ART. IV.—*Renewed excavation at Low Borrow Bridge.* By E. J. W. HILDYARD, F.S.A., and J. P. GILLAM, M.A.

Read at Penrith, September 4th, 1951.

I. THE EXCAVATION. By E. J. W. Hildyard.

IN choosing a title for my account of the work undertaken in 1950, I have been mindful of Mr Eric Birley's recent article in our *Transactions,*[1] which recalls that it was at Low Borrow Bridge, in 1883, that the first Roman excavation sponsored by this Society took place; it seems to me pleasant and proper to stress the continuity of archæological research in England rather than (as some might prefer) to emphasize the changes and the advances in technique that have taken place within the past generation. In recent years Mr Birley has published in our *Transactions* a number of surveys of Roman sites, which provide both a basis for and an incentive to further investigation by the spade. As in the case of Burrow in 1947,[2] I determined to take up the challenge at Low Borrow Bridge and, with the aid of a valuable grant from the Society's research fund, I spent three weeks, from 16 April to 5 May 1950, enduring the rigours of the Tebay Gorge. This is no mere figure of speech: the dig began with 24 hours' steady rain which was to continue intermittently throughout, varied during the second week by snow and in the third by thunderstorms. The bad weather, combined with the extremely poor quality of the paid labour and the great depth of the remains, accounts for the disappointing incompleteness of the results achieved.

[1] CW2 xlvii 1-19.
[2] CW2 xlvi 126-156; xlviii 23-41.

My grateful thanks are due to Mr A. J. Stott, the landowner, for permission to dig, and to the tenant, Mr T. Metcalfe, who allowed injury to be done to one of his few meadow fields. Valuable assistance was rendered by the following: Mr G. V. Snowdon of Stanhope (who devoted a week of his holiday to the cause), Mr J. Ratcliffe of Tebay, Mr A. R. Martindale of Kendal, our members Mr J. W. Shepherd and Dr H. Thistlethwaite, two enthusiastic boys from Sedbergh School, Timothy Bain-Smith and Malcolm Whiteside, and Mr David Pinkney (who took charge of the site at week-ends). My old colleague Mr W. V. Wade, F.S.A., paid a welcome visit to the excavation and has identified the coins, and another former colleague, Mr J. P. Gillam, has contributed the important section on the pottery to the present report. Finally, a considerable debt is due to Mrs Metcalfe, who provided several of us with such excellent hospitality, but for which we might well have echoed Chancellor Ferguson's feeling remark: "No human being, Roman or other, would come and live at this bleak spot except under compulsion."

In deciding which spots to select for excavation, two considerations had to be borne in mind. The first was that Mr Metcalfe's hay crop was especially valuable to him owing to the shortage of meadow land; we therefore had to keep off the actual interior of the fort as far as possible. The second was that we must avoid the places confused by former excavations. Those of 1883 were fairly well recorded and the portions of the west rampart then disturbed can still be made out, as the contours were not restored to those of the untouched portions. The work of the late H. Burrows in 1931 and 1933[3] was more uncertain but, by a fortunate chance, the former tenant, Mr Reginald Branthwaite, returned from Australia just in time to show me the precise places where Burrows had dug during his tenancy. Inside the fort there seem

[3] CW2 xlvii 11.

to have been three trenches. Two were cut diagonally across the N.W. and N.E. corners; they were about 12 yds. long, 2 ft. 6 ins. wide and 3 ft. to 3 ft. 6 ins. deep, and they yielded "pottery, charcoal, nails and broken tiles". A third trench, about 7 yds. long and of similar width and depth to the others, was cut at right angles to the west rampart, just north of the S.W. corner; it began inside the foot of the sloping rampart, and can still be traced on the ground: finds here too were indeterminate and, from my experience of the site, were probably very few in number owing to the failure of the excavator to dig deep enough—for the same reason, these trenches cannot have caused much disturbance of stratification. Outside the fort, the same excavator's efforts were directed to clearing a short length of the north wall, where the oblong red sandstone blocks are still exposed; to clearing out a drain or culvert in the garden adjoining the farm-house on the north-east; and to breaking through the cement floor of the bath-house discovered in the kitchen garden south of the road in 1883 (this was found to be 12 ins. thick, the top 5 ins. of pink and the lower 7 ins. of grey concrete, and it was so hard that a specially weighty pinch bar, used on the railway, had to be borrowed to effect a breach in it). My impression is that his excavations can have produced little worth recording, and cannot have caused any serious damage.

§ 1. *Trench I.*

As there had been no recorded section of the defences, and as the west rampart, to which Mr Birley has drawn attention,[4] invited investigation, while it was only on this side of the fort that ditches are visible, a trench was cut right through these features. The spot selected was 94 ft. 6 ins. south of the south jamb of the west gate, and about 70 ft. north of the S.W. corner of the fort; the trench itself was 108 ft. long and 4 ft. wide (fig. 1).

[4] CW2 xlvii 12.

(a) *The ditches.* The ground outside the fort at this point is rather boggy and, a short distance below, a strong spring emerges just beyond the S.W. corner and flows southwards; even in dry weather, therefore, we should have encountered water in the fort ditches. As to the outer one, it seemed sufficient to confirm that the visible depression did, in fact, mark the site of a ditch, some 22 ft. wide; the angle of the sloping sides, cut into the natural yellow clay, can be seen on the section (fig. 1); the filling in the upper part was slightly reddish, sandy clay: there were no finds. The inner ditch began 10 ft. to the east, and here a determined effort was made to reach the bottom, in spite of the considerable depth of water. As in the case of the outer ditch, the slope of the west side was broken by a modern field drain, but the section of the ditch was determined (as far as was possible in the difficult conditions) and is shown in fig. 1. The natural yellow clay gave place after a certain depth to blue clay (as was the case inside the wall also), and by following it the bottom of the ditch was eventually found. This inner ditch was slightly narrower than the outer one, 20 ft. as against 22 ft., and had been about 6 ft. deep; its filling consisted of a greyish clay and a very large number of stones, including a few facing-stones from the fort wall. The quantity of stone was so great as almost to suggest that the ditch had been purposely filled with them, but on balance there does not seem any real need to think this, since the wall, being so close behind, would naturally fall into the ditch when the facing-stones gave way or were taken away by stone-robbers. Beneath the stones was a layer of grey silt, which unfortunately yielded no finds.

