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Excavations at Brough-on-Humber
1958–1961

By
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Excavations at Brough-on-Humber, 1958-61

Errata

p.129, last line: for "Fig.50", read "Fig.51".

p.134, line 29: for "(no.37)" read "(no.97)".

p.180, line 2: for "to" read "two".

Fig.31. Solid black spot in north-west corner near Market Weighton should be red.

p.23, n.4: for "J.R.S., LVII, 167" read "J.R.S. LVII, 232".

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IN MEMORIAM
PHILIP CORDER

Brough and the Humber. The Haven lies on the near shore to the left of the photograph
(*Photograph by Blackburn and General Aircraft Ltd*)

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LIST OF ABBREVIATIONS

Aldborough	J. N. L. Myres, K. A. Steer and A. M. H. Chitty, 'The Defences of *Isurium Brigantum*'. *Y.A.J.*, xl, 1–77.
Antiq. J.	*Antiquaries Journal*, Society of Antiquaries of London.
Arch.	*Archaeologia*, Society of Antiquaries of London.
Arch. Ael.	*Archaeologia Aeliana*, Society of Antiquaries of Newcastle upon Tyne.
Arch. Camb.	*Archaeologia Cambrensis.*
Arch. J.	*Archaeological Journal*, Royal Archaeological Institute.
B.M.	British Museum.
Britannia	S. S. Frere, *Britannia* (1967).
Camulodunum	C. F. C. Hawkes and M. R. Hull, *Camulodunum* (1947).
Cantley	S. M. Cregeen, 'The Romano-British Excavations at Cantley Estate, Doncaster: the pottery from Kilns 9–25'. *Y.A.J.*, xxxix, 364–88.
C.G.P.	J. A. Stanfield and G. Simpson, *Central Gaulish Potters* (1958).
Chester Arch. J.	*Chester Archaeological Journal.*
Clausentum	M. A. Cotton and P. W. Gathercole, *Excavations at Clausentum, Southampton, 1951–4* (1958).
Colchester	M. R. Hull, *Roman Colchester* (1958).
Colchester Kilns	M. R. Hull, *The Roman Potters' Kilns of Colchester* (1963).
Crambeck (1928)	P. Corder, *The Roman Pottery at Crambeck, Castle Howard* (1928).
Crambeck (1937)	P. Corder and M. Birley, 'Fourth-century Romano-British Kilns near Crambeck'. *Antiq. J.*, xvii, 398–413.
C.W.	*Transactions of the Cumberland and Westmorland Archaeological Society.*
D.	J. Déchelette, *Les vases céramiques ornés de la Gaule romaine, Tome II* (1904).
E.E.	*Ephemeris Epigraphica.*
Gillam	J. P. Gillam, 'Types of Roman Coarse Pottery Vessels in Northern Britain'. *Arch. Ael.*,[4] xxxv, 1–72.
Hofheim	E. Ritterling, *Das frührömische Lager bei Hofheim im Taunus* (1913).
J.B.A.A.	*Journal of the British Archaeological Association.*
J.R.S.	*Journal of Roman Studies.*
Jewry Wall	K. M. Kenyon, *Excavations at the Jewry Wall Site, Leicester* (1948).
Knapton	*Langton*, Appendix 1, p. 96.
Knorr (1952)	R. Knorr, *Terra-Sigillata-Gefässe des ersten Jahrhunderts mit Töpfernamen* (1952).
Langton	P. Corder and J. L. Kirk, *A Roman Villa at Langton* (1932).
Lincs. Architect. & Arch. Soc. Rep.	*Reports of the Lincolnshire Architectural and Archaeological Society.*
L.R.B.C.	R. A. G. Carson, P. Hill, J. P. C. Kent, *Late Roman Bronze Coinage* (1965).
Lydney	R. E. M. Wheeler and T. V. Wheeler, *Report on the Excavations of the Prehistoric, Roman and Post-Roman Site in Lydney Park* (1932).

Malton	P. Corder, *The Defences of the Roman Fort at Malton* (1930).
Margidunum	F. Oswald, *The Commandant's House at Margidunum* (1948).
Med. Arch.	*Medieval Archaeology.*
Nene Valley	B. R. Hartley, *Notes on the Roman Pottery Industry in the Nene Valley* (1960).
Norfolk Arch.	*Norfolk Archaeology.*
North Ferriby	P. Corder, C. W. Wright, E. V. Wright, 'The Pre-Roman Settlement of the Parisi at North Ferriby'. *Hull Museum Publications*, no. 212.
Norton	R. H. Hayes and E. Whitley, *The Roman Pottery at Norton* (1950).
Not. Dig. occ.	*Notitia Dignitatum occidentis.*
Num. Chron.	*Numismatic Chronicle.*
O.	F. Oswald, *An Index of Figure Types on Terra Sigillata* (1937).
Oxon.	*Oxoniensia.*
P. Leeds Phil. & Lit. Soc.	*Proceedings of the Leeds Philosophical and Literary Society.*
P.P.S.	*Proceedings of the Prehistoric Society.*
P.S.A.L.	*Proceedings of the Society of Antiquaries of London.*
P.S.A.S.	*Proceedings of the Society of Antiquaries of Scotland.*
P.S.I.A.	*Proceedings of the Suffolk Institute of Archaeology.*
P.W.	P. Corder, 'Parisian Ware'. *Y.A.J.*, xxxix, 48–52.
R.C.A.M.	Royal Commission on Ancient Monuments for Wales.
R.C.H.M.	Royal Commission on Historical Monuments for England.
R.I.B.	R. G. Collingwood and R. P. Wright, *The Roman Inscriptions of Britain* (1965).
R.I.C.	H. Mattingly and E. A. Sydenham, *The Roman Imperial Coinage* (1923 and later).
Richborough I-IV	J. P. Bushe-Fox, *First to Fourth Reports on the Excavations of the Roman Fort at Richborough* (1926, 1928, 1932, 1949).
Richborough V	B. Cunliffe (ed.), *Fifth Report on the Excavations of the Roman Fort at Richborough* (1968).
Signal Stations	M. R. Hull, 'Pottery from the Roman Signal Stations on the Yorkshire coast'. *Arch. J.*, lxxxix, 220–50.
Silchester	T. May, *The Pottery found at Silchester* (1916).
Stanwick	R. E. M. Wheeler, *The Stanwick Fortifications* (1954).
Throlam	P. Corder and T. Sheppard, 'Roman Pottery and Kilns at Throlam, East Yorkshire'. *Hull Museum Publications*, no. 170.
T.B.G.A.S.	*Transactions of the Bristol and Gloucestershire Archaeological Society.*
T.Shrop.A.S.	*Transactions of the Shropshire Archaeological Society.*
T.Wool.N.F.C.	*Transactions of the Woolhope Naturalists' Field Club.*
V.C.H.	Victoria County History.
Verulamium	R. E. M. Wheeler and T. V. Wheeler, *Verulamium, A Belgic and Two Roman Cities* (1936).
Y.A.J.	*Yorkshire Archaeological Journal.*

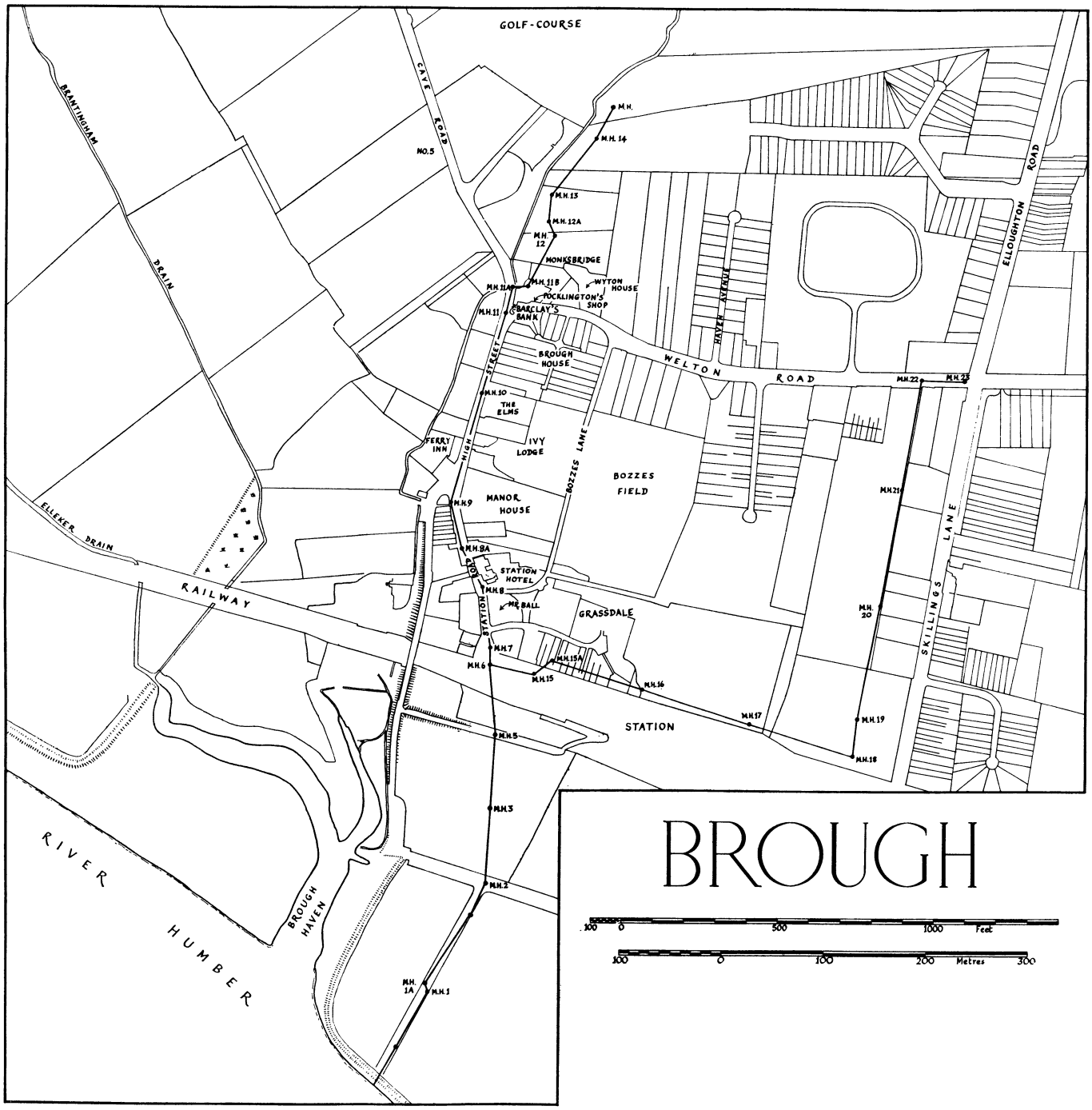


FIG. 1. Plan of Brough, showing the sites excavated and the line of the sewer trench

INTRODUCTION

THE Romano-British town of *Petuaria* at Brough-on-Humber has been the subject of two main series of excavations, those conducted by Dr Philip Corder and the Rev. Thomas Romans between 1933 and 1937[1] and those by the present writer for the Ministry of Public Building and Works between 1958 and 1961.[2] Dr Corder was able to show in the earlier excavations in Bozzes Field that the site was a town of about 13 acres, enclosed first by a turf rampart during the Hadrianic period,[3] and later by a stone wall towards the end of the second century.[4] He also found part of an earlier rampart close to the north-east corner of the later town, which he attributed to the period of the Roman penetration into East Yorkshire under Petillius Cerealis in A.D. 71.[5] But many developments have taken place in the field of Romano-British studies since 1937, and it is both natural and desirable that Dr Corder's interpretations should be reassessed in the light of these developments and of the results of the more recent excavations.

These excavations took place in three different areas within the town (fig. 1). Two months in 1958 were spent investigating the extensive grounds of Brough House, situated at the north-west corner of the Roman town; in 1959, excavations were carried out in the gardens of 'Grassdale', a modern property overlying the south-east corner, and these also included some limited trial-trenching in the garden of the Manor House, an area between Station Road and Bozzes Lane near the south end of the town. The excavations in 1959 were under the immediate supervision of Miss V. Russell. More work was carried out at the Manor House in 1960, while in 1961 a sewer trench dug along the full length of Station Road and the High Street yielded further information.[6]

The writer would like to express his sincere thanks to Messrs Finch and Sons of Hull, for permission to dig at Brough House; to L. H. Beal and Son for permission to dig at Grassdale, and to the Order of St John for permission to dig in the Manor House garden. The generous co-operation of Messrs A. Monk and Co., Ltd must also be acknowledged for allowing continuous observation of the sewer trench as the work progressed. Seldom can contractor and archaeologist have worked so harmoniously together as they did here. Miss Russell not only supervised the excavations in 1959, but she also assisted in 1958 and 1960. Mrs Anna Wacher assisted during 1958, and to her fell the long and often tedious task of watching the sewer trench for almost six months, during which time Miss Jean Smalley and Mr A. L. Pacitto also shared the duty for shorter periods. Dr Corder, before his sudden and untimely death in 1961, gave unsparingly of his extensive local knowledge of Brough; he visited the excavations in 1958, and with his encouragement and advice helped to ensure their success.

[1] P. Corder, *Excavations at the Roman Fort at Brough-on-Humber*, I (1934); *Excavations at the Roman Fort at Brough, E. Yorks.*, II (1935). P. Corder and T. Romans, *Excavations at the Roman Town at Brough, E. Yorks.*, III (1936); IV (1937); V (1938). Hereafter called *Brough*, I-V. The foregoing have been summarized by P. Corder and I. A. Richmond, 'Petuaria', *J.B.A.A.* (3rd series), VII (1942), 5. Hereafter called *Petuaria*, I (See p. 5 for general description of site and its name).

[2] A short summary for 1958 appeared in *Antiq.J.*, XL, 58. Hereafter called *Petuaria*, II.

[3] *Petuaria*, I, 15.

[4] Ibid., 17.

[5] Ibid., 11; *Brough*, V, 15.

[6] A short note appeared in *J.R.S.*, LII, 165.

Subsequently, he discussed the results on a number of occasions, and the writer owes to him a very real debt of gratitude for his generous support and inspiration. The late Sir Ian Richmond also gave much helpful advice during the preparation of this report. Professor S. S. Frere read the report in typescript and made many pertinent and useful comments. The writer is most grateful for all this help, but nevertheless takes full responsibility for the views expressed. He would also like to express his gratitude to all those who helped in the preparation of the report, but who are not thanked elsewhere: Mr J. Bennett for the mortar analyses, Mrs C. Boddington for drawing the majority of the metal objects, Mr P. Broxton for drawing most of the coarse pottery and samian, Miss D. Charlesworth for the glass identifications, Mr Peter Curnow for his comprehensive survey of the Brough coins, Mr R. A. Harcourt for his report on the animal bones, Mr B. R. Hartley for the report on the samian and Mrs K. F. Hartley for that on the mortarium stamps, Mr David Neal for the reconstruction drawings of the gates, Mrs M. Simpson for drawing some of the samian, Mr D. D. A. Simpson for reporting on the prehistoric stone implements, Mr R. S. O. Tomlin for his note on the *numerus supervenientium Petueriensium*, Mr D. D. Bartley for the pollen analyses, Mr J. G. Evans for his report on the mollusca, Mr D. H. Dalby for identifying the mosses, Mr J. R. B. Arthur for identifying the other botanical specimens, Mr G. C. Morgan for identifying the majority of wood and charcoal specimens, Miss R. Powers and Mr D. Brothwell for reporting on the human skeletal material, Mr L. Biek for giving much help and guidance with the metal-work and other finds and also for collating and interpreting all the scientific information, and Mrs A. Wacher for drawing some of the coarse pottery. Miss S. M. Heald and Miss Sheila Gooding both helped with the preliminary work on the pottery, and finally Miss K. E. Hoare had the tedious task of mounting nearly 1000 individual drawings in a form suitable for publication.

The medieval pottery and other finds of later date from the excavations have no direct bearing on either the structures or interpretations discussed in this report; consequently they have here been omitted and will be the subject of a separate paper. All the finds from the excavations, together with the relevant notes, have been deposited in Hull Museum through the generosity of the owners of the individual sites.

CHRONOLOGICAL SUMMARY

PERIOD I (before A.D. 70). Evidence for a native occupation before A.D. 70 was found at Brough House, but there was no structural evidence to suggest a Roman occupation before this date.

PERIOD II A (*c.* A.D. 70). The first Roman occupation took place *c.* A.D. 70, when a temporary camp of unknown size was established. It may possibly have been associated with a stores-depot.

PERIOD II B (*c.* A.D. 70–80). A permanent auxiliary fort of about $4\frac{1}{2}$ acres was soon built to replace the temporary camp, and to supervise the stores-depot, which probably lay south of the fort. Two blocks of buildings in the *retentura*, the *porta decumana* and three streets of the fort were identified. Reinterpretation of the earlier excavations suggested possible sites for the *porta praetoria* and an annexe. The fort was evacuated *c.* A.D. 80.

PERIOD III (*c.* A.D. 80–125). The stores-depot appears to have been maintained even though the fort was no longer occupied. Although the fort's buildings and gates were dismantled, the rampart and the ditches were left to mark the site.

PERIOD IV (*c.* A.D. 125). A brief reoccupation of the fort occurred *c.* A.D. 125, when the defences were refurbished and new internal buildings constructed, but it may not have lasted more than a few months.

PERIOD V (*c.* A.D. 125–200). After the final evacuation of the fort, development of the *vicus* was at first slow, until the later Hadrianic or early Antonine period, when fairly widespread building activity took place. The theatre may have been part of this programme. But the settlement was exceptional among the towns of Britain at this time, since it was defended by a rampart and ditch, which enclosed an area larger than that fortified at a later date. It is possible that it still acted as an army supply-depot, or more likely as a base for a naval detachment, in addition to being a civilian centre and the civitas capital of the Parisi.

PERIOD VI (*c.* A.D. 200–70). The second phase of fortification, on a different line from the first, together with much new internal building construction, took place at the end of the second century or possibly even early in the third. The defences then constructed more closely resembled those of the turfwork and timber forts of the Antonine period, rather than the defences known to have been erected around other towns at about the same time. This might suggest that the *vicus Petuariensis* was still acting in close liaison with army or naval authorities, or even that the work was carried out by an army or marine detachment.

PERIOD VII (*c.* A.D. 270–90?). The work of converting these fortifications to stone must have begun very soon after A.D. 270, and proceeded in a series of stages. The first guardroom at the north gate was started after part of the curtain wall had been built, but before additions were made to the rampart, suggesting that the wall had not been carried to its full height. The guardroom may never have been completed, as no floor was laid, and it is likely that the whole construction work was interrupted for a time.

PERIOD VIII (*c.* A.D. 290–370?). When work was resumed on the defences, the incomplete north-gate guardroom was demolished to make way for another, which was much better built, and which, on structural and general grounds, is contemporary with the added bastions and gate-towers. The present excavations provide no advance on the *terminus post quem* of a late third- or early

fourth-century date for the additions, which Corder originally put forward, in marked contrast with the other phases of fortification. It might therefore be suggested that Brough is a close analogy to the Saxon Shore fort at Burgh Castle, where the original plan may have been pre-Carausian, but with up-to-date modifications probably introduced by Carausius during the construction. So there is good reason to believe that at Brough the additions do not fit neatly into the Theodosian reorganization of town defences. Once again, the pattern of development is linked with the chronology of military rather than civil fortification. New buildings were also erected inside the fortified area during this period.

PERIOD IX (*c.* A.D. 370). There was nothing on the worn and dirty floor of the north-gate guardroom, or in the destruction debris above it, to suggest that it had been in use much after the middle of the fourth century. The inference is that the defences were no longer permanently manned after this date. Any town by now would normally possess some kind of local militia, and, if Brough were allied to a naval base, it might be expected to have a larger garrison of better quality than its small size alone would justify. A run-down in the strength, or complete removal of the garrison, as implied by the state of the defences, might in turn imply that naval activity had ceased, and this at a time when it might be expected to increase. These suggestions are backed by the ceramic and coin evidence; the former pointing to a shrinkage towards the south-west corner, the latter terminating with a single coin of Magnus Maximus. If Brough was no longer used as a naval base in the late fourth century, it is probably because the harbour was no longer serviceable. It may also be suggested that the *numerus supervenientium Petueriensium*, placed at Malton in the Notitia, was a detachment from Brough, which had become redundant, and was transferred to another fort.

PART I

THE EXCAVATIONS

PERIOD I. *Native occupation*

TRACES of a pre-conquest native occupation were found at the bottom of Trench A I at Brough House, where part of a curving ditch, about 3 ft. 9 in. wide and about 3 ft. 6 in. deep was revealed (figs. 6 and 9). It had been dug into the undisturbed sand and was filled with light-coloured, clean sand stained brown in patches. The outer ditch of the period II B fort cut through it. From the filling came the base of a pot of hand-made native fabric (fig. 53, no. 2), and there can be little doubt that the ditch belonged to the pre-conquest period, although pottery of this type cannot be closely dated, as it appears in all contexts down to the fourth century. A vessel of similar fabric was found on the surface of the undisturbed sand at the bottom of a sewer trench in Welton Road, between Manholes 22 and 23, a little further east of the present site (fig. 53, no. 1). The ditch may have been associated with layers of sand and hard gravel (A I, 73; A V, 46; A XI, 25, 28–9, 31) which were also cut by the ditches of the fort, but which could not be fully explored in the time (figs. 9 and 19). A hearth with a small stake-hole near it, in which was a sherd of native pottery, and which was situated close to the inner lip of the fort ditch in trench B I, may also belong to this period (fig. 5).

An extensive native settlement of the pre-conquest period has been identified at North Ferriby,[1] where it was associated with imported Gallo-Roman wares. Substantial traces of huts dating from the mid-first century were also found by Dr Corder in Bozzes Field,[2] so that the area of native occupation on the north shore of the Humber must have stretched for some miles east of the Haven, and acted as a focal point for early trade with the romanized south. An established settlement, combined with suitable geographical conditions[3] for the operation of a ferry between the north and south banks of the Humber, must have affected the decisions made by Petillius Cerealis or an earlier governor when the time came for the permanent occupation of the territory of the Parisi.

PERIOD II A. *First military occupation*

It is easy to see how Brough, with its sheltered haven at the north end of a suitable ferrying position across the Humber and facing a possible fort at Winteringham on the south shore,[4] would have been of some importance during the early stages of the Roman army's advance in A.D. 71, or possibly during earlier operations, perhaps under A. Didius Gallus or Vettius Bolanus.[5] But no structural evidence to support any distinctly pre-Flavian military activities was forthcoming. A few sherds, notably some fragments of samian, including a Ritterling

[1] *Antiq.J.*, XVIII, 262; *Hull Museum Publications*, 212 and 237.
[2] *Brough*, I, 20; IV, 15; V, 7.
[3] See p. 76, below.
[4] *J.R.S.*, LV, 205.
[5] The writer would emphasize that it is impossible to distinguish, on present evidence, between an occupation under Bolanus and one under Cerialis.

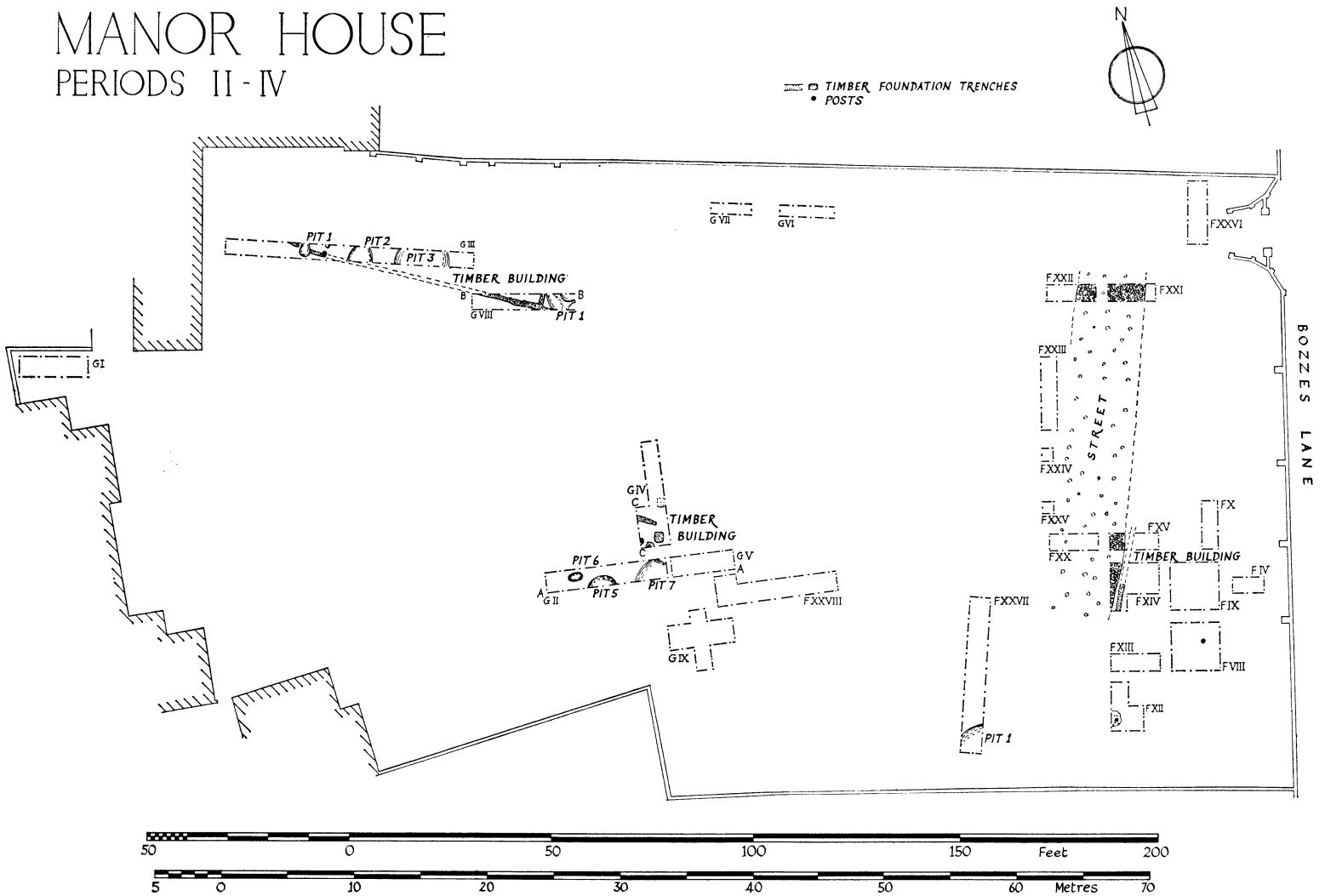


FIG. 2. Plan of early timber buildings in the Manor House garden

12 from B V, 29 and a fragment of form 27 from D I, 30 could be Neronian. Among some pieces of possibly pre-Flavian coarse pottery, there is a mortarium stamped with the name PRIVATUS (A.D. 65–95) from B I, 78; and Dr Corder found pottery and coins,[1] all of which could carry a Neronian date, but there is nothing to show that they were introduced by any means other than by trade with the native settlement. A *fibula* of Hod Hill Class B type, normally of Claudio-Neronian date, was found in a gully (B V, 31) of the period IV fort, but is most likely to have been a survival.[2]

The construction of a temporary camp, perhaps large enough to hold the complete army group, might be seen as the first stage of the operation in A.D. 71, while a stores depot would have been an essential requirement, not only during the primary stages but also after the advance had been resumed, when it could have been supervised by the holding garrison left behind to secure the safe operation of the ferry.

South of the fort, in the Manor House garden, early timber buildings and pits were found in trenches G II, III, IV and VIII and F XIV, and it is interesting that the foundations were aligned in the same direction as the buildings inside the fort (fig. 2). In both trenches the buildings had been based on sleeper beams and individual posts (pl. IV *b*), in contrast to the methods of construction used in the fort (see p. 17, below). The surface of the undisturbed sand, stripped of its covering turf (p. 217), seems to have served as a floor in the three buildings, although timber floors cannot be ruled out. There must be some uncertainty whether these buildings were erected before the fort. Nevertheless, they certainly coexisted with it, and appear to have continued in use after the first evacuation and down to Hadrianic times. No date can be given for the construction of the building in G IV but a few small sherds of probably Flavian pottery (not illustrated) came from the filling of P.H.4 and, although equating with the destruction, were probably derived from the occupation. For that in G III and VIII the date of construction depends on G VIII, 18, which was cut by the foundation trench and produced two sherds of Samian, one a fragment of form 29, dated to *c.* A.D. 70–85, the other from a Flavian form 18. In the filling of the trench itself was a fragment of a form 37, dated *c.* A.D. 70–80, and a coarse pot rim of probable Flavian date (fig. 54, no. 17), while two more Flavian fragments, one from a form 27, the other from a form 37, came from layers associated with the destruction, G VIII, 16 and 23 respectively, although the fragment of coarse pottery in layer 16 (fig. 54, no. 16) is black-burnished ware and probably Hadrianic in date. From layer 21, which must post-date the destruction came a sherd of probable Flavian-Trajanic date.

Much more certainly belonging to this period is the ditch which was found immediately behind the Period II B rampart close to the *porta decumana* (figs. 5 and 10). Its width varied between 3 ft. 6 in. and 4 ft. 6 in. and it was about 3 ft. deep; it had been filled with dirty sand before the later intervallum road of the fort had been laid. The metalling covered it completely, although it later sagged downwards as the soft filling was compressed. The ditch ceased at the gate but it is not known if it continued again on the other side. Structurally it must be earlier than the fort defences: it seems too large for a marking out ditch and more likely belongs to a temporary camp which preceded the fort. If so, then the vestigial remains of a rampart might be expected, and it is of interest that the later intervallum road at this

[1] *Petuaria*, I, 9.

[2] See comments by Mr E. J. W. Hildyard, p. 93.

point was raised on a low bank of clean sand (B I, 60). This bank in part sealed B I, 39 from which came a fragment of very corroded iron. Mr Biek reports fibrous residues in the corrosion products which are probably due to grasses, so that this layer may represent surface vegetation. The metalling of the other streets inside the fort was, in contrast, invariably laid on the surface existing at the time, and no attempt had been made to provide a raised agger for any of them. In a discussion on the existence of a temporary camp, mention should also be made of a 'hollow' which Dr Corder recorded beneath the town wall at the north-east corner.[1] Although it might be only a pit, it could equally be a section of an early ditch, and one which does not correspond with any alternative ditch system so far discovered.

A little dating evidence was recovered from this ditch and its conjectured rampart. From B I, 91, sealed by the 'rampart', came a small group of Flavian sherds of which only three were worth illustrating (figs. 53–4, nos. 14, 15, 43). From the 'rampart' itself, B I, 60 came a small fragment of samian form 37 of Flavian date and another scrap which is probably South Gaulish and first-century in date.

Some pottery was also found in the ditch filling. From B I, 26–7 and B IV, 5 came sherds of coarse pottery (fig. 53, nos. 3–7; fig. 54, no. 18) of a date which is probably Flavian, although a late Neronian date would not be impossible.

Yet another feature apparently belonging to this period was a pit (B I, 77) cut by the foundations of Block 1 in Period II B. It contained a quantity of coarse pottery of Flavian date as well as fragments of Vespasianic samian (fig. 53, nos. 8–12). Similarly the layer (B VI, 43) cut by the foundations of the building below the *via decumana* of Period II B contained only Flavian pottery (fig. 53, no. 13).

PERIOD II B. *The first auxiliary fort* (fig. 3)

In 1934 and again in 1935–6, Dr Corder uncovered a length of a gravel-capped, turf and sand rampart and a parallel ditch running south from outside the north-east corner of the walled circuit;[2] he suggested that they might be part of a fort founded by Cerealis in A.D. 71. As the result of the excavations at Brough House these suggestions required modifications which have already been described elsewhere,[3] and which now need only a brief summary. It would appear that the rampart found by Dr Corder belonged to an annexe on the north side of a Flavian fort lying on a site aslant to, and later occupied by, the northern end of the civilian town.

The excavations at Brough House (fig. 4), coupled with a fresh interpretation of some of the unexplained features in Bozzes Field, enabled the north, east and west sides of the fort to be established, together with the west gate and some of the internal arrangements. The probable site of the east gate can also be inferred. The High Street sewer-trench cut obliquely across the curve of the south-west corner, which allowed the approximate position of the south side to be drawn in.

This fort must be about 350 ft. wide and the north side is about 550 ft. long; but an irregularity in the laying-out gave the south side a length of about 590 ft. The area of the fort is therefore about $4\frac{1}{2}$ acres, if allowance is made for the error. Such an area would

[1] *Brough*, III, fig. 3.
[2] *Brough*, III, 8; IV, 26; V, 15; *Petuaria*, I, 9.
[3] *Petuaria*, II, 58.

a. Front of the fort rampart (Period II B) in trench B I. The intervallum road shows beyond

b. Rear of the fort rampart (Period II B) and the intervallum road, showing subsidence over Period II A ditch below it

a. Period II B rampart of the fort in trench A I. Traces of timber lacing shown up by yellow sand filling the impressions in the dark turf of the front cheek

b. Inner ditch of the fort in trench A I, with Period IV recut

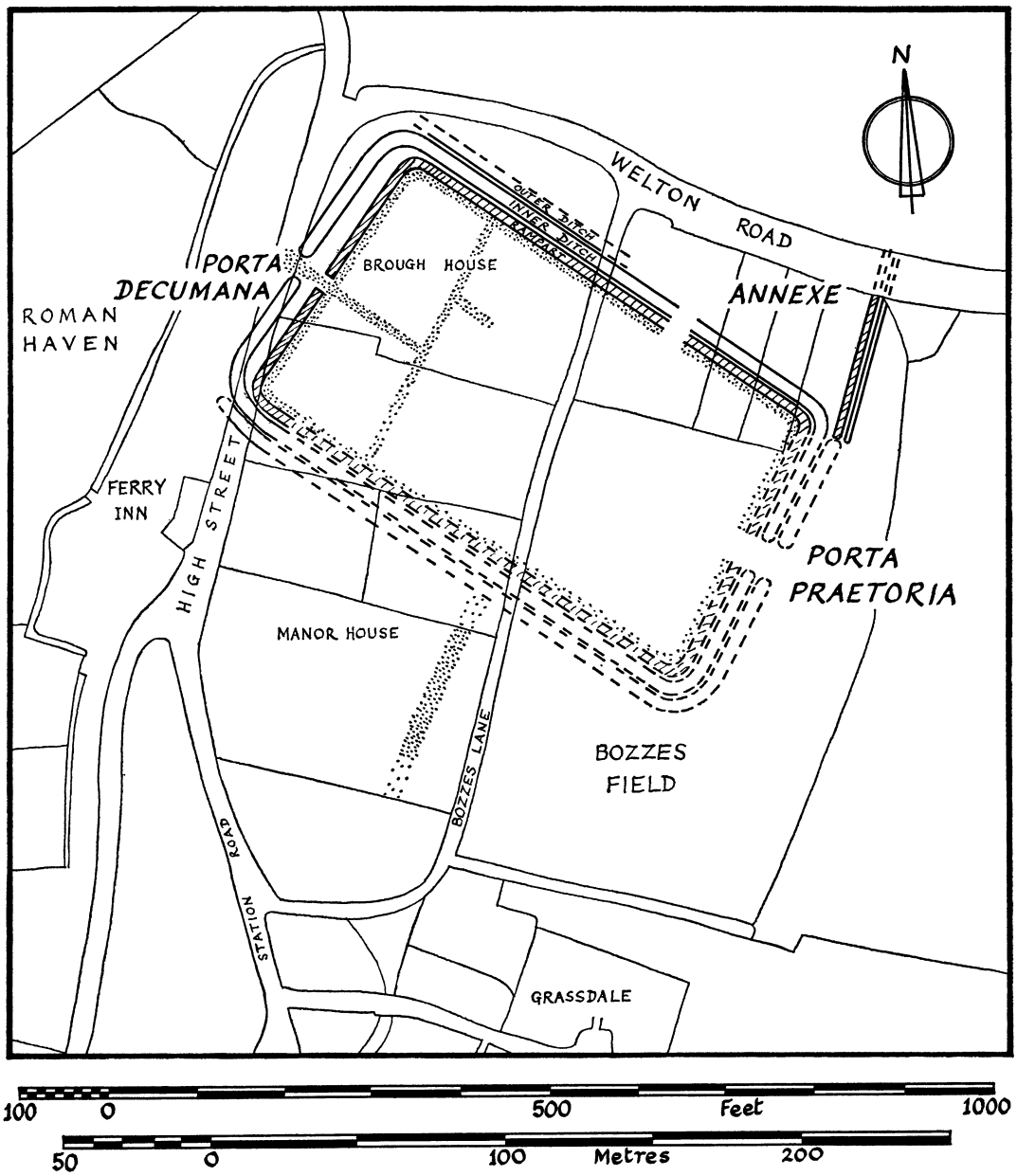


FIG. 3. Plan of the Period II B fort

perhaps be a little small for a *cohors milliaria*;[1] a *cohors quingenaria equitata* would seem a more likely garrison, but not enough is yet known about the internal buildings to give any further degree of certainty. Nevertheless, some attempt has been made below (pp. 17f.) to equate the buildings with the garrison.

[1] There must be some doubt as to the existence of milliary cohorts at this date; see E. Birley, '*Alae* and *cohortes milliariae*' in *Corolla Memoriae Erich Swoboda Dedicata* (1966), p. 60.

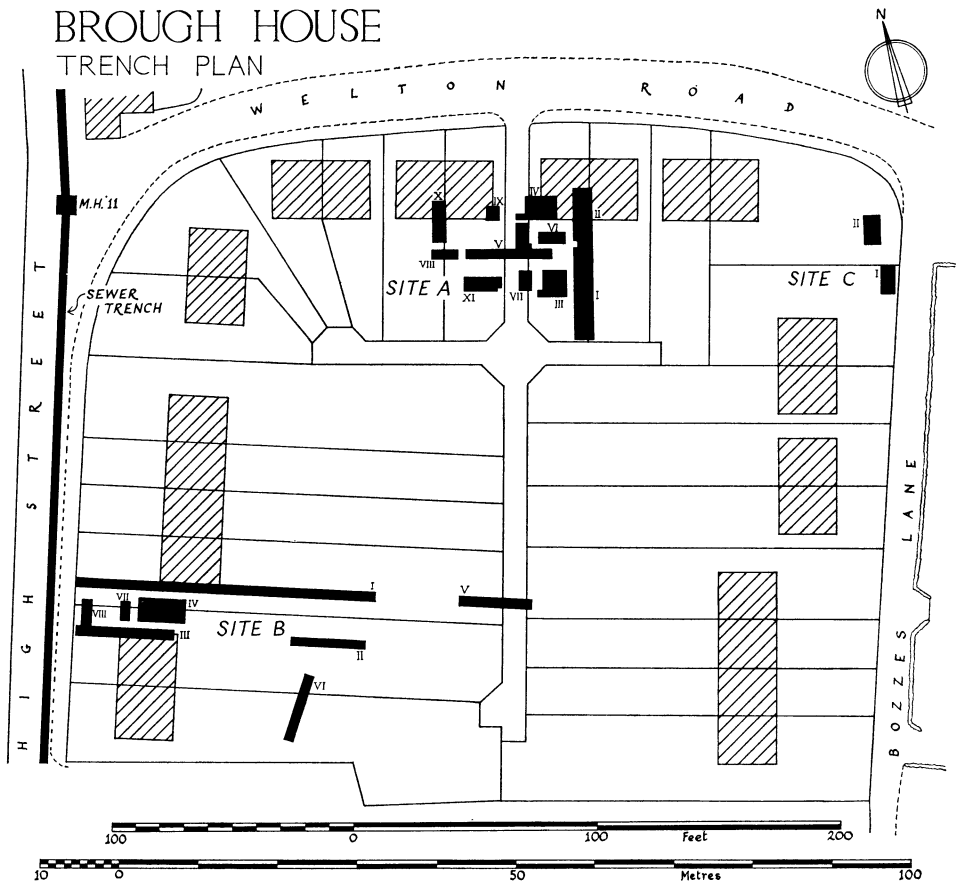


FIG. 4. Trench plan at Brough House

The earliest building inside the fort and found in the course of the excavations, was one of timber, destroyed before the first surface of the *via decumana* was laid down (fig. 5). Its alignment and method of construction were the same as the buildings on the north side of the street, and at first sight it might appear to suggest an earlier fort with a different plan. But such an implication is not supported by evidence elsewhere. One feature served to distinguish it from its later neighbours: once it ceased to be used the main timbers were withdrawn and the rest burned. The burning was not strongly enough marked to suggest that the whole building had perished in flames, but that only small pieces of wood, not worthy of salvage, were so disposed of in a clearing-up operation. As a result the sockets of the withdrawn posts contained more burnt daub than charcoal. It might be suggested therefore that this building, perhaps one of a number, acted as a workshop or housed a working party during the construction of the fort; once the permanent quarters and workshops were habitable, the temporary accommodation could be removed.

A little pottery was found in layer B VI, 43, which pre-dates its construction: part of a frilled rim 'tazza' in hard red ware, almost certainly a first-century type and here likely to be Flavian in date (fig. 53, no. 13).

