I

THE AGRICOLAN SUPPLY BASE AT RED HOUSE, CORBRIDGE

W. S. Hanson, C. M. Daniels, J. N. Dore and J. P. Gillam

With contributions by: L. Allason-Jones, P. J. Casey, D. Charlesworth, B. Dickinson, M. Ellison, A. Donaldson, B. Harbottle, B. Hartley, K. F. Hartley, M. Henig, G. Jobey, A. Welfare, J. Weyman and J. P. Wild.

Introduction

In 1955 Major H. D. Cuthbert, of Beaufront Castle, Northumberland, brought the news to Corbridge Roman Station that, in the course of laying drains across a small field on Red House farm, he had discovered what he took to be Roman masonry, some of it reddened as if by fire. This information was duly passed on to Professor, later Sir, Ian Richmond, and, after a brief preliminary investigation two months later, a full-scale excavation was arranged by Durham University Excavation Committee. This, supervised by Mr. C. M. Daniels, began in November 1955, continued for the whole of 1956 and 1957, and was fully reported on in 1959. What had at first been thought of as a villa, proved to be a substantial military bath-house of pre-Hadrianic character; it had without doubt been carefully dismantled and abandoned so soon after its construction that only minor repairs and modifications had been made to it. Details of the building are irrelevant here, and are in any case readily accessible in Mr. Daniels's report.

There remained, however, the questions of the date of the building, and of its relationship to the successive forts on the Corbridge site. Parts of two independent specialist reports, written, naturally, without fore-knowledge of what was to be learnt later, may be quoted. Mr. B. R. Hartley wrote of the samian that "it is a compact series, closely matched in general character by a group found recently at Inchtuthil in circumstances which allow its deposition to be dated to *c.* A.D. 90. None of the Red House material need have been made earlier than A.D. 80, none *necessarily* later than A.D. 85. The evidence would not be inconsistent with an abandonment *c.* A.D. 90". Mr. Gillam summarized his report on the other pottery by writing that it "would not conflict with a conclusion that demolition came appreciably before A.D. 100."

While there were those who regarded the structures as third-century, most of those involved accepted that they were almost certainly Flavian, possibly specifically Agricolan, and that demolition had taken place within the Flavian period.

At that time it was widely held that the earliest fort on the Corbridge site was Agricolan. There were those who thought it might be earlier still, but nobody enter-

tained the thought, let alone voiced it, that the foundation date might be later than the time of Julius Agricola. The conclusion seemed inescapable that the remains at Red House were those of the bath-house of the garrison of the earliest fort at Corbridge. Red House baths lie to the west of the Corbridge forts and are almost exactly a kilometre distant, which is an unusually long way. The baths are known to have used the water of the Redhouse Burn, but there seems no good reason why other baths should not have used the water of the Cor Burn, which is not only larger, but is also nearer to the fort site. On the other hand, the garrison of the first fort at Corbridge was, and still is, believed to have been the *ala* Petriana, a cavalry regiment. The idea of mounted bathing parades, making light of a ride of some 1,350 *passus* from fort to bath-house and back, gained and continued to command some acceptance for fourteen years, though the excavator and others closely involved were not wholly convinced.

So matters rested until the summer of 1973, when, as part of a Durham University Extra-Mural training course, directed by Dr. B. Dobson and Mr. Gillam, two areas on the Corbridge fort site were investigated. This was expected to be the final excavation on that part of the site which is in guardianship, and therefore available for excavation. It was to be the ultimate excavation after an aggregate of forty-four seasons of work, spread out over sixty-eight years. The object of the investigation was to obtain answers to certain specific questions concerning the plan of the earliest fort on the site. It was not so much that the questions had remained unanswered for so many years, as that, for long, it had been neither necessary nor possible to ask them. It now not only became possible but, if answers were to be found at all, imperative.

The questions were duly answered. In addition some totally unexpected and significant fresh evidence was obtained. First six, and later a further three, fragments of samian pottery were found, deep in a post-trench. The trench was quite certainly that of a building of the earliest fort, as was shown by the plan, by the structural sequence and by the character of the trench itself. Although there had been earlier excavation on that part of the site, hardly surprising in the course of nearly seventy years, the particular stretch of trench, at that depth, was quite undisturbed. The fragments had lain where they were found from the moment the post-trench was filled during the erection of the building, which was, in fact, the *principia* of the earliest fort. The fragments were all from the same vessel, and there were joins between some of them. The vessel was a South-Gaulish decorated bowl of form 37. Making use of the usual scholarly reference works, Mr. H. K. Bowes, who was taking part in the excavation, was able to identify the scheme of decoration, and, using the dates in the books, to assign the vessel to not earlier than the reign of Domitian, that is, to be precise, later than A.D. 81. This was a judgement with which Mr. Gillam concurred. The discovery seemed firmly to rule out the possibility, already mentioned, that the earliest fort at Corbridge was pre-Agricolan, belonging for example to the term of office of Petillius Cerialis, A.D. 71–74. At the same time, the discovery raised a new problem. It was usually assumed that Corbridge had been founded in the course of Julius Agricola's first campaign in northern Britain, in A.D. 79. If the dating of the samian vessel to the time of Domitian was to be taken literally, then there was a discrepancy of a year or two. With non-

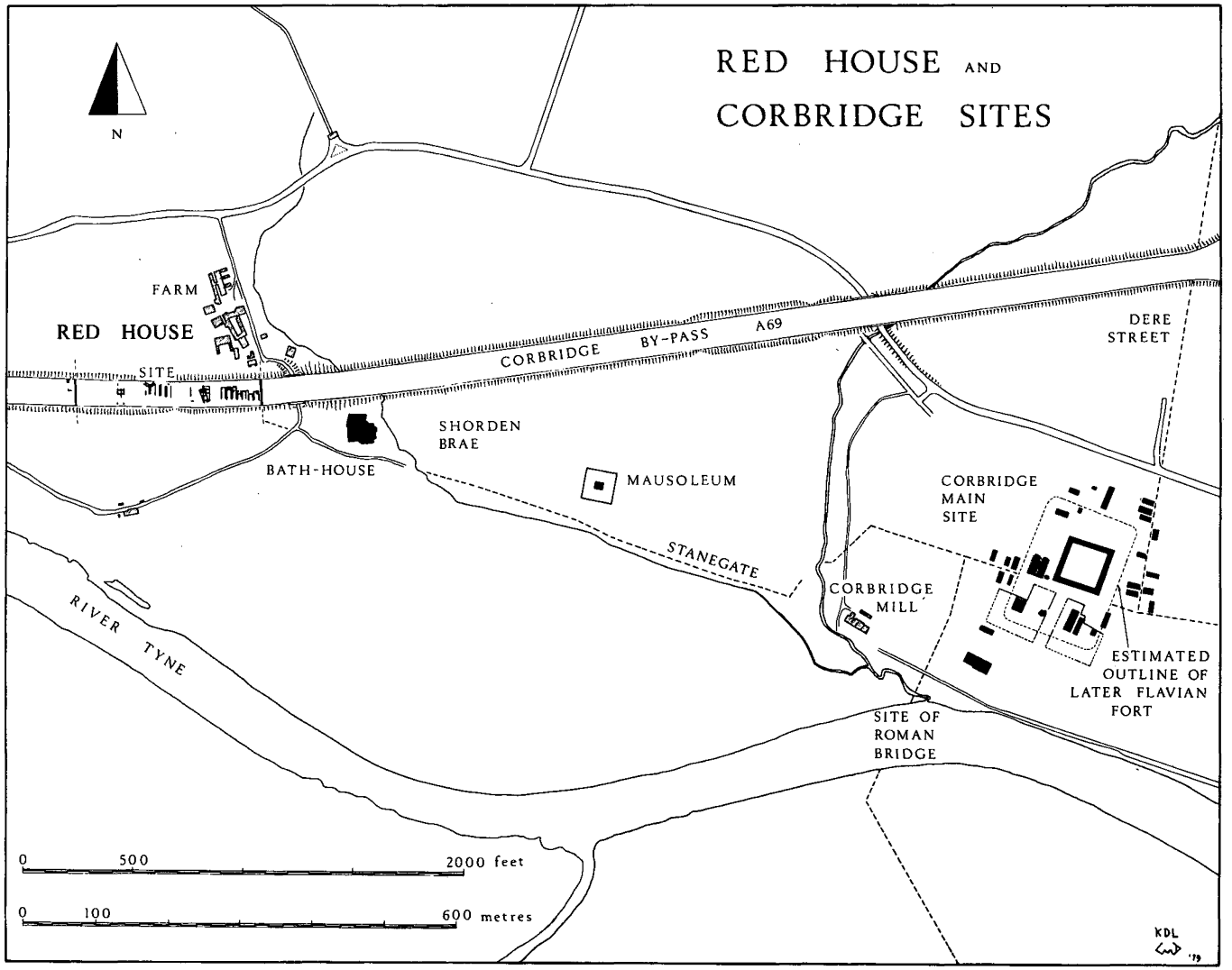

RED HOUSE AND
CORBRIDGE SITES
N
FARM
RED HOUSE
SITE
CORBRIDGE BY-PASS A69
DERE STREET
SHORDEN BRAE
BATH-HOUSE
MAUSOLEUM
CORBRIDGE MAIN SITE
STANEGATE
CORBRIDGE MILL
RIVER TYNE
ESTIMATED OUTLINE OF LATER FLAVIAN FORT
SITE OF ROMAN BRIDGE
0 500 2000 feet
0 100 600 metres
KDL

Fig. 1.

samian pottery discrepancies of more than a few years are frequently met, and they may be readily dismissed as due to the approximate nature of the dating. With figured samian of the Flavian period, within which the dated destruction of Pompeii falls, discrepancies need to be taken more seriously.

It is a measure of the urgency which was felt that even before the further three fragments, all from the same vessel, were found, rubbings of the first six pieces were sent to Mr. Hartley, for a second, and even more expert, opinion. He was told neither what the provisional conclusion had been, nor the stratification of the pieces. He replied to the effect that the vessel was Domitianic, and that it was not likely to have been made before A.D. 90, and certainly not before A.D. 85. This had the effect of widening the already awkward gap by at least four years. As he was then unaware of the significance of the findspot, Mr. Hartley took this no further. Three months later, when he had learnt about the findspot, in an oral discussion with Mr. Gillam, Mr. Daniels and others, he gave it as his firm opinion that the first fort at Corbridge could not possibly be as early as the time of Julius Agricola. Mr. Hartley also said that, as it was unthinkable that there should be no Agricolan fort at so important a site as the crossing of the Tyne by Dere Street, somewhere an Agricolan fort was lurking undiscovered.

Various other points were discussed. Among them the fact, long recorded but only then seen to be significant, that there is a certain kind of mortarium, *Gillam type* 237 being one of its several varieties, which is found abundantly at Malton, in the eastern part of Yorkshire, in both Agricolan and pre-Agricolan contexts. It has also been found at Cardean, Fendoch, Inchtuthil, Newstead and Oakwood, all Agricolan sites in Scotland. And yet, this kind of mortarium has only once been recorded from Corbridge, and that from the level of the second, not the earliest fort. Nor is any unpublished specimen known, despite the size of the total yield of Flavian pottery from Corbridge. This would usefully have corroborated the evidence of the late South-Gaulish samian, had corroboration been needed, but the real significance was that the only mortarium found in Mr. Daniels' excavation in the Red House baths was of this kind.

It began then to look as if the Red House baths were earlier than the earliest fort at Corbridge, and, not only that, and this was important, that they might be the baths of the garrison of the as-yet undiscovered Agricolan fort. This usefully narrowed the area of search for that fort.

A search for the Agricolan fort on the ground was impracticable because of a certain lack of sympathy between the investigators and the heir of that landowner who had been so co-operative in the 1950s. Mr. Daniels and Mr. Gillam were, of course, already familiar with the general topography. For the rest, reliance had to be placed on maps and on aerial photographs. A vertical aerial photograph which dimly showed the outline of the defences of what later proved to be the Agricolan fort, was already in existence. This was not known, however, at the time of the investigation, for the photograph was only later discovered and made available by the Department of the Environment.

Some years previously Professor N. McCord had taken certain oblique aerial

photographs of the Corbridge site, with other landscape in the background. From the point of view of topography, rather than of crop-marks, these proved most useful. With these, with the O.S. maps, and with the as yet undimmed memories of ascents, descents and level movements on the ground, it was possible to mount an operation in fieldwork, without setting foot on the field, with gratifying success.

The problem was to find a fort, thought to be of between two and three hectares, though in fact it subsequently proved to be larger, within an area of about a hundred hectares, without being completely certain that it existed at all. A needle, which might not be there at all, had to be found, admittedly not in a stack, but in a bale which could not be handled. Nine months later, shortly after the first 36 by 6 m trial trench was dug, parallel post-trenches, one of them cobble-filled, were encountered, and Flavian pottery was found. Though it was not certain at the time, the post-trenches proved to be not merely Roman, for even this was doubtful at first, but part of the Agricolan installation which was being sought.

The search was helped, as has been seen, by the fact that the Agricolan fort was unlikely to lie beyond easy marching distance of the Agricolan baths at Red House; no more long-distance mounted bathing parades. Again, as the putative fort was not on a linear frontier, it would be likely to obey the normal rules for siting; anyone who has studied Roman forts in Scotland and northern England for a few decades is as familiar with these rules as Julius Agricola was himself. Finally, there was the general topography, studied, as has been seen, through maps and photographs.

Though there are minor variations, by and large three different levels of land are encountered by anyone moving north from the Tyne west of Corbridge. First there is the flat and level flood-plain, part of which is known as Redhouse Haughs; names generally end in haugh all along the river. Opposite Corbridge the flood-plain is broader on the south side of the river than on the north; opposite the Red House it is broad on both sides. Secondly, north of the flood-plain, there is a step-like change to a terrace, of the order of ten metres above it. The terrace is almost as level as the flood-plain, though it is broken through by the valleys of two streams, the Cor Burn and, further west, the Redhouse Burn. These once flowed separately into the Tyne, but now join it together. Thirdly, north of the terrace, there is a further, though less abrupt, rise in level, a rise which continues, quite steeply in places, far beyond the immediate area of the Red House baths.

The site of the fort was unlikely to be on the haughs, which had probably been liable to flooding. Nor was it very likely to be on the rising ground away from the river. The intermediate terrace seemed to offer the most useful choice of sites. The terrace east of the Cor Burn was occupied by the Corbridge forts, which had been proved to be post-Agricolan; this was therefore the one area where it was known for certain that the Agricolan fort would not be found. The terrace between the Cor Burn and the Redhouse Burn, known as Shorden Brae, was the site of an early second-century mausoleum, excavated by Mr. Gillam and Mr. Daniels fifteen years before; nothing earlier had been found. Aerial photographs were available, and although they showed various clear crop-marks, including that of the re-interred mausoleum, they revealed nothing which remotely resembled the defences of a Roman fort. This left only one real

RED HOUSE, CORBRIDGE 1974

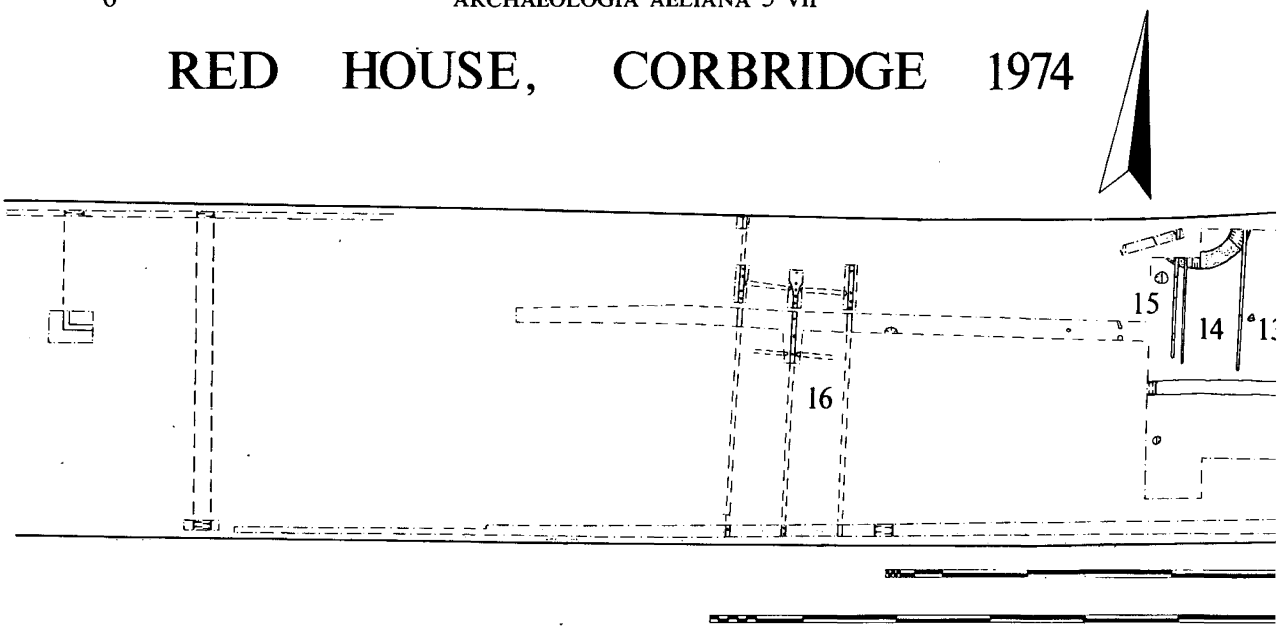


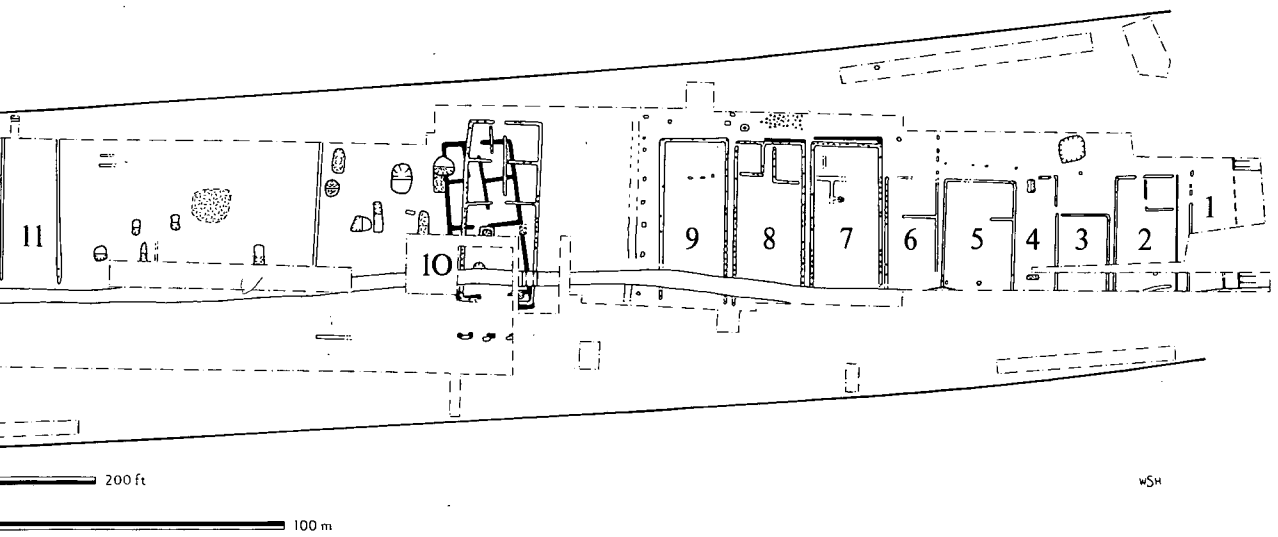
Fig. 2.

possibility for the site of the Agricolan fort. This was the terrace immediately west of the Redhouse Burn, on the same side of the burn as the bath-house; the fort might lie between the edge of the terrace and the buildings of Red House farm; it later emerged that the farm partly overlay the fort. After six years, and with hindsight, this conclusion may seem obvious, but not everyone thought that it was at the time.

A new road, to by-pass Corbridge and Hexham, had been planned for some time. It was to run on the north side, and clear of, Corbridge village and the known part of the Corbridge Roman site. Further west it was to descend gently on to the terrace between the Cor Burn and the Redhouse Burn and to continue beyond it across the site of the hypothetical fort. A rescue excavation had already been arranged, by the Department of Environment, for the stretch of new road from north of Corbridge to the Redhouse Burn. At the beginning of 1974 the D.o.E. agreed that the sector already set aside for excavation should be extended two hundred metres to the west, across the Redhouse Burn.

The excavation began in the last week of July and continued until mid-September, directed by Mr. Gillam and Mr. Daniels. At this point, as they were due to leave for the Tenth International Limes Congress in Germany, Mr. Hanson was invited to join the directing staff. The time originally allowed by the contractors for excavation had by now run out, but they kindly agreed to an extension, and work continued under one or another director until well into October, when time and money finally expired.

At first two areas approximately 6 by 36 m were opened by hand over what became buildings 10 and 14–15. Once the presence of Roman structures had been established,



these areas were extended by machine stripping, first east, and then eventually west of building 10. It was clear that as a result of machine stripping detail was sometimes lost (as with furnace 10). The hand-dug areas, however, especially the complex in and around building 10, provided a control and indicated that the survival of floor levels was at best fragmentary, and had been badly affected by agricultural activity both ancient and modern. It was unfortunate that the unexpected size of the site militated against total excavation, despite the liberal use of machinery and a considerable extension of the originally allotted time and finance, a point which should be borne in mind if and when any further excavation of this important site takes place.

The directors wish to record their gratitude for the support, help and co-operation which they received from many people, and without which there would have been no excavation: The Department of the Environment, especially Miss D. Charlesworth, the North-East Road Construction Unit, Department of Transport, especially Mr. M. Jackson, John Mowlem and Co. Ltd., especially Mr. G. Handcock and Mr. R. Hollis, and the Department of Archaeology of the University of Newcastle.

Mr. I. D. Caruana, Mr. S. J. Hill, Mr. J. N. Dore and Mr. T. M. Robertson acted as site supervisors at various dates, Miss Fiona Harris was finds assistant throughout, Mrs. Vanessa Winchester, Mr. D. Powlesland and Miss Carol Alexander together or separately were responsible for the planning and Mr. P. J. Carmody for the overall survey, while Mrs. Caroline Stringer gave considerable help with the administration.

In as far as it has proved possible, this report has been divided into two parts: first, the presentation of the evidence with the minimum of interpretation; then the marshalling of that evidence and the drawing of conclusions. Mr. Gillam and Mr. Daniels

wrote the introduction, Mr. Hanson the main body of the text with some additions by Mr. Daniels. Mr. Dore and Mr. Gillam wrote the pottery report. The specialist reports are individually acknowledged. Mr. Hanson wishes to thank Dr. E. A. Slater and Dr. W. H. Manning for discussing the interpretation of the furnace features. The photographs are by Mr. Hanson, except for nos. 1 and 2 by Mr. Daniels and pls. I, IX a and b by the Dept. of Photography, University of Newcastle upon Tyne. Figs. 1 and 23 were prepared by Mr. Daniels and drawn by Mr. K. Lawson, nos. 3–7 were drawn by Alison McGhie, nos. 13, 14 and 19–22 by Mrs. Miriam Daniels and nos. 15–18 by Mr. Dore; the rest are the work of Mr. Hanson.

Finally, all those who knew him wish to remember Tom Robertson, who was tragically killed a year or so after the excavation ended. Always an enthusiastic excavator and keen participator, his death was a sad loss to us all.

THE EVIDENCE

Pre-Roman features

It is hardly surprising, given the position of the site on a raised terrace on the north bank of the River Tyne, and the large area that was excavated, that some evidence of pre-fort activity should come to light. Unfortunately these remains do not make a coherent picture.

Palisade trench (fig. 3)

At the southern end of building 2 was a shallow slot 100–200 mm wide running at an oblique angle to the construction trenches of the Roman building. Only some 1·5 m was revealed as it curved into the baulk at the southern limit of excavation. The slot was 50–100 mm deep and apparently contained 4 small stake-holes (40–50 mm in diameter) approximately 200 mm apart driven below the bottom of the slot to a depth of 100 mm. The only associated finds were some small fragments of Roman pottery.

Immediately north of the palisade slot was a possible post-hole 250 mm in diameter, with a V-shaped profile. It was 120 mm deep and contained a similar silty fill to that of the palisade.

Two further post-holes within the area of building 5 were of uncertain association with it, and may, therefore, relate to the earlier occupation (figs. 3 and 11).

Neolithic pit (figs. 4 and 11, pl. IIb)

One metre north of the west wall of building 8 was a circular pit 0·95 m in diameter. It had survived to a depth of only 100 mm but contained within its black sandy fill a number of flints. It had been disturbed during the construction of the Roman fort, for

RECESSED BUILDINGS

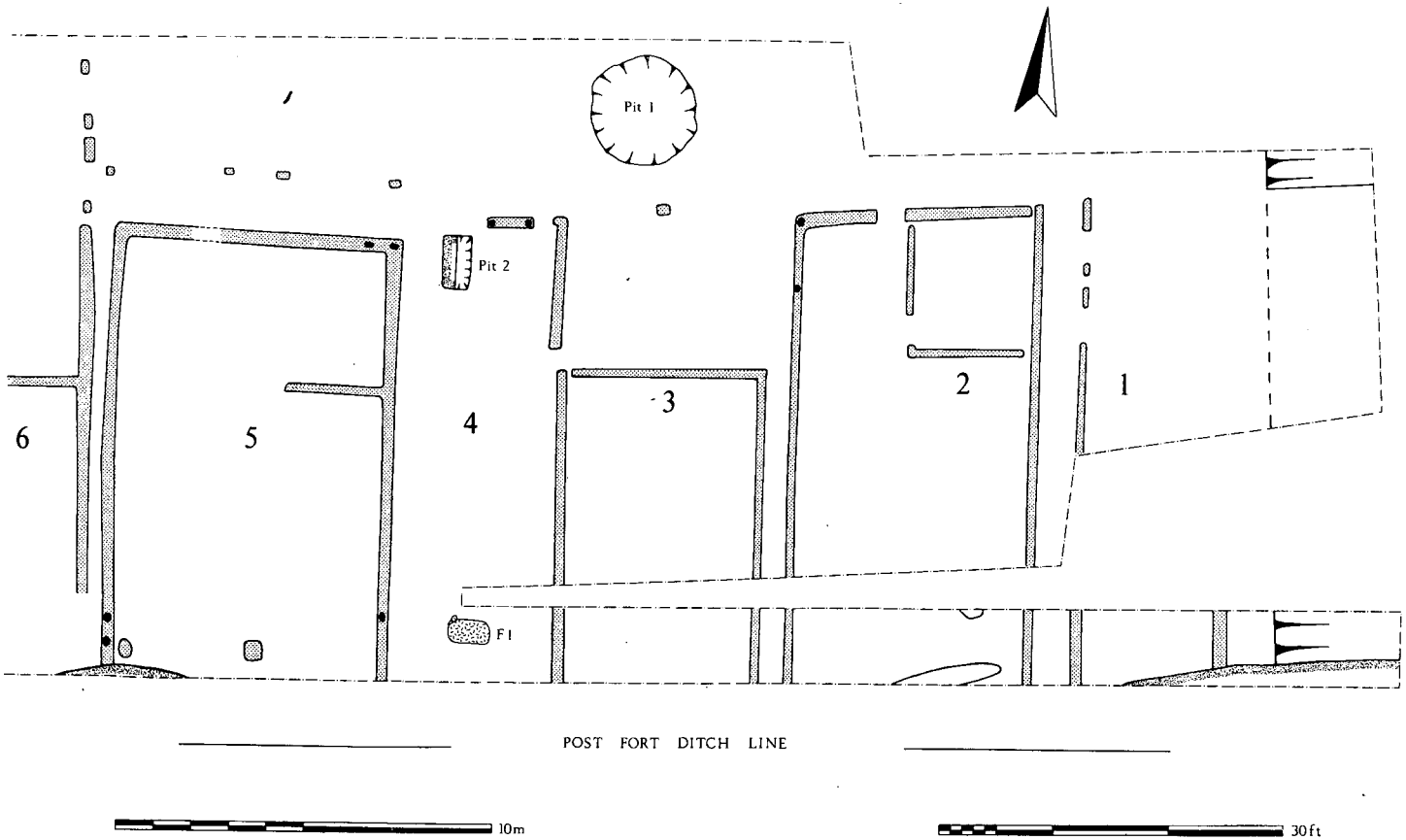


Fig. 3.

a post-hole forming part of the putative verandah of building 8 had been cut into it and a number of flints were found in the post-trenches of that and other buildings on the site (see p. 70).

Ring-ditch (figs. 6 and 9)

In the extreme north-west corner of the area of extensive machine stripping, half of a probably circular shallow ditch (0·45 m deep) projected from the baulk and ran beneath the post-trenches of buildings 14 and 15. The compact layers of grey silt suggested that the ditch had filled naturally over a period of time. The ditch was 1·85 m wide, and if circular would have had a radius of 5·7 m. The only find from the sections excavated was a fragment of pre-Roman pottery (p. 56).

Defences

Because of the position of a major access route through Red House farm it was never possible to cut a full section across the east ditch, although half sections were obtained at two points. These indicated that the ditch would have been at least 5·0–5·6 m wide and 1·6 m deep. The illustrated section (fig. 8) contained a fairly homogeneous stony loam which suggested the strong possibility of deliberate backfilling, although this contrasted with the evidence from the second, more southerly section, which contained a silty fill for up to 1 m from the bottom. Unfortunately, for safety reasons, this section was open for only a brief period. There were no traces of a rampart inside the ditch, unless the parallel construction trenches interpreted as building 1 (below) are re-interpreted as traces of a timber-revetted "box-rampart". While the distance between the construction trenches is of the right order of magnitude, the dimensions of the trenches themselves seem too insubstantial. Furthermore, such ramparts are rare in Britain.

The west ditch eluded discovery until the very end of the excavation when it appeared in a pipe-trench cut by the road contractors across the northern side of the site. Its alignment was checked by a hand-dug trench just within the southern limits of excavation which indicated a U-shaped ditch 1·95–2·15 m wide and 1·15 m deep with a very sandy fill containing lenses of burnt sand and charcoal and a droplet of lead (fig. 8). What was at first taken to be a second ditch 14 m beyond this proved to contain the surviving timbers of a wall (p. 32 and fig. 8).

Only 3·3 m east of building 16, the long machine-dug trench across the southern side of the site sectioned a V-shaped ditch 1·75 m wide and 0·9 m deep filled with compact clayey-silt (fig. 9). This ditch aligned almost exactly with a pit or possible ditch butt-end in the central machine-cut trench, and thus may represent a demarcation line across the site. Alternatively, the ditch detected on the southern side of the site may be simply the continuation, after a ninety degree turn, of the post-fort ditch which ran east–west across the whole of the machine-stripped area of the site, and of which its filling was more reminiscent.

OPEN–ENDED BUILDINGS

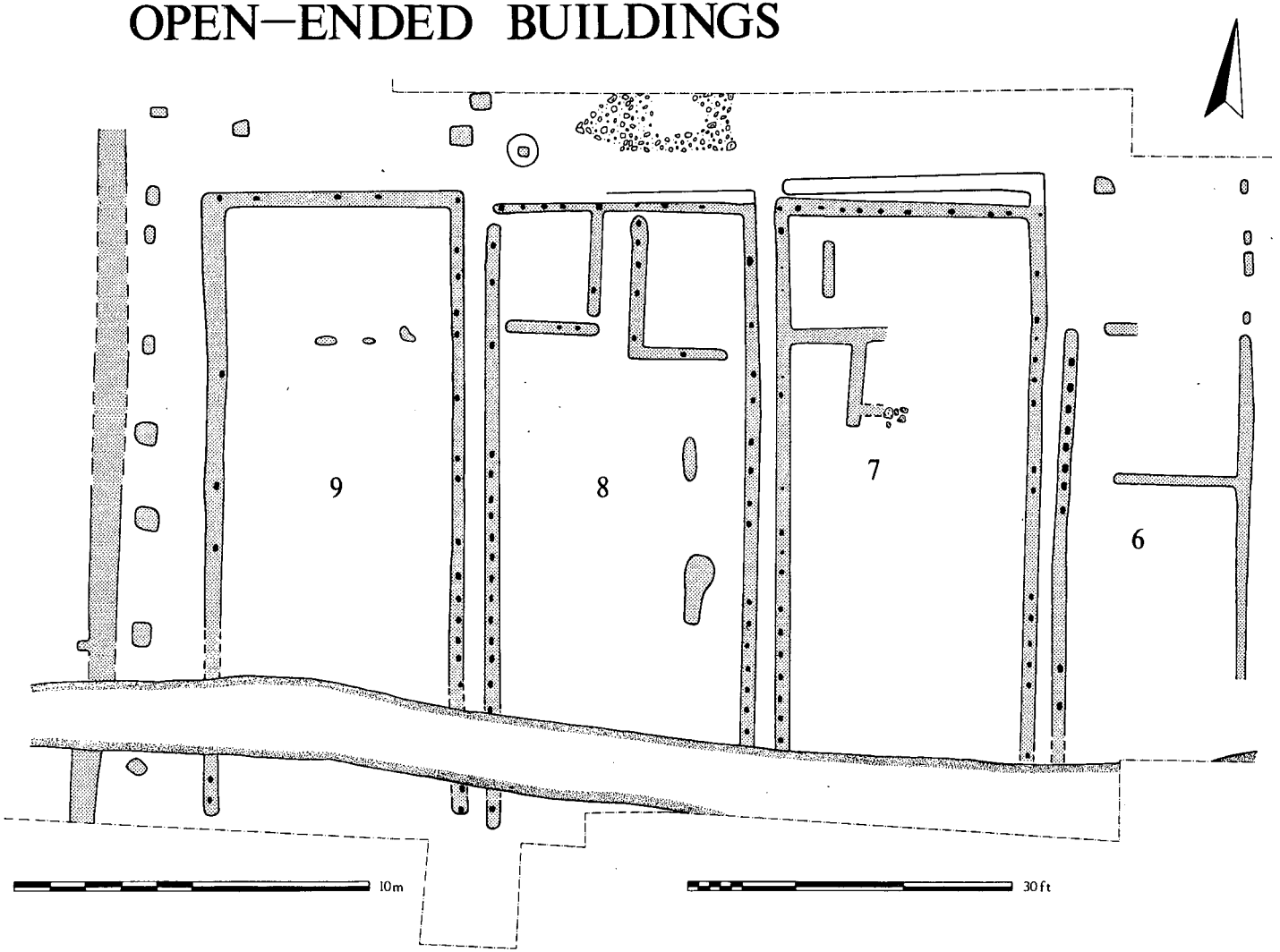


Fig. 4.

INTERIOR

Roads

No certain road surfaces were uncovered during the excavation. This may have been partly the result of the stripping of the site by machine, although it seems unlikely to the excavators that any such surfaces could have been removed totally without recognition. Agricultural activity is attested, if the scatter of pottery in the topsoil is anything to go by, from the second century onwards, and seems to have taken its toll.

That there must have been an east–west road immediately to the south of the block of buildings excavated is indicated by their design, which points to ready access from the south to their open ends. The apparent continuation of building 16 from north to south of the area investigated would argue against the continuation of this road across the full length of the site.