(b) *The fort wall.* The footings of the fort wall lay some 8 ft. behind the inner ditch. They consisted of two courses of water-worn boulders, selected for their approximately oblong shape, set in the yellow clay. Above the footings the facing-stones had been entirely removed, but

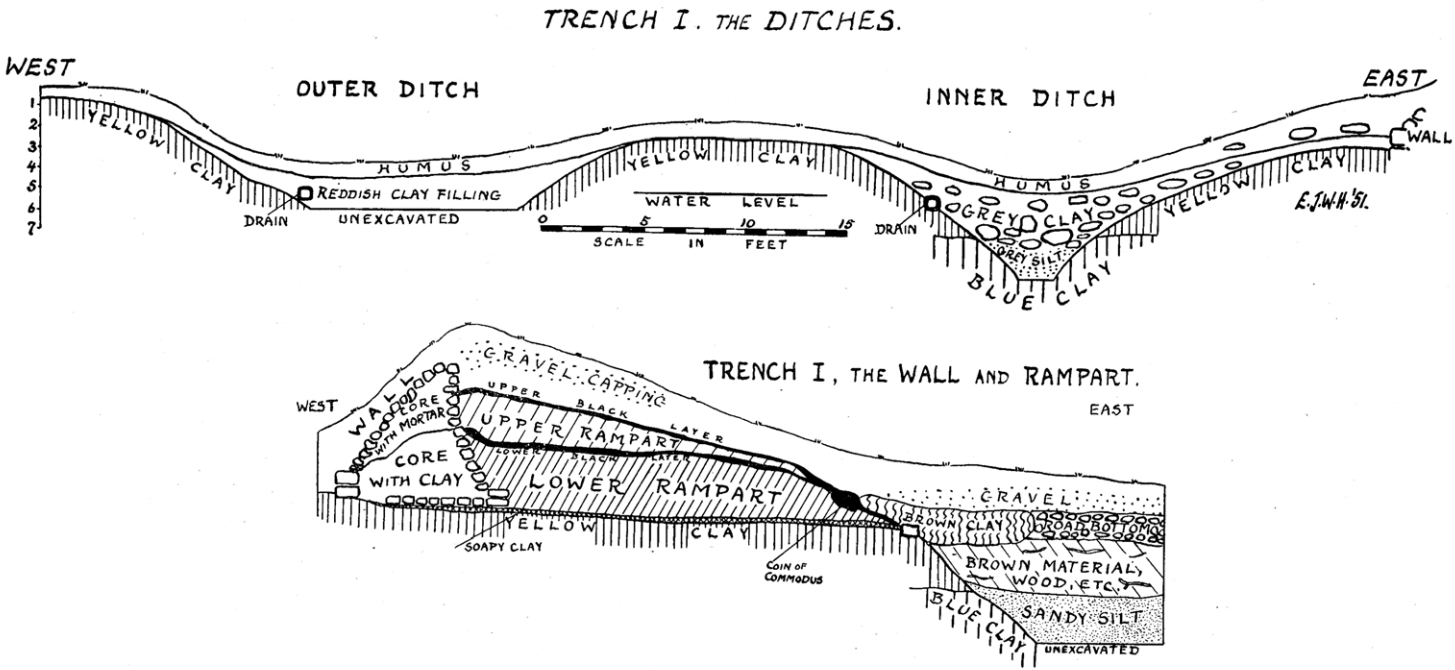
TRENCH I. THE DITCHES.
WEST
EAST
OUTER DITCH
INNER DITCH
YELLOW CLAY
HUMUS
REDDISH CLAY FILLING
DRAIN
UNEXCAVATED
WATER LEVEL
SCALE IN FEET
0 5 10 15
GREY CLAY
GREY SILT
BLUE CLAY
WALL
E.J.W.H. '51.
TRENCH I, THE WALL AND RAMPART.
WEST
EAST
GRAVEL CAPPING
WALL
CORE WITH MORTAR
UPPER BLACK LAYER
UPPER RAMPART
LOWER BLACK LAYER
CORE WITH CLAY
LOWER RAMPART
YELLOW CLAY
SOAPY CLAY
COIN OF COMMODUS
GRAVEL
BROWN CLAY
DRAIN BOTTOM
BROWN MATERIAL, WOOD, ETC.
SANDY SILT
BLUE CLAY
UNEXCAVATED

FIG. 1

the inner face of the wall still stood to a height of 7 ft., and parts of the core protrude in places above the turf: the wall is in fact still used as a field-wall, supplemented with posts and barbed wire where necessary. Although the stone-work was homogeneous throughout, two periods of building could be distinguished in the wall itself. The upper section, which extended down to the footings in front (fig. 1), had a vertical inside face and the interstices of the core were filled, to some extent at least, with clay; the lower section, which rose higher at the rear, had a sloping inner face (presumably pushed outward by the weight of the rampart) and its core was partly filled with mortar, as was first noticed by Just in 1827.[5] Both sections were very rough work, and the interior was by no means solid either; the upper section appeared to go with the outer footings, whereas the lower clearly went with the inner footings, which were at a slightly lower level than the outer (though this may have been accidental); these inner footings were massive boulders, offset nearly 2 ft. from the inner face.

Under the wall ran a line of small square boulders set in yellow clay and at the same level as the inner offset, to which they must belong; they ended 2 ft. short of the outer footings, which implies that the wall was extended or broadened when it was repaired or rebuilt. Beneath them ran a narrow band of purplish clay with charcoal admixture, of a curious soapy texture, which suggests that it had been trampled in and "puddled" during the construction of the wall; it did not extend beyond the early foundation, and indeed it petered out towards its western edge, as might be expected if the wall was built from the inside, with the builders laying the outer face and not standing on the ground under or immediately behind it. This "soapy" layer continued under the rampart, as will be seen. Without the inner offset, the wall conformed to the width of 7 ft. 6 ins.

[5] CW2 xlvii 4.

given in the earlier report; with the offsets, the width of 9 ft. overall corresponded with that of the footings of the south wall, which are exposed in the gateway of the field.

(c) *The rampart.* The rampart, still an impressive mound, was found to be standing to a maximum height of 9 ft.; the stratification is shown in the section (fig. 1), but needs detailed description. The top-soil yielded a mixed assortment of pottery (nos. 15-18, 31 and 33), including late fourth-century pieces; below it came an irregular layer, up to 9 ins. thick, of gravel which may be the remains of a capping for the final restoration of the rampart. Under the gravel came some 2 ft. of disturbed soil which yielded pottery of mid or late second-century date, and this rested on a layer of black ash and burnt material, 2 or 3 ins. deep, running from the wall itself backward along the whole width of the rampart, under which came a layer of obvious "rampart" material —a fairly homogeneous buff, sandy clay, 2 ft. 6 ins. deep at its maximum near the wall. This "upper rampart" contained pottery of second-century date (nos. 11, 13 and 14). Below it came a second black layer, even more clearly defined and rather thicker (up to 6 ins.) than the upper one, which yielded pottery of late second-century date, including no. 12; joining the upper black layer, which dipped down behind the end of the upper rampart, it extended into a large pocket before dipping in its turn behind the lower rampart: in this pocket was a *denarius* of Commodus, in poor condition but not much worn.

