II.

NOTES ON THE ROMAN FORTS AT ROUGH CASTLE AND WESTERWOOD, WITH A POSTSCRIPT. By Sir GEORGE MACDONALD, K.C.B., LL.D., D.Litt., F.B.A., F.S.A.Scot.

The following communication may most fitly be regarded as a continuation of that made to the Society a year ago regarding the forts at Old Kilpatrick and Croy Hill. The motive underlying the investigation was similar, and the methods employed were identical. That is to say, in each case a study of previous accounts had revealed a point or points of special difficulty which a little spade-work might reasonably be expected to elucidate, and in both the principle of aiming at a limited objective was rigidly adhered to. Here and there clues which unexpectedly presented themselves were followed up. But in the process, and indeed throughout, great care was taken to avoid the unnecessary disturbance of anything that might prove valuable as evidence in the event of a really searching exploration being carried out in the more or less distant future.

Permission to cut a few trenches at Rough Castle was most courteously granted me by Mr T. Douglas Wallace, factor on the Callendar estate, acting on behalf of Mr Forbes, the proprietor, while Mr and Miss Drysdale were equally kind and considerate at Westerwood. For the actual digging I was fortunately able to secure the services of Mr Alexander Mann, who had already helped me so effectively elsewhere. Circumstances unfortunately compelled me to draw largely on the kindness of friends for assistance in the work of supervision. Mr A. O. Curle, C.V.O., paid repeated visits to both sites, and Mr John Mathieson spent three days at Westerwood, where some excellent photographs were taken for me by Mr Curle and Mr J. S. Richardson. In this way I was able to follow what was going on at a time when I was laid aside by illness. Once again, however, my chief obligation is to Mr Samuel Smith, who grudged neither time nor trouble to obtain

[1] *Early Christian Monuments of Scotland*, part iii. p. 418, fig. 435.
[2] *Ibid.*, part iii. p. 428, fig. 448.

the information of which I was in search. He was in virtual charge of the operations during some critical stages at Rough Castle and during their whole course at Westerwood. Mr Calder's plan of the latter fort, which appears as fig. 13, is a reproduction of one drawn by Mr Smith from his own measurements, verified at the more difficult points by Mr Mathieson. Figs. 6, 7, and 8 are also based on Mr Smith's measurements and sketches. The cost of the enquiries was covered by a grant of £24 from the Society's Excavation Fund.

I. Rough Castle.[1]

To those whose memory carries them back to 1903 a visit to the Rough Castle of to-day is a somewhat depressing experience. The excavations of that year aroused much public interest while they were in progress, and an appeal that they should be 'left open' was acceded to with a literality that has had unforeseen and disconcerting results. No steps whatever were taken to replace earth that had been moved or to protect the not inconsiderable remains of masonry that were exposed. The upcast, allowed to lie where it had been thrown, is now covered with a growth that renders it indistinguishable from the work of the Romans, while the fragments of buildings, when not disintegrated by the weather, have been maliciously demolished by human hands, and the stones utilized for the building of hearths by vagrants who have sheltered within the ramparts. So far, therefore, as the interior is concerned, the task of verifying or amplifying earlier results has been rendered extraordinarily difficult.

The Bath-house (No. 4 in figs. 4 and 11), which was in very fair condition when first uncovered, presents a specially melancholy spectacle. There is nothing to recall the photographs of 1903,[2] and even the plan is virtually useless as a guide upon the spot. Yet the plan is an excellent one. The excavators seem to have had no idea of the true character of the ruined building on which they had lighted, and it says much for the conscientious accuracy of Mr Mungo Buchanan's work that, despite this heavy handicap, he should have produced a drawing which, taken as a whole, fits quite admirably into the setting of present-day knowledge. As no attempt to decipher its meaning is made in the original Report, a digression on its interpretation may not be irrelevant here. As a matter of fact, the lessons learned at Mumrills make it extremely easy to read. It is reproduced in fig. 1, the only change of

[1] The original Report on Rough Castle, which is quoted *passim* in what follows, will be found in *Proceedings*, vol. xxxix. (1904–5), pp. 442 ff. Detailed references are given in only a very few exceptional cases.

[2] *Proceedings*, vol. xxxix. (1904–5), pp. 484 and 486 ff., and *infra*, figs. 2 and 3.

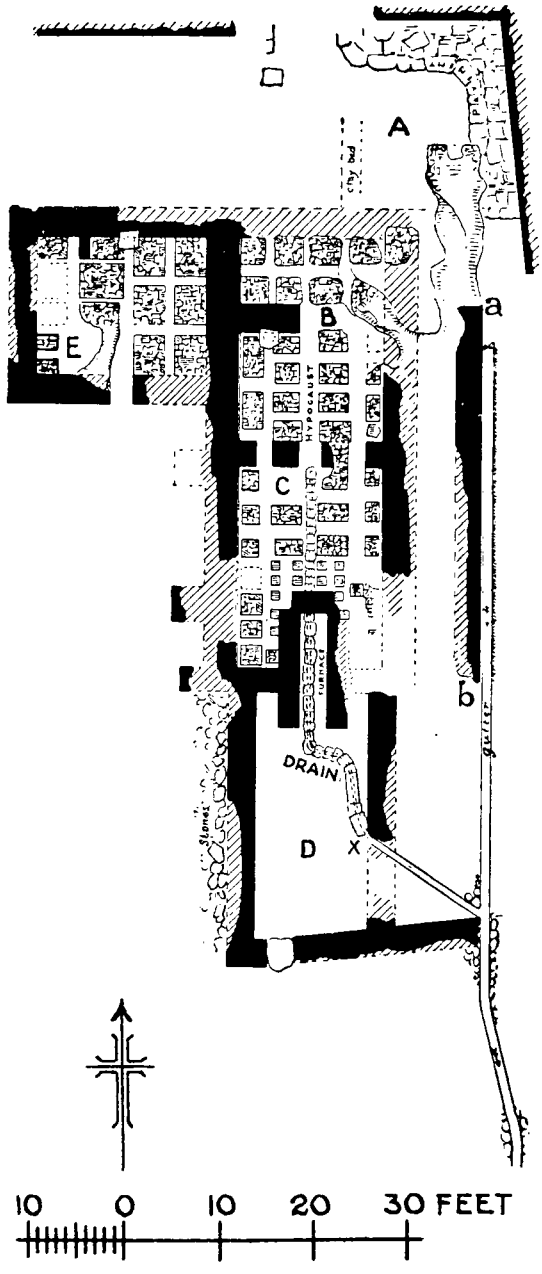

Fig. 1. Plan of the Bath-house.

substance being the omission of a dotted line which is expressly stated to be "conjectural." The descriptive term 'Retaining Wall,' which refers to this line, has also been left out. On the other hand, a few letters have been added to facilitate reference.

As in the case of so many other *castella* at home and abroad, the entrance to the baths was from the Military Way, which ran past them on the north. A gravelled courtyard gave access on the east to a paved apartment (A), which served as a combined Apodyterium and Frigidarium. Mr Buchanan's "clay bed" doubtless represents the partition wall. Although no trace of a cold bath or of a basin for douching has survived, the former presence of one or, possibly, of both is adequately vouched for by the 'gutter,' which is to be seen outside the wall *a b*, and which can only have been intended to carry off the waste-water from the Frigidarium. B and C, both hypocausted rooms, were respectively the Tepidarium and the Caldarium. D, from which the furnace juts out into C, was the Præfurnium; and E, which projects on the west and is likewise hypocausted, was the Sudatorium. The drain issuing from beneath the furnace calls for special notice. Indeed, it was a desire to examine this that in the first instance led me to return to Rough Castle. That it is analogous to the puzzling conduits which were observed at Mumrills is proved by the course it follows, coupled with the account given of it in the Report, where it is said to have been "5 inches wide and 9 inches deep, covered with flagstones." The circumstance that "when opened it was found to be entirely choked with hard soot" may be thought to lend some countenance to the idea of a discarded ventilating-apparatus, for choking with soot is not quite the fate that one would anticipate for a channel that conveyed water. On the other hand, it is certain—I was able to verify the point at X last October—that it was linked up with the 'gutter' which drained the Frigidarium. This is new and important evidence, which will have to be reckoned with in any future endeavour to determine the purpose of such conduits.

Nor is it only in regard to the allocation of the rooms that the plan is instructive. It also throws light on the character of the hypocausts, confirming in a striking fashion the inferences drawn at Mumrills. B and C were heated by pillared hypocausts. In the immediate neighbourhood of the furnace, where the fire would be fiercest, the pillars were of brick, although, as the photographic record (fig. 2) shows, one of them had at some time or other been replaced by a single stone. Elsewhere, at all events during the final phase, the floors overhead had been supported by blocks of roughly built masonry. Nevertheless it would be a mistake to call these hypocausts channelled. According to

the Report, "the pillars placed next to the walls stand clear of them by 2 or 3 inches, the space between being completely clogged with soot, among which were many broken pieces of tile." This means that the hot air was carried up the inside of the walls above through a 'jacketing' of box-tiles, warming the rooms by radiation. It is said by the excavators that the Sudatorium (E) was "similar in arrangement." But fig. 1 shows that there was a difference, and that the hypocaust there was

Fig. 2. South end of Caldarium, showing mouth of furnace.

a channelled hypocaust in the strict sense of the term. The supporting blocks of masonry are larger, and where they approach the walls they actually abut upon them. Thus the hot air could rise only at the ends of the narrow channels, and therefore in streams which would be quite ineffective for radiating purposes. It must have been introduced directly into the room. The furnace of the Sudatorium was evidently small, since all signs of it had disappeared. This points to charcoal fuelling.[1]

It is well known that Bath-houses were peculiarly liable to deteriora-

[1] For a fuller discussion of this and other general points referred to here, see *Proceedings*, vol. lxiii. (1928–29), pp. 447 ff. (Mumrills), and *Arch. Ael.*, 4th S., vol. viii, pp. 219 ff. (Chesters).

tion. We are thus prepared to learn from the Report that "evidence of alterations and additions appear throughout the entire building." But we can go a good deal further, if we bear in mind that in fig. 1 "the portions shaded black indicate what exists of the earlier walling," and that these had been reduced to the basement course or even to the foundations. Three main periods seem to reveal themselves clearly. The fragmentary wall *a b*, taken together with the foundation that projects eastwards into B, in all probability defines the original area of the central portion of the establishment, which was then at its largest.

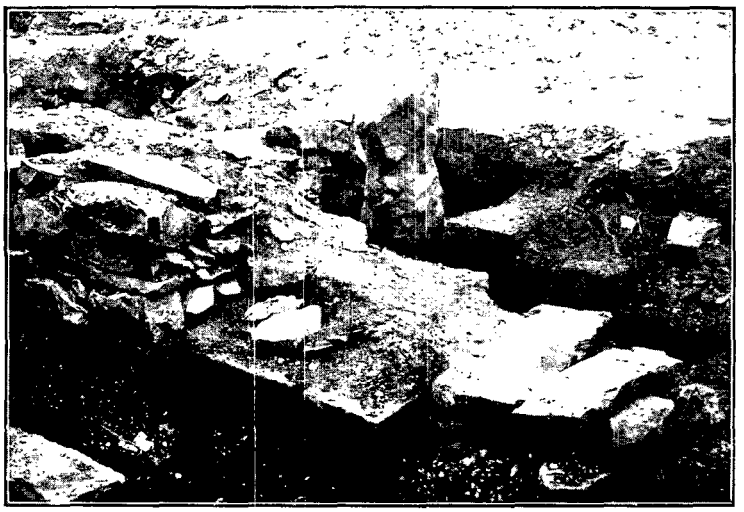

Fig. 3. Reconstruction in the Caldarium.

It is impossible to say what change, if any, was made in E, when rebuilding took place at the opening of the second period. B, C, and D, however, were reduced in width from 23 feet to 15, but in the case of B compensation was provided on the north by the addition of 7 feet to its length at the expense of the Apodyterium. During the third period the dimensions seem to have remained unaltered. The plan, therefore, gives no help there, and we have to turn to one of the photographs of 1903 for proof of complete reconstruction in a singularly slipshod style (fig. 3).

To make the other points to be dealt with intelligible, the plan of the fort (fig. 4) is here reproduced in the exact form in which it appeared in the original Report. One of the puzzling features which a study of it brings out is the occurrence of "mounds" in curiously unexpected places. In walking over the ground it is impossible to

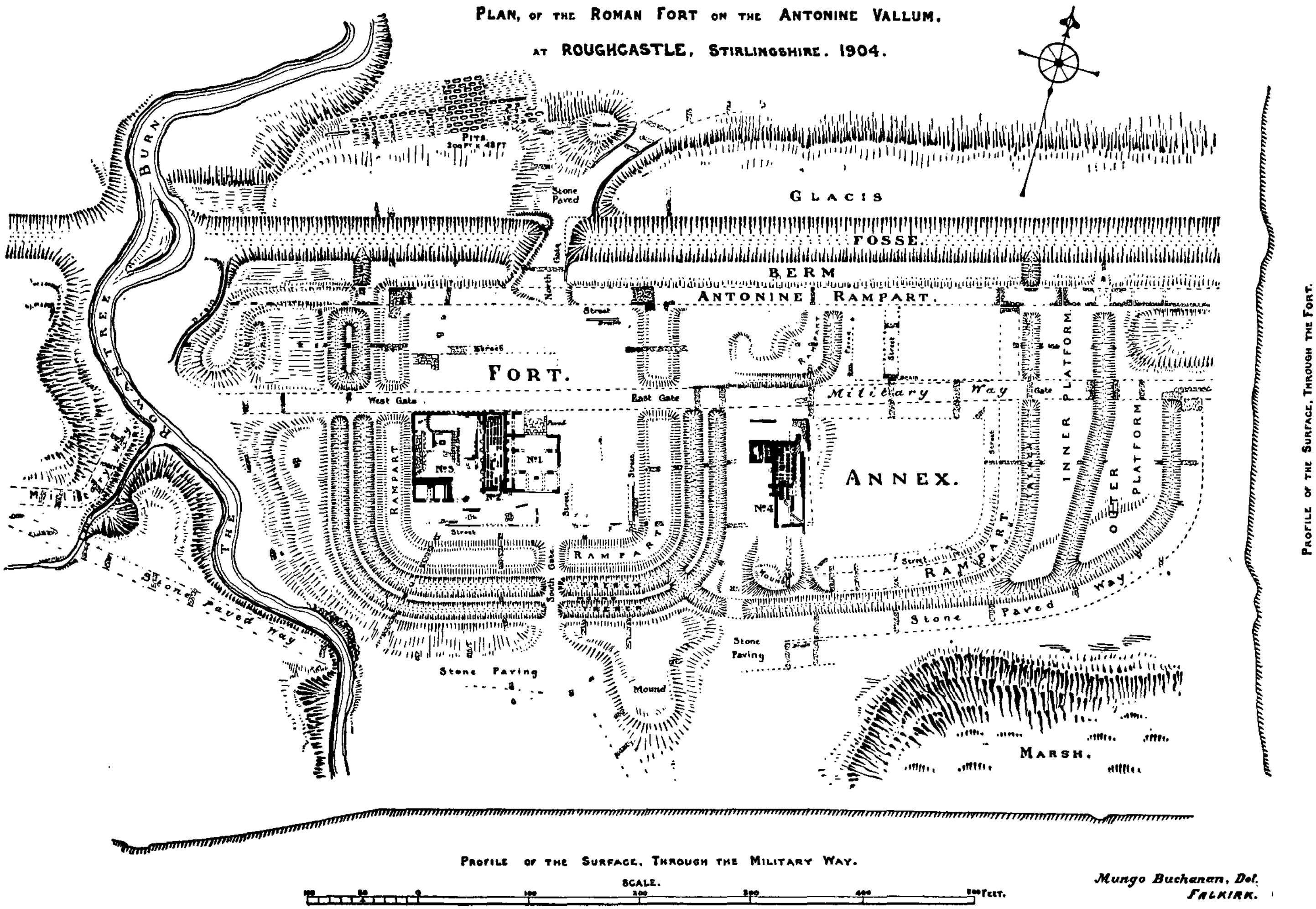
PLAN, OF THE ROMAN FORT ON THE ANTONINE VALLUM,
AT ROUGHCASTLE, STIRLINGSHIRE. 1904.
GLACIS
FOSSE.
BERM
ANTONINE RAMPART.
FORT.
ANNEX.
Military Way
West Gate
East Gate
North Gate
South Gate
RAMPART
INNER PLATFORM
OUTER PLATFORM
Stone Paved Way
Stone Paving
Stone Paved
Mound
MARSH.
PITS
THE ROWANTREE BURN
No 1
No 2
No 3
No 4
Street
PROFILE OF THE SURFACE, THROUGH THE FORT.
PROFILE OF THE SURFACE, THROUGH THE MILITARY WAY.
SCALE.
FEET.
Mungo Buchanan, Del.
FALKIRK.