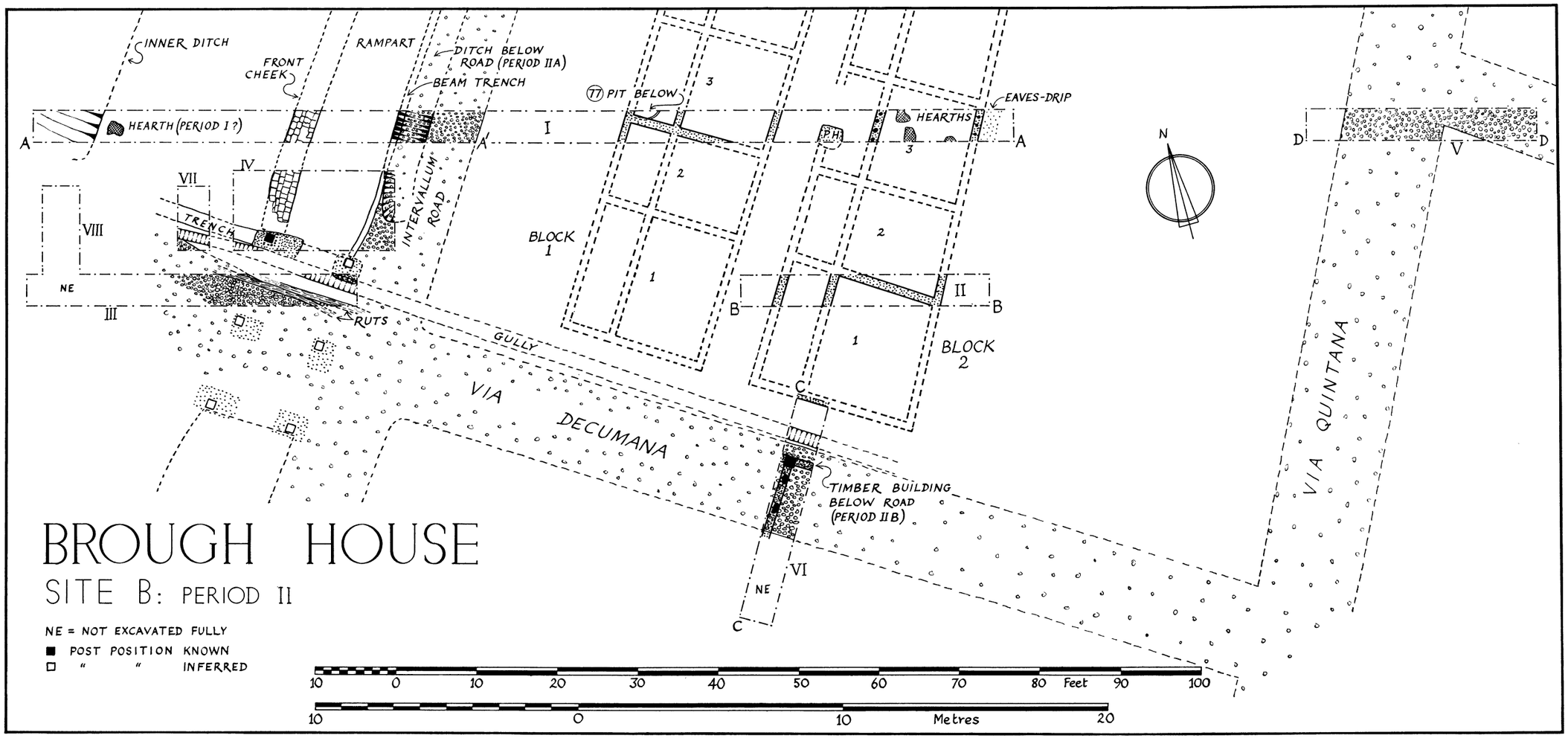


FIG. 5. Plan of Brough House, Site B in Period II

The Fort Defences

Nowhere was it possible to cut a section across the full width of the defences, because of limitations imposed by modern use of the ground. They were however sampled on the west side, close to the *porta decumana* (trenches B I and IV), and on the north side (trenches A I, III and V).

Eight feet of rampart on the north side of the *porta decumana* were exposed (figs. 5 and 10). It was here 13 ft. 6 in. wide, reducing to 10 ft. at the gate, with a core of dirty sand mixed with some clay, retained between cheeks of cut and stacked clay blocks (pl. II *a*, *b*). The front cheek was 3 ft. 8 in. wide at the level of the lowest course, above which the blocks were set back 8 in. from the outer face. The rear cheek was 2 ft. 6 in. wide at both top and bottom, and the clay blocks, of which both cheeks were constructed, had been cut to standard sizes, 12 in. long, 9 in. wide and 4 in. thick. A layer of gravelly shingle between 2 in. and 6 in. thick was spread over the core and rear cheek, but it stopped at the inner face of the front cheek, which rose above it. This layer sloped gently down to the south until it united with the surface of the *via decumana*. A clean cut through the rampart core and rear cheek at

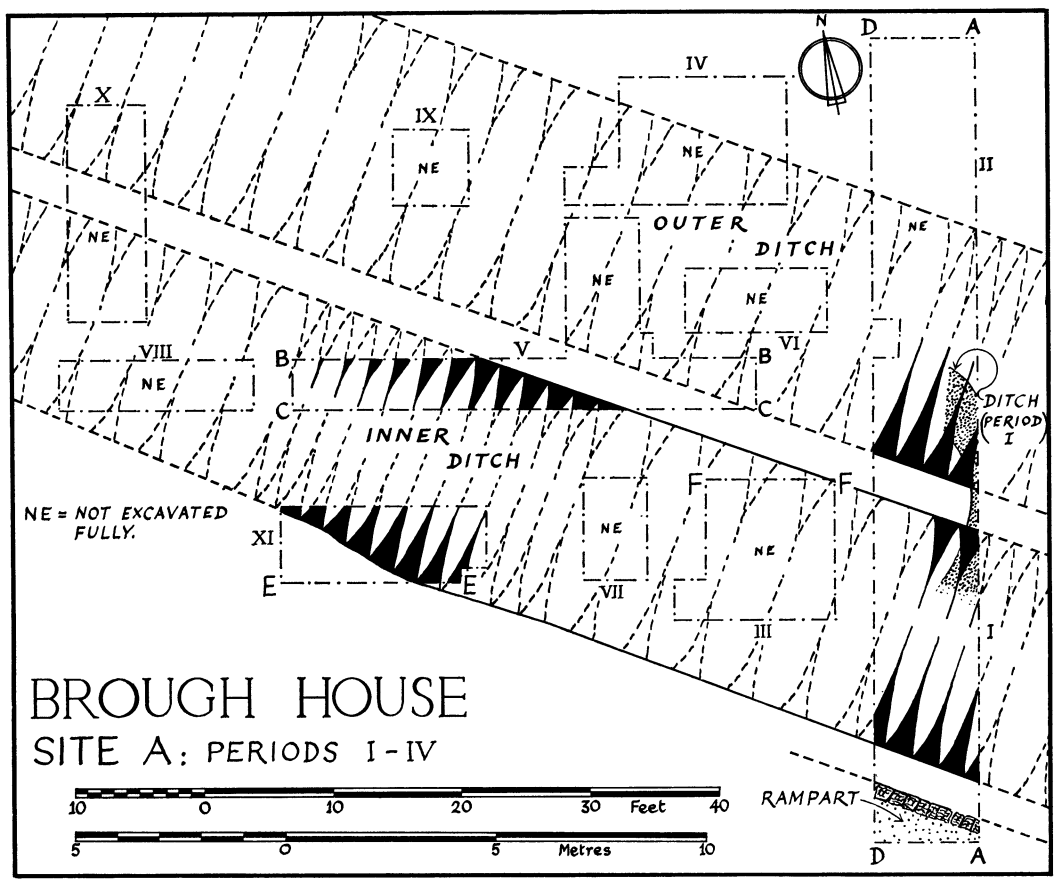


FIG. 6. Plan of Brough House, Site A in Periods I–IV

right angles to its direction and 16 ft. north of the gate marked the northward limit of the gravel capping, and also the remodelled section of Period IV (see p. 20). A small channel, 6 in. wide and 9 in. deep, cut into the top edge of the filled ditch and close to the back face, cannot be satisfactorily explained: it perhaps provided a base for additional revetment.[1] The maximum surviving height of the rampart was 2 ft. 10 in. and no trace of timber lacing or of a vertical palisade was found here.

A berm 23 ft. wide lay between the rampart and the lip of the ditch, which had been almost completely destroyed by the ditch of the first town-defences (Period V).

The defences on the north side of the fort differed slightly from those already described. Only the front 3–4 ft. of the rampart could be exposed in trench A I, where it survived to a height of 18 in. (figs. 6 and 9). A sand core, revetted at least at the front by a turf cheek, 2 ft. wide, had been used as a foundation for a timber lacing placed transversely across it, and the whole had then been covered with a thin layer of yellow sand (pl. III *a*). Subsequent compaction of the rampart made it difficult to estimate the size and shape of the timbers used, as excavation revealed them as a series of shallow, sand-filled corrugations in the darker material of the turf and lighter sand of the core. No rampart survived above this level.

A complete section was cut across the inner ditch in this trench (pl. III *b*). It was found to be 13 ft. wide and 5 ft. 8 in. deep, and was here separated from the rampart by a berm only 8 ft. 6 in. across. Since it had been dug in soft laminated sand, it had not retained its original sharp outline and presented a U-shaped profile, with no sign of a cleaning channel at the bottom. At one stage, it had rapidly filled with alternate layers of greyish-white sand and very thin streaks of grey clay, before being recut afresh, probably in Period IV (p. 20). Its line was followed through trenches A V and XI, but in neither could it be fully excavated. The outer ditch could only be partly excavated in trench A I and the evidence for recutting was not so clearly discernible.

Fortunately the High Street sewer trench cut obliquely across the curve of the rampart at the south-west corner of the fort, revealing the sand core and the outer cheek of turf and clay blocks. The trench also cut both ditches on the south side where they were separated from the rampart by a berm 10 ft. wide. The inner ditch was about 17 ft. wide and the outer 13 ft., while both were about 4 ft. deep; persistent water-logging, however, prevented more accurate measurements. On the narrow ridge between the ditches a small V-shaped slot, 6 in. wide by 6 in. deep and possessing an almost vertical inner face suggested provision for some kind of obstacle.[2] Both ditches, like those on the north side, had become filled with greyish-white sand before being recut. North of the angle the trench cut very obliquely across only one ditch on the west side, so that the fort would appear to have had a double ditch on its south and east sides and on that part of the north side not covered by the annexe. On the west side and on the north side within the annexe one ditch seems to have sufficed.[3]

It remains to consider briefly certain features observed during the 1933–7 excavations in Bozzes Field, which almost certainly belong to this fort. The two most important are the hollow, suggested by Dr Corder to be of natural origin, which he found below the town

[1] Or it may have been connected with an *ascensus* giving access to the rampart beside the gate.

[2] As at Cirencester where a series of barriers were placed in the area between inner and outer ditches, *Antiq.J.*, XLII, 3, and Inchtuthil, where they were placed on the upcast mound beyond the ditch, *J.R.S.*, XLIII, 104.

[3] The reasons for this conclusion are advanced in *Petuaria*, II, 59.

rampart just north of the East Gate,[1] and the large pit which he recorded beneath the south end of Building 1.[2] The position of these two features when related to what is already known of the fort appear respectively as the turn of the inner ditch at the north-east corner, and the ditch-end, or more probably ends, immediately south of the *porta praetoria*.[3] Following the discovery of an approximate position for the south side of the fort in 1961 it would seem that the south-east corner should lie below Dr Corder's Building II.[4] A number of apparently shallow pits, dug in the undisturbed sand, were recorded from these areas, and it must be concluded that they are part of the ditch system, not then fully excavated, although re-excavation is desirable to prove the point.

Datable material from the defences was very limited, none being recovered from the rampart in A I, but it included the following: from A I, 73, a layer earlier than the rampart, came a piece of an imitation form 27; from the rampart itself, in layers B I, 22 and 23a, came some small groups of Flavian pottery (fig. 54, nos. 20–1); also (not illustrated) a fragment of a mortarium of *Gillam* type 238 or 239, part of a dish like *Gillam* type 337 and several body sherds from rusticated vessels of typical first-century varieties.

The Porta Decumana (figs. 5 and 7)

The discovery of the west side of the fort in trench B I at Brough House led to a more extensive search in the same area, and showed that the trench was close to one of the gates. Unfortunately time only permitted the north side of the gate to be cleared, and that not completely; but, since the width of the street through it is known from trench B VI, it is possible to infer the position of the other side. The gate would almost certainly have been symmetrical in plan, so a reconstruction can be attempted.[5]

The gate structure was erected round a pair of large posts placed each side of the street; one post of each pair standing at the front, the other at the back, corner of the rampart-ends. The posts were placed in large pits, of which only one could be completely emptied, although the edge of another was exposed. The excavated pit had contained the front post on the north side of the gate: it was 5 ft. long, 2 ft. 4 in. wide and 3 ft. 8 in. deep (pl. IV *a*). Such a depth is not abnormal and was very necessary in the subsoil of soft sand, into which the post had slightly sunk, revealing its true position and size, about 12 in. square. It is however possible that the impression was caused by a smaller post resting on a timber base-plate of this size, as in the comparable sandy conditions at Xanten.[6] A trench, 18 in. wide at the top and tapering to 9 in. at the bottom, had been dug to a depth of 2 ft. 6 in. west of the pit, so that pit and trench were united. The farthest extremity of this trench was not reached, and no distinction could be made between the contents of the two features. It is clear that the posts had been removed[7] when the fort was evacuated, since no sign of an actual socket could be seen in the filling of the pit over the impression of the post, or base-plate, in the

[1] *Brough*, III, 8 and fig. 3.
[2] *Brough*, V, 34 and pl. IV B.
[3] The selection of this gate as the *porta praetoria* is explained in *Petuaria*, II, 59.
[4] *Brough*, IV, 15 and figs. 3, 4.
[5] The late Prof. Sir Ian Richmond made many helpful suggestions in this respect.
[6] *Vetera* (*Römisch-Germanische Forschungen*, IV, 35). But here stone base-plates were used, as in some forts on the Antonine Wall.
[7] See IRON OBJECTS, nos. 4–5 (p. 94) for two nails which had probably been extracted from the gate structure.

sand at the bottom. The trench might therefore be associated with the removal of the post. But the great length, over 10 ft., would make this unlikely. It resembled a palisade trench, and it may have formed a barrier to prevent access to the exceptionally wide berm.[1] This same trench may also have obliterated the ramp leading to the bottom of the pit, down which the base of the post would slide during erection. It should be added that, within the limited area examined, no sign of derrick posts was observed like those used at Oakwood to raise the posts into upright positions.[2]

The exact distance between front and back posts cannot be measured with certainty, but it would have been about 10 ft. The width of the street metalling in B VI was 11 ft. and a gap of 5 ft. occurred between the posts and the street edge so that some 20 ft. must have separated the posts on either side of the gate, provided it was symmetrical. It is difficult to see how this gap between the rampart ends could have been spanned by a tower or even by a continuation of the rampart walk, without intermediate supports. The south gate of the Claudian fort at Hod Hill, spanned in this way, was 12 ft. across.[3] The south gate at Fendoch,[4] also a single span, was 12½ ft. across, although there the greater width of rampart required three posts each side instead of the two at Hod Hill. In the double gates at these two forts the maximum span between individual posts is 13 ft., while at the Agricolan fort at Oakwood it is from 10–11 ft.,[5] and these dimensions also occur in Pen Llystyn I.[6] The rampart ends at the north-east gate of the Agricolan fort at Malton were separated by a distance of 22 ft., which was divided centrally by a *spina* of at least six posts.[7] So it would be reasonable to suppose that at Brough another pair of posts[8] would be placed in the centre of the roadway between the other two, implying in turn the existence of double portals.[9] The theoretical width of each would be 9–10 ft., but in practise the effective width of the metalled carriageways was little more than 5 ft. since the total width of the *via decumana* was only 11 ft. and it did not appear to widen until outside the gate. This conclusion receives some support from the behaviour of two deep, adjacent wheel-ruts, which, in the narrowest part of the gate, ran into the softer sand at the edge of the metalling, as though some central obstacle in the road was forcing the near-side wheels of the wider carts off the metalled surface. The size of the posts suggests a heavy superstructure of tower or bridge, the front of which would have been flush with the outer face of the rampart. A gate structure set entirely behind the rampart line, like those at Oakwood, cannot be entirely ruled out, but would appear unlikely. Neither would there have been room for a recessed gate between two flanking towers like the north gate at Fendoch, east gate at Hod Hill or the gates at Pen Llystyn. There is too little evidence to establish the nature of the superstructure. If a tower,

[1] Like the access to the east gate at Ardoch, although there it is not clear to which period they belonged, *P.S.A.S.*, XXXII, 447.

[2] *P.S.A.S.*, LXXXVI, 94.

[3] I. A. Richmond, *Hod Hill*, vol. II (1968), p. 71.

[4] *P.S.A.S.*, LXXIII, 121.

[5] Op. cit., p. 90.

[6] R.C.A.M., *Caernarvonshire III*, pp. lxxxiii, 115.

[7] *Malton*, p. 41.

[8] It is possible that a couple of linked posts were placed in the centre of the gateway at both the front and the back to provide extra strength for the gates themselves. This seems to have been the case in the similarly planned gate of Lager C at Neuss, although the description accompanying the original published plan does not make for clarity; *Bonner Jahrb.*, 161 (1961), 460. Also ibid. 164 (1964), 40, for a further consideration of timber fort gates by Dr H. Schönberger.

[9] Lady Fox has recently excavated gates, almost identical with that suggested here, at the late Neronian fort at Nanstallon, Cornwall, *Cornish Arch.*, V, 29. Mr Brian Hobley reports a similarly planned gate from Baginton (Warwicks.), *J.R.S.*, LVII, 188.

it would have taken an unusual rectangular form covering the full width and depth of the gate. It seems likely therefore, that the upper part was no more than a bridge to continue the rampart walk, although an upper storey may possibly have existed and has been shown in the drawing of its reconstruction (fig. 7).

A little pottery was recovered from one of the post-pits of the gate, although at best it dates the destruction and not the construction: the most important piece, part of a ring-necked flagon of Flavian type (fig. 54, no. 34) came from B III, 39, the filling of the rear post-pit.

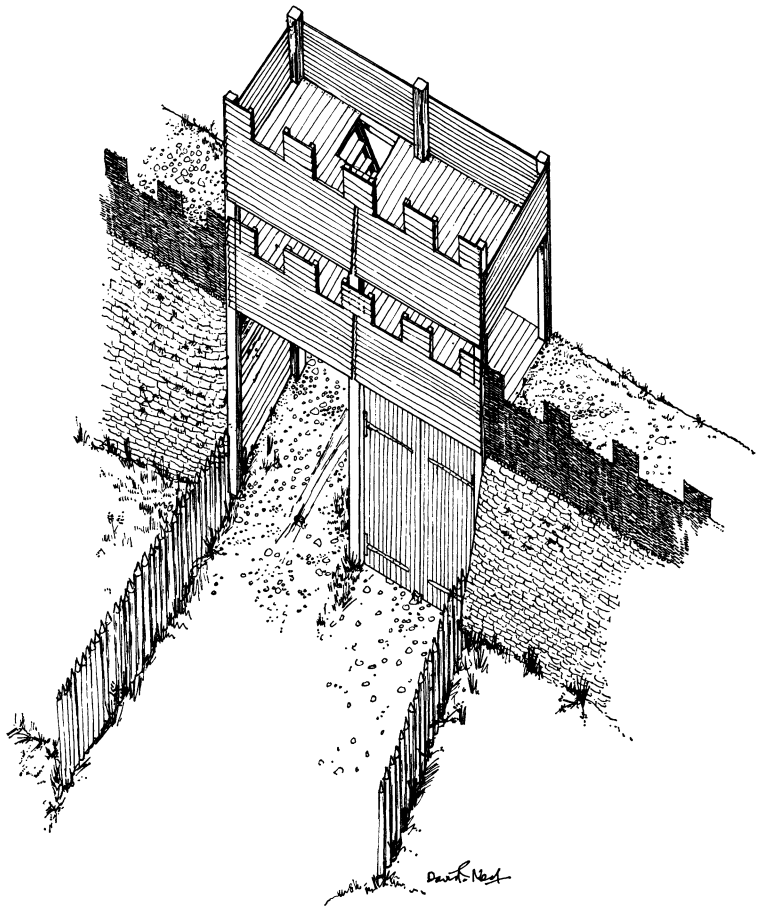


FIG. 7. Restoration drawing of the *Porta Decumana* in Period II B

Internal Lay-out and Buildings (fig. 5)

In addition to the intervallum road and the *via decumana*, two other streets inside the fort were found. One, branching northwards from the *via decumana* at a point 117 ft. from the gate, repeated the irregularity already noted in the fort plan so that the angle between the two streets was less than a right angle. Its full width was 12 ft. 6 in., and 60 ft. north of this

junction yet another street was found turning off to the east. But the width of the latter could not be established.

All the streets were made of lime-grouted shingle, varying in thickness from 2 in. to 4 in., and all, except the side street leading east from the *via quintana*, had been repaired once with a new layer of aggregate.

A shallow U-shaped gully, 22 in. wide and 13 in. deep, ran beside the north edge of the *via decumana* and through the gate. It was filled with dirty gravel, and it is difficult to account for its existence, since drains to carry away surface water would be superfluous, as all water would rapidly soak into the underlying sand. It is possible that the channel once contained a pipe bringing water into the fort, and the fall from west to east of about 1 ft. between the gate and trench B VI favours this explanation.

The arrangement of these streets implies that the one leading off the *via decumana* is probably the *via quintana*,[1] since it did not appear to lead to a gate at its north end. Time did not permit the full exploration of its junction with the intervallum and the rampart at this point, but it should be noted that the ditches continued an uninterrupted course across its line. In some forts[2] the ditches continued across the gates, to which access would have been by bridge, so the presence of a north gate here cannot be entirely ruled out. But it is less likely, since both east and west gates were approached by causeways. The position of the annexe may be taken as additional proof for this arrangement, as the north gate should lie further east to provide the necessary link between it and the fort. A very similar plan can be observed at Fendoch.[3] It must, however, be admitted that the *retentura* would be smaller than might be expected for a Flavian fort, if the *via quintana* is placed in this position: but so little is known about the internal arrangements of Cerialian forts, that it is difficult to say whether the plan is unusual or not. It might owe much to the lay-out of forts of the Claudio-Neronian period, where neither *viae decumanae* or *portae decumanae* need be expected.

Datable objects associated with these streets include:

The Intervallum road. The pottery from the Period II A ditch and its conjectured rampart ante-dates the metalling and has already been discussed above (p. 9). B I, 58, the second of the two layers of metalling, produced some scraps of Flavian pottery.

Via Decumana. The pottery from the building below the street, discussed on p. 10, above, is the only evidence which ante-dates its construction. But from the silt which had washed off the metalling to the south (B VI, 29) there came the base of a pot which typologically should belong to the first century rather than the second (fig. 54, no. 35).

Via Quintana. A fragment of samian, Ritterling 12, of Neronian or Vespasianic date came from the silt (B V, 29) which had formed in the angle at the junction between this street and its eastward branch.

Two ranges of buildings were identified in the *retentura* on the north side of the *via decumana* (trenches B I, II and VI). The method of construction was in all cases the same. A rectangular trench between 8 in. and 18 in. wide was dug to a depth of about 12 in. into the

[1] It must not be overlooked that some forts contain an additional street parallel to the *via quintana* and situated in the *retentura*. Certainly the placing of the *via quintana* in its suggested position would produce outstandingly large *latera praetorii* at Brough. But the forts where the extra street is to be found are normally much larger in size; e.g. Forden Gaer, 7.58 acres.

[2] E.g. Gelligaer, Elslack and Bar Hill to mention but three.

[3] *P.S.A.S.*, LXXIII, 114.

undisturbed sand; vertical uprights were placed directly in the trench, without a sleeper beam, and the excavated sand repacked round them. Only in B I did evidence for uprights survive and the distance between them was about 12 in., but it was not possible accurately to determine their true shape since the posts had been withdrawn by first moving them from side to side, slightly distorting the sockets. The sockets so produced varied between 3 in. and 5 in. in diameter and had become filled with red clay after the posts had been removed: a discontinuous layer of similar clay overlay the floors of this period, doubtless derived from the daub covering of the walls. No marks of wattling were seen in the foundation trenches between the main uprights and it must be concluded that the wattles started at or above ground level.

The construction of military buildings in this way is common in the first century A.D., having been observed at Hod Hill,[1] at Great Casterton,[2] both Claudio-Neronian in date, and at the Agricolan legionary fortress at Inchtuthil;[3] while the classic example at Valkenberg,[4] a fort of Claudian date, where a high water-table preserved the timber intact, clearly showed all structural details. These have recently been discussed elsewhere by Sir Ian Richmond.[5]

So little of the buildings was uncovered in B I and II that it is not easy to decide on the use to which they were put, and any consideration must go with a more general discussion of the fort lay-out. The problem is complicated by not knowing the type of garrison, although either a *cohors milliaria* or more probably a *cohors quingenaria equitata* are the units most likely to have occupied the fort. The composition of a milliary cohort would be reasonably standard, but that of a part-mounted quingenary cohort might have varied considerably.[6] Hyginus quotes a theoretical strength of 380 infantry and 120 cavalry,[7] which can be divided into six centuries and four troops,[8] but the size of the smaller divisions cannot be so easily established, and it is doubtful if any unit was ever at the full theoretical strength.

The shape and size of the Brough fort dictates the alignments of the buildings uncovered in trenches B I and II; for if they are to be identified as barrack blocks or even as stables, they must lie with their long axes running north-south. This is necessary to account for the arrangement of the foundation trenches as revealed, and to give adequate overall lengths to the buildings. When aligned this way, a maximum length of 155 ft. is possible, whereas if they had run from east to west the length could not have exceeded 100 ft. Also, if the blocks had run from east to west the distances between some of the internal cross walls would have been very small. Finally, the easternmost wall of Block 2 must be an outside wall since clear traces left by eaves-drips had survived beside it. This same feature also means that Block 2 can be no wider and that an alternative interpretation, whereby the outer room of the pair shown on the plan (fig. 5) could be the verandah, with an inner room lying beyond the east end of the trench, must be ruled out. The barracks at Fendoch are 154 ft. long[9] but are arranged differently (*per strigas*) from those at Brough. The transverse positions (*scamna*) of

[1] I. A. Richmond, *Hod Hill*, vol. II (1968), p. 75.
[2] M. Todd (ed.), *The Roman Fort at Great Casterton, Rutland* (1968), p. 30.
[3] E. M. Jope (ed.), *Studies in Building History* (1961), p. 21.
[4] A. E. van Giffen, *Jaarverslag xxxiii-xxxvii van de Vereeniging voor Terpenonderzoek*, afb. 9.
[5] E. M. Jope (ed.), op. cit., pp. 19–26.
[6] G. L. Cheesman, *The Auxilia of the Roman Imperial Army* (1914), p. 28.
[7] Hyginus, 25–7.
[8] The *Cohors I Augusta Praetoria Lusitanorum* had 6 centurions and 4 decurions on its books in A.D. 156, *E.E.*, VII, 456.
[9] *P.S.A.S.*, LXXIII, 135

the Brough blocks are more closely matched by those at Pen Llystyn, which are 155 ft. long.[1] On average about 70–75% of the total length is taken up by the men's accommodation, the remainder being the centurion's quarters. On this basis the men's quarters at Brough would occupy about 110–120 ft. of the total length. One noteworthy feature is the narrow width of Block 1, no more than 18 ft. 6 in., excluding a verandah, of which no trace was found. This compares with 22 ft. for the width of the men's quarters in the *retentura* at Fendoch,[2] and about 21 ft. for the narrowest blocks at Pen Llystyn.[3] It is therefore probably correct to place the centurion's quarters at the north end of the blocks, where they would then be in their normal position against the intervallum. This in turn raises further problems, for both blocks appear to face west with only an alley 6 ft. wide between them, so leaving little room for either a verandah, or the usually wider centurion's quarters in Block 2. Admittedly some of the blocks in the *retentura* at Pen Llystyn lack a verandah, and in these there is no difference in width between the two sets of quarters, but it is achieved by extending the men's section across the verandah space, and not by a reduction in width of the centurion's end. In contrast though, at least one block and possibly another in the *praetentura* has the width of the centurion's quarters reduced to that of the rest of the block. Apart from this difficulty, the *contubernia* appear to be of standard pattern, with a small front room for storing equipment and a larger back room for living and sleeping quarters. The limited amount of information on the internal divisions seems to show slight differences in the internal dimensions of each pair of rooms, the inner rooms varying between 15 ft. wide and 12 ft. 6 in. deep for the largest, and 11 ft. by 10 ft. for the smallest. These dimensions, coupled with a suggested length of 110–120 ft. for the men's quarters, implies that there were probably ten *contubernia* per block. On the plan (fig. 5) both blocks are drawn out as barrack blocks, although only Block 2 is fully acceptable as such on the evidence. Block 1 could be another barrack, or if a part-mounted infantry regiment was in garrison it could almost as easily be interpreted as a stable block. There is space for yet another block between Block 2 and the *via quintana*. It is probably right to assume a similar disposition of three blocks south of the *via decumana*, but the probable position of the southern boundary of the fort would prevent these blocks from being as long as those north of the street. If all six blocks were barracks, there would be accommodation for a maximum of 480 infantrymen, far more than the strength of a part-mounted quingenary cohort, and indeed over half the strength of a milliary cohort. But it must not be forgotten that at Fendoch six centuries of a milliary cohort were quartered in the *retentura*, so that a milliary cohort at Brough is not an impossibility. Consequently much more work is needed before the nature of the garrison can be established beyond doubt.

Some other features displayed by these buildings require additional comment. Block 2 tapers towards the north to allow for the irregularity in the fort plan, already referred to on p. 9. If the outside walls are extrapolated for the necessary 110–120 ft. length of the men's quarters, it will be seen that the overall width has been reduced from 22 ft. to 16 ft., and it is likely that some compromise has to be made, so that the rooms at the north end should not be too small. At the point where trench B I cut across this same block, a single post-hole pit, 2 ft. 9 in. in diameter, marked the position of the west wall. The arrangement of the internal

[1] R.C.A.M., *Caernarvonshire III*, 115.
[2] Loc. cit., p. 17, n. 9.
[3] Loc. cit., n. 1.

partitions would seem to confirm that this pit contained a door post giving access to the third *contubernium*. Its companion post must lie outside the northern boundary of the trench. No evidence for an inner door was exposed and it must be assumed to be at one end or other of the internal dividing wall and not placed centrally to coincide with the outer. A number of small hearths were found in the inner room of this pair. No attempt had been made to construct proper surrounds and they simply represented places where fires had been lighted on the accumulated floor layers.

A shallow and irregular channel, in the undisturbed sand outside the east wall of Block 2, appeared to have been formed by eaves-drip from the roof, rather than by an intentional effort to carry away surface water, which would in any case have rapidly soaked into the sand. The sand bordering the gully was heavily stained green, while small deposits of fine white powder were found in the filling (p. 218, below). This might suggest a secondary use, as a convenient latrine for the inhabitants of the block, and serves as a reminder that even modern soldiery is not averse to passing water against the nearest wall if it will save a longer journey in the middle of the night.

Dating evidence for these barracks may be summarized as follows. Two coins came from floor levels in the third *contubernium* in Block 2. One, from B I, 24, the surface of the latest hearth, was issued during the eighth consulship of Vespasian, the other from B I, 78 during the fifth consulship of Domitian, so that both date to A.D. 77–8. Both were also in mint condition when lost. These layers also produced groups of samian; that from layer 24, part of a Flavian form 35; that from layer 78 included fragments of forms 15/17, 18 R, 18, 29 and 37, all of Flavian date and most probably Vespasianic. B I, 80, another floor level, produced a fragment of form 35/36, also probably Vespasianic. All three layers produced groups of Flavian coarse pottery, including, from layer 78, a mortarium, stamped PRIVATUS, dated by Mrs K. Hartley to A.D. 65–95 (fig. 52, no. 2). From the eaves-drip channel (B I, 94) east of Block 2, came some fragments of Flavian coarse pottery (fig. 54, nos. 29–30); and from layers of spread daub (B II, 29, 36), which must equate with the destruction of the block, came two small groups of samian and one of Flavian coarse pottery (fig. 54, nos. 31–3). The samian included forms 27, 35/36 and 37, one of the latter dated A.D. 75–85, the rest Flavian. Nothing of note came from Block 1, except that its construction was ante-dated by the contents of the pit B I, 77 (p. 9).

Summary of the dating evidence for Period II B

Mr B. R. Hartley in his examination of all the samian from the area of the fort noted a lack of material obviously belonging to the period A.D. 85–105, and that much of the more closely datable pieces belonged to the periods A.D. 70–85, or 75–90. This was also true for the stratified samian from the fort, where, in addition, only one piece need be pre-Flavian. The coarse pottery presents the same picture but with a broader outline; very little need be pre-Flavian in date, although generically much of it could be classified as Flavian-Trajanic. In these latter instances greater reliance must obviously be placed on the more accurately datable samian. It is therefore difficult to avoid the conclusion that the fort was an early Flavian foundation (p. 5) and that it had been evacuated by about A.D. 85 at the latest. Perhaps a closer date for the abandonment is provided by the two mint-condition coins of A.D. 77–8 found on the upper floor surface in Block 2, and sealed by destruction debris

(B I, 75). This date is close to that for the arrival in Britain of Agricola as Governor, so that the evacuation may be seen perhaps as part of his general policy to release troops from forts[1] in comparatively safe areas for his impending Welsh and northern campaigns.

PERIOD III. *Fort abandoned*

When the fort was abandoned, probably early in Agricola's governorship, the gates and internal buildings were dismantled. But the rampart was left standing and the ditches open to collect silt, which, although contrary to normal military practice when an orderly evacuation took place, was perhaps done to delimit land still held under military control, and which might possibly be required again. This is in direct contrast to what happened at Cirencester, where the whole fort was levelled before the land was transferred to the civilian authority.[2] But official control of a similar kind seems to have been maintained over the two legionary fortresses at Lincoln[3] and at Gloucester,[4] where the fortifications were left standing and formed the basis for the first defences of the *coloniae*.

Although there was now no longer a military garrison at Brough, activity did not cease altogether. Reference has already been made to the early timber buildings in the Manor House garden (p. 7) which may possibly have survived through to the Hadrianic period. There is also a scatter of late Flavian-Trajanic samian in areas outside the fort. Comparatively large quantities of Flavian-Trajanic coarse pottery were also found, much of it occurring as survivals in later deposits. Yet there are no new buildings which can be attributed to this period and the overall impression gained is that of a decline in activities at Brough. This decline is reflected by coin frequencies (figs. 34–5) for Brough as a whole, for after the steady rise of the Vespasianic period there is a falling-off immediately afterwards, with the next major increase not beginning until the third century.

It is not easy to say when this period terminated. The coin evidence gives no hint, but it will be shown below (p. 22) that the fort was reoccupied at a date suggested to be *c.* A.D. 125.

PERIOD IV. *Second military occupation*

The reoccupation of the fort by an army detachment saw apparently only minor changes in the plan. The rampart was reconstructed where necessary, as in the short section just north of the *porta decumana*. The ditches, by now heavily choked with silt, were recut, the line showing most clearly in the inner ditch in trench A I (fig. 9; pl. III *b*), and in the ditches cut by the High Street sewer trench. The section of the 'hollow' published by Dr Corder[5] and now interpreted as the north-east angle shows a profile very like a recut ditch. Inside the fort a new layer of metalling was laid on some of the still visible streets, and the gates and internal buildings were re-erected, but on different lines to those of Period II B.

Little of the plan of the new *porta decumana* could be recovered, and only one post-pit was found at the north outside corner of the rampart (fig. 8; pl. IV *a*). The pit was originally 3 ft. 3 in. square and 2 ft. 3 in. deep. As with the pits of the Period II B gate, no sign of a

[1] E.g. Cirencester, *Antiq.J.*, XLII, 5; Dorchester (Oxon.), *J.R.S.*, LIV, 166; Great Casterton, M. Todd (ed.), *The Roman Fort at Great Casterton, Rutland* (1968), p. 40.
[2] *Arch.J.*, CXXII, 204.
[3] Ibid., CXVII, 50.
[4] *T.B.G.A.S.*, LXXXI, 16.
[5] *Brough*, III, fig. 3; *Petuaria*, I, 17.

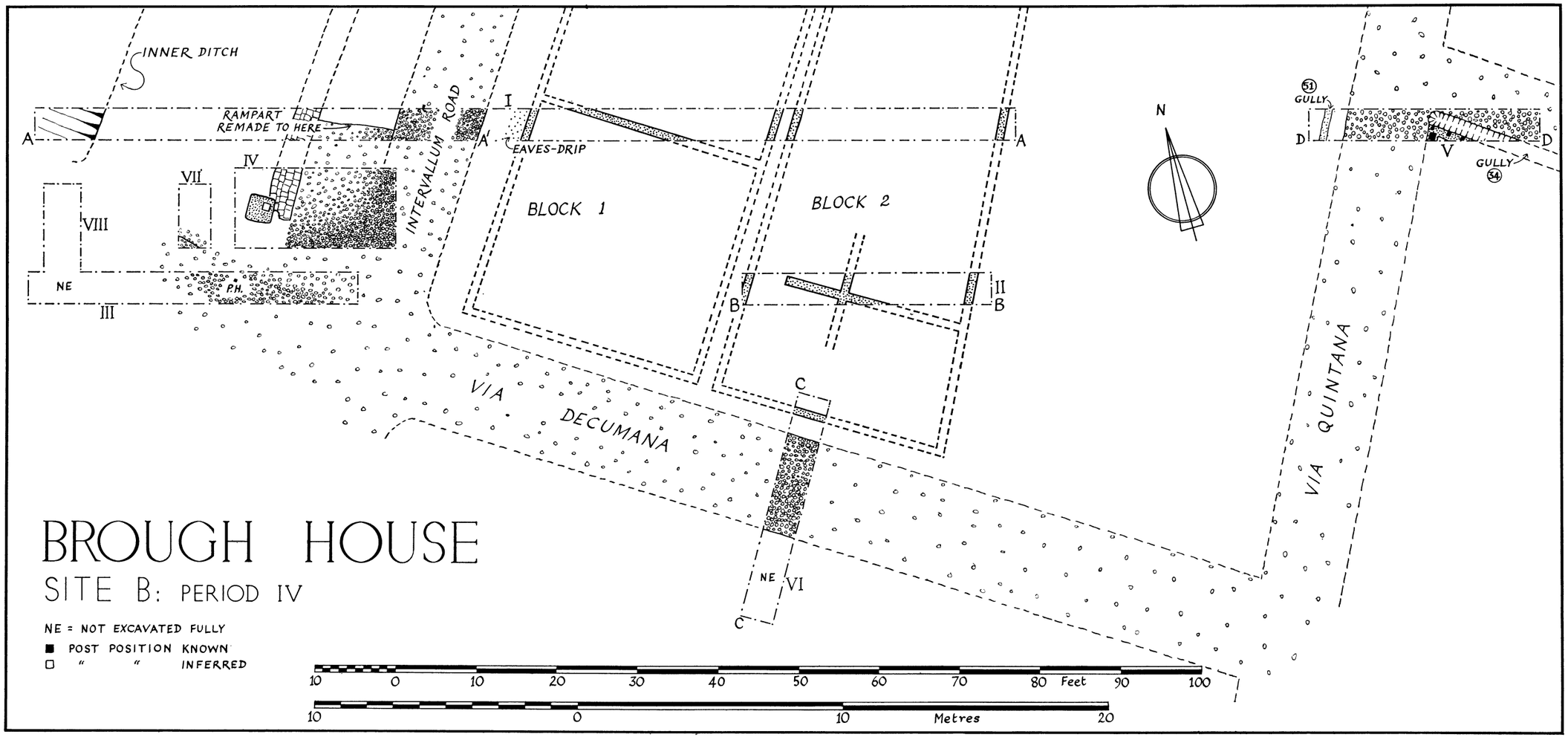


FIG. 8. Plan of Brough House, Site B in Period IV

socket was visible in the filling and it must be assumed that the post was dug out when the gate was dismantled, a process which had destroyed three of the right-angled corners of the pit. The filling was clearly stratified into two parts: the bottom contained a good deal of rubbish and dirty sand together with some clay lumps probably derived from the front cheek of the rampart. Above was a layer similar in all respects to the material forming the core of the first civil rampart (Period V) which sealed the pit completely. The smaller size of the pit and the absence of a ramp leading into it might imply a post of smaller proportions than those of the preceding period. The lack of a post at the rear of the rampart might also suggest that in this period no provision was made for the rampart walk to be carried over the gate, a conclusion supported by the behaviour of the new rampart walk of shingle which sloped gently downwards to join both the intervallum road and the *via decumana*.[1]

Some of the new buildings inside the fort were partly uncovered in trenches B I and II, while a corner of another was revealed in B V, east of the *via quintana* (fig. 8). Their plans differ considerably from their predecessors. In the first place the two blocks are much wider, about 30 ft. instead of about 18 ft., and the space between them is less, being only 2 ft. If they are barrack blocks, they must be in a back-to-back position, but this interpretation is made less certain by the irregularity of the internal divisions. In trench B II a cross partition in Block 2 was encountered, which appeared to have a door at its west end, so in effect giving access to two adjacent *contubernia*. A longitudinal partition in the same trench did not appear in either B I or VI, so it can hardly represent a division between equipment and living rooms along the whole length of the block. A single cross partition in Block 1 was found in B I, but there was no sign of a lengthwise division. If, however, the cross partition of Block 2 is superimposed in an equivalent position in Block 1, it would give *contubernia* from 12 ft. to 14 ft. wide stretching across the full width of the block. If the overall length of the blocks was the same as in Period II B, there would be space for about nine or ten such rooms. But these arguments must remain tentative until more evidence has been obtained.

The corner of the building uncovered in B V produced better evidence for its structural nature. The posts had either been withdrawn cleanly, or sawn off at ground level and the stumps left to rot in position, leaving empty cavities. The main corner post had been 9 in. square, while 6 in. square posts set about 1 ft. 3 in. apart had been used in the framework of the north wall.

The dating of this reoccupation must depend on the following:

From the remodelled end of the rampart (B I, 23) at the *porta decumana* came a fragment of Vespasianic samian form 35/36 and another fragment of Curle 11, probably of Trajanic date and certainly Central Gaulish in origin.

The new surface of the intervallum road (B I, 28) produced one of the few stratified late Flavian pieces of samian, part of a form 37 dated A.D. 85–100; also some scraps of Flavian-Trajanic coarse pottery, not worth illustrating.

The only stratified pottery from the buildings came from part of the floor in Block 1 (B I, 76) which produced scraps of possible Flavian coarse pottery (fig. 56, nos. 74–5). This layer also produced the bronze fitting (no. 6) and the signet ring (no. 7).

[1] A similar access to the rampart walk existed at Malton beside the north-east gate of Period 5, *Malton*, p. 47.

The rest of the dating evidence equates with the demolition of the fort:

The filling of the foundation trenches of Block 2 (B I, 93, 97; B II, 35, 38) had been thoroughly disturbed when the posts were removed, so that no sign of post sockets remained. B I, 97 produced a fragment of an early Flavian samian form 27; B II, 35 fragments of Flavian coarse pottery (fig. 56, nos. 78–80); B II, 38 a fragment of Flavian samian and pieces of Flavian-Trajanic coarse pottery (fig. 56, no. 82).

The most telling fragments connected with the occupation and demolition of this fort came from the eaves-drip channel west of Block 1 (B I, 37, 38) and the post-pit (B IV, 6) of the *porta decumana*. B I, 37 contained a piece of coarse pottery which although it might be Trajanic, is more likely to be Hadrianic (fig. 55, no. 68); while a trumpet brooch, dated by Mr Hildyard to the earlier part of the second century was found in B I, 38 (fig. 39, no. 33). B IV, 6 produced from the rubbish layer at the bottom of the pit a large part of a samian form 37 in the style of Quintilianus, dated A.D. 125–45. This rubbish probably came from cleaning-up operations in the fort and was thrown in the pit after the post had been dug out.

Nothing of significance came from the silt in the fort ditches of this period, layers A I, 67, 68, 88 producing only Flavian or Flavian-Trajanic coarse pottery and samian.