Beneath the second black layer we encountered very hard, light buff clay, freely mixed with fine gravel; this was extremely hard and uniform in composition, and showed no sign of disturbance, while it contained not a single scrap of pottery, so that at first I believed that it must be the natural subsoil: yet the wall was still going

down behind it, and therefore a section had to be removed next to the wall. Eventually the real bottom was reached, and the "soapy" clay layer was found to underlie the pebbly clay, which may now be called the "lower rampart", which in places still remains over 3 ft. high. In due course all this unyielding material was removed, and our efforts were rewarded by the most significant little group of pre-Hadrianic pottery (nos. 3, 4, 7 and 10) found in the soapy layer itself. Beneath was the natural yellow clay.

A line of boulders appeared to mark the heel of the lower rampart, which would thus be 20 ft. wide, with the upper 3 ft. narrower; but there was a patch of hard brown clay, shown on the section, stretching about 8 ft. behind, which may have supported the later mound. Eastwards from the pocket of black material and running over the brown clay, a spread of gravel presumably marked later repairs to the metalling of an *intervallum* road. In these levels the pottery (nos. 20, 30 and 32) was mostly of the fourth century. Behind the brown clay was a thick layer of heavy cobbles, the foundation of the road, but beneath both these strata a new and unexpected feature appeared: the undisturbed yellow clay was found to be steadily sinking behind the heel of the rampart, and a mass of brown sandy material containing a considerable quantity of wood, both thick branches and brushwood, well preserved in the wet, peaty mixture; it was here that the sandals and other pieces of leather were found. The slope of the pit, or ditch, continued to descend till the blue clay replaced the yellow (as in the inner ditch), and after about 2 ft. 6 ins. of the brown sandy layer, sandy silt with pockets of blue clay took its place. Mr Metcalfe allowed an extension of the trench, in an effort to find the other side of the depression; but though we went down 8 ft. from the surface, below several feet of water, the west side was still sloping downwards and no sign of an eastern side appeared. A

further extension would have caused excessive damage to the meadow, so that further search had to be abandoned. The pottery from this "pit" (nos. 2, 5, 6, 8 and 9) was none of it later in date than the middle of the second century, and it all occurred in the brown sandy layer: there was nothing from the lower levels. There is no sign on the surface to indicate the presence of this deep depression.

§ 2. *The south-east corner.*

Although the S.E. corner might not have the depth of stratification to be found at the N.W. or even the N.E., there were three good reasons for examining it. First, it appeared to be the only corner which had certainly not been touched before, next it lay inside the corner of a small garth behind the farm and was separated from the meadow by a field-wall, and lastly it was hoped to find the "two or three superimposed levels" which Burrows was reported to have found in an angle-tower.

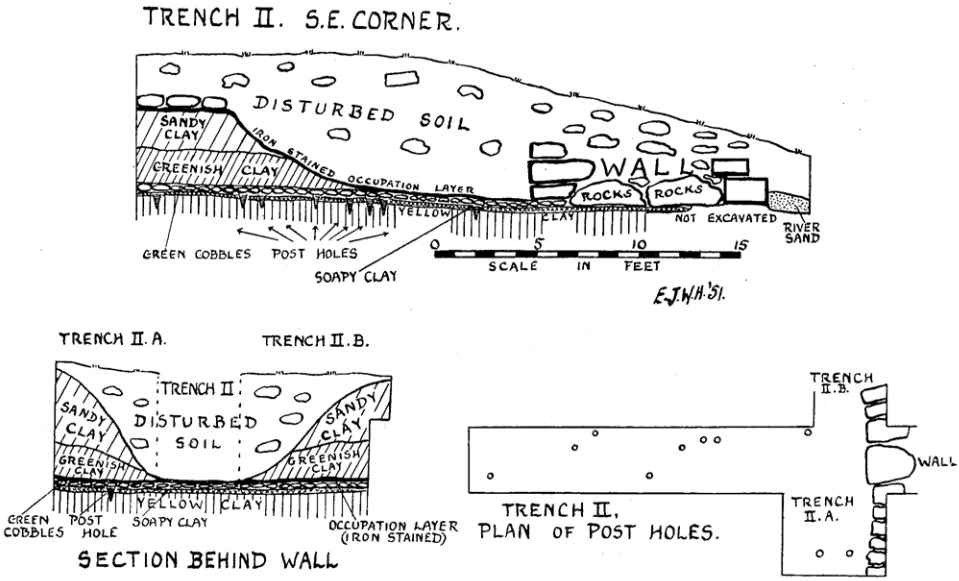

FIG. 2

(a) *Trench II.* A trench 4 ft. wide, which ultimately extended to 23 ft., was cut through the centre (as near as could be judged) of the semicircular corner and at right angles to it. Here again the results were most unexpected. For the first 4 ft. 6 ins. from the north end of the trench, at a depth of 2 ft. 6 ins. was a layer of water-worn, oblong boulders (fig. 2), but for the next 16 ft., until the back of the wall was reached, there was no stratification at all in the middle of the trench, down to a depth of 6 ft. 6 ins. The material was loose, disturbed soil with a good many stones and pottery of all dates, but with late fourth-century pieces decidedly predominating; nos. 19, 21-29 and 34 were found here or in the top-soil above the side cuttings IIA and IIB. Under the boulders, at the north end, came a layer of iron-stained gravel which dropped sharply to the south (see the section, fig. 2); whether this discolouration was due to iron-working or merely to the natural iron in the water (which had been noticed in places between the footing and the rampart in Trench I) is not certain—there were a few much corroded pieces of iron found in the north end of the trench, but this was probably fortuitous. Beneath the iron-stained level came a layer of sandy clay, 1 ft. 6 ins. deep, very similar in composition to the "upper rampart" in Trench I; this yielded a few early sherds, including a scrap of rustic ware. Lower down, the clay became much harder, more compact and greener in colour, and it contained a certain amount of gravel, but it was certainly different from the "lower rampart" material, and there was no clear division between it and the sandy clay above. This harder, green clay appeared at a lower depth in both sides of the trench beyond the boulders, but had nearly disappeared by the time the wall was reached.

(b) *IIA and IIB.* This curious section became a little clearer when two cuts, IIA to the west and IIB to the east, were made into the sides of Trench II, along the wall.

Immediately the strata seen in the north end of the trench reappeared, with sides sloping towards Trench II (see fig. 2). 7 ft. east of the edge of Trench II, the upper layer, of sandy clay, reached a height of 3 ft. and was by then almost immediately beneath the turf; below it again came the harder, greenish, more compact clay. The pottery from these two side cuttings was too fragmentary to be drawn, but it was all of second-century date and, as at the north end, it all came from the upper sandy clay; the only pottery beneath this rampart consisted of a number of pieces of an amphora, found in both IIA and IIB.