Fig. 4.

avoid the suspicion that the excavators have too often been misled by appearances. The word, as they use it, inevitably conveys the impression of a mass of earth that has been deliberately heaped up to serve some defensive purpose. But it is only to two of the "mounds" marked on the plan (or mentioned in the text) that this definition seems in any way applicable.[1] Thus, the "large mound or platform, 100 feet long by 50 feet broad," which is shown "projecting outward on the east of the south gateway" and which is described as "a special defence," is in all probability nothing but the upcast from the ditches, spread over a wide area with the express intention of preventing the accumulation from reaching a height that might have interfered with the outlook of the defenders upon the ramparts. Its top is on a level with the margin of the outer ditch, and it is only in relation to the sloping ground beyond it that it can fairly be spoken of as a mound at all. This conclusion, arrived at from a consideration of what is to be seen upon the surface, was confirmed by the observations made at the one or two points at which we opened it up last autumn. The earth looked as if it had been thrown down quite loosely. There was no indication of the packing or 'ramming' which one would naturally associate with the theory of a "special defence." Moreover, that theory is hardly consistent with what is said in another passage of the Report as to a road which comes from the east, rises over "the traverse" and "is carried across the platform."[2]

It was in quest of this road that we opened up the mound. The result of the search was not quite conclusive, perhaps because the ground had previously been disturbed. But there was sufficient presumptive evidence to satisfy both Mr Curle and myself: over a width of 18 feet the soil was markedly different from that on either side, and 18 feet is exactly the width usual for the Military Way, of which this road was a branch. The branch had first attracted my attention more than twenty years ago. I pointed out then that it was later than the Military Way itself, from which it parted company at the eastern entrance to the annexe, the clearest proof being furnished by the fact (ascertained by the original excavators) that the southern

[1] These are the one in front of the short ditch at the foot of the slope on the north-west, and the 'traverse' outside of the north gate. Nor do I feel at all sure that the latter of these is not largely natural.

[2] The more easterly part of it is the "stone paved way" which is shown on fig. 4, skirting the outside of the annexe ditch. It must have been very visible two hundred years ago, for comparison with Gordon's plan shows that it is to this road that he is referring when he says: "One Circumstance is very remarkable at this Fort; namely, that the same Free-stone Wall already mentioned, seems by its Foundation here, to have surrounded the whole *Castellum*" (*Itin. Sept.*, p. 59). He obviously mistook the bottoming of the road for the stone base of the Vallum, which he believed to be the lowest course of a freestone wall.

entrance must be an afterthought as the ditch in front of it had been filled in to provide a passage for the new approach.[1] The object was, of course, to get rid of what had turned out to be the inconveniently steep gradient between the west gate of the fort and the Rowan Tree Burn, which was crossed by a ford, as well as of the hardly less trying climb on the farther side of the stream. On the alternative route, which was in every way much easier, a bridge took the place of the ford.

All this remains broadly true. But an important modification is called for. Since I wrote in 1911, I have collected evidence from other forts—it would hardly be appropriate to set it out here—which makes it virtually certain that the old idea of the Military Way as a single line, passing through each of the 'stations' (except Bar Hill), must be abandoned, and that there was a series of 'loops,' so arranged that it was possible to travel from the Forth to the Clyde without any break in the journey. That it should have been so is just what might have been expected from Roman common sense. Many, if not most, of the forts are on conspicuous heights. It would have been a serious inconvenience, if traffic intended for some particular one of them could only have reached its destination after a succession of toilsome and unnecessary ascents. In at least a certain number of instances —and Rough Castle is a case in point—the detour was not merely easier but shorter. Nevertheless it seems better to speak of 'loops' and to reserve the term 'Military Way' for the road that would be used by detachments patrolling the frontier.

The extent to which the interpretation of 1911 requires to be amended will be apparent from a glance at fig. 5. The road which is there seen approaching the south gate of the fort from the south-east, and which (as we learn from the Report) the excavators traced backwards in that direction for some 200 feet,[2] was the end of a 'loop' which had left the main Way some distance farther east and had skirted the southern edge of the swamp that lay behind the Wall. In all likelihood it was to carry the 'loop' that the bridge was originally thrown over the Burn. Accordingly, when it was decided to seek relief from the trying conditions that the use of the *via principalis* had been found to involve (A), there was no need to continue the new branch (B) beyond its natural point of junction with the already existing 'loop.' The two merged into one another immediately outside of the south gate of the fort (fig. 5). It will be remembered that the excavators

[1] *The Roman Wall in Scotland* (ed. 1911), p. 229.

[2] In the Report (p. 465) they say "two hundred yards." That, however, is impossible. Two hundred yards would have carried them on to the railway line and into the brickworks on the farther side.

noted an extensive cobbled area just here. This is precisely what might have been looked for at a spot where streams of traffic met. It may be added that, as fig. 5 indicates, the area in front of the south gate of the annexe had been similarly treated.[1]

Our attention was next turned to the annexe itself. I was anxious to test the validity of the hypothesis which I had put forward in 1911 to account for the appearance of three ditches on its eastern side (fig. 4). The excavators had supposed that all three had been dug simultaneously, and that the two enclosed spaces beyond the innermost were "raised platforms," to be manned and held by detachments

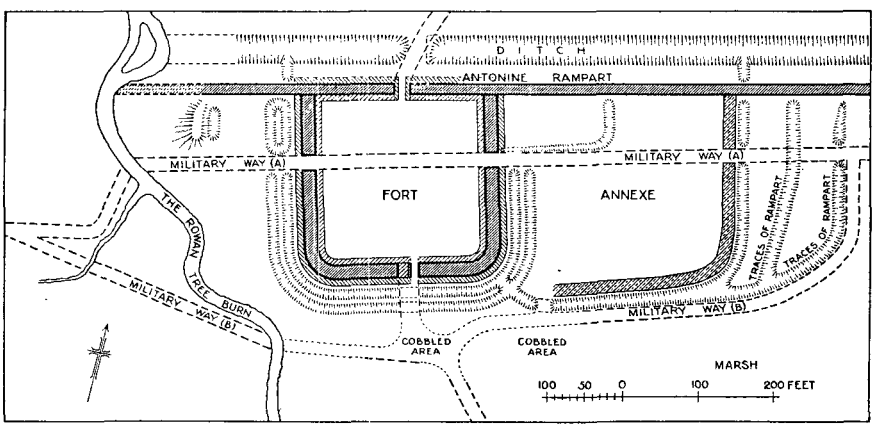

Fig. 5. The earlier (A) and later (B) Military Way at Rough Castle.

of the garrison, who would thus be posted outside of the ramparts altogether. Finding it impossible to reconcile this scheme with any intelligible system of defence, I suggested that the three ditches, instead of being contemporaneous, really represented three consecutive stages in the history of the enclosure, the second and third stages being each marked by an appreciable reduction in its size. That the construction of the branch road had coincided with the opening of the second stage —that is, with the first reduction—was indicated by the ruthless manner in which the diggers of the second ditch had dealt with the Military Way. They had cut right through it, as if it were henceforward to be of no value as a thoroughfare.[2]

One difficulty confronting the view that has just been summarized was that, on Mr Buchanan's plan, the outermost ditch is shown stopping

[1] The limits of these two cobbled areas, as indicated in fig. 5, are naturally very tentative. To map them accurately would have involved the stripping of much turf.

[2] *The Roman Wall in Scotland* (ed. 1911), pp. 229 ff.

abruptly on the south side of the Military Way without re-appearing beyond it. It had always seemed to me possible that this might be due to a misapprehension on the part of the excavators. The work of last autumn proved that the suspicion was well founded. Several cross-sections were cut between the north side of the Military Way and the Antonine Vallum. In the first of these, which was only a few yards from the edge of the road, the ditch duly showed itself in its normal dimensions. A little farther on, however, it began to grow narrower and shallower, its proportions diminishing rapidly until, after a sudden rise of 10 inches in the level of the bottom, it became little more than a mere dent upon the surface.[1] By the time the kerb of the Antonine Vallum was reached, it had disappeared entirely.

After the continuance of the ditch had thus been established, it seemed worth while making some search for traces of the rampart which had presumably run behind it. These turned out to be somewhat indefinite. Nevertheless they seemed to me unmistakable. In each of three sections, cut across the probable line, there was found a bottoming of stones, loosely laid and about 6 feet broad. It can hardly have been designed to support any structure more elaborate than an earthen mound. It may be taken for granted that the upcast from the ditch furnished the necessary material. The rampart behind the central ditch seemed to be similar in structure. Certainly the two had met the same fate. As they lost their value with the successive contractions of the area of the annexe, they were roughly levelled and the material spread over the ground that had been abandoned. That is why, in the words of the excavators, both of "the platforms on the east defence . . . show a decided increase in height where facing the south-east." There is little to be added regarding the third or innermost rampart, the only one marked as such on fig. 4. The stone bottoming was perhaps more substantial—it can be seen in fig. 4 at the end adjoining the Antonine Vallum. On the south side a very small trench, bedded with stones, was noted running east and west, under the rampart, about 10 feet back from the lip of the ditch. Its direction rather negatived the idea that it had been for drainage, and at the same time it was too shallow for a palisade-trench. Possibly it was dug to receive the lower ends of struts which had passed at an angle through the body of the rampart and had supported a facing of wooden planks. An arrangement of the kind was noted at Urspring on the German Limes.[2]

[1] In the first cross-section we made, the ditch was about 15 feet broad and 9 feet deep; in the next, 6 feet broad and 3 feet deep; in the third, which was 8 feet distant from the kerb of the Vallum, 4½ feet broad and 2½ feet deep. I did not myself see the last two of these sections. Mr Smith tells me that to him they suggested half-finished work.

[2] See Fabricius in *O.R.L.*, Bd. vi., B, Kastell Urspring (Nr. 66a), p. 7.

As long as we were exploring the outer fringes of the annexe, we were in comparatively smooth water. The next stage of our enquiry was far more troublesome. The questions we had to face were extremely complicated, and the obstacles in the way were numerous and formidable. Some of the problems that presented themselves proved impossible of solution without the removal of trees and a much more extensive disturbance of the soil than we had either the means or the authority to undertake. This applies more particularly to what may well have been traces of Agricola. As regards the Antonine fort, on the other hand, we not only secured the information we had set out to obtain, but also stumbled upon facts which were as new as they were unexpected, and which illuminate its history in the most interesting manner. The features of the plan which have hitherto seemed unintelligible will be found to fall quite readily into place.

On entering the annexe, we began operations in that part of it which lies just outside the north-east corner of the fort, between the Military Way and the Antonine Vallum. Even a casual inspection of the original plan (fig. 4) makes it evident that the 'lay-out' here was peculiar. The absence of any ditches in front of the rampart of the fort and the appearance of a rectangular ditch some distance to the east of it are very remarkable features, on which it seemed eminently desirable that fresh light should, if possible, be got. We thought it well to make sure, in the first place, that the fort ditches were really absent. There were no visible signs of them on the surface, but it was just conceivable that they might nevertheless be lurking beneath the cobbling that had been discovered in 1903. This cobbling, which extended over practically the whole of the enclosure on which our attention was now concentrated, was covered with a spread of gravel, and consisted of freestone rubble, closely and carefully laid upon the natural surface, to a depth (as it seemed) of 14 inches. Lifting it for the breadth of a cutting, made transversely across the line which the ditches would have followed, we found that the till was nowhere disturbed. Mr Buchanan and his colleagues were, therefore, right in believing that there had never been any ditches there at all. The enclosure had been an integral part of the original design of the Antonine fort.

Speaking of the rectangular ditch, the Report of 1905 says: "To the interior . . . a rampart is still traceable, which takes the form of a prominent mound at the south-east corner. In the centre is a core of stones, among which was observed evidence of the effects of fire. The soil forming the rampart is not laminated." If the enclosure belonged to the Antonine period, so too did the rampart that defended

it, and we thought it well to see whether we could make the description of it more definite, particularly as our curiosity had been whetted by the reference to "the effects of fire." Fig. 4 shows that the section on which the earlier account is based was cut a little to the west of the corner—that is, in a north to south direction. We decided to keep clear of the mound, which is still conspicuous, in order that we might get to the bottom of things without having to move a mass of soil. Accordingly, we cut our trench at a point 26 feet north of the corner—that is, in an east to west direction. The result of our observations (fig. 6) may be summarised as follows:—

The freestone cobbling stopped short, with a well-marked edge, about 12½ feet west of the lip of the ditch. The surface beyond it offered such an obstinate resistance to the spade that we were at first doubtful whether it might not be the till. Perseverance proved that

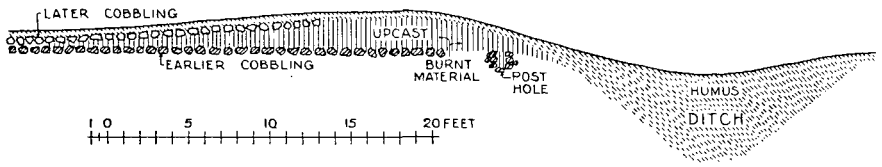

Fig. 6. Section at East End of Cobbled Enclosure.

it was the upcast from the ditch, with its upper inch or two caked to a consistency of singular firmness. There was no sign of a "core of stones." But, on clearing away the 'forced' soil below the crust, we found that the layer of upcast had a maximum thickness of about 2 feet and that towards the east there was intermingled with it a mass of earth, reddened through and through by fire. Beneath the upcast and beginning at a distance of 16 feet west from the centre of the ditch and 7 or 8 feet east of the edge of the layer of cobbles, there was a second layer which extended westwards under the first. It was no less carefully laid, but, instead of being composed entirely of lumps of broken freestone, it contained a large proportion of stones which had evidently been gathered from the surface. At a distance of 3½ feet in front of this lower cobbling, but still buried beneath the crust, was a quite unmistakable post-hole. With the view of ascertaining whether it had been one of a series, we enlarged our cutting for a short distance, first to the north of it and then to the south. In doing so, we encountered in both directions, at a distance of about 3½ feet from its centre, a shallow circular depression among stones, with a little black matter (which might have been decayed wood) in the bottom. These depressions were certainly not post-holes in the full sense of the

word. But it is not improbable that they had held the lower ends of wooden struts which ensured the stability of the post that rose between them.