Traces of a cobble surface (fig. 4) were found to the north of building 8, ending on line with the limit of its putative norther verandah. The cobbles varied in size up to 200 mm in diameter, and produced a large quantity of finds:

fragments of Dr. 18R and 18/31R, fragments of Dr. 29 (no. 4), 4 jars in grey fabric (nos. 12, 15, 23 and 42), 2 bowls in light grey fabric (nos. 74 and 75) and one in light red fabric (no. 54), a dish in grey fabric (no. 78), a mortarium in pale buff fabric stamped OF CACUMATTI (no. 79), a ring necked flagon in orange fabric (no. 1) and numerous other fragments of coarse ware, 2 flints, a small polished stone (no. 49), a piece of bronze strip (no. 13), six lead droplets, 3 nails (1 bent), and a fragment of bone.

The cobbles are tentatively identified as the remains of a road surface though it is surprising to find so much demolition material in association.

Buildings (fig. 2)

The buildings described below have been numbered 1 to 16 from east to west across the site. All building dimensions quoted are internal, measured from the inside edge of one post-impression to the inside edge of another on the opposite side of the building. In the absence of post-impressions it is assumed that they would have been centrally positioned and the measurements taken from just inside the centre of the post-trench. All measurements quoted are metric, but to facilitate comparison with older excavation reports where imperial measurements are used, a table of equivalents is provided below.

CONVERSION TABLES

Millimetres into Inches

mm	0 inch	10 inch	20 inch	30 inch	40 inch	50 inch	60 inch	70 inch	80 inch	90 inch
0	—	0·394	0·787	1·181	1·575	1·969	2·362	2·756	3·150	3·543
100	3·937	4·331	4·724	5·118	5·512	5·906	6·299	6·693	7·087	7·480
200	7·874	8·268	8·661	9·055	9·449	9·843	10·236	10·630	11·024	11·417
300	11·811	12·205	12·598	12·992	13·386	13·780	14·173	14·567	14·961	15·354
400	15·748	16·142	16·535	16·929	17·323	17·717	18·110	18·504	18·898	19·291
500	19·685	20·079	20·472	20·866	21·260	21·654	22·047	22·441	22·835	23·228
600	23·622	24·016	24·409	24·803	25·197	25·591	25·984	26·378	26·772	27·164
700	27·559	27·953	28·346	28·740	29·134	29·528	29·921	30·315	30·709	31·102
800	31·496	31·890	32·283	32·677	33·071	33·465	33·858	34·252	34·646	35·039
900	35·433	35·827	36·220	36·614	37·008	37·402	37·795	38·189	38·583	38·976
1000	39·370	39·764	40·157	40·551	40·945	41·339	41·732	42·126	42·520	42·913

Metres into Feet

m	0 feet	1 foot	2 feet	3 feet	4 feet	5 feet	6 feet	7 feet	8 feet	9 feet
0	—	3·28	6·56	9·84	13·12	16·40	19·69	26·97	26·25	29·53
10	32·81	36·09	39·37	42·65	45·93	49·21	52·49	55·77	59·06	62·34
20	65·62	68·90	72·18	75·46	78·74	82·02	85·30	88·58	91·86	95·14
30	98·43	101·71	104·99	108·27	111·55	114·83	118·11	121·39	124·67	127·95
40	131·23	134·51	137·79	141·08	144·36	147·64	150·92	154·20	157·48	160·76
50	164·04	167·32	170·60	173·88	177·16	180·45	183·73	187·01	190·29	193·57
60	196·85	200·13	203·41	206·69	209·97	213·25	216·53	219·82	223·10	226·38
70	229·66	232·94	236·22	239·50	242·78	246·06	249·34	252·62	255·90	259·19
80	262·47	265·75	269·03	272·31	275·59	278·87	282·15	285·43	288·71	291·99
90	295·27	298·56	301·84	305·12	308·40	311·68	314·96	318·24	321·52	324·80
100	328·08	331·36	334·64	337·93	341·21	344·49	347·77	351·05	354·33	357·61

Building 1 (fig. 3; pl. Ib)

Only fragmentary traces of this building were found. The west wall was well defined by a post-trench 260–400 mm wide, 70–200 mm deep and at least 13 m long. Only the southern end of the east wall was seen, and then only briefly in the section which was rapidly backfilled for safety reasons. No traces of a north wall were detected. The western trench was too deep for an eaves-drip, too shallow for a rampart revetment, and did not have the characteristics of a drainage channel (fig. 10). With the eastern traces it would produce a building 3·75 m wide. No finds were recovered from the construction trenches.

Building 2 (fig. 3, pl. Ib)

Separated from building 1 by a gap of *c.* 1 m, building 2 was 6·4 m wide and at least 12·3 m long. A break in the post-trench of the north wall indicated an entrance 0·75 m wide just to the west of the centre of the building. In the north-east corner was a room 3·3 by 3·7 m with a doorway 0·8 m wide in its western side. The post-trenches of this building were some of the narrowest on the site, the exterior walls varying from 200–430 mm wide and 120–340 mm deep, and the partition walls from 180–220 mm wide and 120–400 mm deep (fig. 10). It was interesting to note that the post-trench was not continuous at the north-east corner, nor did the partition trenches run into the outer walls. Only two post-impressions were recorded, both in the north-west corner. From the post-trenches came fragments of Dr. 18 and Dr. 35, and a few fragments of coarse ware.

Building 3 (fig. 3)

Building 3 was set back *c.* 4 m from the alignment of the north walls of the other buildings in this area, and was separated from building 1 by a narrow gap only *c.* 0·6 m wide. It was 5·3 m wide and 8 m long, although as with all of this first group of buildings (1–6) its southern end did not lie within the area excavated. A trench was dug along the line of the southern limit of the area available for excavation but no post-trenches were found. It seems most likely that the southern ends of this group were in line with the rest of the buildings on site which would give a total length of *c.* 10 m for building 3. The post-trenches of this building were 200–380 mm wide and 200–340 mm deep (fig. 10), and were not continuous at the north-western corner. No finds were recovered from the construction trenches.

Building 4 (fig. 3)

It was not clear whether this was a building proper, a lean-to shed or merely a screen. The 4·5 m gap between the west wall of building 3 and the east wall of building 5 was partially enclosed at its northern end by a short trench containing two post-impressions *c.* 1 m apart. A further trench continued the line of the west wall of building 3, 3·5 m to the north after a short gap. The post-trenches were 300–40 mm wide and 160–260 mm deep and contained no finds. Enclosed within this structure was a pit (no. 2. p. 24), and a probable hearth (no. 1. p. 30).

Building 5 (fig. 3)

This building was similar in plan, but somewhat wider than building 2, being 7·3 m wide and at least 11·6 m long with a three-sided room 3·9 by 2·6 m in the north-east corner. The post-trenches were continuous on all sides of the building, but a probable entrance was revealed in the north wall *c.* 1·8 m from the north-west corner by a stretch of cleaner infilling 0·7 m wide where the post-trench had been dug, but backfilled

almost immediately without the insertion of posts. It is not certain whether the post-hole almost centrally positioned in the southern end of the building is contemporary.

The post-trenches were 300–50 mm wide and 180–400 mm deep (fig. 10). Only five post-impressions were found; one circular, 250 mm in diameter, the others sub-rectangular, 140–50 by 210–50 mm, all extending 50–100 mm below the bottom of the trench. One post-impression produced a fragment of birch charcoal. The two pairs of post-impressions were 0·55 and 0·7 m apart. Approximately 1·7 m north of the north wall were 3, or possibly 4, post-holes 250–300 mm in diameter but only 90–120 mm deep which may represent the supports of a verandah. From the construction trenches came two jars in grey fabric (nos. 11 and 49) along with other coarse ware fragments and two nails.

Building 6 (figs. 3 and 4)

Building 6 was also similar in plan to building 2 although surviving in a somewhat fragmentary state. Separated from building 5 by a narrow gap only 0·35–0·6 m wide it was 12 m long but only 5 m wide with a single internal partition defining a three-walled room 4·1 by 3·6 m internally. The trenches of the external walls were 300–30 mm wide but only 100 mm deep, which is presumably why some could not be traced. It is difficult to explain their shallowness, as excavation in this area was not noticeably deeper than elsewhere on the site. The partition wall was 210 mm wide and 150–90 mm deep. Very slight traces of a possible continuation of the east wall to the north may indicate that it was originally intended to extend the building to the northern alignment of buildings 7–9. A series of sub-rectangular post-impressions was recorded in the west wall, spaced at 0·5–0·7 m intervals allowing for obvious gaps. No finds were discovered in the construction trenches.

Building 7 (fig. 4, pl. IIa)

This building is the first from the east on the alignment of the remaining buildings on the site. Situated only *c.* 0·5 m west of building 6 it was at least 15·2 m long, though probably approximately two metres longer on the parallel of the next two buildings to the west, and 7·1 m wide. Incomplete traces of a number of internal walls including a possible central post set on a stone base failed to make a clear pattern of rooms. Of particular interest was the evidence of a mistake in laying out the trenches, for 0·25–0·60 m beyond the north wall on a slightly different alignment lay a further post-trench connected at its eastern end to the east wall of the building, but containing no post-impressions. The post-trenches for the external walls were 330–60 mm wide and 160–300 mm deep, while the partition walls were 280–300 mm wide and 160 mm deep. A total of 36 post-impressions was recorded from this building, all from the external walls. Both round and rectangular posts seem to have been used indiscriminately and all were filled with grey silt and charcoal. Eleven contained identifiable fragments, of which 9 were oak, one ash and one hazel. Despite the disturbance of the holes on removal of the posts their dimensions give some idea of the order of

magnitude of the timbers used. The circular impressions varied in diameter from 50–150 mm and the sub-rectangular ones were 70–140 by 130–200 mm. Allowing for gaps the spacing between the posts ranged from 0·5–0·9 m although it was not difficult to detect an approximate module of 0·6 m. In addition 5 possible stake-holes ranging in diameter from 50–180 mm were discivered in the west wall. From the construction trenches came a fragment of window glass and an amorphous piece of iron (no. 45).

Building 8 (fig. 4, pls. VIa and IIb)

This was one of the best surviving buildings on the site. It was 17·4 m long and 7·0 m wide and lay squeezed in between buildings 7 and 9, only 0·8 m from the former and 0·9 m from the latter. At its northern end were two rooms 2·75 by 3·35 m and 3 by 4 m separated by a passageway *c.* 1·1 m wide. Apparently 1·5 m away from, and running parallel to, the eastern wall were faint traces of a further partition. The southern end of the building was completely open. A similar mistake to that seen in building 7 had been made in laying out its northern wall, but this time it had been corrected before the trench on the incorrect alignment had been completed. Only one of the post-trenches for the partition walls continued into the outer post-trench, and the post-trench of the outer wall was not continuous at the north-west corner.

The external wall post-trenches showed greater variation in depth than the partition wall trenches—100 to 330 mm as opposed to 200–300 mm—but both were consistently 300–400 wide (fig. 10). Some 49 post-impressions were recognized, filled with grey silty material and some charcoal, mostly in the outer walls but 9 examples from the partition walls. Eight post-impressions produced identifiable charcoal fragments of which 6 were oak, 2 hazel and one ash. Both circular and sub-rectangular impressions were present in approximately equal numbers, the former varying in diameter from 70–170 mm with the outer walls normally 150–160 mm and the partitions 110–130 mm, while the sub-rectangular examples in the outer walls varied from 80–170 by 130–200 mm and in the partitions from 100–40 by 150–60 mm. The spacing between posts ranged from *c.* 0·45–0·8 m allowing for the more obvious gaps, but the figure of 0·6 m was sufficiently consistent to suggest that it was the intended module. From the construction trenches came 4 flints, a dupondius of Vespasian or Titus (no. 3) to which was adhering a fragment of plain-weave textile (p. 74), 2 nails, a fragment of a bowl in light red fabric (no. 54) and other coarse ware fragments.

Building 9 (fig. 4, pl. IIIa)

Like buildings 7 and 8 this building was open at its southern end. It measured 17·2 m by 6·8 m with very faint traces suggesting the presence of a partition wall running across the width of the building *c.* 4 m from its northern end. The presence of a verandah *c.* 1·7 m wide on the west side of the building was attested by some 7 post-holes (fig. 11) beyond which, approximately 0·6 m to the west, was an eaves-drip trench 20–30 mm deep. Three or four post-holes on the north side, also *c.* 1·7 m away, indicated that the verandah continued round the corner of the building.

The post-trenches were 250–400 mm wide and 120–350 mm deep (fig. 10) and contained some 27 post-impressions, all of which were sub-rectangular from 80–160 mm by 130–200 mm and generally *c.* 0·6 m apart, although distances varied from 0·5 m to 1 m. Seven post-impressions produced identifiable charcoal fragments of which 4 were oak, 2 hazel and one birch. The post-holes of the verandah, none of which contained post-impressions, were all sub-square and seemed to fall into two groups; one 180–250 mm across and the other 400–600 mm. None were more than 150 mm deep. From the construction trenches came a piece of flint and some fragments of coarse ware.

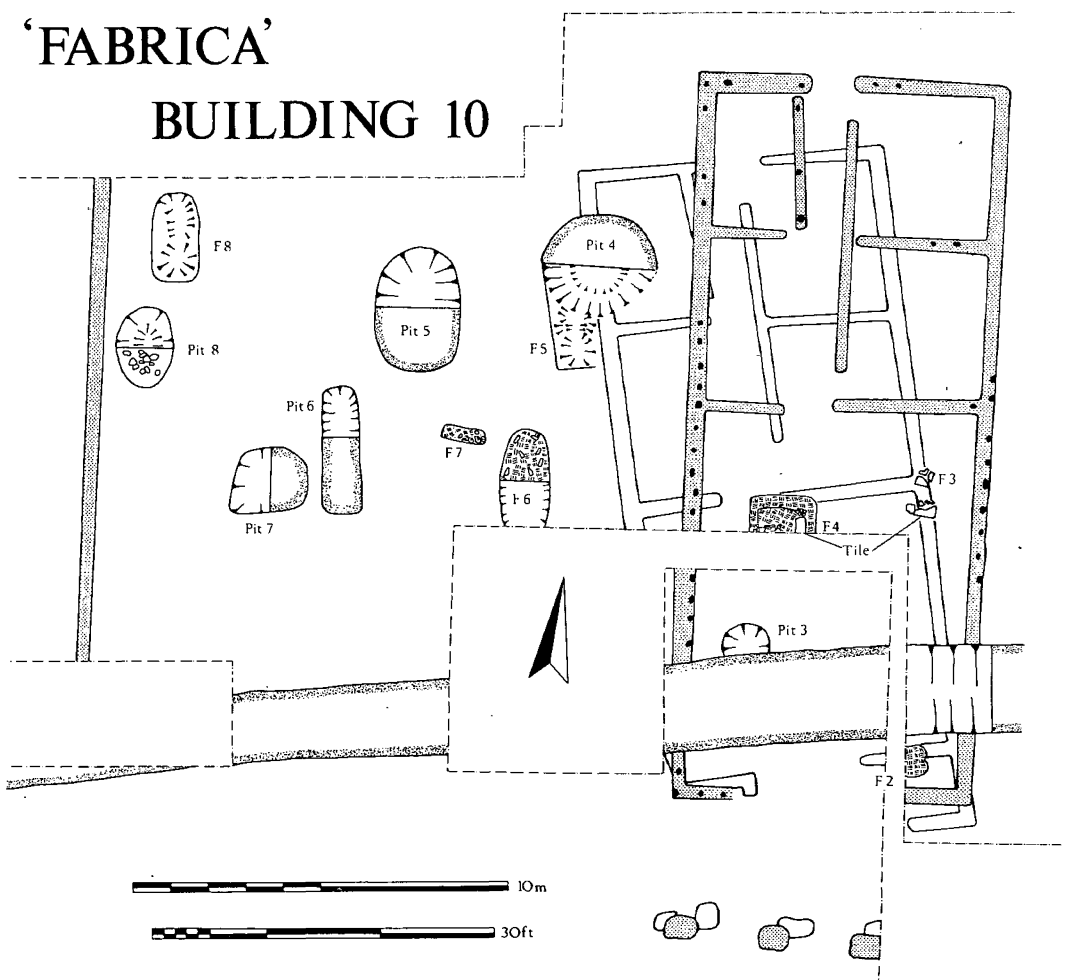


Fig. 5.

Building 10 (fig. 5, pls. IIIb and IVa)

Excavation here revealed two buildings with the same ground plan superimposed one upon the other, the earlier being on a slightly different alignment to the later, reminiscent of the mistakes in laying out noted already in buildings 7 and 8. Such an interpretation was bolstered by the paucity of post-impressions, daub and artefacts from the first phase, suggesting that the building had not been erected.

Phase 1

The first phase of building 10 was 7·5 m wide and 17·8 m long including a 1·9 m long porch at the south-east corner. An almost central corridor 1·3 m wide in the northern half of the building was flanked on both sides by two rooms which were 4·1 m and 4·7 m long on the west side, both being 2·7 m wide, and 4·2 m and 4·5 m on the east side, both being 3·5 m wide. The southern half of the building remained undivided and had a large entrance just under 3 m wide flanked on the east by a small porch and covered by a verandah *c.* 2 m wide set on at least 4 posts approximately 2–3 m apart. The post-holes of the verandah were 300–50 mm deep, but varied considerably in shape, one being 0·63 m in diameter, the others sub-rectangular 0·6 by 0·65 m and 0·55 by 1·25 m. Except where broken for entrances, the post-trenches were continuous throughout. The external walls, one of which contained some small cobble packing (pl. VIIa) were 250–450 mm wide and 360–400 mm deep, although at the southern end of the building depths of up to 700 mm were recorded. The partition walls were of similar width and depth although the majority did not exceed 300 mm in width and none exceeded 460 mm in depth. Only one possible post-impression was found in the north-east corner measuring 150 mm in diameter.

Phase 2

The second phase of building 10 was almost identical with the first, the major changes being the presence of post-impressions, and the movement through approximately 10 degrees to bring it into alignment with the other buildings on the site. It was 7·6 m wide and 18·75 m long but without a porch. The building could have been entered from the north into a corridor 1·15 m to 1·3 m wide running just over half way along its length, on either side of which were two sets of two rooms measuring 3·9 m and 4·5 m long by 2·3 m wide on the west side, and 4·05 m and 4·2 m long by 3·8 m wide on the east. One of the four rooms was only three-sided having no wall trench to separate it from the corridor, the other three had gaps in the inner wall trench to facilitate entrance from the corridor. The remainder of the building was undivided, access being gained either from the north through the corridor or through a large entrance *c.* 4 m wide in the south wall. This was covered by a verandah *c.* 4 m wide, set on at least 3 posts *c.* 2·5 m apart, through which probably passed part of the E–W road across the site. Within this large room were three hearths, two approximately centrally positioned, one on either side of the room, the third in the SE corner (p. 30).

The wall trenches were continuous apart from the gaps left for entrances. The external wall post-trenches were 280–500 mm wide and 230–620 mm deep, with again the greater depths evident at the southern end. This may indicate that the roof was higher at that end of the building, but, since the change was a gradual one and was also seen in building 9, it seems more likely that this merely represents differential survival (fig. 10). The partition walls were generally smaller being 250–380 mm wide and 300–450 mm deep. A total of 41 post-impressions was detected, mostly on the surface as grey patches containing charcoal, although some were seen only after excavation as depressions sunk below the bottom of the construction trenches. Identifiable charcoal fragments were obtained from 21 of the post-impressions, of which 14 were oak, 3 hazel and 4 birch. A further 4 fragments of oak and one of hazel were found in the post-trenches. Most of the impressions were sub-rectangular, all but three having their longer side running along the length of the trench, their dimensions ranging from 100–200 mm by 120–240 mm (pl. IXa). Only 6 of the impressions were circular with diameters varying from 100–200 mm. Seven post-impressions were found in the partition walls, but were not noticeably different in size or spacing from those in the outer walls. Allowing for obvious gaps and missing posts, the spacing between impressions ranged from 0·5–0·65 m, although approximately half of the examples were 0·6 m apart. The post-holes for the verahdah were all sub-rectangular (0·5–0·6 m by 0·8–0·9 m) and 380–500 mm deep.

Building 10 was the most extensively excavated of all the buildings on the site (pls. IIIb and IVa). All the post-trenches of both phases were emptied, so that the finds recovered can be taken as approximately equivalent to those lost, with allowance for human error.

From phase 1:

2 nails, a bowl in red fabric (no. 73) and one or two other fragments of coarse ware.

From phase 2:

2 fragments of Dr. 18 or 18R, one stamped OFCALVI, considerable quantities of coarse ware including a dish in red fabric (no. 76), a glass bead (no. 21), a fragment of blue glass (no. 13), a shale? spindle-whorl (no. 25), 4 flints, 9 nails (2 bent), and many fragments of brick and daub.

It is instructive to note the contrast in the number of finds from the two phases of the building, the greater number from phase 2 presumably reflecting increased deposition during demolition.

Compound (fig. 5)

To the west of building 10 was an area *c.* 15·7 m wide and at least 21 m long defined on the west side by a wall running parallel to the line of building 10, and on the south by slight traces of a wall which continued the alignment of the verandah at the southern end of building 10.

Access to the compound would have been gained through the gap between the west

and south walls through which probably ran the postulated east–west road. The west wall of the compound was 350 mm wide and 250–300 mm deep (fig. 10). The south wall was 300–60 mm wide but only 20–60 mm deep, yet found in it were 2 nails, a jar in grey fabric (no. 32) and 2 other fragments of coarse ware. Within this compound were found three or four furnaces, four pits and a probable well (p. 26 and ff).

Beyond the compound to the west was an open space 27 m wide in which were found two probable hearths or furnaces, and four pits, one of which was of rather later date (pp. 28 and 32). Very faint traces of three short stretches of construction trench were noted, but did not form a coherent pattern (fig. 2).

Building 11 (fig. 6, pl. IVb)

Building 11 was a simple three-sided rectangular structure 17·25 m long and 5·9 m wide, open at its southern end. Because of the limitations of the area available for excavation, it was the only one of this second group of open-ended buildings whose full length was ascertained. The post-trenches were 270–350 mm wide, though the southern end of the trench on the east side broadened out to 450 mm and 150–260 mm deep. No post-impressions were evident on the surface but two were detected 0·85 m apart as depressions sunk below the bottom of the post-trench of the eastern wall. Both were sub-rectangular, 100–20 by 150 mm with their longer sides running parallel to the side of the trench. Only sample sections of the wall trenches were excavated and no finds were forthcoming.

Building 12 (fig. 6, pl. Va)

Sandwiched between buildings 11 and 13, only 400–500 mm from the former and 450–550 mm from the latter, building 12 was 5·7 m wide and at least 15·1 m long. Its northern end which was not within the limits of the excavation, is assumed to have been closed as was demonstrated in the case of building 11, but there can be no doubt that there was no wall defining its southern end. The post-trenches ranged in width from 280–350 mm and in depth from 240–320 mm (fig. 10). Four scattered post-impressions were found, one apparent only at the bottom of a wall trench. Three were sub-rectangular in shape, 110–50 mm by 160–200 mm, with their longer dimension running along the length of the wall, the fourth was 130 mm square: one contained a fragment of hazel charcoal. Two of the impressions were 0·6 m apart. Occasional fragments of coarse ware were found in the sample sections of construction trenches which were excavated, including a jar in reddish-yellow fabric (no. 50).

Building 13 (fig. 6, pl. Va)

It was unfortunate that the position of spoil and general inaccessibility prevented the examination of the northern end of buildings 13 and 14 for they appear to have had a central party wall. Thus only the east and west walls of building 13 were discovered, indicating that it was 6·2 m wide, at least 15·2 m long, and open at its southern end.

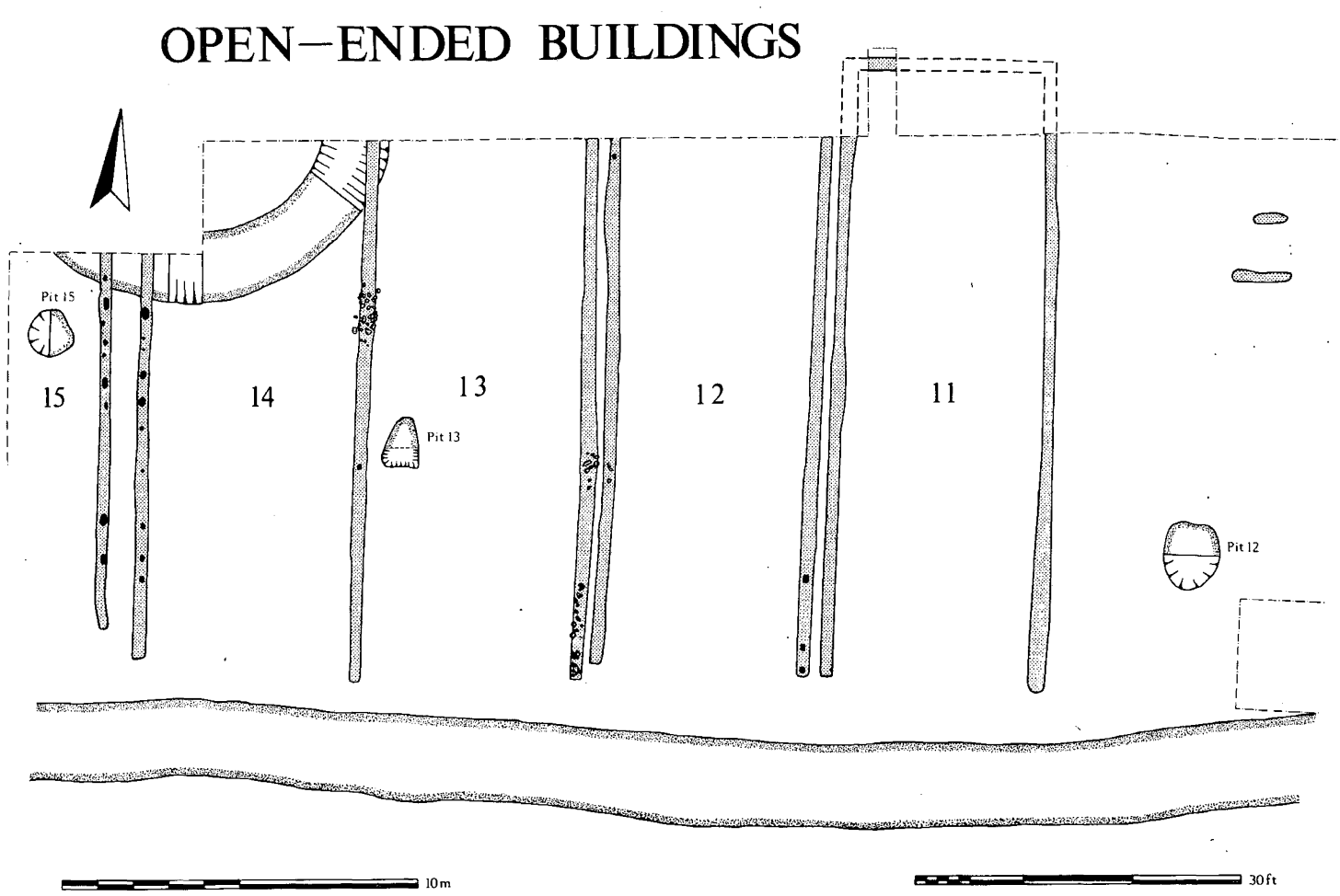

OPEN–ENDED BUILDINGS
Pit 15
15
14
13
Pit 13
12
11
Pit 12
10m
30ft

Fig. 6.

The west wall trench was not noticeably larger than that on the east both being *c.* 250–350 mm wide but only 50–150 mm deep (fig. 10). Both wall trenches contained a certain amount of small cobble packing, but no finds. Only one post-impression was detected situated in the west wall measuring 100 by 140 mm.

Building 14 (fig. 6, pl. Va)

Building 14 was almost the mirror image of building 13, being 6·0 m wide, at least 15·2 m long, and open at its southern end. Structural details of its east wall have already been discussed under building 13, but its west wall was 250–350 mm wide and 210–50 mm deep (fig. 10), and contained a large number of water washed cobbles between 100–50 mm in diameter in its upper fill, and some fragments of burnt daub and coarse pottery. No post-impressions were in evidence on the surface of the trench, but after excavation they appeared as darker filled depressions containing charcoal sunk below the bottom of the post-trench to a depth of 70–100 mm. There were some 6 in all, all circular 150–200 mm in diameter and 0·5–0·9 m apart, interposed with possible stake-holes.

Building 15 (fig. 6)

Running parallel to the west wall of building 14 some 0·8–1·0 m away was a further post-trench 200–360 mm wide but only 80–200 mm deep (fig. 10) which contained a number of post-impressions, some daub and a few fragments of coarse pottery. Lack of time prevented the total stripping of the area in which the west wall would have been expected, but possible traces were seen at two points in small trenches indicating a width of approximately 5·5 m and a length of at least 14·7 m. Four possible post-impressions were discovered in the east wall after it had been excavated, showing up as circular patches of silt and charcoal sunk below the bottom of the post-trench to a depth of between 40 and 140 mm, 150–300 mm in diameter and 1·1 m to 2·2 m apart. Much smaller holes at irregular intervals were also noticed but lack of time prevented investigation to ascertain whether they were stake-holes or animal disturbance, the latter being abundantly present across the site.

Only trial trenching was possible in the area to the west of building 15 in the time available. This revealed a gap of *c.* 30 m broken by only one post-hole before reaching the final building on the site.

Building 16 (fig. 7)

Building 16 was not totally stripped, but excavated by selective trenching which suggested an overall length of at least 34 m and a width of 11·6 m. It was centrally divided along its length, and trenching revealed partition walls, two each side of the central divide, defining rooms 5·6 m by 6·9 m internally. The post-trenches were very substantial and of markedly different character from those found in all other buildings on the site (fig. 10). The outer and central wall trenches were 500–700 mm wide and

BUILDING 16

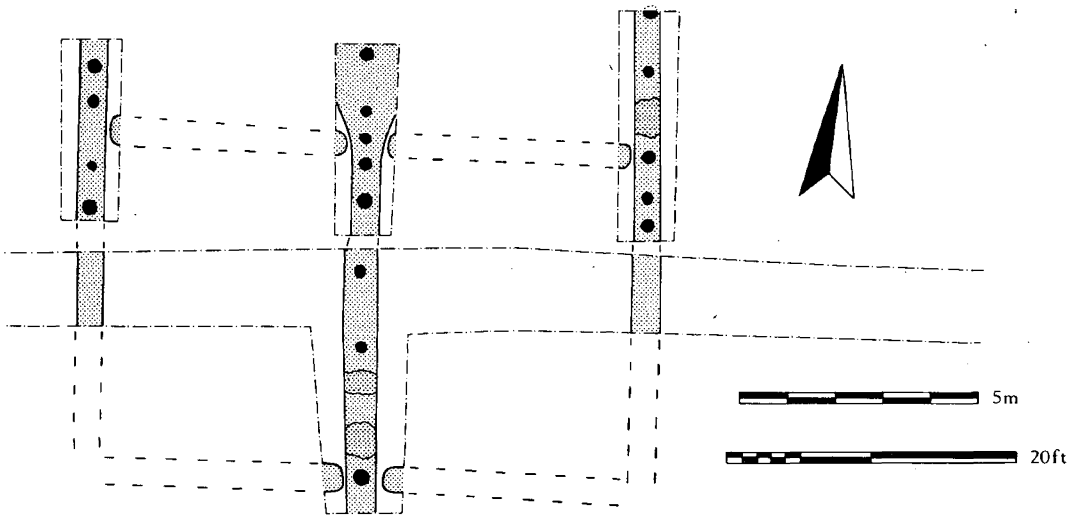


Fig. 7.

700–850 mm deep. The partition wall trenches which in all cases stopped *c.* 50 mm short of the outer load-bearing ones, were 400–50 mm wide and 650 mm deep. Part of the central wall trench was considerably wider than the norm and seems to have been disturbed, possibly during dismantling. Dismantling is also suggested by the presence of charcoal in most post-impressions, though only two oak fragments were identifiable, and by disturbed post-impressions in the central wall. From the construction trenches came a few fragments of coarse pottery and a lead droplet.

Despite limited examination of this building some 20 post-impressions were discovered, all in the load-bearing walls for only the ends of the partitions were defined. The majority of these were circular and their size reflected that of the trenches in which they were set, with diameters of 200–350 mm. The sub-rectangular examples were of a similar order of magnitude being 200–50 mm by 330–50 mm. The spacing between the posts varied considerably from 0·45 to 1·35 m with no consistency. The overall impression of building 16 was of massive size dwarfing all else on the site. In fact, from a structural viewpoint the remains are quite adequate to support a two-storey building.

No further buildings were detected in the 60 m between the west wall of building 16 and the western ditch. The area was, however, only lightly trenched, mainly in search of the western defences, so that too much weight should not be placed on the apparent absence of buildings. Nevertheless the contrast with the eastern end of the site, where the buildings are tightly crammed together, is marked and lends strength to the impression given by the nature of the structures of dichotomy of organization on the site.

Demolition spreads (not on plan)

Evidence for the burning of debris in piles was abundant across the site, often surviving only as black and red stained soil but occasionally having some depth. Demolition debris was also noted in the upper filling of many pits and furnaces, and a number of the former may have been dug specifically for this purpose. The charcoal filling and finds from post-impressions and the finds from post-trenches seem to have been the result of building demolition as was particularly clearly emphasized in the contrast in the number of finds from the post-trenches of the two phases of building 10.

Within building 5: a shallow depression 1·0 by 0·75 m containing charcoal and burnt daub. Finds: jar in buff fabric (no. 53).

Within building 6: an area of burnt daub and charcoal 1·2 by 0·5 m. Finds: bronze rod attached to an iron nail (no. 18).

Within building 7: an oblong patch of charcoal, ash and burnt daub. Finds: jar in grey fabric (no. 24), flagon in white fabric (no. 2), a mortarium in white fabric (no. 80), an iron nail, burnt bone fragments and brick fragments; a patch of charcoal 0·5 by 0·7 m and 60 mm deep. Finds: a droplet of lead; patch of charcoal and burnt daub. Finds: a sherd of Dr. 37 (no. 7) and a rim sherd of Dr. 27.

Within building 8: a sub-rectangular patch of burnt sand with charcoal flecks. Finds: 3 base sherds of Dr. 18 one with an unidentified stamp.

Within building 10: (pl. II): an area of burnt soil, oak charcoal and large lumps of burnt daub 2 m in diameter and 50 mm deep at the southern end of the building. Finds: a fragment of glass, an iron knife blade (no. 30) and 2 nails (one bent); a spread of discoloured soil and scattered charcoal covering much of the north-west corner of the building overlying internal partition trenches. No finds; a small patch of burnt daub and charcoal 0·3 m in diameter. No finds.

Pits

These are numbered from east to west.

1. A shallow circular demolition pit *c.* 3 m in diameter and 0·2 m deep containing brick fragments, burnt daub and charcoal, situated to the north of building 3 (fig. 3).
   Finds: a sherd of Dr. 37 (no. 7), 5 sherds of Dr. 18, jar in grey fabric (no. 44), a bowl in red fabric (no. 64), a mortarium of Kentish group II (as no. 79), bronze plate (no. 10), 2 nails and 2 bone fragments.
2. A rectangular pit 1·5 by 0·8 m by the entrance to building 4 (figs. 3 and 1) 0·45 m deep made up of 2 main layers of burnt material and charcoal interspersed with layers of dirty sand. This probably represents a rubbish pit with demolition debris on top since only the upper burnt layer contained daub and covered a smaller area than the pit proper.
   Finds from upper layer: 3 fragments of Dr. 37 (no. 11), a jar in grey fabric (no. 34), and one nail.