Among the layers which sealed the destruction levels of the internal buildings, and so provide a *terminus ante quem* for the fort's demolition, are B I, 14, 16, 25 and B VI, 22. The former produced a group of samian sherds and coarse ware containing predominantly Hadrianic and early Antonine pieces (fig. 49, nos. 38–54; fig. 55, nos. 55–73); the latter coarse pottery of an Antonine date (fig. 56, nos. 84–90).

It is difficult with this dating evidence to fit the reoccupation into its correct historical context. A *terminus post quem* for the reconstruction of the rampart and intervallum road is provided by only two sherds of samian and shows that it lies in the Trajanic period. A date for the dismantling of the fort is provided by the samian bowl form 37, which must have been in use in the fort and ended as rubbish in the post-pit at the gate. Mr Hartley considers that it cannot have been in circulation before A.D. 125, a date supported by the coarse pottery and possibly the *fibula* in the eaves-drip channel. Moreover the fort must have been abandoned before the early Antonine period. But there is one other factor to be taken into account. In trench A I the line of the recut inner ditch showed its pristine freshness preserved in the soft sand by a rapid accumulation of thrown-down rampart and sand. An exceptionally short occupation must therefore be envisaged, to be reckoned perhaps in months and not in years, so that the date of reoccupation and evacuation may be virtually the same. The latter cannot have occurred before A.D. 125: consequently the reoccupation cannot have been much before this date at the earliest, and the fort must be Hadrianic and not Trajanic. But how can it best be fitted into known Hadrianic history? It is too far removed in time to have played any part in the period immediately following the war of A.D. 117–18, when reinforcements for the army were probably being brought in over several years. It is possible that a temporary need was felt for a fort at Brough, to guard or supervise the transhipment of stores from York to the Tyne during the construction of Hadrian's Wall, thus anticipating a later use of the site. Certainly the low incidence of Hadrianic coins lends support to a short occupation, as, after the decline following the Vespasianic peak, a uniformly low level of coinage is maintained until the next major increase in the third century (p. 82 and figs. 34-5).

a. The fort rampart at the *Porta Decumana*, showing the post-pit of the Period II B gate on the right and that of Period IV in the centre

b. Flavian and Antonine timber buildings in trench G IV

Flavian-Hadrianic timber building in trench G VIII

a. Ruts alongside the north edge of the *via decumana* of Period II B passing through the gate. The edge of a post-pit shows in the far left corner

b. Foundation trenches of Barrack Block 2 in trench B I

a. Inner face of the turf revetment of the Period V rampart

b. Post-holes associated with the West Gate of Period V

Had the fort lasted any length of time, a higher percentage of Trajanic or Hadrianic coins might well have been expected, to match that of the earlier occupation.

The abandonment is perhaps best illustrated by the intervallum road in trench B I. Its surface was covered by humus-laden material and a small bronze object lying on the surface showed copious evidence of vegetable debris in the corrosion products,[1] perhaps suggesting the growth of weeds and grass.

THE CIVILIAN SETTLEMENT AT BROUGH

Very little detailed information has been obtained about the civilian settlement which existed at the same time as the fort. Dr Corder found mid to late first-century huts towards the south end of Bozzes Field,[2] and a wide scatter of Flavian samian and coarse pottery was found in Grassdale so that the existence of a *vicus* cannot be doubted.

The presence of Flavian timber buildings in the Manor House garden has already been referred to (p. 7), but the regularity of their lay-out suggests official planning and they were almost certainly not part of the *vicus*.

So long as there was a fort at Brough, the *vicus* would probably have been under military control, but when this control was removed early in Hadrian's reign, arrangements would have been made to transfer its administration to the appropriate local authority, in this instance probably the *Civitas Parisorum*.[3] Much has been written recently about the problems of *civitates* and the legal status of their chief towns,[4] in which doubt has not only been cast on the existence of the *Civitas Parisorum*, but also on whether Brough acted as its *caput*. Certainly *Petuaria* lacks the tribal suffix in the Antonine Itinerary, but is not the only civitas capital to be so treated. Its definitive legal status was undoubtedly that of a *vicus*, as the theatre inscription shows,[5] and this is the main argument advanced by the objectors, who consider that a civitas capital would rank higher than a *vicus*. Yet the same inscription also attests the existence of an *aedilis* in the town, whereas a normal *vicus* would only possess joint *magistri*, and Professor Eric Birley in his original assessment of the value of this inscription wrote: 'its [the office of aedile] occurrence here shows that, by the time of Pius, *Petuaria* had become something more than a village'.[6] Moreover, Brough is the only walled town[7] to have been discovered so far in Parisian territory, which emphasizes its relative importance over other settlements.

To return to the change from military to civilian government, it is perhaps desirable to refer to other sites in Britain where it is known that a town grew from the *vicus* of a fort, better to illustrate what happened at Brough. Unfortunately there are all too few examples where the detailed succession of events is clearly discernible.[8]

[1] Information from Mr L. Biek.

[2] *Brough*, IV, 15.

[3] See *R.I.B.*, 707, for a possible reference to the existence of this *civitas* by A.D. 144.

[4] J. C. Mann, *Antiquity*, XXXIV, 222; S. S. Frere, ibid., XXXV, 29; J. C. Mann, ibid., 142 and (ed. Jarrett and Dobson), *Britain and Rome*, p. 109; Joyce M. Reynolds (ed. J. S. Wacher), *Civitas Capitals of Roman Britain*, p. 70; A. L. F. Rivet, ibid., p. 101; J. E. Bogaers, *J.R.S.*, LVII, 167.

[5] *R.I.B.*, 707, referring to – – – *vici Petu(ariensis)* – – –.

[6] *Brough*, V, 61; *J.R.S.*, XXVIII, 199.

[7] The phrase 'walled town' is used throughout, simply as a convenient term, and without prejudice to arguments advanced below as to the nature of the settlement.

[8] The evidence has been surveyed by G. Webster in (ed. J. S. Wacher), *Civitas Capitals of Roman Britain*, p. 31.

The Claudio-Neronian fort at Cirencester was not evacuated until the early Flavian period.[1] Before this a *vicus* had begun to grow in the area north of the fort,[2] so that a civilian nucleus already existed on which, once military control had been removed, the trappings of tribal government could be conferred. Within a decade or so of this control ceasing, the newly-developing town had been provided with a regular pattern of streets and some major public buildings, not only on the land north of the fort but also on the site of the fort itself. Nothing can show more clearly how complete was the conveyance of army land to the new local authority, and no vestige of military control can have survived. Much the same must have occurred at Wroxeter, where the legionary fortress[3] is not likely to have been evacuated before late Flavian times. If more were known about other cantonal capitals such as Dorchester (Dorset), Leicester and Aldborough,[4] they might all reveal comparable developments, and the recent identification of a fort below the civilian town at Exeter[5] does show a repetition of events.

Among the smaller towns, Great Casterton is one of the best examples,[6] but here the town's growth was never vigorous enough to take in the land on which stood the fort, abandoned like many others in the early Flavian period. It must however have started as a military *vicus*. Dorchester (Oxon.) would seem to be yet another case.[7] Outwardly Catterick would appear to be an analogous but later example, with the town wall enclosing both *vicus* and fort. But there are difficulties in accepting this simple explanation, owing to uncertainty of the true nature of the walled settlement.[8]

Lincoln[9] and Gloucester[10] show parallel developments, although they are not strictly true comparisons, as the change from fortress to *colonia* was not dependent on the development of a *vicus*.

The foundation of a *colonia* on the site of a legionary fortress and the extension of a *vicus* to take over the site of an abandoned fort would each be acts of deliberate policy involving government-owned land. But the subsequent development of a *colonia* might receive official encouragement, whereas the expansion of a *vicus* would be a matter more of spontaneous growth dependent on economic circumstances. It does not follow that a *vicus*, even if given government land, would necessarily make use of it; at Brough it did, but at Great Casterton it did not.

As a civilian settlement and port, Brough has many contrasts. Although extra-mural buildings are known, it was, when walled, smaller than many military *vici*. If it is accepted as the civitas capital of the Parisi, it shows none of the regular lay-out of streets and buildings common to most. Yet it is one of the few towns in Britain so far known to have possessed the civic amenity of a theatre.[11] Many of the buildings revealed by excavation had been solidly

[1] Coins of Vespasian were associated with the latest occupation of the fort.

[2] *Antiq. J.*, XLII, 11; XLIV, 11.

[3] *T.Shrop.A.S.*, LVII, 113; *Britannia*, p. 117, 243, n. 1.

[4] A fort at Aldborough must be almost a certainty. The early timber buildings recorded in 1938 from below the northern town defences, are very like fort buildings of the period, while the eaves-drip channels are closely matched by those at Brough. The date of these buildings, from earliest Flavian to *c.* A.D. 125–30, is strikingly similar to the range of dates for the military occupation at Brough. *Y.A.J.*, XL, 52.

[5] *J.R.S.*, LV, 217; LVI, 213.

[6] P. Corder, *The Roman Town and Villa at Great Casterton* (1961), p. 11; *J.R.S.*, LI, 119, 175.

[7] *J.R.S.*, LIV, 156.

[8] *J.R.S.*, L, 217.

[9] *Arch.J.*, CXVII, 40.

[10] *T.B.G.A.S.*, LXXXI, 16.

[11] *R.I.B.*, 707.

BROUGH HOUSE: SITE A

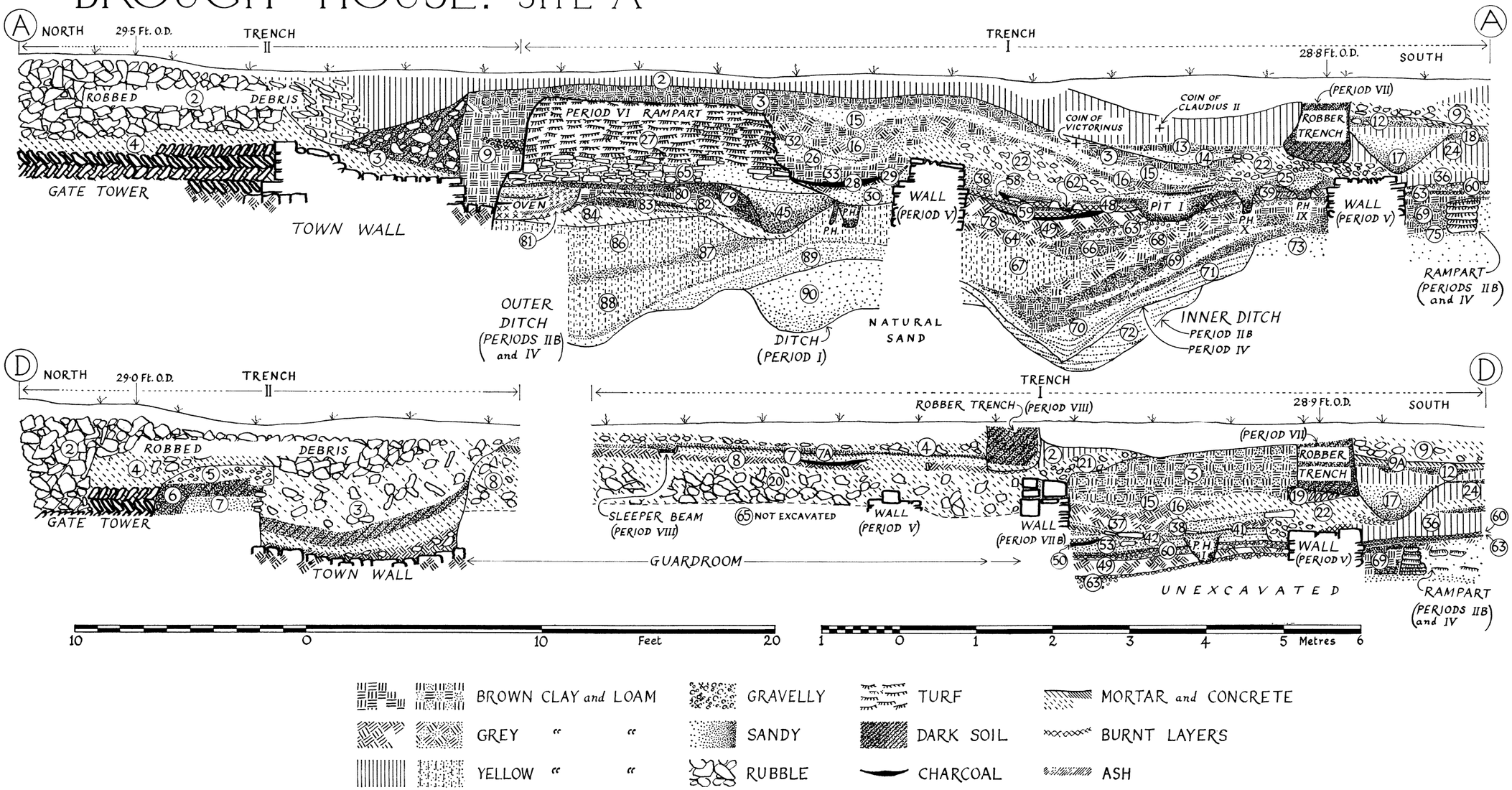


FIG. 9. Sections of trenches A I and II, Brough House

constructed but lacked both the size and the refinements normally associated with houses of the curial[1] class. A high proportion seem to be connected with metal-working (p. 227). Not even fragmentary mosaics are recorded from the town itself, except for some red and white *tesserae* found by Dr Corder in 1936 in Building III,[2] although it lies in one of the areas identified by Dr David Smith as possessing a local school of mosaicists.[3] And this is in contrast with a number of villas in East Yorkshire and Lincolnshire which possessed elaborate fourth-century mosaics, including one at Brantingham,[4] only just over a mile north of the town. Here, of course, may be part of the answer; that the *decuriones* of the Parisi from the first exercised a sturdy independence and stayed on their farms, coming to town when essential business made it necessary. Only the most philo-Roman among their number, like M. Ulpius Ianuarius, appear to have spent their money on public buildings. There can be little doubt that the main wealth of the Parisi remained in the countryside.

It is now generally accepted that most towns in Britain show two distinct and separate phases in the construction of their linear defences. Brough appears no different in this respect, but there is, in addition, an extra phase earlier than the other two, which has to be explained.

There is also the relative importance of the port to be discussed. Undoubtedly it was considerable in the early days of Roman penetration into the north. During the second, third and early fourth centuries it may have acted as a base for a detachment of the *Classis Britannica* as well. There is evidence to show that the Humber estuary was used as a trade route with direct links to Bordeaux.[5] But much of the merchandise must have been consigned direct to York, or via the Trent to Lincoln. M. Minucius Audens, a *gubernator*, or ship's quartermaster, dedicated an altar at York,[6] but he was also a soldier of the Sixth Legion and was probably employed on government or naval transports. Special knowledge would have been required to navigate the difficult upper reaches of the Humber,[7] and it has been suggested that he was a river pilot.[8] It is hard to assess the part played by Brough in this trade. If it had been a port where goods were landed or shipped before or after a journey by road, one might expect a thriving dock settlement with many warehouses, which would go with large-scale operations; none have yet been found. Neither is there a rich hinterland requiring large imports of luxury goods, although agricultural produce from the Wolds might have been carried away by water.[9] The pigs of Derbyshire lead found in or near Brough[10] have been cited as evidence for an export trade. These heavy articles would, almost certainly, have been brought down the tributaries of the Trent and Yorkshire Ouse. It may be that, at Brough, they were transferred from barges to sea-going ships,[11] although this is entirely supposition, as the pigs found at Brough are more likely to have been lost on the

[1] That such men existed is shown not only by the theatre inscription but also by the interment close to the road north of the town. *Antiq.J.*, XVIII, 68.

[2] *Brough*, IV, 24.

[3] D. J. Smith in *La Mosaïque Gréco-Romaine* (1965), p. 96.

[4] *J.R.S.*, LIII, 131.

[5] The altar of M. Aurelius Lunaris, *J.R.S.*, XI, 101.

[6] *R.I.B.*, 653. Sometimes read as M. Minucius Mudenus; *EE*, V, 215; R.C.H.M., *Roman York*, p. 116. Pauly-Wissowa, *Realencyclopädie*, gives only helmsman or steersman, whereas their duties were probably greater: see *Thesaurus Linguae Latinae; Digest*, 19, 2, 13, 2. (Ulpian) *si magister navis sine gubernatore in flumen navem immiserit et navem perditerit* . . . See also C. G. Starr, *Roman Imperial Navy*, p. 56, implying responsibility for navigation and control of the after part of the ship.

[7] See p. 79.

[8] R.C.H.M., *Roman York*, p. 116.

[9] *Petuaria*, I, 25, for a discussion on this trade.

[10] Ibid., 32.

[11] *J.R.S.*, LV, 31–9, where such operations are described and illustrated.

journey inland away from the port, and may have been no more than a limited consignment for use in Parisian territory.[1]

Brough is also the terminal point of *Iter I* in the Antonine Itinerary,[2] a route which takes in both Corbridge and York, and which is one of only three *Itinera* to give an overall distance between the frontier and a port. Britain had probably been divided into two provinces by the time the Itinerary had been compiled.[3] The newly-created province of Britannia Inferior included the northern frontier as well as Brough, and in many respects was probably the more important of the two provinces, for the safety of Britain as a whole depended on it. It would seem therefore that a direct link existed between this province and the central government, with Brough as the port where users of the *cursus publicus* would find accommodation and could take ship from Gaul or Germany.[2] Besides enhancing the value of Brough as a port, it emphasizes that there were occasions when the praetorian governor of Lower Britain could act independently of, and by-pass, the consular governor of Upper Britain.

In sum, the evidence points to Brough as a port of considerable commercial potential. But the paradox remains; if it was important, why was this not more reflected in the town itself? The absence of rich dwellings and imposing public buildings is one problem, but the apparent absence of an extensive trading settlement is altogether another. Possible reasons are discussed below.

PERIOD V. *Development of the second-century vicus and its first defences*

Dr Corder's conclusions that the town received its first impetus towards growth in the Trajanic period[4] must be reconsidered, since it is now known that the sites of some of the buildings attributed to this period lay within the fort until early Hadrianic times. The pottery on which he based his conclusions contained much Flavian-Trajanic material, although there are some pieces, which, as the result of Mr J. P. Gillam's subsequent work on northern pottery,[5] would fit more appropriately into a later context. Such sherds as those illustrated in *Brough* IV, fig. 11, nos. 37, 38 from Pit 2 below Building II, and fig. 13 no. 85[6] from a 'Trajanic' foundation trench would all bear a Hadrianic date, while no. 85 could even be Antonine.

This revised dating does not effect Dr Corder's other conclusions about the early development, although it brings it into line with the epigraphic evidence for the construction or possible reconstruction of a theatre.[7] The Hadrianic and Antonine periods of initial growth came to a stop which Sir Ian Richmond and Dr Corder originally suggested might have

[1] It is of course possible, and would be in keeping with the use of Brough as a port, that the Brough pigs formed part of the stock of a ship-repair yard or ship-chandler. Mr George Naish of the National Maritime Museum, Greenwich, and Miss Honor Frost, who has studied Mediterranean wrecks, report that it is usual to find some pigs of lead on board, which may have been used to replace lead sheathing, anchor stocks or plummets, etc.

[2] *It.Ant.*, 464.1, where it is called *Pretorium*. See *Brough*, III, 27 for its identification with *Petuaria*. The name *Pretorium*, usually considered to be a corruption of *Petuaria*, might nevertheless be correct and, if so, strongly suggests that accommodation was provided for important officials on tours of duty; J. E. Bogaers, *Praetorium Agrippina* (*Bull. Koninklijke Nederlandsche Oudheidkundige Bond*[6], XVII, 210–39).

[3] *c.* A.D. 220 with later additions. Recent arguments tend to show that Britain was divided *c.* A.D. 211–20; *J.R.S.*, LV, 107. But see also *J.R.S.*, LVI, 61, for an alternative view.

[4] *Petuaria*, I, 12; *Brough*, IV, 15, 19; V, 28, 34.

[5] See *Gillam* in List of Abbreviations (p. xii).

[6] Compare *Gillam*, types 115, 122.

[7] *Petuaria*, I, 31.

BROUGH HOUSE: TRENCH B I

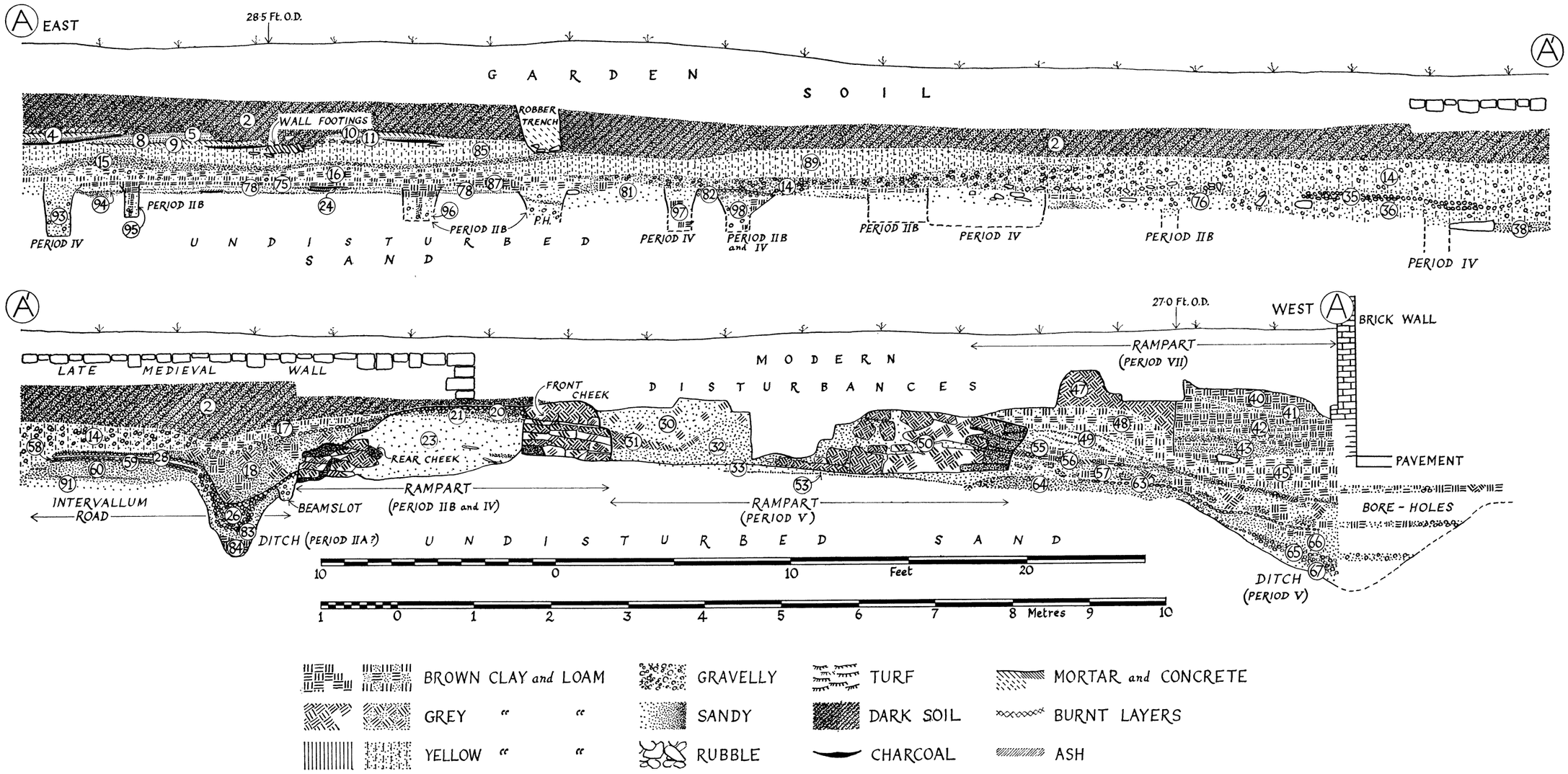


FIG. 10. Section of trench B I, Brough House

been caused by the war of A.D. 117–18.[1] But this explanation must be revised with the dates of the buildings. The Antonine period also had its troubles, any one of which might have produced the same effect. The serious Brigantian rebellion in A.D. 154–5, the long wave of unrest which followed it in the north, coupled perhaps with disaffection in Wales,[2] and terminating with the events of A.D. 193–7, are bound to have started a train of repercussions over the rest of the country, even if it took time for the effects to appear. It is doubtful if the economic effects of the disturbed years of Romano-British history in the second half of the second century are yet fully appreciated. The nearer a town was to the disturbances, the more quickly would it feel the effects. So at Brough, not far from the northern frontier and the rebellious Brigantes, new building schemes may well have come to a halt, while other more pressing works were put in hand, such as the provision of defences. Fortifications were certainly erected, but not on the lines first put forward by Dr Corder.[3]

Professor Frere has recently suggested that Brough was still an army supply depot, requiring defences when the neighbouring town of Aldborough did not.[4] But defences would be just as important to a naval base, and this seems to be the most likely reason,[5] especially if a fleet detachment was stationed here to act as a link in the *cursus publicus*.

First Defences

In the course of excavation at the west end of trench B I, it became clear that there was a differently aligned rampart in front of that belonging to the fort. At first it was taken for Dr Corder's 'Hadrianic' defences, but ultimately it emerged that the two were not the same for the following reasons. In the first place, the rampart was constructed differently, with a wall of turf and clay blocks, 6 ft. 6 in. wide, retaining the core of greenish loamy sand, which partly overlay the front cheek of the fort defences (fig. 10). Secondly, there was no stone platform foundation, and the front was at least 20 ft. behind the inner face of the town wall, instead of immediately behind it. Later, the High Street sewer trench showed the stone platform of Dr Corder's rampart in its correct position behind the wall, and well in advance of the line of the present rampart, which, it must be concluded, represented the first attempt to defend the town. The establishment of its position elsewhere will not be easy. A number of house walls have been found below the bank of the next phase of the defences (Period VI) on both the north[6] and east[7] sides of the town, which must lead to the conclusion that the earlier circuit enclosed a larger area in both these directions, to include the buildings to which the walls belonged.

Seven feet in front of the rampart was a ditch 4 ft. 6 in. deep. Nearly half the width lay beneath the High Street, but the total width was established by making horizontal borings with an earth-auger under the street.[8] The ditch here converged on the fort ditch which had been almost completely destroyed by it. The filling consisted of layers of brown loamy silt,

[1] Ibid., 13.
[2] *Britannia*, p. 162.
[3] *Petuaria*, I, 15.
[4] *Britannia*, p. 249, n. 2.
[5] The placing of a naval detachment, or even a fleet base, at a commercial port was by no means uncommon practise although it is difficult to find examples in the second century in the Western Empire; R. Meiggs, *Roman Ostia*, p. 304; *praefectus classis fluminis Rhodani* at Arles (*Not. Dig. occ.*, XLII, 14); *praefectus classis Anderetianorum* at Paris (ibid., 23). But see also p. 54.
[6] See p. 62.
[7] *Brough*, V, 28.
[8] Kindly carried out by Mr David Brachi, of Hull University's Department of Geography.

mixed with thin bands of gravel and red clay. It should also be mentioned that no sign of the ditch was observed in the High Street sewer trench south of the west gate. This may represent no more than a radical change of line, with the southward continuation much further to the west, to produce a west gate of similar plan to the later east gate. It is known that a road from the later west gate ran northwards outside, and parallel to the town wall (p. 73) and this could have been repeating an earlier design. Or it may be that the defences of this period were never completed, an implication which is discussed below (p. 29).

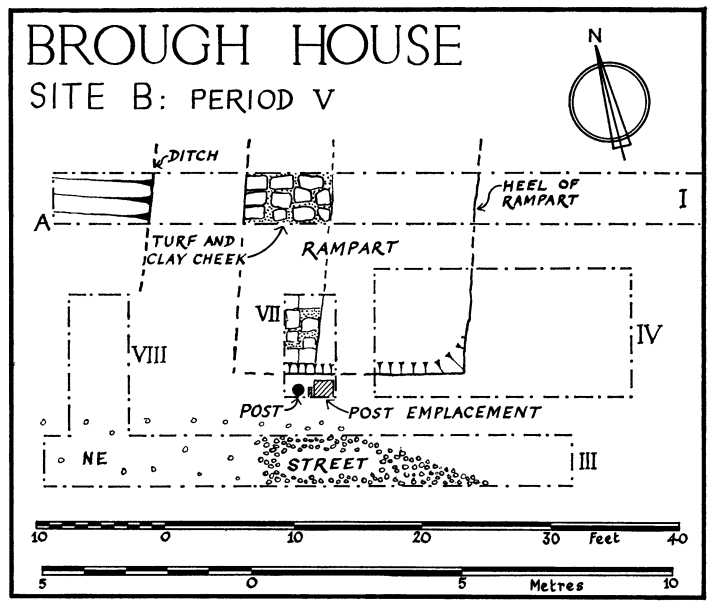


FIG. 11. Plan of West Gate in Period V

The position of the *porta decumana* of the fort had been re-used as a gate in this period, the new rampart and ditch respecting the line of the resurfaced street which ran through it (fig. 11). Only two post-holes, possibly connected with a gate structure, were found in B VII (pl. VII *b*). One had a flat stone for a base-plate, with a vertical stone beside it as packing for the post. A coin of Trajan, dated A.D. 103–11 was lying on the base stone where it must have been either sealed by the post or dropped in after its removal. Apart from this coin, which by itself is not satisfactory, a *terminus post quem* for the construction of these defences is provided by the early Hadrianic pottery sealed by the rampart in the post-pit of the Period IV fort gate, described on p. 22 above, and by some scraps from the bank itself: layer B I, 50 produced a fragment of an unusual samian form 33 of Central Gaulish manufacture and probably Trajanic in date, and some fragments of Flavian-Trajanic coarse pottery (fig. 58, no. 113). Layer B I, 32 also produced a scrap (not illustrated) of similarly dated pottery. The rapid silt in the ditch, layers B I, 65 and 67, which may be close to the date of construction, both produced small amounts of Flavian-Trajanic coarse pottery (fig. 58, nos. 114–16). So that all that can be said about its construction is that it

was built after A.D. 125, although a *terminus ante quem* of late second-century date is, of course, provided by the defences of Period VI. Unless there were special reasons for its erection, like those demanded by a fleet base or army supply depot, the most likely time for defences to have been required was in the period from about A.D. 150 onwards, for reasons already discussed above (p. 27).

PERIOD VI. *The second defences* (fig. 12)

The rampart and ditches described by Dr Corder as the first town defences[1] and dated by him to the second quarter of the second century must now take second place. For reasons given below, a *terminus post quem* for their construction now lies in the late second century.

This late Antonine rampart, on a new and entirely different alignment to that of Period V, suggests either that the earlier bank had never been completed, or that it had been so far mutilated as to be no longer defensible, or that it had enclosed an inconveniently large area. A new line was therefore adopted, dictated by one or more of these considerations. Yet at least two buildings, one found by Dr Corder just south of the east gate,[2] the other (A.II) near the north gate, had been cleared for the new earthwork. This is in contrast with Building A.1 (fig. 25) which preceded the new defences, and may still have been in use after their construction.

Dr Corder was able to trace the rampart's course southwards from the north-east corner to the boundary of Bozzes Field. Miss Russell cut a number of trenches across it at the south-east corner (figs. 15 and 16), where, in places, it had been badly mutilated and where different materials were used in the construction. Mrs Wacher observed the stone foundation in the sewer trench running north for 223 ft. from a point 112 ft. north of Manhole 9, at the junction of Station Road with the High Street. Its line on the north side of the circuit was confirmed at several points at Brough House, where it stood to a maximum height of 2 ft. 6 in. above a foot-thick foundation (fig. 9). Between the west gate and the north-west corner it had not survived so well, having sunk into the earlier ditches of Periods II–V, here lying underneath, and it had been apparently swept away when the stone wall (Period VII) was built (fig. 12).

Although Dr Corder adequately described the structural details of these defences, there are some further points to be noted. He made a rigid distinction between the 'turfwork' of this period and the 'red clay' rampart associated with the stone wall of the following period. In cutting turf some of the subsoil is bound to adhere to each block, and the nature of this subsoil will influence its appearance upon excavation. For instance the turf rampart near the north gate was made up of mixed blocks, some derived from a grey or green clay subsoil and some from a sandy subsoil. The humic content of the sandy turves also varied to give colours ranging from dark purplish, through grey, to white and yellow; the latter probably contained little or no humus (pl. XI *a*). In contrast, at the south-east corner, sandy turves and those derived from a subsoil of red clay had been used, often intermixed. For instance in section D I (fig. 16) red clay turf had been used throughout; next, in the adjacent trench D II (fig. 15), a clear division existed along a line at right angles to the

[1] *Petuaria*, I, 15; *Brough*, II, 9; III, 8; IV, 8; V, 26.

[2] *Brough*, V, 28.

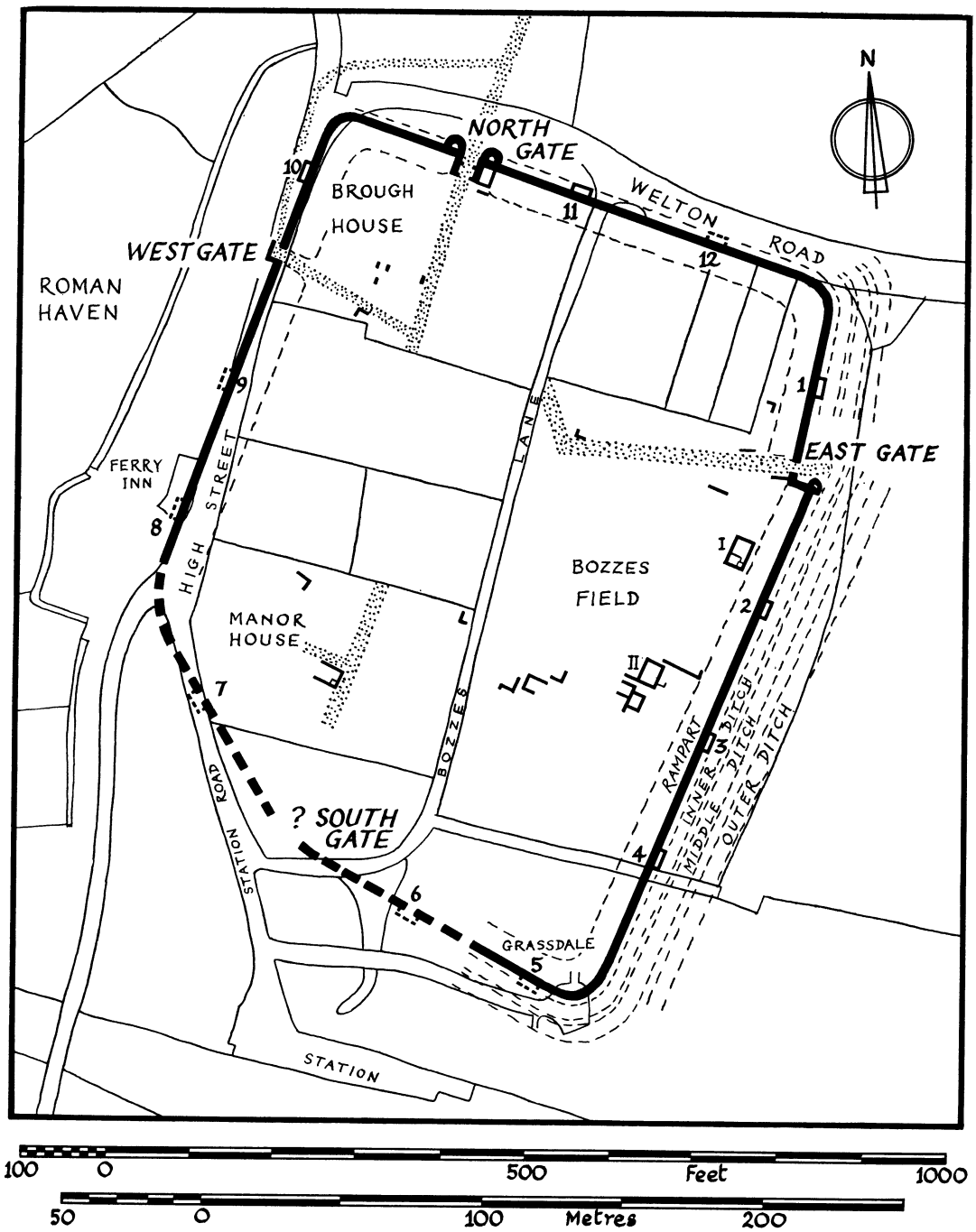


FIG. 12. Plan of the fortified area in Periods VI–VIII

rampart and where both the nature of the turf and the stone foundation changed (pl. IX). It seems clear that this line marks the division between two separate working parties, who may well have been obtaining their materials from different places.[1] South of the line marking this change, in trenches D III–V and E I (fig. 16), less stone and more sandy gravel was used in the foundation, and the upper work contained a mixture of sandy and red clay turf. But whatever differences occurred in construction, there can be no doubt that the rampart is of the same structural period throughout, as, in each case, the cut made for the foundations of the stone wall was clearly visible, especially in sections A I (fig. 9), D I and E I (fig. 16). Although it is, of course, possible that repairs to the rampart had been carried out during the eighty or so years of its existence, there was nothing, either in its structural pattern, or in the dating evidence from below or in the core, to suggest that this had been the case.

Red clay and also loam were used in the additions made to the rampart when the town wall was built, as recorded by Dr Corder, but it was usually more uniform and solid in consistency, as though it had been obtained in digging subsoil and not during turf-cutting. It was sometimes found mixed with jumbled turf and gravel, and occasionally with mortary streaks (e.g. A II, 9).

In these circumstances it is difficult to know what to make of some of Dr Corder's sections, for there seems to be a lack of distinction between red clay turf used in this period and the red clay used in Period VII and in subsequent repair work. For instance, of the three sections illustrated on p. 13 of *Petuaria*, I, the red clay shown in the second, and possibly the first, extends well beyond the inner edge of the stone foundation of this period and should belong to Period VII; but in the third section, its inner face coincides with that of the foundation and should belong to the turf bank. These three sections can be matched in whole or in part by the sections at the south-east corner. *Petuaria*, I, 17, however, shows a section very different from the others, and Dr Corder himself notes that north of the east gate the rampart was less clear. Here, it passes close to the north-east corner of the fort and over the filled inner ditch, into which it had sunk. This closely resembles the conditions at the west end of section B I (fig. 10) at Brough House. In this, all trace of the turf rampart had been cleared away, including the stone foundation (except for a few single stones) at some later date, probably during Period VII when an attempt had been made to remedy the instability of the ground by cutting out the heart of the bank and solidly packing the interior with red clay. The clay had a laminated appearance with bands of reddish sandy loam at irregular intervals, as though it had been trampled to compact it. This closely matches Dr Corder's description of the red clay in his section, but there the stone foundation had not been removed, and extended westwards beyond the inner edge of the clay.

Much new dating evidence came from the recent excavations.

The following layers were sealed by the foundations of the rampart:

A I, 45, the filling of a small ditch, contained part of a samian bowl form 37 in the style of Cinnamus and dated to A.D. 150–80 (fig. 48, no. 8).

D I, 30, 33 contained coarse pottery of *Gillam*, types 221 and 71 (fig. 59, nos. 135–46) which should be late second or early third century in date.

[1] Green Lias clays occur east of Brough and red Triassic marls to the west.

D II, 18, 20, 23, 25 contained groups of late Antonine pottery (fig. 59, nos. 147–55; fig. 60, nos. 156–64).

E I, 34, the filling of the ditch which, although not sealed here by the rampart, ran beneath it in trenches D III–V, also produced a group of pottery containing late Antonine sherds (fig. 61, nos. 211–18; fig. 62, nos. 219–24).

A V, 19, a layer of ash, associated with Building A.II, which was levelled to make way for the rampart, contained sherds of late Antonine date (fig. 58, nos. 121–2).

The base of the rampart, represented by layers A I, 65; D II, 15; E I, 27 all produced coarse pottery groups which contained sherds of late second-, or late second- to early third-century wares (figs. 62–3, nos. 231–74).

Finally, the core of the rampart in two trenches produced pottery of equivalent dates: E I, 5, coarse pottery which could carry an early third-century date (fig. 63, no. 253); and most decisively of all A I, 27 produced a large fragment of an East Gaulish samian Curle 11, dated by Mr Hartley to the late second or early third century. Much Hadrianic and Antonine pottery was also found in these and other layers connected with the rampart.

The reasons which prompted the erection of town defences at this time have recently been discussed fully elsewhere,[1] and it is not necessary to repeat the extensive arguments here. If, however, an early third-century date for the Brough defences was established, it would be necessary to seek other reasons.

Little trace of the West Gate of this period was found, although trench B VIII (fig. 26) just cut the edge of what seemed to be a large post-pit at least 2 ft. 6 in. in diameter, but time did not permit further exploration. Two large post-pits were however found on the west side of the North Gate, one at the rear corner of the rampart, the other about 12 ft. south of it (fig. 13). Rather less than half of the northernmost pit could be excavated in A V (P.H. II); it was squarish in shape with rounded corners and at least 3 ft. wide at the mouth, reducing to 2 ft. at the bottom, and 2 ft. 8 in. deep. It was firmly packed with large stones and red clay, but no sign of a post socket was observed in the exposed part and, if one survived, it must have been outside the trench. The packing was in part sealed by the turf of the rampart A V, 16 (fig. 19), which terminated in a straight line 14 in. from the east edge. This space would allow ample room for a post standing clear of the rampart material. The second post-pit (A XI, P.H. I) was much the same shape, 3 ft. 4 in. across, and funnelling to a rounded bottom about 18 in. in diameter (fig. 19). Again there was no sign of a socket, which could have lain outside the trench, or the post could have been dug out. The pit was partly filled with dirty sand, on top of which there was a thick wedge of red clay. A small, corroded bronze object from this filling showed traces of vegetable debris — probably grasses — in the corrosion products (information from Mr L. Biek).

These two posts may have formed either part of the west side of a gate-tower, some 12 ft. square, placed behind the line of the rampart and straddling the road, or part of an internal guardroom. Wooden town gates are so far unknown in Britain, but the contemporary turf rampart with its stone foundation is so obviously modelled on army methods of construction, that it is probably fair to compare this gate with timber fort gates of the Antonine period.

[1] J. S. Wacher in *Civitas Capitals of Roman Britain*, p. 60; *Antiquity*, xxxix, 57, 137, 225. The final word for the time being is left to S. S. Frere, *Britannia*, p. 250.