As it turned out, this first cutting, taken along with the remains of the rampart shown in fig. 4, gave us all the elements which were essential for a reconstruction of the history of the cobbled area. But the information it yielded had to be verified and supplemented by

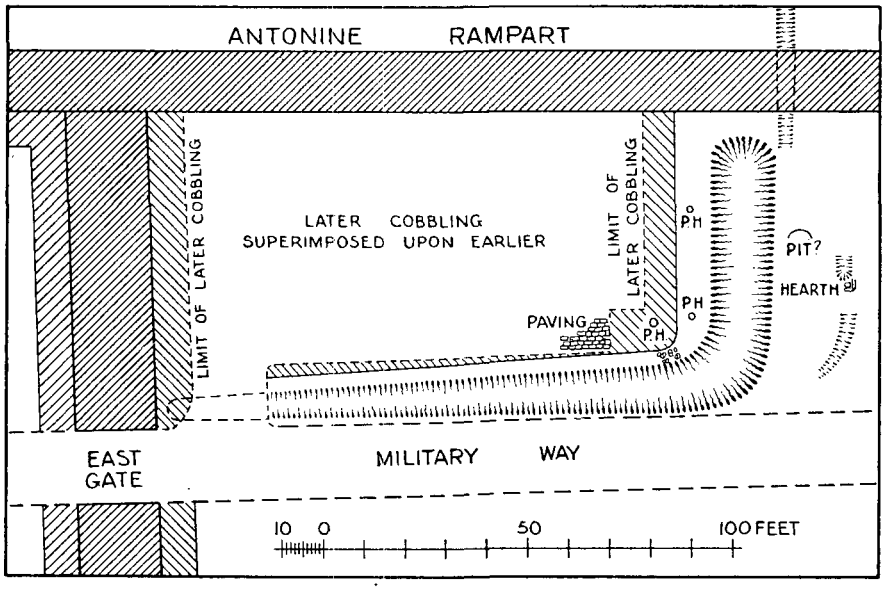

Fig. 7. The Cobbled Enclosure.

cuttings made elsewhere, before the interpretation embodied in fig. 7 began to assume intelligible shape. Although here and there part of an outline may remain doubtful,[1] the illustration may be accepted as a reasonably accurate record of the essential facts. As a record, however, it does not profess to be complete, for to have made it so would have called for much more time and work than we could afford to devote to it. Thus, we refrained from attempting to locate the whole of the post-holes in the series that must have run along the east front. When another cutting, close to the corner, had disclosed a second post-hole in exact alinement with the first, we were content to take the existence of the rest for granted. A third was discovered at the same time, not (as will be seen from fig. 7) in the same alinement as the others, but 9½ feet south-west-by-west of the second. Its size

[1] This is particularly true of the south-east corner, which had been much disturbed in 1903.

and depth indicated that it had held an exceptionally stout and heavy post, in all likelihood the first of the series. The limits of the two layers of cobbling, as far as they were definitely ascertainable, are so plainly marked in the illustration that it is unnecessary to describe them in detail. Attention should, however, be drawn to the paving which began about 11½ feet west of the large post-hole and covered a space measuring, roughly, 13 feet by 9. There were two layers of it, just as there were of the cobbling, and these were separated from one another by a foot or so of upcast, part of which was reddened by intense heat. The signs of fire seemed to stop here after being detected at intervals, in front of the lower stratum of cobbles, all the way from the Antonine Vallum. The quantity of the burnt material varied in the different sections, and occasionally some of it lay on the top of the cobble-stones.

Before any attempt is made to interpret these various appearances, it is necessary to return to the west end of the area and pick up a clue which we were fortunate enough to light upon there. As a first step, however, it should be pointed out that the representation of the rectangular ditch in fig. 4 is incomplete and inaccurate, although it corresponds fairly closely to what can be seen upon the surface. The actual dimensions are as set out in fig. 7. Here it is necessary to anticipate a little, and to explain that the fort rampart as it appears to-day is not the fort rampart as it existed when the ditch was first dug. We shall learn presently that an addition of no less than 9 feet was made to its width on the outer or east side, when the *castellum* was reconstructed for the second time. The Report, which is here more explicit than fig. 4, fixes the starting-point of the ditch "about 20 feet in front of the rampart"—that is, really, in front of the addition. This is fully 26 feet too far east. It actually started about 3 feet out from the kerb of the original rampart, so that some 6 feet of it must be buried beneath the extension. At first it is comparatively small, not more than 5 feet broad and 3½ or 4 feet deep. As it advances eastwards, however, its dimensions increase. Before it reaches the turn, it is quite 14 feet broad, with a proportionate depth. After rounding the corner, it has a uniform breadth of about 17 feet, until it stops in front of the Antonine Vallum.

The first proof that any amendment of the plan of 1905 was called for was obtained in the course of testing a hypothesis which had been very tentatively advanced in 1911.[1] With nothing but the material available in the Report to go upon, I had suggested that the ditch, which had an odd appearance of being intrusive, might really be an adaptation of some

[1] *Roman Wall in Scotland* (ed. 1911), p. 235, where "north-east" is a misprint for "north-west."

part of an older—that is, an Agricolan—system. If this were so, the original ditch must have continued farther westward. A transverse cut was accordingly made across the apparent gap and at no great distance from the edge of the rampart. When the covering soil was stripped off, the cobbling was seen to have subsided all along the edge of the Military Way; there had certainly been a ditch there at one time. On removing the cobbles we found that it had been V-shaped and that it had been deliberately filled in. So far the omens had been favourable, but disillusionment came speedily. There was only an inch or two of silt at the bottom, and then came 2 feet of earth, mingled with large stones and broken pottery. Higher up, the filling was almost entirely of lumps of broken freestone, of which there were two layers with a thin spread of gravel between. The lumps in the upper layer were of greater size, some of them looking as if they had previously done duty as building-stones. On the top of the whole was a second spread of gravel. We were plainly in the presence of two roads, one superimposed upon the other. It was evident that the entrance to the enclosure had been here, and that the traffic had been heavy.

The negligible quantity of silt in the ditch tended to discredit the Agricolan hypothesis. The testimony of the pottery fragments was still more discouraging. The majority were portions of amphoræ, too much mutilated to convey any meaning. But there were also some pieces of Samian ware, including the bottom of a platter of Form Dr. 18/31 and the greater part of a small bowl of Form Dr. 37. The decoration of the latter is characterized by poor workmanship; the stamps are worn and carelessly impressed, and the ovolo is singularly crude. Its surface, too, is much rubbed, but Mr James Curle, who was the first to examine it, recognized the following types immediately—Déch. Nos. 187, 265, 455, 613, and 1041. Two others have since been identified—Nos. 471 and 555. There remain only a small leaf-like object, which does not seem to find a place in Déchelette's list at all, and three figures, of each of which no more than a part, in two cases a very small part, has survived. Now it cannot be a mere coincidence that every one of the seven stamps enumerated is known to have been used by Libertus of Lezoux. Dr Oswald suggests Vespasian-Trajan for the *floruit* of this potter. Others believe that he was still active under Hadrian, if not later. Whatever may be the truth as to that, the Rough Castle bowl, with its degenerate craftsmanship, cannot possibly have reached Scotland earlier than the Antonine period, and it can hardly have been thrown upon the scrap-heap there as soon as it arrived. Antonine troops had therefore been in occupation of the site for some time before the filling took place.

Agricola finally faded out of the picture when it was discovered

that the ditch ended 3 feet short of the kerb of the original rampart, for we were able to satisfy ourselves that the end was a true end and not a break for a gateway. The rectangular ditch, then, had belonged to the initial lay-out of the Antonine fort. When the first reconstruction took place, it had been filled up with débris of the earliest Antonine occupation, and a road carried across it into the enclosure. When the time for a second reconstruction came, the road had collapsed so far that it was necessary to replace it, and this was done by simply laying a second road upon the top of it. Other roads in and about the fort had undergone similar repair, notably that part of the original Military Way which extended from the east gate of the *castellum* to the east gate of the innermost and latest annexe. The double stratum was unmistakable there, and it occurred to me that it offered a convenient touchstone of the soundness of the theory I had advanced as to the chronological sequence of the various annexes. The road was, therefore, examined at a point a little way inside the central annexe-ditch (fig. 4). It showed no such signs of repair as had been noted farther west, a very satisfactory confirmation of the view that the area beyond the innermost ditch had been excluded from the annexe at the opening of the third of the three Antonine periods. The fact that a gate still led into it suggests that it was not entirely abandoned. Perhaps the remains of its eastern rampart were considerable enough to admit of its serving as a pen for cattle.

The discovery that one road had been superimposed upon another prompted us to scrutinize the cobbling of the interior more carefully. It turned out that here also there were two layers, separated from one another by a thin spread of gravel and each about 7 inches thick. A cutting carried westwards from the apparent edge of the enclosure supplied convincing proof of this. The section, as reproduced in fig. 8, is self-explanatory, but attention must be drawn to certain features of it which have a wider bearing. The cutting was continued for some distance into the body of the rampart of the fort, and it will be seen that the lower cobbling marched with the original kerb as closely as it would be possible to do. The upper cobbling, on the other hand, besides being higher than the kerb, was sundered from it by an interval of 9 feet. In the side of the cutting the lamination was very distinct above the stone foundation, the black lines tending to droop a little as they came directly over the kerb. But it was no whit less distinct above the 9 feet of lower cobbling, and here the black lines were inclined to rise as they left the kerb behind them. Even he who runs may read. When the cobbling was first laid down, the outer face of the rampart remained unchanged. When it was renewed, the outer

face of the rampart was given an 'eke' of 9 feet. In other words, the final reconstruction of the fort had involved a reinforcement of its defences. We shall return to this shortly. In the meantime it will be best to complete the account of the annexe.

In one vitally important respect the evidence was still defective. We did not know what relation, if any, the double layer of cobbling on the west had borne to the double layer we had previously encountered on the east. At first sight there seemed to be a serious obstacle in the way of supposing that the two had been in any way connected. In the former case the two layers had only a sprinkling of gravel between them. In the latter they were separated from one another by nearly 2 feet of soil. Investigation, however, proved that

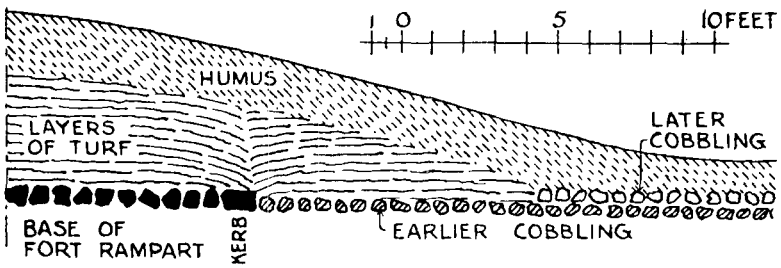

Fig. 8. Section at West End of Cobbled Enclosure.

the intervening soil had all the characteristics peculiar to the upcast which had already given us trouble, notably the tendency to cake, and, further, that it decreased steadily in thickness as it was followed westwards. The levels were then taken, with the result that the height of the lower cobbling above the datum line was found to be virtually the same at the east end of the enclosure as at the west. There could no longer be any doubt as to the double layer being continuous throughout. The upcast that had made us hesitate meant no more than that the ditch had been deepened immediately before the process of re-cobbling began. When the final reconstruction took place, the defences of the enclosure too had been strengthened.

The whole of the evidence has now been set out. The conclusions to which it seems to lead can be stated most clearly in narrative form. The enclosure, which measured roughly about 130 feet by 60, was an integral part of the Antonine fort as originally designed. It was then uncobbled, and had on the south and on the east a ditch which seems to have been about 5 feet wide, and which was apparently a line of demarcation rather than a barrier. The position of the entrance is quite uncertain. Equally uncertain is the use to which the reserved

area was to be put. All that can be confidently affirmed is that it was intended to supplement the very limited accommodation available within the ramparts by providing room for something that was normally placed inside—perhaps a barrack-yard for drill. The first of the two reconstructions which the *castellum* is known to have undergone was accompanied by three notable changes in the enclosure. Cobbling was laid down over the whole surface, a roadway for wheeled traffic was carried across the ditch, and a timber barricade was erected all along the eastern front from the Antonine Vallum to the corner. The barricade was apparently composed of horizontal planking, nailed firmly to stout posts or *valli* which were set up at intervals of perhaps 9 or 10 feet, and each of which was probably supported on either side by a wooden strut. The manner in which the cobbling spreads out towards the ditch at the south-east corner may indicate that there was an entrance for foot-passengers here, while the paving may represent the floor of a small building, possibly a wooden hut.

Modifications so sweeping amount to more than repair. They indicate the adaptation of the enclosure to some quite new purpose. We shall find in due course that, at the very time when the alterations were made, the space within the ramparts was cut down, and cut down, as it happens, by approximately the same number of square feet as the enclosure contains. It is reasonable to infer that there was a transference. Stores—barrels of wine, for instance, and amphoræ—may now have been kept outside, although sufficiently near the gate of the fort to allow of their being moved inside quickly, if there were a prospect of the garrison being hard bestead. A serious defence of the relatively flimsy barricade can scarcely have been contemplated, particularly in the absence of any corresponding protection along the south front Why, then, have a barricade at all? Probably as a precaution against the entry of unauthorized intruders from the annexe; it is hardly to be supposed that 'broaching the admiral' had no counterpart among the Romans. Nothing of the sort was needed on the south, since the line of the road, from which alone access could be had, would be under the immediate eye of the sentries at the gate. Such would seem to be the easiest and most natural explanation of an adjunct which is, so far as I remember, unique among Roman *castella* at home and abroad. Its occurrence here must be a result of the abnormally small size of the fort—less than an acre after the reduction to which I have referred.

When the Romans withdrew for the second time, the barricade was given over to the flames, whether by the retreating troops or by the exultant Caledonians no one can tell. The stumps of the *valli* and of

their supports were left unscathed below the surface, to perish later by natural decay. Everything above blazed furiously, and, crashing to the ground, burned itself out there, reddening the soil on which it lay. Before very long the invaders were back at Rough Castle once more. When they set themselves to raise up the former desolation they adhered to the old lines, but with certain not unimportant differences (fig. 7). To begin with, the ditch bounding the enclosure was widened and deepened, the increase on the south side being gradual and progressive, that on the east uniform and at the maximum. In the process much, if not all, of the upcast, including the reddened earth, was thrown inwards on to and above the original cobbling and post-holes. Fresh cobbling was then laid down on the new surface, as well as on that part of the old surface which had not been reached by the upcast, and on the roadway over the ditch. At the same time the buried patch of paving was replaced by another of virtually identical dimensions. As recobbled, however, the area at both ends was shorter by 8 or 9 feet than it had been before. Fig. 8 makes clear why this was so on the west. The reason for the curtailment on the east was not dissimilar. An earthen rampart, the remains of which are still visible, was substituted for the wooden barricade, and the necessary room for its base could only be found by taking something away from the cobbling.

The history of the enclosure, then, falls wholly within the Antonine period. But, in collecting the evidence which has made its re-discovery possible, we came upon traces of something which seems to be certainly older. Thus, in cutting a trench east and west along the Berm of the Antonine Vallum, we struck a very small ditch, 4 feet wide and about 1½ feet deep, running north and south, on a line parallel to the ditch of the cobbled enclosure but a little farther to the east (fig. 7). Towards the north it was soon lost in the Ditch of the great Wall, on the farther side of which it failed to re-appear. Towards the south, on the other hand, it passed under the stone base of the Vallum, where it was transformed in a manner which proved it to be unmistakably pre-Antonine. Beneath the north kerb it had been filled with stones to carry the later structure; as it approached the centre it grew shallower and shallower until it was hardly visible at all; thereafter the process was reversed, so that by the time the south kerb was reached it had returned to its original depth and was once more filled with stones. It was obviously older than Lollius Urbicus. When the Wall-builders arrived upon the scene, they must have found it crossing a slight rising ground, directly in the path marked out for them, and

must have removed part of it in the course of providing a level bed for the foundation they had to lay.