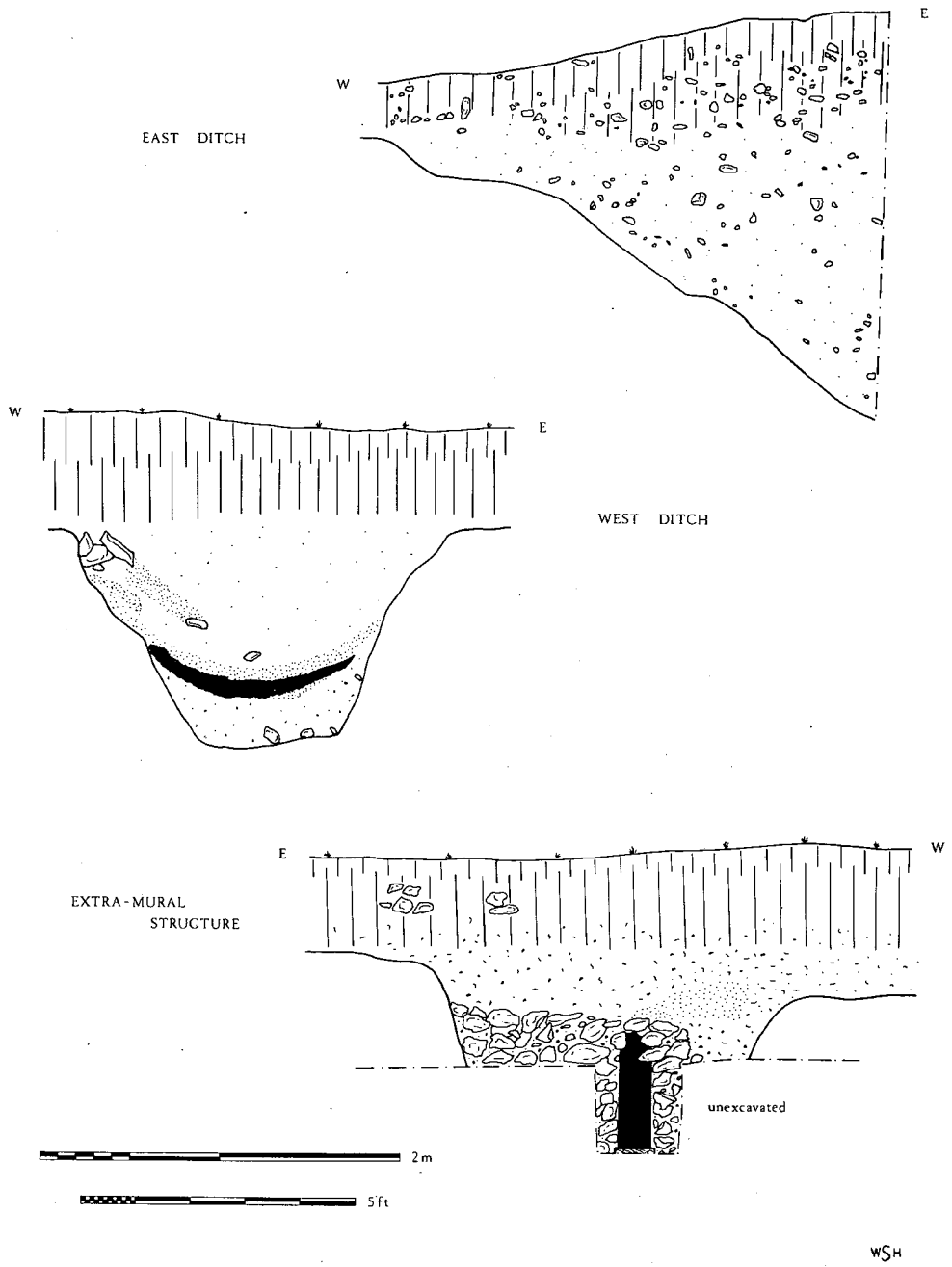

W
E
EAST DITCH
W
E
WEST DITCH
E
W
EXTRA-MURAL
STRUCTURE
unexcavated
2m
5ft
WSH

Fig. 8.

Finds from lower layer: 9 fragments of Curle 11, 3 fragments (2 vessels) of Dr. 18, fragments of Dr. 15/17 including the stamp LOGIR, one sherd of Dr. 27, one sherd of Dr. 37 (no. 14), a honey pot in orange fabric (no. 47), other coarse ware fragments and 2 bent nails.

3. Circular pit 1·2 m in diameter and *c.* 0·3 m deep within the southern end of building 10, containing a high concentration of charcoal and some large cobbles (fig. 5). Function uncertain.
   Finds: one sherd South Gaulish samian and 2 unidentified iron fragments.
4. Steep sided circular pit 1·7 m in diameter (3 m on the surface) cutting the west wall of building 10, phase 1 and the northern end of kiln/furnace No. 5 (fig. 5, pl. 7). Excavated to depth of 1·6 m but not bottomed (fig. 11). Probably represents a well. The upper fill consisted of a number of lenses of oak charcoal and burnt material interspersed with clean sand.
   Finds: a number of fragments of tile and mixed coarse ware, a fragment of bottle glass (no. 10), 10 quern-stone fragments, flint, and a nail.
5. Large sub-rectangular pit 3·5 by 2·2 m situated in the compound to the west of building 10 (figs. 5 and 11). Two main layers of rubbish and burnt deposits separated by clean sand, the upper fill containing charcoal flecks and daub, the lower a greater concentration of oak charcoal. The depth as excavated was only 0·65 m but it was not certainly bottomed.
   Find from upper layer: 2 rim sherds of Dr. 27 (2 vessels), a bowl in grey fabric (no. 67) much coarse ware including 212 sherds of amphora (2 stamped handles —b anc c), bone fragments, a droplet of lead, and 3 nails (one bent).
   Finds from lower fill: Five sherds of Dr. 27 (one vessel), a rim sherd of Dr. 18, much coarse ware including 23 sherds of amphora, a fragment of indented glass beaker (no. 2), one fragment of bowl, jar or flagon in amber glass (no. 8), and 1 bent nail.
6. Long rectangular pit 3·3 by 1·0 m within the compound to the west of building 10 (figs. 5 and 11). It was extremely regular in shape being virtually straight-sided 0·52 m deep with a flat bottom, and may have been a tank of some sort, subsequently used as a demolition pit. The fill included burnt daub and charcoal (hazel, ash, oak and birch were all identified), but unburnt clay and pebbles were also present. There was no indication of burning *in situ.*
   Finds: 2 lead droplets, a rectangular lead plate (no. 22), an illegible coin, a fragment of worked bone (no. 21), a fragment of glass (no. 14), a bead (no. 22), 39 nails (3 bent), 5 sherds of Dr. 27 (1 vessel), 2 sherds of Dr. 18 and other samian fragments, a jar in grey fabric (no. 45), a flagon in orange fabric (no. 5) and other coarse ware fragments.
7. Almost square pit 1·7 m across adjacent to pit 6 in the compound to the west of building 10 (figs. 5 and 11). An irregular bowl in section 0·22–0·45 m deep it contained much charcoal and burnt daub. Function uncertain.
   Finds: 4 sherds of Dr. 18 (1 vessel), coarse ware fragments, bone, and 2 nails (1 bent).
8. Sub-rectangular pit 1·5 by 2·2 m situated immediately south of kiln/furnace 9

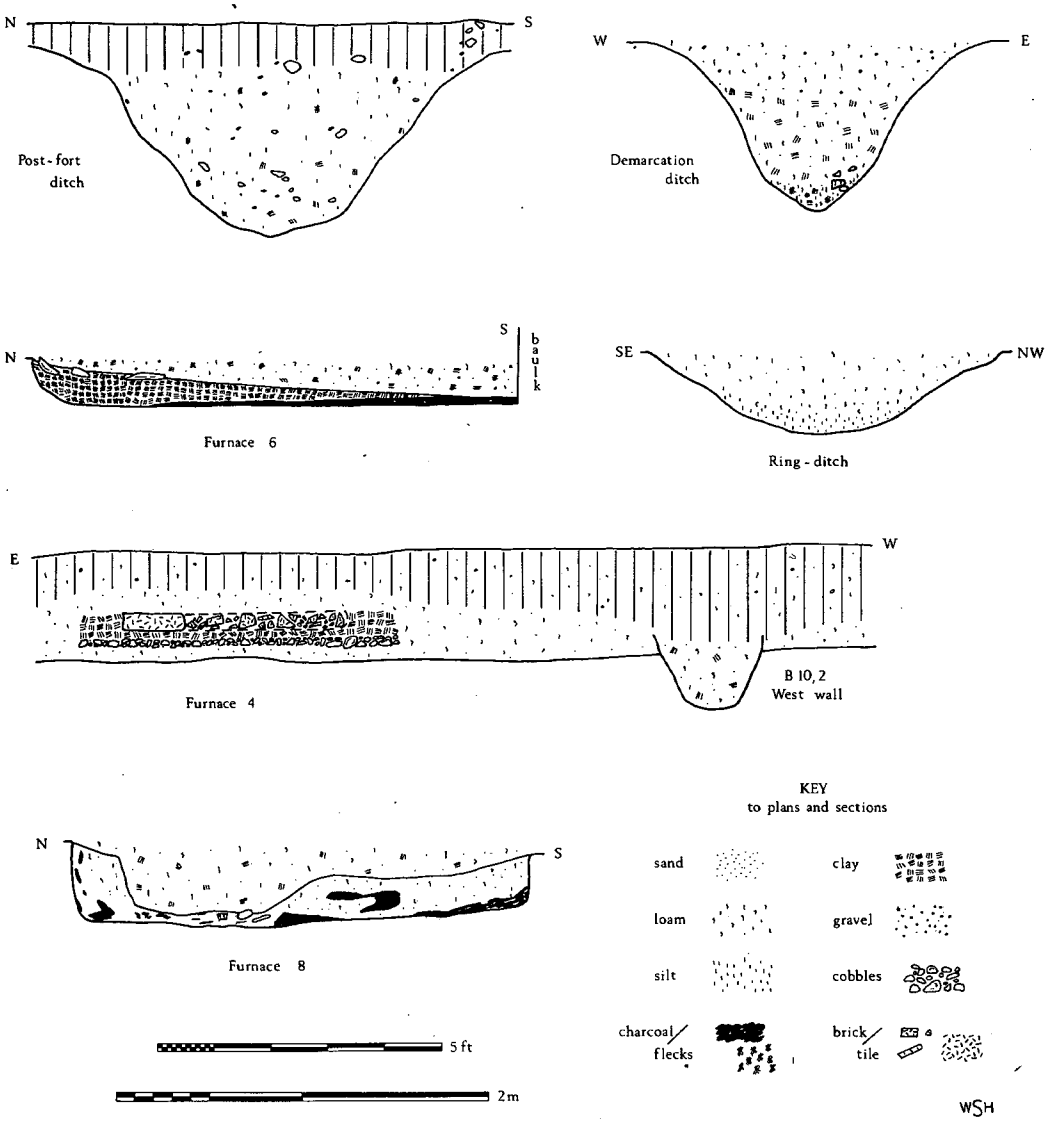

N
S
Post-fort ditch
W
E
Demarcation ditch
N
S
baulk
Furnace 6
SE
NW
Ring-ditch
E
W
Furnace 4
B 10, 2
West wall
KEY
to plans and sections
sand
clay
loam
gravel
silt
cobbles
charcoal flecks
brick
tile
N
S
Furnace 8
5 ft
2m
WSH

Fig. 9.

within the compound, filled with large cobbles up to 0·3 m in diameter and some brick (figs. 5 and 11). Function uncertain.
Finds: fragment of Dr. 37 (no. 8), 22 amphora sherds, a melon bead (no. 18), and 1 nail.

9. Key-hole shaped pit 1·6 by 0·8 m between the compound and building 11 (fig. 11). It was 0·43 m deep and contained oak charcoal. Function uncertain but the presence of second century pottery indicates a date later than the occupation of the fort.
Finds: A fragment of Dr. 27 and some fragments of coarse ware, one certainly of second-century date.
10. A shallow (0·25 m) oval pit 0·8 m wide and at least 2 m long in the area between the compound and building 11 (fig. 11). The fill included unburnt clay, burnt daub, oak charcoal and small burnt stones. Function uncertain.
Finds: a flint arrowhead, glass fragments, 3 nails and some coarse ware, fragments including tile.
11. Rectangular pit 1·6 by 0·8 m in the area between the compound and building 11 (fig. 11). It was regular in shape, straight-sided 0·46 m deep and flat bottomed, filled with dark-brown sandy loam containing oak and birch charcoal and burnt daub. Function uncertain but reminiscent of pit 6.
Finds: 4 nails (2 bent), a droplet of lead, fragments of bone and miscellaneous coarse ware.
12. A shallow demolition pit 0·5 m deep and 1·7 m in diameter containing burnt daub and charcoal situated just to the east of building 11 (figs. 6 and 11).
Finds: a fragment of Dr. 37 (no. 10), a fragment of Dr. 29 (no. 2), 3 jars in grey fabric (nos. 11, 36 and 49) and a jar in light red fabric (no. 28), a bowl in grey fabric (no. 69), 2 lids, one in reddish yellow fabric (no. 85), and one in grey fabric (no. 86), other coarse ware fragments and brick, a fragment of glass, a bronze rod (no. 19) and 2 nails.
13. Small triangular demolition pit 1·4 by 0·8 m within the area of building 13 containing a heavy concentration of oak charcoal and burnt daub (fig. 6). No finds.
14. A roughly circular pit 0·9 m in diameter situated due south of building 15. The fill was uniformly dark with flecks of charcoal but no finds. Both its function and association with the fort are uncertain.
15. A circular demolition pit 1·3 m in diameter within building 15 containing charcoal and daub but no finds (fig. 6).

Furnaces, kilns and hearths

A number of small features (numbered from east to west) were clearly areas for the controlled use of fire. Their interpretation as either furnace, kiln or hearth is subjective, though based where possible on analogies, since only one of these features (no. 2) produced any artefactual evidence for its function.

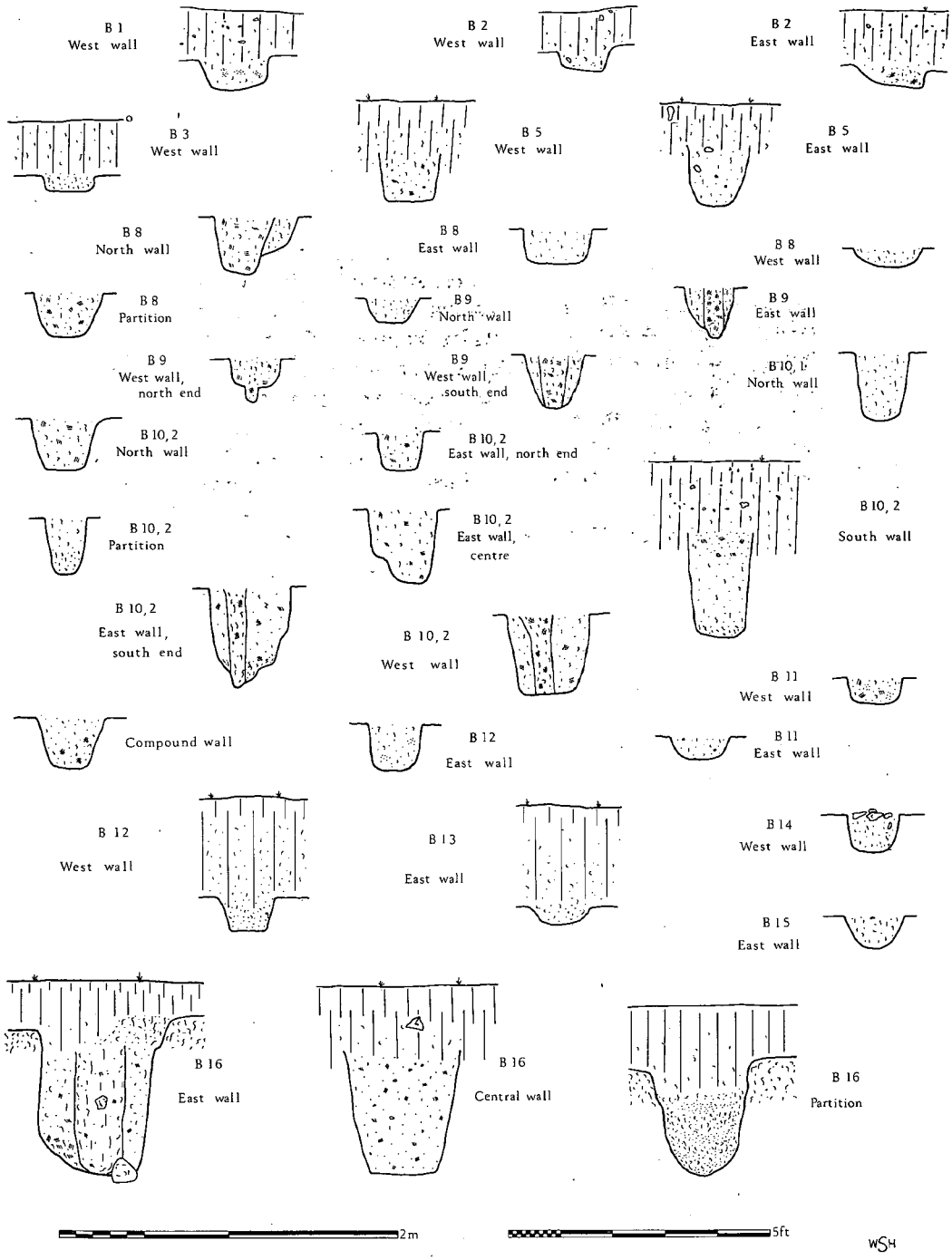

B 1
West wall
B 2
West wall
B 2
East wall
B 3
West wall
B 5
West wall
B 5
East wall
B 8
North wall
B 8
East wall
B 8
West wall
B 8
Partition
B 9
North wall
B 9
East wall
B 9
West wall,
north end
B 9
West wall,
south end
B 10, 1
North wall
B 10, 2
North wall
B 10, 2
East wall, north end
B 10, 2
Partition
B 10, 2
East wall,
centre
B 10, 2
South wall
B 10, 2
East wall,
south end
B 10, 2
West wall
B 11
West wall
Compound wall
B 12
East wall
B 11
East wall
B 12
West wall
B 13
East wall
B 14
West wall
B 15
East wall
B 16
East wall
B 16
Central wall
B 16
Partition
2m
5ft
WSH

Fig. 10.

1. A sub-rectangular area 0·6 by 1·1 m of packed Roman tile, brick and sandstone set on a foundation of large stone situated at the southern end of building 4 immediately beneath the topsoil (fig. 3). The tiles and brick had been burnt *in situ* and presumably represent a hearth.
2. A rectangular area (0·9 by 0·6 m) of layered clay baked *in situ* in the south-east corner of building 10, phase 2, overlying a partition trench of phase 1. The association of this feature with much charcoal and a crucible containing cuprous oxide suggests that it represents the base of a furnace for melting copper alloys (information from Prof. R. F. Tylecote).
   Finds: 2 sherds of Dr. 29 (no. 1), sherds of two Dr. 37s (nos. 5 and 13), a jar in grey fabric (no. 33), sherds of a Kentish group II mortarium (as no. 79), a fragment of a pillar moulded bowl (no. 6), a fragment of bronze (no. 16), an *as* of Vespasian or Titus (no. 4) and 2 nails (1 bent).
3. Fragmentary remains of an area of large tiles set in yellow clay with considerable evidence of burning (from which came 1 nail), situated to the east of the centre of the main southern room in building 10. For probable interpretation see 4 below.
4. A rectangular area of brick and tile 1·76 by 0·95 m, set in grey clay 100 mm thick on a base of small cobbles (figs. 5 and 9). The central area of the clay had been reddened by fire and there was much associated charcoal and broken tile. This feature, situated up against the baulk to the west of the centre of the southern room of building 10, phase 2, overlying a partition trench of phase 1, was possibly associated with some form of secondary metalworking, and may have been the base for a raised hearth for forging iron (see Manning 1976a, 144), although no hammer scale was found.
   Finds: a jar in grey fabric (no. 52) and a bronze pin (no. 11).
5. A key-hole or dumb-bell shaped depression set in a rectangular pit (1·2 by 1·8 m and 0·6 m deep) lined with oak and hazel charcoal and filled with mixed sandy loam much discoloured by burning (fig. 5 pl. VIIa). This feature was situated immediately west of building 10, and cut by pit 4. The two circular depressions in the surface contained considerable quantities of oak and hazel charcoal and demolition debris including:
   a melon bead (no. 17), fragments of Niedermendig lava probably from a quernstone, 7 nails and assorted coarse ware.
   This feature, and the two others like it (nos. 8 and 9 below) was probably a small pottery kiln such as was found outside the vexillation fortress at Longthorpe (Wild 1974, 144), although there was no clear evidence of either kiln furniture or wasters from this site. A possible alternative interpretation might be reheating furnaces for the secondary working of iron, or smithing, but this process ought to leave considerable quantities of slag which would survive.
6. A shallow cutting *c.* 1·2 by 2·6 m lined with oak charcoal and filled with burnt clay in which were set, on edge and apparently at random, a number of flat-sided stones situated to the west of building 10 (figs. 5 and 9). The clay platform appeared to slope downwards to the south. The function of this feature is un-

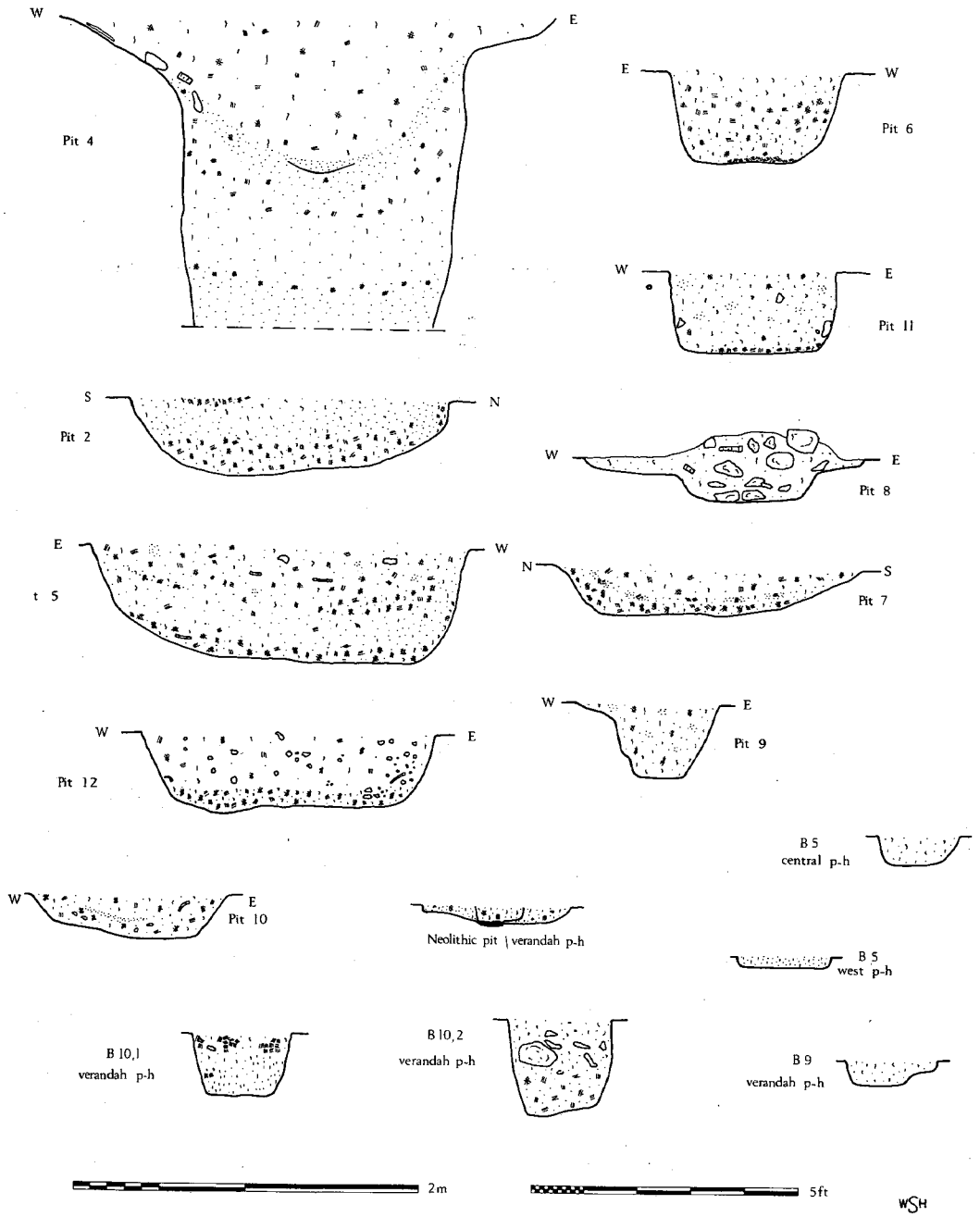

W
E
Pit 4
E
W
Pit 6
W
E
Pit 11
S
N
Pit 2
W
E
Pit 8
E
W
t 5
N
S
Pit 7
W
E
Pit 9
W
E
Pit 12
B 5
central p-h
W
E
Pit 10
Neolithic pit | verandah p-h
B 5
west p-h
B 10,1
verandah p-h
B 10,2
verandah p-h
B 9
verandah p-h
2m
5ft
WSH

Fig. 11.

certain, but the extent of burning of the clay does not indicate high temperatures. It may perhaps have been associated with the smelting of lead.

The finds listed below all come from the demolition material overlying the clay platform:

two sherds of Dr. 18/18R, fragment of a jar in grey fabric (no. 11), over 1,000 sherds of amphorae (at least 3 vessels), a fragment of glass, 8 nails (1 bent) and an iron ring with intaglio (p. 68).

7. Rectangular area of fired clay and cobbles with some daub 0·4 by 1·2 m just to the west of no. 6 (fig. 5). The subsoil in the immediate vicinity had been burnt. Function uncertain. No finds.
8. A key-hole or dumb-bell shaped depression similar to no. 5 situated in the north-west corner of the compound (figs. 5 and 9). It, too, was apparently set within a pit 1·2 by 2·4 m lined with charcoal and filled with redeposited burnt sandy subsoil. Apart from some fragments of coarse pottery and 2 nails, all the finds came from the demolition fill of the key-hole shaped depression which also contained a number of large flat burnt stones and, in the furnace area at the northern end, much oak and birch charcoal. Function assumed to be similar to no. 5.

   Finds: a fragment of Dr. 37 (no. 10), a fragment of Dr. 18, 2 fragments of glass (no. 11), and some miscellaneous sherds of coarse ware and tile.
9. Just outside the southern end of the compound to the west were the poorly surviving remains of a further furnace or kiln similar to nos. 5 and 8, set within a shallow rectangular pit 1·5 by 2·0 m. The depressions in the surface were again filled with demolition material including some coarse ware fragments and tile.
10. A surface scatter of cobbles and tiles 0·8 by 2·5 m associated with a wider area of charcoal and daub situated to the west of the compound. This probably represents the remains of a hearth or working area but was much disturbed by machine clearance. No finds.

Extra-Mural Buildings

Considerable difficulty was encountered in locating the western limit of the site because of its unexpectedly large size. The west ditch was eventually discovered in the last days of the excavation in a contractor's pipe-trench. Some 14 m beyond the west ditch was what appeared to be a further ditch *c.* 2 m wide filled mainly with large cobbles. Just visible amongst the cobbles in the south section was a piece of decaying oak timber. While cleaning the section this timber was followed down and eventually found to be morticed into a sleeper beam approximately 0·75 m from the top of the cobbles. Lack of time and the limitation of operations possible within the pipe-trench allowed for only a cursory examination which demonstrated that the contractor's trench had passed precisely between two uprights, and at right angles to the wall of a timber building (pl. VIIb). A small machine-cleared trench some 10 m further south

revealed a possible corner of this building turning to the east, but surviving only as a narrow slot which did not contain any timber. It was unfortunate that there was not more time available for a detailed examination of these enigmatic traces, although details of the timbers were recorded and the two uprights removed.

Upright 1 : timber	oak
Length (excluding tenon)	650 mm
Scantling	220 by 180 mm
length of tenon	40 mm
scantling	40 by 50 mm
position	central
Upright 2 : timber	oak
length (excluding tenon)	540 mm
scantling	180 by 180 mm
length of tenon	55 mm
scantling	45 by 40 mm
position	central.
Sleeper-beam : timber	Oak assumed
length	not ascertained—at least 1·4 m
scantling	220 by 120 mm
size of mortice holes	140 by 90 mm (cut through the beam)
position of holes	central with the longer dimension parallel to the long axis of the beam.
distance between holes (centre to centre)	740 mm

Sleeper-beam construction is well paralleled, though not particularly common, in Roman military contexts, and seems to be generally of first century date as at Corbridge (Gillam 1977, 53) and Valkenburg (Glasbergen 1972, 30). It is also found in an early civilian context at Verulamium (Frere 1972, 9), though presumably as a result of direct military aid. The example noted above in detail is of particular interest for two reasons. The depth to which the sleeper-beam had been buried (0·9 m) seems excessive given that the main advantage of this construction method is its inherent stability. It may, possibly, have been set within the disused ditch of the fort, but no evidence for the continuation of the ditch to the south was noted in the, admittedly brief, examination of the building corner. A sleeper-beam similarly deeply buried was found in one of the construction trenches of a granary at Richborough (Cunliffe 1968, 17). Also, it is apparent that the mortice holes are too big for the tenons which were placed within them. This may indicate the use of timbers not originally intended for use together.

It is not certain that the original discovery in the pipe-trench was related to the possible corner further south, or that either were in any way associated with the fort. However, circumstantial evidence—their position and orientation in relation to the fort, and appropriate Roman structural parallels—favours such an interpretation.

Further to the west some fragments of a stone drainage system were seen during

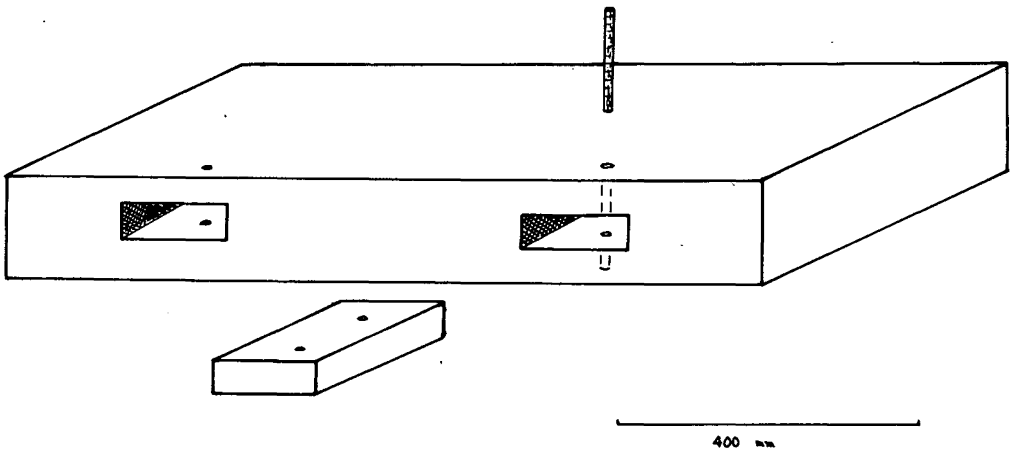


Fig. 12.

contractor's operations. It was not possible to investigate these in any detail, nor were they certainly Roman, but their proximity to the material noted above necessitates some mention. Somewhere in the vicinity of these extra-mural structures two large blocks of oak were unearthed by the road contractors after the end of the excavation. One was very badly preserved, but appeared identical in all significant aspects to the one described in detail below (fig. 12, pl. VIII):

length	930–90 mm
width	475–85 mm
depth	115–45 mm

There were two mortice holes in the longer side

length	140–55 mm
width	45–50 mm
depth	170 mm

A separate oak tenon 145 by 35 mm was secured within one of the mortice holes by a dowel rod 13 mm in diameter, and projected 110 mm from the hole, presumably for insertion into an equivalent mortice on the second block. The function of the four mortice holes and two separate tenons was to lock together the two rectangular blocks to form a square. There were no signs of jointing or other disturbance of any further surfaces of the timber, so that the best explanation of its use would seem to be as some kind of heavy duty cover, possibly for a well.

Post-Fort Activity

There were only two certain Roman post-fort features on the site. The first, a pit (no. 9) has been described already. The second, a ditch, ran for a distance of at least 160 m east–west across the southern part of the area excavated cutting through the post-trenches of the fort buildings. The ditch was sectioned in two places and revealed a V-shaped profile 1·0 m deep largely filled with clayey silt with some cobbles (fig. 9). Finds included: a mortarium in brownish-cream fabric (no. 81) and other miscellaneous coarse ware fragments, a rim-sherd of Dr. 27 and 3 nails.

Despite the V-shaped profile, the variation in ditch width across the site, from 1·4–2·1 m, and its somewhat meandering course, do not indicate a military origin. The general scatter of second century pottery from the topsoil suggests that at some time shortly after the abandonment of the fort the site was given over to agriculture and fourth-century pottery suggests that this continued. Numerous native sites have been noted in the vicinity of Corbridge (including those excavated by Mr. Jobey and Mr. Casey elsewhere on the bypass). Clearly, farming was intensive in the area, and we know that the fort granaries at Corbridge continued into the later town period, perhaps indicating a collection point for the *annona militaris*, the corn levied to feed the army. The fertile terraces along the valley of the Tyne were ideally suited to agriculture and no doubt provided their share of this tax.

THE POTTERY

Samian

Mr. Brian Hartley and Miss Brenda Dickinson very kindly furnished notes on the stamps (which are here reproduced verbatim) and on the decorated ware (of which extensive use has been made). Their assistance is gratefully acknowledged.

In the following report various methods have been used to indicate quantities of samian from the site. Numbers of sherds are given and subjective estimates of the number of vessels represented have been attempted. Rim-sherds have been quantified by measuring the circumferential length of each sherd and expressing this as a percentage of the original complete vessel. Totals are given for the different forms. Finally the total weight of sherds is given for each form. Naturally, in the case of rim percentages and weights, direct comparison between the different forms is not significant, because a small vessel will break into larger pieces, relative to its size, than a larger vessel, and the original weight of a small vessel will, obviously, have been less than a large vessel.

Decorated Ware (figs. 13 and 14)

Altogether, a total of 71 sherds of decorated samian were recovered from the site. With the exception of one sherd in Antonine central Gaulish fabric, all of them were south Gaulish in origin. The probable number of vessels which these sherds represent is as follows: Dr. 29 4; Dr. 37 13; Dr. 30 1; Déch. 67 1. The total rim percentages for the different forms are as follows: Dr. 29 28; Dr. 37 95; Dr. 30 no rim sherds; Déch. 67 no rim sherds. The total weights for the different forms are as follows: Dr. 29 211·5 g; Dr. 37 559·8 g; Dr. 30 4·4 g; Déch. 67 31·6 g.