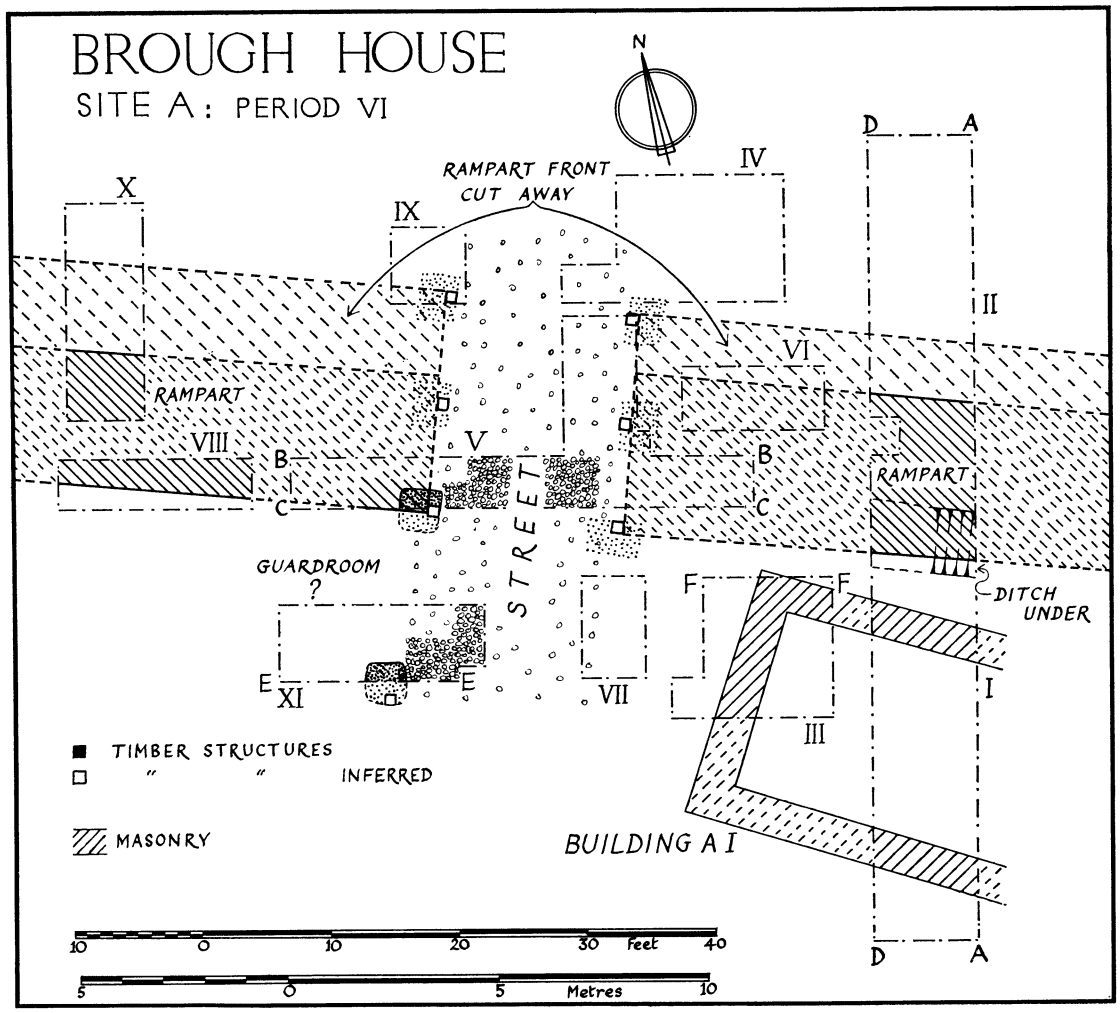


FIG. 13. Plan of the North Gate in Period VI

Indeed, it may be suggested that the whole work was carried out by an army or marine detachment.

Few such gates have been completely excavated in recent years, and the plans of those that do exist, either in whole or in part, are not perhaps very reliable. Among the earlier excavations on the Antonine Wall, they are found at Old Kilpatrick,[1] Bar Hill,[2] and Cadder,[3] while Duntocher[4] has provided a more recently excavated example. At the three former places the gates, where they were proved, seem to have been set between the rampart ends with no projecting structure to the rear, although at both Old Kilpatrick and Cadder

[1] S. N. Miller, *The Roman Fort at Old Kilpatrick* (1928), p. 14.
[2] G. MacDonald and A. Park, *The Roman Forts on the Bar Hill* (1906), p. 24.
[3] J. Clarke, *The Roman Fort at Cadder* (1933), p. 18.
[4] A. Robertson, *An Antonine Fort at Golden Hill, Duntocher* (1957), p. 45.

there is evidence for internal guardrooms on each side of the gate. At Duntocher the evidence for gate structures hardly existed, but Miss Robertson did suggest that there may have been a guard chamber at the north gate, and there was certainly one at the north gate of Castledykes.[1] Lastly, Sir George MacDonald found a post, in much the same position as that at Brough, inside the south gate of Mumrills,[2] although little of the remaining gate structure could be uncovered. But at the other gates, the towers appear to have occupied the more normal position between the rampart ends.

No evidence for complementary posts on the east side of the gate was obtained and it must be concluded that they were destroyed by the later stone wall foundations.

PERIOD VII. *The stone wall* (fig. 12)

The complete circuit of the stone wall, except for a short section at the south-west corner, is now known. Dr Corder established its line from the north-east corner to a point 500 ft. south of the East Gate.[3] Miss Russell was able to plan the south-east corner with its westward return; the High Street sewer trench cut obliquely across its line for a distance of nearly 150 ft. south of the north-west corner and also revealed interesting features at the West Gate. The circuit was completed on the north side at Brough House.

Three trenches at Brough House were dug across the north line of the wall (figs. 4 and 17), one on each side of the gate (A II and X) and one close to Bozzes Lane (C II). A fourth trench (B I) dug on the west side of the site and at right angles to the boundary with the High Street, did not disclose the wall, but did reveal the back of the contemporary rampart (fig. 26).

The north wall was heavily robbed and in only one trench (A II) did any quantity of masonry survive (fig. 9; pl. XIII *b*). The foundations, 11 ft. wide, consisted of limestone slabs set herring-bone fashion in grey clay, above which roughly-shaped limestone blocks had been laid in poor quality, gravelly yellow mortar to a width of 8 ft. 10 in. This layer rose two courses high at the back, but only one at the front, a necessary variation caused by bad levelling of the foundations. The outer face of the wall was set back 7 in. from the front of the base course, and the inner face 3 in. from the back. At best four courses of ashlar survived and this in only one small area.

The front of the existing Period VI bank had been cut back to allow room for the foundation trench, and the gap of about 2 ft. 6 in. between the inner face of the wall and the bank, was later filled with red clay (A II, 9), streaked with layers of mortary gravel (fig. 9). The rampart was also extended to the rear and probably heightened at the same time (A I, 3, 15, 16).

At the south-east corner, the wall was as extensively robbed as elsewhere, and only in trench D I did two courses of herring-bone footings, 9 ft. 9 in. wide,[4] survive (fig. 16). For the remainder of the area, the line was followed as the robber trench, which was in places extremely shallow and difficult to trace, notably in D V (fig. 16).

[1] A. Robertson, *The Roman Fort at Castledykes* (1964), p. 39.

[2] *P.S.A.S.*, LXIII, 412.

[3] *Petuaria*, I, 17; *Brough*, I, 13; II, 9; III, 8, 16; IV, 8; V, 26.

[4] The difference in width of the foundations here, as compared with those near the north gate is noteworthy, in view of the considerations advanced on pp. 37–40 and 48–55.

The wall must once have crossed the line of Station Road somewhere between the Ferry Inn and the Station Hotel, but no sign of it, or its robber trench, or the external ditches showed in the sewer trench. Almost all the way along Station Road, north of Manhole 7 (fig. 1), the trench cut through between four to seven feet of grey or black sludge, in places overlaid by a thin, black, peaty clay. Medieval and post-medieval pottery was found in its uppermost levels only. At a point 148 ft. north of the same manhole some wooden piles and horizontal timbers were seen. These were again associated with medieval pottery, so they are unlikely to have been an underpinning for the Roman curtain wall. Beneath the sludge were layers of sandy shingle which produced some Antonine samian and third-century coarse pottery (fig. 76, nos. 655–8). The sludge itself was probably in part, if not entirely, a result of the Romano-British marine transgression (see pp. 81 and 218), and it is almost certain that this same rise in sea level undermined the wall on the south-west side, causing its collapse. For reasons which are discussed below (p. 54) it is also probable that it was not rebuilt.

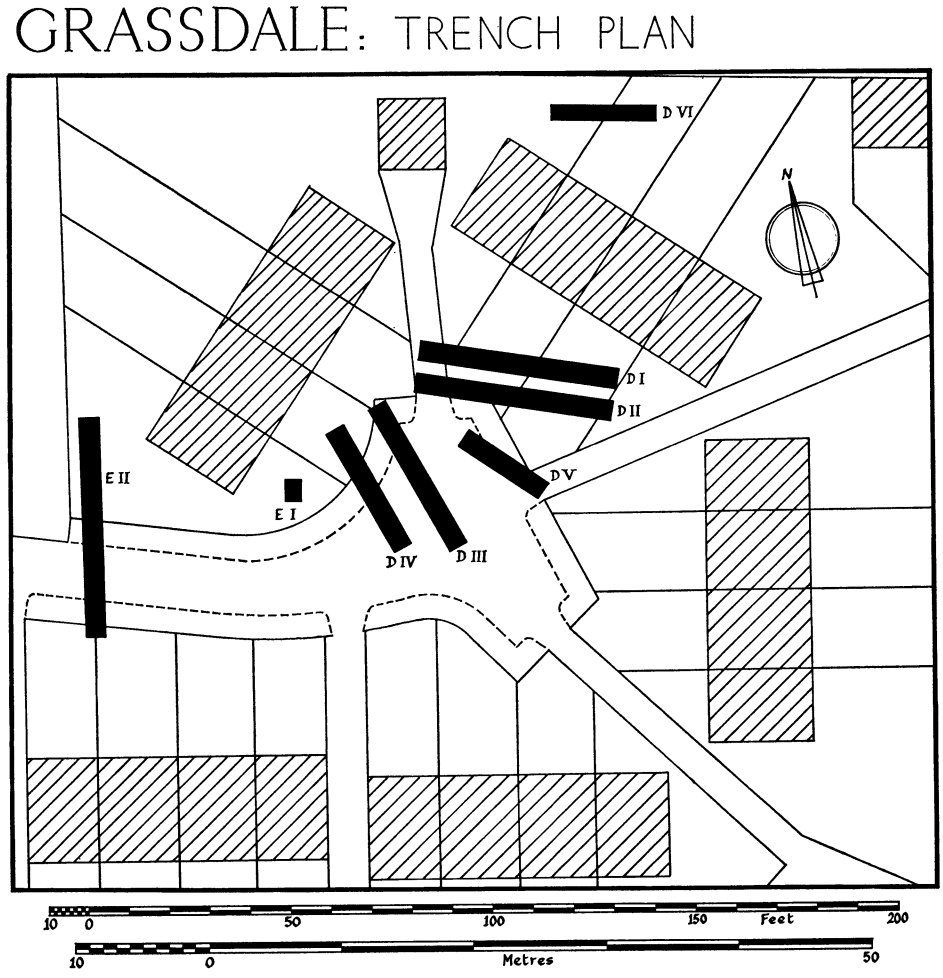


FIG. 14. Trench plan at Grassdale

Certainly in trench G I (fig. 27), in an area that should lie inside the walled circuit, much the same conditions were observed as in the sewer-trench (see p. 78).

A deposit of red clay was first observed in the sewer-trench, 50 ft. south of Manhole 9, at the junction of Station Road with the High Street. This might represent the rampart contemporary with the wall, but so little of it was seen that it cannot be certain. Also, in view of what has already been said about the use of red clay in the defences (p. 29, above) there is no certainty that it belonged to this rampart. About 300 ft. north of the same manhole the trench began to cut across the herring-bone footings of the wall, running obliquely from

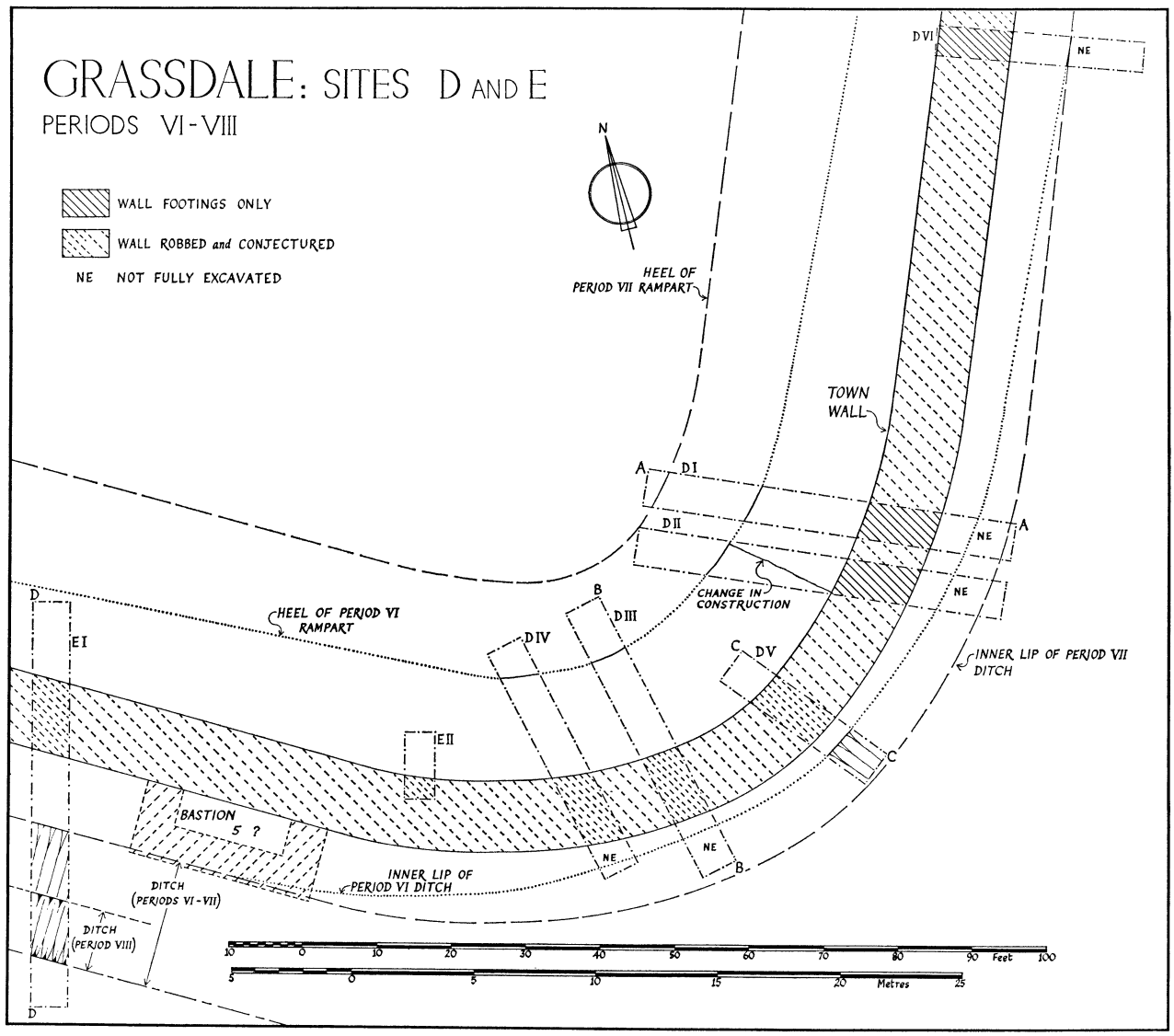


FIG. 15. South-east corner of the defences in Periods VI–VIII

GRASSDALE: SITES D AND E

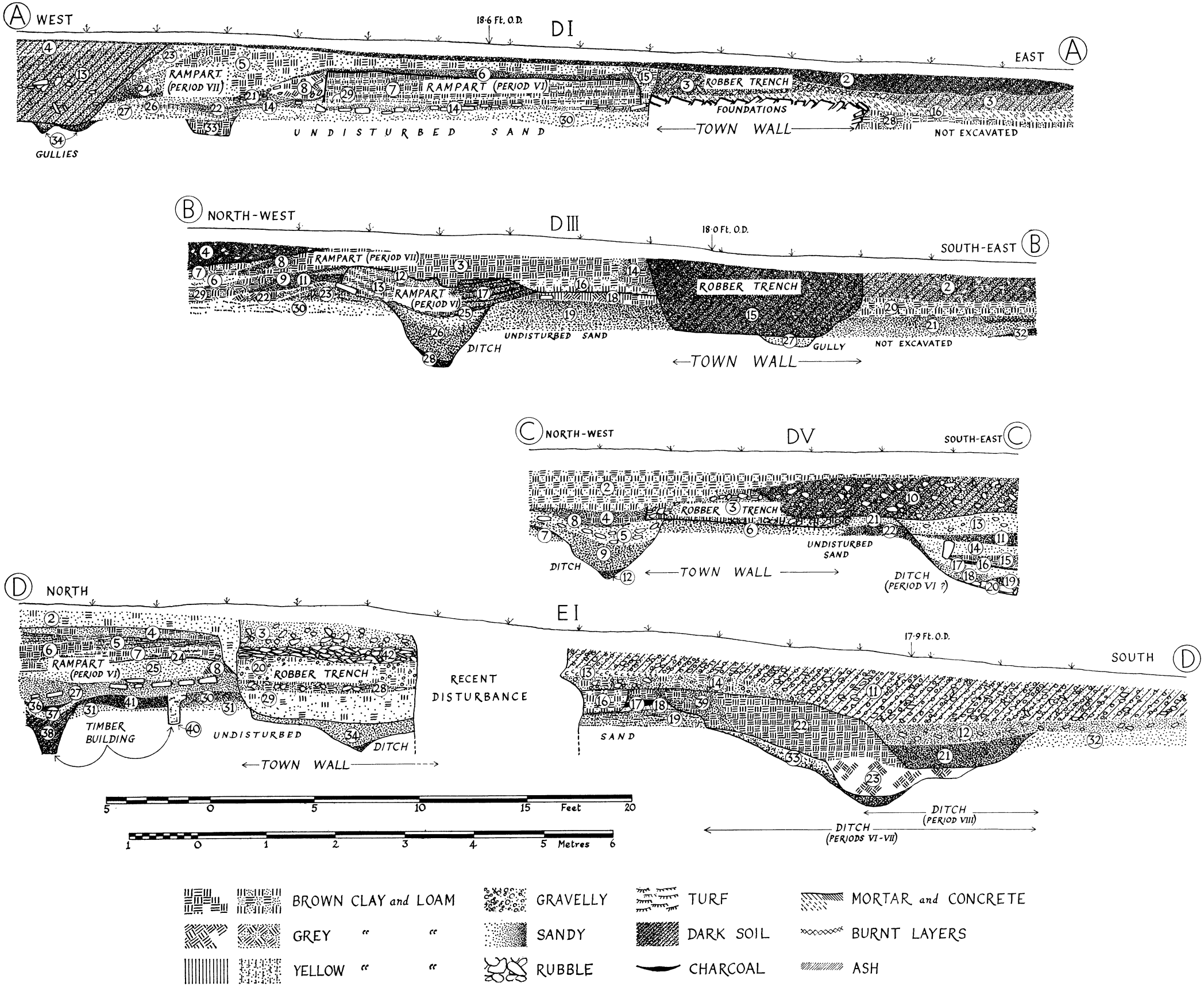


FIG. 16. Sections of trenches D I, III, V and E I, Grassdale

south-west to north-east, and continued to do so up to a point 18 ft. beyond the West Gate. No more than three courses of foundations had survived anywhere beneath the High Street.

The present series of excavations throws little additional light on the ditches. Dr Corder was able to show that there had been three ditches on the east side in Period VI, but he was able to prove only a single ditch for Period VII.[1] He thought it unlikely that all three had remained in use throughout the life of the defences down to the time in the late third or early fourth century, when drastic modifications were put in hand[2] (see p. 43, below). At Brough House, the ditch lay under a modern drive which ran parallel to it and which could not be disturbed. Miss Russell was able to clear the inner ditch at the south-east corner, where it was separated from the wall by a berm 3 ft. wide at the angle, expanding to 14 ft. along the south side (fig. 15). It showed evidence of having been recut once; initially it was 14 ft. wide with a surviving depth of about 3 ft. 6 in., but the recutting had increased the width by about a foot on the outer edge (fig. 16).

Little of the bank contemporary with the wall remained in position. At Brough House, in trench A I, layers 3, 15 and 16 represent all that remained of the addition made to the Period VI rampart at the time the wall was built (fig. 9); in A II, layer 9 filled the gap between wall and bank. Trench B I revealed rather more than this, because of the earlier collapse of the Period VI rampart over the ditch of Period V. To remedy the underlying instability of the ground, almost all the existing bank was removed, and the straight cut made in the process is visible in section AA'A (fig. 10). Since the cut penetrated through layer 47 partly into the underlying 45 (45 = 48), it is clear that the excavation was carried out within the core of the rampart and was not made with the work starting at the tail and progressing inwards towards the centre. The resulting cavity was firmly packed with stiff, red clay, interleaved with layers of sandy loam (40–3) as described above on p. 31. Although the work here, and in the section of rampart excavated by Dr Corder north of the east gate, is attributed to Period VII, there is no certain proof that it was exactly contemporary with the construction of the stone wall. There is evidence to show that some of the work at this time, such as the construction at the north gate, was carried out in successive stages. It can also be seen in section D I (fig. 16) where layer 5, part of the rampart of this period and obviously later than that of Period VI, is itself cut by layer 15 for the wall foundation trench. There is a possible repetition of this sequence in section D III, where layer 14 might possibly represent a cut in the rampart, layer 3; the distinction is less clear. But, although there are stratigraphical indications to show varying sequences of construction, all must belong to the same scheme of fortifications.

A certain amount of new dating evidence has been provided for the stone wall and its rampart:

In trench A I, all layers associated with Building A.I and its destruction (p. 57) are sealed by the tail of the bank. This building can hardly have survived long into the third century.

The following key layers, all of which form part of the rampart, produced informative dating evidence:

A I, 16, coarse pottery including *Gillam*, type 53 (fig. 64, nos. 286–7) dated *c.* A.D. 240–320.

[1] *Petuaria*, I, 15.

[2] Ibid., 16.

A I, 3, a coin of Victorinus dated A.D. 268–70.

B I, 48, part of a Castor-ware beaker (fig. 64, no. 298), probably of early third-century date.

Layers D II, 7, 12; D III, 6, 11 all produced groups of pottery, including Throlam types (figs. 64–5, nos. 302–5) which are probably of third-century date; while D IV, 8 also produced Throlam types (fig. 65, nos. 308–13) which are also likely to be of third-century date.

The wall construction trench, A X, 5, contained late second- to early third-century pottery (fig. 64, no. 294).

Two layers, A XI, 14 and A XI, 16 are probably contemporary with the construction of the town wall and gate, and produced groups of late second- to third-century and late third- to fourth-century pottery respectively, including a fragment of Dales ware (fig. 65, nos. 317–20).

For reasons which are explained below (p. 41) the dating evidence for the first north gate guardroom is included here:

From below the doorstep (A III, 17) and in the west wall (A III, 20) were sherds (fig. 65, nos. 321–3) which are probably late third or early fourth century in date.

From the pottery it can be seen that there is nothing which need be later than about the end of the third quarter of the third century, and this agrees well with the date of the only coin from this stage of the rampart. It should be emphasized that these groups of pottery are the very latest representatives among a mass of sherds, dating from the Flavian period onwards. There were also considerable quantities of Hadrianic and Antonine samian and coarse pottery.

The *terminus post quem* provided by all these groups, obtained from widely separate sectors of the defences must be *c.* A.D. 270, and the close agreement which has already been remarked upon, might suggest that this date lies close to the actual date construction started.

The North Gate in Period VII (fig. 17)

For a long time the North Gate was thought to lie at the north end of Bozzes Lane. The lane itself bisects the walled area and might have been a modern version of one of the streets.

Excavations began at Brough House with these thoughts in mind, and a trench (C I and II) was placed close to the lane, to strike the gate should it be there. Another trench (A I and II) was placed 110 ft. further west in the hope of finding the next bastion along the wall from the gate. Although both bastion and gate were found, their positions were reversed from those expected.

The stone-built gateway which was to replace the wooden gate of Period VI was seemingly planned in simple form, consisting of a single entrance with an effective width of 11 ft. between jambs. On either side of the entrance the wall turned sharply inwards through 90° for a distance of 31 ft., to retain the rampart ends.

There appeared to be two sets of responds projecting from these inturns, which would have carried a pair of arches over the entrance; one between the ends of the inturned walls, the other at a point about 13 ft. 6 in. in from the front face of the curtain wall (pl. X). The outer set in addition, were probably intended to act as jambs for the gates, and the space between the two arches would probably have been vaulted over. Between these arches, recesses,

a. Building A.I (Brough House)

b. Building A.I with, beyond, the stone foundation of the Period VI rampart, overlaid by the east wall of the Period VII B guardroom

Stone foundation of Period VI rampart at the south-east corner, showing where two working-parties met. Beyond it in the left-hand trench are the stone wall foundations (Period VII)

Gate-jambs and projecting imposts of the North Gate in Period VII

a. Section through the Period VI rampart in trench A I showing the turf construction

b. East gate-jamb of the North Gate in Period VII

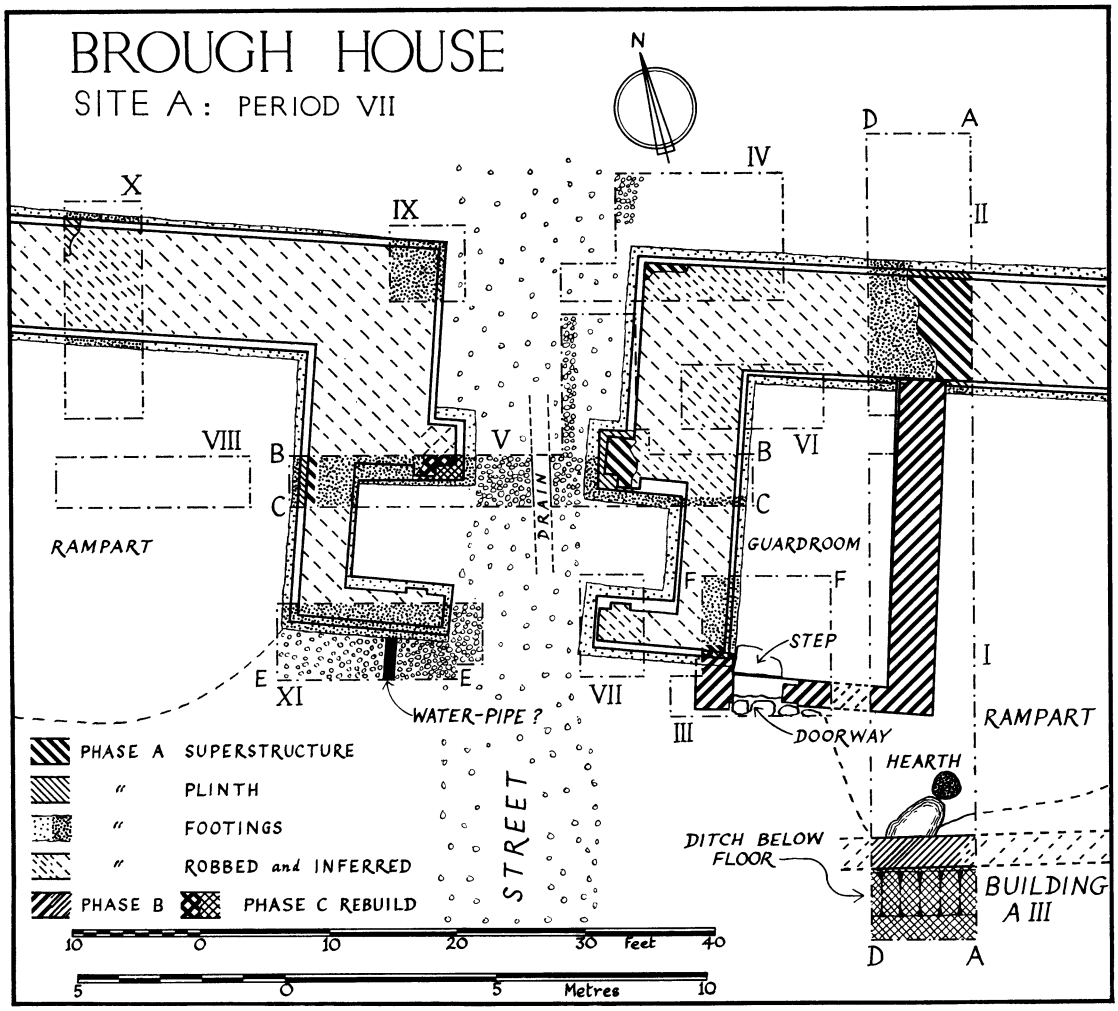


FIG. 17. Plan of the North Gate in Period VII

8 ft. wide and 5 ft. deep, had been provided on either side of the entrance, in the thickness of the inturned walls. A pair of responds faced each other across the entrances of both recesses, implying that these too were to be arched and vaulted at right angles to the line of the main entrance vault. It is, of course, possible that there was to be a rear gate as well as one at the front, and the covered space between the gates, formed by the recesses and the carriageway, would have been useful for controlling traffic. Such a system is reminiscent of the Knag Burn customs gate on Hadrian's Wall.[1]

The masonry of the gate and of the wall adjacent to it had been extensively robbed, in many places down to the foundations, and in some places, even these had been removed. Fortunately three fragments had survived this destruction and enabled the conclusions

[1] *Arch. Ael.*[4], XIV, 172.

detailed above to be made. On the east side the stone robbers had worked their way along the wall towards the gate and, when they reached the angle, turned inwards with it. The facings of two superimposed corner stones at the outer corner had earlier become laminated and loosened from the main masonry, but without falling away: robbing had removed the wall core, leaving these thin flakes to mark the correct position of the corner (pl. XIV *a*). The robbers, slavishly following the inturned walls, missed the projecting masonry of the front responds, but completely demolished the back pairs when they reached the ends of the walls. The original work, as represented by the eastern survivor had been constructed on a plinth, one course high, and 2 ft. deep by 4 ft. 6 in. wide. The courses above the plinth were set back 3 in. on the north side, 6 in. on the side facing the street, while on the south side, a nearly square recess, 12 in. by 9 in. was set 2 in. in from the edge of the plinth. This masonry was first-class work with carefully dressed, regular ashlar, even jointing, and fresh pointing. That on the west was less carefully built, and the stratification showed that it was structurally later. In trench A V, section BB (fig. 19), it will be seen that the foundation trench for the eastern respond was dug after the street surface, layer 34, had been covered with grey clayish, turfy material, layer 33. The latter was probably spread when the Period VI rampart was being cut about for the insertion of the stone walls. The street surface immediately contemporary with this same respond was represented by layer 31. The foundations for the western respond cut this street, and a similar layer of turfy clay covered it on the south side of the trench (section CC; layer 29). The street immediately contemporary with this respond is layer 28. The ditches of the fort run obliquely below the gate: the eastern respond lying over the ridge between inner and outer ditch, the western one directly over the inner ditch. It seems likely that this caused the gate structure to tilt as the walls subsided and at least partial reconstruction was necessary (Phase C), perhaps before the whole work had been completed to its full height. It is not possible to say exactly when this took place, but it probably happened before the beginning of Period VIII, as, when the work was carried out, a drain was inserted running north-south through the entrance. This drain had become choked and useless and had been replaced by another further east, probably rather late in Period VIII. Alternatively, the east side of the gate may have been started, but not completed, before the work was interrupted (see p. 53, below), and the west side only begun when the work was resumed in Period VIII. No sign of pivot stones was found on either side, and it seems likely that the gates had ultimately to be rehung at a level higher than had survived, owing to the rise in the street surface through the entrance.

The drain, already referred to, was partly stone-lined, 20 in. wide and 15 in. deep and contemporary with Phase C of this period. The ground level falls from the north, so it must have carried water from the street surface, and perhaps from the gate buildings, to some point further south. It was not observed in trench B V. No roofing slabs were seen in position and it was most likely covered with planks.[1]

A guardroom was built in the angle between curtain wall and inturn east of the gate, before the entire system of fortification had been completed, and the sequence of construc-

[1] At Cirencester a wood-lined and roofed sewer ran down the middle of Ermin Street at one point. *Antiq.J.*, XLII, 12 (fig. 5).

tion was very clear. The east wall of the guardroom had butted against the inner face of the curtain wall, although separated from it by a thin skin of red clay which remained adhering to its end, even after the curtain wall had been robbed. The west wall had been butted against the south end of the inturn, which had here been robbed to its foundations. The robbing, however, had been carried out in such a way that the imprint of the plinth had been left in the surrounding clay, and the guardroom wall over-rode this plinth to end against the higher masonry (pl. XII *a*, *b*). On the other hand, layer A I, 3, almost the first addition made to the rampart, had been piled against the east and part of the south walls of the guardroom. So it would seem that at first the Period VI rampart was dug out where necessary for the foundations of the curtain wall and the east side of the gate, which were then in part constructed. Next, the gap between the wall and the surviving part of the Period VI rampart was filled (A II, 9), mainly with compact red clay. Then the area was cleared for the guardroom, which would account for the skin of red clay separating the guardroom wall from the curtain wall, and which must originally have been left on the surface of the latter when the area was excavated. Only after the guardroom-walls had been carried high enough, were additions made to the rampart.

The guardroom was a slightly irregular rectangle, 10 ft. 6 in. wide and 23 ft. 6 in. long, with a door in the south wall near the south-west corner. The walls were very rough, poorly built and made of undressed stone with large spaces, almost completely devoid of mortar, between them. On the east side there was an internal offset 3 in. wide at floor level, while the wall above was 3 ft. 6 in. thick: on the south side there was no offset and a wall 2 ft. thick. Presumably the extra thickness was required on the east side to retain the thrust from the bank (pl. VIII *b*).

The doorway into the guardroom was 3 ft. 9 in. wide on the outside. Well-defined sockets for an internal wooden beam-sill were noted penetrating the wall for 8 in. on either side of the door. The beam itself must have been at least a foot wide and 4 in. thick. Rebates about 4 in. square, on both the inside and outside edges of the masonry jambs, suggested wooden frames,[1] while inside the door and 3 in. below the sill a large, irregular slab of stone had been placed as a lower step; its surface had been much worn by frequent use, but not necessarily in the position where it was found (pl. XII *b*).

The guardroom floor may have been of wood, although no definite traces could be detected and it does not perhaps fit with a stone step; if not, it could only have been the levelled and trodden surface of the truncated rampart. But a floor may never have been properly constructed before other changes took place (p. 44, below), as stones of the wall of Building A.I were left projecting up through this surface (Section DD; fig. 9).

Other features associated with the gate were observed in trench A XI (Section EE; fig. 19). Here, at the rear end of the west inturn a series of mortary spreads (layers 15, 16, 27) sealed the post-pit of Period VI, and were in turn cut by a channel (24). There can be little doubt that these mortar spreads are the construction levels of the gate, and it is possible that the channel once contained a beam which was part of the scaffolding. But in the latter case, the mortar spreads would more likely have covered it. The channel itself was slightly narrower at the top (8 in.) than at the bottom (12 in.) and when found, contained in a few

[1] For both internal and external wooden door-frames, see Cirencester amphitheatre, *Antiq.J.*, XLIV, 18, pl. XIII B.

places some very fine, dark silt; elsewhere it was completely hollow. It is similar in many respects to the channels in which wooden water-pipes were buried, though it was not possible to clear a sufficient length to see if the iron junctions between individual lengths of pipe had survived. But something more can probably be inferred from its position. *Castella aquae* are thought to have existed on the town wall at Lincoln,[1] and at Silchester[2] where it was beside the ditch just outside the south-west gate and had a wooden pipe running from it into the town. Inside the Verulamium Gate at Cirencester, a similar pipe appeared to be carrying water from the gate into the town,[3] and could be a close parallel for that at Brough. Doubtless there would be instances where such *castella* could be most conveniently accommodated over the gates.

Lastly, in this same trench, layer 14, which sealed the mortary layers and pipe-channel referred to above, consisted of red clay and rubble which was probably formed during the heightening of the bank behind the wall.

Attempts to visualize the elevation of the North Gate as first planned raise a number of problems. It is fortunate that gates of the same general pattern exist at Silchester (North and South Gates), Colchester (North-east Gate), and Caerwent (North Gate). The two gates at Silchester are both deeply recessed, with single towers astride the entrance and set behind the line of the town wall.[4] The North Gate at Caerwent is simpler in plan, but must have been of similar build.[5] Professor Frere has recently drawn attention to these single, narrow gates, where the entrance was often flush with the front face of the town wall, and has suggested that they are typical of the late third-century period of town defences.[6] Both Canterbury (London Gate)[7] and Caerwent (South Gate)[8] are similar in style, though the Caerwent gate had no inturns to retain the bank, in which respect it also resembles the South-west Gate at Silchester.[9] The closest parallel is probably the North-east Gate at Colchester, for which there is evidence of the superstructure and the restoration by Sir Ian Richmond.[10] But, as it is doubtful if the gate was ever completed before major modifications took place, the restoration as shown in Mr David Neal's drawings (figs. 21 and 22), includes the final additions to the plan and presents a composite picture.

The chief distinguishing features of the Brough gate, as first planned, are the inner chambers in the thickness of the walls. To find a parallel for these recesses within a gate, it is necessary to go to the not far-distant fort at Malton, where the conjectural plan of the Period 5 north-east gate shows recesses with almost identical measurements.[11] It is interesting that Dr Corder assigned this gate to the period A.D. 300–69,[12] so that the *terminus port quem* is not far removed from that at Brough. These recesses, with their arched and vaulted roofs would have been intended to help carry the heavy weight of a tower, and have already been discussed (p. 38). If a thickness of about 3 ft. is allowed for the walls of a tower, and if it took the same form as the Colchester gate, its external dimensions would have been 22 ft. by 16 ft., compared with 16 ft. by 11 ft. 6 in. for Colchester. The effective widths of the two

[1] *J.R.S.*, LV, 205, n. 52.
[2] *Arch.*, LV, 422 ff. I am indebted to Mr G. C. Boon for additional comments on this structure.
[3] *Antiq.J.*, XLI, 66 (fig. 1).
[4] *Arch.*, LII, 750.
[5] *Arch.*, LIX, 87.
[6] *Britannia*, p. 253.
[7] S. S. Frere, *Roman Canterbury* (2nd ed.), p. 6 and fig. 8; *J.R.S.*, XLVI, 144.
[8] *Arch.*, LXXX, 257.
[9] *Arch.*, LV, 424.
[10] *Colchester*, p. 36.
[11] *Malton*, p. 47.
[12] Ibid., p. 67.

entrances are closely comparable, since that at Brough is artificially reduced by the projecting responds. But the full width between the inturns is not the same, and for this reason alone the tower at Brough would have been larger than that at Colchester. Apart from the difference in size the arrangements might have been much the same, with doors in the sides of the tower communicating with the wall parapet, and two or three windows in front and back faces at the upper floor level, although the modifications incorporated in Period VIII probably made changes necessary in these arrangements.

The West Gate (fig. 12)

The position of this gate had, until 1961, been the subject of as much speculation as the North Gate. Dr Corder considered that it lay near the Ferry Inn,[1] while the present writer, in an earlier account, put forward reasons for considering it to be further north, at a point where the High Street rises to a hump,[2] in spite of its being only 30 yds. south of what was then called a 'postern'. The High Street sewer trench has now settled beyond doubt that there is no opening in the wall, or a street leading to one, at either of these places, and that the only West Gate is the so-called Postern. Very little is known about it, however, as it lies entirely under the High Street. Such evidence as was obtained from the sewer trench and from Brough House suggested that it was no more than an opening in the wall, about 12 ft. wide, with no inturns like the North Gate. Gates of this simple type have already been discussed in connection with the North Gate. Neither does provision seem to have been made to retain the rampart ends inside the gate with a wooden revetment, as no contemporary post-holes were found in trenches B III and VIII.

PERIOD VIII. *Alterations to the defences* (fig. 12)

Many towns in Roman Britain[3] had their defences altered during the later fourth century to accord with new styles of military architecture. Dr Corder found that bastions had been added at Brough to the east wall and that a single tower had been built round the projecting angle at the East Gate; he finally identified four bastions along the length in Bozzes Field. Moreover he dated all this work to the fourth century.[4] The present excavations have added two more bastions to the list: Bastion 11 just west of the north end of Bozzes Lane, with its centre 136 ft. east of the centre of the North Gate, and Bastion 10 on the west side of the town with its centre 105 ft. north of the centre of the West Gate. Yet others, Bastions 5–9 and 12, can probably be inferred (see plan, fig. 12). In addition a massive drum tower had been built on each side of the North Gate and an unusual, apparently single, rectangular tower astride the West Gate.

Bastion 11

The position of Bastion 11 was identified on its east side only, by means of a single trench, C II. Like the wall against which it had been built, it had been completely robbed; but although the robber trenches did not provide accurate dimensions, those obtained approxi-

[1] *Brough*, III, 21.
[2] *Petuaria*, II, 64.
[3] *Arch.J.*, CXII, 20 ff.; P. Corder, *Great Casterton* (1961), p. 27.
[4] *Petuaria*, I, 23; *Brough*, II, 10 (Bastion 4); III, 10, 13 (Bastion 1, East Gate); IV, 12 (Bastions 2, 3). But see below, p. 49.

mated closely to the other known bastions. The walls were from 4 ft. to 5 ft. thick and the rectangular, hollow bastion projected about 10 ft. out from the face of the curtain wall.

The dating evidence for this bastion was meagre. A coin of Constantine I, issued in A.D. 330–7 was found in a layer of mortary rubble, inside the hollow of the bastion, and on top of layers which had probably accumulated against the outer face of the curtain wall (fig. 19). The layer in question might represent a construction level; but there is no absolute certainty for this, and it is more likely to belong to a destruction level.[1]

Bastion 10

The position of Bastion 10 was indicated by two parallel foundations, one 5 ft., the other 7 ft. wide and 14 ft. apart, found at a point about 100 ft. north of the centre of the West Gate, where they were cut at right angles to their line by the sewer trench, which here ran in front of the curtain wall. The foundations were of pitched, unmortared stones; no dating evidence was obtained from them.

The External Towers at the North Gate (fig. 18)

Neither of these towers could be completely excavated. That to the east of the gate provided most information, although stone-robbers had left only the tower core of stones pitched herring-bone fashion in liberally applied, soft yellow mortar (pls. XIII *b* and XIV *b*). The foundations covered a segment, slightly greater than a semi-circle of 31 ft. diameter, with a semi-circular hollow, 13 ft. in diameter, at its centre. A small, rectangular projection, 2 ft. by 3 ft., and continuous with the tower foundation, jutted out on its west side towards the street. No corresponding feature was observed on the opposite side of the gate, and it is difficult to offer an explanation for it (but see the reconstruction drawing, fig. 21).