That the little ditch had continued beyond the south kerb was apparent, but the intervention of trees made any attempt to follow the trail hopeless. Fragments of similar ditches—for they can hardly have been the same—were found farther south, in positions which are marked on fig. 7, the most noteworthy being a rounded corner. There was also a hearth—which may quite well have been Antonine, although it was a foot or two below the modern surface—and what seemed to have been a pit. The rounded corner would have been more thoroughly examined, had not progress been once again completely blocked by trees. That it had had no place in any Antonine system of fortification was clear from its having been deliberately choked with heavy boulders. None of these had been used for building. They had been gathered for the express purpose of blocking the ditch. Even in combination the indications just described are far too slight and vague to justify any conclusion except one of the most general character: should it ever become practicable to initiate an exhaustive search for first-century remains, the explorers will at least know where they ought to begin.

Up to this point we had been working entirely in the annexe. Incidentally, however, we had discovered that, when the fort was reconstructed for the second and last time, the rampart on the north-east had been extended outwards by 9 feet, and there was a prospect that with this key in our hands we might be able, without much trouble, to add substantially to what the Report of 1905 had said of the defences as a whole. So far as the rampart-base is concerned, the conclusion there reached is summed up as follows: "It may be affirmed that underneath all the ramparts of the fort there are stone foundations of an average width of not less than 20 feet, supplemented by varying margins, adapted to suit special requirements, and increasing the width so that it is nowhere less than 30 feet; and amounts in the east rampart to 35 feet." As to the superstructure of turf, we are told that "while it is noted that the layers terminate at the edge of the stone foundation, similar laminated soil appears beyond its kerbs, both externally and internally, lying on the original surface,[1] extending outwardly 6 feet and inwardly fully 8 feet, sometimes in continuation of the core, but more often quite separate, and always showing the same systematic layering, evidently intentionally laid, to add to the width of the rampart."

[1] The phrase "lying on the original surface" is hardly borne out by the sections in *Proceedings*, vol. xxxix. (1904-5), pl. i. Some, if not the majority, show a bottoming of stone.

The accompanying sections prove that the estimate of 20 feet as an average for the breadth of the original foundation may quite safely be accepted. The idea of "varying margins," however, is *a priori* unsatisfactory. A uniform breadth for the whole is a far more likely arrangement. The 9 feet of fig. 8 gave us a standard for the outer 'margin' on the east, and on examining the Report it turned out that, in the sections cut in 1903, the outer 'margin' was exactly 9 feet wide on the west and only a very little more on the south. A section cut on the east, but to the south of the Military Way, had given a rather different result, the 'margin' there becoming "a strong stone revetment, about 7 feet 6 inches wide, built higher where facing the interior, and set back 5 feet from the edge of the inner trench." It looked as if we should have to reckon with variety after all. Before acquiescing, however, we put the matter to the test by making a cutting of our own not far from the one described in the Report. The 'margin' which it disclosed was certainly not less than the 9 feet which we had assumed to be the standard, and it is thus scarcely doubtful that the deficiency of 1½ feet, which was noted by our predecessors, must be due to the accidental removal of one or two stones. It is, therefore, fairly safe to say that on all three sides the breadth of the extension had originally been about 9 feet.

The Antonine Vallum along the front of the fort would appear to have been similarly reinforced, presumably at the same time. There, however, the sods seem to have been laid on the natural surface without any bottoming of stones, and the precise breadth of the extension is consequently difficult to determine. Here are the facts, so far as they have been observed. Speaking of the Antonine Ditch, the Report says: "The berm next the fort is about 27 feet wide, measuring up to the stone foundation; but as the rampart extends beyond the foundation, the width is reduced to about 20 feet." This implies a breadth of about 7 feet for the actual extension. The Glasgow Committee, again, in the single section which they cut here ten years earlier, noted that lamination was well marked for a distance of 6 feet out from the edge of the stone base. But they also mention that 6 feet farther out still there was "a stone which may be a kerb."[1] If the "quasi-kerb," as they call it, is to be taken as the limit, it would mean an extension of 12 feet. The figure may not seem excessive, if it be remembered that in the same section the stone foundation proper was only 16 feet wide, as against 20 in the case of the ramparts of the fort. Finally, at this particular point, which was just east of the north-west corner of the fort, the foundation is said to have lacked the neatly formed kerbs which occurred everywhere else. Instead,

[1] *Antonine Wall Report*, pp. 116 f.

there was "at each side a built-up core of stone about 2 feet high"—3 feet wide on the north, and on the south 2 feet 6 inches. The suggestion of repair is unmistakable, and the repair is in all likelihood to be associated with the first reconstruction, since the extension lay beyond it.

I come now to the inner 'margin,' where the difficulties of interpretation are more serious. Speaking of the east side, the Report states that towards the interior, beyond the kerb of the foundation, "there is a channel, stone-bottomed, 6 inches deep by 6 feet wide. This, again, is bounded inwards by a raised core of stones of about 3 feet in width, which ends upon the edge of a cobble-paved street rising about 9 inches above it. This street is 12 feet wide." The description is based upon two sections, cut respectively to the north and to the south of the Military Way. The drawing of the latter breaks off abruptly just where its testimony would have been specially valuable, but that of the former shows both the "channel" and the "raised core," with the layers of turf covering the whole as far as the edge of the "street." Except for the difference in the character of the stone bottoming, what we seem to have here is an extension of the inside of the rampart, very similar to that upon the outside. The street would then be exactly in its right place in the *intervallum*. Our own evidence from the east was less definite. When we were working there, we were chiefly concerned with the outer face. The inner one was less thoroughly explored, but all the appearances pointed to there having been two distinct layers of stone 'bottoming,' stretching as far as the original rampart and having laminated soil between them.

On the west, according to the Report, the inner 'margin' had "flat stones like paving" on the top. The layers of turf can be seen spreading inwards over these both in the drawing of the section cut in 1903 and in the contemporary photograph (fig. 9). What the Glasgow Committee have to tell us is even more conclusive. Their section through the west rampart

> "begins near the eastern kerbstone of what appears to have been a roadway 14 feet in width, paved with flagstones, three of which measure about 2 feet by 1½ feet, 22 inches by 34 inches, and 19½ inches by 19½ inches. It passes through a heap of confused stone, mostly squared, and indiscriminately thrown together, intermixed with loose earth. This covers about 8 feet of the line of section. Then begins the familiar *layering*, as seen in all the Bonnymuir sections. Through this the section proceeds, and just after fairly passing through it, ends on the edge of the inmost of the western ditches of the camp—at a point 52 feet from the eastern kerb of the supposed roadway."[1]

They add that, while the confused heap of stone and earth appeared far too loose to be the remains of buildings *in situ*, the stones are dressed

[1] *Antonine Wall Report*, p. 118.

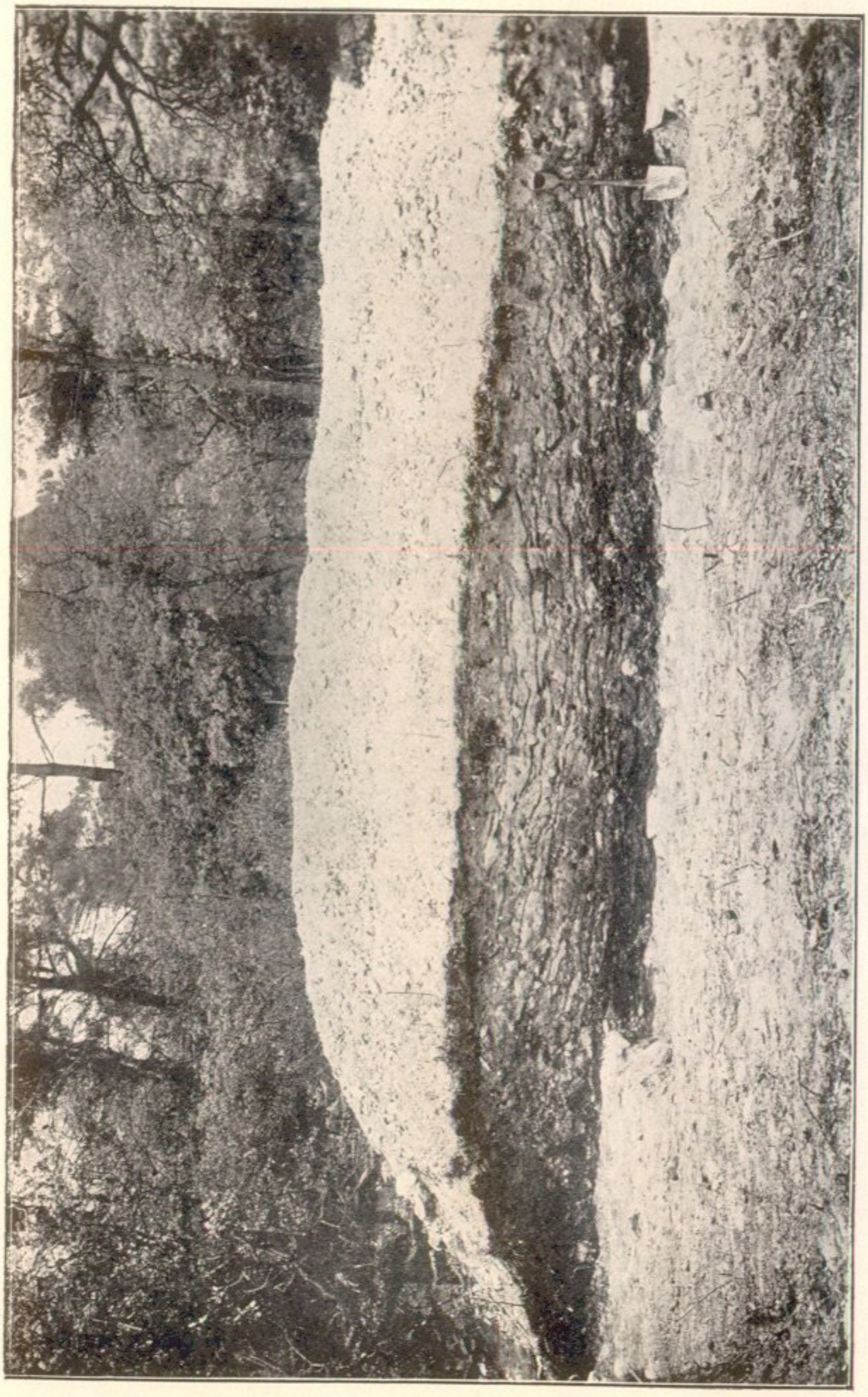

Fig. 9. Section through West Rampart, looking north.

yellow freestone, and further that at a point 18 feet from the beginning of the section, the fragments of a large vessel of earthenware were found nearly 3 feet below the level of the pavement. The suggestion of a roadway is hardly probable. Streets within forts were not usually paved, and in a *castellum* so small as Rough Castle there would scarcely be room for a 14-feet street in that particular position. A courtyard or the floor of some building is more likely. But, for our present purpose, the important thing is that the Committee's statement, as it stands, gives us a continuous belt of 44 feet of laminated soil. If we deduct 20 for the breadth of the original rampart, we have still 24 to divide between the extensions, which is 4 or 5 feet more than we require. Had the Committee given complete details of the stone bottoming, we might have been able to dispose of the surplus. As it is, they deliberately confine their observations to the base of the rampart proper, so that we must leave things where they are, remarking only that the spot where the amphora fragments were found must have been just a foot or two east of the original kerb, which means that they had been used for making up the ground when the extension was added.

Our own experience on the west had one or two features of special interest. The stone bottoming bore some resemblance to that which the Report describes as characteristic of the east. A bed of stone pitching extended inwards from the kerb for 7½ feet, when it abutted against a somewhat higher band of stones, 2 feet 9 inches wide. Beneath the latter was gravel, and above it was earth, reddened by fire. The soil over the stone pitching was richly laminated, the lamination being interrupted at a fairly low level by a layer of large stones. We pushed our section far enough west to uncover the junction between the superstructure of the extension and that of the original rampart. They were standing side by side to a height of 3 feet 10 inches above the kerb. The line of demarcation, which was extraordinarily distinct (fig. 10),[1] indicated that the lower part of the original rampart-face had begun to rise at an angle of about 72 degrees and had then developed an inclination inwards. With a base of 20 feet, the batter suggested would easily admit of a height of 10 or even 12 feet. Anything more than that would probably have reduced the value of the top as a platform for defence; the object of the extensions would be to increase the breadth. The gravel underlying the band of stones may represent the remains of the earliest *intervallum* street, which must have run close

[1] The photograph was taken for me by Mr Smith. Although the layerings in the extension are barely discernible in the illustration, they were in fact very pronounced. The difference in the degree of response which the two sets of sods have made to the camera indicates a difference in the character of the soil from which they have been cut—in itself a proof of difference of period.

to the original kerb. The significance of the burnt earth is more obscure. Had it occurred nowhere else, I should have been inclined to associate it with a hearth, for in the Vallum forts hearths are not infrequently found in the lee of the western rampart, which afforded ready shelter from the prevailing wind. But we met it again both on the north and on the south, and I cannot help wondering whether we ought not rather to think that a flight of wooden steps, giving access to the top of the rampart, has been destroyed by fire when the fort

Fig. 10. Section through the West Rampart, looking south, showing the sods of the extension abutting against the original inner face.

was abandoned. Unless the precepts of Hyginus[1] were entirely ignored, a whole series of such flights must have risen from the *intervallum* street.

The Glasgow Committee say nothing as to what they may have found on the inside of the Antonine Rampart, and the excavators of 1903 are equally silent. We carried a trench from its southern face backwards into the fort for 10 or 12 feet. At the lowest level and close to the kerb were stones and gravel, doubtless representing all that was left of the original *intervallum* street. Above that, the soil immediately adjoining the Vallum was laminated to a height of 15 inches, but the lamination rapidly tailed off. On the top of it was earth reddened by fire. Then came a little more lamination, less well defined, and finally soil and stones. At a distance of 9½ feet out from the kerb were the remains of two roadways, one above the other, presumably

[1] *Meminisse oportet in hostico ascensus valli duplices et frequentes facere* (*De Mun. Castr.*, 58).

the *intervallum* streets of the second and third periods respectively. The lower one had been practically on the same level as the street that lay between it and the kerb. As might have been expected, the surface in the interior of the fort had been higher during the period of the last occupation than during that which had preceded it.

The south rampart had not been touched by the Glasgow Committee. In 1903, however, a section was cut right through it. No description of the result appears in the text of the Report, but the drawing shows layers of turf on the inside, apparently resting on the natural surface and extending backwards for 6½ feet, after which come stones with no layers of turf above them. The conditions which we met with in a trench cut on the same side but farther east were quite different. Close to the rampart-kerb, and on the same level, we found a layer of stones. In the absence of gravel it was not possible to say positively that this had been the earliest *intervallum* street, but that is, of course, where one would have looked for it. Resting on the stones was a laminated stratum, 6 inches deep, which could be followed for 8 feet northwards. Over that, again, there seemed to be a second layer of stones, intermingled with gravel, 1½ feet thick but gradually diminishing to about 1 foot at a distance of 9 feet from the kerb. One or two of the topmost stones were laid flat like paving-stones, recalling the description of the west side given in the Report. Above the layer was more lamination, as well as earth reddened by fire. This upper stratum was about 1 foot thick at the maximum, and it could be traced for only some 3 feet inwards from the kerb.