1. Dr. 29. The scroll in the upper zone (cf. Curle 1911, p. 215, 3) is too common at La Graufesenque to be diagnostic, but the wreath, though abrasion has obscured the detail of the leaf, is more likely to indicate a late-Neronian or early-Flavian date than later. A small non-conjoined fragment shows part of a straight godroon, which may have formed part or all of the decoration of the lower frieze. *c.* A.D. 65–80. Diameter is 240 mm. Sixteen sherds in all, two of them from furnace 2 inside the south-east corner of building 10.
2. Dr. 29. Although the elements of the decoration were used by many La Graufesenque potters, the main connections are with bowls stamped by Rufinus ii. The leaves in the upper zone are on form 29 from Vechten. The crouching dog. (0·1965) is on bowls from the Pompeii hoard (Atkinson 1914, 35), Torre Annunziata and Vechten. The wreath below the cordon is on a bowl from Heddernheim with straight godroons below as here. *c.* A.D. 70–85. Diameter is *c.* 220 mm. One sherd only from pit 12.
3. Dr. 29. Upper zones with alternating panels of figures and leaf-tips were particularly common in the Neronian period, but are found also on early Flavian bowls of form 29. The figure types are D. 268 and D. 280 variant. For the leaf tips cf. Knorr 1919, Taf. 48 (Macer i on a bowl from Köln) and also two bowls from Camelon (NMA FX 138 and no no.). One is a substantial piece with typically Neronian-Flavian decoration *c.* A.D. 65–80. Diameter *c.* 220 mm. One sherd only, from the topsoil.
4. Dr. 29. The two fragments show an unusual division of panels in the upper zone. and above, an unrouletted lower moulding. There is a wreath of similar, though smaller, trifid leaves on no. 14. The five point rosette occurs on the work of Coelus (Knorr 1919, Taf. 24). The birds to left (Hermet 1934, pl. 28, 67) were used by several potters who worked mainly under Nero but whose activity just continued into the Flavian period. Two sherds, from the large patch of cobbles to the north of building 8.
5. Dr. 37. Ovolo used at La Graufesenque by Frontinus and Paullus iii. Frontinus also uses the stumpy godroons (cf. Curle, 1911, p. 209 nos. 1 and 4), the leaves on the tendrils in the medallion panel (Knorr 1952, Taf. 25 and Curle 1911, p. 209. no. 1) and the fan-shaped leaf under the running boar (Knorr 1919, Taf. 33 no. 2). The boar itself was a figure type much used by Flavian potters. *c.* A.D. 75–90. Diameter is 175 mm. Six sherds, all from the same find-spot as no. 1.
6. Dr. 37. Again by Frontinus. The godroons are as on no. 5. On the right hand

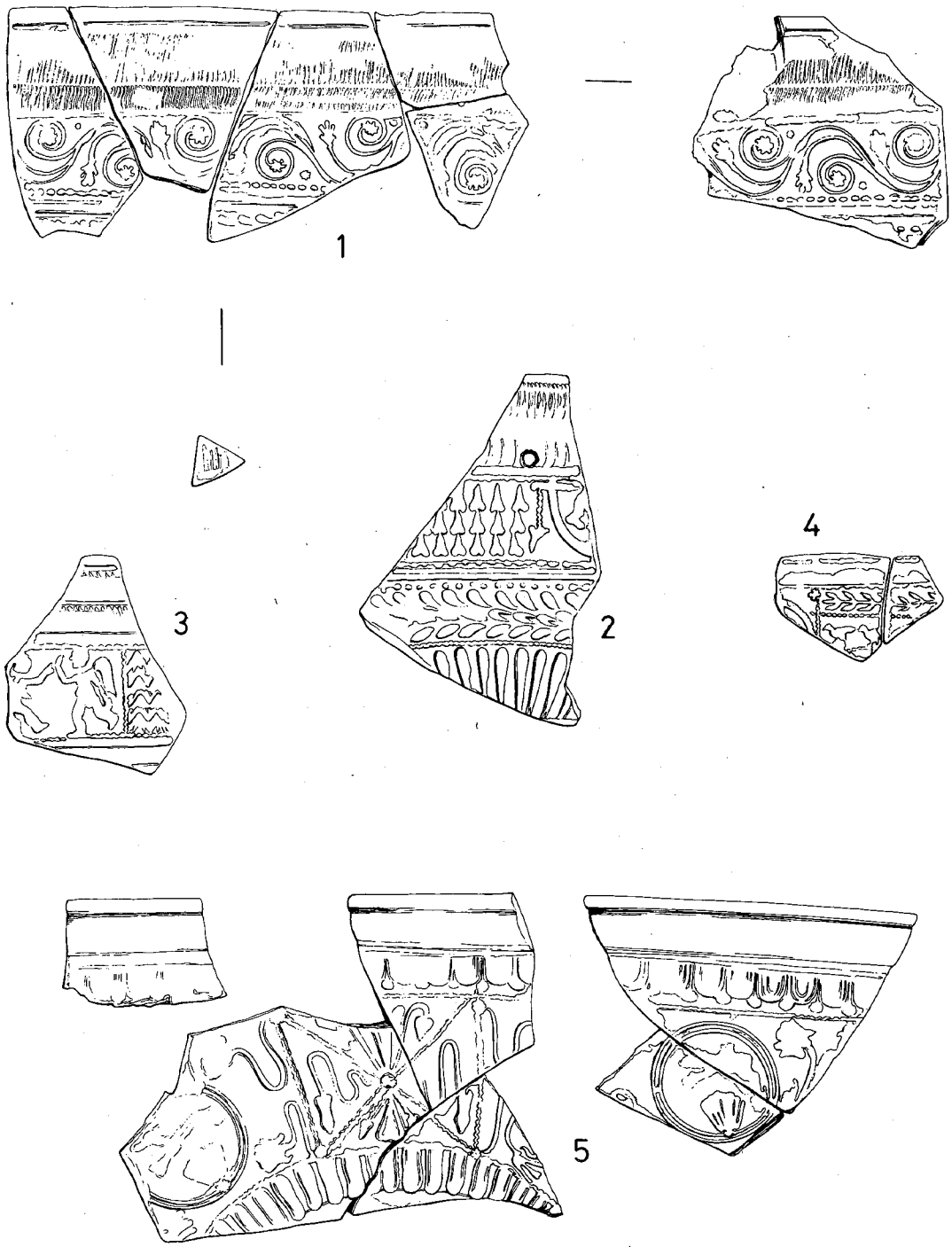


Fig. 13. ($\frac{1}{2}$).

sherd can be seen the point where the mould-maker began and finished the decoration. The filled concavity of the scroll is cramped and beneath, two of the godroons are overlapping. The trick of alternating spirals and leaf-tips in the lower parts of the scroll is diagnostic (Bushe-Fox 1916, pl. 26, 3; London LM; Kettering) *c.* A.D. 75–90. Three sherds, all from the topsoil.

7. Dr. 37. The rosette tongued ovolo (also on no. 9) is on bowls in the Pompeii hoard (Atkinson 1914, 49) and several of the bowls in this group have similar chevron wreaths (cf. pls. VII–XI). The ovolo and wreath are together on a bowl from Camelon. For the bird to l. see no. 4. The bird to r. is Hermet 1934, pl. 28, 41. *c.* A.D. 75–90. Diameter is 180 mm. Two sherds, one from a demolition spread inside building 7, the other from pit 1, outside the north end of building 3.
8. Dr. 37. Ovolo as no. 5. Both it and the wreath of small fan-shaped leaves occur on a bowl from the Pompeii hoard (Atkinson 1914, pl. 8, no. 43). Diameter is 230 mm. Two fragments, one from pit 8.
9. Dr. 37. Ovolo as no. 7. The decoration can be closely paralleled on a bowl from the Pompeii hoard (Atkinson 1914, pl. VIII. no. 43). Diameter is 185 mm. Three fragments, all from the topsoil. *c.* A.D. 75–90.
10. Dr. 37. The rim of this bowl was clumsily fashioned. Above the ovolo there is a pronounced step where the clay bulged out over the top of the mould. The distinctive ovolo, with four pronged tongue, occurs on the work of M. Crestio and Crucuro. Crestio also used the poppy-head motif (Knorr 1952, Taf. 19A). Diameter is 180 mm. Two sherds, one from pit 12, the other from furnace 8. *c.* A.D. 75–95.
11. Dr. 37. Ovolo as no. 10. Again, almost certainly M. Crestio. For use of diagonal wavy lines in panels cf. Knorr 1919, Taf. 28C. Diameter is 170 mm. Three sherds, all from pit 2.
12. Dr. 37. Ovolo too blurred for identification. One sherd from the topsoil.
13. Dr. 37. The scheme of decoration would seem to have been a wreath of chevron motifs with a zone of festoons containing animals underneath. The unusual festoon and the dog (Hermet 1934, pl. 26, 28) are on bowls of form 29 from Heerlen and Koenigshoffen respectively, both stamped by Iustus i. The festoon is also on form 29, from London (GH) stamped by Medillus. *c.* A.D. 75–90. Two sherds, one from furnace 2.
14. Dr. 37. The details all appear on bowls of form 29: the wreath at Nijmegen, stamped by Rufinus ii, the smaller leaf at London (GH), stamped by Vitalis ii and the larger leaf at Wroxeter, stamped by Cotto. For a similar decorative scheme on a bowl from the Pompeii hoard of Atkinson 1914 nos. 41 and 42. *c.* A.D. 75–90. One sherd from pit 2.
15. Dr. 37. For a possibly similar decorative scheme on a bowl from the Pompeii hoard cf Atkinson 1914, no. 65. *c.* A.D. 75–90. One sherd from the topsoil.
16. Dr. 37. For the dog cf. no. 13. *c.* A.D. 75–95. One sherd from the topsoil.
17. Dr. 37. Fragment with the gloss completely worn off. Faint outline of decoration showing a zone of double bordered festoons. From the possible drip gulley beyond the verandah at the south end of building 10.

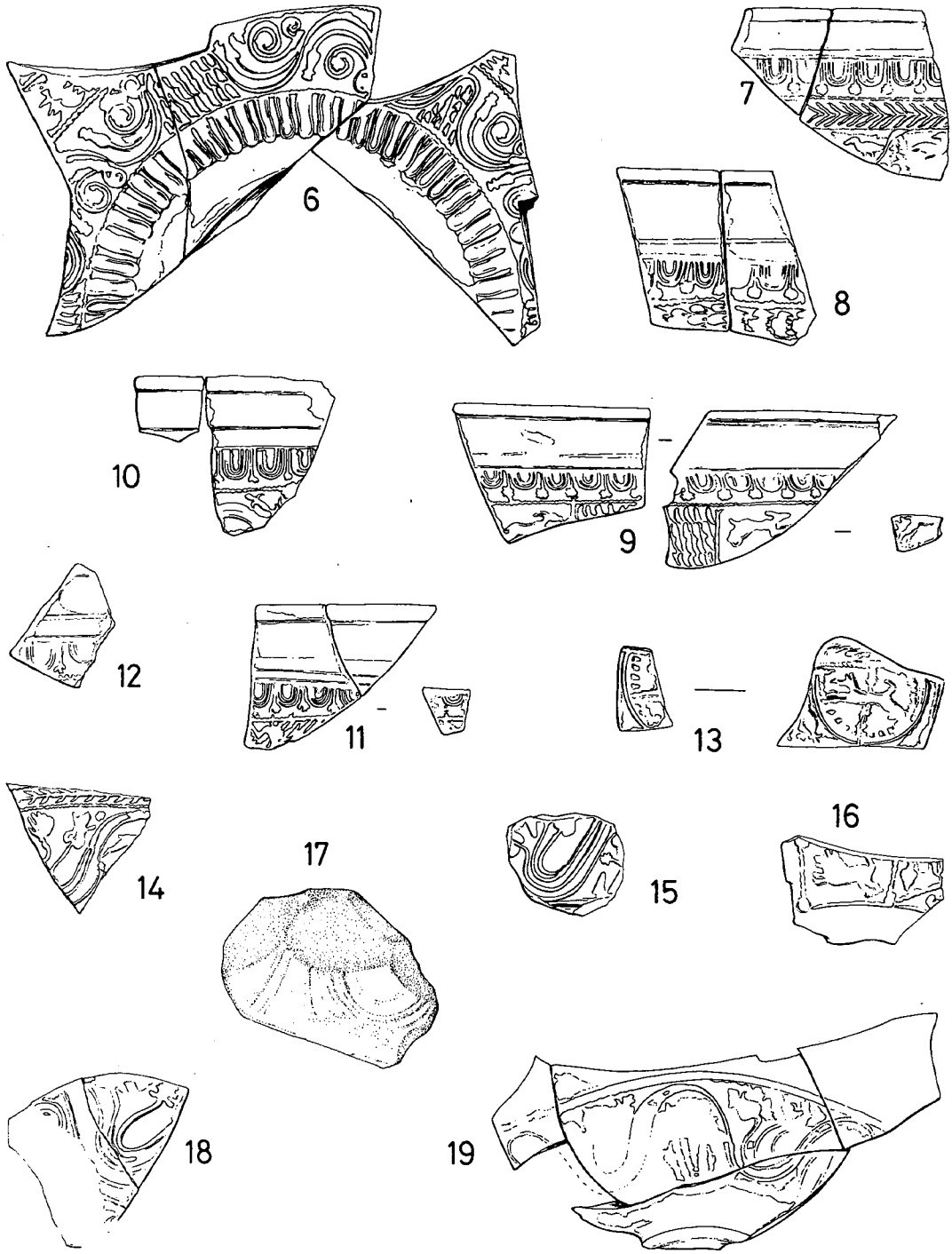


Fig. 14. ($\frac{1}{2}$).

18. Dr. 30. Winding scroll pattern with large leaves. Similar leaves occur on a bowl by M. Crestio (Knorr 1952, Taf. 19B). Topsoil.
19. Déchelette 67. The sherds are too abraded to discern much detail but it would seem that the decoration consisted of a simple winding scroll and tendrils with poppy-head terminals (possibly those used on Knorr 1919, Taf. 99B), the lower concavities of the scroll being filled with upright plant motifs and tendrils. Four sherds, all from the topsoil.

The Potters' Stamps

a. Calvus i 5 m on form 15/17 or 18 OFCALVI; from a post-impression in the post-trench for the west wall of building 10, phase 2. This stamp is known at La Graufesenque and is attested at several sites founded in the 70s of the first century, such as the fortress and Ulpia Noviomagus at Nijmegen, Castleford, Gernsheim and Rottweil-Hochmauren. It was used on form 29. *c.* A.D. 65–80.
b. Logirnus 10a on form 15/17 or 18 LOGIR[NM]. Fragments of this vessel came from pit 2. The stamp is known from Montans, where Logirnus may have worked, but most of his other stamps are attested at La Graufesenque, and the pot presumably came from there, since Flavian products of Montans are virtually unknown in Britain.

   Recent evidence from the Boudiccan burning at Colchester shows that Logirnus was at work by A.D. 61 at the latest. Much of his work comes from Agricolan sites in Scotland, but this particular stamp is known only from Vespasianic foundations, such as Caerleon, Caerwent, Carmarthen, Chester, Pen Llystyn and Rottweil-Hochmauren. It was used on form 29. *c.* A.D. 65–80.
c. Unidentified. The end of this stamp from a demolition spread in building 8 probably reading]VI on form 15/17 or 18, cannot be matched with any known stamps in –VI. It is perhaps likely to be illiterate.

Plain Ware

Altogether, 208 sherds of plain ware were recovered of which 14 sherds representing eight vessels, all from the topsoil, were in Antonine central-Gaulish fabric. The remainder, representing probably 51 vessels, were south-Gaulish in origin.

Ritterling 9. One small rim sherd, without the external groove on the upper wall. The fabric is much paler than the characteristic pinkish-red of the rest of the samian from the site. Diameter is 110 mm. Rim % 10. Weight 4·8 g.

Dr. 24/25. One small wall sherd showing the external cordon and part of the rouletting above. Weight 2·7 g.

Dr. 15/17. Eight sherds representing one vessel, stamped LOGIR ... (see above). The vessel is shallow and the wall has a pronounced outward slant. The inside of the wall is almost smooth, the internal projection beneath the rim being only slight. The junction of wall and base is thick, the external concavity being only slight. Rim % 30. Diameter 180 mm. Weight 86·9 g.

Curle 11. Fourteen sherds probably representing three vessels. Rim % 30. Weight 177·9 g. The majority of the sherds are from one vessel of 200 mm diameter.

Dr. 27. 45 sherds representing perhaps 18 vessels. Rim % 240. Weight 201 g. All examples have the internal groove just below the rim. The sample is about equally divided between vessels with a diameter of *c.* 85 mm and those with a diameter of *c.* 120 mm.

Dr. 18 and 18R. 122 sherds perhaps representing 24 vessels. Rim % 157. Weight 831·8 g.

Dr. 18. 20 vessels. Rim % 130. Including two stamps: OFCALVI and unidentifiable (see above).

Dr. 18R. 4 vessels. Rim % 27.

In all the examples the wall showed a marked outward slant. None of the vessels had either the internal or external offset at the junction of the wall and base. Of the Dr. 18's the majority had diameters between 160 and 175 mm. The diameters of the Dr. 18R's were 210 mm, 250 mm (two) and 270 mm.

Dr. 35. One base and two body sherds, possibly representing three vessels. Weight 15·9 g.

Discussion

From examination of individual dates assigned to pieces in the report it will be clear that a first century date for the site is beyond dispute. There is a complete absence of early central-Gaulish ware and of the latest first century south-Gaulish ware in the style of potters such as Mercato and Biragillus. Occupation cannot have continued long after A.D. 90 and the narrow date range of the group suggests that it was short. The actual date of commencement of occupation involves a consideration of pottery loss and survival.

Under normal circumstances rate of loss of pottery ought to remain fairly constant; it could be expressed as a percentage per year. Though there is no way of knowing exactly what the rate of loss was or is, this does not matter; if it is constant, the result will be the same whatever the actual figure.

Thus, if a certain quantity of pottery, for example 100 vessels, were supplied in a given year, and the rate of loss per year was, for example, 20% then in the first year the actual loss would be 20 vessels. In succeeding years this loss would decrease exponentially as it would be 20% of the vessels remaining after the previous year's loss. In the second year it would be 16, in the third year 13 and so on. The actual loss would be greatest in the period immediately following the arrival of the consignment of pottery. This can be represented graphically as a curve which drops steeply at first before gradually levelling out; eventually it is almost horizontal and in theory continues this way, getting closer and closer to the horizontal but never actually reaching it, that is, never reaching zero. In practice, though, it would reach zero; the graph would end when the last vessel from a given consignment was lost or broken.

This pattern of exponentially decreasing loss will be the same for every consignment of pottery that is delivered in succeeding years. Graphically represented this is a series

of exponential curves advancing across the graph. Thus, both pottery in use and that which is lost at any given time will be a cross-section of these curves, and will consist of a large number of the latest arrivals, together with older vessels, the quantities of which will decrease exponentially with age, and pottery recovered from a site will consist of vessels in current use during the occupation of the site and older vessels in the same proportions.

This can be seen with the datable decorated and stamped samian from the site. The widest possible date range for the group is from A.D. 65, or a little before, to A.D. 95. Within this, the majority of pieces (more than 60%) date to between A.D. 75 and 95, a much smaller proportion (29%) date to between A.D. 65 and 85, and only one piece (*c.* 6%) could date to much before A.D. 70.

In much more general terms it can also be seen in the plain ware assemblage. This is typically Flavian: form 15/17 is present, though greatly outweighed by form 18; form 11 and form 35 are present and form 27 is present in quantity. Also present though, are two sherds (*c.* 4% of the probable total of plain vessels) of forms which are usually regarded as pre-Flavian in date: Ritterling 9 and Dr. 24/25.

The occupation of the site should therefore be dated by the latest vessels within the group and should lie in the range A.D. 75–90, or possibly 95.

The Coarse Pottery (figs. 15, 16, 17 and 18)

The following analysis of the coarse pottery concentrates on the fabric types. Numbers at the end of each fabric description, and cross-references from the structural report, refer to the illustrations from which general morphological characteristics should be self-evident. Each drawing has its illustration number, fabric number, and an "S" if it is stratified. The stratified contexts are listed according to illustration number after the fabric descriptions. In this way, it should be possible to work from context to morpohology to fabric, or vice versa.

The Fabrics

The coarse-ware was examined using X10 and X20 handlenses and a X30 binocular microscope. The characteristics of each fabric are described under the following headings: colour, using the Munsell Soil Color Chart and the verbal description associated with each colour code; hardness, four categories: soft, fairly hard, hard, very hard; feel, four categories: harsh, rough, smooth, powdery; compactness of clay matrix, four categories: open, fairly compact, compact, very compact; fracture, five categories: sub-conchoidal, smooth, finely irregular, hackly, laminar; treatment of surface, where this has survived; inclusions: frequency, four categories: sparse, moderate, common, abundant; roundness, three categories: angular, sub-angular, rounded; max. and min. size; size of main fraction; type. Without recourse to thin-sectioning and examination under a petrological microscope, identification of only a few types of inclusions has been possible.

The mortaria, except for no. 79 (fabric 12) have been treated separately.

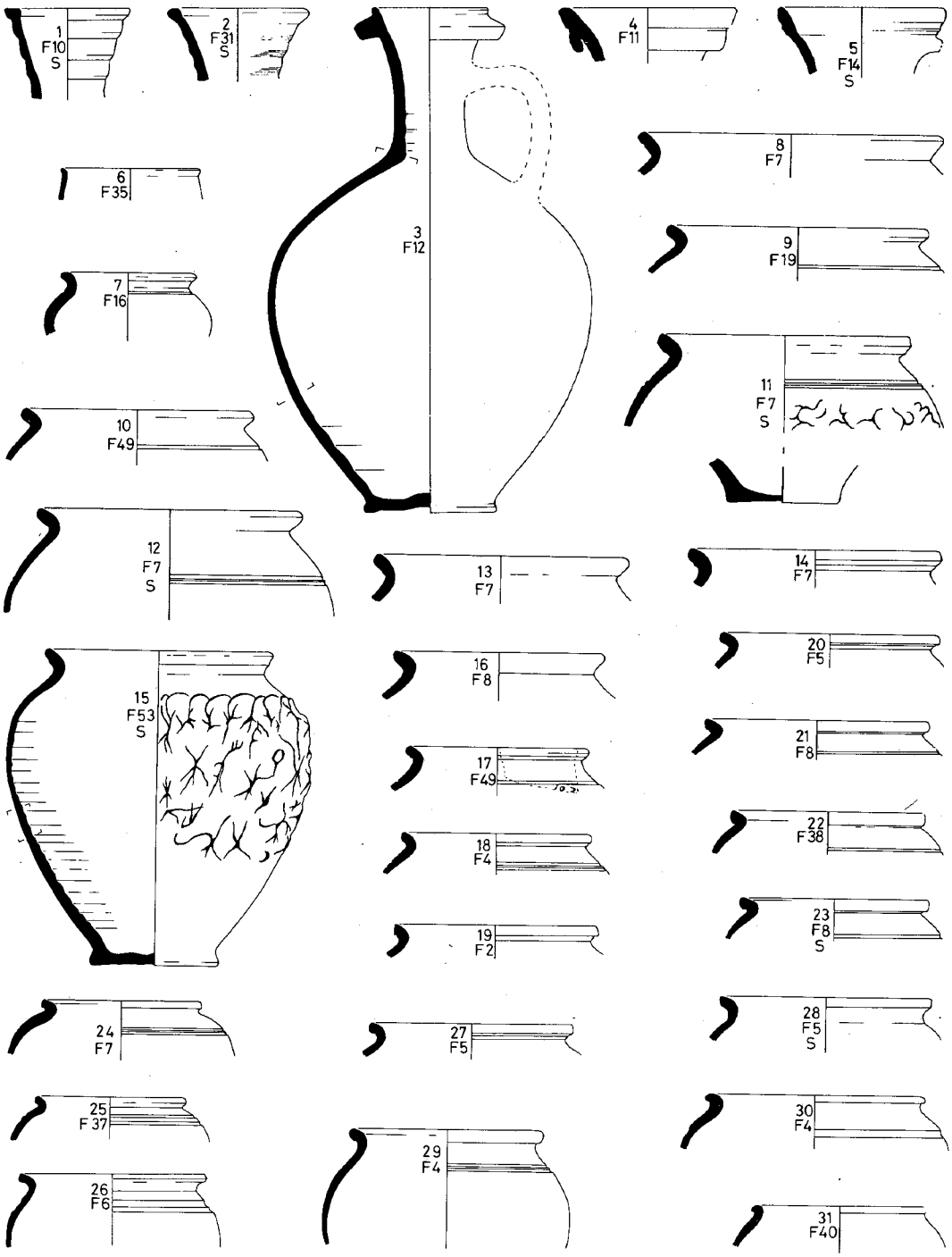


Fig. 15. $\frac{1}{4}$).

Fabric

1. Reddish-yellow (5YR 6/8) with grey core (N5); very hard, smooth feel, very compact fabric, smooth fracture, smoothed surface and knife trimmed base; inclusions: sparse, rounded, 0·5–2·0 mm, main fraction *c.* 0·3 mm, quartz, red and black iron ore, ?feldspar, quartz sandstone. No. 47.
2. Light red (10 YR 6/8–2·5YR 6/8) with dark grey core (N4); fairly hard—hard, harsh feel, very compact fabric, smooth fracture, wet smoothed surface; inclusions: moderate, sub-angular, 0·2–3·0 mm, main fraction *c.* 1·0 mm, quartz, ?limestone, quartz sandstone and quite a high percentage of fine-grained rock fragments. Nos. 19 and 55.
4. Reddish-yellow (5YR 6/6–7/6) with, in all but nos. 18 and 62, grey core (N5). In the best examples, where the surface is still intact, the fabric is fairly hard—hard, harsh feel, compact fabric, finely irregular—smooth fracture with a tendency to laminar in nos. 30, 59 and 62; inclusions: common, sub-angular and rounded, 0·2–1·5 mm, main fraction *c.* 0·5 mm, quartz ?limestone, black iron ore, quartz sandstone and various other fine grained rock fragments. Nos. 18, 29, 30, 59, 60, 62.
5. Light red to reddish-yellow (2·5–5YR 6/8); soft, powdery feel, compact fabric, smooth fracture, original surface lost; inclusions: sparse, sub-angular and rounded, 0·2–2 mm, main fraction *c.* 0·5 mm, quartz, fine grained rock fragments and large (up to 2 mm) grains of grog. Nos. 20, 27, 28.
6. Light red (2·5YR 6/8) with brown core (10YR 5/3–6/3); fairly hard—hard, smooth feel, compact fabric, smooth fracture, surface smoothed with, on 26, a trace of grey slip on the rim; inclusions: common, sub-angular and rounded, 0·2–1·5 mm, main fraction *c.* 0·3 mm, quartz and other monomineralic grains. Nos. 26, 63.
7. Dark grey (N5) with thin patchy light grey surface; fairly hard—hard, harsh feel, compact fabric, smooth fracture; inclusions: moderate, sub-angular and rounded, 0·5–2·0 mm, main fraction 0·8–1·0 mm, quartz and fine-grained rock fragments. Nos. 8, 11, 12, 13, 14, 24, 86. Similar fabric: Daniels 1959, no. 4 (Red House bath-house).
8. Grey (N5–N6); hard, rough feel, compact fabric, finely-irregular—smooth fracture, surface smoothed; inclusions: common, rounded, 0·2–1·0 mm, main fraction *c.* 0·5 mm, quartz and also well-rounded dark grey patches of clay-sized grains in matrix. Nos. 16, 21, 23. Similar fabric: Daniels 1959, Nos. 1, 7, 8, 13 (Red House bath-house).
9. Light grey (N7) with very thin, patchy, dark grey surface, possibly a slip; fairly hard, rough feel, compact fabric, smooth fracture, surface probably originally wiped; inclusions: moderate, rounded, 0·2–0·3 mm, quartz and occasional fine-grained rock fragments. No. 40.
10. Reddish-yellow (5YR 7/8) with grey core (N5); fairly hard, smooth feel, very compact fabric, finely irregular fracture, surface smoothed, possible burnished; inclusions: moderate, rounded, 0·1–3·5 mm, main fraction *c.* 0·2 mm, quartz and fine-grained rock fragments, including 1 large (3·5 mm) grain of quartz sandstone. No. 1.

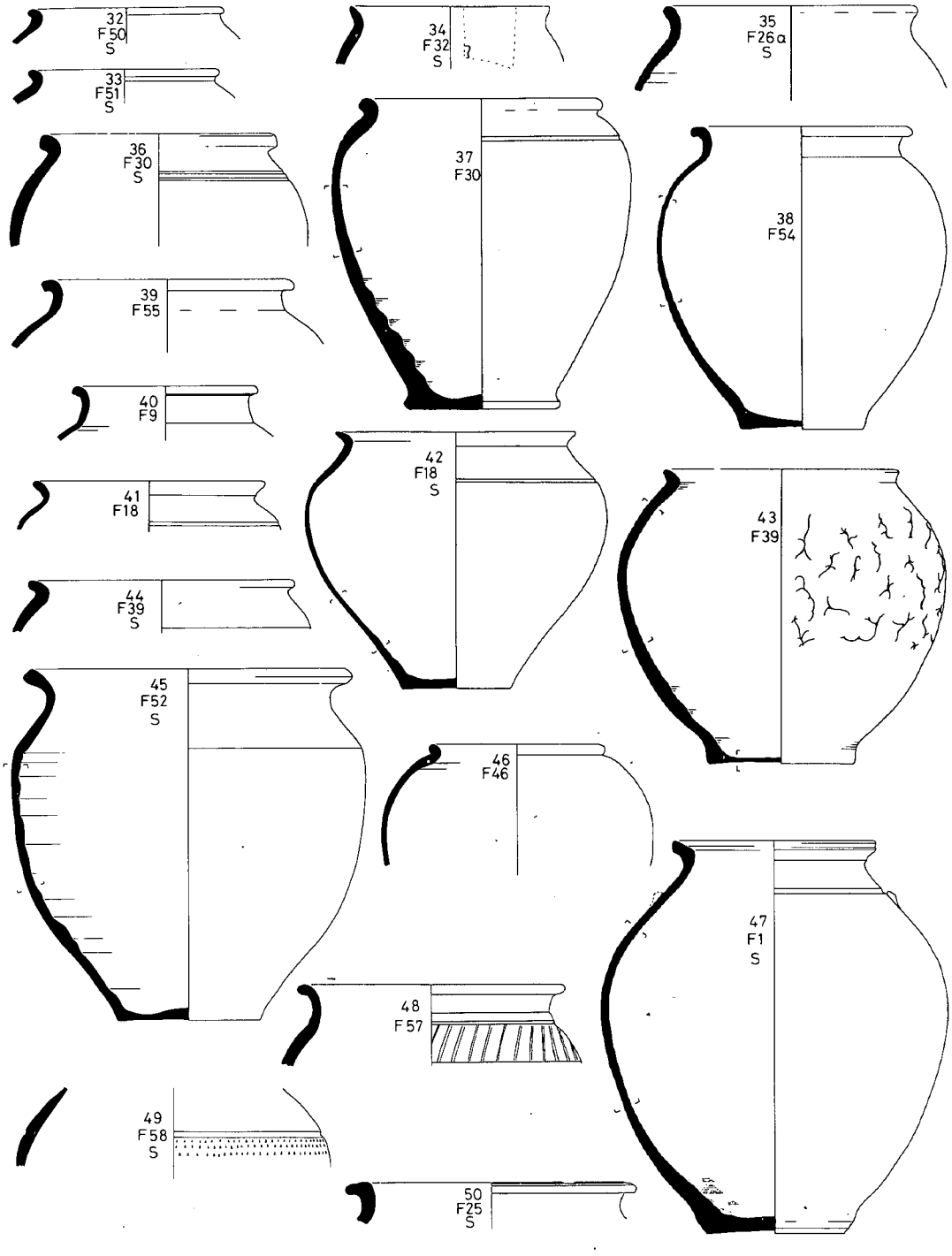

32
F50
S
33
F51
S
34
F32
S
35
F26a
S
36
F30
S
37
F30
38
F54
39
F55
40
F9
41
F18
42
F18
S
43
F39
44
F39
S
45
F52
S
46
F46
47
F1
S
48
F57
49
F58
S
50
F25
S

Fig. 16. (1:4).

11. Light red (2·5YR 6/8) with thin dusky red surface inside rim; very hard, smooth feel, very compact fabric, finely irregular fracture, wiped surface; inclusions: common, rounded, 0·1–1·0 mm, main fraction *c.* 0·4 mm, quartz, black iron ore, fine-grained rock fragments. No. 4.
12. Very pale brown (10YR 8/4); soft, powdery feel, very compact fabric, finely irregular fracture, original surface lost; inclusions: moderate, rounded, 0·2–0·5 mm, main fraction *c.* 0·2 mm, quartz, red and black iron ore. Nos. 3, 79. Much of the body, and the handle of no. 3 have been restored.
14. Light red (2·5YR 6/8); soft powdery feel, compact fabric, finely irregular fracture, original surface lost; inclusions: sparse, rounded, 0·1–1·5 mm, main fraction *c.* 0·2 mm, quartz and fine-grained rock fragments. No. 5.
16. Light reddish-brown (5YR 6/6); fairly hard, smooth feel, compact fabric, finely irregular fracture, surface burnished and tooled on shoulder; inclusions: some circular voids and very fine yellow grains (?limestone). The fabric has the appearance of a coarse samian fabric. No. 7.
17. Pale pink (7·5YR 7/4); fairly hard, smooth feel, compact fabric, finely irregular fracture, surface wet-smoothed, finger marks visible; inclusions: sparse, rounded, 0·1–0·5 mm, main fraction *c.* 0·2 mm, quartz and occasional fine-grained rock fragments. No. 90.
18. Light grey (N7) with darker grey to black surface; soft—fairly hard, smooth feel, fairly compact—compact fabric, finely irregular fracture; inclusions: sparse, rounded, *c.* 0·1 mm, quartz and mica. Nos. 41, 42.
19. Dark grey core (5Y 5/1) with thin light grey margins and dark grey surface (N4); fairly hard, rough feel, compact fabric, finely irregular fracture; surface wet-smoothed over the grits; inclusions: moderate, rounded, *c.* 0·3 mm, quartz. No. 9.
21. Dark grey (N4) with pale grey margins and dark grey surface; fairly hard, smooth feel, compact fabric, finely irregular fracture, smoothed surface; inclusions: sparse, rounded, up to 0·3 mm, main fraction 0·1 mm, very micaceous. No. 89.
22. Light red (2·5YR 6/8); fairly hard, smooth feel, fairly compact fabric, finely irregular fracture, smoothed surface; inclusions: common, rounded, 0·1–3·0 mm, main fraction 0·2 mm, quartz, red and black iron ore, fine grained rock fragments and grog. No. 70.
23. Red (10R–2·5YR 5/8); fairly hard—hard, harsh feel, fairly compact fabric, finely irregular—hackly fracture, wet-smoothed surface; inclusions: common, rounded, all sizes 0·2–1·2 mm, quartz and many fine-grained rock fragments. Nos. 64, 76.
25. Greyish-brown (10YR 5/2) with pale orange surface; soft, rough feel, fairly compact fabric, finely irregular fracture, original surface lost; inclusions: moderate, rounded, 0·2–3·0 mm, main fraction *c.* 0·5 mm, little quartz, high proportion of rounded black grains and fine-grained rock fragments (including ?siltstone). No. 50.
26. No. 67—Grey (N5) burnt orange in places, no. 74—light grey (10YR 7/2) with dark grey to black surface; fairly hard, rough feel, fairly compact fabric, finely irregular—laminar fracture; inclusions: moderate, rounded, all sizes 0·2–1·0 mm, max. 5 mm, quartz, mica, quartz sandstone, fine-grained rock fragments. Nos. 67, 74.