At the bottom of the trench the stratification was more uniform. A layer of green cobbles, of the local silurian slate, underlay the whole of Trench II as far as the inner face of the wall, under which it continued for a few inches; it also underlay the "ramparts" in IIA and IIB.[6] Under the cobbles there reappeared the soapy purplish clay, as in Trench I, an inch or two thick, lying immediately on the yellow clay; the only pottery found beneath the cobbles was the neck and shoulder of a cordoned jug (no. 1), not closely datable. Under the cobbles were a number of irregularly spaced post-holes, eight in Trench II and two in IIA; they appeared to be 4 ins. in diameter at the top and 8 or 9 ins. deep, but at these levels we were again waterlogged, for though the cobbled layer was dry when we first reached it, thunderstorms raised the water level soon after. In several of the holes pieces of wood were still preserved, and in one case the point of the stake was extracted almost whole; others were empty, and it looked as though the posts had been removed in Roman times. The plan of the post-holes is shown in fig. 2.

(c) *The fort wall.* The wall itself was found to be standing only three courses high on the inside; each

[6] The iron-stained layer continued under the "rampart" and on the cobbles in IIA and IIB; this supports the idea that it was merely a discolouration caused by the iron in the water.

course contained faced blocks, the middle one having a massive wedge-shaped stone, 2 ft. 6 ins. long and broad, which was clearly a re-used facing-stone from the exterior; the significance of this will be discussed later. The bottom course rested on no footings except the green cobbles, but inside the wall were massive rocks up to 3 ft. or more in length; it was not possible in the time available to remove them all, but we found that the soapy clay continued to run underneath them. The front of the wall had one facing course in place and this consisted of carefully squared red sandstone blocks, similar to, though larger than, those exposed by Burrows in the north wall; below was a footing course of even larger blocks, offset by a foot, which were bedded in front by fine river gravel or sand. Just over the outside face, in the top-soil, was found a fourth-century 3rd brass, probably of Constantinian date. The width of the wall was 10 ft. from inner face to first outside course, or 11 ft. to the offset footing course.

Behind the rampart, in IIA and IIB, the dressed stones gave way at once to the unfaced cobbles and broken silurian slate such as we had found in Trench I; the wall was, in fact, of precisely similar construction and rose to within an inch or two of the present surface, in places showing through the turf. At the corner itself the wall had splayed outwards 1 ft. 6 ins. in a height of 6 ft. 6 ins. in IIB, but once round the turn it appeared to be vertical; it was traced for some 30 ft. round to the east, as far as the modern wall of the garth, but only the top few courses could be uncovered: the sandy clay rampart continued behind it.

An attempt must here be made to interpret the phenomena observed in Trench II. At first it was thought that our trench had been so unfortunate as nearly to coincide with a stone-robber's trench, and this idea was supported by the cut-away sides of the rampart, as revealed in IIA and IIB. It is clear that our trench did

roughly coincide with an earlier U-shaped cut, whose maximum breadth was immediately behind the fort-wall (see fig. 2), while it narrowed towards the north end of Trench II, so that the lower rampart began to appear in the sides of our trench. It is suggested that this cut was connected with a late phase of the Roman occupation. It may be noted that there was no depression on the modern surface, such as is usually left by recent disturbance; but the most significant factor is the presence of the facing-stones, one of them certainly re-used, on the inside of the wall. The explanation seems to be that this U-shaped trench was dug for the purpose of accommodating some structure which has now vanished, possibly a wooden platform for some form of artillery; when the rampart was being removed, to allow the insertion of that structure, it may be supposed that the inner face of the wall fell in, and it was then re-faced with squared blocks, projecting outwards a foot or so beyond the lower line of the wall—thus accounting for its extra thickness at this point.

§ 3. *Conclusions.*

A good deal was already known about the physical character of the fort at Low Borrow Bridge, and indeed the outlines of its walls, ramparts and gateways, are plain for all to see; but nothing was known of the length of the occupation or the date and history of the fort. In view of the limitations and handicaps to the work already noticed, it is felt that a reasonably satisfactory amount of new information has been obtained. The results of the section through the defences may be summarised as follows. The date of the ditches, the filling of which was not similar, remains uncertain, but the section of wall and rampart reveals at least two periods, and possibly four. The "lower rampart" and "upper rampart" are very clearly defined, and there is no question that they are respectively contemporary with the two wall periods; the

possibility of the wall having been inserted later was always in mind, but there were no traces of such an arrangement: the rampart material backed right on to the masonry, and the fact that the two ramparts correspond to the changes in the structure of the wall cannot be a mere coincidence.

If we are to give a date for these periods, bearing in mind the pottery which has already been referred to and the likely times for building in this part of Britain, it would seem probable that the lower rampart and wall are of Hadrianic date, and the upper of Severan: the latter dating is supported by the coin of Commodus stratified in a level earlier than, though not itself sealed by, the upper rampart. Such a dating may seem earlier than had been expected, and does not at first sight accord with the very rough character of the masonry of both periods; but previous excavations, and our own digging at the S.E. corner, show that where masonry was to remain visible it had been carefully rendered, and suitable freestone had been brought considerable distances to achieve this: but the labour involved was evidently great, and where (as in footings, core and inner face) the result was to be invisible, the local boulders from the river or the intractable local slate could be pressed into service. For footings, indeed, the latter was not unsuitable, as it could easily be broken into those very large, rough slabs which still show outside the remains of the east wall. A third period is suggested by the "gravel capping", which is probably very late—for occupation up to the end of the fourth century is well attested by the pottery from the S.E. corner.

The pit or ditch at the east end of Trench I presents a problem not yet solved. If it is a pit, it must be a very large one and in an unusual place; and it may be noted that no sign of a curve could be observed in its side in our 4 ft. trench. It seems more likely, therefore, that it is a ditch, later deliberately filled with brushwood and

rubbish; in that case it must belong to a smaller fort, or fortlet, inside the 2.8 acres of the visible fort. The pottery is sufficient to show that there was certainly a Flavian occupation of the site, as is only to be expected, since the road through the Lune valley seems to be the earliest Roman route to Carlisle, and the forts at Burrow and Watercrook were established in the Flavian period.[7] The inner fortlet would presumably belong to the earliest phase of the occupation, making four periods in all.

The story told by the S.E. corner is more confused, and further work is needed before we can equate it certainly with the periods in the western defences; but the post-holes naturally suggest the Flavian period, and it may be noted that the ground falls away at this corner, which may therefore have been the corner of the fortlet also, while its west wall will presumably have come well inside that of the existing fort. The green cobbles, though now overlying the post-holes, may possibly be of the same date.