As the evidence regarding the inside was less unambiguous than could have been wished, I have set it out at length. Everyone may not agree with the conclusion I have reached. But to me it seems certain that inside the fort, just as outside of it, the rampart was 9 or 10 feet wider at the end of the occupation than it had been at the beginning. Two questions immediately arise. What was the object of the addition? And when was it made? As to the first, careful consideration has led me to set aside the idea that the extension had been meant to support a raised walk, such as is often found, both at home and abroad, immediately behind the walls of stone forts erected in the second century or later. The superstructure has, I believe, been of the same height as the rampart against which it was reared; it served as a reinforcement pure and simple, exactly as did the addition that was made to the outer face. But the idea of a raised walk suggests some points of so much importance for the Vallum forts as a whole that I propose to discuss it separately in a Postscript. Meanwhile the second question has to be answered.

Before we began our examination of the extension on the inside, I was quite prepared to accept the view that, if it were an extension, it had been made at the same time as the one on the outside. What we actually found, however, led me to change my mind. Despite the differences in detail, we seemed everywhere to be confronted by at least two layers of stones,[1] each with a laminated stratum above it, and I could see no plausible explanation except to suppose that we were dealing with the débris of two extensions, one of which had been heaped up on the ruins of the other. Both were foreign to the original scheme. The lower must, therefore, have belonged to the first of the two reconstructions of the fort. The upper can only have belonged to the second, and we already know that it is with the second that the extension on the outside was connected. Nor is it at all surprising that the lower one should have become so dilapidated as to require rebuilding, and that to-day only miserable remnants of the upper one should survive. It was the inner face of the rampart, with its numerous *ascensus valli*, that would be most likely to attract the attention of victors bent upon destruction. Short of levelling the defences, that was the surest way of rendering them useless.[2]

A review of the evidence from the cobbled enclosure lent additional support to the chronological sequence that has just been proposed. If the first of the two additions on the inside were assigned to the opening of the second period, it would supply a convincing explanation of the change which then took place in the use to which the cobbled enclosure was to be devoted. On the face of it, there was no very obvious reason why what had previously been a barrack-yard, if we may call it so, should have been all at once commandeered for storage accommodation. But, when the rampart foundation was increased on its inner side by, say, 9 feet all round, this would mean that the free space, which was already barely adequate for the needs of even a tiny garrison, would be reduced by close upon 8000 square feet. And an additional area of 8000 square feet is, as nearly as may be, the amount that would be gained by appropriating the barrack-square and transforming it into the cobbled enclosure. That step, otherwise unprecedented and therefore difficult to account for, becomes immediately intelligible if it is looked upon as 'compensation for disturbance.' Moreover, while the *pros*

[1] The abundance of stones may indicate either hasty construction or a scarcity of suitable sods. As regards the second alternative, it is perhaps not always sufficiently realized how heavy was the demand which cæspiticious construction involved. Mr Smith has calculated that as many as 8 acres must have been stripped in order to provide sods for the original rampart of Rough Castle on east, west, and south.

[2] That the original rampart had been similarly treated, when the fort was first abandoned, is suggested by what the Report says as to the layering of the extension being "sometimes in continuation of the core" (*supra*, p. 263).

and *cons* were still being weighed, what I cannot but regard as conclusive confirmation was forthcoming in the shape of a most interesting and quite unexpected discovery.

The information given by fig. 4 as to the position of the north gate was obviously unsatisfactory, inasmuch as it indicated an entrance fully 50 feet wide. To clear matters up, we made search for the south kerb of the Vallum at the point where the gap is shown as beginning on the east. We struck it without difficulty and, following it along, found that, so far from ending where the plan of 1905 suggests, it continued for no less than 26 feet farther west. The break for the gate was thus 95½ feet distant from the inner kerb of the eastern rampart, while, as will be seen from fig. 11, the actual opening was 20½ feet wide. The figure is nearly twice as large as is usual for the corresponding gateway at the other Vallum forts,[1] so that the gate must certainly have been a double one.[2] We noticed that the road passing through it had been repaired by relaying, exactly after the fashion with which the Military Way beside the cobbled enclosure had made us familiar. The double layer, however, measured only about 10 feet across. The width of the entrance had, therefore, been reduced by a half when the fort was reconstructed for the second time. Incidentally, we were able to account for the erroneous impression conveyed by fig. 4, and to realize how fortunate we were in having chosen to work along the south side of the Vallum. On the north, which was preferred in 1903, the kerb, along with a good deal of the foundation behind it, had been deliberately torn out in post-Roman times for 26 feet.

As a result of this experience, it seemed desirable to make quite sure of the position and width of the south gate, and it was here that surprise awaited us. The gateway, as it is marked upon fig. 4 and as it appears to-day, had indeed been the gateway at the end of the occupation. But it had not been the original entrance. It had been formed by breaking through the rampart, as first erected, and removing 9½ feet of the stone foundation underneath. Its predecessor, the south gate of the earliest lay-out, had been 14 feet wide and had lain farther west, more nearly opposite the north gate. Between the new entrance and the old the rampart had been left intact for 3 feet 3 inches. Measured from centre to centre, the interval separating them was 15 feet. Owing, however, to the reduction in width from 14 to 9½ feet, the edge of the later street within the fort was 17 feet 3 inches farther away from the western rampart than was the edge of the earlier one.

[1] At Bar Hill and Balmuildy it was 12 feet, at Mumrills 11, at Castlecary 10, and at Old Kilpatrick even less. Cadder with 15 feet approaches it most closely.

[2] It would have been impossible to ascertain details without interfering too seriously with the heavy cobbling which extends all the way across.

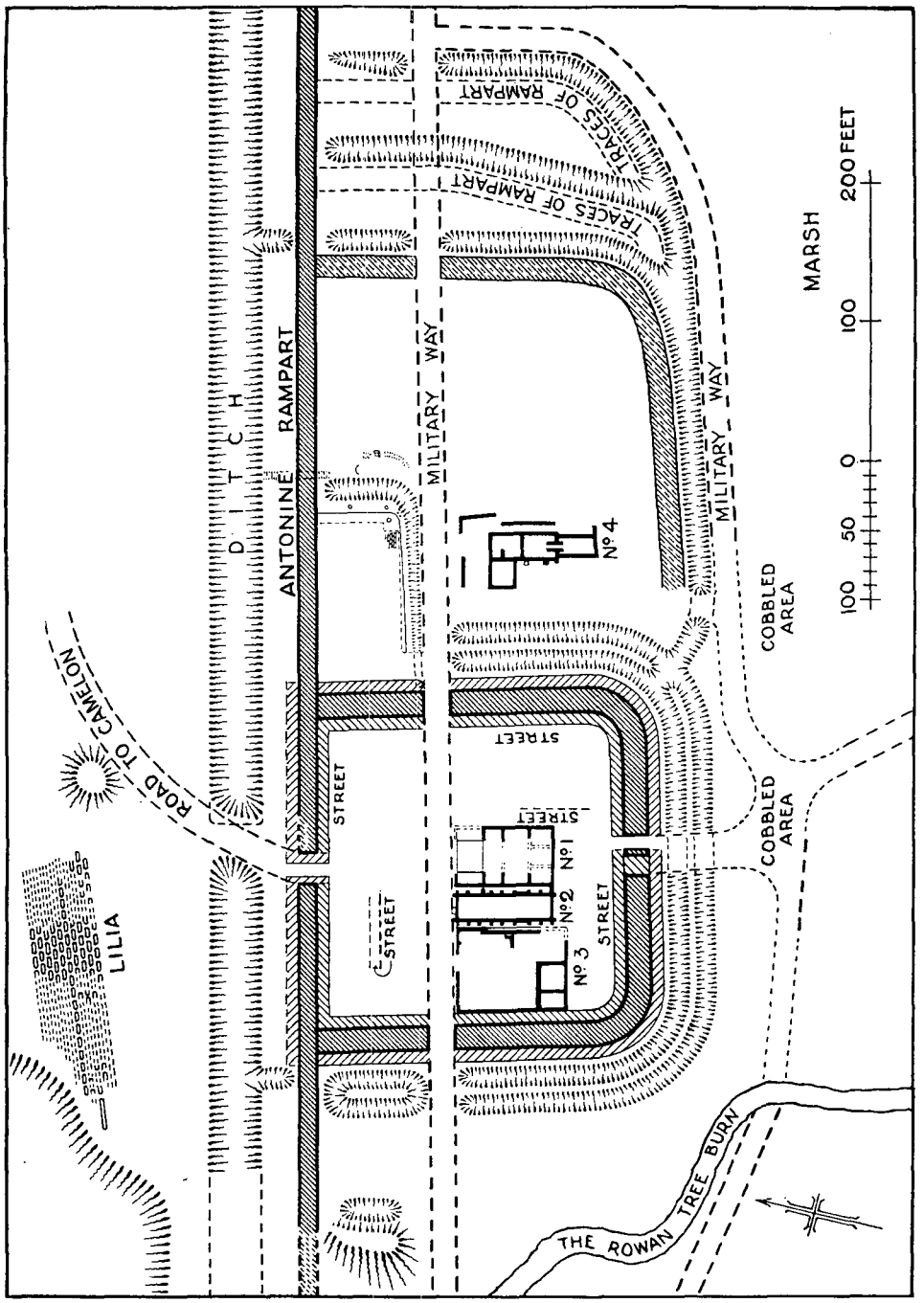

Fig. 11. Plan of Rough Castle.

As we shall see presently, it was in order to gain this additional space that the change in the position of the gateway was made.

As the two roadways, old and new, entered the fort, the contrast between them was striking. That upon the west had been admirably constructed and showed hardly any signs of usage. The gravelled and well-cambered surface can have borne but little traffic before it was utilized as a foundation for the mixture of earth and sods that was to make it part and parcel of the rampart. As to that upon the east, I wrote in 1911: "The hard stones of the street that entered the Porta Decumana were worn into ruts. Many of those who saw them, as they lay exposed during the excavations, must have been reminded of Pompeii."[1] In penning those sentences, I was drawing on my own personal recollection of what I had seen some half-dozen years before. Last January I was disconcerted to find that there were no stones within the gateway at all, nothing indeed except a few shivers lying on the natural surface. I can hardly think that my memory was—or, rather, is—so seriously at fault as this condition of things seemed to imply. It is easier to suppose that the roadway was 'left open' in accordance with the disastrous policy I referred to at the outset, and that its stones have shared the fate that has certainly overtaken the interior buildings. With it all, however, the traces of the waggons have not been wholly obliterated. Even the natural surface shows two well-marked depressions, emphasizing the lines over which the wheels must have passed and repassed.

The absence of wear and tear in the earlier gateway led us to examine the ground in front of the whole entrance more closely than we might otherwise have done. We had had no reason to distrust fig. 4 when it represents the roadway as solid. We were therefore hardly prepared to find that the two ditches had originally run past this side of the fort without interruption of any kind. Later on, obviously when the position of the gateway was altered, both alike had been filled in for a width of 26 feet. The filling was all of a piece, as the large boulders at either end of it showed. But the 9 feet of it on the west was virtually untrodden; the stones lay loose among the soil. The 17 feet towards the east, on the other hand—that is, the part in front of the later gate—had a very different story to tell; its surface was beaten to a firmness which spoke plainly of much coming and going. One could not help wondering why the western portion should have been filled in at all. Possibly it may have been because the old entrance was left open until the alterations inside the fort were completed.

[1] *Roman Wall in Scotland* (ed. 1911), p. 231.

Whether that was so or not, the new evidence has clearly an important chronological bearing. Before the gate was moved to the east, the southern entrance played a comparatively minor rôle as a channel of communication with the world outside. It is true that of the four gates it was the nearest to the loop-line of the Military Way. But no one who was making for the fort would use the loop-line at all, so long as the ordinary route was available. The ditches could be bridged with planks, if a sortie was contemplated; in all other circumstances it was as well—or better—to leave them open. The situation was, however, profoundly modified by the transference of the Military Way proper to an easier route (fig. 5). A new era was thereby inaugurated in the life of the south gate, which had henceforward to be used by supply-waggons, not only on entering the *castellum* but also on leaving it. The makeshift of plank bridges no longer sufficed. Something more permanent and more substantial had to be provided, and accordingly a regular roadway was constructed. As this step coincided with the change in the course of the Military Way, it must have been taken on the occasion of the first of the two reconstructions which have been so often mentioned, and it will be remembered that it was then that the ditch in front of the south gate of the annexe was filled in.

Glancing back at the various alterations that have been described, we can now see that they were intimately connected. When the fort was re-occupied after its first abandonment, a desire to avoid a couple of very awkward gradients was met by bringing the Military Way along a line skirting the southern side of the *enceinte*. This involved the filling in of the two ditches immediately opposite the south gateway. Simultaneously the gate itself was moved some distance towards the east. Here a different but even more compelling motive was responsible. The new commandant, perhaps because the force at his disposal was too small for him to trust to the old-fashioned Roman method of challenging assailants in the open, determined to make the rampart top more effective as a defensive platform by increasing its width so as to allow greater freedom of movement. He therefore added an extension of 9 or 10 feet all the way round its inner side. One result of this, as we already know, was the appropriation of the barrack-yard for storage accommodation. The change in the position of the south gate was another. Our information as to the arrangement of the interior is too scanty to permit of any very positive conclusions beyond this general statement. But the statement itself calls for some justification, even if it be of a hypothetical character.

When one studies the plan (fig. 11) and considers the large proportion

of the area within the ramparts which was occupied by the central group of buildings, one cannot but wonder where the men were housed. In ordinary *castella* the long narrow blocks which served as barracks measured between 130 and 170 feet. But, when regard is had to the demands of the streets, it will be immediately apparent that nothing approaching that size could have been fitted in at Rough Castle at all, except by setting it at an angle which would have been hopelessly out of alinement with everything else, and would besides have effectually prevented an economical use being made of even the limited space that was available. At the little fort of Cappuck, however, Messrs Miller and Stevenson uncovered two barrack-buildings, each of which represented a type that may conceivably have been adopted for Rough Castle.[1] The larger, which it will be convenient to distinguish as Type *a*, measured about 96 feet by 17 over walls. The corresponding figures for the smaller, which I propose to designate Type *b*, were 50 and 22. The following calculations as to how these types might have been employed at Rough Castle are, of course, subject to the condition that a minimum of 9 or 10 feet must be added to the end of each, to allow for the passage of the *intervallum* street. It is important, too, to remember that the barrack-blocks of a *castellum* were, as a rule, placed parallel to the *via principalis*.[2]

If fig. 11 be consulted, it will be seen that the western edge of the *via prætoria*, as it passed through the north gate, was about 108 feet distant from the original kerb of the west rampart. During the earliest of the three periods, therefore, there may have been two east-and-west blocks of Type *a* in this part of the *prætentura*, separated from one another by a street occupying the same position as that which was partly exposed in 1903. In the other portion of the *prætentura* the space was less ample, the interval between the *via prætoria* and the original kerb of the east rampart being only 95½ feet. Whether the first lay-out made any provision for barrack-blocks here is doubtful; the area may have held workshops or it may have accommodated the stores which were subsequently transferred to the cobbled enclosure. What is certain is that, if it did contain barrack-blocks, these cannot have been as long as Type *a*. There would, of course, have been no difficulty about the east-and-west dimensions of blocks of Type *b*. On the other hand, their breadth would have been such that there could not have been more than one of them on each side of the transverse street. That would have been wasteful in the first period. It would

[1] *Proceedings*, vol. xlvi. (1911–12), p. 450.