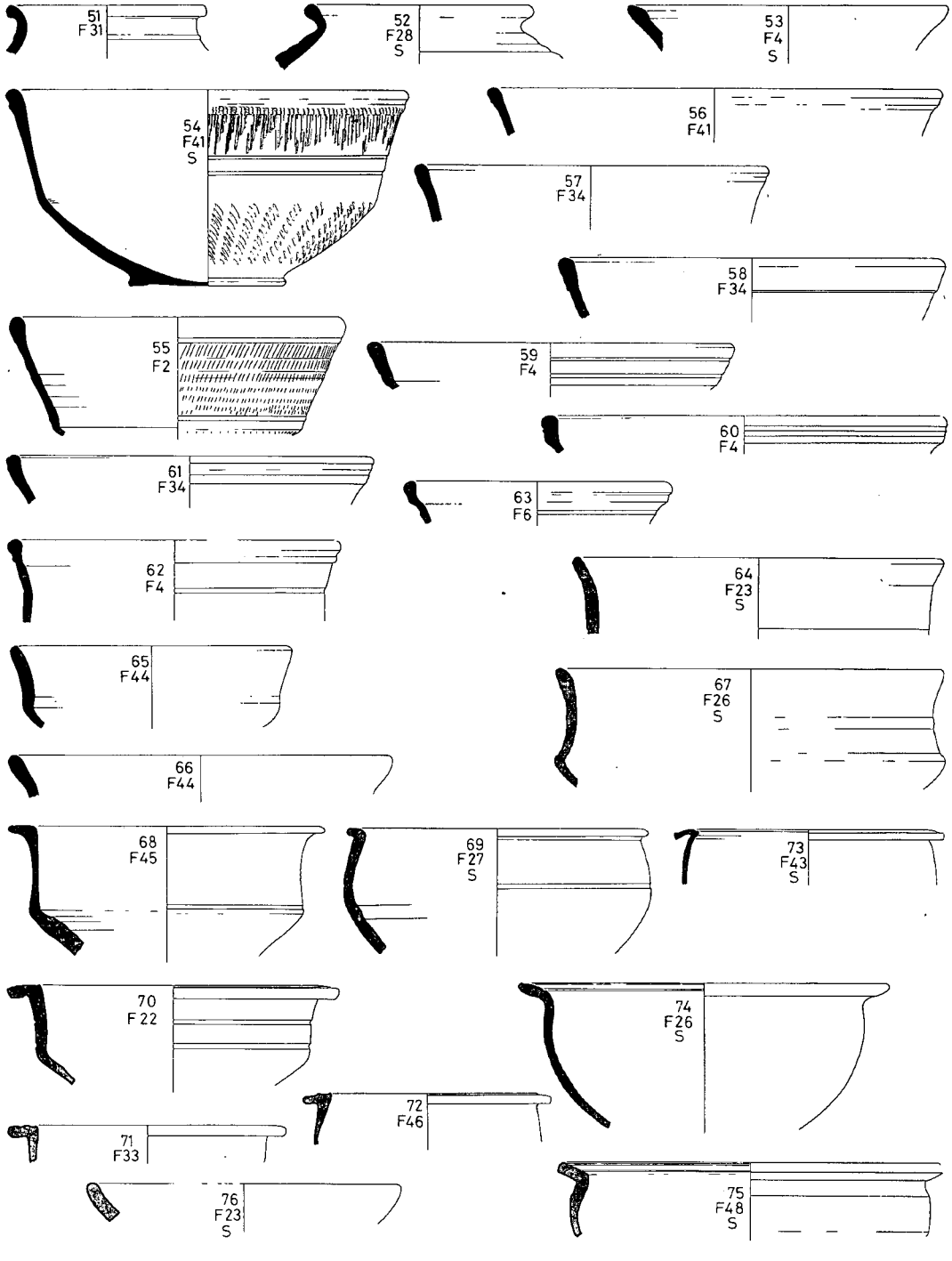

51
F31
52
F28
S
53
F4
S
54
F41
S
56
F41
57
F34
58
F34
55
F2
59
F4
60
F4
61
F34
63
F6
62
F4
64
F23
S
65
F44
67
F26
S
66
F44
68
F45
69
F27
S
73
F43
S
70
F22
74
F26
S
72
F46
71
F33
76
F23
S
75
F48
S

Fig. 17. (1:4).

26a Greyish brown (10YR 5/2) with pale grey core (N7) and dark grey surface; fairly hard, rough feel, fairly compact fabric, finely irregular fracture, smoothed surface; inclusions: moderate, rounded, 0·2–1·5 mm, main fraction *c.* 1·0 mm, mostly quartz. No. 35.

27. Light grey (5Y 7/1); soft, powdery feel, fairly compact fabric, finely irregular fracture, original surface gone; inclusions: sparse, rounded, all *c.* 0·6 mm, quartz and fine-grained rock fragments. No. 69. Vessels with similar fabrics: Daniels, 1959, nos. 3 and 9 (Red House bath-house).

28. Dark grey (N4) with paler grey surface; fairly hard, rough feel, fairly compact fabric, finely irregular fracture, original surface lost; inclusions: moderate, rounded, 0·2–0·6 mm, main fraction 0·2 mm, quartz and fine-grained rock fragments. No. 52.

29. Grey (5Y 5/1); soft, harsh feel, fairly compact fabric, finely irregular fracture, original surface lost; inclusions: common, sub-angular and rounded, 0·3–0·6 mm, main fraction 0·6 mm, mostly quartz. No. 87.

30. Greyish-white (5Y 8/2) with black outer surface, no. 36—hard, rough feel, fairly compact fabric, hackly fracture, smoothed, particularly on shoulder; the fabric of no. 37 is much softer and more friable; the vessel appears to have been crudely made and badly fired; inclusions: common, rounded, all sizes 0·2–1·0 mm, max. 1·5 mm, quartz, mica, black iron ore, grog, fine-grained rock fragments. Nos. 36, 37.

31. White (10YR 8/2–8/3); soft, rough feel, open fabric, hackly fracture, original surface lost; inclusions: abundant, rounded, all sizes 0·2–1·0 mm, mostly quartz with occasional fine-grained rock fragments. Nos. 2, 51.

32. Grey (5Y 6/1) with black outer surface; fairly hard, harsh feel, open fabric, hackly fracture, rusticated surface (probably irregular, high relief); inclusions: common, rounded, all 0·3–0·4 mm, mostly quartz. No. 34.

33. Dark grey (N4) with thin light grey margins and light grey surface (5Y 7/1); fairly hard, harsh feel, open fabric, hackly fracture, original surface lost; inclusions: common, rounded, 0·2–1·5 mm, main fraction *c.* 0·6 mm, quartz and occasional fine-grained rock fragments. No. 71.

34. Light red—reddish-yellow (2·5YR 6/8–5YR 6/6) with reddish-yellow to brown core; fairly hard—hard, harsh feel, compact—very compact fabric, laminar fracture, probably originally wet-smoothed, faint stuttered decoration on no. 58; inclusions: common, angular—rounded, 0·2–1·5 mm, main fraction *c.* 0·8 mm, quartz, red and black iron ore, ?limestone and other fine-grained rock fragments. Nos. 57, 58, 61, 85.

35. Pale reddish-yellow (5YR 7/8) with light brown core and slightly paler surface; soft, smooth feel, compact fabric, laminar fracture, original surface lost; inclusions: moderate, rounded, 0·1–2·5 mm, main fraction *c.* 0·2 mm, quartz, red iron ore, occasional grains of grog. No. 6.

37. Light red (2·5YR 6/6) with thin, slightly paler core; hard, rough feel, compact fabric, laminar fracture, wet-smoothed surface; inclusions: moderate, rounded, all 0·2–0·3 mm, quartz and black iron ore. No. 25.

38. Light red (2·5YR 6/8) outer fabric, reddish-yellow (5YR 6/6) inner; soft, smooth feel, compact fabric, laminar fracture, inner surface wiped; inclusions: moderate, angular—rounded, all sizes 0·3–1·0 mm, max. 2·5 mm, quartz and fine-grained rock fragments (including occasional angular grains of quartz sandstone). No. 22.
39. Light brownish-grey (2·5Y 6/2) with dark grey core (N4) and darker surface; well laminated; fairly hard, smooth feel, compact fabric, laminar fracture, rusticated surface (low relief, thin spined, irregular); inclusions: sparse, only very occasional rounded quartz grains *c.* 0·3 mm. Nos. 43, 44.
40. Reddish-yellow (5YR 7/6) with greyish-brown core (10YR 5/2); soft, smooth feel, fairly compact fabric, laminar fracture, original surface lost; inclusions: sparse, occasional quartz grains *c.* 0·6 mm, fine-grained rock fragments *c.* 3·0 mm and angular grog grains *c.* 3·0 mm. No. 31.
41. Light red (2·5YR 6/8) with slightly browner core; hard, smooth feel, fairly compact fabric, laminar fracture, stuttered decoration; inclusions: common, rounded, 0·1–0·6 mm, main fraction *c.* 0·2 mm, quartz and black iron ore. Nos. 54, 56.
42. Light red (10R 6/6) with orange core (2·5YR 6/8); fairly hard, harsh feel, fairly compact fabric, laminar fracture, wet-smoothed surface; inclusions: common, rounded, all sizes 0·2–2·0 mm, max. 4·0 mm, quartz, ?siltstone, occasional large (up to 4·0 mm) fine-grained rock fragments containing ?oolitic limestone. No. 77.
43. Red (2·5YR 5/8); hard, rough feel, fairly compact fabric, laminar fracture, wet-smoothed surface; inclusions: common, angular—rounded, all sizes 0·2–1·5 mm, max. 4·0 mm, quartz, black iron ore, occasional large, fine-grained rock fragments. No. 73.
44. No. 65—Pinkish-white (7·5YR 8/2) with pinker core, no. 66—yellowish-white (10YR 8/3); soft—fairly hard, rough feel, fairly compact fabric, laminar fracture, smoothed surface; inclusions: moderate, sub-angular and rounded, 0·3–2·0 mm, main fraction *c.* 1·0 mm, quartz and fine-grained rock fragments, occasional large angular grains of grog. Nos. 65, 66.
45. Very pale brown (10YR 8/3), outer surface burnt reddish-brown to black; fairly hard, powdery feel, fairly compact fabric, laminar fracture, surface smoothed when green hard; inclusions: moderate, angular—rounded, main fraction *c.* 0·2 mm, max. *c.* 1·0 mm, quartz and fine-grained rock fragments (including occasional grains of quartz sandstone). No. 68.
46. Dark greyish-brown (2·5Y 4/2) with thin grey margins (N6) and dark grey to black surface; hard, rough feel, fairly compact—compact fabric, laminar fracture, surface wet-smoothed; inclusions: moderate, rounded, main fraction *c.* 0·2 mm, larger grains 1·5–3·0 mm, quartz and angular fine-grained rock fragments. Nos. 46, 72. Vessel in similar fabric: Daniels, 1959, no. 2 (Red House bath-house).
47. Grey (N6) with darker grey core (5Y 5/1) and black surface; hard, rough feel, compact fabric, laminar fracture, wiped surface, knife-trimmed base; inclusions: sparse, mostly *c.* 0·5 mm, occasionally up to 2·0 mm, quartz and fine-grained rock fragments. No. 78.

48. Light grey (10YR 7/1) with reddish-brown to black surface; soft, rough feel, compact fabric, laminar fracture, original surface lost; inclusions: moderate, sub-angular and rounded, all sizes 0·5–2·0 mm, quartz and fine-grained rock fragments (including ?siltstone). No. 75.
49. Very dark grey (5Y 3/1) with light grey margins and dark grey to black surface; hard, rough feel, compact fabric, laminar fracture, smoothed surface with trace of rustication on no. 17; inclusions: moderate, angular—rounded, 0·2–0·7 mm, main fraction *c.* 0·5 mm, quartz and larger grains of ?siltstone. Nos. 10, 17.
50. Light brownish-grey (10YR 7/1–7/3) with dark grey surface (N4); fairly hard, rough feel, fairly compact fabric, laminar fracture; inclusions: common, rounded, mostly 0·3 mm or finer, quartz, mica. No. 32.
51. White (N8), grey core with bluish-white margins and very dark grey surface (N3); fairly hard, rough feel, compact fabric, laminar fracture, wiped surface; inclusions: moderate, rounded, all sizes 0·2–0·5 mm, max. 1·0 mm, mostly quartz. No. 33.
52. Light brownish-grey (2·5Y 6/2) with dirty grey outer surface and dark grey inner; soft, smooth feel, fairly compact fabric, laminar fracture, smoothed surface; it is possible that the vessel was not thrown in one piece, but the shoulder and rim added to a hand-coiled base; inclusions: sparse, only an occasional rounded grain of quartz *c.* 0·5 mm, much mica. No. 45.
53. Greyish-brown (10YR 5/2) with light yellowish-brown to grey core; soft, rough feel, fairly compact fabric, laminar fracture, rusticated surface (irregular star-shaped, high relief with imbricated scale pattern on shoulder); inclusions: common, rounded, main fraction *c.* 0·2 mm, max. *c.* 0·8 mm, mostly quartz. No 15.
54. Grey (N5) with pale brown surface (10YR 6/3); fairly hard, rough feel, fairly compact fabric, laminar fracture, original surface lost; inclusions: common, rounded, mostly 0·2 mm or finer, mostly quartz. No. 38.
55. Grey (N5) with very pale brown margins and very dark grey surface (N3); fairly hard, rough feel, fairly compact fabric, laminar fracture, wiped to give a slight gloss (possibly a slip); inclusions: moderate, rounded, 0·2–0·3 mm, max. 2·0 mm, quartz and occasional fine-grained rock fragments up to 2·0 mm. No. 39.
56. Grey (N5) with pale grey margins and dark grey surface; soft, rough feel, fairly compact fabric, laminar fracture, smoothed surface; inclusions: moderate, rounded, 0·2–0·3 mm, mostly quartz. No. 88.
57. Light grey (10YR 7/2) towards inner side, darkening towards outer surface, outer surface black, inner surface very dark greyish-brown; hard, rough feel, fairly compact fabric, laminar fracture, surface probably once burnished; inclusions: abundant, rounded, 0·1–0·2 mm, quartz and other monomineralic grains. No. 48.
58. Reddish-brown (2·5YR 5/4) with very dark greyish-brown core (10YR 3/2) and black outer surface; very hard, rough feel, open fabric, laminar fracture, surface wiped, stuttered decoration below deep shoulder groove; inclusions: abundant, rounded, all sizes 0·2–0·5 mm, occasional max. 1·5 mm, quartz and other monomineralic grains. No. 49. Two small fragments in the same fabric, one having the

same decoration were found in the excavations of the Red House bath-house in 1957 (unpublished).

Stratified contexts

Illustration

1. cobble surface north of building 8
2. demolition spread in building 7
5. pit 6
11. post-trench in the east wall of building 5, pit 12 and furnace 6.
12. cobble surface north of building 8
15. as above
23. as above
24. demolition spread in building 7
28. pit 12
32. post-trench of the southern wall of the compound
33. furnace 2
34. pit 2
36. pit 12
42. cobble surface north of building 8
44. pit 1
45. pit 6
47. pit 2
49. post-trench of the east wall of building 5 and pit 12
50. post-trench of the west wall of building 12
52. furnace 4
53. demolition spread in building 5
54. partition post-trench of building 8 and cobble surface north of building 8
64. pit 1
67. pit 5
69. pit 12
73. post-hole of the verandah of building 10, phase 2
74. cobble surface north of building 8
75. as above
76. partition post-trench of building 10, phase 2
78. cobble surface north of building 8
79. as above
80. demolition spread in building 7
85. pit 12
86. pit 12

The Mortaria by Katherine F. Hartley (figs. 18 and 19)

Illustration

79. This stamp when completely impressed reads OF / CACVMATTI for *officina* (workshop) of Cacumattus. This potter was one of the very few mortarium potters to use the word "officina" in their stamps, a habit normally linked with Gaulish samian potters. Cacumattus was one of a number of potters who made mortaria of Gillam 238 (Group II in Hartley 1977, 5–17). The dating evidence for their work, and their fabric and distribution indicate manufacture within the period A.D. 70–100 in south-eastern England or north-eastern France.
80. Not illustrated. Three small fragments probably all from one vessel, in soft, fine-textured cream fabric with thin pale grey core; a little flint and red-brown grit survives on the flange but the inside is worn smooth. These fragments are probably from a mortarium of form Gillam 238, made within the period A.D. 70–100 (*ibid.* Group II). Probably burnt.
81. About half of a mortarium in soft brownish-cream fabric with concentric scoring, and flint and much red-brown grit on the inside surface and on the flange. Probably burnt.

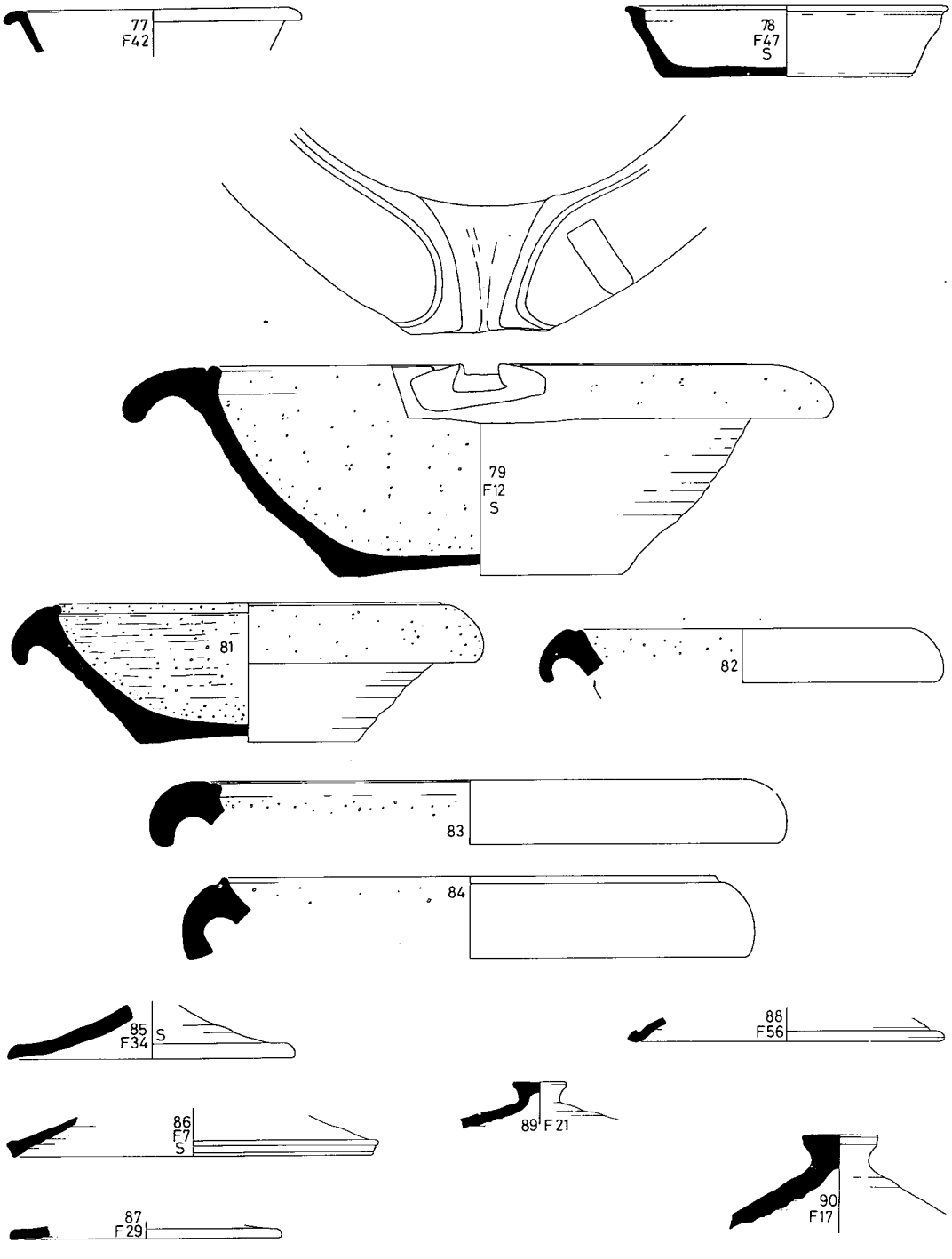

77
F42
78
F47
S
79
F12
S
81
82
83
84
85
F34
S
88
F56
86
F7
S
89
F21
87
F29
90
F17

Fig. 18. (1:4).

79

a b c d

Fig. 19. (1:2).

82. A mortarium in fine-textured, pale brown fabric with thick brownish-pink core, tempered with flint and brown grit; there is a little trituration of the same kind surviving.

Mortaria nos. 81 and 82 are basically of the same type as those made by such potters as Q. Valerius Se- , Buccus, Summacus and others (*ibid.* Group I), though both differ slightly in fabric from their products. Their activity is dated within the period A.D. 55–85 but some of their mortaria would, of course, continue in use after this date.

83. A mortarium in granular, greyish-cream fabric with thick bluish-grey core; the trituration grit is mostly flint with some red-brown particles. Although this type of core is relatively uncommon there is no doubt that this mortarium was made in the complex of potteries centring on Brockley Hill, Middlesex. In the Flavian–Hadrianic period these potteries formed one of the major production centres serving markets throughout Britain. This piece can be attributed to the period A.D. 70–100 on account of the rim-profile which can be matched in the work of Albinus and Matugenus, and the presence of abundant, closely packed small trituration grit extending right up to the bead; this practice did not continue in this area after about A.D. 100/110 at the latest.

84. A mortarium in slightly sandy brown fabric with pinker core and matt self-coloured slip; sparsely distributed red-brown and quartz-like grit. This vessel was certainly made in the north of England, probably in the Flavian period.

Amphorae (fig. 19)

In a number of places on the site large numbers of amphorae fragments were recovered from stratified contexts:

1. From the filling of pit 5, 235 fragments of globular amphora from at least two vessels, including stamps b. and c. below.

2. From furnace 6, 997 fragments of globular amphora from at least three vessels.
3. From pit 8, 22 fragments of globular amphora from at least one vessel.

Stamps

a. Handle stamped M^{Δ} F C, cf. *Callender* 1083a, dated from the Vindonissa Schütthugel to A.D. 30–100. Unstratified.
b. On the body of the vessel, next to the handle –] F.$\widehat{VES}$ cf. *Callender* 1457b (Q F. VES). Probably south-Spanish. Dated from the Vindonissa Schütthugel to the second half of the first century.
c. On the body of the vessel, next to the handle SEX, cf. *Callender* 1601. Dated from the Vindonissa Schütthugel to A.D. 30–100.
d. Handle stamped -] C Unstratified.

Discussion

The coarse pottery from the site includes many types which are often regarded as characteristically Flavian and which do, in fact, occur repeatedly on Flavian sites throughout northern Britain. Difficulties arise, however, when it is realized that many of these types remain substantially unchanged until the Hadrianic period and that within the general types there is considerable variety of detail. In general one gets the impression that pottery found on Flavian sites in northern Britain is coming from a number, possibly a large number, of separate sources but is nevertheless being made by potters working within the same general tradition, and that this continues to be the case until the changes imposed by the building of the permanent Hadrianic frontier.

The carinated bowl with reeded rim is a case in point. Within the definition of a bowl with a carinated profile and reeded rim there is considerable variety, from examples showing pronounced "tumble home" (the leaning-in of the upper wall) and a nearly hemispherical profile (cf. for example, Charlesworth 1964, fig. 5, no. 7, from Kirkby Thore) to those which seem to be peculiar to the main site at Corbridge, where the upper wall leans out, the profile is truly carinated, the lower wall being concave, and the whole rim undulates downwards (Richmond and Gillam 1953, fig. 9, no. 7). Examples of the latter occur in Flavian, Trajanic and early-Hadrianic deposits at Corbridge.

The plain-rim carinated bowl, no. 68, can be paralleled both at Fendoch (Richmond and McIntyre 1938, fig. 15, no. 6) and Birdoswald (Richmond and Birley 1930, fig. 16, no. 64—alley deposit), and examples of a common type of cooking pot at Red House (nos. 8–16) still occur at the Trajanic–early Hadrianic sites of Throp and Haltwhistle Burn (Simpson 1913 and Gibson and Simpson 1909) and in the Hadrianic levels at Corbridge (Richmond and Gillam 1953) and Birdoswald (Richmond and Birley 1930).

There are, however, several vessels from the site whose presence would seem to indicate a date early in the Flavian occupation of northern Britain. Cacumattus, who stamped mortarium no. 79, belonged to a predominantly Flavian group of potters who

have been dated by Mrs. Hartley to A.D. 70–100 (Mrs. Hartley's Group II). There is a stamp of Cacumattus from Corbridge, there are stamps of the other potters in this group from Cardean, Camelon, Corbridge and Bochastle, and unstamped fragments of the rim-form so characteristic of this group occur on Flavian sites all over northern England. Mortaria nos. 81 and 82 were made by a Neronian-Flavian group of potters dated by Mrs. Hartley to A.D. 55–85 (Mrs. Hartley's Group I). Stamped vessels of this group are known from Corbridge, Carlisle and Barochan. (For information on potters of Groups I and II cf. Hartley 1977).

Mortarium no. 84 is probably of the same kind as *Gillam* 237 which occurs at Oakwood (Steer and Feachem 1954, no. 1), Malton (from a pre-Agricolan and an Agricolan context—Corder undated, fig. 1, no. 1 and fig. 15, no. 9) and Brough-on-Humber (from a pre-Agricolan context—Corder 1937, fig. 12, no. 57). A more nearly similar vessel occurs at the Red House bath-house (Daniels 1959, fig. 21, no. 8).

The small, thin-walled, reeded-rim bowl, no. 73, cannot be precisely paralleled anywhere in Scotland though there are somewhat similar vessels from Newstead (Curle 1911, fig. 26, no. 13, in a mica-dusted fabric) and Inchtuthil. It does not form part of the series of carinated bowls which continue until Hadrianic times. Clearly these vessels found their way into the area at the time of the Agricolan conquest and not thereafter.

Finally, there is the single-handled flagon, no. 3, to be considered. There seem to be no published examples of this type of vessel from Scotland or Northern England. May published one from Silchester (May 1916, pl. LXII no. 113) and quoted parallels from Newstead, though these are not altogether similar, and are in a different fabric. They could be typologically later developments. The closest parallels are from Richborough (Bushe-Fox 1926, nos. 37 and 39 and 1928, no. 199) all from Claudio-Neronian contexts. No. 199 in particular, was securely stratified in a Claudio-Neronian pit (35), the fill of which appeared to have been deposited all at the same time. There are what seem to be typologically later examples at Richborough from Flavian contexts and these are close to May's Newstead parallels. The vessel is an isolated example, a survival probably brought in a soldier's pack. Flagons being tall and thin-walled, are not vessels which one thinks of as having a high chance of long survival, and its context at Red House is most likely to be Agricolan.

To summarize, none of the vessels here illustrated necessarily suggests a date later than Agricola, and there are enough vessels of demonstrably Agricolan and pre-Agricolan character to make an Agricolan occupation of the site a virtual certainty, on the evidence of the coarse-ware alone.

Of note, incidentally, is the complete absence from the site of colour-coated rough-cast beakers. They are also absent from Inchtuthil, Red House bath-house, Carlisle and the earliest deposits at Corbridge, and it therefore seems possible that they did not start arriving in the north until after *c.* A.D. 90.

Later Roman Pottery

Five fragments of later second century pottery, including two rim-sherds of bowls in black-burnished category 2 fabric, were recovered during the excavation. All were

from the top soil. During initial machine-stripping of the site by the contractors, prior to the commencement of the excavation, about half a dozen sherds of cooking pots in calcite gritted fabric, of fourth century date, were recovered from the topsoil.

Pottery other than Roman

Native (Information from Mr. G. Jobey)

Two sherds of handbuilt native pottery containing large grits were recovered. One was from the pre-fort ring-ditch, the other was from the later ditch cutting the south end of building 10.

Medieval (Information from Miss B. Harbottle and Mrs. M. Ellison)

All the sherds recovered were unstratified.

1. Fragment of buff-ware rod handle, slightly reduced with a thin green glaze on one face. From a small fourteenth century jug.
2. Fragment of a straight-sided bottle in a reduced fabric with a splash of green glaze on the outer surface. Fourteenth century or earlier.
3. Fragment of buff-ware containing small grits with a splash of green glaze on the outer surface.
4. Two fragments of a small slipware plate with a "hooked-down" rim and a treacly-brown glaze over a white slip on the inner surface. Seventeenth century.
5. Fragment of jug wall in a reduced gritty fabric with a dark green glaze on the outer surface. Fourteenth century.
6. Much worn fragment of reduced gritty pottery with green glaze on both surfaces. ?Sixteenth century.
7. Fragment of jug wall in a reduced gritty fabric with a thin green glaze on the outer surface. Fourteenth century.
8. Fragment of fine reddish-brown ware with a green glaze on one surface. Late sixteenth/seventeenth century Dutch import.
9. Fragment of rim of a similar fabric to no. 8 with traces of brown glaze.

COINS

P. J. Casey

The condition of the coins at the moment of loss has been indicated by a notation of the wear displayed, where this can be ascertained. This is a subjective assessment and has no absolute chronological significance.

UW/UW — unworn obverse, unworn reverse. A virtually uncirculated coin.
SW — slightly worn. The highest relief slightly flattened by wear.
W — worn. The relief abraded but all the details of legends visible.
VW — very worn. Considerable abrasion, legends indistinct.
EW — extremely worn. Great erosion of details and legends.

VESPASIAN:

1. Denarius
   obv. IMP. CAESAR VESPASIANVS AVG.
   rev. PON. MAX. TR. P. COS. V
   as RIC 75
   Issue date: A.D.74
   Condition: SW/SW
2. Dupondius
   obv. —
   rev. [FORTVNAE REDVCI]S [C]
   as RIC 473
   Issue date: A.D. 69–79
   Condition: illegible
3. Dupondius
   obv. —
   rev. —
   Issue date: —
   Condition: corroded

VESPASIAN or TITUS:

4. As
   obv. —
   rev. —
   as RIC 487
   Issue date: A.D. 69–81
   Condition: VW/VW, corroded

Nos. 1 and 2 were unstratified. No. 3 came from the post-trench for an internal partition of building 8, and was found adhering to the textile fragment. No. 4 came from furnace 2.

GLASS

Dorothy Charlesworth (fig. 20)

Thirty-four pieces of glass vessels, one piece of moulded window glass from building 7 and two bangle fragments were submitted.

The vessels could not for the most part be identified. The bulk of the fragments were of natural green bottle glass, a metal used for a wide range of purposes, storage jars, bowls and beakers. Two fragments of deep blue and one of deep amber glass were found. Rather more coloured glass might have been used on an Agricolan site, but this confirms the impression that coloured metals were going out of fashion and colourless taking their place for better quality vessels in the 70s. (Harden and Price 1971, 319–21). Only one pillar-moulded bowl was found, a fragment in natural green glass (no. 6).

1. *Unstratified*

Small fragment of a facet-cut beaker in good colourless glass the bottom row of facets, flat polished side with a ground rib below them (fig. 20).

This is a well-known Flavian/Trajanic type of beaker made either from a moulded blank shape or free-blown. There is a considerable variation in the details of decoration and proportion of these beakers, but this fragment does not admit a proper classification within the type (Isings 1957, form 21; Charlesworth 1959a, 40–44).

2. *From pit 5*

Fragment of the lower side and base of a beaker with arcaded applied ribs round indents, pushed in base ring, colourless glass (fig. 20).

This is a better quality indented beaker than those found in the Red House bathhouse (Charlesworth 1959b, 165–6). There are examples at Pompeii and Vindonissa.

3, 4, 5. *All unstratified*

Three fragments of hollow tubular rims of bowls in natural green glass (fig. 20).

These bowls are such a long lived type and show such variety of size, some shallow with a flat base, some deep with a base ring, most plain but some decorated, that no useful comment can be made on small fragments (Isings 1957, forms 19, 44, 46).

6. *From Furnace 2*

Fragment of a pillar-moulded bowl in blue-green glass (Isings 1957, form 3).

7. *Unstratified*

Fragment of blue-green glass with trailed ribbing from near the top of the body of a conical-bodied flagon, other pieces from lower on body (fig. 20).

This is a type coming into common use in the Flavian period. Many were made in the Seine/Rhine area. (Charlesworth 1959a, 51–2).

8. *From pit 5*

Fragment in deep amber glass of the base of a deep bowl, jar, or globular bodied flagon (fig. 20).

9. *Unstratified*
Blue-green fragment with trailed ribbing from near the top of the body of a conical flagon. *c.* A.D. 70–150. Other pieces probably from the same vessel but nearer the base.
10. *From pit 4*
Cylindrical bottle fragment.
11. *From furnace 8*
Fragment, probably from a cylindrical bottle.
12. *Unstratified*
Small ribbed fragment of deep blue metal.
13. *From the post-trench for the south wall of building 10.*
Small chip of deep blue metal.
14. *From pit 6*
Small fragment of thin, colourless metal, partly melted.

BANGLES

15. *Unstratified*
Fragment of a bangle in poor quality green glass with a trail of deep blue spirally wound with white in the centre of its convex surface, eye-shaped spiral of blue and white on the side (fig. 20). Kilbride-Jones type 2.
16. *Unstratified*
Fragment of a bangle in better quality blue-green glass with blue and white twisted trail in the centre of its convex surface (fig. 20). Kilbride-Jones type 2.

Both these have parallels at Hyndford (Stevenson 1954, figs. 1, 11 and 12). Such bangles are more common north of Hadrian's Wall than in the Roman province. Their dating is not certain so these two examples on an Agricolan site are useful additions. Two bangle fragments at Fishbourne in period I, dating before A.D. 75, seem to be the earliest dated examples. (Harden and Price 1971, 366–7).