The west tower was still more heavily robbed and less accessible for excavation. The points where the outer circumference met the curtain wall were identified, giving an overall diameter of about 28 ft. This discrepancy in the diameters of the two tower foundations need not be taken to imply the existence of towers of different size, for both may have been equal in the size of their superstructures.

A little dating evidence was obtained from layers related to the east tower:

The construction trench for the foundations, A II, 6 produced a large piece of a flanged bowl, like *Gillam*, type 228, but in calcite-gritted, native fabric. Bowls in this fabric occur in second-third century layers and are obviously imitations of the commonly occurring forms of this period. But the flanged bowl does not normally appear so early, and consequently here is probably late third or early fourth century in date (fig. 66, no. 339).

In the gate-tower foundations in A IV was the base of a Castor-ware beaker, of third-century type (fig. 66, no. 359).

The new Guardroom and other alterations to the North Gate (fig. 18)

The guardroom inside the gate would appear to have been rebuilt at the same time as the towers were added. The poor workmanship and possibly the incomplete state of the

[1] See p. 224. Analysis showed that this mortar resembled neither that from the curtain wall nor that from the gate-towers, but that it could have been the result of a mixture of the two. Hence it is likely to be a destruction level. It should also be noted that no mortar was adhering to the coin.

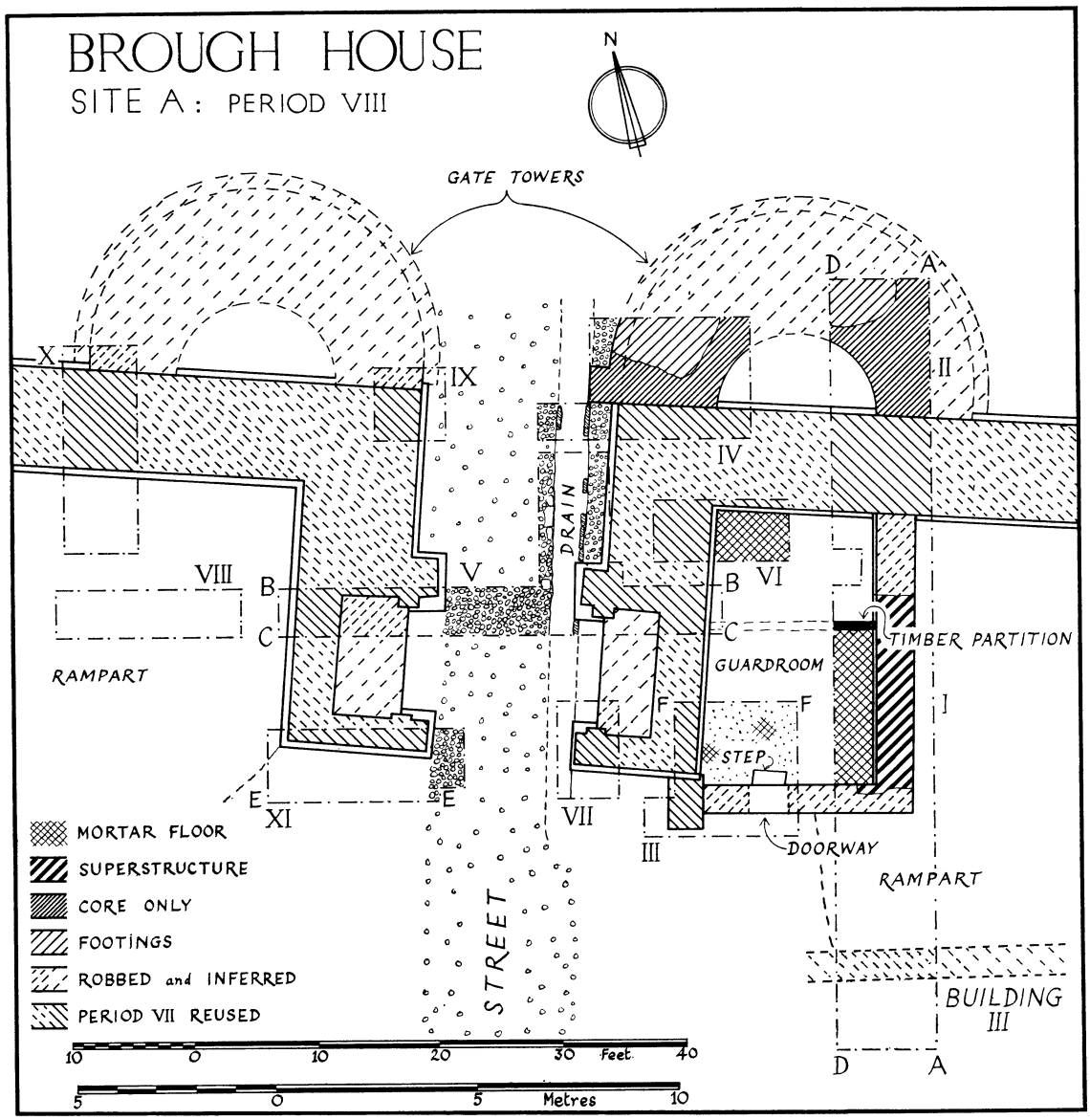


FIG. 18. Plan of the North Gate in Period VIII

earlier room would have made this necessary. The new work did not quite over-ride the old, and the east wall, 3 ft. wide, with a 2–3 in. internal offset, now cut more into the rampart than before. The south wall, 2 ft. 3 in. thick, was made parallel with the town wall, and a new door provided near its centre. Apart from a short length on the east side and an internal door-step, most of the masonry had been robbed, but the quality of that remaining was greatly superior to the earlier work (pl. XIV *b*). The stones were evenly dressed, though when compared with the earlier masonry, each stone was found to be shorter in length but about

the same thickness.[1] The guardroom was now divided in two by a wooden partition going from east to west to give rooms 8 ft. 6 in. by 13 ft. and 12 ft. 6 in. by 13 ft. 6 in. at the north and south ends respectively. A floor of yellow sand, 2–4 in. thick (A I, 7; A III, 3) had been laid originally in the outer room and subjected to heavy wear, so that frequent patching with sand and mortar had taken place (figs. 9 and 19). A number of small fires had from time to time been lighted on these surfaces. Ultimately, a plain concrete floor had been laid in both rooms. This had become so worn and eroded that, in the outer room and in a large part of the inner, all that remained of it was a thin layer of brick chips with the lime removed. In places, even these had disappeared; only in the north-west corner did the floor survive completely intact.

When the work on the defences had been resumed, the internal recesses in the gate had also been blocked up, perhaps in an attempt to remedy a continuing subsidence. The foundations for this blocking were not so substantial as those of the original masonry; consequently the robbing trenches did not penetrate so deeply and could be distinguished from the others. In section CC (fig. 19) the robbing trench for the masonry in the western recess is visible over the Period VI rampart (layer 16); but that for the eastern recess does not show here, as on this side of the gate the earlier foundations extended across to the south section (fig. 19). Nevertheless the necessary evidence was forthcoming in trench A VII.

Lastly, an addition was made to the bank on the east side of the gate. This was A I, 2, a composite layer which must originally have been part of the bank. It sealed the destruction debris of the Period VII B guardroom (A I, 21) and had been cut by the south-east corner of the new guardroom (section DD, fig. 9). When the town wall had been robbed, some of this layer had fallen down to fill a cavity left in the robber trench, and it did not prove possible there to distinguish between the two parts, which formed one continuous layer. Only at the rear of the bank where this layer was sealed by a greater depth of topsoil, did it seem safe to accept as genuinely stratified any objects found in it.

Subsequently, probably towards the end of Period VIII, a drain had been built along the east side of the entrance passage, to replace the earlier one, which had become blocked. It was U-shaped in section, about 16 in. deep and 2 ft. 6 in. wide at the top. The edges had once been lined with limestone slabs set in red clay, but few survived in position.

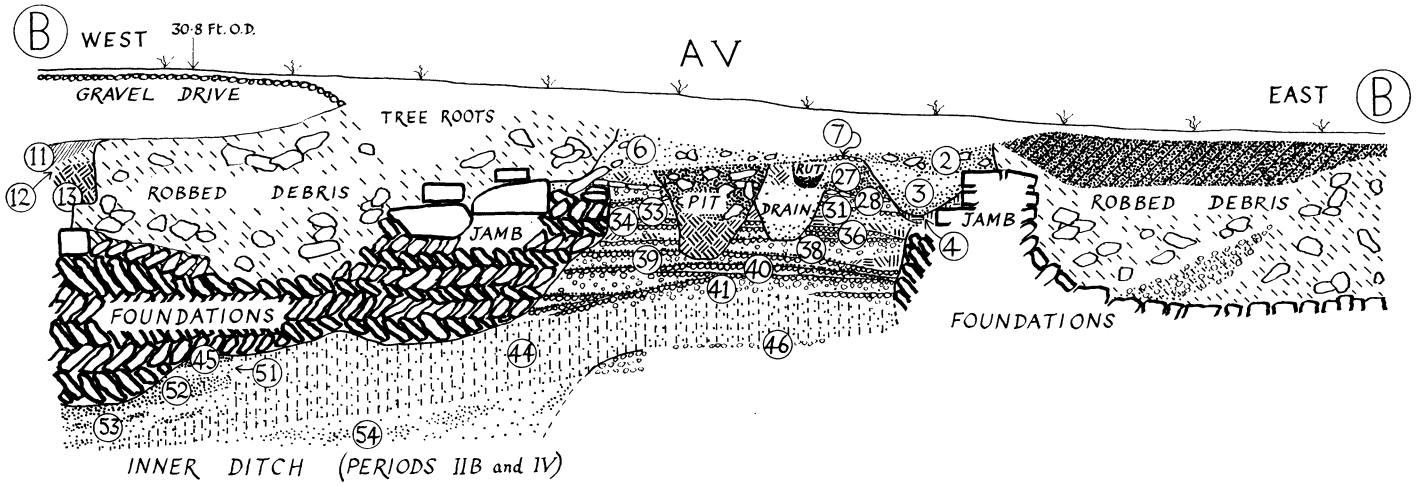
There is one further point of interest relating to this phase of the North Gate. In the centre of the carriageway and between the outer gate jambs was an irregular shaped pit, 2 ft. 10 in. across at the mouth and 2 ft. 6 in. deep, which had been solidly packed with stones overlying stiff green clay (fig. 19). It is in the right position for a gate stop, but if so it must have been deliberately removed at a later date and the hole filled, presumably while the gate was still functioning.

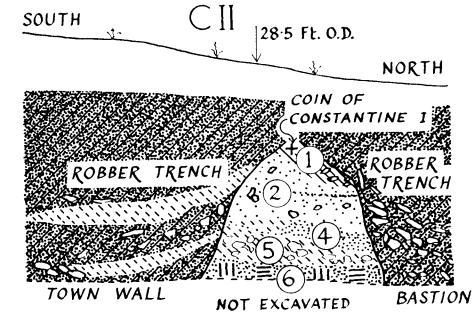
Dating evidence connected with the construction and use of the above features can be summarized:

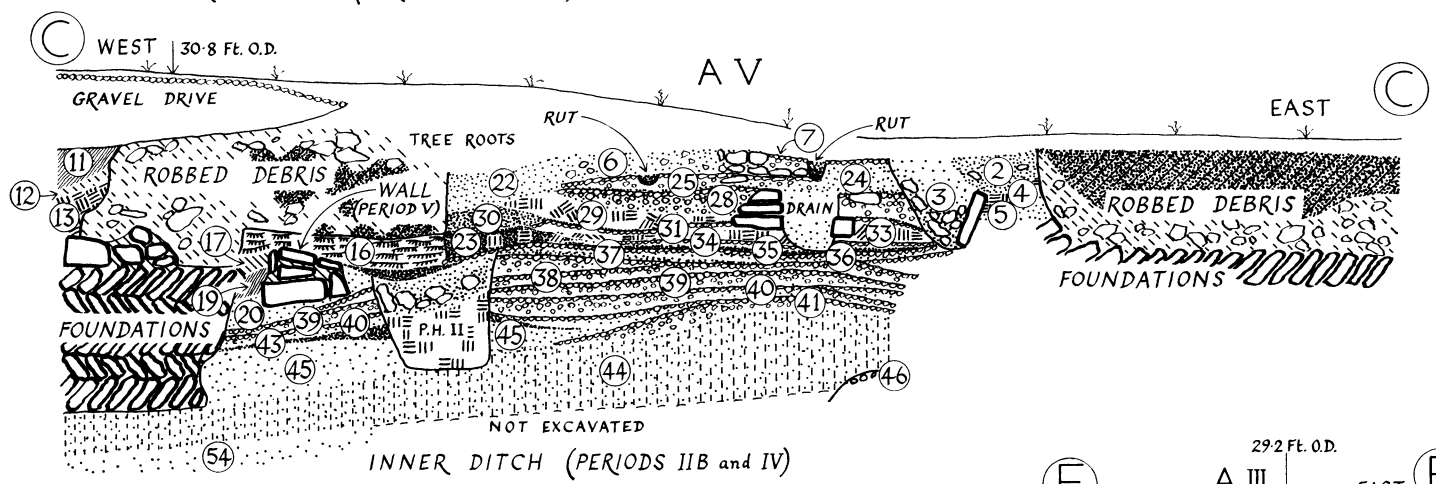
From the destruction debris of the Period VII B guardroom, represented by layers A I, 8; A III, 15, 16, came groups of coarse pottery of late third- or fourth-century date (figs. 65–6, nos. 329–37, 355–8); the latest piece is perhaps fig. 66, no. 358, from A III, 16, which probably dates to the fourth century, although more precise dating is not really possible.

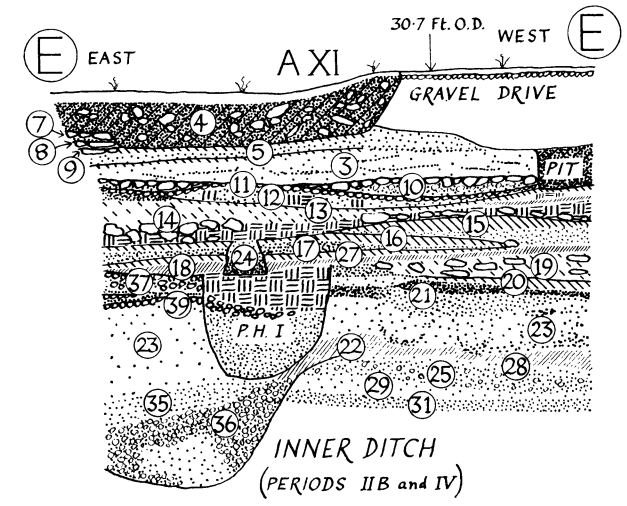
[1] And closely resembled the masonry of the bastions found by Dr Corder (unpublished photograph).

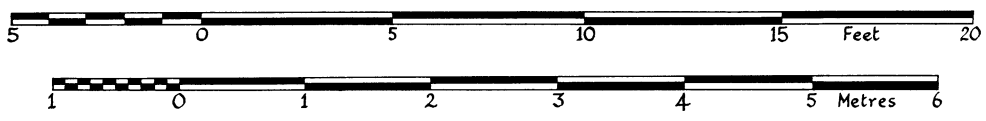
BROUGH HOUSE: SITES A AND C

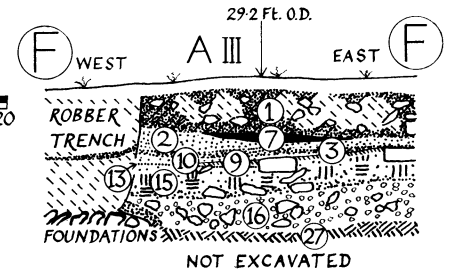












BROWN CLAY and LOAM · GREY " " · YELLOW " " · GRAVELLY · SANDY · RUBBLE · TURF · DARK SOIL · CHARCOAL · MORTAR and CONCRETE · BURNT LAYERS · ASH

FIG. 19. Sections of trenches A III, V, XI and C II, Brough House

Layer A I, 2, from a 'safe' position (see above), produced a coin of Claudius II. This is the rampart layer which intervenes between the destruction of the first guardroom and the building of the next.

Datable material from the floors and occupation layers inside the guardroom was not prolific, but presented an interesting picture. A single, very corroded coin of probably Constantinian date came from A III, 10, and another of Claudius II (A.D. 268–70) from A III, 13; from the remaining layers (A I, 7; A III, 2, 3, 9, 10, 13) came pottery (fig. 66, nos. 348–54), which, at the latest, can hardly be later than the mid fourth century.

Other layers connected with the latest use of this gate are:

A V, 25, the penultimate street surface in the gate, and earlier than the drain, A V, 3, produced coins of Gallienus and Tetricus I and coarse pottery (fig. 67, nos. 367–8) which is best described as belonging to the second half of the fourth century.

A XI, 3, a thick layer of silt extending beyond the west edge of the street behind the gate and sealed by the three latest layers of metalling, produced coarse pottery of *Gillam*, type 147, which need not be later than the above groups and could be slightly earlier (fig. 67, nos. 360–4).

The external tower at the West Gate (fig. 20)

The unusual tower outside the West Gate is described on evidence obtained entirely from the sewer trench, which cut across two parallel wall foundations, one on each side of the gate; these were deeper by a foot than the curtain wall foundations against which they abutted. The trench for the foundations on the north side of the gate had been cut to a width of 5 ft. 8 in., but only filled with pitched stone for a width of 4 ft. out from the north edge, the rest of the trench being back-filled with dirty sand. The companion trench on the south side of the entrance had been dug to a width of 5 ft. 5 in. and completely filled with stone. It should be emphasized that no other foundation or even robber trench was seen in the vicinity, which would enable these two walls to be interpreted as parts of *two* external flanking towers, one each side of the entrance. It should be assumed, therefore, that they are the side walls of a square or rectangular tower, whose foundations imply an external width of about 26 ft. from north to south, projecting westwards for an unknown distance from the town wall. It should be noted that the width of the tower compares closely with that of the bastions.

There are two alternative suggestions to be made about the form of this gate tower. The emerging street could have passed through its centre, which is not entirely satisfactory as it fails to take into account the unequal thickness of the side walls as implied by the foundations.[1] Neither is it possible to find a convincing analogy for such an arrangement. A better suggestion might be that it resembled the north postern at Richborough,[2] where the tower, of one build with the curtain wall, was planned like a *clavicula* with the exterior entrance on the east side. To quote from the 1932 excavation report, it was observed 'that the wall was continuous beneath both the entrances to the tower'. This is a normal feature in many gates where the sleeper walls below the carriageways served to unite the different parts of the structure in a solid mass. If this was the arrangement at Brough, then the slighter

[1] But this is not necessarily a cogent objection; see Bastion 10 above (p. 44).

[2] C. Roach Smith, *Richborough, Reculver and Lympne* (1852), p. 38; *Richborough, III*, p. 31.

foundation of the north side could be interpreted as underlying the sleeper wall below the entrance.

No dating evidence for this tower was found and it must be assumed to belong to the same general period as the other additions.

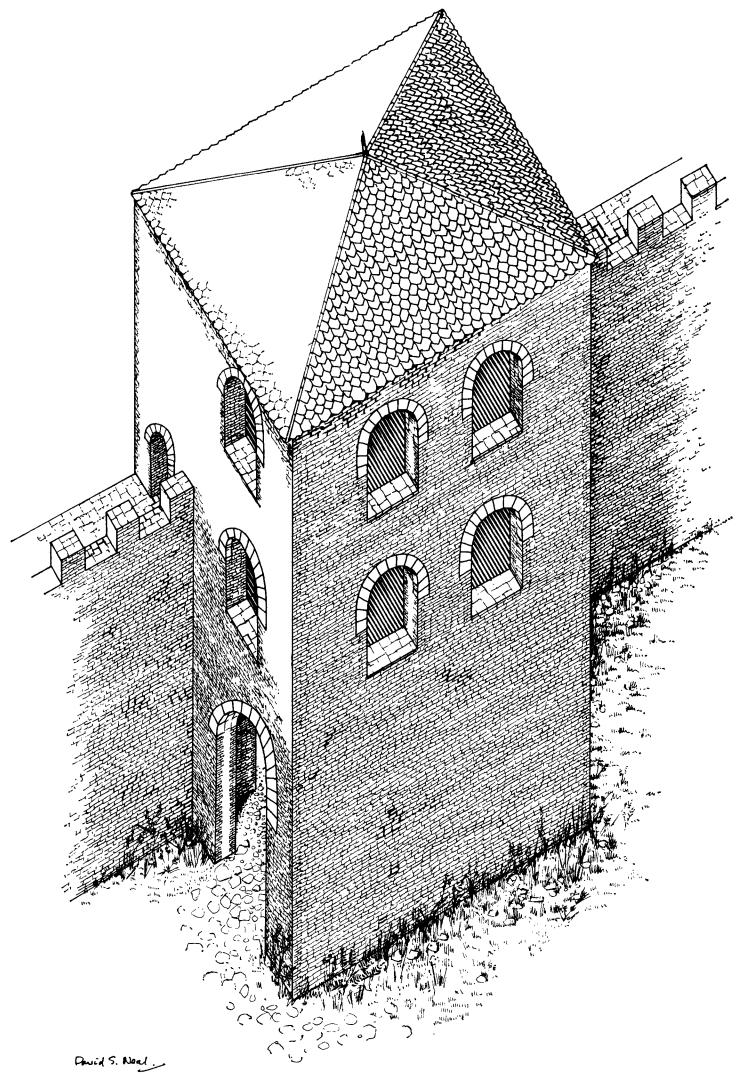


FIG. 20. Restoration drawing of the West Gate in Period VIII

Discussion on Periods VII and VIII

Although many cases are known where bastions were added to town walls, there are few, if any, examples where gate-towers were added. In considering the tower at the east gate, Dr Corder quoted the early fourth-century towers added to the *Porta Asinaria* in

Rome.[1] Kenchester might be another example.[2] Normally in both Britain[3] and Gaul[4] such gate-towers, where they existed, were an integral part of a defensive circuit and built with the gates. The later date of most Gaulish town walls provides a reason there, for, by the time they were built, bastions and towers were again necessary, and Professor Frere has recently made a penetrating analysis of the contrasts between the town fortifications of the two provinces.[5] He also suggests that in Britain the programme of wall building, perhaps lasting over fifty years, had been largely completed before the reign of Carausius; for in his reign the new styles of military architecture, which, among other features, made use of external bastions, were appearing in Saxon Shore Forts, so implying that, had town walls been as late, they too might have had bastions. But at least three towns, Catterick, Thorpe-by-Newark and Great Chesterford, do not appear to have been walled until the early fourth century, a fact noted by Professor Frere. One might have thought that, in the circumstances outlined above, they at least would have had bastions and have resembled the Gaulish town walls of comparable date. But very clear aerial photographs[6] of the first two, and excavation in the third,[7] have shown quite clearly that they never existed. This is especially pertinent at Catterick, a single-phase fortification, where two other late defensive features are present; no rampart and only one wide ditch. What went wrong? Are they genuine anomalies, or has there been an error in archaeological interpretation? At present it is hard to say. Perhaps the answer lies in another comment of Professor Frere's,[8] where he notes the innate conservatism of the military authorities in Britain, even down to A.D. 370.

Great Casterton has provided the latest date for the reorganization of town defences, with coins of A.D. 354–8.[9] This has led to the conclusion that it was the work of Count Theodosius immediately after the barbarian conspiracy of A.D. 367. How then does Brough fit this pattern? In the first place, the latest and highly suspect evidence for an individual bastion is the coin of Constantine I (A.D. 330–7) associated with Bastion 11. Yet if our conclusion is correct, as seems most likely, that the guardroom of the north gate was rebuilt at the same time, it would be expected that the floors and layers inside would, if Count Theodosius was the originator of these schemes, produce evidence for a post-370 date for the occupation. But this is not so, and the latest sherd to be deposited (p. 47) before the floors were sealed by destruction debris (A I, 4) can hardly be later than about mid fourth-century. None of the latest east Yorkshire or Signal Station wares are represented. It might be that the dating of the sherds from the guardroom is too conservative, although it seems unlikely. However, there is other evidence: Mrs Ravetz has shown that Brough is a site with her 'Pattern A' fourth-century coinage.[10] This shows a slight rise following the general scarcity in Britain of early Valentinianic issues. Thereafter it falls away, finally dwindling to zero in the early 380s. Much the same effect is shown, perhaps more clearly, in Mr Curnow's histograms (figs. 34–5) and amplified in his comments (p. 82). Indeed, the latest known coin

[1] *Petuaria*, I, 29; I. A. Richmond, *The City Wall of Imperial Rome*, p. 145.
[2] *T.Wool. N.F.C.*, XXXVII, 149 ff., but see p. 53, n. 2.
[3] As at Verulamium (*Verulamium*, p. 63) and Cirencester (*Antiq.J.*, XLI, 65).
[4] A. Blanchet, *Les enceintes romaines de la Gaule* (1907), passim; *Arch.J.*, CXVI, 25 ff.
[5] *Britannia*, pp. 249 ff.
[6] Catterick: *J.R.S.*, XLIII, pl. XIII, i.
Thorpe: *J.R.S.*, LIV, pl. XIII, i, and unpublished photographs in the Cambridge University collection.
[7] *J.R.S.*, XL, 106; V.C.H., *Essex*, III, pp. 72–6.
[8] *Britannia*, p. 224.
[9] P. Corder, *Roman Town and Villa at Great Casterton*, III, p. 27.
[10] *Num.Chron.*[7], IV, 201 ff. (fig. 1 d).

from Brough as a whole is one of Magnus Maximus (A.D. 383–8). No Theodosian issues are known, and, of a total of about 310 coins from the Brough area, only eight are Valentinianic or later. With regard to the Theodosian issues, Mrs Ravetz comments that a poor showing is not, 'as before, a crisis of supply, but a crisis of use'.[1] Professor Frere takes a different view, and refers to their absence at Exeter: 'but this in itself means only that the supply of coinage was interrupted'.[2] Yet there are sites where the proportion of Theodosian issues exceeds all earlier ones, as shown by Mrs Ravetz's 'Pattern C'. Again in her 'Pattern B',[3] there are other sites, including the Yorkshire Signal Stations, where the proportion of Theodosian coins increases, even if not reaching the same peaks as 'Pattern C'. Some sites in Yorkshire such as Malton,[4] Catterick[5] and Brough-by-Bainbridge,[6] where a Theodosian occupation is well attested on both structural grounds and from the quantity of late pottery present, nevertheless belong to coin 'Pattern A'. Two of these sites were forts, and there is good reason to believe that Catterick possessed an army detachment.[7] Soldiers were paid in gold, which was subsequently exchanged for bronze before being spent in the normal way. Gold coins as site finds are rare, but an absence of bronze coinage on a particular site might be explained if it was only exchanged or spent on another, or even in a particular building.[8] In view of this, and of the very limited amount of excavation carried out on the internal buildings at Brough, it might be unwise to attach too much importance to the absence so far of Theodosian coins. But coin evidence cannot be considered in isolation. During the excavations of the 1930s, Dr Corder noted that late fourth-century pottery of east Yorkshire types was not common at Brough;[9] he suggested a contraction towards the south-west, and this has been confirmed to a great extent by the more recent excavations. Such late pottery as did occur, and this was not a great deal, was normally found in the topsoil or in robbing-trenches,[10] and on only one occasion was it found stratified in a building (G.I), and even then was not indicative of the very latest types (pp. 182–3).

These considerations raise interesting problems and possibilities. In the first place, the north gate guardroom can hardly have been maintained for long after the middle of the fourth century, despite the fact that the floors had been worn and patched. It might be argued that cleanliness prevented the survival of later material, but the floors were not conspicuously clean, and pockets and layers of dirt had formed, especially in the worn patches. If the guardroom was disused and probably even in a state of collapse by this date, it might imply that the defences were no longer permanently manned. But more important still, it means that the reorganization of the Brough defences will not fit neatly into the restoration of Count Theodosius. If not, then to what date can it be ascribed? Attention has already been drawn to the probable importance of Brough as a port and possible naval base (pp. 25, 27). No governor or emperor, preoccupied with the defence of Britain's eastern seaboard, can have overlooked the importance of the Humber estuary, and of Brough, so long as its harbour remained usable. Carausius was perhaps not the first to have done so within the two periods now being

[1] Op. cit., 224.
[2] *Britannia*, p. 377.
[3] Op. cit., 208–9; 210–11.
[4] *Malton*, p. 68.
[5] *J.R.S.*, L, 218.
[6] *P. Leeds Phil. & Lit. Soc.*, IX, 126.
[7] *Med.Arch.*, V, 20; also unpublished excavations in 1959.
[8] Mrs Ravetz herself commented on this uneven distribution at Verulamium, op. cit., 226.
[9] *Petuaria*, I, 30.
[10] Much the same distribution was observed at Catterick, and Mr Hartley notes similar circumstances at Brough-by-Bainbridge: *P. Leeds Phil. & Lit. Soc.*, IX, 126.

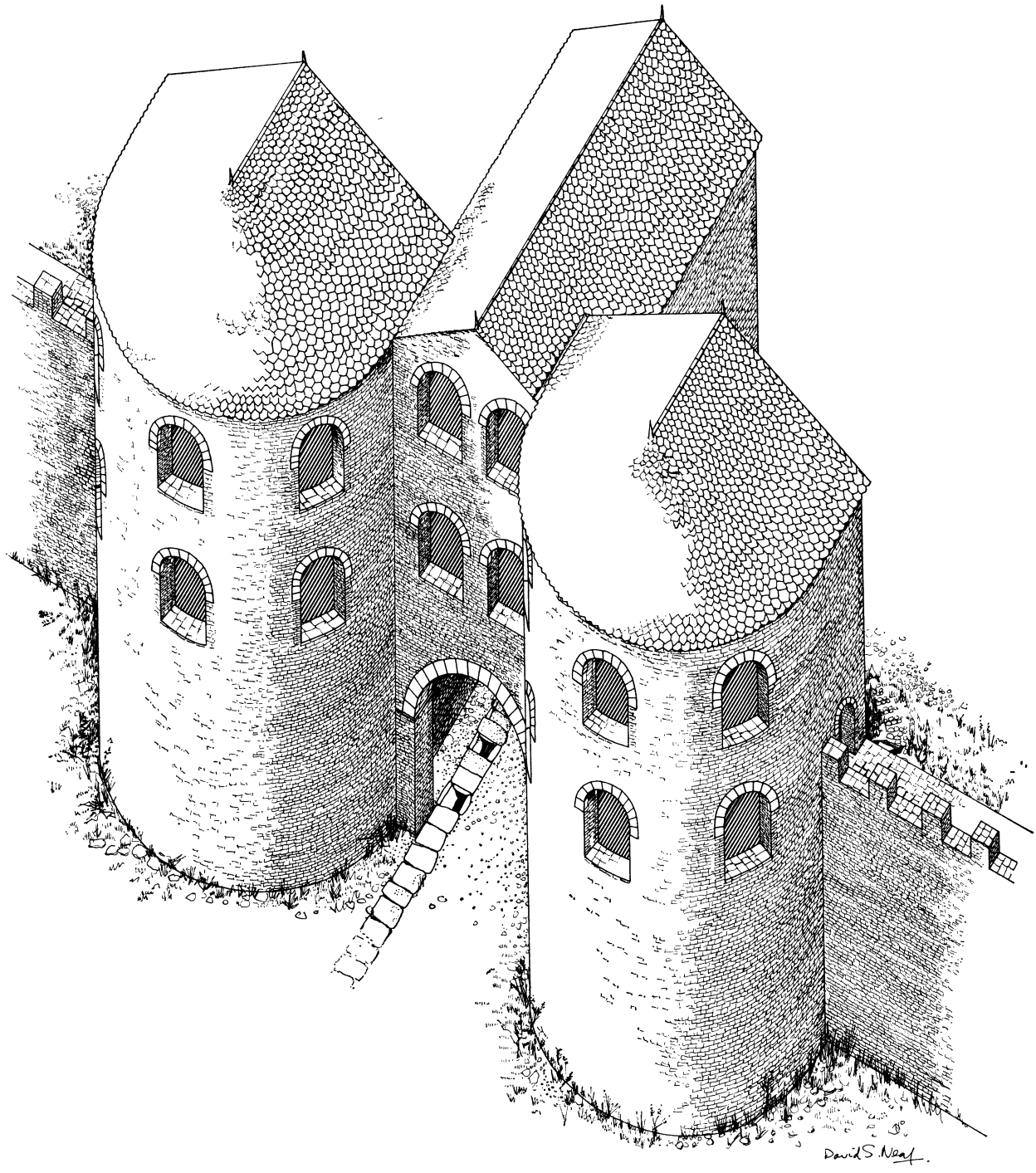


FIG. 21. Restoration drawing of the exterior of the North Gate in Period VIII

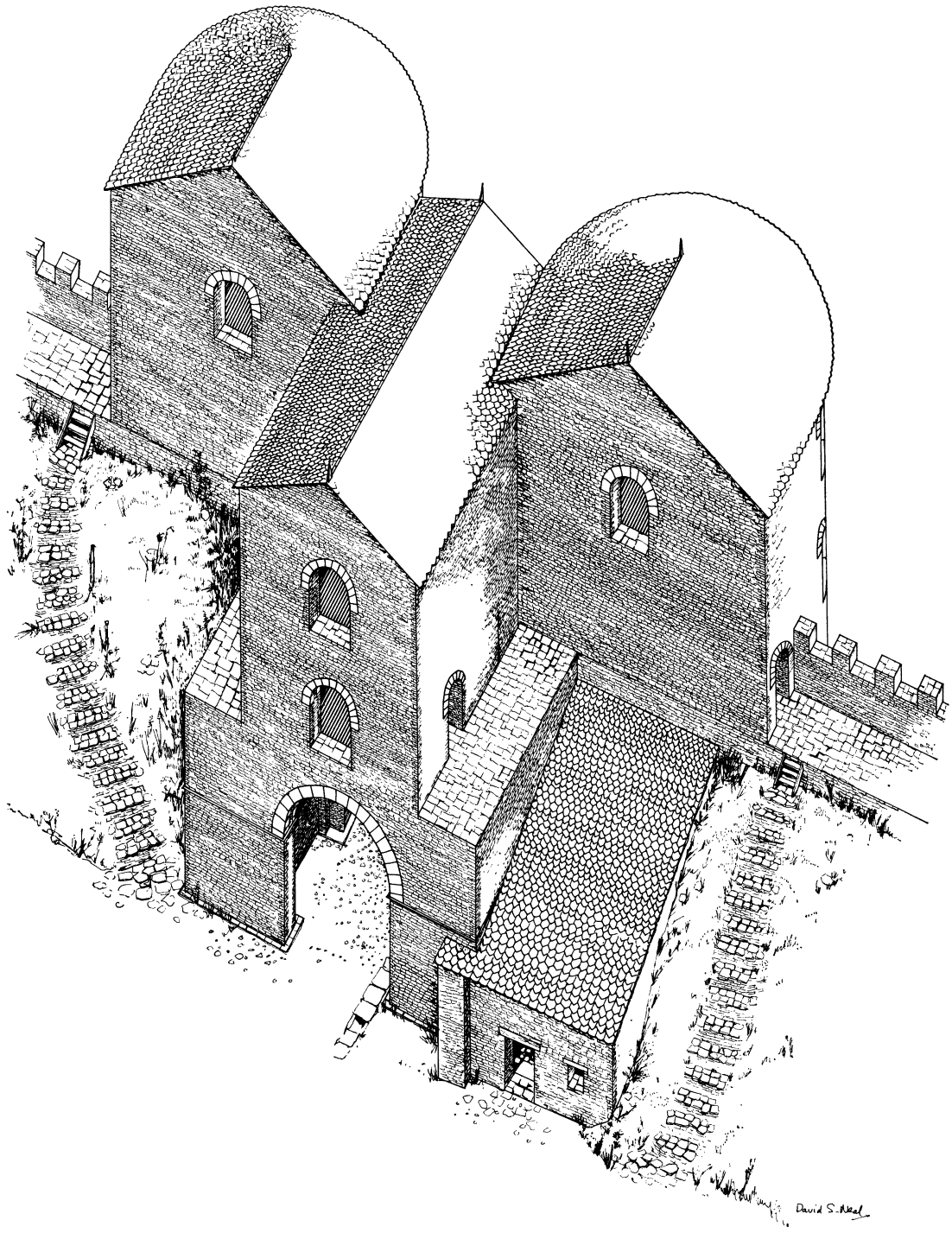


FIG. 22. Restoration drawing of the interior of the North Gate in Period VIII

considered, and it is not unlikely that, by the time he came to view the scene, the stone fortifications at Brough were still unfinished. In writing of the fort at Malton, Dr Corder considered that Carausius may well have used the Humber as a naval centre, and even considered the possibility that it was he who rebuilt the fort,[1] since there is a relatively high proportion of Carausian coins present. There is now little doubt that Carausius extended the Saxon Shore system of coastal defence, and at Burgh Castle he may have caused some drastic modifications to be made to the original plan.[2] Yet, if no more of the walls survived there than did at Brough, it would have been concluded that the bastions were a later addition to a fort of old design. It has already been shown almost conclusively (p. 38) that the start of the stone circumvallation of Brough pre-dates the usurpation of Carausius, but there is no reason why, on present evidence, and if the very questionable coin of Bastion 11 is discounted, the added towers and bastions could not have been bonded with the curtain wall at a higher level than now remains, and so have resembled those at Burgh Castle. Moreover, such a suggestion enables other features to be better explained: the towers at the north and east gates, unmatched, except perhaps for Kenchester,[3] at any other town in Britain subject to the Theodosian reconstructions; the siting of a single tower beside the east gate is very similar to the single bastion placed just east of the north gate at Burgh Castle.[4] The unusual tower at the west gate has already been compared (p. 47) with the north gate at Richborough, where a Carausian date[5] is almost certain for the stone fort. A change in plan of this type, following an interruption could also help to explain the apparent absence of a floor in, or occupation of, the Period VII B guardroom; it was never used before being replaced by that of Period VIII. It would also allow adequate time for the floors of the later guardroom to become worn and patched before its use ceased soon after the middle of the fourth century.

If further support is needed for a Carausian date, it is only necessary to turn back to Dr Corder's original views. He excavated four bastions and a gate tower and found nothing which prevented his originally attributing their construction to Constantius Chlorus.[6] He cited the evidence of a nearly complete cooking-pot: this 'found in the ashes of a fire left by the builders of tower 4,[7] while suggesting a third-century date, is insufficient basis for more than a suggestion'. Although it is difficult to be absolutely certain, both the form and the fabric of this pot would fit far better into a third-century context, than into one of *c.* A.D. 370, which it would have to do if the bastions are the work of Count Theodosius. In sum, therefore, the evidence appears to point to only one conclusion which covers all the facts: that Period VIII would be better called Period VII, phase D, with a starting date late in the third century.

If Brough was important as a general port, a naval base and staging post for the *cursus publicus* (p. 25 above) during the second and third centuries, its importance at least as a

[1] *Malton*, p. 67. Moreover, a fleet operating from the Humber, to work in conjunction with the Yorkshire Signal Stations, has long been postulated: Collingwood and Myres, *Roman Britain and the English Settlements* (1936), p. 285; *Britannia*, p. 356.

[2] *Britannia*, p. 338; for a slightly different view, see *Richborough*, v, p. 261.

[3] *T.Wool. N.F.C.*, xxxvii, 149 ff. One tower appeared to be bonded; the other was less certain. But the plan of the gate suggests that it belongs to the type where towers were an integral part of the structure.

[4] *Arch.J.*, cvi, 68; *P.S.I.A.*, xxiv, 100; *Norfolk Arch.*, v, 153; *J.R.S.*, lii, 178.

[5] *Richborough*, v, p. 245.

[6] *Petuaria*, i, 29. But even this deduction was made more from historical analogy than by strict interpretation of the evidence.

[7] *Brough*, ii, 28 and fig. 6, D 1.

naval base ought not to have been reduced once the intensity of east coast raiding increased.[1] It is all the more surprising, therefore, to find that soon after the middle of the fourth century, at a time when control of the sea had become even more vital for the defence of Britain, the Brough defences were no longer properly maintained; that from then on the importance of the site dwindled to that of a backwater; and that it was excluded altogether when the Yorkshire coast defences were overhauled by Count Theodosius. For such inferences seem inescapable. What had happened to Brough to make it count no longer? The answer probably lies in the behaviour of the River Humber. It is today a capricious river, with the navigable channels altering almost from week to week, and with a constant shifting of its sand and mud-banks. So it could be that some such shift, or more probably even the silting-up of the harbour itself, caused by a rise in sea-level and the consequent backing-up of rivers and streams soon after the middle of the fourth century, rendered it unserviceable for all but the smallest craft.[2] The simultaneous destruction of the south-west defences was probably a contributory factor. It is not the only harbour in Britain where this appears to have happened, and recent excavations by Professor Cunliffe at Portchester have shown that it was probably abandoned in favour of *Clausentum* at or soon after A.D. 370.[3]

Two points arise from these conclusions. It seems likely that from the third century, if not earlier, the importance of Brough as a naval base outweighed its position as *vicus Petuariensis*[4] and possible chief town of a small and backward *civitas*. It is of interest to compare the mid second-century reference of Ptolemy to *Petuaria* as the only πόλις of the Parisi,[5] with later references in the Antonine Itinerary[6] and Ravenna list[7] to *Pretorium* and *Decuaria* without the tribal suffix, which, as has already been mentioned (p. 23) usually, but not always, appears with civitas capitals. In official circles, where lists like the Itinerary would be compiled, its provincial status as a naval base perhaps outweighed its purely local status as a civitas capital, and an unimportant one at that. At least it provides an alternative theory for the, by now, slightly hackneyed one that the suffix was not included because (*a*) there was no *civitas Parisorum* and (*b*) if there was, *Petuaria* was not its *caput*. Secondly, there is the unit at Malton (*Derventio*) listed in the Notitia Dignitatum as the *numerus supervenientium Petuariensium*, under the command of the *dux Britanniarum*.[8] The name of the unit has been used to imply that a tribal levy had been made on the *civitas* of the Parisi, which, by the late fourth century, had taken the name of its capital, and with which it was completely identified.[9] But auxiliary units do often bear the name of their place of service,[10] and if later they were transferred to another, they frequently took the original name with them.[11] A strong case can therefore be made out for the *numerus* at Malton being one which had served at *Petuaria*,

[1] B. Cunliffe, *Classis Britannica* in *Richborough V*, p. 261.

[2] See p. 81. A Roman site at Faxfleet, about 3½ miles upstream from Brough, appears to have suffered the same fate. Information from Mr John Bartlett, who noted an absence of late Roman pottery. This is in marked contrast to Winteringham on the south bank, which has a coin sequence (fig. 36) going down to the very end of the fourth century (information from Dr Ian Stead).

[3] *Antiq. J.*, XLIII, 227.