[2] At Housesteads, where they are set at right angles to it, the shape of the enclosure made the usual arrangement impracticable.

have been less so in the second and third, since the amount of ground left unused would then be reduced by the 9 or 10 feet that had been annexed for the rampart extension. One or even two blocks of Type *b* may, therefore, have been inserted when the extension was made. Unless the garrison were cut down to an extent that seems unlikely in the case of so small a fort, something of the sort would undoubtedly be necessary to offset the reductions elsewhere. The two blocks of Type *a* to the west of the *via prætoria*, for instance, must have been shortened by 9 or 10 feet.

This is admittedly all very speculative. We can see just a little more clearly when we turn to the *retentura*. Here the distance of the original gateway from the original rampart-kerb was practically the same on the east as on the west—104 feet, *minus* the loss due to the rounding of the corners. The same type of barrack-block, something a little shorter than Type *a*, would therefore be as suitable for the one side as for the other. On the west, however, only a single block can have found a place between the *intervallum* street and the back of the group of stone buildings which appear in fig. 11. There was no elbow-room in which to seek compensation when the rampart was extended. Rather than curtail the block still further, it was decided to move the gate eastwards, and at the same time to reduce the width of the entrance from 14 feet to 9 feet 6 inches, changes which meant a sorely needed gain of nearly 4½ feet. The new situation thus created on the east could be dealt with very simply. Barrack-blocks approximating to Type *a* were now out of the question there. We do not know how many of them there may have been while the gate was still in the old position. After the reconstruction, however, it would be possible to find comfortable accommodation for four blocks of Type *b* between the *intervallum* street and the *via principalis*. To do this it would obviously be necessary to invade the *latera prætorii*—that is, the space immediately alongside of the Headquarters Building. And it will be observed from fig. 4 that the excavators of 1903 failed to discover any stone foundations there. It probably did not occur to them to look for post-holes.

This Note has already run to much greater length than I anticipated. Had it been briefer, I should have tried to bring the various threads together by giving a detailed estimate of the extent to which our knowledge of Rough Castle has been advanced by the work whose results I have chronicled. As it is, I must content myself with saying that most of the riddles presented by the original Report have been satisfactorily answered. I doubt whether we shall ever learn very much more about the Antonine fort. Of the first-century occupation,

on the other hand, and of the significance of the *lilia* we are still almost entirely ignorant. A word must be added as to the 'finds.' The lines on which we proceeded made it inevitable that these should be few in number. The most interesting was the Samian bowl which has already been described.[1] There were a good many amphora fragments, including a handle—found near the south rampart of the annexe—bearing the letters A·L·F·O, a stamp which occurred at Newstead and which is also known abroad.[2] A small vase or jar (fig. 12), which came from a drain under the Antonine Vallum, in front of the fort, should also be mentioned. About half of it could be put together from the pieces that survived. It is made of dull reddish clay, but it has been covered with a black slip, small patches of which still remain. The shape is suggestive of the early second century, a date that would be consistent with the 'find spot,' for there is no reason why the jar should not be a 'survival.' Round the shoulder are two girth-grooves, from the lower of which there depend, by way of decoration, lines of dots in engobe. It is 6½ inches high and has at the mouth an outside diameter of 4⅞ inches. Its most peculiar feature, however, is that in the bottom, which has a diameter of 2¼ inches, there is a carefully made hole, approximately circular and ¾ of an inch in diameter, like the hole in the bottom of a flower-pot.

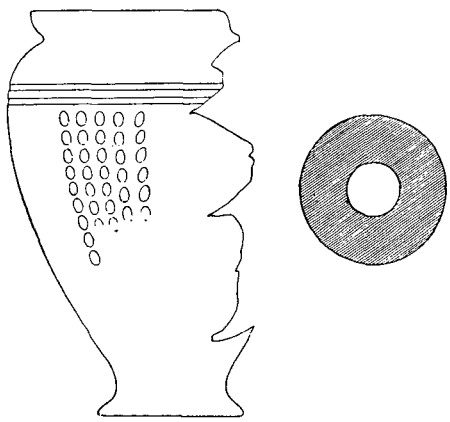

Fig. 12. (⅓.)

II. Westerwood.

The immediate issue at Westerwood was comparatively simple. Although the remains are far less considerable than at Rough Castle, the position of the fort has been known from time immemorial. The track of the ditches on the south and west is still visible on the surface, while the line of the east ditches is betrayed by a well-marked subsidence in the end wall of the long range of farm buildings. This being so, I should hardly have felt justified in pushing enquiry further, had it not been for the conflicting accounts that have come down to us from eighteenth-century sources. The various writers are at one in

[1] *Supra*, p. 258.

[2] *C.I.L.*, xiii., Pt. iii., Fasc. 1, No. 10002, 301 (Lezoux, Worms, and in the Museum at Mainz).

holding that the great Ditch had, as usual, formed part of the northern defence. But there is a curious difference of opinion regarding the great Rampart. On Roy's plan the east and west ramparts of the 'station' are made to abut against it in the normal fashion. Gordon and Horsley, on the other hand, show a gap at each of the two points of junction, thus leaving the northern front without any rampart at all. The descriptions of the course of the Military Way are also at variance. Gordon says: "What is very peculiar here, is the Causeway which goes round this Fort, on the Top of the Ramparts."[1] It is not easy to attach any very intelligible meaning to his statement, nor is there much enlightenment to be got from the accompanying plan, but the story, confused as it is, receives both support and illumination from Maitland, who writes that the station at Westerwood "is fortified with a rampart and ditch, and the military way runs round the latter in a different position from what it does at most of the other forts."[2] Horsley, again, while explicitly rejecting Gordon's view, affirms that the road "passes close by the wall, on the north side of the fort,"[3] but any traces he saw would seem to have been slight, for he does not mark them on his plan. Finally, Roy represents it as running right through the *castellum* between the east gate and the west, as it so often does elsewhere.

In a talk I had had with him more than a year ago, Mr Drysdale, the proprietor, had emphatically endorsed Roy's version of the matter. He has farmed the land for more than thirty years and he annually makes acquaintance with the cobbling of the Military Way in the ploughing season. He had no doubt at all as to its entering the east gate and issuing from the west. But for the fact that it is always dangerous to ignore Horsley, I should have been disposed to accept this as conclusive. As it was, I felt that some investigation with the spade was desirable. Last autumn the field in which most of the fort lies was in potatoes, and Mr Drysdale readily agreed to a little digging being done as soon as the crop was lifted. In September Mr Smith and I, along with Mr Mann, paid a preliminary visit to the site to discuss the plan of campaign. It was clear that it would not take long to discover the truth about the Military Way, and it occurred to us that with a little additional trouble we might be able to ascertain the exact dimensions of the fort. Work was begun in November and proceeded continually for four weeks, despite the inclemency of the weather. High winds hampered the task of measurement, and violent rainstorms reduced the already heavy soil to a sodden condition. In the circumstances the plan (fig. 13) reflects great credit on all who assisted in its production. It forms the

[1] *Itin. Sept.*, p. 56. [2] *Hist. of Scotland*, vol. i. p. 175. [3] *Brit. Rom.*, p. 170.

basis of practically everything I have to say. The few scraps of pottery that were unearthed are too inconsiderable to furnish any information. And there was nothing else.

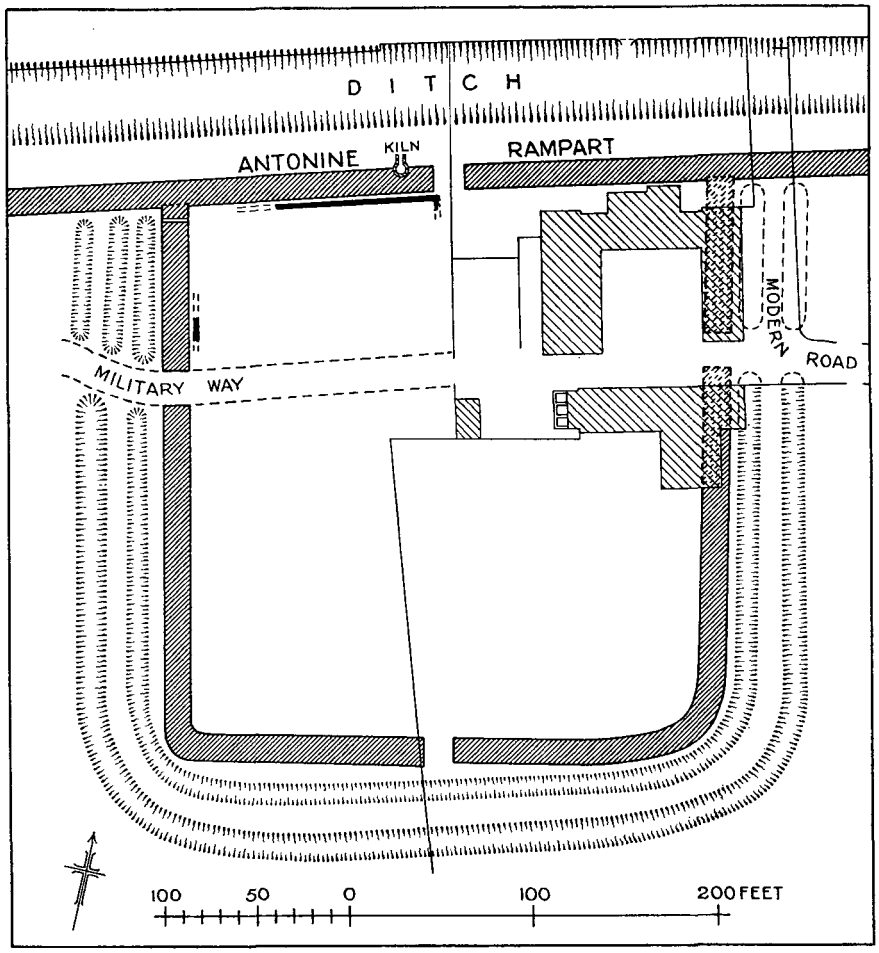

Fig. 13. The Fort of Westerwood.

The north-east quarter of the *castellum* is occupied by the farmhouse with its garden and steading. Otherwise the site is unencumbered. Apart from some small but significant irregularities, which will be touched on later, the fort had been of the normal shape. It had had the great Rampart for its northern defence; and the Military Way had served as the *via principalis*. In these two respects, therefore,

the plans of Gordon and Horsley are misleading. Internally, the enclosure measured some 275 feet from east to west by 290 from north to south, giving an area of nearly 2 acres. As usual, there had been four gates. Those on the north and on the south, although not exactly opposite to one another, had been approximately in the middle of the sides to which they respectively belonged. But that on the west was fully 90 feet farther from the south rampart than from the Vallum on the north. The eastern entrance was inaccessible. To judge, however, from the line taken by the Military Way, so far as it could be followed, the difference there may have been slightly greater. It is obvious that the Headquarters Building has faced north, as is generally (but not invariably) the case in the forts on the Wall. The *retentura*, or space behind it, must therefore have been more than twice as large as the *prætentura* which lay in front. We may take it for granted that it had held the majority, if not all, of the long barrack-blocks, in which the rank and file of the garrison were quartered.

The rampart of the fort was constructed in precisely the same way as the great Rampart itself; that is, it was of turf, resting on a substratum of laid stones. An examination of the junction of the two at the north-west corner brought out the fact that the foundation of the fort rampart rose 18 inches higher than the foundation on which it abutted, and overlapped it by about a foot (fig. 14). The overlapping has an interesting implication. It almost certainly means that we have to do with the work of two different sets of hands, and that the legionaries who were the builders of the Vallum had carried its foundation past the contemplated site of the fort before their comrades—presumably the future garrison—had made much, if any, headway with the particular task that had been allotted to them. We know that elsewhere—at Balmuildy and Old Kilpatrick, for example[1]—it was otherwise. But confirmatory testimony as to what happened at Westerwood is furnished by the Ditch, which runs straight on without a break, completely disregarding the road that was to issue from the north gate of the *castellum*. Moreover, there is no reduction in its width where it passes in front of the fort, no approximation of its dimensions to those of the ditches surrounding the enclosure. The latter, as will be seen from the plan, were two in number for the greater part of the circuit. On the west side, however, a third was added between the Military Way and the Vallum. Whether a similar precaution was taken on the east side, it is no longer possible to say, since (as I have already indicated) that portion of the ground is beyond reach of the spade. It should be added that on the south and west, particularly on the west, the Romans have

[1] See *Proceedings*, vol. lxvi. (1931–32), pp. 227 f.

taken advantage of natural depressions in digging their ditches. And it will be noted that the double ditch was continuous in front of the south gate. Before seeking to account for this unusual feature, it will be well to give some description of the rest of the defences.

The foundation of the great Vallum measured 14 feet from kerb to kerb and was thus of normal width. It runs along a gentle slope, which becomes more sharply accentuated a little way in front. Consequently, to provide it with a bed which should be at once secure

Fig. 14. Junction of West Rampart of the Fort with the Antonine Vallum, showing mouth of drain from the Bath-house.

and level, the subsoil beneath it had been excavated to a maximum depth of 2 feet. As an additional precaution, a single row of boulders had been laid along the unexcavated, and therefore higher, ground on the north at a distance of about a yard. The remains of the superstructure were represented by 18 inches or so of laminated soil. Some 16 feet west of the north gate a kiln had been constructed in its northern face. This was, of course, post-Roman, but it had been entirely built from remnants of Roman masonry (fig. 15). There was nothing about it to mark its date or its purpose very definitely. But, if one can trust the analogy of the similarly situated kiln at Mumrills, it must have been mediæval. The motives prompting the choice of position had been the same in both cases, and they are self-evident:

the mound of turf, lying ready to hand, offered a convenient backing, and the existence of the hollow of the Ditch would go far to ensure a steady draught.

The foundation of the fort rampart had been laid upon the natural surface, and had thus been much more extensively damaged by the plough. So far as could be judged, however, the method of construction had been otherwise identical. Both kerbs had usually survived,

Fig. 15. Post-Roman Kiln, built into the body of the Antonine Vallum.

but sometimes the stones that had presumably lain between them had been torn out. From the north-west corner to the south gate, and again all the way down so much of the east side as could be opened up, the stone base had been approximately 16 feet wide. Between the south gate and the south-west corner it had been only 14. And there was another peculiarity here. Simultaneously with the reduction in the width of the rampart there began a narrowing of the berm, which ultimately shrank from 9 feet to about 4½. The south-west corner was also curious, as a look at the plan will show. Although the outside appeared to have been rounded, the inside had been almost square. Of that there could be no manner of doubt, the inner kerb being singularly well defined (fig. 16). The effect of this arrangement was to

push the outer edge of the rampart so far forward that the space separating it from the lip of the ditch outside can hardly have been more than a couple of feet.