BEADS (Information on no. 21 from Mrs. M. Guido)

17. *From Furnace 5*
Half melon-shaped bead in deep blue glass (fig. 20).
18. *From pit 8*
Quarter of a similar bead, though definitely not the same bead (fig. 20).
19. *Unstratified*
Quarter of a small, green "faience" melon-shaped bead (fig. 20).
20. *Unstratified*
Half of a deep-blue "faience" melon-shaped bead. The core is lighter than the exterior except in the old breaks which appear brown (fig. 20).
21. *From the west wall of building 10, phase 2*
Hexagonal bead in colourless glass with three opaque yellow spirals, each centred on one flat side and extending over half of the areas at either side of the centre, so that

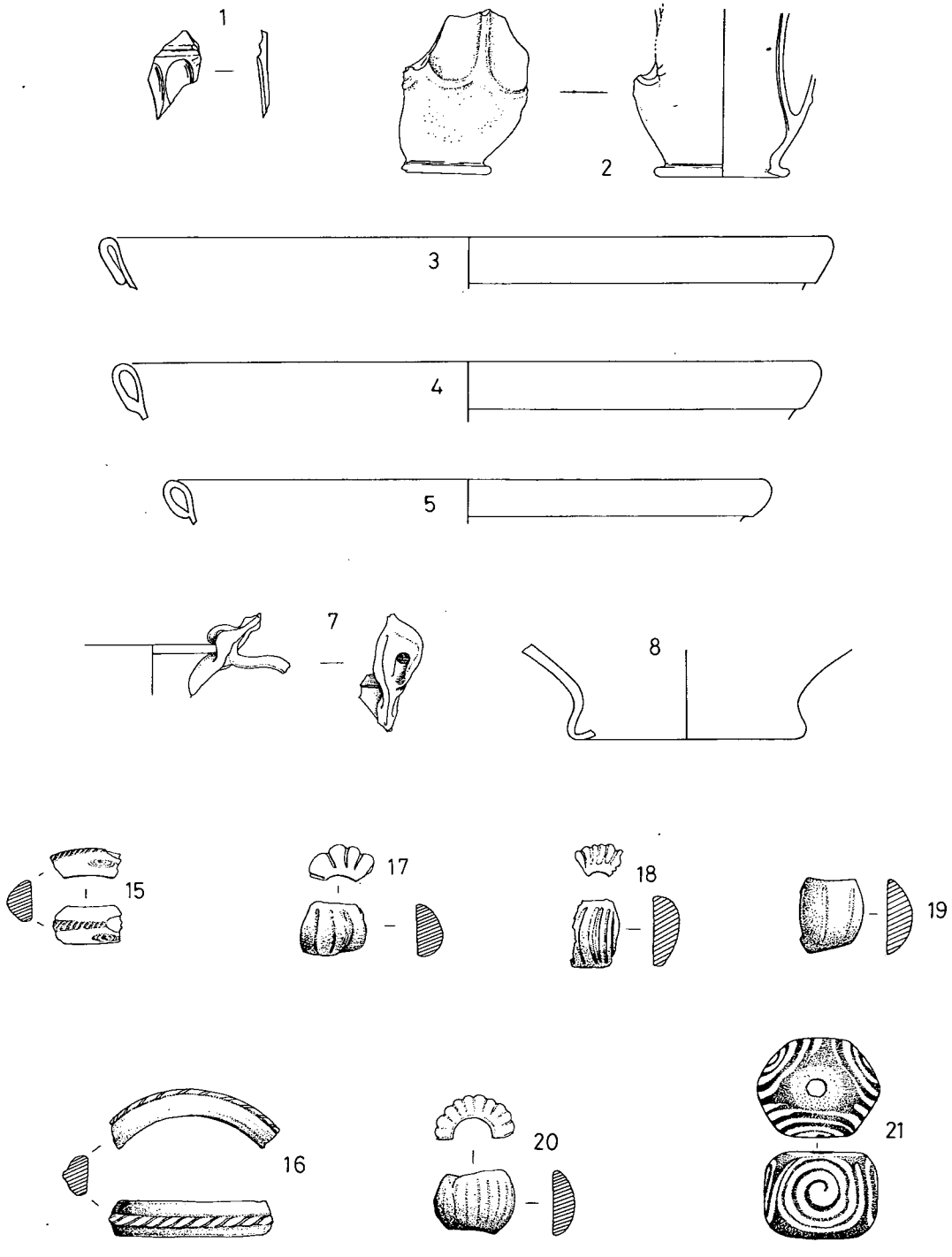


Fig. 20. 1:2, except numbers 19 and 21 which are 1:1.

at first glance it appears triangular (fig. 20). The hexagonal shape is probably simply due to the pressure applied to the spirals in the process of marvering. The bead is one of an interesting type made in the British Isles and generally not surviving much after the 1st century A.D. It could have been made in Meare (Somerset), whose products are mostly of quite colourless glass with yellow, finely made spirals and current from *c.* 250 B.C.–late 1st century B.C., or it could have come from the Scottish factory in Moray (Culbin Sands), whose products are generally the same size and shape as this but not quite so colourless. Beads from the Moray factory were much more concentrated in distribution and the factory seems to have taken over when Meare went out of production, and then itself did not last into the 2nd century A.D. (cf. Guido 1978, Classes 10 and 13).

22. *Pit 6*

Chip off a bulbous, opaque blue bead.

23. *Unstratified*

Chip off a white glass plano-convex gaming counter.

SMALL FINDS (figs. 21 and 22)

Miss L. Allason-Jones

BRONZE

1 & 2. *Unstratified*

Two identical bronze brooches, a) L: 64 mm, W. of head: 23 mm; distorted but lacks only the pin and half of the spring; b) L: 58 mm is in two fragments but is of truer shape than a). It also lacks its pin and spring (fig. 21).

Also associated were a number of fragments of circular-sectioned pin and spring and several short lengths of bronze chain.

The brooches have a curved bow decorated by two grooves running the length of the bow on either side of a raised rib. At the head this rib folds back onto itself over the spring cross-piece to terminate in a circular pseudo-headstud. This "headstud" has an incised concentric circle motif which may have contained enamelling, but this is doubtful. It rests on the central rib of the bow and is *not* cast in one piece with the bow or rivetted on. The sides of the bow splay outwards at the head to form short rectangular arms to shield the spring. These arms are decorated by a series of grooves with a central notched rib. The eight-coil spring is formed from a length of bronze which projects from the back of the head, being cast in one piece with the bow. There is evidence of a wire headloop slotted through the spring. The catchplate is not perforated and the foot terminates in a dished cylindrical knob which echoes the decoration on the arms. This knob is rivetted into position and not cast in one piece with the bow. The brooches would have been worn as a pair linked by the chains. This interesting pair of brooches, for which exact parallels are unavailable, appears to be a development of the "headstud"

brooch (Collingwood and Richmond 1969, Type Q, 296) or "Lamberton Moor" type. Collingwood described the type as being derived from the Honley brooch (Richmond 1925, 12, fig. 2a, no. 6), which is dated by a coin of *c.* A.D. 72–3 but he regarded the type proper as first being made in the early second century. The dating features on the Red House brooches are contradictory: on the typical headstud brooch the headstud is rivetted onto the bow in order to secure the retaining strip which holds the spring-chord in position. On the Red House examples the "headstud" has developed into a merely decorative terminal for the retaining strip, implying that these are late in date. The sophisticated arrangement of the spring and retaining strip being cast in one piece with the bow also implies a late date. However, the manner in which the cylindrical foot is rivetted into position, the wire headloop and the lack of enamelling on the bow are all early features. Collingwood's theory that spring-pins predate hinged-pins has been discounted by Hull (1967, 42). The nearest parallel is a brooch from Rudston which, unfortunately, is undated as are the headstud brooches discussed by Painter and Sax (1969, 153 nos. 3 and 4). The few dated examples set out below are only comparable in certain details but would seem to point to a mid-second century date.

cf. Rudston, E. Yorkshire: undated (Hildyard 1954, 74, fig. 3).
Richborough: ? post A.D. 80 (Bushe-Fox 1949, no. 33).
Lamberton Moor, Berwickshire: pre-A.D. 100 (Curle 1911, 320, fig. 46).
London: (Smith 1934, pl. 31, nos. 9–10).
Kingsholm: undated (Painter and Sax 1909, fig. 2 no. 1).
Monyash: undated (*idem* fig. 2, no. 7).
York: undated (*idem* fig. 3, no. 11).
Stanwix: pre A.D. 134 (Hull 1967, 40).

The associated chain is of the complex type discussed by Stevenson and Emery (1963, 20f.), consisting of a series of bronze wire rings bent and fitted into one another so that each ring contains part of two others. The resultant cross-section is a concave-sided square. The links are in very close relationship to each other and have a limited play. This is an uncommon chain type in Romano-British contexts and is usually found only in association with brooch pairs, for example; a late second century brooch pair from the River Tyne (Brewis 1924, pl. 4) and the headstud brooch from London (Smith 1934, pl. 31, nos. 9 and 10).

3. *Unstratified*

Fragment of bronze brooch spring formed from a length of circular-sectioned bronze wire.

4. *Unstratified*

Distorted bronze lock-plate with slightly tapering sides and pierced by a central keyhole. L: 45 mm, max. W: 27 mm, T: 2 mm (fig. 21). cf: Saalburg (Jacobi 1897, 477, fig. 76, nos. 11 and 17).

5. *Unstratified*

Hollow, circular-sectioned bronze tube tapering to both terminals. L: 90 mm, max T: 5 mm (fig. 21). This may be a bronze pen of the type from South Shields (Museum of Antiquities, Newcastle upon Tyne: 1956. 128. 33A) which has a cupped terminal.

6. *The road found by contractors near the site*

Bronze "bell-shaped" door- or furniture-stud pierced by a square socket and decorated by one deeply incised band. H: 11 m, max. D: 22 mm (fig. 21).

7. *Unstratified*

Bronze door- or furniture-stud of a developed "bell-shaped" type. L: 23 mm, max. D: 17 mm (fig. 21).

Bell-shaped studs are common on Roman sites of all periods and have been interpreted variously as vehicle or furniture decorations (Webster 1958, 69f.), the ends of keys or latch-

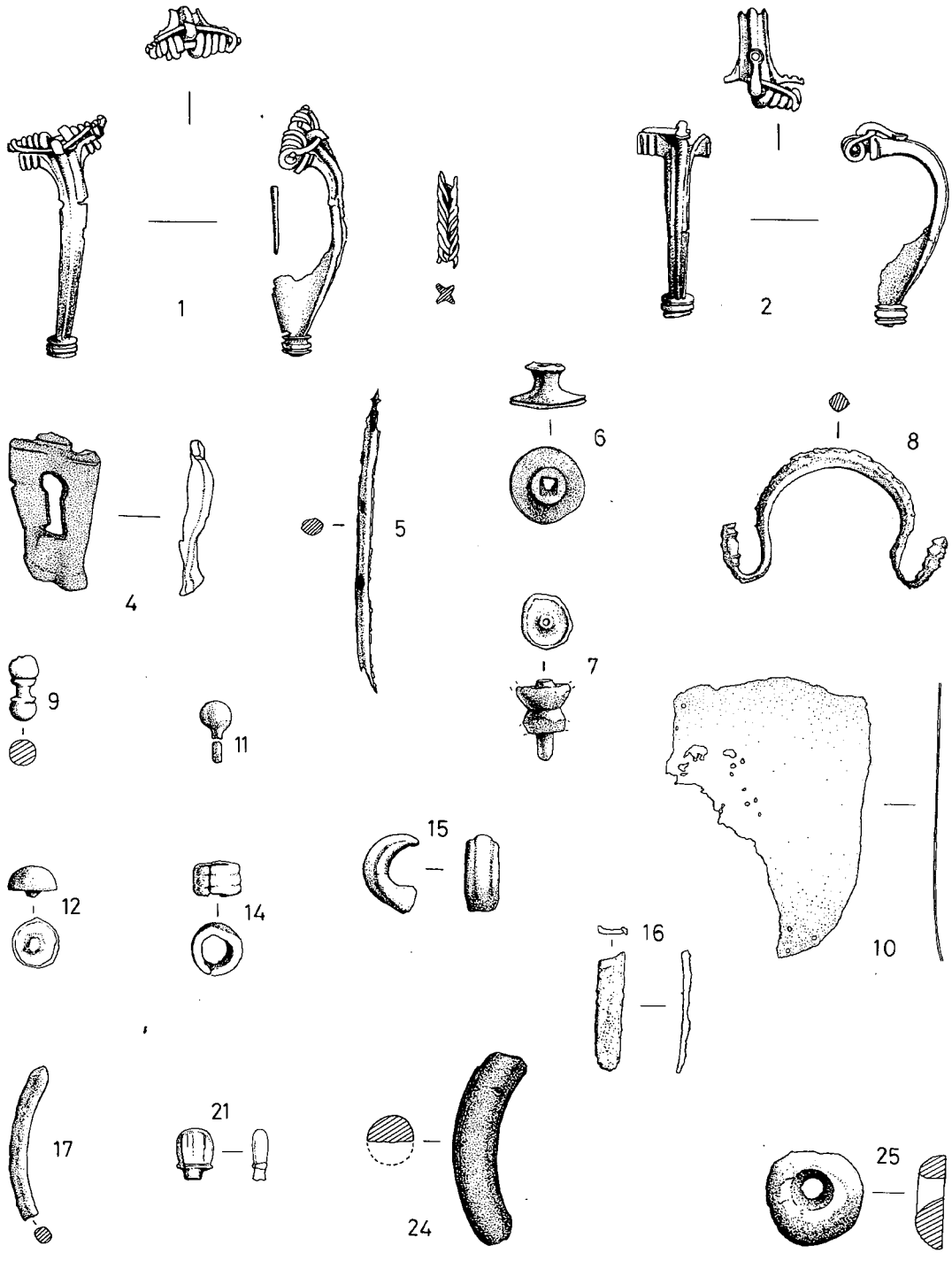


Fig. 21. 1:2, except chain of number 1, 1:1.

lifters (Jacobi 1897, 472), bolts for fastening a lock-plate (Curle 1911, pl. 78, nos. 9 and 10), handles for boxes or drawers (Kenyon 1948, fig. 88) and as decorative doorstuds.

8. *Unstratified*

Diamond-sectioned bronze helmet carrying handle with decoratively moulded terminals. The mouldings are more angular than is usual on this type of handle. Overall width: 66 mm, max T: 5 mm (fig. 21).

cf. Corbridge (Corstopitum Museum: 75.1238)
Gillbanks Collection, Tullie House Museum, Carlisle. No. 3.
Newstead (National Museum of Antiquities of Scotland: FRA 3246)
Mumrills (National Museum of Antiquities of Scotland: FRB 407)
Saalburg (Jacobi 1897, Taf. 57, no. 4).
Kastell Theilenhofen (Fabricius et al. 1919, Taf. 4, no. 71a).

Carrying handles were introduced in the mid-first century A.D. as a secondary means of suspension on helmets of Robinson's Coolus Type I, Auxiliary Cavalry Types D, E. and F, Imperial Italic and some Imperial Gallic types. (Robinson 1975).

9. *Unstratified*

Bronze 'dumb-bell button'. L: 19 mm, T: 9 mm (fig. 21). J. P. Gillam first drew attention to dumb-bell buttons in 1961 as evidence for an inter-wall school of metalworking. Their origin may lie in the small toggles with a central loop as seen at Glastonbury (Bulleid and Gray 1953, pl. 46, E26 and 125) and they are certainly related to the button-and-loop fasteners discussed by Wild (1970a, 137f.). They are common on Roman sites from the late-first to third centuries (MacGregor 1976, 136).

cf: Newstead (Curle 1911, pl. 82, 8).
Airhouse Farm, Berwicks. (Anon. 1946, 189 and 192, fig. I, 4).
Wroxeter (Bushe-Fox 1913, fig. 5, 17).

10. *From pit 1*

Fragments of bronze plate which appears to have been pierced by a number of small circular holes. When found this fragment was associated with a thin layer of charred material, possibly burnt leather. T: 0·5 mm (fig. 21).

11. *From Hearth 4*

Two fragments of a square-section bronze pin with a spherical head. T. of head: 9 mm, T. of shank: 3 mm (fig. 21).

cf. South Shields (Arbeia Roman Fort Museum: 1900, 41(2)).
Chesters (Chesters Museum: 2696).
Kirkby Thore (Tullie House Museum, Carlisle: 2656).
Jewry Wall, Leicester (Kenyon 1948, fig. 89, nos. 7 and 9).

12. *Unstratified*

Bronze dome-headed stud. The hollow head contains some iron corrosion whilst the surviving length of circular-sectioned shank appears to enclose a square-sectioned iron rivet. D. of head: 14 mm (fig. 21).

13. *From the large patch of cobbles outside the north end of building 8*

Curved bronze strip with rounded cleft terminals. L: 34 mm, W: 19 mm, T: 3 mm.

14. *Unstratified*

Thick circular bronze collar pierced by a square hole. The outer face is decorated by two incised bands. D: 15 mm, T: 8 mm, W: 4 mm (fig. 21).

15. *Unstratified*

Fragment of a bronze collar of tapering thickness with two incised grooves on the outer face. L: 22 mm, max. W: 8 mm, max T: 10 mm (fig. 21).

16. *From Furnace 2*
Bronze strip of curved section. L: 35 mm, T: 4 mm, W: 7 mm (fig. 21).
17. *Unstratified*
Curved, circular-sectioned bronze rod with one surviving terminal. L: 46 mm, T: 6 mm (fig. 21).
18. *From demolition spread in building 6*
Fragment of bronze rod adhering to an iron nail.
19. *From pit 12*
Two fragments of a circular-sectioned tapering bronze rod. L: 18 mm, max T: 4 mm.
20. *Unstratified*
Several fragments of fine bronze sheet, some tinned. T: 0·5 mm.

BONE

21. *From pit 6*
Fragment of a bone terminal of curved section. Surviving L: 15 mm, T: 5 mm (fig. 21). This fragment has been broken in such a way as to make it impossible to tell if it forms part of a dumb-bell button—cf. South Shields (Museum of Antiquities, Newcastle upon Tyne 1972. 31.111) and the discussion on the bronze example above—or the head of a bone pin.

LEAD

22. *From pit 6*
Rectangular plate, smoothed on one face and pierced by four square-sectioned iron nails along one edge. ?Fragment of roofing material. L: 95 mm, W: 85 mm, T. of nails: 3 mm.
23. *Unstratified*
Thick circular weight. Max. D: 24 mm, T: 8 mm.
Droplets of lead were also found in the following stratified contexts: cobble surface north of building 8, demolition spread in building 7, post-trench of building 16, pits 5, 6, and 11, and the west ditch.

SHALE

24. *Unstratified*
Fragment of an undecorated shale armlet. The section is no longer complete but was probably circular. R: 50 mm, W: 13 mm (fig. 21). Shale armlets of this form are common throughout the Roman period and were probably manufactured locally.
cf: Corbridge (Corstopitum Museum: 74.412).
South Shields (Arbeia Roman Fort Museum: 1900.198).
25. *From a post-impression in the east wall of building 10*
Fragment of a pierced shale sphere or hemisphere. Max. D: 29 mm (fig 21). This object may be a spindle-whorl, although its off-centre, tapering hole does not favour this interpretation.

26. *Unstratified*
Worked fragment of shale.
27. *Unstratified*
Fragment of worked coal.

IRON

28. *Unstratified*
Iron spearhead socket. Max. L: 95 mm (fig. 22). The head is missing but the length of the circular-sectioned socket suggests that it may be of a similar type to the example from Housesteads discussed by Manning (1976b, 18, no. 1).
29. *From pit 5*
? Iron hipposandal. Surviving L: 163 mm (fig. 22). Hipposandals were a form of temporary horseshoe common in Roman Gaul and Britain. George Fleming first drew attention to them in 1869 in *Horseshoes and Horseshoeing* and suggested two possible uses: to stop horses sinking into marshy areas or to hobble horses. Both suggestions have since been discounted and it is more probably that they were used to give protection on the rare occasions when the horses walked on road surfaces. Some examples have spikes to give a grip in icy conditions.
M. Xavier Aubert (1929, no. 19, pp. 5, 53 and 75) grouped hipposandals into three types: the earliest has a long hooked or looped tang for attachment, the second and third groups lack this feature, the third group having a central and side hooks. Unfortunately, the Red House hipposandal is not complete enough to be dated although the lack of a central opening, as seen in X-ray, suggests that it belongs to the first or second group.
cf: Verulamium (Wheeler and Wheeler 1936, pl. 63B, 220).
Blackburn Mill (Piggott 1952, 45, B20 and 21).
Saalburg (Jacobi 1897, 529, fig. 87).
For a discussion of hipposandals and their relationship to the more common horseshoe form see G. Ward (1941, 26).
30. *From a demolition spread in building 10*
Fragment of an iron knife blade with a rectangular-sectioned tang (fig. 22). Surviving L: 49 mm. The edge and back of the blade are both straight as in the two examples from South Shields (Manning 1976b, nos. 139 and 140).
31. *Unstratified*
Fragment of an iron knife blade with a rectangular-sectioned tang (fig. 22). Surviving L: 80 mm. This is of Manning's Type I with the back of the blade arched, and a curved cutting edge. Parallels occur at Housesteads and Carrawburgh (Manning 1976b, nos. 121–5).
21. *Unstratified*
Conglomeration of ten dome-headed iron hobnails (fig. 22). The shanks are short and circular in section. Roman hobnails are known from several sites including Cranbourne Chase (Pitt-Rivers 1887, p. 98, pl. 31, 2) and Turret 33b, Hadrian's Wall (Manning 1976b, no. 183).
33. *Unstratified*
Iron loop. Surviving L: 51 mm (fig. 22). Such loops are common finds, usually with the pointed ends bent at right angles, and were probably used for attachment to wood.
cf: Carlingswark Loch (Piggott 1952, C62 and 63).
Blackburn Mill (Piggott 1952, B.24).
Newstead (Curle 1911, pls. 67, 10, 11, 13).

34. *Unstratified*
Fragment of a triangular iron hinge with two remaining dome-headed iron rivets. Surviving L: 60 mm (fig. 22).
35. *Unstratified*
Square iron plate. L: 35 mm, W: 36 mm.
36. *Unstratified*
Square-sectioned iron rod. L: 28 mm.
37. *Unstratified*
Circular-sectioned iron hook. Surviving H: 22 mm (fig. 22).
38. *From pit 6*
Rectangular iron plate. L: 54 mm, W: 16 mm.
39. *From pit 12*
Tapering iron strip of curved section. L: 61 mm, Max. W: 20 mm (fig. 22).
40. *Unstratified*
Tapering, curved, square-sectioned iron bar. L: 132 mm. (fig. 22).
41. *Unstratified*
Rectangular iron plate. L: 67 mm, max. W: 27 mm.
42. *Unstratified*
Rectangular iron plate. L: 49 mm, max W: 29 mm.
43. *Unstratified*
Curved iron strip L: 44 mm.
44. *Unstratified*
Fragment of iron strip. L: 45 mm.
45. *From a post-impression in the north wall of building 7*
Large lump of iron. No recognizable form can be seen in X-ray.

Fragments of approximately 200 iron nails were recovered during the course of the excavation. Of these only 18 could definitely be identified as having been bent. The nails were all in an advanced state of corrosion when recovered so their original size could not be ascertained. As far as could be judged they were all square-sectioned with flat, disc-shaped heads. The stratified contexts in which the nails occurred were as follows:

post-trench for the east wall of building 5 (2); post-impression in the west wall of building 7 (2); post-impressions in the north wall of building 8 (2); the west wall and a western partition of building 10, phase 1 (2); post-impressions in the north, east and west walls, and the post-trench for the latter, and two partition walls (9); eavesdrip for the verandah at the south end of building 10 (4); south wall of the compound (2); single post-hole immediately to the west of building 15 (2); demolition spreads in building 7 (1) and building 10 (2); pits 1 (2), 2 (3, 2 bent), 4 (1), 5 (4, 2 bent), 6 (39, 3 bent), 7 (2, 1 bent), 8 (1), 10 (3), 11 (4, 2 bent) and 12 (2); furnaces 2 (2, 1 bent), 3 (1), 5 (7), 6 (8, 1 bent) and 8 (2); cobble surface north of building 8 (3); east ditch (1).

STONE

46. *Unstratified*
Sandstone disc. ?Gaming counter. D: 24 mm, T: 4 mm (fig. 22).
47. *Unstratified*
Water-worn sandstone disc. ?Gaming counter. D: 21 mm, T: 6 mm (fig. 22).

48. *Unstratified*

Flat, circular spindle-whorl, roughly fashioned from micaceous sandstone. Max. D: 52 mm, max. T: 10 mm (fig. 22).

49. *From the cobble surface to the north of building 8*

Small circular stone of hemispherical section which has been polished. D: 5 mm (fig. 22).

Seventeen well-worn fragments of Niedermendig lava were recovered. Ten were from pit 4, one from furnace 5 and the rest unstratified. Although these fragments undoubtedly once formed part of a quernstone, or -stones, all surface details had been abraded (Information from Mr. A. Welfare).

IRON RING AND INTAGLIO (Pl. IXb)

Martin Henig

Found in furnace 6. Finger ring, hoop of flat section expanding towards the bezel. It is much corroded and part of the hoop is missing. Internal diameter *c.* 20 mm; width across bezel *c.* 15 mm; width across narrowest point *c.* 3 mm. For similar rings see Henig (1974, 47 and fig. 1 type 3; 381, pl. 37) and Marshall (1907, 46 type E14).

The setting is a clear chalcedony with flat upper surface (11 by 9 mm) and sides which bevel outwards (Henig 1974, fig. 1 type F2 or 4). Although corrosion of the iron has somewhat obscured the bevelling, the overall dimensions are *c.* 13 by 11 mm. The setting (plate IXb) is cut with a representation of a male figure wearing a plumed helmet, corselet and tunic, striding purposefully towards the right (*impression described*). In his right hand he carries a trophy over his left shoulder. The figure was almost certainly identified as the god Mars (although Romulus is also a possibility and the iconographic type is likely to have been taken from a statue of the Roman hero). He may be compared with the commanding figure of *Mars Victor* on sestertii of Vitellius, although here Mars walks towards the left; however, it should be noted that the trophy is still carried on the left shoulder (Mattingly and Sydenham 1923, 226 no. 6, pl. 16 269a). A wall painting from the Via dell Abondanza in Pompeii portrays a very similar figure striding three-quarters towards the front (Picard 1957, 276f. and pl. 2). This suggests that the origin of the type was a statue of a god or hero and, as confirmation, we read in Plutarch's life of Romulus (16) that "Romulus ... cut down a monstrous oak that grew in the camp, hewed it into the shape of a trophy, and fitted and fastened to it the armour of Acron. He set the trophy on his right shoulder, where it was held erect, and began a triumphal march ... The Statues of Romulus bearing the trophies are, as may be seen in Rome, all on foot." If our figure shows Romulus rather than Mars we have another nice illustration of the importance of heroes to the Roman soldier (Henig 1970, 249f.). The only point of disagreement here between what is shown on the coin and the gem impression (Roman gems were almost always designed

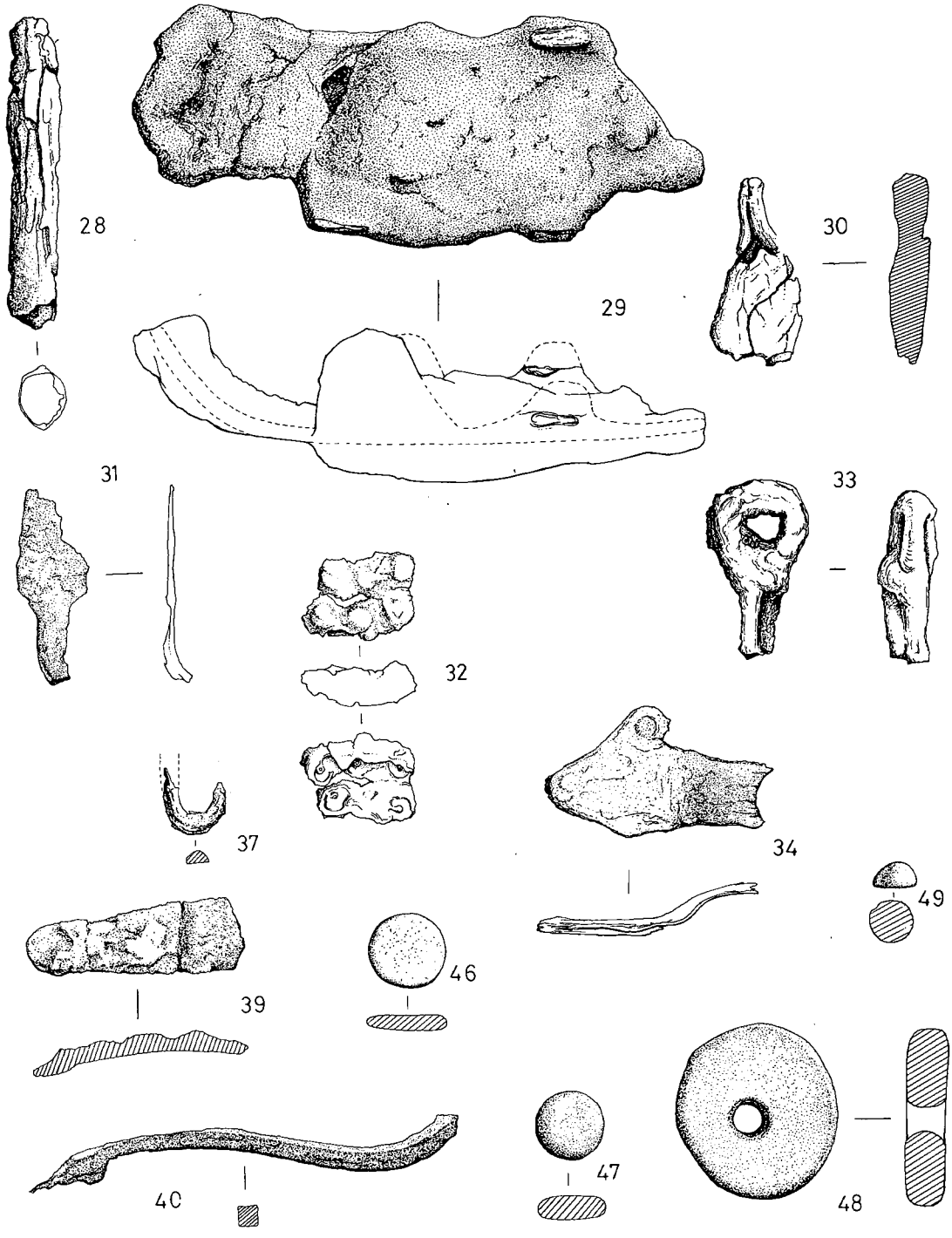


Fig. 22. (1:2).

to be seen in impression as sealings on letters) is the shoulder which bears the trophy. Apart from the known ability of Graeco-Roman artists to produce mirror-images of statues thanks to the invention of the "pointing process" in the first century B.C., there seems to me to be very good reason for the change: if Romulus was to be provided with a spear, this would have to be carried in the right hand, for the sake of religious and social decorum.

The type is comparatively rare on gems. A prase in Hanover Museum is dated to the second or third centuries on the basis of its disorganized style (Zazoff 1975, 265 and pl. 192, no. 1423), but the material was much more popular in the first century and I would not have assigned the intaglio to such a late period (Maaskant-Kleibrink 1975, 168). Another representation of the same device is recorded in Aquileia (Sena Chiesa 1966, 157 and pl. 13, no. 241 "Chestnut-coloured stone with a bevelled edge"), while a more frontally disposed figure comparable to the Pompeian fresco is in the British Museum (Walters 1926, 159 and pl. 20, no. 1427).

A closely related figure of Mars, nude apart from a *subligaculum* around his waist, but otherwise bearing the same attributes, is immensely popular on gems. Amongst examples found in Britain we may note those from Chesterholm (Henig 1974, 16 pls. 3 and 27, nos. 70–74) and Housesteads (information from C. M. Daniels). The nude *"Mars Gradivus"* type could have been derived from another statue in Rome.

Style: the facial features are schematized but in other respects the workmanship is crisp and neat. It recalls the style of the Flavian gems from Bath and of others like them (Henig 1969, 71f and pl. 12; Maaskant-Kleibrink 1975, 210f). Thus on both art-historical and stratigraphical grounds the signet ring would appear to date from the last quarter of the first century A.D.

FLINT (fig. 23)

Dr. Joan Weyman

The subject of this report consists of two flint collections. The first is the material from the Red House fort excavation of 1974 and contains 142 pieces of flint and 2 of other stone. None of these were properly stratified and, with the exception of 25 flakes from a pit outside the north end of building 8 (p. 16), all were considered to be from disturbed soil. The other collection was made by Mr. W. Dodds during the excavation of the Red House bath-house in 1956–7, and subsequently, and were all from ploughsoil in the immediate area of the excavation. They were donated to the Museum of Antiquities at Newcastle University (Accession no. 1964.6, 5–6) and I am indebted to Dr. D. Smith, the Keeper, for help, and permission to publish them. This group consists of 355 flint pieces and 84 of other stone. There are no reasonable grounds for treating these two groups other than together, but for reference purposes, where a piece is mentioned individually, the initials "RH" for the 1974 excavation are added

to the record number, while those from Mr. Dodds' collection are signified by "SB", Shordon Brae being the place-name of the site under which they are registered in the Museum accession book.

The total of 497 pieces of flint (SB-335, RH-142) included 88 which were worked or chipped from use (see Table below), and 259 manufacturer's waste, the majority of this being less than 15 mm in size. Of the total there were 135 thermally damaged.

The material used showed a marked preponderance of grey flint of varying shades, the proportion being 238 within this colour range to 82 of other colours. The areas of cortex present on 44 of the grey pieces were equally distributed between chalky and abraded pebble types, while that on the flint of other colours was almost entirely of pebble type. This would indicate that the minority material was probably derived from the local resources of glacial origin and that much must have been brought in from a chalky deposit elsewhere.

Some of the material could be distinguished as of mesolithic origin and some pieces were obviously from a neolithic context.

Mesolithic

Waste—Cores and core-trimmings. There were 8 cores of microlithic appearance (SB-6, RH-2) of which two were typical conical microcores (RH190b, fig. 23a, RH544a) two prismatic and the remainder irregular. There were two core-trimmings which would appear to belong to this series (RH544b was found with, and was of the same yellow and black flint, as RH544a, and RH257d, fig. 23b). Two other core-trimming flakes were noteworthy. One was a deep "plunging" flake which included the conical apex of the core (RH37, fig. 23c) and the other similar but less pronounced and which had been trimmed at the distal thicker end to a steep scraper edge (RH140a, fig. 23d).

Microburin Only one was present and it was badly burned (SB)

Blade waste This was not a feature of the collection and only five non-utilized bladelets were present.

Implements—Microliths Three obliquely blunted points occurred (2-SB, fig. 23e, RH28) and a particularly fine needle-like point (RH345b, fig. 23f).

Burin One burin was present, made in excellent quality honey-brown flint (RH425, fig. 23g).

Notched blade The only notched blade form was not a very good example. (SB).

Blades with marginal retouch There were 9 whole or broken blades with some such retouch.

Scrapers One small typical end-of-blade scraper occurred (RH1, fig. 23h) and another scraper-like type with very steep retouch on the distal end which did not encroach at all on to the dorsal surface (RH25, fig. 23i). Another scraper of special interest was a flake of orange-brown flint with the bulb removed. (RH355, fig. 23j). The margins were retouched all round the periphery except where the bulbar end was broken. The interest of this tool was that the fine retouch along the incurved distal edge was worn to a smooth feel as was the similar curve on the proximal part of

the left margin. Here the ridge on the dorsal surface had a slight gloss but leaving the ventral surface wholly unworn. It would seem that this tool had been held by the right hand in two different places for scraping, by the basal end and by the projection on the upper right margin, in both cases with the ventral surface uppermost.

Neolithic

In this group the strikingly post-mesolithic items were the worked implements, the waste products being of no special distinction except for two rather poor grey flint cores. One of these was bruised on all its scar margins from use repeatedly for striking. The other was burnt and came from a pit outside Building 8 together with 12 other burnt and 13 unburnt flakes, all of neolithic appearance (RH348, RH433).

Implements—Arrowheads One leaf arrowhead of very poor faulted material, poorly worked, occurred. (SB, fig. 23k) and another uncompleted (RH347). A hollow-based arrowhead of Clark's class G was found in a pit-like feature. It was of good brown flint and competently made (RH143, fig. 23 1).

Knives Three knives were present (RH1, RH250h, fig. 23m, and RH336, fig. 23n). All were of grey flint but the second was of faulty material.

Scrapers Three scrapers could be allocated to the post-mesolithic period. The flat flaking encroached well on to the dorsal surface in two examples, both side scrapers (SB, fig. 23p, and RH290d), but on the third the treated area formed a neat hollow along the distal edge (RH127) and this tool may well belong to the earlier period.