The two kinds of material, sandy clay and harder green clay, in the ramparts in the north end of Trench II and in IIA and IIB, might correspond with the two ramparts behind the west wall. The upper material was certainly very similar to the "upper rampart" in Trench I, and though it contained some early pottery this is not decisive against a later date: compare Mr Gillam's observations, p. 62 below. The lower "green clay" was definitely different from the material of the lower rampart, but like it in being very compact, and containing fine gravel and no pottery.

The question of an angle-tower must remain open. There was no sign of one—unless the green cobbles were its floor—and the U-shaped disturbance was not broad enough to have removed one entirely; if there was an angle-tower, it must have been covered by the present ramparts. The latest phase must certainly be represented

[7] CW2 xlv 156; xlviii 28.

by the U-shaped "trench" with its considerable quantity of late pottery, but of the structure it contained no traces remain. It may be remarked, however, that an artillery-platform at this corner would command the approach from the south, especially as the road would have to pass close to this corner of the fort to enter by the east gate, there being no gateway in the south wall.[8]

As to the question of the length of the occupation, the pottery (as Mr Gillam shows in his detailed discussion of it) proves that it continued throughout the Roman period in the north of Britain, though it is not possible to determine whether there were intervals in the tenure of the site. The black layers in Trench I, and the considerable reconstruction of the fort-wall, suggest thorough destruction on more than one occasion, while a complete change of plan, necessary to the idea of an inner fortlet, would also imply a break in continuity. Perhaps the most striking fact about the pottery is the abundance of late fourth-century material in comparison to the whole, allowing for the proportion of the total length of occupation that it should represent. But this is not the place to discuss the accepted, if curious, notion that the making of pottery came to a sudden stop about A.D. 395. Nevertheless, this feature does recall Mr Birley's words[9]: "in its remote valley, away from the main stream of Dark Age traffic, it may well have continued in sub-Roman hands for many years after the official abandonment of Britain."

But if many problems still remain for solution at Low Borrow Bridge (not the least concerning Mr Metcalfe's shortage of hay at a time when its price is so prohibitive), it is hoped that a definite basis has now been obtained upon which, under more favourable conditions, a clear and complete story could be built up.

[8] PSAL^2 x 32; CW2 xlvii 11.
[9] CW2 xlvii 19.

§ 4. *Small finds* (*excluding pottery*).

Small finds were few in number, but they included one or two interesting items. Unstratified pieces are marked by an asterisk after the site-reference.

1. Head of a large bronze stud, 1 1/2 in. diameter. Trench I*.

2. Oval iron ring, 1 3/4 by 1 1/4 in. diameter, possibly a harness fitting. Trench I, upper rampart.

3. Spindle whorl, made from a wall-fragment of a large white pot, diameter 1 1/2 in. Trench I*.

4. Bone pot-decorator, 3 ins. long, retaining a high polish; the shank thickens towards the lower end before terminating in an asymmetrical point: this makes it clear what the purpose of the instrument was. Trench I, from the brown layer in the pit or ditch.

5. Small piece, just over 1 in. long, of a double-sided wooden comb. The ends of both sets of teeth are broken, but the total breadth must originally have been about 2 1/2 ins.; one set is, as usual, finer than the other, and the centre piece, which is nearly 1/4 in. thick, has a raised band as decoration down each side. This is a normal type of Roman comb, and there is a very similar example at Tullie House Museum. Trench I*.

6. Portions of the soles of at least seven shoes, heel pieces and other scraps, were recovered from the brown sandy layer in Trench I. The largest complete sole measured 11 1/2 ins., the smallest 9 1/2 ins.; all had been hobnailed, and one had the hobnails still in place, the nails having iron shanks and copper heads. Mr James McIntyre, F.S.A., has kindly provided the following report:—

"The leather consists of the remains of men's shoes, outsoles with nails, insoles, heel counters or stiffeners, and a fragment or two of upper leather. The shoes were of the hobnailed type, in which nails are fixed round the edge of the sole, with more nails either in rows or in some decorative pattern at the forepart and heel. They were

made (presumably on a wooden last) by sewing the edges of the upper to a piece of leather which was secured to the underside of the insole by means of leather thongs which ran from toe to heel. The outsole was then secured to the shoe by means of hobnails, which were driven through and clenched after penetrating the insole; this operation would be done by using a hobbing-foot or the like. Footwear made in this manner seems to have been in general use at all periods on military sites in Roman Britain, and was used by both sexes and all ages. The interesting point about the nails is that they served the dual purpose of securing the insole and also giving protection to the shoe in wear; in modern shoes, hobnails are used for the latter purpose only."

II. THE POTTERY. By J. P. Gillam.

§ 1. The fragments drawn as nos. 1 to 10 are either from deposits formed during an occupation which preceded the construction of the earlier of the two sets of defences that were identified during the excavation, or from deposits formed at the time of their construction.

1. Found below the layer of green cobbles in Trench II. Narrow-mouthed jar with cordon at junction of neck and shoulder, in light grey self-coloured fabric now pitted and worn.

Vessels of this type had a long history. Their origins are to be found among the vessels of the Celtic Iron Age in north-eastern Gaul and south-eastern Britain, and they were still being made in Britain as late as the fourth century A.D. They did not become common in northern Britain until Hadrianic-Antonine times. Cf. *Willowford Bridge* no. 44.

2. Found in Trench I, in a pit or ditch below the earlier *intervallum* road; this deposit was evidently sealed while the defences were under construction. Narrow-mouthed jar with under-cut rim, in orange buff fabric.

While it would only be possible to quote Antonine parallels to this vessel, it is nevertheless probable that the type had emerged during the reign of Hadrian, when many types were either newly developed or introduced to northern Britain for the first time. Cf. *Corbridge 1947* no. 7.