Except at Rough Castle, where the extension of the rampart made the conditions exceptional, I cannot recollect anywhere else on the Antonine Wall an example of a berm so exiguous as $4\frac{1}{2}$ feet, to say

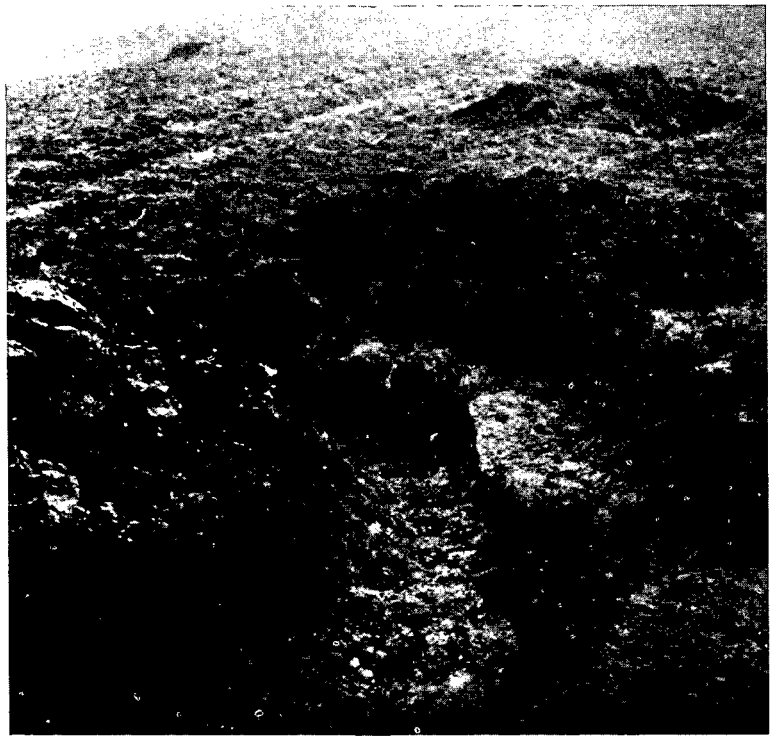

Fig. 16. Inner Kerb of the Rampart at the north-west corner of the Fort.

nothing of 2. And that this lack of conformity can hardly be due to mere caprice seems more than ever certain, if it be remembered that the $4\frac{1}{2}$ feet berm is associated with a sector of the rampart whose breadth is 2 feet less than the average for the rest. A moment's study of the plan (fig. 13) will, I think, enable us to see what the actual motive was. The fort, as outlined by the rampart, obviously sits rather uneasily within the framework of the inner ditch, particularly at the southern end. The absence of proper co-ordination is so unmistakable that I have no hesitation in accepting the suggestion made to me by Mr A. O. Curle when he brought me Mr Smith's drawing. It was not

a clear field that awaited the soldiers who erected the Antonine fort, when they took up their task. What they made the inner of their two ditches was already there, and they had to adapt the line of their rampart to the limitations which its presence imposed. A very instructive parallel can be found at Cappuck.[1]

Are we, then, justified in adding Westerwood to the lengthening list of Vallum sites on which traces of an Agricolan *præsidium* have come to light? To give an emphatic answer in the affirmative would perhaps be unwise. But the *prima facie* probability is undoubtedly strong. And it may well be that the suggestion furnishes a clue to the anomalous behaviour of the two ditches over against the south gate. If the inner one has belonged to an Agricolan fort, it is easy to understand why it should ignore an Antonine entrance; and, if it were already continuous, no good purpose would be served by making a break in the one that was added outside. The argument is not, of course, conclusive, as the behaviour of the ditches at the south gate of Rough Castle shows.[2] But a wonderfully close analogy can be cited from Bar Hill. There the two ditches on the west side run past the gate, as if there were no gate in the question at all, and excavation has proved that at this point the inner of the two had originally formed part of the Agricolan lines. At Westerwood it is, of course, impossible even to guess at the shape of the earlier enclosure, if earlier enclosure there was. We must be content with having obtained presumptive proof of its former existence.

As to the interior of the Antonine fort there is little to be said. We have seen that most, if not all, of the barrack-blocks must have lain to the south of the Military Way, and we know that part of the Headquarters Building must be buried beneath the south-west corner of the farm-steading. It may be taken for granted that there was at least one granary or storehouse alongside of the Principia. It is not unlikely that it was on the east, for twenty-five years ago I was told that a quantity of blackened wheat had been discovered there when the foundations of the farm-buildings were being dug. Lastly, the recent excavations showed that there had been substantial buildings of stone within the north-west corner of the *castellum*. There was no time to follow up a fragment of walling (fig. 17), which ran north and south within a foot or two of the west rampart. But at the same distance behind the Antonine Vallum the spade brought to light 90 feet of one side of a long narrow building. This had extended westwards from the north gate, close to which a part of the return was

[1] *Proceedings*, vol. xlvi. (1911–12), p. 450.
[2] *Supra*, p. 273.

also uncovered. The wall was well constructed, and varied in thickness from 2 feet 6 inches to 2 feet 9. That it represents the remains of the Baths is certain. From that point of view the shape of the building is significant, and not less so is the drain which passed under the rampart into the innermost ditch directly opposite its western end (fig. 14). A comparison of the two plans will show that the Baths occupied exactly the same position at Bar Hill. At the latter fort a

Fig. 17. Wall of Building within the western part of the *Prætentura* of the Fort.

space of 20 feet had been left between the west wall of the Baths and the west rampart, doubtless to give room for a corner-tower. If there was a somewhat similar arrangement at Westerwood,[1] the bath-building there would be about 120 feet long as against 150 at Bar Hill and only 80 at Croy. These differences in size are roughly proportionate to the differences in the area of the three forts, and therefore presumably to the strength of their garrisons.

The emergence of such a long stretch of walling in this particular position, and only a short distance beneath the surface, brings us back to what was the starting-point of our whole investigation. Is it not

[1] The question could not be definitely determined owing to the presence of a mass of tumbled stones which it seemed best not to disturb.

at least possible that Horsley's view as to the course of the Military Way may rest upon a mistaken interpretation of the line of stones, which may well have been visible, cropping up through the turf, when he visited the fort two centuries ago? He was not in the habit of committing himself rashly, and we may be sure that he had some grounds for assigning so very unusual a route to the Roman road. Nor is it at all unlikely that Gordon and Maitland had still stronger justification for the entirely different account which they give of the matter. What attracted their attention was probably one of the loops or by-passes of which I have spoken in connection with Rough Castle. At Westerwood there was no unnecessary climb to be saved from. The only thing to be avoided was the actual passage through the *castellum*. In the circumstances the loop would be short, beginning just before the fort was reached, and hugging the outer ditch until the main Way was rejoined a little beyond the west gate. This is not mere guess-work. Mr Smith tells me that in carrying a trench out from the south-east corner, in order to satisfy himself that there had only been two ditches, he found, not a third ditch, but a bed of stones, closely resembling the bottoming of a Roman road.

III. A Postscript.

Some time ago Mr John Clarke, in the course of a conversation about the work on which he was then engaged at Cadder, suggested to me that the evidence from Rough Castle, as set out in the Report, pointed to there having been a raised walk on the inner side of the rampart there. The object of the arrangement would be to enable the defenders to exercise a certain degree of command over the ground in front, without exposing themselves unduly to the missiles of assailants. The suggestion was naturally present in my mind when I came to examine the inner 'margin' of the stone foundation, and its consideration ultimately led me to a review of the known facts relating to the ramparts of the whole of the nine forts that have been more or less thoroughly excavated along the line of the Antonine Wall. In doing so I inevitably wandered still farther afield, so that some of the conclusions I have reached are perhaps capable of a more general application. It may, therefore, be useful to summarize them.

Nothing is more striking about the defences of the forts on the Wall than their variety. In six of the nine cases the rampart was of turf, in two it was of stone, and in one it was of clay. Although all were built at one and the same time and were integral parts of one and the same scheme, there was evidently no fixed type to which their designers were expected to conform. Castlecary, for instance, was

given a wall of stone, clearly because there happened to be a convenient outcrop of suitable rock in the immediate neighbourhood. Clay, on the other hand, was preferred at Mumrills, where sufficient supplies of stone or turf were not easy to come by. And, even when the material employed has been identical, there are differences of detail—some of them by no means unimportant—which prove that individual commanders were allowed a surprisingly free hand. The point needs emphasizing at the present juncture. Despite Mr James Curle's wise words of caution, written more than twenty years ago,[1] there has recently been a tendency to classify the remains of Roman forts on a more or less rigid chronological basis. When I came to close quarters with Mr Clarke's suggestion, it seemed to me that this would not be a very hopeful method of approach, and I deliberately selected another.

The *castellum* or permanent fort was, of course, the direct descendant of the temporary camp. To begin with, it was girt, like its prototype, with a rampart of earth. The primary purpose of this particular element of the defence was to bar the way against assailants. But it was not designed for passive resistance merely. It had to provide the defenders with a vantage-ground from which they could retaliate upon the attackers, and it was therefore vital that the top should be roomy enough to admit of its being effectively manned in the event of an assault. Gellygaer, which was probably erected towards the end of the first century, offers a most instructive example. The rampart there was almost 20 feet wide at the bottom and, as there was a retaining wall on both sides, it is hardly likely to have been much narrower at the top. Such a double revetment is of rare occurrence.[2] More usually the inner side is marked by a kerb, which has supported the foot of a sloping bank and which indicates a width of between 30 and 40 feet at the base. If the bank were, say, 10 or 12 feet high and 12 or 15 feet broad at the top, the slope would rise at an angle which would make it unsuitable for a ramp. *Ascensus valli*, such as Hyginus postulates for the temporary camp, would therefore be as indispensable as they would be when the inner face was vertical. The revetment in front, it should be explained, would rise a little way above the rampart behind, thus acting as a breastwork or parapet. Originally it was of wood, but before the end of the first century wood was being replaced by stone. I can remember no more interesting or more convincing illustration of the transition than the characteristically lucid description

[1] *A Roman Frontier Post*, pp. 28 f. *Cf.* also Haverfield's note in Ward's *Roman Fort of Gellygaer*, p. 38.

[2] Ritterling, however, believes that it has been much more common than might appear. See *O.R.L.*, vol. ii. 3, Kastell Wiesbaden (Nr. 31), pp. 18 f. At Caerleon the original rampart, which was of clay and dates from *circa* A.D. 75, had a double revetment of timber.

which Fabricius gives of the evolution of '*Mauer*' and '*Wall*' at Urspring.[1]

Scotland can show at least one example of an earthen fort which has demonstrably been reveted with wood, and it is significant that it should be a fort which was in all probability erected for the first time in the reign of Antoninus Pius, half a century after Gellygaer. When Birrens was excavated in 1895, interest was in the main (and very rightly) directed to the interior, the recovery of the plan of which was destined to be a landmark in the progress of Romano-British studies. The rampart was completely overshadowed. Nine cuts were indeed made through it—not all of them, unfortunately, carried down to the original ground-level—and profiles of these were drawn by Mr Barbour. They are described in the text of the Report, where also the drawings are reproduced. But they were never critically studied, nor was any serious attempt ever made to grasp their implications. Nevertheless, even as they stand, they tell us quite enough to make it fairly certain that an *ad hoc* investigation—which could still be carried out, and which would not be a costly undertaking—would yield much valuable information. Thus, there would be little or no difficulty in finding out whether there were stone towers at intervals, as one of the sections would seem to suggest, and whether these were connected by a terraced walk, represented by the fragments of "polygonal pavements," which appeared at two separate points.[2]

For the present we are concerned only with the general shape of the rampart and with its wooden revetment. The section on which the evidence for the latter rests—evidence which has hitherto passed unnoticed—was the most complete of the nine (fig. 18). In the centre was a stone bottoming, 18 feet wide, above which the spoil of the ditch had been heaped. At a distance of 11 feet behind was a well-laid stone kerb. In the Report the kerb is assumed to be the outer edge of a flat terrace, which had run along the inner side of the rampart. Obviously, however, it is the 'heel' of the sloping bank, which we should naturally expect to have terminated here. Its face was cleared for 45 feet (fig. 18) as far as E, "a little square recess, the sides, back, and bottom of which were of single flat slabs, each about 2 feet square. . . . The arms or sides were notched as if for the suspension of vessels; charcoal was found in the bottom and near it."[3] Mr Barbour's enlarged sketch (fig. 19) enables us to visualize the recess distinctly, and we need hardly hesitate as to its meaning. The notches were not "for

[1] *O.R.L.*, vol. vi., Kastell Urspring (Nr. 66a), pp. 5 f.
[2] See *Proceedings*, vol. xxx. (1895–96), pl. ii., Sections O.P. and Q.R.
[3] *Ibid.*, pp. 98 f.

the suspension of vessels" but for the support of the lowest of the wooden steps—perhaps a movable ladder—which had given access to the rampart-top. The recess was, in fact, the beginning of one of the

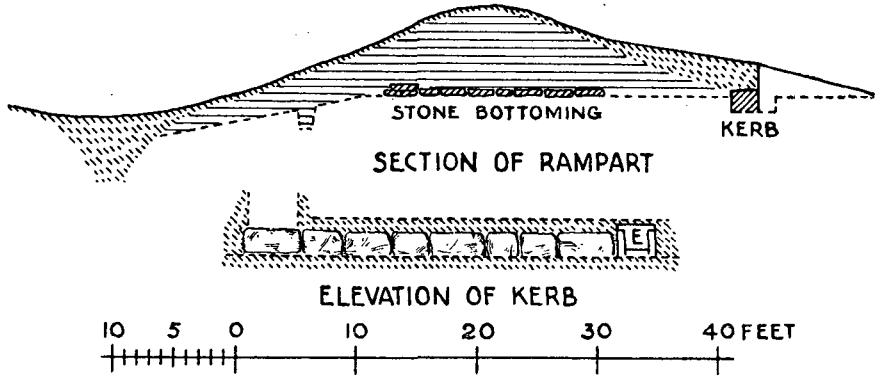

Fig. 18. The Rampart of Birrens.

ascensus valli, required by the steepness of the sloping bank. The "charcoal" we may suppose to have been merely decayed wood.

Thus much for the inner face. The clue to the character of the outer face is furnished by the 'slot' that is visible in fig. 18, about 6½ feet in front of the bottoming of stones. It is 2 feet deep and rather more than 1½ wide at the top. That it has been a post-hole and not part of a palisade trench is proved, not merely by its shape and size, but also by the fact that it is not continuous: only in one other of the nine sections was anything of the kind observed.[1] We may safely infer that, exactly as at Urspring, the revetment had consisted of horizontal planking, nailed to a series of uprights or *valli*. We cannot say positively how high it was. But, in order to provide a serviceable breast-work, it must have risen 3 or 4 feet above the level of the rampart top. This, again, can hardly have been more than 10 or 12 feet above the berm. Any excess over that would have lessened its value for offensive purposes by increasing the extent of the 'dead' ground, within the limits of which the assailants could shelter themselves from missiles.[2] Of the width of the fighting platform we can say nothing,

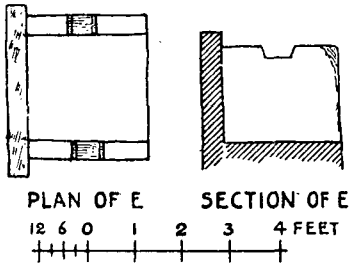

Fig. 19. Recess in the Rampart at Birrens.

[1] The section is that lettered Q.R. on the plate already referred to.

[2] See von Groller in *Röm. Limes in Oesterreich*, Heft ii. 25, where 3·00–3·20 metres is suggested as a maximum height for the wall of the fortress at Carnuntum, exclusive of the battlements. At the Brecon Gaer the revetting wall still stands 11 feet high.

except that 15 or 20 feet is probably the utmost that need be allowed for. On the other hand, the width of the rampart at the base can be calculated far more accurately than was done in 1895. Measured from the outside of the post-hole to the outside of the kerb, it was 38 feet, or precisely the same as that of the base of the clay mound behind the wall at Newstead.

So far as I am aware, there is no fort in Scotland of which we can say with confidence that it has been an earthen fort with a stone revetment. The Scottish forts that are sometimes so described really fall into quite a different category. But there are numerous examples south of the Border and abroad. The characteristics of a true revetting wall are that it is relatively narrow—seldom more than 4 feet thick—and that it is left rough and unfinished on the inner face. At the Brecon Gaer, for instance, the average thickness was 3 feet 5 inches, and the side next the rampart was 'tusked,' as if to ensure a firmer grip of the mass of earth that was to be supported. It is far from unlikely that the uppermost part of the revetting wall—that is, the portion of it which served as a parapet—was narrower than the lower part against which the weight of the rampart rested, for a parapet of 4 feet broad would have been ill-adapted for the use of missiles. All this may have helped to hasten the advent of the next stage in the evolution of fort-defences. By the time that Lollius Urbicus entered Scotland the tendency to break up the 'composite' rampart into its two constituent parts was fully developed. We may trace the fortunes of each of them separately.