[4] The fate of the *vicus*, if this happened, raises some interesting questions, which will be discussed elsewhere.

[5] *Geog.*, II, 3, 17.

[6] *It. Ant.*, 464.1.

[7] *Geog. Rav.*, V, 31, 431.

[8] *Not. Dig. occ.*, XL, 31.

[9] *Brough*, III, 27; V, 64.

[10] E.g. *numerus Longovicanorum* at Longovicium (*occ.*, XL, 30); *milites Bingenses*, Bingio (*occ.*, XLI, 22); *milites Grannonenses*, Grannono (*occ.*, XXXVII, 23).

[11] *milites Anderetianorum* at Vicus Julius (*occ.*, XLI, 17) and *classis Anderetianorum* at Parisius (*occ.*, XLII, 23), both probably from Anderita.

a. Junction of Period VII B guardroom wall with the curtain wall robber trench, showing the skin of red clay still adhering

b. Doorway of Period VII B guardroom, with to the right, the foundations of the North Gate east inturn beside the foundations of Building A.I

a. ? Water-pipe trench inside the North Gate

b. East side of the east tower of the North Gate abutting the curtain wall

a. West side of the east tower of the North Gate with surviving ashlars at the corner of the inturn

b. East wall of the Period VIII guardroom

a. Doorstep and robbed south wall of the Period VIII guardroom

b. Building G.I: The main south wall of the building and added walls of Phase D in the south-east corner

perhaps as a reinforcement to a naval unit, until the silting-up of the harbour made it redundant, when it was transferred to Malton.[1]

THE STREETS

Four more streets inside the walls have now been added to the plan. One, which is part of the main north–south axis, runs towards the north gate; another forms a junction with it at an angle of 75°, 205 ft. south of the gate and runs to the west gate. Two others were found in the Manor House garden: one north–south, but on a line further east than the above-mentioned section and the other, a later addition, at right angles to it and running west. All these, when taken with the street going to the east gate, show conclusively that there was no regular grid pattern at Brough. The three main streets, those that come from the north, east and probably south gates, all converge on a central area now partly covered by a tennis court in the garden of Ivy Lodge, a house fronting Bozzes Lane. At the centre thus indicated, the public buildings intended for the town might be found, but whether a forum or perhaps the theatre will not be known until the expensive work of excavating and reinstating the tennis court can be undertaken.

Mention should also be made of an early, single-phase north–south street, found running parallel to, but further east than, the later street in the Manor House garden. Its line when projected northwards strikes the fort close to where the south gate (*porta principalis dextra*) might be expected (fig. 3).

Sections could only be cut across three of the four main streets described above; two were at Brough House and one at the Manor House.

At Brough House sections were made across the north–south street in two places, one where it ran through the gate and the other at a point 70 ft. north of its junction with the east–west street. The section at the gate (fig. 19) showed four superimposed main surfaces (layers A V, 41, 40, 39, 38) in Period V, as well as two extensions to the width of the street on the west. All except the first (A V, 41), which lay further east, and its later extensions to the west, appeared to be on much the same line. Hard, rammed and lime-grouted gravel with a floated finish was the material used for all the surfaces. Some showed signs of wheel ruts, but the majority were still in excellent condition when new layers of aggregate were placed upon them. The full width of the street at this stage in its history was not apparent, since in each case one or both of the edges had been cut by the gate foundations. Four of these surfaces (A V, 38–41) had also preceded the construction of Building A.II. It is not certain if ditches or drains were provided at the verges. Two street surfaces belonged to the Period VI gate (A V, 36, 34), and had been constructed in a manner similar to those preceding them. One surface only (A V, 31) separated the construction work of Period VII from that of VII C. Thereafter there were three surfaces (A V, 28, 25, 7) which post-dated Period VII, and there were also minor repairs and patchings. The detailed stratification of these later periods and the drains associated with them has already been discussed in connection with the north gate (pp. 40, 46). In general, the surfaces which were contemporary with, or later than, the construction of the stone defences, were made up of limestone rubble in place of gravel or grouted gravel. This points to the probability that use may have been

[1] The writer is very grateful for the comments by Mr R. S. O. Tomlin on this subject, which appear in full on pp. 74–5.

made of waste stone from the construction work, a factor which has been observed elsewhere.[1] The topmost surface had been almost worn away and contained a single rut, over 6 in. deep.

Dating evidence for these successive street levels has already been partly summarized under the sections describing the north gates (p. 47).

The second section across the north–south street is shown in fig. 23, section DD. At this point the overall width in the latest phase was 15 ft., as marked by two shallow side ditches (B V, 3, 13), that on the west separating the street from a wall. Ten surfaces in all were counted (B V, 4, 6, 9, 12, 15, 19, 21, 23, 25, 30) as post-dating the *via quintana* of the fort. But with the exception of layers 4, 6, 9, 12 the east edges of all the others lay outside the trench, so that their full widths could not be measured. Although the number of surfaces here equals the number at the north gate, there is a difference between them. For at this point the change to limestone rubble metalling took place after only two gravelled surfaces, so that there appear to be more rubble surfaces than at the gate. But the changeover took place at much the same point in time. An explanation for this apparent anomaly might lie in the fort ditches below the road at the gate. These undoubtedly caused subsidence in the street, which would early require more repairs than elsewhere. But once the gate had been built, the street level could not be raised indefinitely, and it is possible that before a new surface was laid, the old metalling was first removed, in which case the equality in the number of surfaces at the two points would be largely a matter of coincidence. This supposition is, to an extent, confirmed by the street leading to the west gate, where only one gravelled surface had been laid before the change in materials took place.

The wall which bounded the street to the west was immediately contemporary with BV, 12.

The three upper surfaces, layers 4, 6, 9, appeared most worn, especially 4, which was the latest and only survived as a series of discontinuous patches, separated by large, silt-filled pot-holes. The remainder of the surfaces appeared still to be in reasonably good condition at the time when new metalling was laid, but all were covered by thick layers of silt, which was undoubtedly the reason for the resurfacing.[2]

It should also be noted that few of the surfaces anywhere in the town had a pronounced camber, which is often a feature of town streets.

A little dating evidence was found which reflected the periods during which resurfacing of this street took place. In the gate section:

A V, 41, the first surface to be laid after the fort ditches had been filled, produced a scrap of probably Hadrianic pottery.

A V, 38, the fourth surface, and earlier than the Period VI gate, produced a group of Antonine sherds. It was also earlier than Building A.II.

A V, 36, the fifth surface at the gate and contemporary with Period VI produced Hadrianic-Antonine sherds (fig. 64, nos. 275–6).

A V, 25, the penultimate surface produced coins of Gallienus and Tetricus I and some pottery which probably dates to the second half of the fourth century, but need not be very late in that period (fig. 67, nos. 367–8).

Lastly A V, 6, the worn and churned-up west side of the latest surface contained an irregular *Urbs Roma* coin of Constantine I, dated A.D. 330+.

[1] E.g., Cirencester (unpublished).

[2] For comments on the frequency of resurfacing and its causes, see *Antiq. J.*, XLIII, 21.

BROUGH HOUSE: SITE B

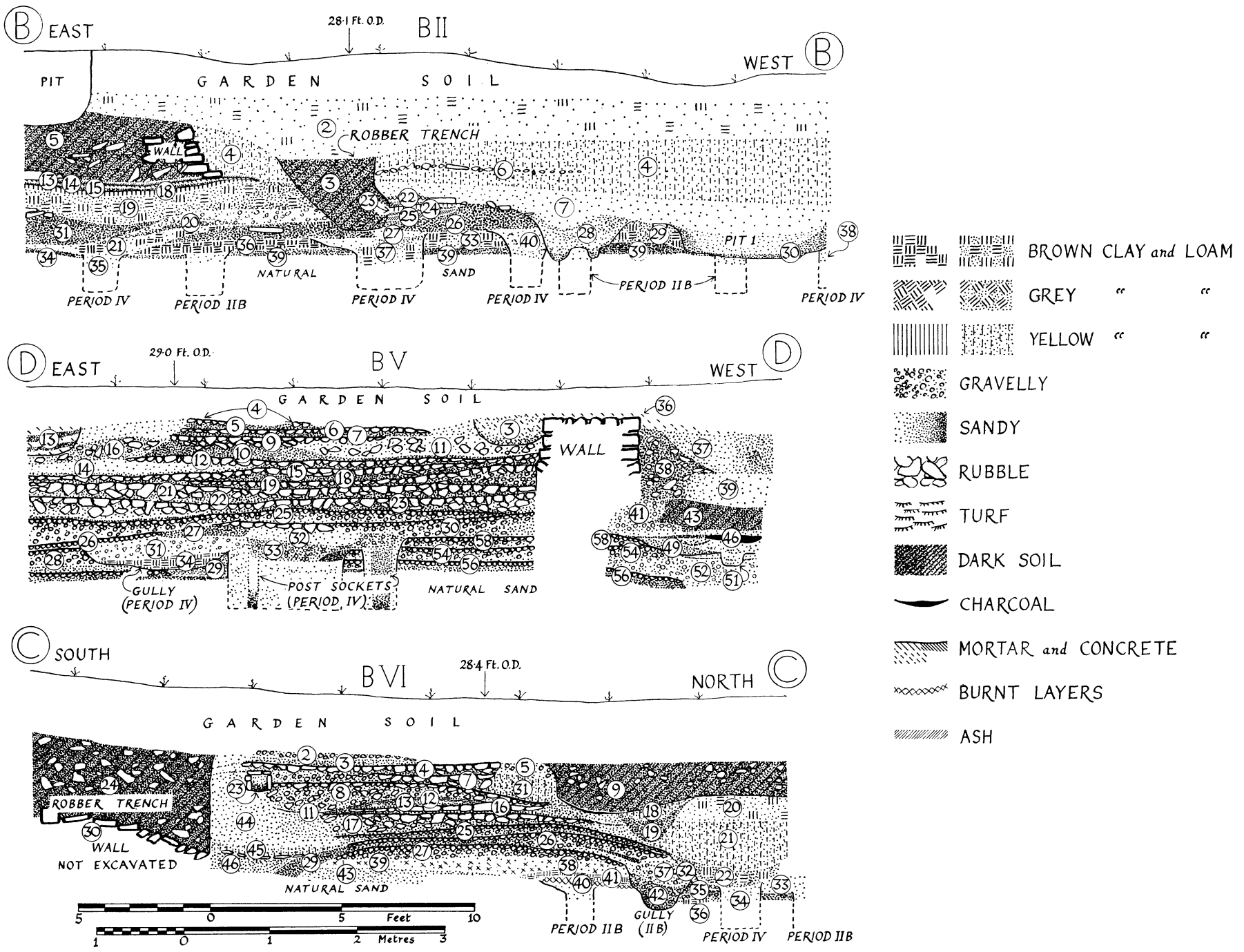


FIG. 23. Sections of trenches B II, V and VI, Brough House

In the second section:

B V, 20, a layer of silt separating the fourth from the fifth surface produced pottery of late third to mid fourth-century date (fig. 67, no. 391).

B V, 9, the eighth surface produced pottery (fig. 67, no. 390) which is fourth-century in date but probably not later than the middle of the century.

Only one complete section (B VI) could be cut across the street leading to the west gate (fig. 23), although the north edge was explored just inside the gate (B III). The line of this street preserved that of the *via decumana* of the fort (fig. 26), but, as resurfacing took place from time to time, there was a gradual tendency for it to take a line a little more to the south. It was not as wide as the street leading to the north gate and its maximum width was never more than 13 ft.; neither does it seem to have been used to the same extent, in consequence requiring fewer repairs, and only eight surfaces could be distinguished. It would certainly seem that the west gate was less important than the north. An attempt does, however, seem to have been made to produce a camber on some of the earlier surfaces, and better drainage was provided with a succession of small ditches on the north side. A small, covered and stone-lined culvert or conduit, 7 in. wide and 8 in. deep, had been constructed on the south side, contemporary with the sixth surface (B VI, 7).

Once again, the dating evidence for individual surfaces was meagre, but informative:

B III, 13, 21, the latest silt layers beside the street contained nothing that need be much later than the third century (fig. 67, nos. 370–2).

B VI, 22, the filling of the ditch for the first surface contained pottery which is probably Antonine.

B VI, 20, a layer cut by the side ditch of the fifth surface (layer 8) produced a group of Antonine samian, including a form 33 stamped MAPILLUS; also coarse ware (fig. 67, nos. 382–8) of a similar date.

B VI, 7, the sixth surface and B VI, 4, the seventh surface both produced sherds of late second- to third-century date (fig. 67, no. 380), although the filling of the stone-lined culvert, B VI, 23, only contained late second-century pottery (fig. 67, no. 389).

B VI, 3, the silt separating the seventh from the eighth and last surface produced late third- to fourth-century types of pottery (fig. 67, nos. 375–7).

A section could be cut through only one of the streets in the Manor House garden. It lay at right angles to the main north–south street and was clearly a late service road running along the north side of Building G.I. Only a single layer of limestone rubble metalling, 10 ft. wide and about 1 ft. thick had been laid down, but it possessed the characteristic worn surface shown by other streets.

There is little by which to date it, but some third-century coarse pottery was found in a layer (G IV, 5) beneath it (fig. 72, nos. 520–3).

INTERNAL BUILDINGS

Building A.I (figs. 9, 24–5; pl. VIII *a*, *b*)

The east end of a simple rectangular building was discovered in trenches A I and III. It is probable that its construction preceded that of the Period VI rampart, although later the two probably coexisted for a short time.

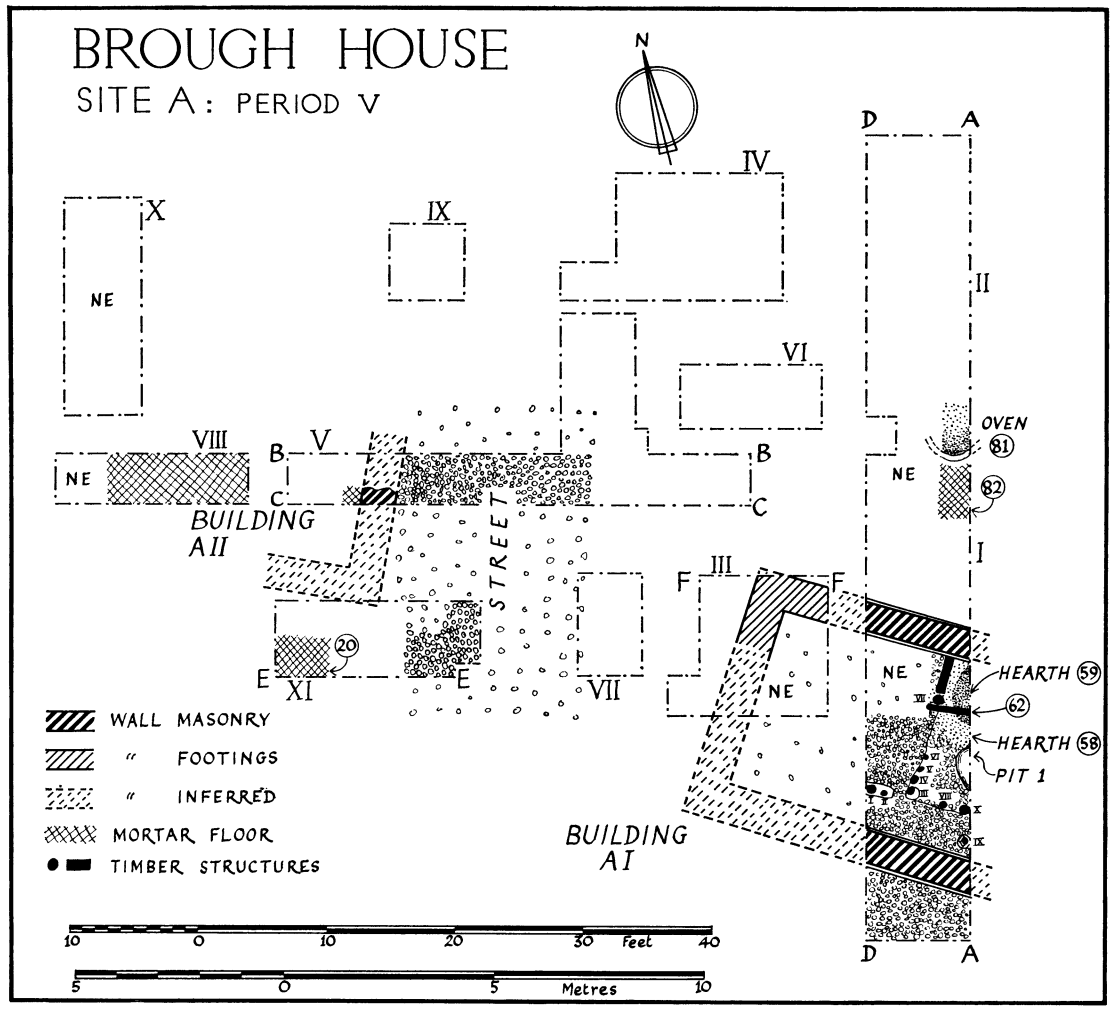


FIG. 24. Plan of Buildings A.I and A.II

The outside wall of the house was well constructed, and the siting of the north and south walls suggests that the position of the fort ditches was still known, or otherwise apparent, as the former ran along the median line between the inner and outer ditch, while the latter occupied the berm. The only superstructure to survive was in A I, and here the north wall had five or six courses of roughly dressed masonry, 3 ft. 4 in. wide, above the herring-bone foundations before a reduction in width occurred: a single 4 in. inset on the south face and a double inset, 2 in. over 4 in. on the north face. There were three courses above this level and the total surviving height above the foundations was 2 ft. 10 in. The south wall had four courses of the same width above the foundations, with another course above, set in 4 in. from each face. In A III, the wall had either been robbed to the level of the foundations or below, and all contemporary floor levels removed by the guardroom of the Period VII gate.

Although there was no evidence of rebuilding in the outer walls, several alterations had taken place inside, associated with different lines of wooden partitions and floor levels. Four phases could be distinguished.

Phase A (fig. 25). This is represented by the earliest floor levels, layers A I, 63, 64. Layer 63 was gravel, up to 6 in. thick, which covered all the exposed area except for a strip 4 ft. 3 in. wide running alongside the north wall; here the floor was grey clay (64). The junction may have represented the line of an internal partition, but in the short length uncovered (just over 3 ft.), no sign of one was seen.

Although no direct link could be established, it is most likely that the mortar floor (layer 82) and the oven which cut through it (81), outside and north of the house, belong to this phase. The oven, originally of oval or circular shape, was built in a shallow clay-lined pit, 1 ft. 6 in. deep. Several successive firings and relinings had taken place before it was disused, and it contained much ash and burnt material although this provided no clue to its function.

A gravel surface (layer 63S) had also been made up south of the house, and may have been part of a courtyard.

Apart from a little Flavian pottery in the upper filling of the ditches the only dating evidence for this phase came from some Hadrianic-Antonine coarse pottery in A I, 63 (fig. 68, no. 393).

Phase B (fig. 25). This phase was represented by a new floor of grey clay (A I, 49) which was spread over the full width of the building, covering both layers 63 and 64. Two superimposed hearths (layers 58 and 59), placed in shallow bowl-shaped depressions in the floor, were situated near the north wall; the earlier hearth, 58, covered a rather larger area than its successor.

It may have been during this phase that the Period VI rampart was erected, with the tail only 2 ft. 3 in. away from the north-west corner of the house.

The only dating evidence came from the floor itself, which produced fragments of Trajanic-Hadrianic samian, and coarse pottery (fig. 68, nos. 394–7) which is almost certainly Antonine, and possibly late in the period. An iron stylus (fig. 41, no. 20) was also found on the floor.

Phase C (fig. 25). The first definite evidence for wooden partitions was found in this phase. Over the surface of the now disused hearths (58, 59), a flimsy structure was erected against the north wall, based on lengths of shallow sleeper beam (61, 62) and a post-hole (P.H. VII), to form one end of a room, or passage, 4 ft. wide and of undisclosed length:

Beam 61: 3 ft. long by 10 in. wide by 2 in. deep.

Beam 62: 6 in. wide by 2 in. deep.

P.H. VII: 10 in. in diameter and 3 in. deep, with no sign of packing material.

No attempt was made to provide new floors either in the newly-partitioned area, where the ash-filled hearths sufficed, or in that part of the house which was now adjacent to, and south of it. But a new gravel floor (A I, 60) was laid over the earlier clay floor (49) in the east end, up as far as the beam (61), and its line continued across to the south wall. There had been a small hearth (layer 50) in this floor, but its full extent was not measured as it lay below the south wall of the Period VII guardroom.

A new gravel surface also appears to have been laid south of the building (layer 60S).

A little coarse pottery of Antonine date was found in layer 60 (fig. 68, no. 398).

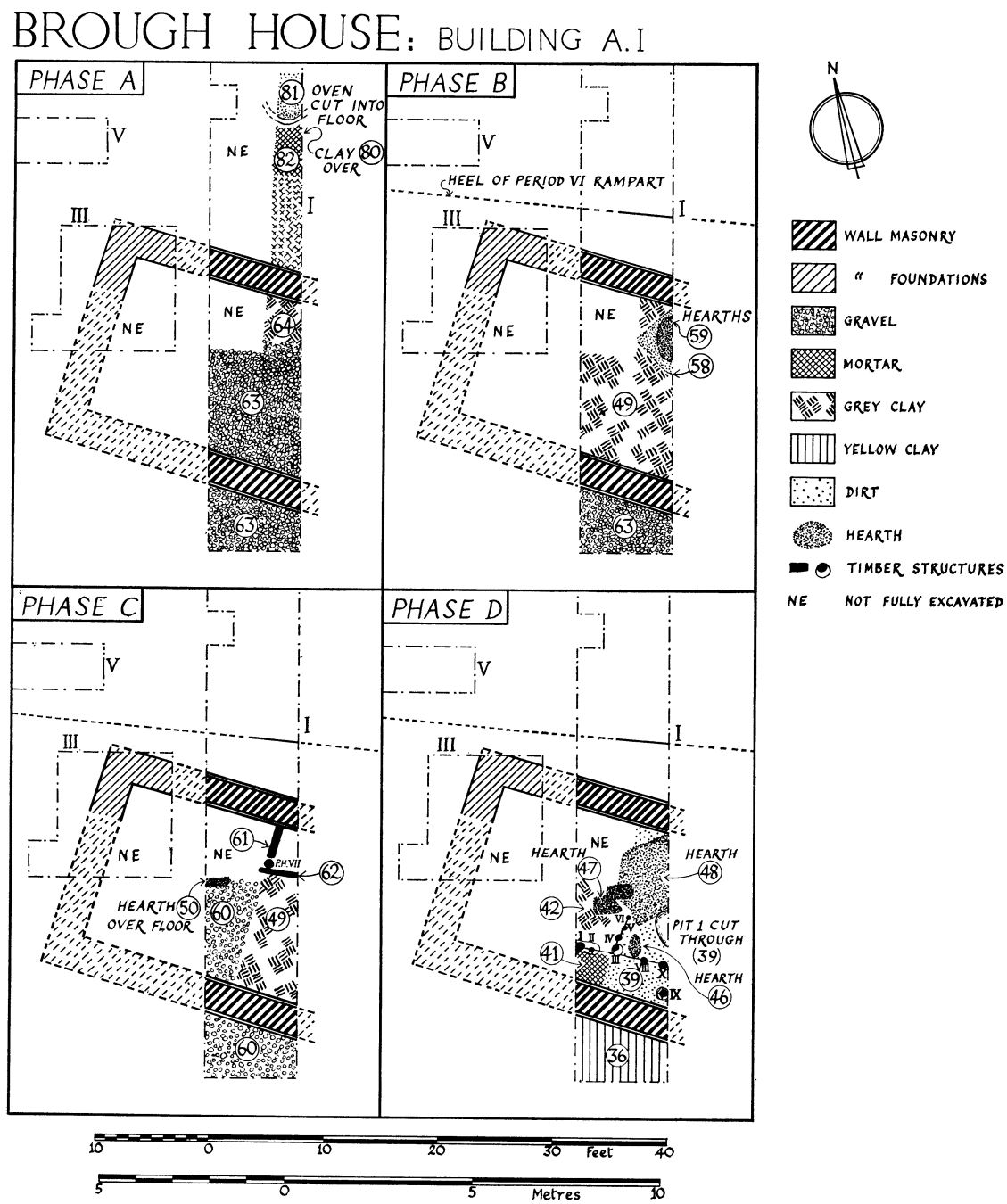


FIG. 25. Plan of Building A.I, Phases A–D

Phase D (fig. 25). An almost complete reversal of the internal arrangements now took place. The partitions of Phase C were removed, and a new line of individual posts formed one side of a passage about 3 ft. 6 in. wide, running along the south of the house (P.H.s I, II, III, VIII, X). A second short length of partition only 3 ft. 6 in. long projected northwards from P.H. III (P.H.s IV, V, VI), but certainly never extended further, as a large hearth (layer 48), with a smaller, later one (layer 47) partly overlapping its edge, cut across the line. There was also a post (P.H. IX) between the south wall and P.H. X, and another small hearth or ash-pit (layer 46) in the north-east angle of the partition.

Dimensions of the posts were as follows:

P.H.s I and II were set in a common pit and were 12 in. and 6 in. in diameter respectively and 15 in. deep. The pit was packed with red clay.

P.H. III was about 8 in. in diameter and set in a pit 18 in. in diameter and 19 in. deep. The pit was also packed with red clay.

P.H.s IV and V were only shallow impressions where the bases of posts had rested on the ground.

P.H. VI was 5 in. in diameter and set 15 in. into a small pit, again packed with red clay.

P.H. VIII was 10 in. in diameter and 12 in. deep and packed with dark clay.

P.H. IX was similar to VIII but packed with stones as well as clay.

P.H. X was 4 in. in diameter, 14 in. deep with red clay packing.

New floor levels were laid: over layer 60 and to the south of the lengthwise partition a thin mortar floor (41) was laid, while to the north of it the gravel was covered with grey clay (42). But to the east of the cross partition there was only a dirt floor (39) and this extended both sides of the longitudinal one. The gravel in the yard to the south of the house was also covered with a layer of yellow sandy loam (36). A large number of nails came from this layer. Two of these show traces possibly consistent with grass and roots in the corrosion products, suggesting weedy growths (information from Mr L. Biek).

Later still, a small, shallow pit (Pit I) was cut through 39 into the layers underneath; it was filled with soft dark silty soil.

The dating evidence for this phase came from layers 36 and 39, which both produced groups of late Antonine coarse pottery (fig. 68, nos. 399–406, 418–23). The rim of a crucible (no. 405) was included in the group from 36, which suggests that the various hearths may have been connected with some metallurgical process (see pp. 227–8).

There were also some small objects from layer 39: the handle of a glass vessel and some fragmentary bronze pieces (fig. 37, no. 10). A jet counter (?) was found in layer 36 (fig. 46, no. 13).

Abandonment and Destruction. During the life of the building, some erosion took place in the gap between the north wall and the rampart, presumably as the result of water running off the back of the bank and being channelled away in the confined space. It had truncated the south edge of the ditch (45) and layer 88, and, for a time, must have exposed the foundations of the wall. Erosion eventually gave way to deposition, and a white sandy layer (30) had formed in the hollow produced. Then followed a series of layers, composed primarily of tipped rubbish, interspersed with material washed down off the rampart, all of which had piled against the outer face of the wall. After the building had been totally abandoned, a

composite layer (25, 37, 38, 40) of fine, wind-blown sand mixed with lumps of clay, had accumulated over the floors and more especially against the walls. Finally the building was pulled down, and a layer (22) of mortary rubble with small pieces of stone, spreading out from the surviving tops of the walls, was left after the destruction. This must have taken place before the Period VII rampart was constructed, but it is not possible to say how long before.

A considerable amount of pottery came from the layers representing the abandonment: layers 25, 38, 37, 40 and probably 28, 29, 30 all produced groups of Antonine or late second-century pottery (fig. 68, nos. 407–24).

Layer 22, directly associated with the destruction also produced a late second-century group (fig. 68, nos. 425–8).

Building A.II (figs. 19, 24)

There is little to be said about this building, as only a very short length of wall was found in A V. As this wall did not appear in A XI, it probably turned a corner between the two trenches; since a street lay to the east, it must have turned to the west. Areas of mortar floor associated with it, both inside and out, were found in A V, VIII, XI. The sole surviving fragment of masonry was 2 ft. 2 in. wide, very roughly built, and did not appear to have proper foundations. The building must have been destroyed to make way for the Period VI rampart, which in part overlay it.

The only secure dating evidence came from A V, 19, a thick layer of ash which lay under the mortar floor A V, 17. This produced a fragment of samian form 37, probably Antonine, and a group of perhaps slightly later coarse pottery (fig. 58, nos. 121–2). A XI, 21, 22, both sealed by the external mortar floor A XI, 20, produced groups of Trajanic-Hadrianic samian, including part of a form 37 attributed to Cocatus, whose work was primarily Trajanic. The latest piece, from 22, was part of a form 18, most likely to be Hadrianic. A VIII, 11, also sealed by the internal mortar floor, contained samian fragments of an Hadrianic-Antonine form 31, and another of the same form with the stamp REGULUS, probably of Hadrianic date.

Building A.III (fig. 17)

This building lay immediately behind the rampart to the east of the north gate; only a small part could be excavated at the south end of trench A I.

Between the destruction of Building A.I and the construction of this, a small ditch, 4 ft. 6 in. wide and 22 in. deep, of unknown purpose, had been dug parallel with and to the rear of the rampart. This had ultimately become filled with silt (layer 17), which contained nothing later than *c.* A.D. 200, although it had been cut through layer 18 which contained pottery of late third- to fourth-century date and which provides a *terminus post quem* for the building's construction. A bronze signet ring (fig. 37, no. 11) came from the filling of the ditch.

The exact relationship between the building and the town defences is not easy to establish. In section DD (fig. 9) it will be seen that the foundations (layer 19) for its north wall are cut through and yet sealed by layer 3, which must also have been piled to a height of at least 2 ft.

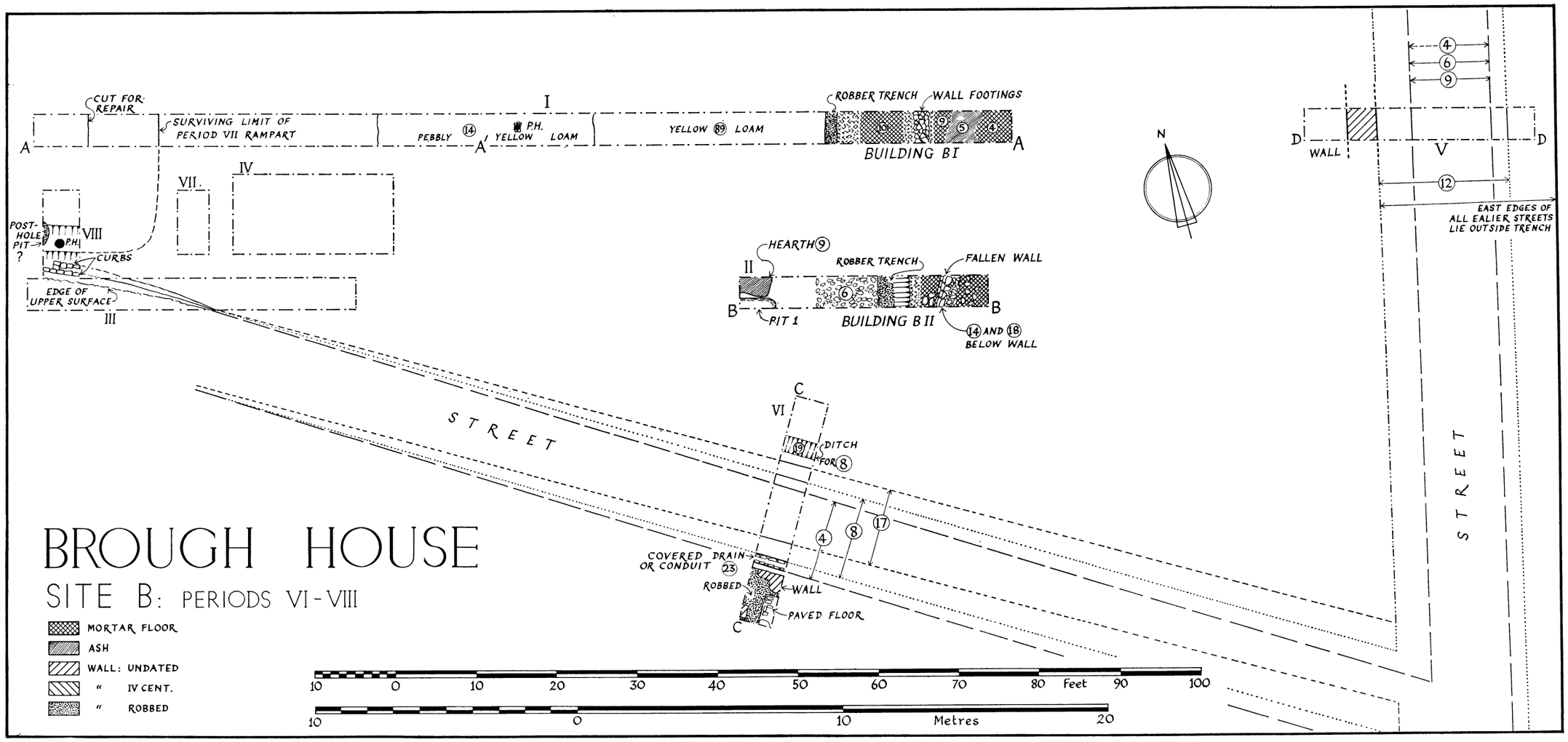


FIG. 26. Plan of Buildings B.I, B.II and B.III, the streets and interior of the West Gate in Periods VI–VIII

against part of the outer face of the wall. The relationship of layer 3 to the town wall has already been discussed (pp. 37, 41), and it would follow that this building was probably constructed at the same time as the Period VII B guardroom.

If the two sections AA and DD (fig. 9) are compared, it will be seen that a greater thickness of layer 3 shows in the latter than in the former, so that there was a small hollow in the tail of the bank just outside the building, and before layer 2 was added to the rampart. In this hollow, presumably protected from the wind, a small hearth and ash-pit had been made (layers 6 and 11) (fig. 17). The hearth (6) was associated with late third- to fourth-century pottery, and with the flesh-hook (fig. 41, no. 19).

There is little that can be said about the building itself. The only wall had been almost entirely robbed and only a small area of pitched stone footings survived. The earlier floor (layer 12a) was a yellowish sandy loam, with patches of clean, pale sand mixed with it. On top of this, a layer of dirty occupation material (12) had accumulated and this had in turn been succeeded by a mortar floor (9a), which in places had worn away. Such a floor could be more easily swept and no occupation layer separated it from the destruction level (9) above.

The date of construction has already been mentioned, while the only material to cast light on the length of occupation came from layer 12, intermediate between the two floors, which contained only late third- to fourth-century pottery (fig. 69, nos. 429–38). But none need be late fourth-century in date.

Buildings B.I and II (figs. 10, 23, 26)

Partly for the sake of convenience, partly because these two sections may have belonged to one and the same building, they are taken together. Included also is the single wall in trench B V.

Mention should first be made of the hearth (layers 8, 9, 10, 11) in the north-west corner of B II, which was earlier than the building, and which was associated with a single post-hole (17). The hearth was well constructed of large flat stones packed tight with smaller stones and gravel and had seen considerable use, to judge by the amount of ash that overlay it.

A little pottery was found in and around it, mostly of a Flavian date, but a small fragment of an early Antonine samian form 36 came from the filling of the post-hole.

Another hearth area, later than that just mentioned, was made up of layers B II, 22, 23, 24, 25. This may have been connected with Pit I and the irregular hollows filled with B II, 28. It seems probable that it was earlier than the building, with the robber trench of one of the walls cutting through these layers on their east side. The earliest silt in Pit I (layer 30) contained Antonine pottery (fig. 70, nos. 464–5).

The building itself, on the evidence of the slight remains of the walls and floors, does not seem to have been pretentious. The foundations, which only survived robbing in B I where a single course was left, scarcely penetrated below the floor levels, and the superstructure cannot have been more than about 16 in. wide. The floors, in both trenches B I and II (figs. 10 and 23), were at best thin mortary spreads less than an inch thick, or else clay interspersed with ashy layers containing a good deal of charcoal and thin layers of dirty soil.

The date of the building(s) is in little doubt. B I, 14, a layer which is earlier than the date of construction, contained a large group of samian, including pieces of Trajanic-Hadrianic

and Antonine forms, which Mr Hartley considered should have a *terminus post quem* of A.D. 140, and coarse ware pieces dating to the late second century (fig. 55, nos. 55–73).

The building itself produced coins and pottery of third-century date. Four coins came from the floor levels in B II: B II, 18, one of Claudius II (A.D. 268–70); B II, 15, one of Victorinus (A.D. 268–70) and one of Tetricus I (A.D. 270–3); and from B II, 13, one of Salonina (sole reign of Gallienus, A.D. 253–68). The pottery supports this dating and the groups range from the late second to the mid third century. The following layers produced significant groups: B I, 13, 8, 7 (figs. 69–70, nos. 443–63); B II, 22, 19[1] (which pre-dates the construction), 7 (figs. 70–1, nos. 470–94). So it would seem that the building was not in use for long after *c.* A.D. 273. It may be that the work started about now on the stone defences had some effect on its life.

After the building had been abandoned, another wall was built in B II, sealing its floor levels. It does not seem to have belonged to a building and appeared more likely to be a retaining wall for B II, 5. It was reasonably well constructed but the joints were not mortared and it ultimately collapsed inwards over layer 5. Material, which Mr Biek showed probably contained grasses, by examining an iron object buried in it, also seems to have accumulated against its exposed outer face (layer 4), and at one point in the deposition of this layer a rough cobbled path was laid (layer 6). Both layers 4 and 5 contained pottery which need be no later than the middle of the fourth century (fig. 71, nos. 495–517).

Finally, the wall to the west of the street in B V was altogether different in character. It was 3 ft. 8 in. wide above the foundations and was more substantially constructed, with well-coursed stone and good mortared joints. Yet there were no recognizable floor levels connected with it, and it would seem to be the boundary wall of an enclosure. It was later in date than the building(s) already discussed, as its foundations cut through the street layers earlier than B V, 18, and late third- to mid fourth-century pottery was found in B V, 25, 20 (fig. 67, nos. 391–2), all earlier than layer 18.

Building B.III (fig. 26)

The corner of a quite substantial building was found south of the street in trench B VI. The walls had been almost entirely robbed and only fragments of masonry survived, but they appeared to have been about 2 ft. 9 in. wide and were well built. In the inside angle at the corner, parts of a well-paved floor survived, which was made of blocks of stone, about 9 in. long by 3 in. wide, set on edge. No dating evidence was found.

Building G.I (figs. 27 and 28)

This was the only building of any consequence found in the Manor House garden, and four phases of its life could be distinguished, dating from the Antonine period to at least A.D. 360.

Phase A (fig. 28). In the first phase the building seems to have been entirely constructed of timber and no signs of masonry were detectable. One foundation trench (Beam-slot 1) was encountered in G IV, where the method of building used was similar to that employed in the barrack blocks of the earlier fort. A trench about 10 in. wide and 1 ft. 3 in. deep was

[1] This layer produced the cauldron fragments (IRON OBJECTS, no. 24–5) which, Mr Biek reported, showed evidence of grasses in the corrosion products.