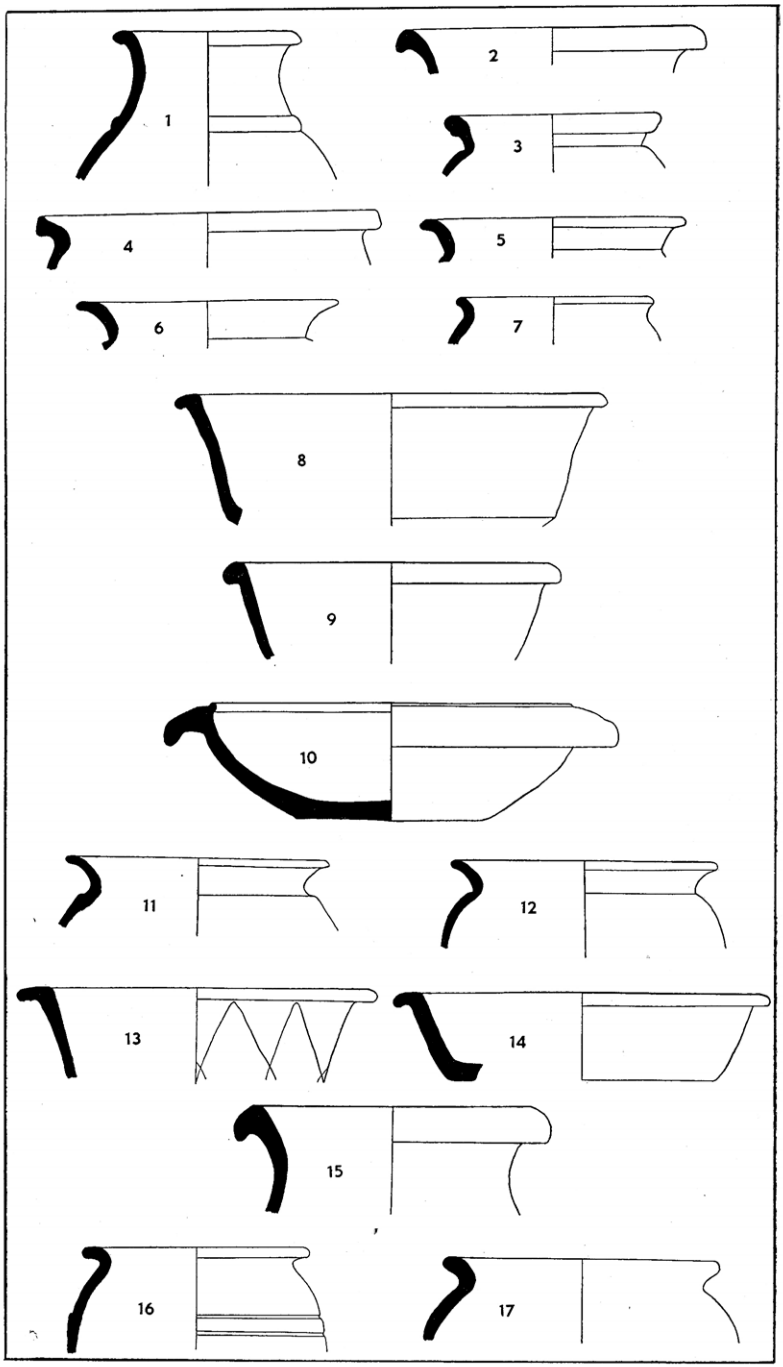

FIG. 3 (¼).

3. Found in Trench I, in the soapy clay and charcoal layer below the earlier rampart, and probably deposited during an occupation of the site antedating the construction of the rampart. Jar with thickened rim, in fairly hard light grey fabric with a matt dark grey surface.

This is a typical pre-Hadrianic vessel. Cf. *Chesterholm* no. 26.

4. Found in Trench I, below the rampart, with no. 3. Jar with unusual out-bent and under-cut rim, in soft light grey fabric with a matt dark grey surface.

The general character of this vessel is pre-Hadrianic.

5 and 6. Found in Trench I, below the road, with no. 2. Each a jar or wheel-made cooking pot, in soft bright orange self-coloured fabric.

These vessels are of a type which died out during Hadrian's reign, under the impact of competition from hand-finished cooking pots in black fumed fabric. For the shape cf. *Chesterholm* no. 22.

7. Found in Trench I, below the rampart, with nos. 3 and 4. Beaker in matt grey self-coloured fabric.

This is almost certainly a pre-Hadrianic vessel.

8. Found in Trench I, below the road, with nos. 2, 5 and 6. Flat-rimmed, deeply chamfered bowl, in grey fabric with a black fumed and burnished surface decorated with a simple pattern of lightly scored lines.

This vessel is typical of the period A.D. 125-150; it is one of the first forms of the new fumed-ware series to be used in the north, and it still retains the deep chamfer derived from the carinated bowls in other fabrics which preceded it. Cf. *Birdoswald* no. 65 and *Milecastle 48* pl. iii, no. 5.

9. Found in Trench I, below the road, with nos. 2, 5, 6 and 8. Bowl or platter in grey fabric with a black fumed and burnished surface.

While bowls and platters with rims that are not unlike that of this platter occur in the third century (cf. no. 33), an almost identical rim has been noted from the exclusively Hadrianic deposit in Milecastle 50 on the Turf Wall.

10. Found in Trench I, below the rampart, with nos. 3, 4 and 7. Bowl, shaped like a mortarium, in hard metallic dark grey fabric with a greyish white core.

This is an unusual vessel. When handled it seems to have more of the character of Flavian-Trajanic than of Hadrianic-Antonine pottery.