As regards the rampart proper we need not travel beyond the Antonine Wall for illustrations. By employing a different material it was transformed into an independent structure. At Mumrills, for instance, it was a mound largely of clay, resting upon a carefully laid stone foundation, 12½ feet broad. More often it was of turf. The coherent quality of sods was sometimes turned to account as a means of holding masses of loose earth in place; cases in point are its use as kerbing in the 'Vallum' on Hadrian's Wall and as a cradling for the original earth rampart at Urspring. It was but a small step from that to building it up as a regular wall. Occasionally, as in the *murus cæspiticius* at Appletree, the sods were simply laid upon the natural surface. As a rule, however, there was a stone foundation, as in the Antonine Wall. In the forts with which we are immediately concerned, the breadth of the foundation varied, ranging from 12 feet at Bar Hill to 20 feet (and ultimately 38) at Rough Castle. The superstructure, whether of clay or turf, must have been at least 9 or 10 feet high if it was to serve its primary purpose of keeping assailants at

bay. This would allow a minimum width of 6 feet for the flat top which served as a fighting platform. It is tolerably certain that there would be a parapet, either of timber or of wattles.

The conversion of the retaining wall into an independent barrier was an even simpler and more natural process. All that was needed was to double its width and impart a finish to its inner face. Allowing a minimum of 6 feet on the top for the rampart-walk, the builders would have room and to spare for a battlemented parapet. That is the full-grown stone fort of the second century as we find it at Castlecary and Balmuildy and at Newstead. But, even when the stone fort had attained its majority, there was very often a mound of clay or earth behind it. It is customary to speak of this as if it were still the rampart, with the unfortunate result that the independent stone wall is apt to be treated as if it were a mere revetment. It is equally misleading to reverse the position and to look upon the mound as designed to support the stone wall. A well-built wall of stone, 8 feet broad and 12 feet high, needed no backing of earth to ensure its stability. How, then, is the presence of the mound to be explained? If that question can be answered satisfactorily, we shall be a good deal nearer a right understanding of one or two hitherto puzzling features of our own Vallum forts.

Where a pre-existing earthen fort was rebuilt in masonry—by which I mean something more than the substitution of a stone revetment for one of timber—it would be a perfectly intelligible proceeding to leave the old rampart standing and erect the new wall in front. It is less easy to see why an earthen mound should have been piled behind the wall of a stone fort that was built on a virgin site. Yet there is one very obvious reason. It offered a convenient means of disposing of the upcast from the ditch or ditches, a problem that must have been more serious than is always realized. Ritterling calculates that at Wiesbaden, where there were two ditches, each linear metre of the *enceinte* meant about 16 cubic metres of upcast.[1] And the Romans would not have been the practical people that they were, if they had been content to let it be a mere 'dump.' There are good grounds for believing that they turned it to excellent purpose. On that head the description which von Groller gives of the walls of the fortresses at Carnuntum and Lauriacum is most illuminating. With the aid of fig. 20, which is based upon one of his diagrams, I will endeavour to summarize the salient points of his argument.

Fundamental to it is a clear-cut distinction between the '*Wallgang*' or rampart-walk and what he calls the '*Wehrgang*,'[2] a word which I

[1] *O.R.L.*, ii. 3, Kastell Wiesbaden (Nr. 31), p. 18.
[2] *Röm. Limes in Oesterreich*, Heft ii. 31 f.

propose to translate as 'sentry-path,' although the connotation of the English expression is too narrow to permit of its being accepted as a wholly satisfactory rendering. The former was that part of the top of the stone wall which lay immediately behind the battlemented parapet, and which now served as the fighting platform from which the active part of the defence was conducted. The latter was the top of the earthen mound, which was some 3 feet lower than the wall. Soldiers standing upon it, or moving along it, would be much more effectually sheltered from snipers than if they were on the rampart-walk, on to which they could be ready to mount if a direct attack were launched. Meanwhile they would have a good view of all that was going on beyond the inner ditch and might even have an opportunity

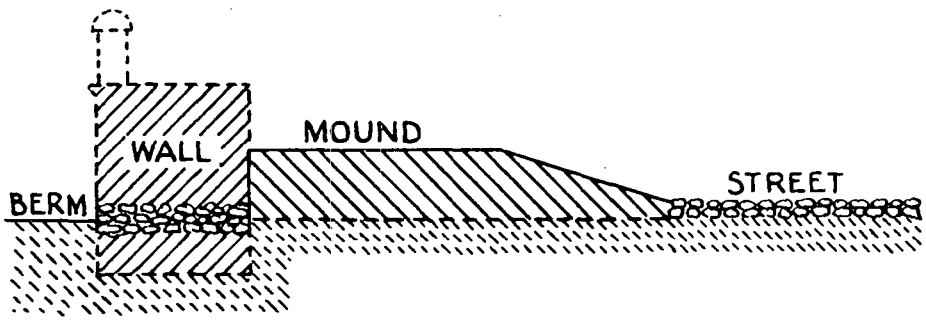

Fig. 20.

of hurling a missile home. The earthen mound, then, fulfilled a definite and a very useful function. Nor is this mere theory. It is borne out by positive evidence. Except in so far as the dotted lines are concerned, the diagram reproduced in fig. 20 is a representation of what von Groller actually discovered at Lauriacum.[1]

The earthen mound is below the level of the present surface and was not visible until it was exposed by the spade. Knowing by his experience at Carnuntum what to expect, and basing his calculations on the ascertained position of the berm, the excavator made up his mind beforehand as to the amount of soil that would have to be removed before he reached the 'sentry-path.' That his estimate should have turned out to be correct is the surest proof of the soundness of his hypothesis. Incidentally, he remarks that the angle at which the mound leaves the edge of the *intervallum* street produces a slope which is gentle enough for an easily ascended ramp. A reference which he makes to the

[1] *Op. cit.*, Heft xi. 5. Mr S. N. Miller made a very similar discovery at York. There, however, the wall may have risen from 4 to 6 feet above the level of the 'sentry-path.' See *Journ. of Roman Studies*, vol. xv. pp. 177 f.

sculptures on the Column of Trajan is very relevant. Several of the scenes depicted there might be cited in confirmation of his view. In particular there is one in which Roman auxiliaries are seen defending a *castellum* against an assault by a horde of Dacians (fig. 21).[1] The front wall is battlemented, and there the soldiers who man it are evidently on the rampart-walk, for they are visible from a little above

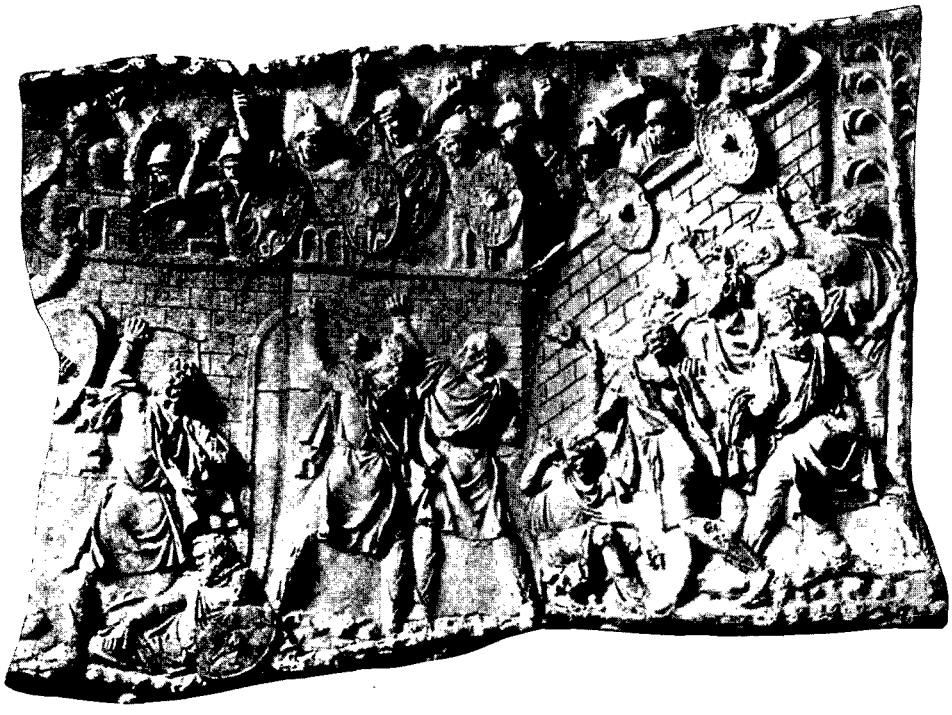

Fig. 21. Roman Auxiliaries defending a fort against a Dacian attack.

the knee. Those who are guarding the side wall—only this and the front wall are within the range of vision—must be at a considerably lower level. Despite the absence of any parapet, no more than their heads and shoulders can be seen.

My knowledge of the stone forts south of the Tweed is not nearly detailed enough to justify me in generalizing about them. But I may be allowed to refer to Housesteads. That was a stone fort in the full sense of the term. Its walls were as carefully finished inside as outside.

[1] C. Cichorius, *Die Reliefs der Trajanssäule*, Taf. xxiv. (Bild xxxii.). In a sculptured relief of this kind it would be idle to look for precision of architectural detail. The essential point is the difference in the height to which the bodies of the two groups of defenders are visible.

When the fort was opened up a century ago, a bank of earth, or of earth and clay, was cleared away from behind such parts of them as were excavated. It seems to have been 12 or 15 feet wide and to have been supported by a retaining wall. Mr Bosanquet, in his admirable account of his own diggings at Housesteads, writes: "Hodgson observed 'a terrace, made of earth and clay, which ran from tower to turret along the inside of the wall to the height of about five feet above its foundation,' and noted that the insides of the towers of the gates and of the turrets between them and the corners of the walls were filled up with clay to the same level."[1] Does not this seem to be a singularly close parallel to the 'sentry-paths' at Carnuntum and Lauriacum?

Thus armed, we may return to the *castella* on the Antonine Wall. They fall into two groups, and I will deal first with that which consists of the two stone forts—Castlecary and Balmuildy. Those who are familiar with what was found at Castlecary will remember the kerb which ran along the inside of the north front at a distance of 6 feet behind the wall. The excavators were avowedly baffled by it, and I some time ago abandoned a suggestion I had put forward in 1911 as to its possible significance.[2] I am now inclined to think that it really indicates a 'sentry-path.' The fact that there was apparently nothing of the kind on the other three sides is hardly a serious objection, since it was from the north that danger chiefly threatened. Nor does its seeming narrowness, as compared with what was found at Housesteads, present any real difficulty. If the 'path' were of sods with a 'duck-board,' as may very well have been the case, the side next the interior would be practically vertical, so that a space of 6 feet would be ample.

At Balmuildy the case for a 'sentry-path' is even stronger. Such evidence as survived went to show that, as at Castlecary, the wall had been carefully finished on the inner side. This, combined with its thickness, places the *castellum* in the category of stone forts properly so called. But Mr Miller noted certain features which might easily have escaped the eye of a less acute observer and which seemed to him to point to there having been a bank, averaging 20 feet in breadth, behind. Accepting the current view,[3] he took it for granted that it had been a backing of earth, intended to support the masonry. By the kind permission of the Glasgow Archæological Society and of Mr Miller himself the diagram embodying his interpretation is reproduced here as fig. 22. Such an arrangement as it indicates would perhaps be possible in a stone fort whose wall has been built immediately outside

[1] *Arch. Ael.*, N.S., vol. xxv. p. 246. [2] *Roman Wall in Scotland* (ed. 1911), p. 209.
[3] *E.g.* Jacobi, *Das Römerkastell Saalburg*, Taf. ix. and x., fig. iii.

of an already existing earthen rampart. For a stone fort built on a virgin site it seems to me hardly conceivable. That it was not continuous is a strong argument against its being a backing. It is no argument at all against its being a 'sentry-path.' The bank of earth and clay at Housesteads was interrupted by the latrines. At Balmuildy a bath-house blocked the way on the west side, to say nothing of an oven on the south.[1] That the base of the 'path' should have been 20 feet broad shows that it must have been a mound of earth or of earth and clay.

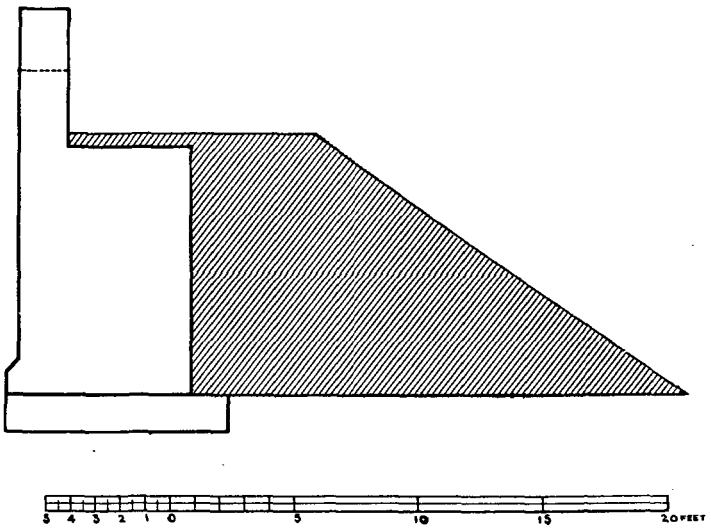

Fig. 22.

The other seven forts may be treated as a single group. So far as the presence or absence of a 'sentry-path' is concerned, the difference between a turf superstructure and one of clay is immaterial. What matters is the breadth of the stone foundation. Mr Miller's account of the excavations at Old Kilpatrick gives no hint of anything abnormal being observed there, and I can vouch for there having been nothing of the sort at Mumrills, Westerwood, Croy Hill, or Bar Hill. At Croy Hill and at Bar Hill there were numerous hearths close to the kerb of the rampart on the west, while at Westerwood and Bar Hill the long Bath-buildings were within 2 or 3 feet of it on the north. If definitely negative evidence was lacking at Mumrills, the search there

[1] Mr Miller suggests (*Balmuildy*, p. 11, footnote 2) that the bath-house may have had a flat timber roof. But there is evidence to show that the roofs of bath-houses were generally arched, and, where the risk of fire was so great, it is difficult to believe that they were ever made of timber.

was thorough enough to make it certain that there was no blank space which a 'sentry-path' could have occupied. There remain Rough Castle and Cadder. I have already dealt with the former. In inferring that what we had to do with there was a reinforcement of the rampart itself, I was guided not merely by the appearances described in the Note but also by a more general consideration. With a rampart that was 20 feet wide at the base a 'sentry-path' would have been useless. To obtain any view of what lay on the other side, it would be necessary to clamber on to the rampart itself. A 'sentry-path' from which it was impossible to see even the outer ditch would have been something like a contradiction in terms. For that reason I believe that a similar explanation holds good at Cadder, where Mr Clarke has discovered that on at least three sides there was a clear and seemingly unoccupied space of 10 feet behind the kerb of the rampart. It is true that there are no signs of a stone foundation for the sods of an extension to have rested upon. But the surface is hard and they may have been laid on it directly, just as they were at Appletree and in front of the Antonine Vallum at Rough Castle; or sods and stones may have been intermingled as they apparently were in some of the Rough Castle sections.