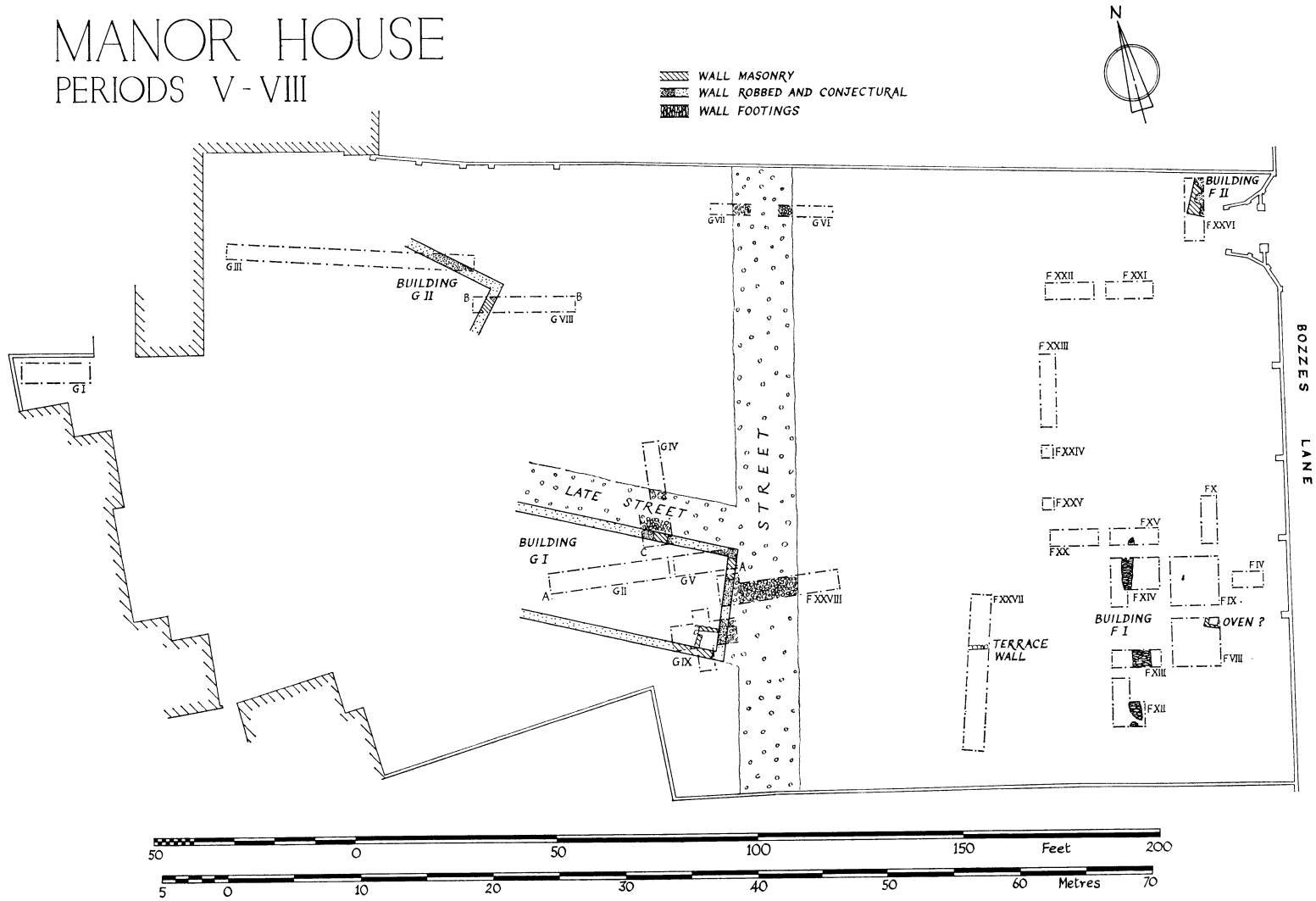


FIG. 27. Plan of Buildings G.I and G.II, F.I and F.II and associated streets

MANOR HOUSE: BUILDING G I

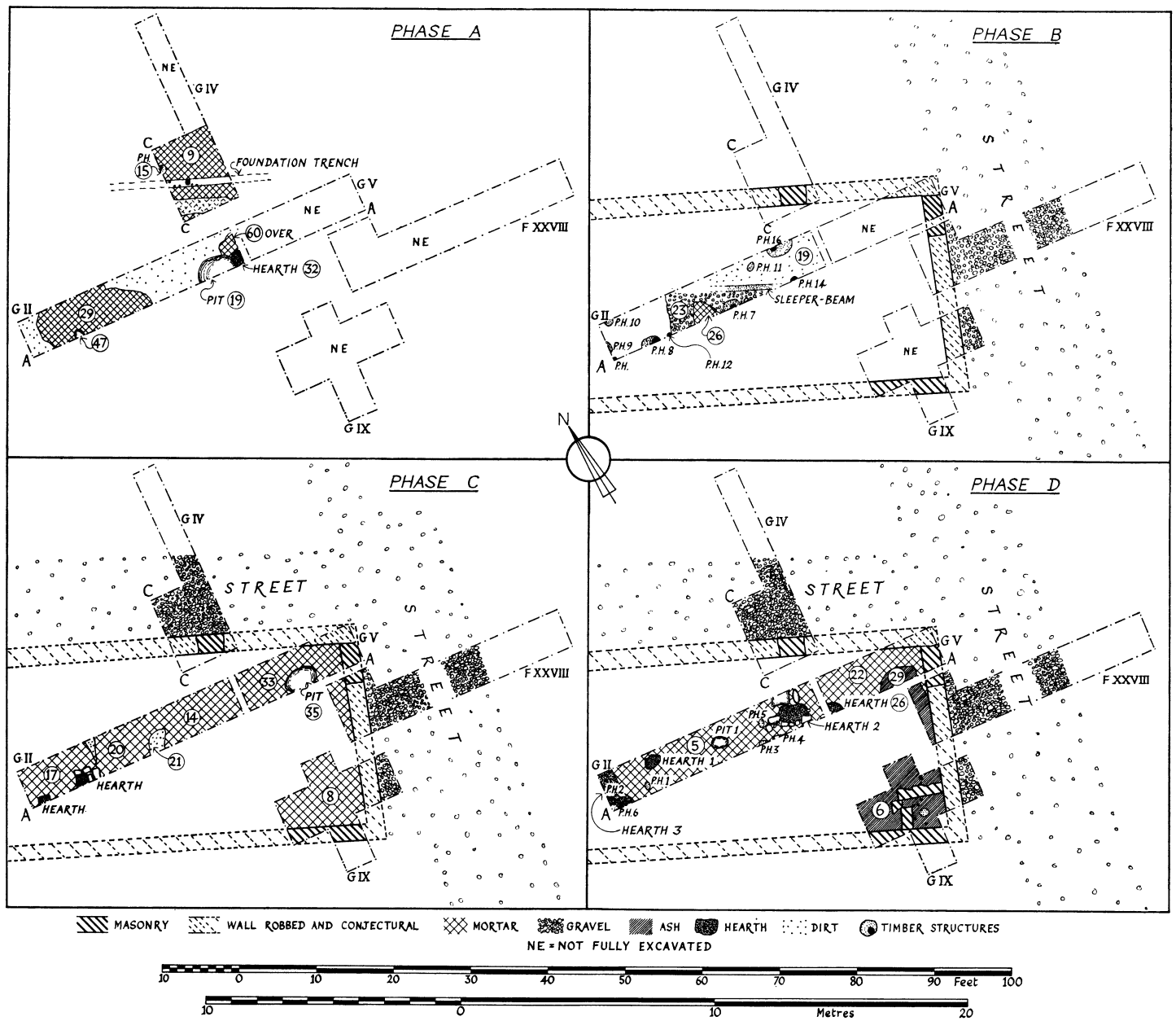


FIG. 28. Plan of Building G.I, Phases A–D

taken out; vertical posts were placed in it with no underlying sleeper-beam and the trench back-filled. The impressions of one major post of 6 in. diameter, and five smaller posts each only about 4 in. in diameter were seen in the trench filling. Some time later a single subsidiary post was found to have been placed about a foot away from the wall on its north side.

This wall would seem to have been an internal wall, as a mortar floor (G IV, 9) spread out on both sides of it and continued apparently into trench G II, at a slightly lower level, as layer 29, where it may have sunk into the filling of Pit 5. But it was not continuous in the latter trench and in places gave way to a dirt floor, while at the east end of the trench there was a hearth, layer 32, which was later sealed by a patch of mortar (60). Many bronze and iron fragments were found in this hearth. Finally, a pit was dug in the same area, partly cutting through the hearth and mortar, and a new floor (G IV, 7) laid north of the wall.

The date of this phase is provided by layer G IV, 10, a layer of sand sealed by the first floor (9), which produced a fragment of Antonine pottery (fig. 72, no. 525) and the hearth G II, 32, which contained Antonine coarse pottery and a fragment of an Antonine samian form 37. A date, perhaps advanced in the Antonine period, would, therefore, not be unreasonable for the construction.

Phase B (fig. 28). The first masonry appeared in this phase, replacing the timber construction of Phase A.

It was a simple rectangular building, 23 ft. wide and over 47 ft. long internally, although the full length could not be determined.[1] At the east end it fronted one of the main streets (p. 55), but its axial line was not at right angles to the street. The only information about the interior in this phase came from trench G II; unfortunately time did not permit more extensive exploration.

The outside walls had been mostly robbed, but short lengths survived in G IV, V, IX and F XXVIII. Where it did survive, the wall was 2 ft. 6 in. wide and built of well-coursed stone set in a yellowish, sandy mortar. There were two internal offsets: one of 4 in. immediately above the foundations, the other of 2 in. above it, making the overall width 3 ft. at foundation level.

No internal masonry walls were found belonging to this phase and the partitions were of timber. A shallow sleeper beam, 9 in. wide and 1 in. to 3 in. deep, divided the building roughly into two equal halves along its longitudinal axis. South of this partition and west as far as P.H. 12, the floor was of sandy gravel (layer G II, 23, 25); elsewhere of the dirty sand (layer 19) which also packed P.H. 14. A number of posts of variable size were observed on both sides of the central partition, but it is difficult with the limited amount of information available to see how these fitted into the overall plan. Presumably they indicated other partitions, but it is not possible to say how they ran.

The dimensions of the post-holes were as follows:

P.H. 7. A pit 2 ft. 6 in. across and about 1 ft. 10 in. deep was dug, into which was inserted a post about 9 in. in diameter. The pit was filled with greenish-stained sand, and the post socket with very loose, dark soil. There was a cavity at the top of the socket, suggesting that the stump of the post had rotted *in situ*.

[1] This building resembles A.I in many ways. Dr Stead reports at least two similar examples at Old Winteringham, both of which were associated with internal timber partitions and furnaces.

P.H. 8. The size of the pit was much the same as P.H. 7, although it narrowed towards the bottom. The post was a little larger, 1 ft. in diameter. The filling of the pit was also of dirty sand, but the post socket was filled with clean sand with some stone fragments at the bottom.

P.H. 9. Only an edge of the pit was found in the west section of the trench, and no socket was visible. The filling of the pit was mainly of dirty sand, but it also included lumps of red clay, while at the bottom there was a 3 in. thick layer of this clay.

P.H. 10. Again only the pit showed, filled with black-stained sandy loam.

P.H. 11. An oval pit, 13 in. by 9 in. with a depth of 13 in., filled with dark brown sand and with a stone base-plate. Other stones set vertically round the edges acted as packing stones.

P.H. 14. This post would appear to have been set in the pit which was dug towards the end of Phase A, and then filled with yellow sandy loam (G II, 19). The socket of the post, like that for P.H. 7, was almost entirely hollow and had a diameter of about 10 in.

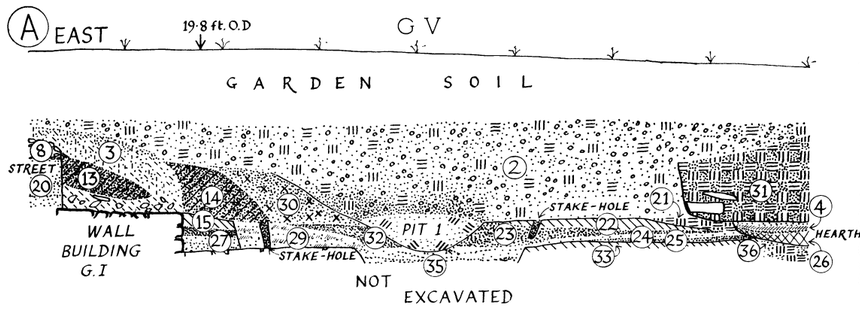
P.H. 16 was a large post-hole, with a pit 3 ft. 6 in. across and 3 ft. 1 in. deep, containing a post 14 in. in diameter. A number of large flat stones had been laid at the bottom of the pit, and the bottom 2 ft. had been packed with more stones. Higher up, the filling consisted of patchy sand. The post socket was entirely filled with patchy sand, much stained with charcoal.

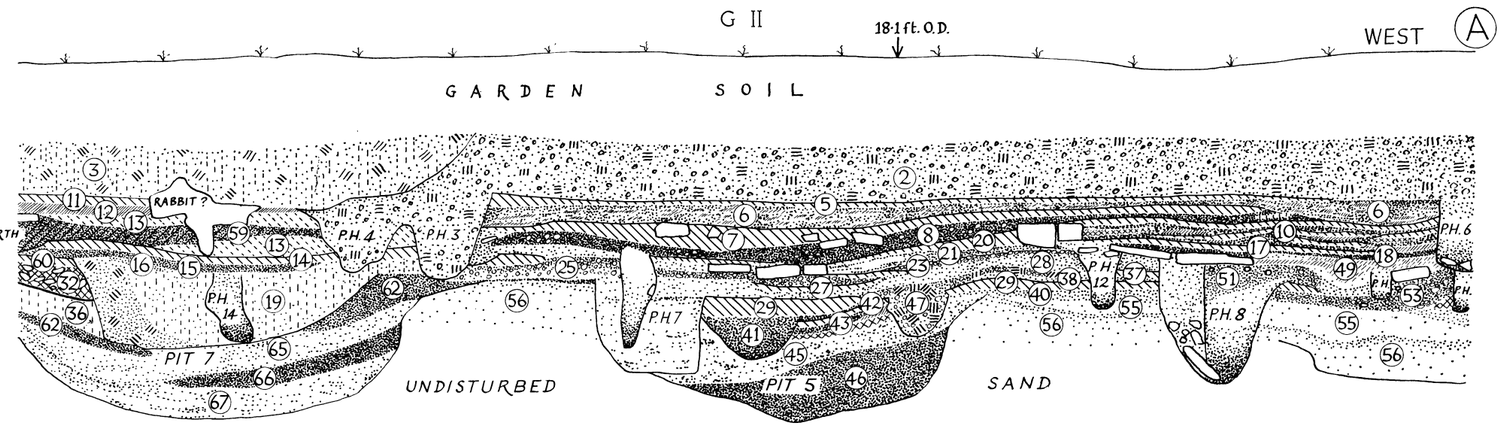
The dating for this phase relies on G II, 34, which contained coarse pottery as late as A.D. 190 (fig. 72, no. 534) and Antonine samian and G II, 30, which contained late Antonine samian forms Curle 21 and 33. Both these layers are intermediate between Phases A and B. G II, 19, the packing round P.H. 14, contained Antonine samian and coarse pottery dating from A.D. 170 (fig. 72, nos. 532–3). G II, 21, a layer of dirty sand which had accumulated on the gravel floor (23) produced pottery similar in date to that in G II, 19. A late second-century, or possibly early third-century date, is not unlikely for the start of this phase, although for reasons explained below, its life would seem to have been short.

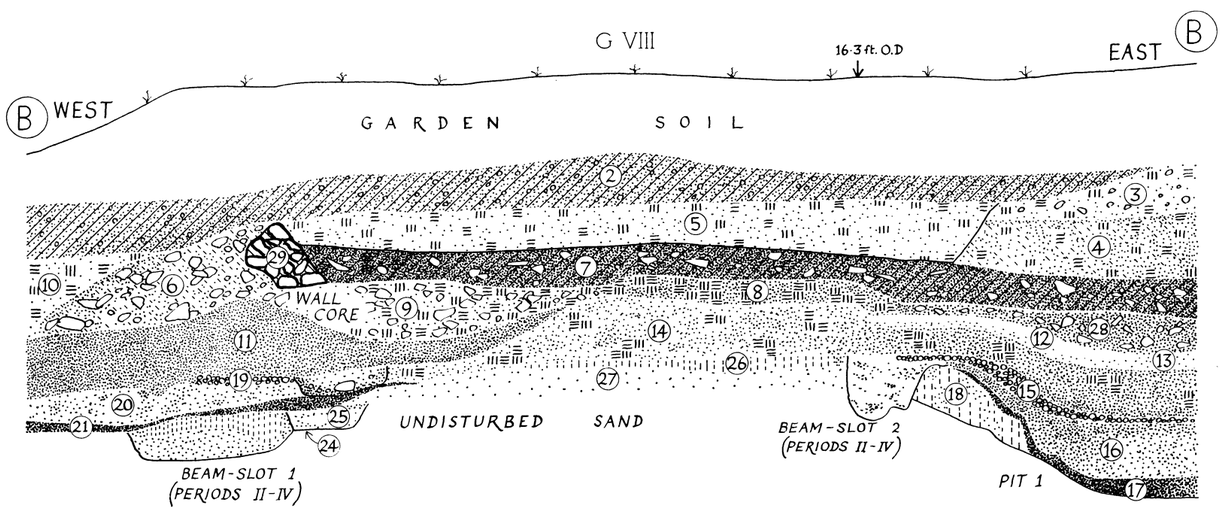
Phase C (fig. 28). All the internal divisions, with the possible exception of P.H. 7, were removed in this phase, and a new mortar floor laid to cover almost the whole area excavated (G II, 14, 20; G V, 33; G IX, 8). Towards the front of the building this floor had a foundation of flat stones, while other smaller areas of paving below it were found in trench G II, notably over P.H. 8. A break occurred, however, in G II at a point where a hearth was now built, and the floor 17, was a few inches lower than 20. The hearth was constructed with a rough surround of stones on three sides, with the fourth side left open. The area enclosed by the stone curbing was 18 in. deep and over 18 in. wide and it extended beyond the south section. A smaller and slightly earlier hearth was found 4 ft. further west. Several layers of dirty sand and ash (G II, 10) accumulated on the original floor in this part of the building and these were interspersed with three layers of mortar. Later, another mortar spread was laid to cover these and also the hearth. A pit, which could not be fully excavated, was also dug through the floor near the front of the building and filled with streaky sand (G V, 35).

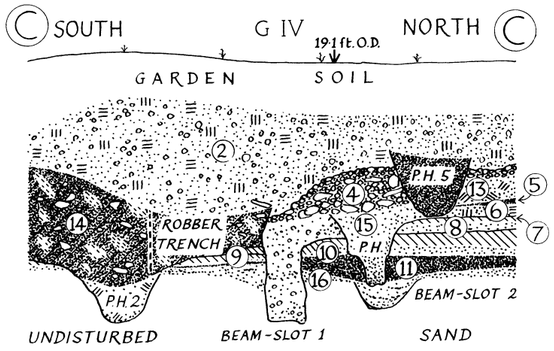
Finally a thick layer of dirty sand, G II, 8 was deposited over the floor and a new floor, G II, 7, was laid down. A thick layer of ash and dirty sand, G II, 6, was in turn allowed to accumulate.

MANOR HOUSE: SITE G









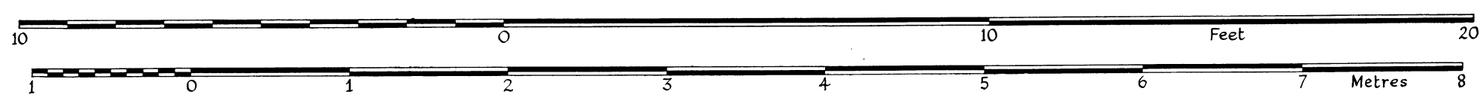


FIG. 29. Sections of trenches G II, IV, V and VIII, Manor House

The dating for this phase depends on the following layers: G II, 15 and 18 were sealed by the floor 14 and contained coarse pottery dating from A.D. 190 (fig. 72; nos. 544–51), and Antonine samian. Layer 15 and the floor 14 both contained parts of two stamped mortaria dated by Mrs Hartley to the Antonine and late Antonine periods (fig. 52, nos. 3–4). The floor 14 also produced coarse pottery and samian of late Antonine date. The mixed layers of ash and sand (G II, 10) between the floors 17 and 7 contained Antonine samian and late third-century coarse pottery (fig. 72, nos. 552–4). Layer G II, 13 produced pottery of late third-century date (fig. 72, nos. 555–7).

Phase D (fig. 28). A new mortar floor (G II, 5; G V, 22) was laid in this phase over the eastern part of the building, partly to seal the dirty deposit of ash (G II, 6) of the previous phase. Post-holes 1–6 in G II also belonged to this phase and several small pits had been dug through the floor in the same trench.

P.H. 1. Oval, 14 in. by 11 in. and 8 in. deep, and filled with soft, dark soil.

P.H. 2. Oval, 11 in. by 9 in. and 14 in. deep. The filling was similar to P.H. 1, but a baby had been interred in it.

P.H. 3 and 4. Both were about 1 ft. 10 in. deep, but the other dimensions could not be established, as the major parts of the holes lay outside the trench. They were filled with the same dark brown, stony soil as layer 2.

P.H. 5. Oval, 12 in. by 9 in. and 11 in. deep. The filling was the same as P.H.s 3 and 4.

P.H. 6. Only a small part was exposed in the south-west corner; it was 1 ft. 6 in. deep, and the filling consisted of dark soil with two packing-stones that had fallen to the bottom. Both this post-hole and P.H. 2 had been dug through Hearth 3.

Three hearths were found in G II and part of another in G V (layer 26). Hearth 2 had a very rough stone curb on its south side alone; the remainder were completely open. Hearths 2 and 3 were large and surrounded by a considerable spread of charcoal and ash. At the east end of the building a large area of floor, and the layers underlying it, had been dug out to a depth of about a foot and used as an ash pit, G IX, 6. The ash showed a distinctly laminated appearance, each tip being heavily compressed; the general colour was greenish-grey and the texture was gritty with larger fragments of cinder and clinker. Analysis[1] showed that the ash was almost certainly derived from coal, and it may be mentioned here that lumps of unburnt coal were comparatively common finds in many levels at Brough.

After this ash had been deposited a small area in the south-east corner of the building was enclosed by two roughly built walls (pl. XV *b*). The northern of these two walls had been built as a terrace wall with only one proper face. The other was faced on both sides, and an 18 in. gap existed between the ends of the two walls, which was partly blocked by a single large stone set further to the west. A number of small stake-holes and a single post-hole, 12 in. in diameter, were found in the newly-enclosed area.

The date for this phase is provided by the latest occupation of Phase C, in particular layers G II, 6, 10 and 13, which all produced pottery of third-century date, that from layer 6 being late in the century. The ash tip, G IX, 6, produced much later pottery including several fragments of Huntcliffe-type ware (*Gillam*, types 161 and 163 dated to A.D. 360–400;

[1] Kindly carried out by Messrs Capper Pass Ltd., on the instructions of Mr Peter Wright. See pp. 227–31 for a discussion on this, and also on metal-working at Brough.

figs. 72–3, nos. 559–69). Nevertheless, the latest Crambeck wares dating to after A.D. 370 were not represented, although G IX, 2, a layer which completely sealed the building, produced two fragments of painted Crambeck ware.

The use made of this building can probably be related to the large number of hearths in all its phases. These, together with the fact that coal was used as a fuel, and the large quantity of ash collected, especially in Phase D, strongly suggests that some industrial process, most likely metal-working, was being carried on. The evidence for this is discussed in full on p. 228.

Building G.II (fig. 27)

One corner of a masonry building was found extending between trenches G III and VIII. There is little that can be said about it. Except for a length of wall-core left standing in G VIII, the remainder had been completely robbed, probably in Roman times. The only traces of floor levels survived in G III, where the shattered and broken remains of a mortar floor (layer 13) were overlaid by a rough cobbled floor (layer 12). Both floors died out at a point 42 ft. from the east end of the trench, and although part at least of the remaining length of trench must have been inside the building, all signs of it had been removed. The dimensions of the robber trench would suggest that the wall had been originally about 2 ft. 6 in. wide and that the foundations had penetrated about 2 ft. below floor level. No floors were detectable in G VIII.

The latest groups of pottery to be sealed by the floor of the building came from G III, 8 and 23 (fig. 73, no. 573), which produced late second- and early third-century groups respectively. It would seem therefore to have been constructed at about the same time as Building G.I. Its subsequent history was, however, different. Medieval wares were well represented in later levels and pits in the Manor House garden, and, if the wall-robbing had been carried out after the Roman period, it could probably be assumed that they would have been present also in the robbing-trenches. Two groups of sherds from G VIII, which must post-date the robbing, might be taken to suggest the time when the building was destroyed. G VIII, 4 produced pottery which is probably late third- or early fourth-century in date; and G VIII, 5, pottery of third-century date (fig. 74, nos. 590–1) so it would seem that the building scarcely survived beyond the end of the third century.

Building F.I (fig. 27)

Part of the very mutilated foundations of a wall were found running through trenches F XII, XIII, XIV and XV. Only in F XIII did the two original edges appear to survive, so that it is difficult to say whether they were all part of the same continuous length of wall. It is more likely that they were not, as the two lengths in F XIV and XV did not line up well with the other two, even when allowance is made for the destroyed edges. Much stone was found spread over a considerable area of site F, presumably the debris of destruction.

It is also possible that the stone-lined pit, or oven, in F VIII belonged to this building. It was rectangular in shape, and if it was an oven, the stoke-hole would presumably have been situated under the baulk to the north. To construct it, a U-shaped hole had been scraped in the underlying layers to a depth of 15 in., and then surrounded by a curb of stones set in yellow mortar. Four courses of stone survived on the east side, two on the south,

but only one on the west. Doubts about its function as an oven arise, as the structure itself bore no sign of burning; however, a foot-thick layer of ash and charcoal covered the bottom.

The foundations mentioned above were cut through layers (F XII, 3, 4; XIII, 6, 7; XIV, 4; XV, 5, 6) which produced pottery and which can best be dated to the period A.D. 350–70 (fig. 74, nos. 592–614; fig. 75, nos. 615–44; figs. 75–6, nos. 645–9).

The oven was constructed over layers containing no datable finds, while F VIII, 6, from its filling, produced pottery of uncertain date.

Building F.II (fig. 27)

The corner of what must have been a substantial building was found in trench F XXVI, but as in Building F.I, only the bottom course of masonry survived, and this had no other foundations. The internal angle at the corner had been completely removed, together with the inside face, so that no indication of the original wall thickness could be obtained, although it must have exceeded 3 ft. A complete, unused, box-type flue-tile was found in the robbed area.

The only indication of a date for this building came from F XXVI, 5 and 6, which were below the wall. Both layers contained pottery of the first half of the fourth century.

Other Buildings and Features (fig. 30)

A length of a small ditch was uncovered in the garden of Grassdale; it was at the most 5 ft. 4 in. wide and 3 ft. 4 in. deep, and in places had a flat bottom, in others a V-shaped one. It was earlier than the Period VI rampart, by which it was in parts sealed. It is tempting to link it with the Flavian temporary camp, but this will not do, as in trench D V it was dug through layer 6, which contained Antonine samian (p. 112). The ditch itself contained pottery going down to the end of the second century. Several small gullies were found in the same area, as well as some traces of timber buildings: E I, 38 and 40; D I, 33 and D II, P.H. 1 and 2. These ranged in date from Flavian for that in E I to Hadrianic-Antonine for those in D I and II.

In 1962, Mr J. Leonard, who occupies one of the new houses built at Grassdale and now called 5, Grassdale Park, found while digging his garden a 10 ft. stretch of a substantial wall, with foundations 3 ft. deep.[1] It ran east–west, but at the east end turned towards the north. It seems likely that it is part of the building encountered by Mr Hunter in 1952, and by Mr Barker, one-time owner of Grassdale, when a swimming pool was being constructed[2] in 1958.

Extramural Settlement and other Finds

Apart from burials reported from a number of sites to the north and east of the walled area, there is also evidence of buildings and roads.

Dr Corder considered that the Roman quays lay near the Police Station and that a road ran north from them outside the west wall of the town. Reference is made to this road being found in the gardens of houses west of the High Street.[3] But the quays could easily have come as far north as Cave Road, so as to flank the higher ground on the edge of what is now a

[1] Information from Mr John Bartlett, F.S.A., Kingston upon Hull Museums.

[2] Unpublished.

[3] *Brough*, III, 21.

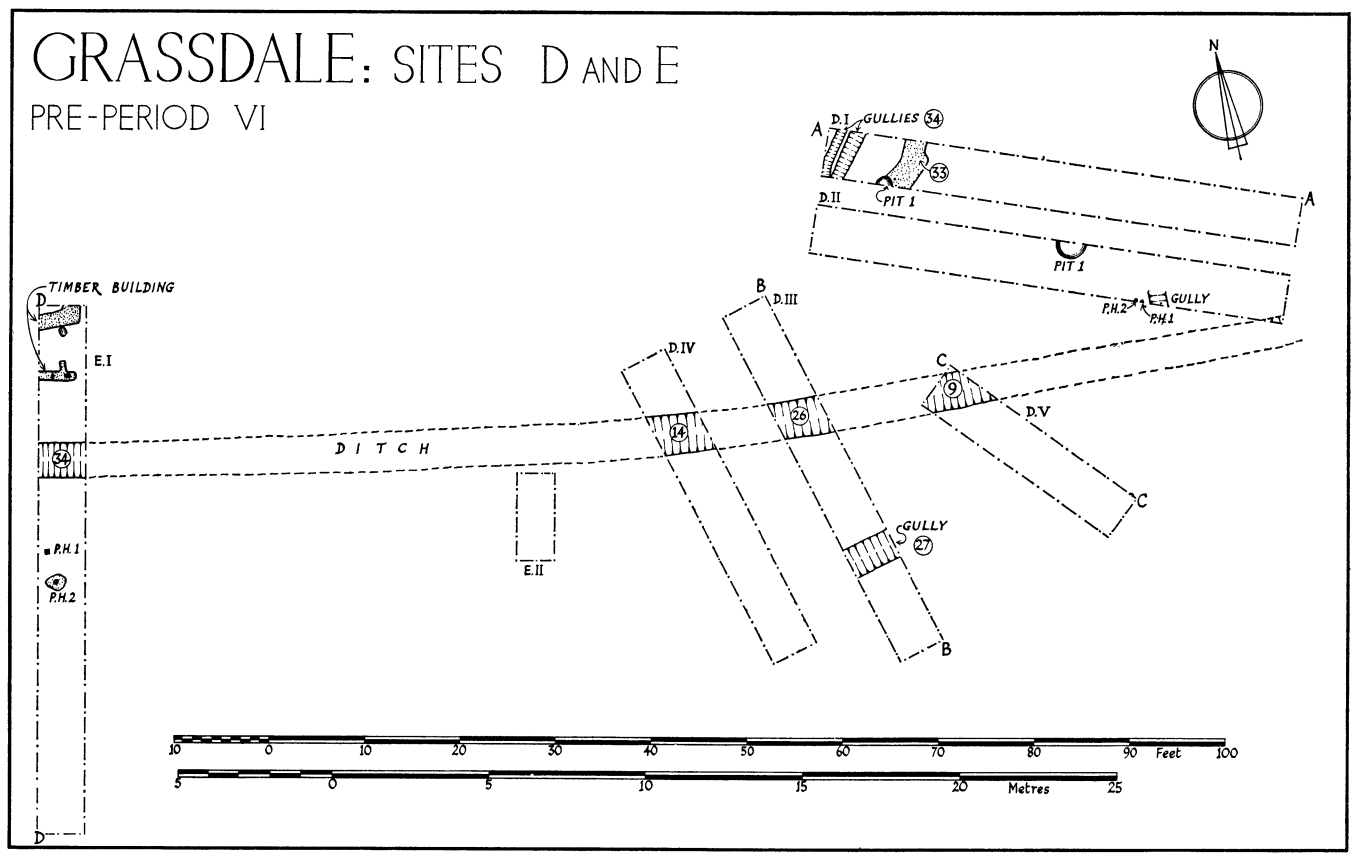


FIG. 30. Plan of structures on Sites D and E (Grassdale) earlier than Period VI

series of water meadows parallel with the west defences. It is possible that the so-called 'road' found in the gardens is, in fact, part of the quay system, for the road as drawn in by Dr Corder in *Brough*, III, fig. 1, can hardly have existed for the following reasons. It must have crossed ground which was at least marshy, if not actually under water.[1] The road from the west gate runs northwards close to the curtain wall[2] presumably to join that from the north gate, instead of striking out in a north-westerly direction to join Corder's suggested road (fig. 12). In 1961, two short and possibly connected sections of road metalling were reported from behind Barclay's Bank and Pocklington's shop next door. Unfortunately the owner of the shop, although he reported the find, refused to allow Mrs Wacher to see it. These two sections may be a continuation of the road from the west gate, before it joined the road from the north gate. Another area of metalling was seen in the garden of Wyton House, which must lie on the line from the north gate. A continuation of the sewer trench just south of the golf-course showed another section, which is again probably part of the same road. So it would seem that this road does not follow the modern line of Cave Road, in spite of its straight course. Instead, it seems to have run due north until it reached the golf-course, before turning north-west to take up the line of the road to Brantingham. The section of road seen near the golf-course appeared to show two different tracks, as a stone-walled building had been later constructed over the eastern part of the metalling.

Another extensive area of stone spread was seen in the garden of Mr and Mrs Hamlyn of Monksbridge, Cave Road, but its interpretation is difficult. It may be the spread from a destroyed building.

Second-century timber buildings and pottery, and a third-century coin were found by Mr Peter Wright in his garden at 5 Cave Road, while further finds of pottery and metalwork were reported by Mr Tony Burnett from Atkinson Drive. The latter is part of a new housing estate erected during the early 1950s in the corner formed by the junction of Welton Road with Elloughton Road.

So it would seem that a fairly extensive extramural settlement existed north of the walled area and stretched from the edge of marshy ground west of Cave Road, almost as far as Elloughton Road, a distance of about half-a-mile; while to the north it extended at least as far as the golf-course, a distance of about 200 yards from the north gate.

Lastly, a trench dug in the garden of Mr Ball's bungalow, erected just south of the junction of Bozzes Lane with Station Road, revealed an extensive cobbled area, which could be part of a road running from the south gate to the Humber foreshore. Alternatively, it might have been part of a quayside along the same shore, which in Roman times was probably much closer to the south end of the town (see p. 78).

[1] The sewer trench revealed marshy ground at the south end of Cave Road, near Barclay's Bank, and close to where the present stream crosses Cave Road.

[2] See p. 28.

NUMERUS SUPERVENIENTIUM PETUERIENSIUM

By R. S. O. Tomlin

In a military context the meaning of 'supervenio' is basically 'to come upon unexpectedly', usually with a modification of sense depending on whether an enemy or an ally does so. In Livy, it occurs twice in the basic sense only (of arriving when something else is happening): 30.25.9; 2.3.5. But most commonly it refers to an ally's arrival: 24.35.9; 34.28.4; 34.29.4; 42.56.5, and once to an enemy's sudden appearance: 28.7.7. Both senses appear in Vergil:

> Addit se sociam timidisque supervenit Aegle. (*Ecl.*, VI, 20)
>
> semianimi lapsoque supervenit, et pede collo
> impresso dextrae mucronem extorquet et alto
> fulgentem tingit iugulo (*Aen.*, XII, 356)

Both senses also continue until the time of Vegetius, which is roughly contemporary with parts of the Notitia:[1]

1. of surprise attack: Justin ii.11.12. dum nox occasionem daret, securis et laetis supervenien-dum; *Epitome De Caesaribus* 46.2. Valens fled to a hut after the battle of Adrianople, and it was burnt over his head 'supervenientibus Gothis'; Vegetius 91.17. ultimos vel certe insperatus superveniat; 114.7. secreto itinere superveniens obprimit ignorantes.
2. of reinforcement: Tacitus, *Hist.*, IV, 25 nullis supervenientibus auxiliis; Suetonius, *Otho*, IX, 3 quippe residuis integrisque etiam nunc quas secum ad secundos casus detinuerat, et supervenientibus aliis e Dalmatia Pannoniaque et Moesia . . ; Vegetius 79.14 f. Praeterea nosse debemus hostium consuetudinem, utrum nocte an incipiente die an hora reficiendi lassis supervenire consuerint, et id vitare, quod illos facturos putamus ex more.

'Superventor' and 'superventus' in late Latin bear only the *aggressive* sense of 'super-venio' (surprise attack). 'Superventus' is a rare word before Vegetius in a military context. It occurs once in Tacitus (*Hist.*, II, 54), referring to a false rumour at Rome that Legio XIV had arrived in the north and joined Otho's defeated army in destroying the Vitellians:

> adfirmans superventu quartae decimae legionis, iunctis a Brixello viribus, caesos victores, versam partium fortunam.

The context implies that 'superventus' means 'arrival'. In Vegetius it is a common word, and nearly always means 'surprise attack' (17 times according to the Teubner index; 4 times coupled with 'insidiae'). Twice it means a 'skirmish'; 71.1, on guerilla warfare: qua ratione famem collecti patiuntur hostes, dispersi vero crebris superventibus facile vincuntur; 105.15: (the technical term) 'globus' autem dicitur qui a sua acie separatus vago superventu incursat inimicos, contra quem alter populosior vel fortior inmittitur globus.

'Superventor' occurs as a personal name (*R.I.B.*, 16: Valerius Superventor; *Mansi SCC*, VI, p. 441: Superventor, deputy of Bishop Claudius, one of the signatories of the first Council

[1] Vegetius, *Epitoma Rei Militaris*, ed. C. Lang (Teubner). References are by page and line number. *Notitia Dignitatum*, ed. O. Seeck. Both are of uncertain date and incorporate earlier material, but for the present enquiry may be taken as documents of the early fifth century.

of Arausio); twice as a legal term in titles of the Lex Burgundionum (*MGH Legum sect.*, I, ii) meaning a housebreaker; three times as a unit-title in the Notitia (*or.* XXXIX, 21. *milites superventores* at Axiupolis, Scythia; *occ.* XXXVII, 18. *milites superventores* at Manatias, tractus Armoricanus; *occ.* VII, 96. *superventores iuniores, legio pseudocomitatensis* in the Gallic field-army); and once in Ammianus Marcellinus (18.9.3) as one of the six *legiones* which took refuge in Amida. Thus originally it was a title of *limitanei*. Its meaning must grammatically be 'one that delivers a surprise attack'. This type of title, formed from the supine stem of verbs, is fairly common in the Notitia; it seems in the majority of cases, including 'superventor', to be purely ornamental, without denoting any special role. Thus there are Exploratores, Insidiatores, Exculcatores, Praeventores, etc., but it should be noted that there are no Explorantes, Insidiantes, Exculcantes or Praevenientes. Indeed the *numerus* at Malton is the only one in the Notitia with a unit-title formed from a present participle, a peculiarity which suggests that, unlike the run of nearly similar titles, it is supposed to mean something.[1] Moreover, it is clear from the parallels collected above that 'superveniens' can be used in either the sense of 'taking by surprise' or of 'reinforcing'; so it is wrong to class it as a synonym for 'superventor' (*vide Brough*, III, 27).

Units commonly bear the name of their station: e.g., *milites Bingenses*, Bingio (*occ.* XLI, 22); *milites Grannonenses*, Grannono (*occ.* XXXVII, 23) and seven auxilia in Moesia I (*or.* XLI, 21–7). Still more common are units in the field armies bearing titles derived from forts: e.g. *Lancearii Comaginenses* and *Lauriacenses, pseudocomitatenses* in Illyricum (*occ.* VII, 58–9). There seems also some evidence for units with titles derived from one fort stationed at another: *milites Latavienses*, Olitione (*occ.* XXXVI, 5) perhaps from Latavi; *milites Anderetiani*, vico Julio (*occ.* XLI, 17) and *classis Anderetianorum*, Parisiis (*occ.* XLII, 23) both perhaps from Anderita; *milites Acincenses*, Antonaco (*occ.* XLI, 25) perhaps from Acincum. By analogy *Petuerienses* derives from Petuaria.

The usage of 'supervenio' suggests that the *Petuerienses* were either making a surprise attack, or were acting as a reinforcement. The latter seems far more likely. The *numerus* could have been reinforcing either naval units at Brough, or, later in its career, an unknown unit at Malton.

[1] We may exclude *constantes* (*or.* IX, 31, etc.) and *petulantes* (*occ.* VII, 11, etc.), as being not participles, but adjectives of no exact military meaning.

THE RIVER HUMBER[1]

(Figs. 31–3)

To substantiate the claim that has been made that *Petuaria* was the principal Humber port from the mid second to the mid fourth century, it is necessary first to examine the geological and geographical setting of the river in some detail, more especially at those sites known to have been occupied in Roman times.

The geological succession of East Yorkshire is a continuation of that to be found in Lincolnshire, with a sequence of Triassic, Jurassic and Cretaceous formations from west to east at Brough.[2] There are also considerable areas on both shores covered by glacial drift, lacustrine sands, gravels and clays of Humber fluviatile, known locally as warp. The situation of Brough has already been briefly considered in connexion with the finding of the North Ferriby boats.[3] It lies at the end of a small promontory of Cave Oolite, which, because of a fault or anticlinal fold along the line of the river, is orientated roughly north-west to south-east, and emerges in the river bank as a reef known as Brough Scalp, just downstream from the Roman site. Cave Oolite readily decomposes on exposure into porous, friable, oolitic sand, with which it is covered at Brough, although the rock itself outcrops about 400 yds. north.[4] There is also gravel, which is recorded as being very thick in places.[5] There can be little doubt (see p. 78, below) that in Roman times a natural inlet existed west of this promontory. Old Winteringham, a known Roman site, lies on comparable ground due south of Brough on the opposite shore. There, just before it reaches the Humber, Lincoln Edge bifurcates into two ridges with Winteringham and Whitton at the ends of the eastern and western approaches respectively. The Roman site at the former lies slightly further east at Old Winteringham, with the haven, now completely silted up, at 'Flashmire' on the southern shore opposite Read's Island.[6] The mouth of the Trent lies just west of the Whitton ridge, but its swiftly flowing waters would not provide the same shelter as the havens at Brough or Old Winteringham. Two other known settlement sites at North and South Ferriby, and a possible third at Faxfleet, are probably the only others which need be considered as harbours. North Ferriby seems only to have been used before the Roman occupation.[7] It is situated on a narrow plain of drift at the foot of the Yorkshire Wolds, and affords little or no shelter from the main stream. South Ferriby, in a comparable setting on the south bank is slightly better placed near the mouth of the River Ancholme, and might have provided better harbour facilities. The site at Faxfleet is close to the mouth of the

[1] The writer gratefully acknowledges the generous help given by Dr A. H. W. Robinson, M.SC., PH.D., Dept of Geography, and Mr R. J. King, Curator, Dept of Geology, of Leicester University; Miss M. Perry, Curator, Hydrographic Dept, Ministry of Defence (Navy); by Mr D. F. Tute, a Goole Pilot, and by Mr L. Biek, A.M. Laboratory, in compiling this section.

[2] C. Fox-Strangways, *The Jurassic Rocks of Britain. Vol. I (Yorkshire)*, 1892, p. 215, and *The Water Supply of the East Riding of Yorkshire* (1906), p. 3.

[3] E. V. Wright and C. W. Wright, *P.P.S.*, XIII, 116.

[4] Fox-Strangways, op. cit., p. 215.

[5] Ibid.

[6] Information from Dr Ian Stead, F.S.A., who has plotted the haven outlines.

[7] *Antiq. J.*, XVIII, 262; *Hull Museum Publications*, no. 212, 237.