Denticulated blades Four large blades occurred, of which one (RH140b, fig. 23q) was a well-made saw which had some preparation of one margin at the bulbar end which could have made it possible for it to have been hafted. Another (RH349, fig. 23r) was not only finely denticulated along one margin but the reverse showed slight gloss of wear on the raised ripples. The two remaining blades showed fine denticulateds and some chipping from use (RH287c, RH322). A neat fragment of blade (RH168, fig. 23s) of good orange-brown flint had fine denticulations along both margins showing some wear on one of them. Possibly this was part of a composite tool such as a sickle.

Borers Two borers occurred, one an obliquely trimmed point, the other on a short broad flake with the boring point in the centre of the distal margin (SB-2).

Stone Other than Flint These pieces included miscellaneous pebbles, some broken pieces of a black metamorphic stone, quartz and agate, some of which were probably man-made flakes and scrapers.

Discussion

The presence of mesolithic material at this particular site came as no surprise as it is a well-drained gravel terrace on the north bank of the River Tyne along which more such collections are being discovered in a pattern similar to those of the River Tweed (Lacaille 1954, 172f). Indeed a terrace on the south bank only 6·4 km further east is producing much the same type of material from ploughsoil, including very many tiny waste flint chippings, which were also present at Corbridge. The general and particular appearance of the latter group give the impression of visits to the site over a long-

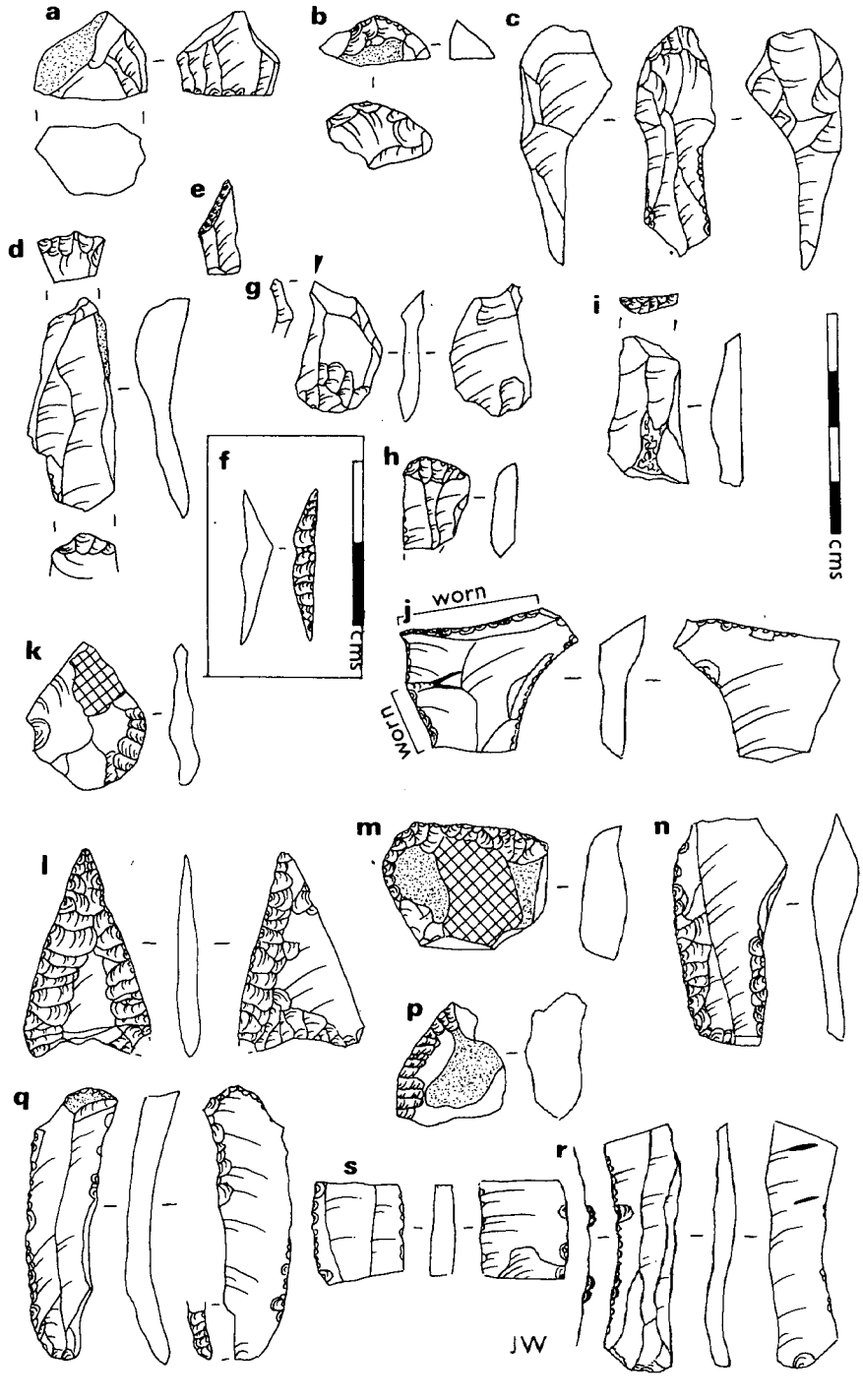


Fig. 23.

extended period, and without a clear-cut cultural appearance, in contrast to a group of flints from Gallowhill Farm, Corbridge, only 2·7 km away which were so homogeneous as to suggest a single "family" living or regularly visiting the same spot without admixture of other material (Weyman 1975, 219–21).

In the neolithic material, the hollow-based arrowhead is of special interest. It is only the third to be found in Northumberland as far as can be ascertained. The first was from plough-soil at Throckley in the Tyne valley, 28 km further east and is of very fine workmanship. It has now been donated to the Museum of Antiquities at Newcastle by the finder (Acc. No. 1978. 30). The second was found at Byrness near Otterburn and is very similar to the first. It is still in private hands. Several examples of the a-symmetrical types have been found in the county, but all are rare. A point of note concerning the Corbridge example is that it was found in a pit, as these types have been frequently associated with Grooved Ware in pits elsewhere (Manby 1974, 84f).

The remaining neolithic suggests a domestic situation though probably an impermanent one. There are few such known so far in this part of Britain although leaf arrowheads, scrapers and polished axes are relatively generously represented but need only imply a "passer-by". No pottery has so far been identified from the Tyne valley.

Table

Total of flint pieces.	497
Total of flakes and other waste	259
Cores (inc. 1 core-scraper (SB) and 3 burnt)	12
Core trimmings (inc. 1 possibly burnt and 1 utilized—RH37)	5
Flint hammerstone fragments	5
Microburin (SB) burnt	1
Burnt and other thermally damaged pieces	135
Worked and utilized pieces	88

TEXTILE FRAGMENT

J. P. Wild

A fragment of plain-weave textile from Red House was submitted for examination. It had stuck to a dupondius of Vespasian (no. 3), and was preserved by its corrosion products. The cloth is grey in colour on the side adjacent to the coin flan, and light brown on the other.

System (1) singles, Z-spun, *c.* 1 thread per mm, maximum length now 25 mm.
System (2) singles, Z-spun, *c.* 1 thread per mm, maximum length 25 mm.
The yarns are fairly unevenly spun and the weave is irregular. In System (1) a pair of threads take the place of a single thread; but this may be the result of damage rather than a weaving fault. One loose thread of System (1) lies on the surface as a loop, probably snagged.
Under low magnification the fibre resembles flax.
The cloth may be the remains of a purse or purse-lining, of which a number of examples have already been noted (Wild 1970b, 92f). More recent finds include textile from the Oldcroft hoard (Rhodes 1974, 65f), from the Waternewton hoard 1 (Johns and Carson 1975, 10) and from Colchester (Inventory no. 242, unpublished, Colchester Museum).

CHARCOAL IDENTIFICATIONS

Alison M. Donaldson and W. S. Hanson

Charcoal was recovered in samples large enough to be readily identified from a number of contexts listed below. Estimates of the original size of the timber from which the charcoal derived are appended where possible.

Structures:

Oak, ash, birch and hazel charcoal was recovered from the post-trenches and post-impressions of buildings 5, 7, 8, 9, 10 phase 2, 12 and 16. Sizes:

from post-impressions in building 8:	birch 10 mm diameter
	oak 10 mm diameter
from a post-impression in building 9:	oak not less than 30 by 50 mm
from post-impressions in building 10:	oak 20 mm diameter
	hazel 10–15 mm diameter
from a post-trench in building 10:	hazel 15 mm diameter

Pits:

Oak charcoal was recovered from pits, 4, 5, 6, 9, 10, 11 and 13; birch charcoal from pits 6 and 11; and hazel and ash charcoal from pit 6. Sizes:

from pit 5:	oak not less than 110 mm diameter
	oak 15 mm diameter
	oak not less than 20 mm square
from pit 6:	hazel 10–15 mm diameter
from pit 13:	oak 60 mm diameter
	oak 80 mm diameter

Furnaces, kilns and hearths:

Oak charcoal was recovered from numbers 5, 6 and 8; birch charcoal from number 8; and hazel charcoal from number 5. Sizes:

from furnace 8: oak not less than 15 by 40 mm
oak not less than 25 by 100 mm
oak not less than 20 by 60 mm
oak not less than 40 mm square

Demolition:

Oak charcoal was recovered from a demolition spread within building 10.

Defences:

Fragments of oak charcoal 20 by 35 mm were recovered from the west ditch.

Comments on the woods present:

Oak (*Quercus robur/petraea*)

The oaks are native forest trees of both highland and lowland areas. The two species are inseparable in terms of wood anatomy and frequently hybridize. It is undoubtedly Britain's finest and most versatile timber for building purposes and was the most abundant timber from the site. It also makes good firewood and charcoal, and its use as such on the site, is indicated by the material from the lower fill of furnace 8.

Birch (*Betula pendula/pubescens*)

These native tree birches are both light-demanding pioneer trees. The two species are inseparable in terms of wood anatomy. Birch is not a common building timber in areas where there are good alternatives, although its discovery in structural contexts may indicate its use here, at least as wattling. It is an excellent firewood and a good source of charcoal, although its use as such is not readily demonstrable from this site.

Ash (*Fraxinum excelsior*)

Like oak, ash was often used as a building timber, as its presence here in structural contexts might suggest, though it can also be coppiced. The ash tree is native and a component of many types of woodland but forms pure stands generally only in limestone areas.

Hazel (*Corylus avellana*)

This is a native shrub often occurring in the under-storey of woodland and frequently planted or encouraged. Coppiced hazel has been used from earliest times as a convenient source of small poles, posts and wattling as seems to be indicated by the size and context of examples from Red House.

Bone

Little bone was recovered during the excavation, and the few fragments found were too badly decayed to be capable of identification.

INTERPRETATION

Recessed buildings (1–6)

This group of buildings at the eastern end of the site were all, with the exception of building 3, recessed approximately 3–3·5 m from the alignment of the northern ends of buildings across the site. The northern end of building 3 is set back a further 4 m. It proved impossible to excavate the southern ends of these structures in order to ascertain whether they too were open, but their similarity to buildings 7–9 in other respects—lack of internal partitions and cramped layout—make a similar function likely. Assuming that their southern ends were aligned with other buildings, their overall length would be *c.* 13 m.

The position of these buildings extending right up to the lip of the eastern ditch leaves no room for a rampart or intervallum road. This, and their recessed northern alignment could indicate that they represent an extension of the site to the east, a suggestion supported by the apparently deliberate infilling of the eastern ditch.

Open-ended buildings (7–9 and 11–15)

Buildings 7–9 are clearly a related group being closely packed together, open at their southern ends and having traces of internal partitions at the opposite end. Buildings 11–15 were obviously a similar homogeneous group, being so closely spaced that numbers 13 and 14 shared a central wall. They too lacked a southern wall but produced no signs of internal partitions. With the exception of building 7, whose southern end was destroyed by a later feature, there can be no doubt that none of these buildings were walled at their southern ends. Either these were open to the elements, or they were closed by barn doors. The latter would be preferable, but the former must be assumed in the absence of any evidence of either central door stops or the large posts at their southern ends which would be needed to support such massive doors. The prevailing wind on the site today is westerly so, assuming environmental similarity, there would be little danger of their sheds acting as wind tunnels or of their being blown away.

The modern barn is the most obvious building parallel, and it is difficult to see how such buildings could have served any function other than storage. But all too often in the absence of clear evidence as to precise function the term "store-building" has been attributed to such structures within forts. Direct Roman parallels for this particular type of building are not readily apparent. At Fendoch in the area to the north-east of the granaries were two buildings, one of which could well be a third granary with its sleeper walls running longitudinally; but the second seems to be open at its south-western end and contains traces of one internal partition at the opposite end. The building is described as 64 ft (19·5 m) long but no width is quoted. Measurement from the published plan gives a figure of 22–7 ft (6·7–8·2 m) and thus indicates overall dimensions not unlike the Red House examples, although the partition at Fendoch occupies more of the enclosed end of the building than those at Red House. Excava-

tion at Fendoch was insufficient to be conclusive about the function of this building, but Richmond and McIntyre suggested either a workshop or cart-shed (1939, 137 and fig. 2).

A similar group of buildings has recently come to light during excavations at Oberstimm on the Raetian *limes* (Schonberger 1972, 35 and abb. 1 building 12). Apart from their size, these are very similar in plan to the Red House examples. The excavator concluded that they were store-houses and quoted parallels from the legionary fortress at Neuss (Koenen, Lehner and Nissen 1904, Taf. 3). In fact, similar buildings are to be found fronting the major roads in several other legionary fortresses including Xanten (Petrikovits 1958), Inchtuthil (Taylor and Wilson 1961, fig. 9) and possibly Usk (Wilson 1975, fig. 2 and 223). At the latter, traces of enclosures *c.* 11·5 by 8·5 m were discovered separated from the *via principalis* by a colonnade, although the excavator does not seem to have interpreted them as roofed. At Inchtuthil they seem to flank all the main streets measuring *c.* 20 by 30 ft (6 × 9·1 m) fronted by a verandah 15 ft (4·6 m) wide supported by a colonnade. (Information from Prof. J. K. S. St. Joseph). The storage function of these structures was confirmed by the discovery of quantities of trampled glass and pottery in the road gutter in front of one, presumably representing items stored there which were considered to be disposable at the time of evacuation (Richmond 1958, 132). At Bonn (unpublished) similar buildings on the *via praetoria* had been used by smiths (information from Mr. A. G. Gilson).

Rather enigmatic traces of open-ended buildings are also known from the Claudian and Flavian levels of the supply base at Richborough in *insula* III referred to as open-fronted stalls or shops (Cunliffe 1968, figs. 4 and 7). No dimensions are quoted in the excavation report, but from the plan they are of the order of 11 × 3·6 m, separated from the roadway by a colonnaded verandah *c.* 4·5 m wide. As at Red House some of them have small rooms partitioned off at the opposite end measuring *c.* 3·4 × 4 m. If Cunliffe's proposed reconstruction is accepted a further group were situated across the roadway to the north in *insulae* V and VI (Cunliffe 1968, fig. 28 and Bushe-Fox 1949, pl. 96). Similar open-ended buildings fronting onto a road are also evident at Wroxeter (Bushe-Fox 1916, 4–5 and pl. 30).

A further possible parallel of later date may be cited from the excavations south of the fort at Birdoswald (we are obliged to Dr. Grace Simpson for reminding us of this reference). Although the buildings had been badly damaged by later activity including the ditch of the fort itself, and by subsidence on the scarp, one building was clearly open at its southern end and a further group appeared to have been open to the north. The excavators described these buildings as open-ended sheds for carts or stores which they suggested were associated with the building of the fort (Simpson and Richmond 1933, 256; 1934, 125).

Parallels are also available from a civilian context. We are fortunate that one of the few buildings named on the fragmentary Marble Plan of Rome is the *Horrea Lolliana* which consists of a series of rooms (estimated dimensions 4 by 11 m) with wide entrances opening onto a colonnade around a courtyard. (Caretti, Colini, Cozza and Gatti 1955, frag. 25. More readily accessible in English in Rickman 1971, 108 and figs. 23–4). Similar buildings are seen in other *horrea* represented elsewhere on the

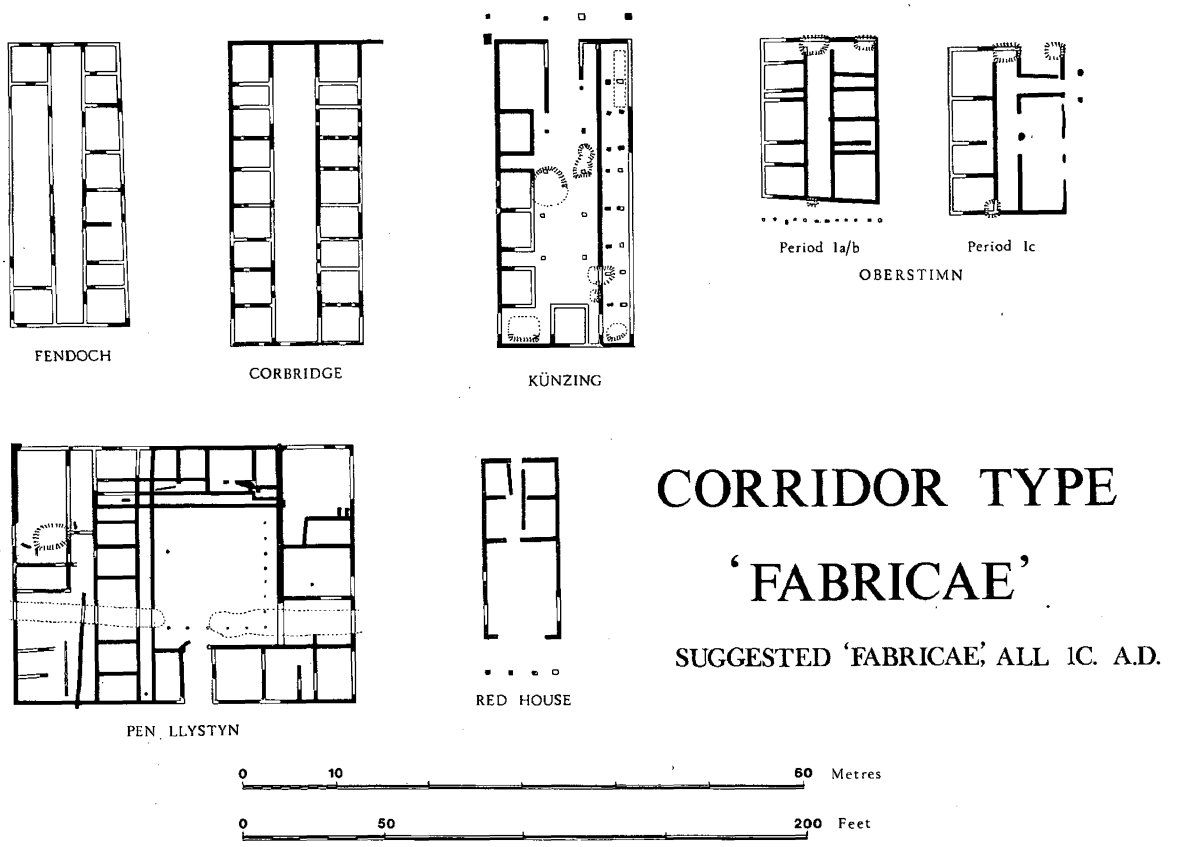


Fig. 24.

Marble Plan and provide the most precise parallel for the buildings lining the main roads at Inchtuthil and the other legionary fortresses.

All the examples seem to emphasize one thing: that ease of access was the main criterion for the design and siting of these buildings. Two possible functions suggest themselves for the buildings at Red House—stabling and the storage of non-perishables. In the absence of positive indications of either a drainage or mucking out channel, or the sort of staining of the ground—sand subsoil being particularly susceptible to such staining—which one would expect in a building housing animals, the former interpretation seems the more likely. Certainly it is upheld by previous excavators' comments and the presence of such buildings in storage or supply contexts in both civilian and military life.

The position of the Red House base on the north bank of the Tyne, immediately above its flood plain at a point some 25 miles from its mouth and at a good bridging point, which marks the start of one of the two main Roman routes into Scotland, Dere

Street, is a significant one. From here supplies brought most of the way by river could be stored temporarily before moving by road to supply the troops advancing into Scotland. The open-ended buildings could have been used for the storage of any non-perishable goods from pottery to weaponry, the open ends facilitating easy access for loading or unloading, or even leaving loaded wagons parked under cover. Military carts cannot have been wider than the average width of fort gateways (2·7–3·7 m) so there was room for two carts side by side in most of the buildings.

Building 10—"fabrica" (fig. 5)

The northern end of this building consisted of a central corridor separating two sets of double rooms; the southern was a single large room, without partitions. Corridor buildings of similar plan have usually been described as hospitals (Fendoch: Richmond and McIntyre 1939, 132; Corbridge: Richmond and Gillam 1952, 242), the small rooms being interpreted as wards. But the evidence from Red House necessitates a re-examination of this interpretation.

Building 10 is closely associated with various forms of industrial activity, for it contains 3 hearths in the large southern room, in one of which there were crucible fragments. Outside it, within an area *c.* 15 m wide and enclosed by walls on the west and south sides, were two kilns or furnaces, a hearth, a probable well and four pits from two of which came fragments of lead droppings. Unfortunately, only one of the furnace features provided clear evidence of its function, the melting of copper (p. 30). The proximity of such obvious fire risks, and the isolation of building 10 from the store buildings to the east (11 m) and west (28 m) lead to the conclusion that it was a *fabrica.* A similar interpretation was suggested for the Corbridge building some time ago, for buried below one of its rooms was a chest containing armour, tools and scrap metal (Daniels 1968, 115).

Similarly-shaped buildings have also been found in the forts of Künzing and Oberstimm by Professor H. Schönberger, who interpreted both as hospitals (Schönberger 1972 and 1975).

The published plan of the auxiliary fort at Pen Llystyn reveals a further possible example. The Commanding Officer's House falls clearly into two parts, the western third being basically a building (27·4 by 12·8 m) divided by a central corridor with rooms or bays on either side. Although this is published as all of one build the extremely small size of some of the rooms defined, combined with the excavator's own comments of the reliability of observations in this part of the fort, make a re-interpretation as two separate buildings not unreasonable. The excavator did note that part of the western side contained nothing but rather lightly built sheds, which may have been unroofed (Hogg 1968, 131).

To this the *praetorium* at Caernarvon can almost certainly be added (Jarrett 1969, 61), as well as three of the tribunes' houses on the *via principalis* at Inchtuthil (Richmond 1961, 158).

The nature of these corridor buildings is mostly uncertain. Fendoch, the type site, produced no definite evidence for its purpose, while Künzing was interpreted by

Schönberger as much on its similarity to Fendoch, as on anything recovered during the excavation. Pits were found in the central area of the Künzing building, also what was called a latrine. But as this latter contained a varied fill, including layers of charcoal, it is pertinent to ask whether it may not have been used for some industrial purpose, and whether the building was in fact, a *fabrica.*

Building 2 at Oberstimm is nearer in size to Red House than the larger structures of Corbridge, Künzing and Fendoch, each over 30 m in length. Here, too, Schönberger saw a hospital, originally consisting of a central corridor with side rooms, one range of which was later modified when a new entrance was built. Nothing from the excavation would prevent the building being re-interpreted as a *fabrica.* In its place building 3, previously considered a residence for doctors and workshop-workers, could well have been a hospital, for it is a courtyard building like the known legionary *valetudinaria* and the accepted hospital at Housesteads (Charlesworth 1976, 17).

The *"fabricae"* of Pen Llystyn and Caernarvon are more difficult to interpret. Recent work at Caernarvon has produced a large courtyard building in the eastern *praetentura* of the fort which could well be a hospital (we are indebted to Mr. P. J. Casey for this information). Both these *fabricae* lie close to one of the gateways of the *via principalis*, and would be accessible to wheeled traffic. The buildings attached to the tribunes' houses at Inchtuthil are even less certain. The fortress has produced both hospital and *fabrica* elsewhere within its *retentura* (Richmond 1961, 158).

The only real evidence comes from Corbridge and Red House, where definite traces of industrial activity have been found. In spite of the varied sizes of these buildings, then, their general interpretation as hospitals must now be brought into question, and an alternative, that they were in fact corridor *fabricae*, suggested in its place.

Building 16—barrack block

The lateness of the season, the need for an access route across the site for contractor's plant and exhausted financial resources prevented the complete stripping of the area to the west of buildings 11–15. Small scale trenching did, however, reveal foundation trenches of a different scale from those previously encountered of a building apparently stretching the full width of the area available for excavation. It is just possible, however, bearing in mind the alignment of the probable road running east–west across the site immediately to the south of the open-ended buildings, that the trenches cut two separate but identical buildings. But this hypothesis would be stretching the already doubted concept of standardized Roman military planning too far (Hanson 1978, 298–304). Furthermore, there are traces of a ditch apparently dividing off the western third of the site.

The building was centrally divided longitudinally with partitions defining rooms *c.* 5·6 m wide on each side, and is provisionally interpreted as a barrack block. Examination of the table below shows that the *contubernia* at Red House are considerably larger than have been found in any other legionary barrack block in Britain whether built of stone or timber. The construction trenches of this building were considerably wider and deeper than any others on the site, although the width of the building was not much

greater than most, and less than the overall width of buildings 13 and 14 which shared a central wall. The size of the post-impressions would certainly indicate the use of posts strong enough to support an upper storey.

LEGIONARY BARRACKS[1]

Site	*Total*	*Length Men's Quarters*	*Width of Men's Quarters + Verandah*	*– Verandah*	*Length of Contubernia*	*Stone/ Timber*
Caerleon	74·4	49.1	10·2	7·7	4	S
Chester	77·7	51·8	10·97	8·53	3·96	S
Inchtuthil	84·9	64·6	10·7	—	4·5[2]	T
Gloucester	—	—	10	8	3·75	T
Longthorpe	104·5	69·54	*c.* 10·5	*c.* 8[3]	4·88	T
Red House	—	—	—	11·6	6·9	T

[1] All measurements are in metres

[2] By calculation

[3] Taken from barrack II by measurement since the figure quoted in the report is at variance with the plan and the norm (Frere and St. Joseph 1974, 32–3 and fig. 17). The plan of barrack I is too confused for comparative purposes and presumably represents two periods of construction.

Interior

Structural methods (fig. 10)

All the buildings within the fort were of post-trench construction. Trenches were dug defining the plan of the structure and posts placed in them before backfilling the trench, and in some cases packing it with small river cobbles. That sleeper beams had not been used was indicated by the failure of many of the trenches to interconnect at the corners and the numerous examples of post-impressions which had sunk into the soft sand subsoil below the bottom of the post-trench. Mistakes in the laying out of buildings were indicated at three points. In buildings 7 and 8 the foundation trench for the north wall had at first been dug on a slightly different alignment from the other buildings. This was corrected before erection of the building, for no post-impressions were found in the northern trench. In building 10 the mistake had been allowed to progress further before correction, for two plans of the same building on a slightly different alignment are here apparent, although the lack of post-impressions in the earlier building trenches indicates that construction had not been completed. The fill of the later phase also contained a considerable amount of yellow clay, presumably from the daub of the walls.

The identical plan of both phases of building 10, which was not just a simple outline, suggests that the construction gang was probably working from a manual or blue-print plan, something frequently assumed for military buildings, but not so often capable of archaeological proof.

Considerable variation was noted in the width of post-trenches (200–700 mm) but

the majority of external wall trenches in buildings 1–15 were 300–400 mm wide while those in building 16 were 600–700 mm wide. Internal partitions were generally slightly narrower (200–300 mm in buildings 1–10 and 400–50 mm in building 16) although they too showed considerable variation (180–460 mm). Even greater variation was apparent in the depths of the post-trenches. The lesser dimensions may be in part the result of farming in Roman times attested by the post-fort Roman ditch and scatter of second century pottery in the topsoil, although the expediency of rescue excavation necessitated the rapid removal of soil if features were not readily apparent. It was, however, noticeable that construction trenches tended to be shallower at the northern side of the site (fig. 10 buildings 9 and 10) which would seem to support the former explanation. Once again building 16 was notable for its consistently larger dimensions with external or load-bearing wall trenches 700–850 mm deep and partition walls 650 mm deep in contrast to the other buildings whose external wall trenches were usually 200–350 mm deep and partition wall trenches 200–300 mm deep, although ranging overall in both cases from 100 mm to 460 mm.

Numerous post-impressions were detected, usually seen as rather amorphous darker stains containing silt and charcoal. Spreads of reddened earth and charcoal, in some cases overlying the post-trenches, combined with the disturbed state of the post-impressions and the presence of bent nails (9% of total found) and burnt daub in the post-trenches indicate that the buildings had been dismantled and much of the timber burnt. It is more than likely, therefore, that re-usable pieces would have been transported the short distance to Corbridge main site to reduce the time and effort involved in felling and preparing fresh timber. Charcoal identification indicates that the main timber used was oak, as would be expected. The presence of birch and ash in structural contexts (p. 75) suggests the possible utilization of whatever timber was locally available (Hanson 1978, 298–9), although none of the pieces for which some estimate of original dimensions could be attempted, could be demonstrated to have been derived from sufficiently large timbers for major structural use. Both circular and rectangular posts appear to have been used, although the circular impressions could have been formed as a result of the way in which the post was removed. Despite disturbance during removal of the posts, it was possible to gain some idea of their probable dimensions. It would be unsafe to lay too much stress on the precise measurements recorded, but the general order of magnitude does seem to be consistent. Apart from building 16 where over 80% of the post-impressions were circular, rectangular or sub-rectangular impressions were approximately twice as common, usually aligned with their long axis along the line of the trench. Generally speaking the posts seem to have been placed in the centre of the trench, although some examples were placed up against the side, as for example in the east wall of building 10. Stone packing, presumably for greater stability in the sandy subsoil, was used in buildings 13, 14 and in the west wall of building 10. The spacing between posts varied considerably (0·45–0·9 m); the upper limit was less certain because of the need to allow for gaps in recovery, but the figure of 0·6 m (almost exactly 2 Roman feet) was sufficiently common to suggest that it was the module (Hanson 1978, 302). Most of the post-impressions fell into the range 110–160 mm diameter or 100/150 by 130/200 mm, although they ranged from 50–250

mm in diameter and 70/180 by 110/250 mm. The examples from building 16 were all notably larger—200–350 mm diameter or 200/250 by 300/350 mm. There were insufficient examples of post-impressions recovered from partition walls to give a reasonable sample for comparison, but those excavated did not differ noticeably from the others, averaging 110–130 mm in diameter or 120/140 by 150/160 mm and ranging from 70 to 170 mm in diameter or 100/200 by 150/240 mm. Finally it is interesting to note that, as at Richborough, many of the posts had sunk up to 100 mm below the bottom of the trenches in which they were set which must have resulted in considerable distortion of the frame of the building, unless they had been rammed in position during construction.

Nature of the site

The distance between the east and west ditches at Red House was approximately 254 m, a fact that was not discovered until the very last days of the excavation. On this evidence alone the site could not be an auxiliary fort as was anticipated at the outset of the excavation. Since it was not possible to examine the area outside the line of the new road, the dimensions of the installation from north to south can only be estimated. The possible southern extent of the site is limited by the sharp drop down to the flood plain of the Tyne only some 35 m beyond the area investigated. The northern side, on the other hand, has no obvious topographical limitation. Comparison with the dimension of other sites would suggest that Red House should fall into the category known as vexillation or half-legionary fortresses such as Longthorpe (360 by 301 m), Rossington Bridge (262 by 236 m), Kinvaston (442 by 236 m later reduced to 320 by 236 m), and Leighton (275 by 300 m). Unfortunately, despite recent excavations at Longthorpe, our knowledge of the internal arrangements of this class of military establishment is scanty. We cannot say with any certainty where within the installation the excavation lay, but it seems likely that we are in the *retentura* of a north facing establishment of some 25 acres (8–9 hectares). The cramped layout at the eastern end of the site, encroaching right up to the lip of the ditch, and the apparently deliberate backfilling of that ditch would seem to indicate that the site was extended eastward, although the respect shown to the basic alignment of the site by the additional buildings, the evidence of alterations in laying out other buildings (7, 8 and 10), and the short period of occupation indicated by the pottery suggested that changes were made during the construction rather than at a later date. Investigation further east was prevented by the farm access road, but the extension cannot have been large for the ground starts to fall away to Redhouse Burn immediately beyond the road, and the bath-house is situated less than 100 m away.

The "vexillation fortress" at Red House, if it is accepted as such, provides us with considerable evidence of the function of this comparatively new class of Roman military establishment. All the known examples are in positions and have dates, where known, which associate them with active campaigning. Red House, despite being the latest of the examples known, fits this pattern, for the ceramic evidence leaves little doubt that it was associated with Agricola's activity in northern Britain, and it

probably served as the starting point for his march into Lowland Scotland. The presence of legionary troops, although not definitely attested, is strongly suggested by the extremely large and well built barrack block (building 16) and the large bath-house with legionary parallels excavated in 1956–7 (Daniels 1959, p. 91). The contrast between both the construction methods and the space allowed for buildings at the east and west ends of the site may point to the presence of auxiliary troops also, although these variations may simply reflect differences in the function of the buildings.

Frere and St. Joseph have suggested that this type of site served as winter-quarters for battle-troops, although recognizing that some may have served as stores bases (1974, 6). The large and impressive bath-house at Red House suggests a greater degree of permanence than might be expected for troops over-wintering, and the preponderance of store buildings, combined with the evidence of manufacturing or repair activities, is strongly suggestive of a major supply role. The extra-mural evidence presumably represents some form of annexe, rather than an established civil settlement at this early stage in the conquest of the area.

BIBLIOGRAPHY

ANON., 1946, Donations and Purchases for the Museums, *Proc. Soc. Antiq. Scotland*, 81 (1946–7), 189f.

ATKINSON, D., 1914, "A Hoard of Samian Ware from Pompeii", *J. Rom. Stud.*, 4 (1914), 27–64.

AUBERT, M. X., 1929, "Evolution des Hipposandals: essai de classification rationelle", *Revue de Musées* (1929).

BIRLEY, E. and BIRLEY, M., 1938, "Fourth Report on Excavations at Chesterholm-Vindolanda", *Archaeol. Ael.*[4], 15 (1938), 222–37.

BREWIS, P., 1924, "British Brooches of the Backworth Type in the Black Gate Museum, Newcastle-upon-Tyne", *Archaeol. Ael.*[3], 21 (1924), 173–81.

BULLEID, A. and GRAY, H. St. G., 1953, *The Meare Lake Village* II.

BUSHE-FOX, J. P., 1913, *Second Report on Excavations on the site of the Roman Town at Wroxeter, Shropshire.*

——, 1916, *Third Report on Excavations on the site of the Roman Town at Wroxeter, Shropshire.*

——, 1926, *First Report on the Excavation of the Roman Fort at Richborough, Kent.*

——, 1928, *Second Report on the Excavation of the Roman Fort at Richborough, Kent.*

——, 1932, *Third Report on the Excavation of the Roman Fort at Richborough, Kent.*

——, 1949, *Fourth Report on the Excavation of the Roman Fort at Richborough, Kent.*

CALLENDER, M. H., 1965, *Roman Amphorae.*

CARETTI, G., COLINI, A., FOZZA, L. and GATTI, G., 1955, *La Pianta Marmorea di Roma Antica.*

CHARLESWORTH, D., 1959a, "Roman Glass in Northern Britain", *Archaeol. Ael.*[4], 37 (1959), 33–58.

——, 1959b, "The Glass" in Daniels 1959.

——, 1964, "Recent work at Kirkby Thore", *Trans. Cumb. West. Antiq. Archaeol. Soc.*, 64 (1964), 63–75.