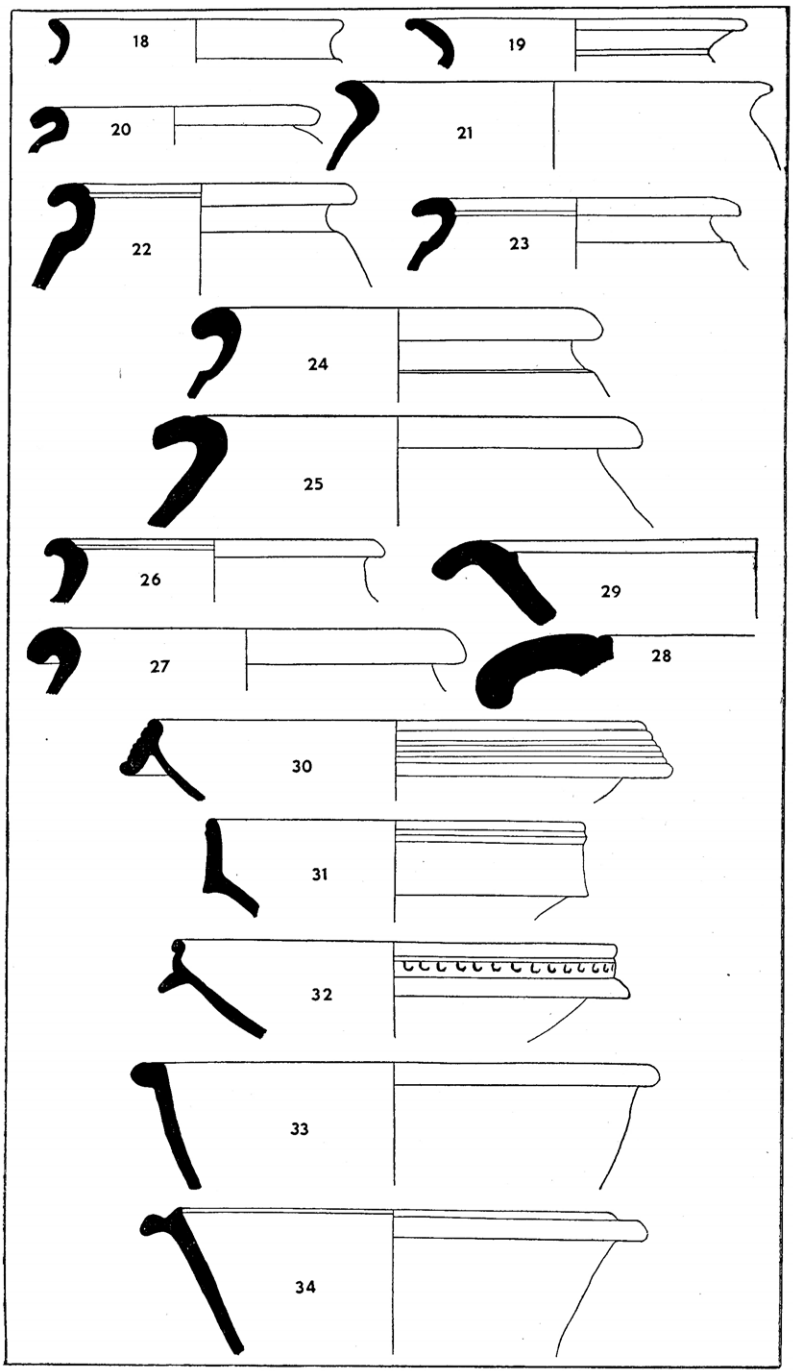

FIG. 4 (¼).

Fragments that have not been drawn include on the one hand rustic ware and other pre-Hadrianic fabrics, and on the other hand black fumed ware of the kind first used in Hadrian's reign.

Although no. 10 is an unusual vessel, and no. 9 is reminiscent of vessels of a later date, there can be little doubt that both of them are in fact consistent in date with the rest of the group. In the twenties of the second century, about the middle of Hadrian's reign, a very marked change came over the character of the coarse pottery in use in northern Britain. Until then styles had changed comparatively little since Roman pottery was first introduced to northern Britain in the seventies and eighties. Development was once again gradual from Hadrianic into Antonine times. The present group includes both vessels of pre-Hadrianic character, and vessels of Hadrianic-Antonine character. Those described as Hadrianic-Antonine are of the types which were first introduced just before the middle of Hadrian's reign, and remained fashionable into early Antonine times, after which slight changes in style once more became noticeable. This does not mean that the closing date for the present group is necessarily Antonine, for just as when dating the deposition of a hoard of coins one takes into account the earliest date at which the latest coin could have been struck, so, when dating a group of pottery, one takes into account the date of the first emergence of the latest types—in this instance the late twenties of the second century.

The earlier defences could not then have been raised before the middle of Hadrian's reign, though they may well have been raised as early as that. The pottery would for instance support a conclusion reached on other grounds that the fort was contemporary with either Moresby or Bowes. On the other hand the presence of distinctively pre-Hadrianic pottery on the site in fair quantity suggests that this was not the first occupation.

This impression is borne out by the evidence of the vessels nos. 11, 16, 17, 18 and 28 still to be described.

§ 2. The fragments drawn as nos. 11 to 14 are from deposits formed either immediately before, or at the moment of, the construction of the later of the two sets of defences identified during the excavation.

11. Found in Trench I, in the upper clay rampart. Jar or wheel-made cooking pot in soft light grey self-coloured fabric.

This is a pre-Hadrianic vessel. Cf. *Chesterholm* no. 22.

12. Found in Trench I, in the black layer below the upper rampart. Cooking pot with cavetto rim, in grey fumed fabric.

This vessel is typical of the closing years of the second century, and of the early years of the third. Cf. *Corbridge 1947* no. 33 and *Milecastle 48* pl. iv, no. 24.

In the same deposit as no. 12, but too fragmentary to be drawn, were the rim of a Samian-ware vessel of Dragendorff's form 31, and several fragments of a Castor-ware hunt cup.

13. Found in Trench I, in the upper rampart, with no. 11. Flat-rimmed bowl in black fumed fabric with a simple pattern lightly scored on the burnished outer surface. There is also a fragment of a deeply chamfered base in identical fabric, which, though it does not join, is almost certainly from the same vessel.

Like no. 8 this is a Hadrianic-Antonine vessel.

14. Found in Trench I, in the upper rampart, with nos. 11 and 13. Flat-rimmed platter without chamfer, in black fumed fabric burnt pink in places.

This is a Hadrianic-Antonine vessel; cf. *Cardurnock* no. 27.

The group from below the rampart, though small, is internally consistent in date; it comprises types and wares which only came into use in the last quarter of the second century, so it shows that the earliest possible date for the second period of work in the identified defences is *circa* A.D. 175; in fact these defences probably belong to the beginning of the third century, for the slightly worn coin of Commodus, already mentioned, came from the same relative level as the group of pottery. The vessels from within the rampart are Hadrianic-Antonine, and must be regarded as rubbish survivals in their context, though they usefully confirm occupation of the site in Hadrianic-Antonine times.

§ 3. The fragments drawn as nos. 15 to 34 come from deposits formed after the construction of the later of the two sets of defences.

15. Found in Trench I, immediately above the later rampart. Narrow-mouthed jar with under-cut rim, in soft bright orange self-coloured fabric.

This vessel is similar in form to no. 2, and in fabric to nos. 5 and 6; it belongs to the Hadrianic-Antonine period.

16. Found in the top-soil, above the rampart, Trench I. Jar with everted rim and with two parallel scored lines on the shoulder, in light grey fabric with dark grey matt surface.

This is a typical pre-Hadrianic vessel. Cf. *Corbridge 1911* no. 34.

17. Trench I, top-soil. Jar, or wheel-made cooking pot, in soft sandy light grey fabric with dark grey matt surface, heavily coated with soot.

This is a pre-Hadrianic vessel. Cf. *Corbridge 1911* no. 23.

18. Found in the top-soil above the rampart in Trench I. Jar, or wheel-made cooking pot, in soft light grey fabric.

This is a pre-Hadrianic vessel.

Nos. 15 to 18, inclusive, were found at a higher level than the later rampart, but are all of earlier date. They had evidently survived as rubbish.

19. Found at a higher level than the layer of green cobbles in Trench II. Cooking pot with splayed rim in black fumed fabric.

This vessel is typical of the closing years of the third century and the first two-thirds of the fourth. Cf. *Birdoswald* no. 18.

20. Found in the top-soil in Trench I, above the later *intervallum* road. Jar with overhanging rim, in a very hard over-fired fabric, brick red in fracture with a dark grey surface; the clay is heavily charged with particles of hard grit, which give the surface a gooseflesh character similar to that of Derbyshire ware.