——, 1976, "The hospital, Housesteads", *Archaeol. Ael.*[5], 4 (1976) 17–30.

COLLINGWOOD, R. G. and RICHMOND, I. A., 1969, *The Archaeology of Roman Britain.*
CORDER, P., undated, *The Defence of the Roman Fort at Malton.*
—— and ROMANS, T., 1937, *Excavations at the Roman Town at Brough, East Yorkshire.*
CUNLIFFE, B., 1968, *Fifth Report on the Excavations at the Roman Fort at Richborough, Kent.*
CURLE, J., 1911, *A Roman Frontier Post and its People: the Fort of Newstead in the Parish of Melrose.*
DANIELS, C. M., 1959, "The Roman Bath-House at Red House, Beaufront, near Corbridge", *Archaeol. Ael.*[4], 37 (1959), 85–176.
——, 1968, "A hoard of iron and other material from Corbridge", *Archaeol. Ael.* [4], 46 (1968), 115–26.
FABRICIUS, E., HETTNER, F. and VON SARWEY, O., 1919, *Der Obergermanisch-raetische Limes des Römerreiches* Abt. B, Band 7.
FRERE, S. S., 1972, *Verulamium Excavations* I.
—— and ST. JOSEPH, J. K. S., 1974, "The Roman Fortress at Longthorpe", *Britannia*, 5 (1974), 1–129.
GIBSON, J. P. and SIMPSON, F. G., 1909, "The Roman Fort on the Stanegate at Haltwhistle Burn", *Archaeol. Ael.*[3], 5 (1909), 213–85.
GILLAM, J. P., 1958, "Roman and Native, A.D. 122–197" in Richmond, I. A. *Roman and Native in North Britain*, 60–90.
——, 1977, "The Roman Forts at Corbridge", *Archaeol. Ael.*[5], 5 (1977), 47–74.
GLASBERGEN, W., 1972, *De Romeinse Castella te Valkenburg Z.H.*
GUIDO, M., 1978, *The Glass Beads of the Prehistoric and Roman Periods in Britain and Ireland.*
HANSON, W. S., 1978, "The Organisation of Roman Military Timber Supply", *Britannia*, 9 (1978), 293–305.
HARDEN, D. B. and PRICE, J., 1971, "The Glass" in Cunliffe, B. *Excavations at Fishbourne* II, 317–67.
HARTLEY, K. F., 1977, "Two major potteries producing mortaria in the first century A.D." In Dore, J. N. and Greene, K. *Roman Pottery Studies in Britain and Beyond*, 5–17.
HENIG, M., 1969, "The Gemstones from the Main Drain" in Cunliffe, B. *Roman Bath*, 71–88.
——, 1970, "The Veneration of Heroes in the Roman Army", *Britannia*, 1 (1970), 249–65.
——, 1974, *A Corpus of Roman Engraved Gemstones from British Sites.*
HERMET, F., 1934, *La Graufesenque (Condatomagus).*
HILDYARD, E. S. W., 1954, "The Rudston Fibulae", *Antiq. J.*, 34 (1954), 73–5.
HOGG, A. H. A., 1968, "Pen Llystyn: A Roman Fort and Other Remains". *Archaeol. J.*, 125 (1968), 101–92.
HULL, M. R., 1967, "The Nor'nour brooches" in Dudley, D. "Excavations on Nor'nour, Isles of Scilly, 1962–6", *Archaeol. J.*, 124 (1967), 28–64.
ISINGS, C., 1957, *Roman Glass from Dated Finds.*
JACOBI, L., 1897, *Das Römer Kastell Saalburg bei Homburg vor der Höhe.*
JARRETT, M. G., 1969, *The Roman Frontier in Wales*, V. E. Nash-Williams, 2nd edition.
JOHNS, C. and CARSON, R., 1975, "The Waternewton Hoard", *Durobrivae*, 3 (1975), 10–12.
KENYON, K. M., 1948, *Excavations at the Jewry Wall Site, Leicester.*
KILBRIDE-JONES, H., 1937, "Glass Armlets in Britain", *Proc. Soc. Antiq. Scotland*, 72 (1937–8), 366–95.
KNORR, R., 1919, *Töpfer und Fabriken verzierter Terra-Sigillata des ersten Jahrhunderts.*
——, 1952, *Terra-Sigillata-Gefässe des ersten Jahrhunderts mit Töpfernamen.*
KOENEN, C., LEHNER, H. and NISSEN, J., 1904, "Novaesium", *Bonner Jahrbucher*, 111–12 (1904), 1f.

LACAILLE, A. D., 1954, *The Stone Age in Scotland.*
MAASKANT-KLEIBRINK, M., 1975, *Classification of Ancient Engraved Gems.*
MACGREGOR, M., 1976, *Early Celtic Art in North Britain.*
MANBY, T., 1974, *Grooved Ware Sites in Yorkshire and the North of England.*
MANNING, W. H., 1976a, "Blacksmithing" in Strong, D. and Brown, D. *Roman Crafts.*
——, 1979b, *Catalogue of Romano-British ironwork in the Museum of Antiquities, Newcastle upon Tyne.*
MARSHALL, F. H., 1907, *Catalogue of the Finger Rings, Greek, Etruscan and Roman in the Departments of Antiquities, British Museum.*
MATTINGLY, H. and SYDENHAM, E. A., 1923, *The Roman Imperial Coinage I: Augustus to Vitellius.*
MAY, T., 1916, *The Pottery Found at Silchester.*
PAINTER, K. and SAX, M., 1969, "The British Museum collection of Roman headstud brooches", *Brit. Mus. Q.*, 34 (1969–70), 153–74.
PETRIKOVITS, H. von., 1958, "Vetera" in *Paulys Realencyclopädie der Classischen Altertumswissenshaft* 8A², 1801–34.
PICARD, G. C., 1957, *Les Trophées Romains.*
PIGGOTT, S., 1952, "Three Metalwork hoards of the Roman period from Southern Scotland", *Proc. Soc. Antiq. Scotland*, 87 (1952–3), 1f.
PITT-RIVERS, A. H. L., 1887, *Excavations in Cranbourne Chase I.*
RHODES, J. F., 1974, "The Oldcroft (1971–2) hoard of Bronze Coins and Silver Objects", *Numis. Chron.*, 14 (1974), 65–74.
RICHMOND, I. A., 1925, *Huddersfield in Roman Times.*
——, 1958, "Roman Britain in 1957", *J. Rom. Stud.*, 48 (1958), 130–49.
——, 1961, "Roman Britain in 1960", *J. Rom. Stud.*, 51 (1961), 157–98.
——, and BIRLEY, E., 1930, "Excavations on Hadrian's Wall in the Birdoswald-Pike Hill Sector, 1929", *Trans. Cumb. West, Antiq. Archaeol, Soc.*, 30 (1930), 169–205.
RICHMOND, I. A. and GILLAM, J. P., 1952, "Further exploration of the Antonine Fort at Corbridge", *Archaeol. Ael.*⁴, 30 (1952), 239–66.
RICHMOND, I. A. and GILLAM, J. P., 1953, "Buildings of the First and Second Centuries North to the Granaries at Corbridge", *Archaeol. Ael.*⁴, 31 (1953), 205–53.
—— and MCINTYRE, J., 1938, "The Agricolan Fort at Fendoch", *Proc. Soc. Antiq. Scotland*, 73 (1938–9), 110–54.
RICKMAN, G. E., 1971, *Roman Granaries and Store Buildings.*
ROBINSON, H. R., 1975, *The Armour of Imperial Rome.*
SCHÖNBERGER, H., 1972, "Der Römerkastell Oberstimm: Bericht über die Grabungen von 1968 bis 1971", *Bayerische Vorgeschictsblätter*, 37 (1972).
——, 1975, *Kastell Künzing-Quintana.*
SENA CHIESA, G., 1966, *Gemme del Museo Nazionale di Aquileia.*
SIMPSON, F. G. et al., 1913, "The Fort on the Stanegate at Throp", *Trans. Cumb. West. Antiq. Archaeol. Soc.*, 13 (1913), 297–397.
SMITH, R. A., 1934, "Relics of Londinium", *Brit. Mus. Q.*, 9 (1934–5), 95–6.
STEER, K. A. and FEACHEM, R. W., 1951, "The Roman Fort and Temporary Camp at Oakwood, Selkirkshire", *Proc. Soc. Antiq. Scotland*, 86 (1951–2), 81–105.
STEVENSON, R. B. K., 1954, "Native bangles and Roman Glass", *Proc. Soc. Antiq. Scotland*, 88 (1954–6), 208–21.
—— and EMERY, J., 1963, "The Gaulcross Hoard of Pictish Silver" *Proc. Soc. Antiq. Scotland*, 97 (1963–4), 206–11.

TAYLOR, M. V. and WILSON, D. R., 1961, "Roman Britain in 1960", *J. Rom. Stud.*, 51 (1961), 157–91.

WALTERS, H. B., 1926, *Catalogue of the Engraved Gems and Cameos, Greek, Etruscan and Roman in the British Museum.*

WARD, G., 1941, "The Iron Age Horseshoe and its Derivatives", *Antiq. J.*, 21 (1941–2).

WEBSTER, G., 1958, "The Roman Military Advance under Ostorius Scapula", *Archaeol. J.*, 115 (1958), 49–98.

WENHAM, L. P., 1968, *The Roman-British Cemetery at Trentholme Drive, York.*

WEYMAN, J., 1975, "Mesolithic occupation at Gallowhill farm, Corbridge", *Archaeol. Ael.*[5], 3 (1975), 219–21.

WHEELER, R. E. M. and WHEELER, T. V., 1936, *Verulamium: a Belgic and Two Roman Cities.*

WILD, J. P., 1970a, "Button-and-loop Fasteners in the Roman Provinces", *Britannia*, 1 (1970), 137–55.

——, 1970b, *Textile Manufacture in the Northern Roman Provinces.*

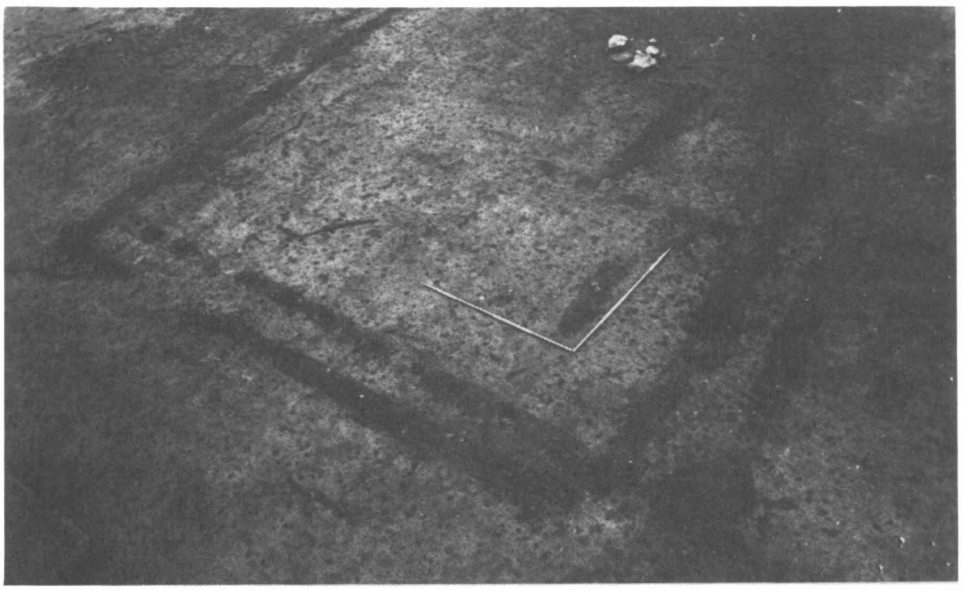
——, 1974, "Roman Settlement in the Lower Nene Valley", *Archaeol. J.*, 131 (1974), 140–70.

WILSON, D. R., 1975, "Roman Britain in 1974", *Britannia*, 6 (1974), 220–83.

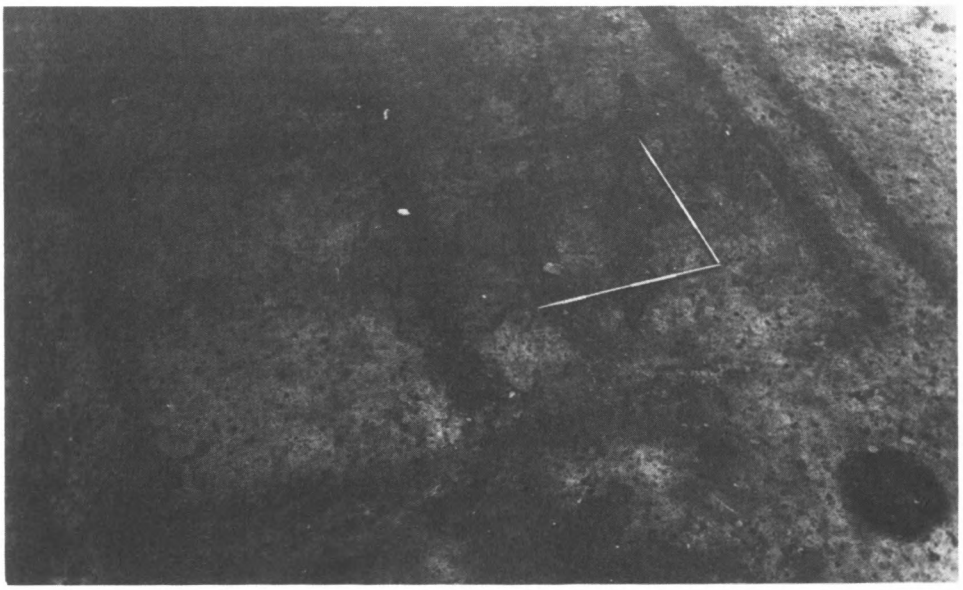
ZAZOFF, P., 1975, *Antike Gemmen in Deutschen Sammlungen IV Hannover, Kestner-Museum.*

a. The site from the east.

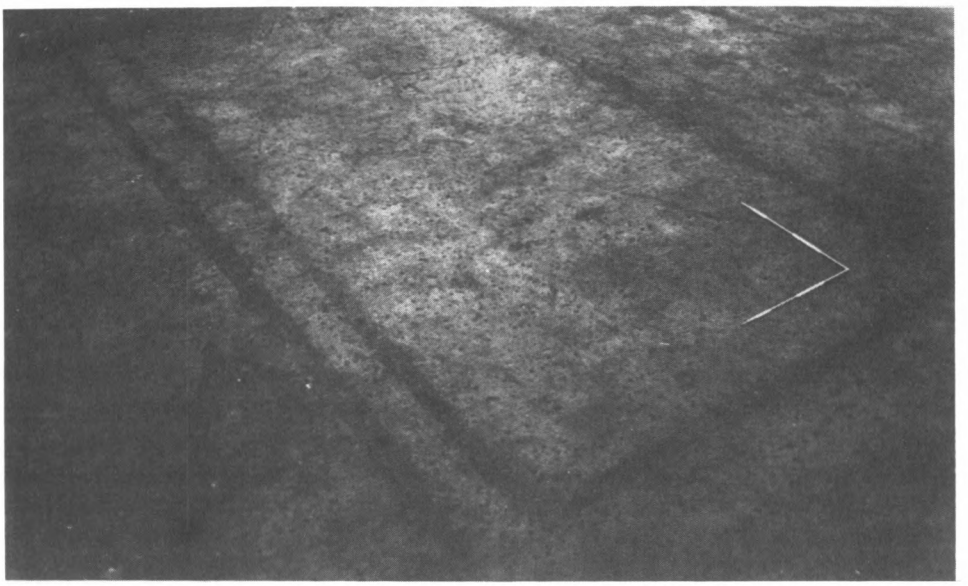
b. Buildings 1 and 2 from the north.



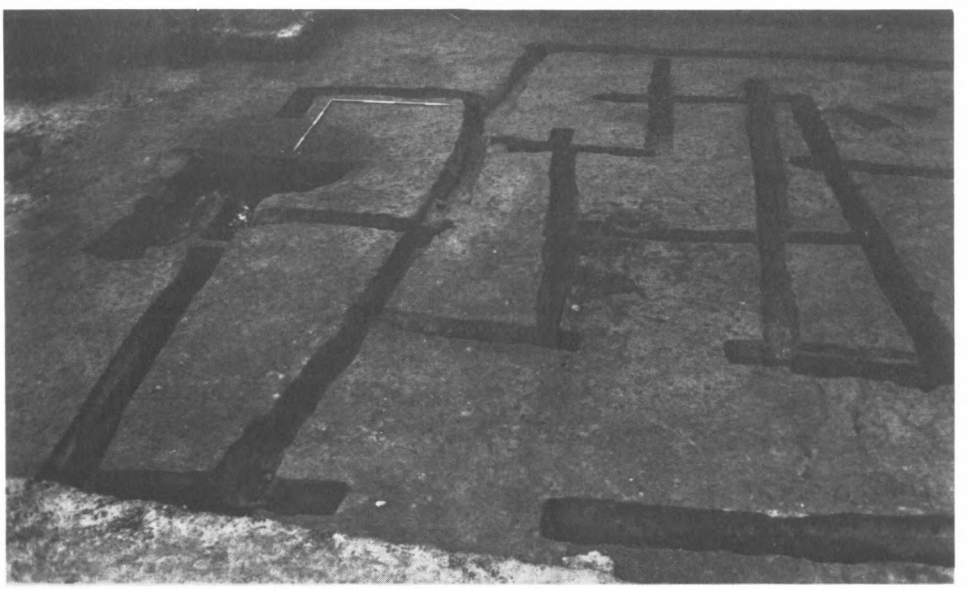
a. Building 7 from the north.



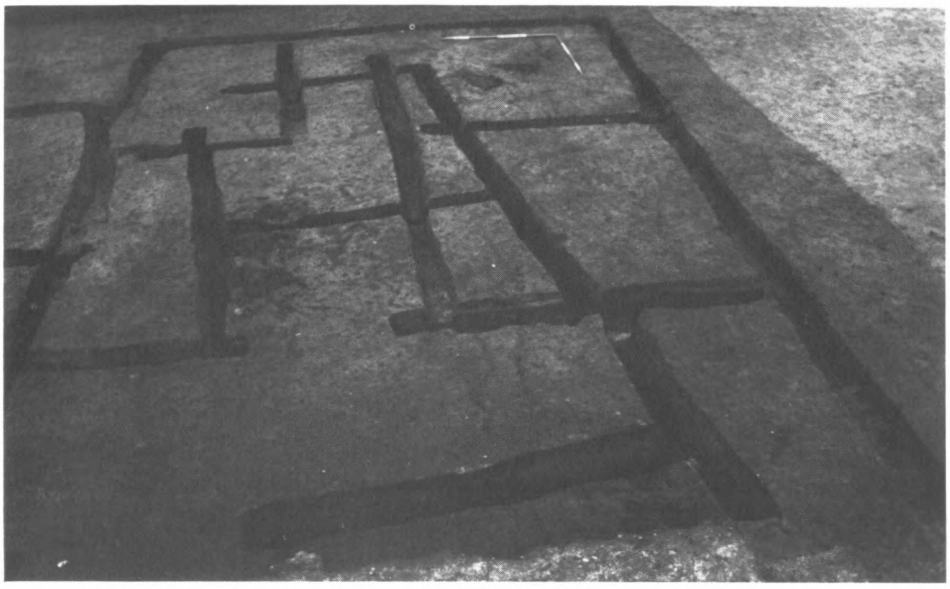
b. Building 8 and Neolithic pit from the north.



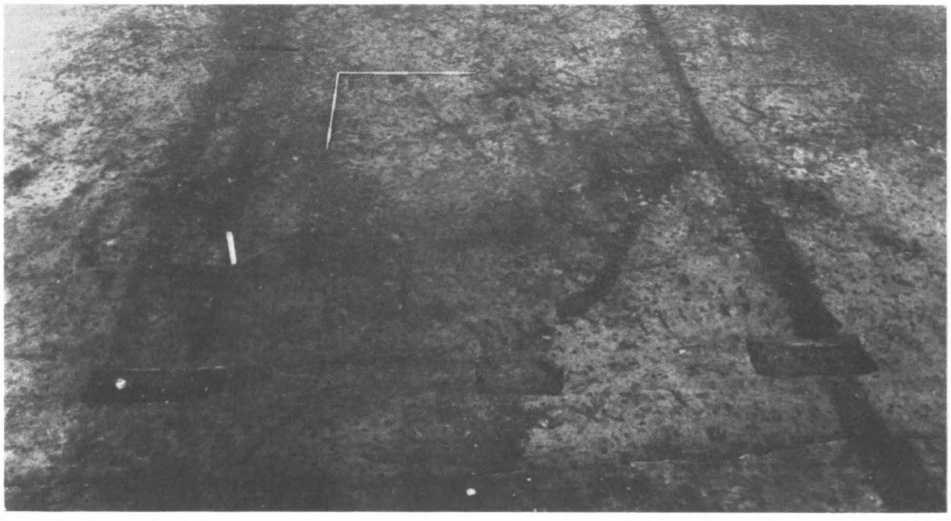
a. Building 9 from the north.



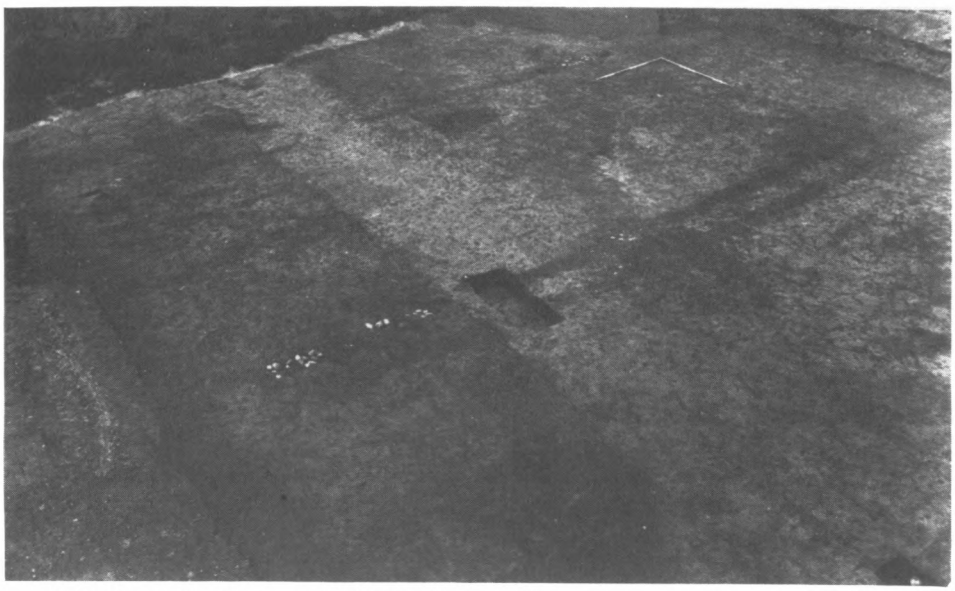
b. Building 10, phase 1 from south.



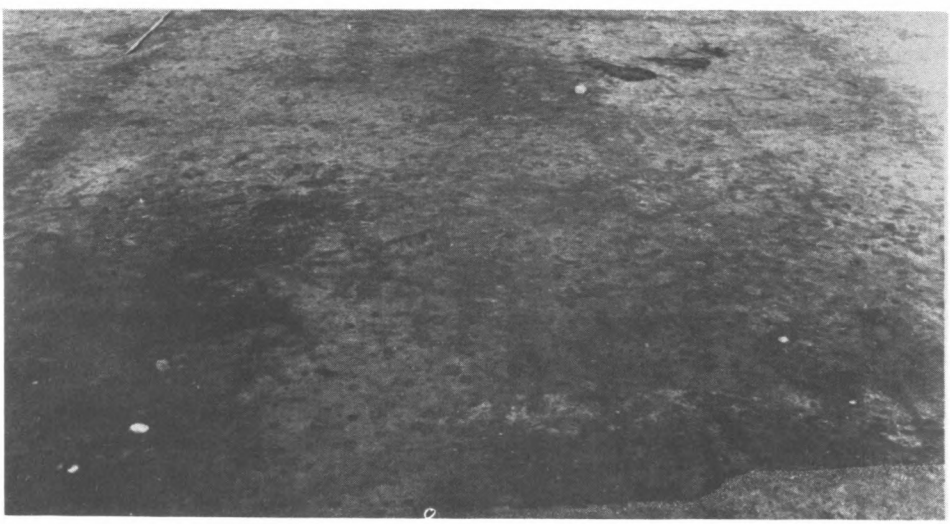
a. Building 10, phase 2 from the south.



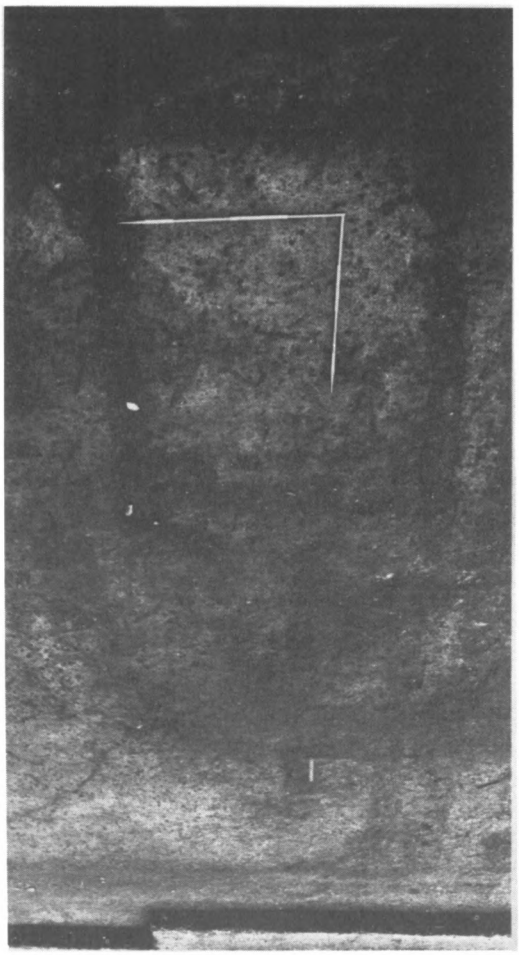
b. Building 11 from the south.



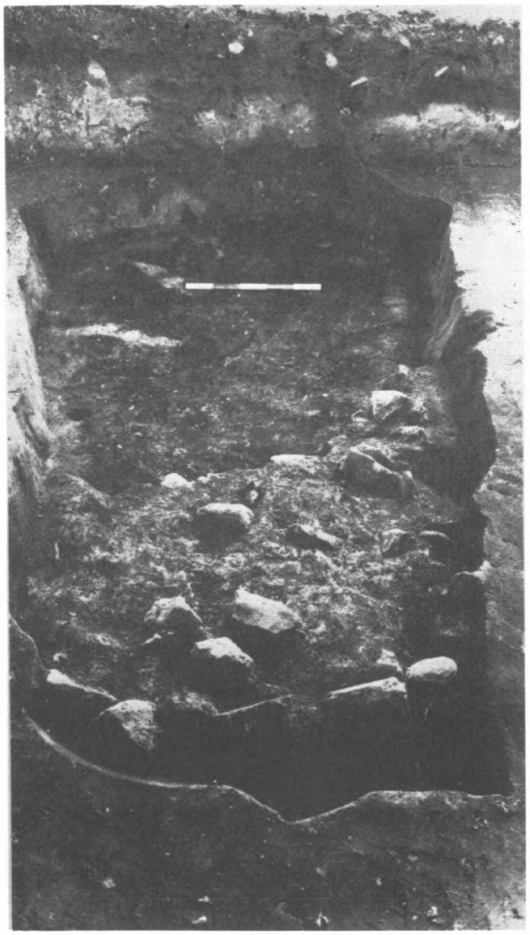
a. Buildings 12, 13 and 14 from the south-east.



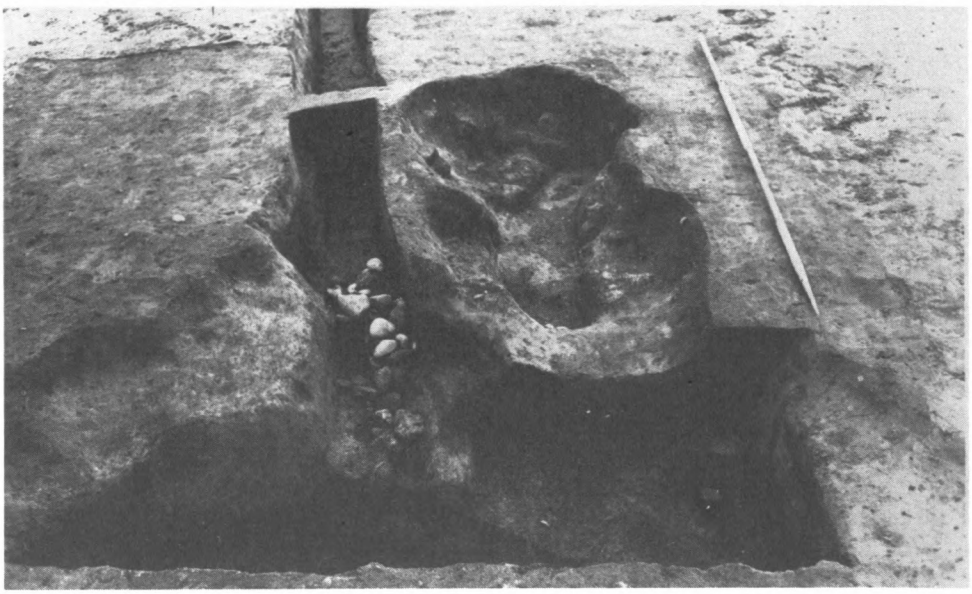
b. Hearth 10.



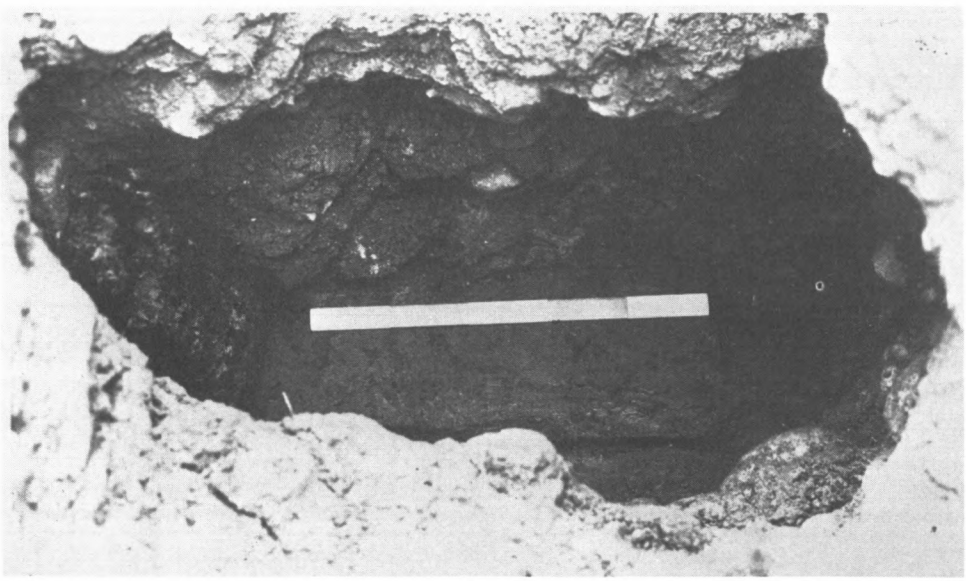
a. Building 8 from north-east corner.



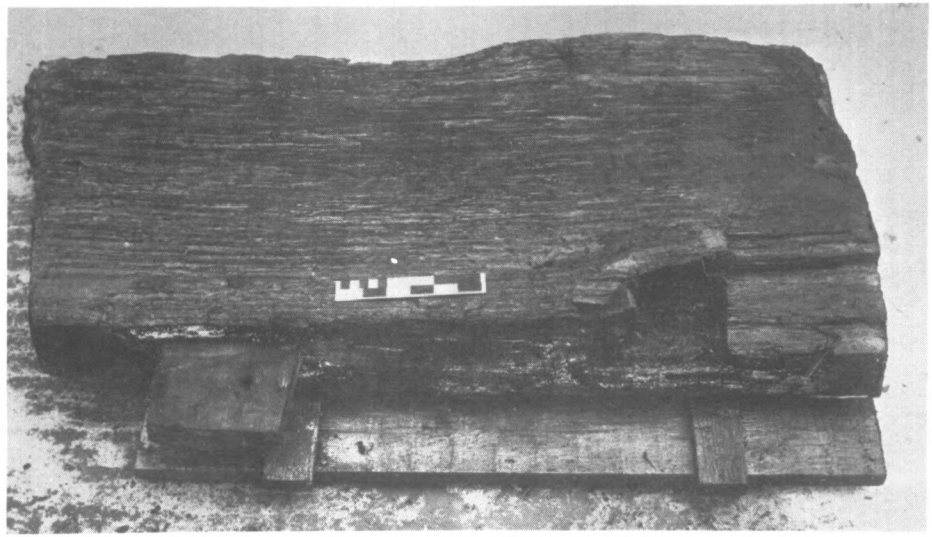
b. Furnace 6 from the north.



a. Building 10, west wall phase 1, pit 4 and furnace 5.

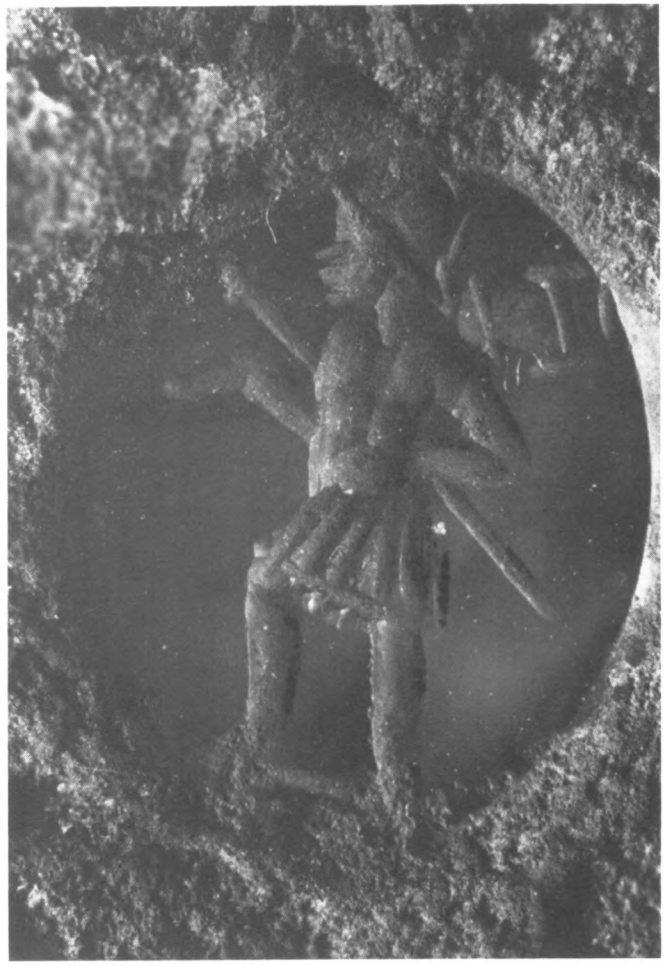


b. Extra-mural building.



Oak block unearthed by road contractors.

a. Building 10, phase 2 west wall from south.



b. Chalcedony intaglio.