While close parallels cannot be quoted to the form of the vessel, the fabric is one that was common early in the fourth century, and the vessel is therefore doubtless contemporary with nos. 19 and 30.

21. Trench II, top-soil. Cooking pot in coarse salmon pink fabric, pitted here and there on the surface, as though it had originally been charged with calcite grit.

Cooking pots in calcite-gritted fabric, but with simple rims, first began to appear in appreciable numbers in the north-west at the beginning of the fourth century.

22, 23 and 24. Trench II, top-soil. Each a cooking pot of the Huntcliff type, in dark grey or black fabric, originally calcite-gritted, but now pitted where the grit has dissolved away; there is a continuous band of small circular depressions around the top of the rim of no. 23.

The Huntcliff type of cooking pot came into general use in northern Britain in the sixties of the fourth century. Cf. *Crambeck* type 16, *Signal Stations* type 26, *Birdoswald* no. 20 and *Milecastle 48* pl. v, no. 6.

25. Trench II, top-soil. Cooking pot in pitted grey fabric.

26. Trench II, top-soil. Cooking pot in reddish brown calcite-gritted fabric with a black burnished surface.

27. Trench II, top-soil. Cooking pot in heavily pitted dark grey fabric.

Nos. 25, 26 and 27 all appear to be variants of the Huntcliff type.

28. Trench II, top-soil. Much worn and battered fragment of a mortarium rim of Bushe-Fox's *Wroxeter* type 14, in buff sandy fabric.

This mortarium is typically Flavian both in form and fabric, and it is clearly a stray from the earliest occupation of the site.

29. Found in Trench II, above the green cobbles, with no. 19. Mortarium of Bushe-Fox's *Wroxeter* type 62 in soft brick red fabric; no grit survives.

This is a Hadrianic-Antonine mortarium. Cf. *Balmuildy* pl. xli, no. 19 and *Milecastle 48* pl. iv, no. 2.

30. Found in Trench I, above road, with no. 20. Mortarium of Bushe-Fox's *Wroxeter* type 186, in pipeclay fabric.

This is a typical form of the very end of the third century and the first half of the fourth. Cf. *Bewcastle* no. 15.

31. Trench I, top-soil. Mortarium of Bushe-Fox's *Wroxeter* type 242, in hard orange buff fabric; the grit is small, black and sparse.

This is an imitation of the Samian-ware mortarium of Dragendorff's form 45. Such imitations were especially common in the closing years of the fourth century.

32. Found in Trench I, above road, with nos. 20 and 30. Mortarium of Corder's *Crambeck* type 8, in hard smooth whitish buff fabric with decoration in red paint; no grit survives.

It was only after the military disasters of the sixties of the fourth century that pottery manufactured in east Yorkshire became widely distributed in northern Britain.

33. Trench I, top-soil. Bowl with rounded rim, in black fumed fabric.

This is probably a third-century vessel. Cf. *Birdoswald* no. 80 and *Corbridge 1947* fig. 10, bottom right.

34. Trench II, top-soil. Straight-sided flanged bowl in black fumed fabric, patchily reddened by fire; there is no internal wavy line.

This is an early fourth-century type, differing in detail from the later *Crambeck* types.

The interest of the deposits of pottery found above the later rampart lies in the range of time that is covered by them. They include strays of pre-Hadrianic date, nos. 16, 17, 18 and 28, and of Hadrianic-Antonine date, nos. 15 and 29, as well as pottery of the third century and the first part of the fourth century, nos. 19, 20, 21, 30, 33 and 34. When the small scale of the excavation is considered, the quantity of late fourth-century pottery, nos. 22, 23, 24, 25, 26, 27, 31 and 32, is remarkable. More or less continuous occupation of the site is thus attested from the time of the earliest Roman penetration into the district at the beginning of the last quarter of the first century, until the closing years of the fourth century, and possibly later.

The references to reports quoted in this section are as follows:—

Balmuildy	S. N. Miller, *The Roman fort at Balmuildy* (1922).
Bewcastle	CW2 xxxviii 195.
Birdoswald	CW2 xxx 169.
Cardurnock	CW2 xlvii 78.
Chesterholm	AA4 xv 222.
Corbridge 1911	AA3 viii 137.
Corbridge 1947	AA4 xxviii 152.
Crambeck	*Antiq. Journ.* xvii 392.
Milecastle 48	CW2 xi 390.
Signal Stations	*Arch. Journ.* lxxxix 220.
Willowford Bridge	CW2 xxvi 429.
Wroxeter	J. P. Bushe-Fox, *Excavations . . . at Wroxeter . . . in 1912* (1913).

§ 4. Only one piece of figured samian requires illustration and discussion; it comes from Trench II, unstratified. Miss Grace Simpson provides the following note upon it:—

"It is in the distinctive style of the so-called Leaf-cross Potter, and is of special interest because it allows us to add a new decorative detail to his comparatively small series: namely, the *double festoon* of tiny leaves, a small portion of which remains on the fragment, while it has been restored complete in the drawing. This potter used two closely similar *ovolos,* the present one being the larger of the two. The decoration is arranged in panels, separated by the bold wavy lines invariably used by him, with their junctions masked by small *crowns or astragali,* one example of each, rather blurred, showing on this piece. The *tier of baskets, dolphins and mask* (Déch. 1069a, part only) and the *small figure bearing a mask, standing on a column* (Déch. 673 = Oswald 729 and 730) recur frequently on this potter's bowls. His output was small, and no examples have yet been found in Scotland or on Hadrian's Wall; the occurrence of vessels assignable to him at Carlisle, Nether Denton, Chesterholm and Corbridge (to mention only sites in the north of England), suggests that his period of production fell within the years *circa* 100-120.

My thanks are due to Mr W. Dodds, of Houghton-le-Spring, for the excellent drawing, here reproduced as fig. 5."

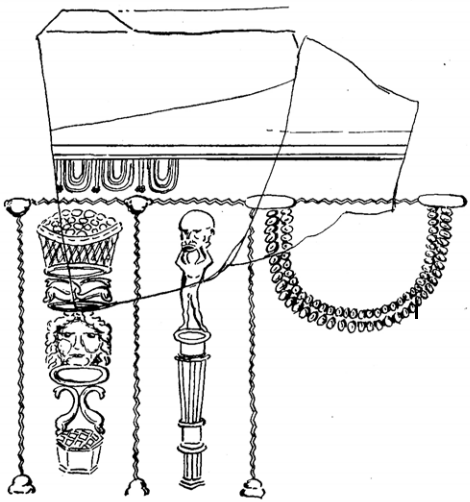

FIG. 5 (½)