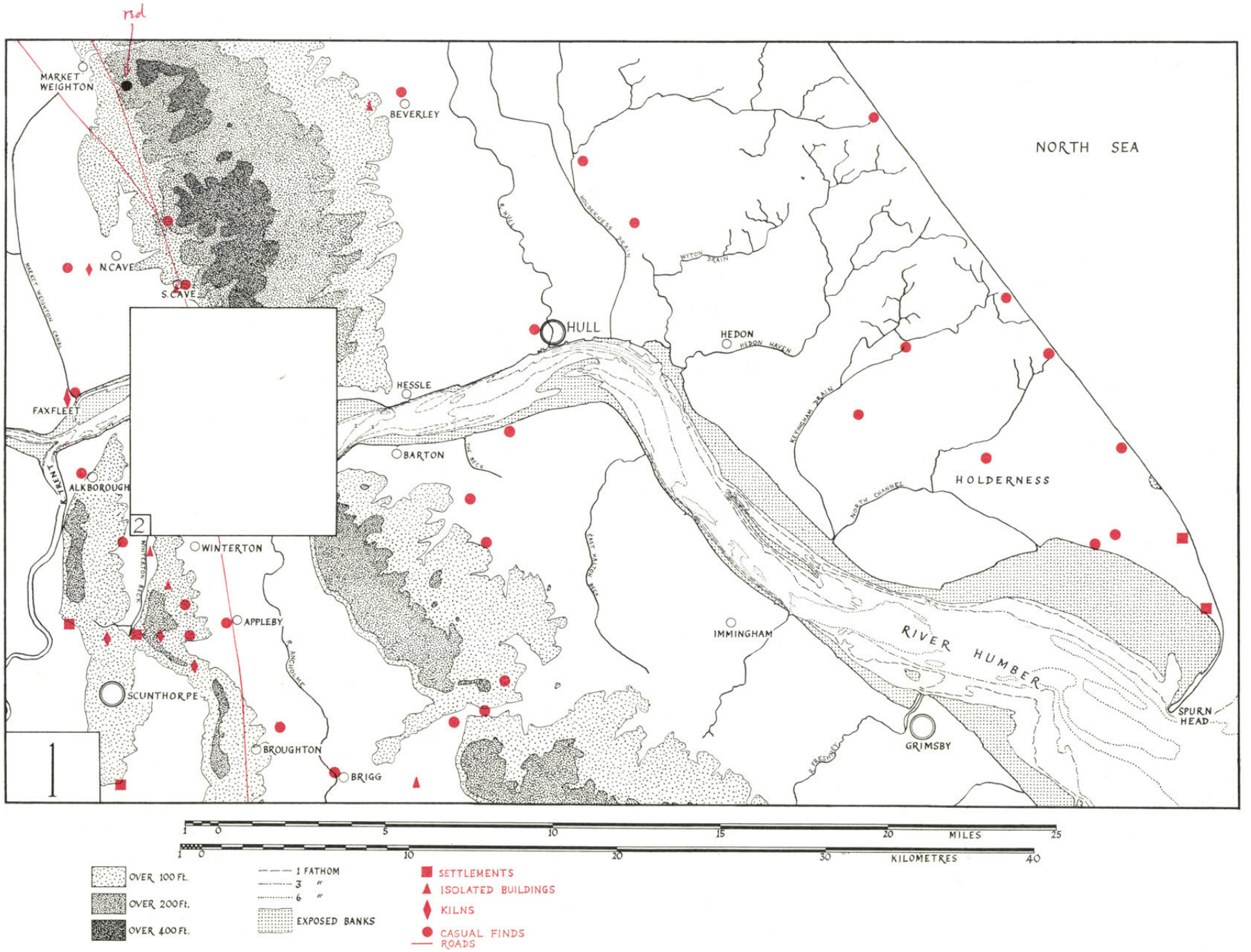


FIG. 31. Roman sites in south-east Yorkshire and north Lincolnshire related to topographical features and the river Humber

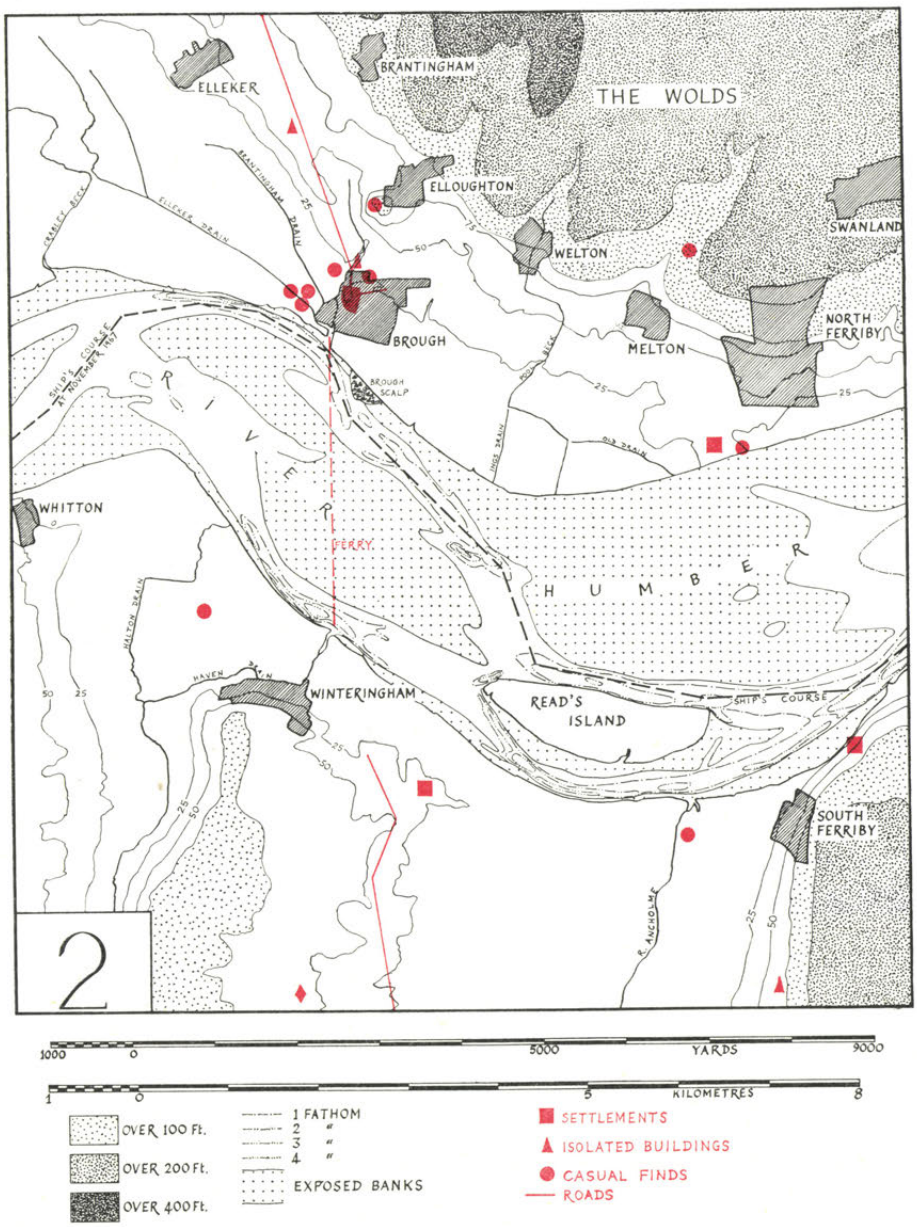


FIG. 32. Roman sites near Brough and Winteringham related to topographical features and the river Humber

Market Weighton canal, which has probably replaced an earlier river course; it lies on Triassic marls. But all three sites share one grave disadvantage when compared with Brough or Winteringham. Any harbours connected with them would have bottoms of clay or mud, whereas those of Brough and Winteringham would evidently have been of sand or shingle, providing foreshores on which ships could be beached more easily for repair or laying-up in winter. The sewer trench at Brough provided evidence for such a beach there. At its southern end, between Manholes 7 and 8 (fig. 1), a layer of coarse sand and small white pebbles (cf. J I, 5 and 6) was found at approximately + 9 ft. O.D.[1] The level rose slightly towards the north, and the overall impression was that the trench was being cut obliquely along a buried foreshore, a suggestion supported by the appearance of the shingle itself. At one point it contained slightly water-worn Antonine samian and coarse pottery of second- and third-century dates (fig. 76, nos. 655–8). Normally[2] one would expect a peat layer over the gravel here; its absence would suggest that it was at some time scoured by water, so moving the shingle about extensively, before it became covered by silt or warp. The lowest-lying part of the walled area of *Petuaria* was the south-west side, which seems on present evidence to have been inundated probably in the fourth century. It is generally acknowledged that there was a marine transgression during the later Roman period, but opinions vary as to its precise date and the effect it had on the Humber region.[3] It is possible that this marine transgression caused the silt layer (J I, 4) here found laid down on the shingle. A layer of different composition (p. 214) in G I suggests the northern limit of the area affected. There the top appeared at about + 12 ft. O.D.; this is 2 ft. lower than the top of the silt in the sewer trench and the most likely explanation would be that the warp had formed a raised mud-bank a short distance offshore. It is interesting that the south-east corner, as observed in Grassdale, where the contemporary level was at about + 15 ft. O.D., appears completely to have escaped being flooded. So it would seem that the maximum height to which the water rose here, presumably at High Springs, would have been about + 12–13 ft. O.D. With a tidal rise of about 21 ft. at High Springs at Brough, this would imply that mean sea level during the transgression was about two feet higher than today. Yet, in Manhole 9, some 50 ft. south of G I, and roughly on the line of the defences, no silt was observed, although the bottom of the defences there must have been at about + 12 ft. O.D. The town wall was presumably built to be well clear of the highest spring tides experienced at the end of the third century. So the gravel beach exposed some three feet lower in the sewer trench was clearly not below and was probably slightly above the reach of High Springs.

All this would imply that mean sea level in the third century could have been about five feet lower than now, and was probably less (fig. 33).

In view of the foregoing arguments, it is difficult to reach any other conclusion than that Brough and Old Winteringham would have provided the best natural harbour facilities. Undoubtedly the Romans early recognized their pre-eminence in this respect, as the be-

[1] Yet in the Station Yard between Manholes 15 and 15 A, undisturbed sand and gravel was found immediately below the modern layers at + 13 ft. O.D. No silt was observed. Unfortunately the vital length between Manholes 6 and 15 was dug before a full-time observer could be present. But it would almost certainly have been in this stretch that the original Roman shore-line of the haven occurred.

[2] Cf. p. 76, n. 5.

[3] A. G. Smith, *New Phytologist*, LVII, 45; D. M. Churchill, *P.P.S.*, XXXI, 13.

haviour of Ermine Street and its continuation over the Humber shows. With its tributary river systems, the Humber penetrates not only Yorkshire, but also the heart of the Midlands, reaching out nearly to the Welsh border, and its importance as a major point of entry[1] would not have been overlooked by the Romans. For them to have underestimated its importance would have been a grave strategic error, especially when the threat to the east coast began to grow more serious very early in the third century. Certainly they then took precautions to guard the mouths of the Wash and the Thames, the two other main east coast river systems, by placing forts at Brancaster and Reculver.[2] For this reason alone, the provision of a naval base on the Humber would seem a necessity.[3] Either Brough or Old Winteringham would appear to be an obvious choice, but tactically both would have the disadvantage of being about 35 miles from the sea. Even with a favourable wind and a following current of 3–4 knots, it would still take up to 8–9 hours to reach open water. Potentially then, both sites could provide good harbours, which were undoubtedly used for cross-river traffic, but it still remains to be shown which of the two was more suitable for traffic passing up or down river. The deciding factor is most likely to be the ease with which they could be approached.

The Humber has never been an easily navigable river, with its rough water, constantly changing shoals and banks, and high current speeds combining to create very considerable difficulties, which were recognized in the middle ages.[4] A current speed of 3–4 knots is now given for the river in general, rising to 5–6 knots in some places.[5] The fastest currents are experienced on the incoming tide, and there is only about an hour of slack water at high tide. A ship making either for Brough or Winteringham would be carried by the current close to the north shore at Hull, where the main channel lies, without experiencing too great difficulty. From there, navigation is more hazardous, and Mr Tute has the following comments to make on the comparative accessibility of Brough and Winteringham:

'During the ten years and more that I have been piloting on the Upper Humber, the main navigable channel at Brough has changed many times, from the south channel at Winteringham, to mid-channel and to the north channel at Brough. Up to November 1967 the main channel passed close to Brough (fig. 32) and had been fairly constant in direction and depth for over two years. I believe this to have been caused by the new training wall built west of Brough Haven. This channel has now silted up above Brough, and the main channel now passes close to Winteringham. But even when the Brough channel was in use, barge traffic, low-powered vessels and those drawing no more than 7 ft. of water still used the south channel at Winteringham from half-flood onwards. Vessels using this channel would keep the full force of the flood-tide and would be assisted on passage.

'As can be seen from the Humber Conservancy charts (figs. 31–2), the main channel from Hull runs near the south bank up to Read's Island, and as far as I can ascertain this has been fairly constant since the 1930s. Therefore a sailing vessel making for Brough today would have to cross the tide; no easy matter for the types of ship like those known to the

[1] C. Fox, *Personality of Britain* (1959), passim.

[2] *Richborough*, v, p. 260.

[3] A base situated on the North Sea coast, near the mouth of the river cannot be ruled out, but, if one ever existed, it would have been entirely lost in coastal erosion.

[4] *Lincs. Architect. and Arch. Soc. Rep.*, I, 12.

[5] The Admiralty, *North Sea Pilot*. This is the figure given for Blacktoft Channel. But see *P.P.S.*, XIII, 116, where a speed of up to 7 knots is quoted for Hessle Roads.

Romans, and Winteringham would be the safer and easier place to make for. But if there had been a channel on the north side of the Humber in Roman times,[1] then the approach to Brough would have been the easier and that to Winteringham the more difficult.

'To reach either place vessels would only be able to navigate on the flood-tide, to make the most of the current; wind speed and direction would only be of minor importance, unless it was stronger than Force 6.

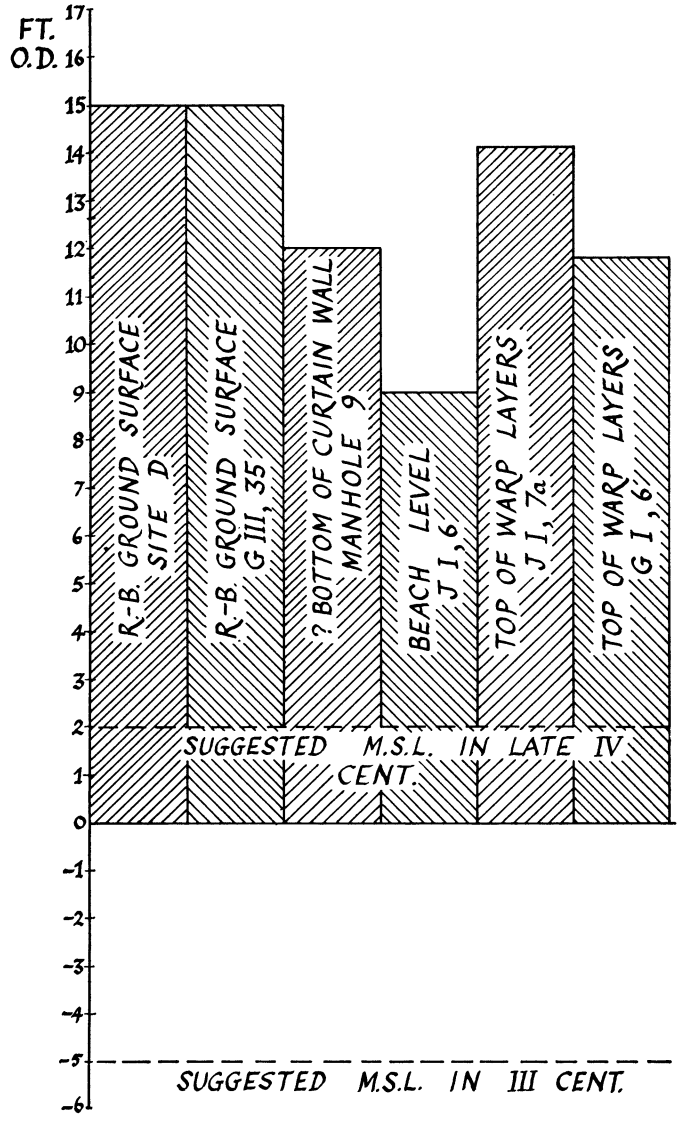


FIG. 33. Comparative levels at Brough related to Mean Sea Level in the third and fourth centuries

[1] Humber Conservancy charts show that a channel was open on this side between 1931 and 1949, although at times it was only suitable for light-drafted vessels.

'But as all seafarers know, the Upper Humber is one of the most inconstant rivers in the British Isles, and to make any haphazard deduction would be unwise.'

There seems to be no satisfactory way of finding out if a north channel existed during all or part of the Roman period. So there the matter must rest for the time being, until much more is known of the size and relative importance of the Roman settlement at Old Winteringham. Perhaps then it may be possible to say whether the channel existed or not.

Last to be considered is the silting-up of the harbour at Brough during the second half of the fourth century.

The Fens underwent severe flooding at the close of the second century, with a final evacuation at Hockwold coming soon after.[1] The present evidence shows (p. 78) that conditions at Brough were normal at least until the middle of the third century if not later. However a transgression may well have begun to creep some considerable time before it reached its peak and before its full effects came to be felt at Brough.

At a point[2] 148 ft. north of Manhole 7, at the south end of the sewer trench, the shingle (J I, 6; AM 610809) which has already been mentioned, was covered by a foot-thick layer of stained orange sand and silt (J I, 5; AM 610808). This was overlaid in turn by (J I, 4; AM 610806–7) 19 in. of greyish-black warp; (J I, 7) 20 in. of black peaty clay with stones; (J I, 7a) 10 in. of black, peaty clay. Further south only layer J I, 4 appeared to be present, but in much greater thickness, up to 7 ft., while its surface resembled a buried turf. Late medieval pottery was found associated with this surface and immediately below it, and also with the surface of J I, 7a. These warp layers would therefore seem to have been laid down between *c.* A.D. 250 and the late middle ages. Yet, although it is known that there was another marine transgression in the fourteenth century, the main depth of silting, up to + 12 ft. O.D. (fig. 33), was almost certainly the product of the earlier rise in sea level, as only Roman pottery (fig. 76, nos. 659–62) was found in the silt, here consisting of dirty sand, at that level in trench G I (layers 6, 7). At first, a transgression would give a greater depth of water, although in the end it would lead to a much greater and more rapid deposition of silt, especially if some change in the current created a bar across the harbour mouth. On the Humber, most silt is brought in by the tide and is probably derived from erosion of the Holderness coast. There can be little doubt that the deposition of 3 ft. and more of silt in the harbour at *Petuaria*, combined with the almost certain destruction of part of the fortifications by the rising water,[3] would have seriously prejudiced its use as a naval base.

[1] *J.R.S.*, LII, 178.

[2] Samples were taken 10 ft. north of this point. See p. 205 for a discussion on the nature of these samples and pp. 222–3 for reports on the botanical material which they contained. This evidence suggests that these layers were laid down predominantly under freshwater conditions, in turn suggesting that a marine transgression caused the backing-up of rivers and streams.

[3] Trench G I, which must lie close to, and inside the conjectural line of the south-west defences, was probably located at a pocket peripheral to the main flooded area and was subjected to strong currents (p. 219).

PART II

THE FINDS

COINS

By P. E. CURNOW, F.S.A.

APART from the coins found in the seasons 1958–60 which are listed below, the total identified coins found at Brough to date are shown in block form on the accompanying histograms. Over 50% of the coins thus shown were chance finds, most of which remain in private hands. Many of these were listed in brief by Corder (*Petuaria*, 1, 29). However, those handed in to Hull Museum were included in the full list of coins prepared by Mr J. Bartlett and I am most grateful to him for allowing me to use his handlist. Further coins found in the period after 1940 were also listed by Hull Museum and thanks are also due for the use of this

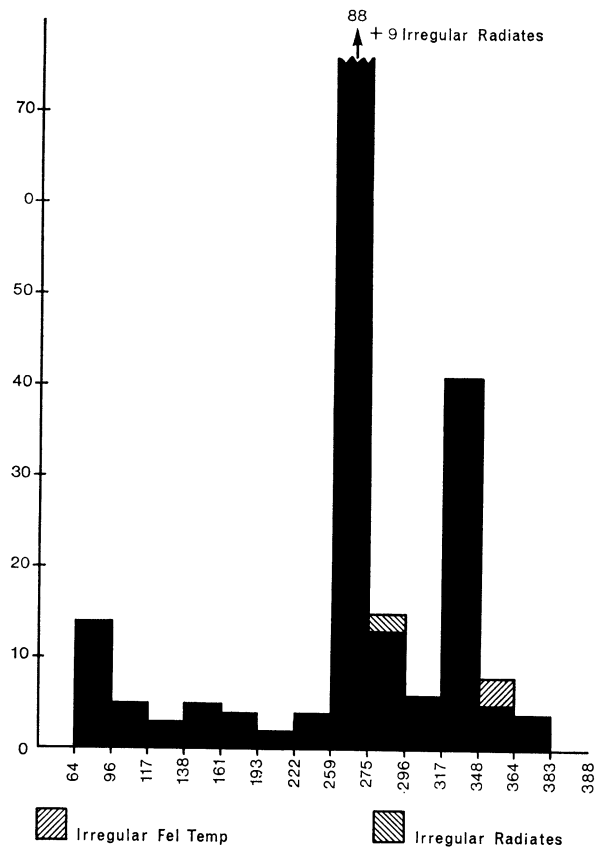


FIG. 34. Brough (208 coins fully identified)

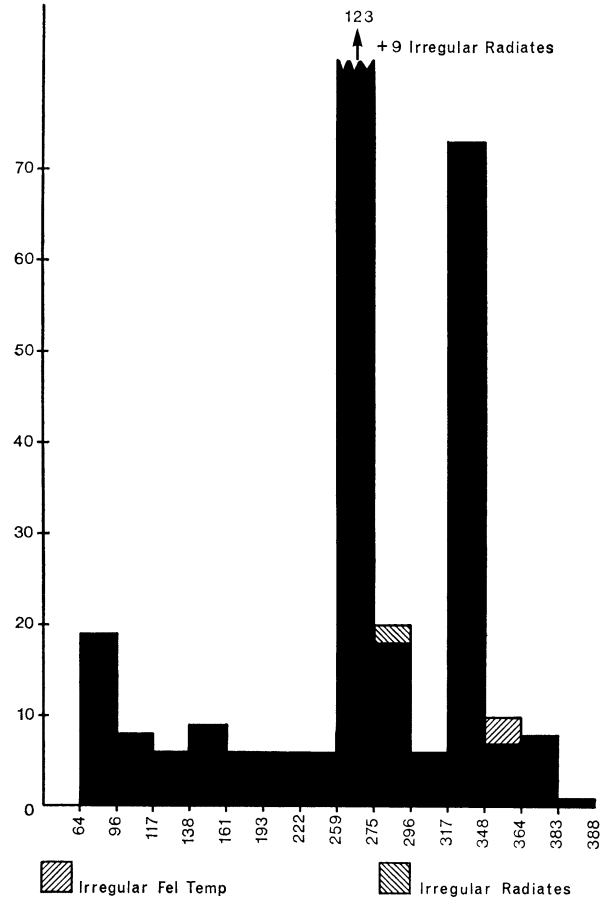


FIG. 35. Brough (310 coins)

list. The smaller Brough histogram (fig. 34) was compiled from these two lists and the 1958–60 finds. Illegible, uncertain and irregular coins were excluded except for Irregular Radiates and Fel Temp Copies.[1]

The second histogram (fig. 35) with the larger number of coins (310) draws on the coins seen and summarily listed by Corder but not incorporated in the Bartlett list. These coins were only listed by reign and for the period 296–364 a few coins have had to be allocated to their date divisions on a basis proportional to those on the lesser list — the margin of error can only be very slight and cannot seriously affect the validity of the histogram.

The same problem applies to Old Winteringham, where up to 1967 only 13% of the coins were found during excavations. The writer was able to see 60% of the total finds, however, and the remainder were briefly noted from private collections by the excavator, Dr I. M. Stead. The histogram (reproduced here by courtesy of Dr I. M. Stead) shows a number of

[1] The following coins are also excluded:
1. Drachma of Alexander the Great, *c.* 300 B.C. — found in Bozzes Field allotments.
2. Dupondius of Claudius I (Antonia) reported to have come from Brough but doubted by Corder.

points of interest when compared with Brough (fig. 36). The two sites have yielded a comparable number of coins, containing in each case a high proportion of chance finds. It should be noted nevertheless that the excavated area at Winteringham which yielded the majority of the first- and second-century coins is much smaller than that at Brough and the numbers shown on the histogram should be looked at in this light. A further point of comparison is that both sites were subject to military occupation, and lay on the same major route only some three miles apart. But the contrasting elements are perhaps more noteworthy, Brough being north of the Humber and having therefore a later military context than Old Winteringham. The status of the settlements may also have imposed a different pattern of economic activity and hence coin loss.

Whilst the Brough series runs fairly steadily from Flavian times on through the second and third centuries with quite a high proportion of regular radiates 259–75, and Carausian issues together with a plentiful supply of Constantinian issues, the fall in coinage following that period is very marked. Irregular 'Fel Temp' issues are conspicuous by their relative absence, the House of Valentinian I is represented by eight coins, and the series ends with a single AE 4 of Magnus Maximus 383–8 A.D.

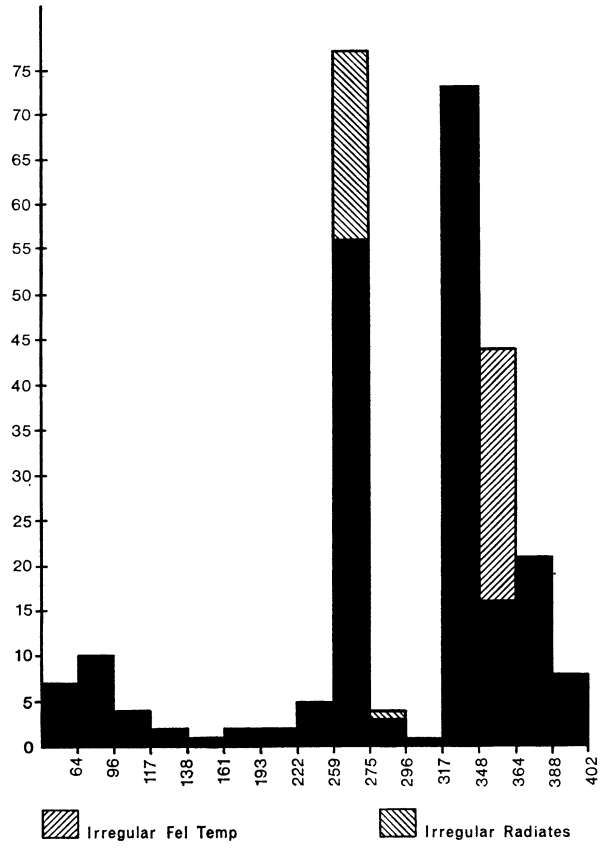


FIG. 36. Old Winteringham (266 coins)

No.	*Reign*	*Date*	*Reference**	*Site No.*
1–2	Vespasian	69–79	Dup. 479/744, As 764 c.	B I, 2; B I, 24
3	Domitian (Vespasian)	69–79	As 791 (Vesp.)	B I, 78
4–5	Trajan	98–117	Den. 318, Dup. 575	G II, 21; B VII, 9
6	Antoninus Pius	138–61	Dup. cf. 924 or 937 (but Asses)	A V (unstratified)
7	Severus Alexander	222–35	Den. 42	B II, 4
8–10	Gallienus (Sole Reign)	259–68	Ant. 157 B|__ , 280, 287 __|Є	A V, 25; F XIII, 2; B VI, 24
11	Salonina (Sole Reign)	259–68	Ant. 31	B II, 13
12–16	Claudius II	268–70	Ant. 34/5, 45 __|Γ , 48, 63 __|X	A I, 2; F XIII, 3; B I, 3; A III, 13; B II, 18; B II, 15; A I, 3
17–20	Victorinus	268–70	Ant. 40, 67, 114 *|__ , + 1 Salus type	F XIII, 3; B I, 2
21–2	Tetricus I	270–3	Ant. 89, 88/90	B II, 15; A V, 25
23	Tetricus II	270–3	Ant. 270	F XIV, 3
24–5	Carausius	287–93	Ant. 24 (Rev. Var. MIL) $\frac{\|}{ML}$, 895	F XII, 3; F XXVII, 3
26–9	Irregular Radiates	*c.* 270	[4] all Æ 3/4 size, 1 type of Tet. I with Virtus type reverse — pierced in antiquity. + 3 with uncertain reverses	B I, 3; G II, 3; F IX, 3; F XIV, 6

No.	*Reverse Type*	*Date*	*Mint*	*Obverse Type*	*Reference**	*Site No.*
30	VICTORIAE LAETAE PRINC PERP	317–20	London	C. I	*RIC*, VII, Lond., 168 MM(D), Num. Chron. 57, no. 78 (A.D. 320)	G II, 3
31	GLORIA EXERCITVS (2 Standards)	330–5	Trier	C. I	72 p.	C II, 1
32–3	Irregular Wolf and Twins	330 +	—	VRBS ROMA	Æ 4 [2] (1 cf. 180 p.)	A V, 6; A V, 14
34	Victory on Prow	330–5	Rome	CONSTANTINOPOLIS	547.s.	F VIII, 2
35–8	GLORIA EXERCITVS (1 Standard)	335–7	Trier	C. II	94.s.	F VIII, 2
			Lyons	D.	237.s.	F XIII, 1
		337–41	Trier	Cs. II, Cn.	132.s., 134.s.	F VIII, 4
						F VIII, 2
39	Irregular GLORIA EXERCITVS (1 Standard)	335 +	—	Type of Cn.	Small Æ 4 size	F XXI, 2
40	VICTORIAE DD AVGG Q NN	341–8	Trier	Cs. II	139.s.	G II, 3
41	Irregular VICTORIAE DD AVGG Q NN	341 +	—	Type of Cn.	As 138, etc., but Æ 4 size	F VIII, 2
42–43	Irregular Fel Temp Reparatio (fallen horseman)	353 +	—	Type of Cs. II	1 Overstruck on Gloria Exercitus (2 Stds.),	F U/S
					1 Æ 4 (cut flan.)	F VIII, 2
44–6	Illegible	—	—	[3] all illegible and fragmentary	2 Æ 3/4 size, 1 minim	A I, 8; G II, 3; G I, 6
				MEDIEVAL ENGLISH		
47	Edward III	Half Groat (London)		Annulet Mark	Brook, *English Coins*, p. 132, Type B	F Unstratified

* Refs.: nos. 1–30, *RIC*, Vols. I–VII; nos. 31–46, *LRBC*, Parts I–II (Spink, 1965).
Abbreviations: C. I and II = Constantine I and II; Cs. II = Constantius II; Cn. = Constans; D. = Delmatius.

The series from Old Winteringham presents a substantially different distribution. Pre-Neronian series, absent at Brough, are represented by seven regular coins at Old Winteringham of which five are Claudius. In addition three irregular Claudian coins (not shown) should be noted. Coins of Nero (post A.D. 64) which are included with the Flavian issues in the second column also preponderate at Old Winteringham six to four. The second half of the fourth century shows an even more striking variation between the sites. There can be little doubt that the lack of coinage at Brough in the late fourth century compared with what went before is of considerable significance in the history of the site. Old Winteringham on the contrary shows evidence of considerable late fourth-century activity, the House of Theodosius I being represented by six coins of which at least three are AE 4 Salus Reipublicae. Thus occupation may well have been continued until at least the threshold of the fifth century.

OBJECTS OF BRONZE

(Figs. 37–8)

PERIOD II A

(*)1. Small dome-headed stud of indeterminate use. From B I, 77 (AM 580141).

(*)2. Similar to 1, but with longer shank. From B I, 77 (AM 580125).

(*)3. Stud with foliated head in the form of a crosslet cross (see no. 10). From B I, 77 (AM 580126).

PERIOD II B

4. Stud with pin broken out of the head. From B I, 94 (AM 580143).

PERIOD IV

*5. Flat-headed circular stud with eccentrically-placed square-sectioned shank. *The corrosion products showed copious evidence of vegetable debris, flints and sand, on which had dropped splashes of molten copper alloy.*[1] From B I, 28 (AM 580128).

(*)6. A hollow cylinder with a waisted centre, and plain circular mouldings round the outside; the edges are bevelled inwards. It seems likely to have been some kind of ornamental fitting, possibly acting as a junction between two members. Cf. a rather similar piece from Chester (*Chester Arch.J.*, XLIV, 36, no. 16), and a slightly larger, but closer parallel from Wroxeter (J. P. Bushe-Fox, *Excavations at Wroxeter in 1914*, pl. XXI, no. 7). An almost identical example is in Lincoln Museum (*J.R.S.*, XXXIX, 59, no. 12).[2]
Turned from a thin-walled tube, this object had possibly been heated and plunged into water before becoming buried in an environment containing much vegetable debris of all kinds and sizes. From B I, 76 (AM 580133).

(*)7. A signet ring with enamel inset. *The ring was cast, but never properly 'finished' (in the sense of polishing the surface). The 'jewel' would appear to have been a white, opaque 'glass' probably applied as an enamel, i.e. by fusing a number of layers of slurry frit successively* in situ. From B I, 76 (AM 580134).

[1] This and all following comments in italics in the sections dealing with metal objects have been kindly supplied by Mr L. Biek (Ancient Monuments Laboratory). His full reports are deposited with the finds at Hull Museum. Items marked * can be, and those marked (*) may be, connected with metal-working activity (p. 227).

[2] I am indebted to Miss E. Blank for these references.

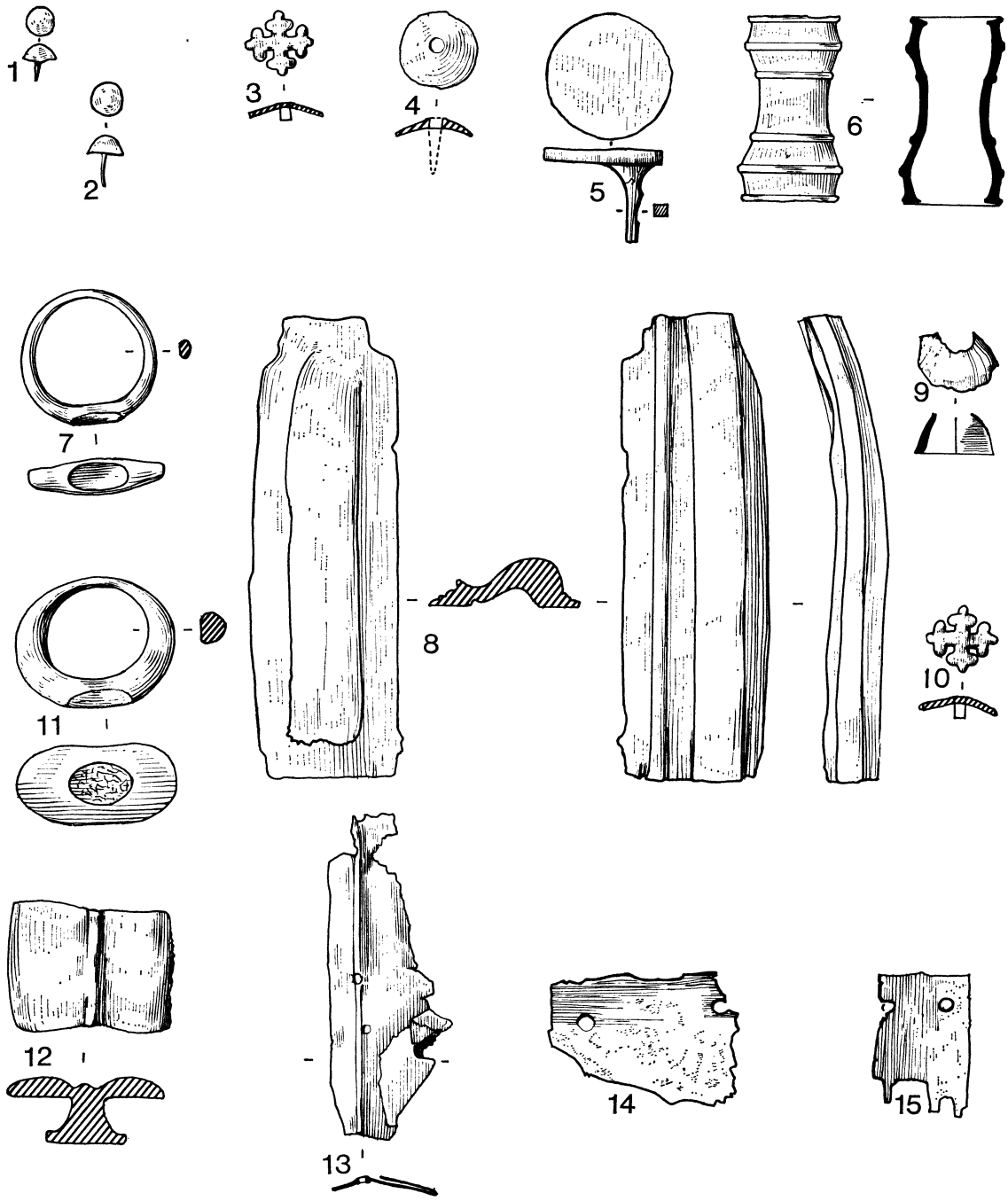


FIG. 37. Objects of bronze (1/1)

PERIODS V–IX

8. Heavy slightly curved *cast* plate with moulded exterior surface and corresponding depression on the underside. From B V, 12, seventh street surface leading to the west gate (AM 580115).

(*)9. Fragment of dome-headed stud, much distorted when the shank broke away. From A I, 38 (Building A.I) (AM 580119).

(*)10. Stud with foliated head like no. 3. From A I, 39 (Building A.I) (AM 580140).

11. Heavy signet ring with wide shoulders. The intaglio has been imitated, like no. 7 above, with a glass frit, possibly once white but now green. From A I, 17, ditch below Building A.III (AM 580129).

12. Large rectangular stud with head formed like an open book. From A I, 10, robber trench of Building A.III (AM 580132).

13. Part of a thin strip, folded longitudinally to form a thickened rib along the line of the fold, through which two small holes penetrate. From A I, 10 (AM 580117).

14. A thin bronze plate with two perforations near one edge. *On the surface not shown in the drawing there is evidence of longitudinal striations such as are found when the surface of a piece of metal is 'keyed' to take solder. On the other surface there are suggestions of charred leather residues.* From A I, 1, topsoil (AM 580116).

15. Heavily-corroded bronze plate with one and probably two perforations near one edge. Possibly similar to no. 14, but the mass of corrosion products makes it difficult to estimate the original thickness. From E I, 29, robber trench of town wall (AM 9980).

16. Fragment of a thick-walled hollow cylinder with closely-spaced rounded mouldings around the circumference. From B I, 14, pre-Building B.I (AM 580131). *Hofheim.* Taf., XVI, nos. 28–9, 32.

(*)17. Two fragments of a penannular brooch with plain knob terminals, and with the pin broken, but with hinge still in place. From B IV, 3 (AM 580144). Similar brooches with plain terminals were found at *Langton*, fig. 18, nos. 4 and 5, and Norton (*Y.A.J.*, XLI, 256, fig. 18, nos. 19 and 20).

(*)18. A rectangular plate from F XII, 3, cut by foundations of Building F.I (AM 9983).

19. Fragment of a large stud with a raised elliptical boss at the centre. From F X, 3 (AM 9984). This would appear to be a simpler form of a harness mount which sometimes has a prominent central decorative stone; cf. Birrens (*P.S.A.S.*, LXXII, fig. 39, no. 1) dated to the mid second century.

20. One end of a *ligula*, with a spatulate terminal. From G III, 9 (AM 600329).

The following objects were all found in Building G.I

(*)21. A pin with moulded knob terminal with a milled edge round the uppermost ring. From G II, 38 (AM 600332).

22–3. Dome-headed studs. From G II, 32. These formed part of a mass of small, very corroded fragments, of which it is not possible to say very much. **22* (*AM 600328*) *appears to have been attached to some organic material of a type which suggests a less dense, more pliable and 'wetter' material than wood, and was probably attached to leather or hide. 23* (*AM 600330*) *is also attached to some charred material of organic origin with a disorganized structure; it does not appear to be wood, although it is fibrous and there is a general alignment of grain.* (See p. 229 *for further discussion of general context.*)

24–6. A collection of small bronze fragments including square- and round-shanked rivets *(24) (AM 600321), folded plate *(26) (AM 600318), and a thick, shapeless lump *(25) (AM 600338) from G II, 19. *25 is apparently a (?) cast lump with one intentional perforation.*

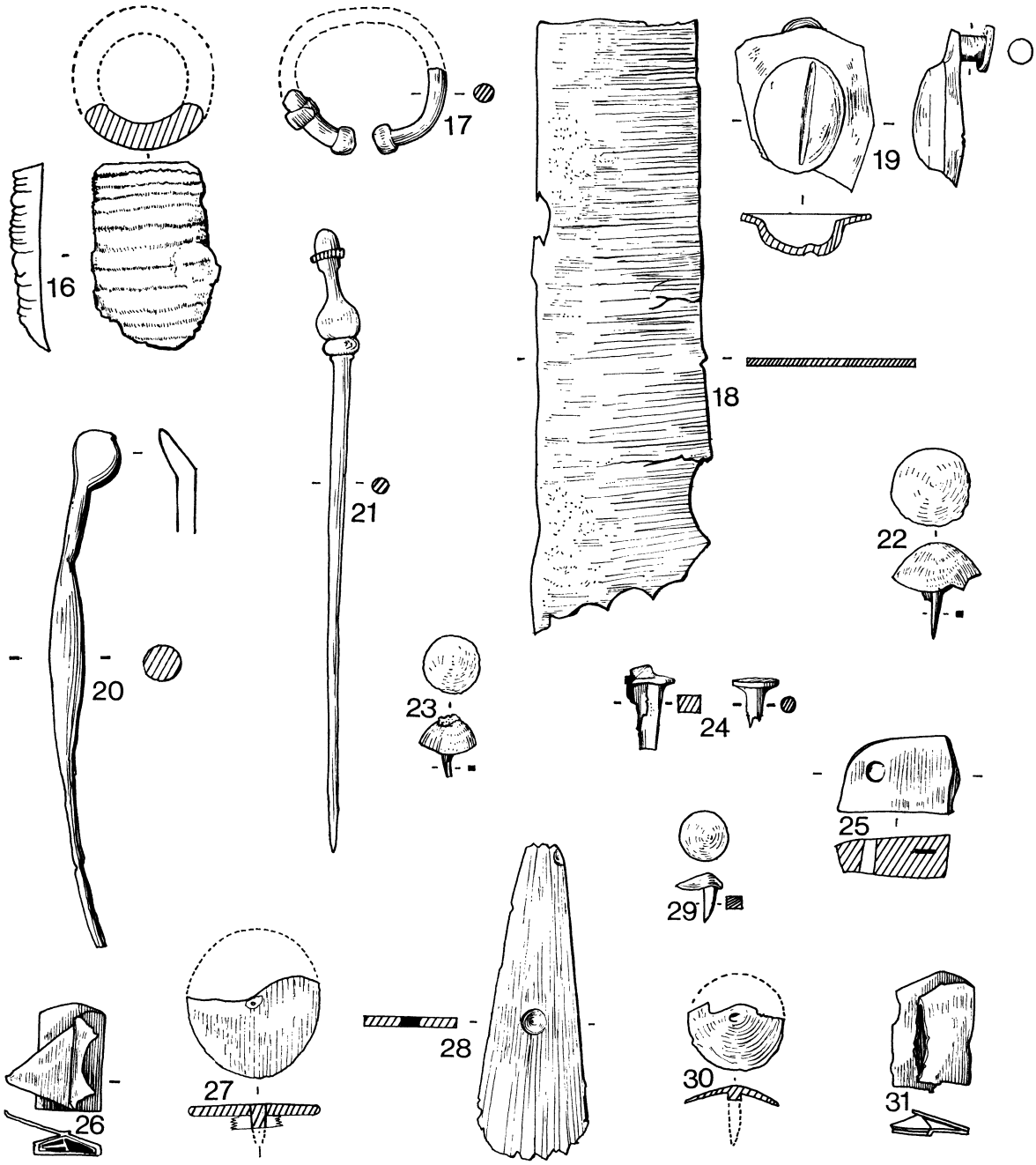


FIG. 38. Objects of bronze ($\frac{1}{1}$)

27. A flat-headed rivet from G II, 3 (AM 600307) (pl. XVIIa).
It carries on its undersurface the clearest indication of mineralized fibrous residue seen in this context. It is in part, at least, almost certainly of woody origin, and the stud shank is embedded in this residue to its full remaining depth. It is clear, however, that the grain of this 'wood' changes direction at least twice between the end of the shank and the underside of the head. Although the change of direction, which in both cases is at right angles to the previous layer, is quite clear, and probably completely valid, it seems difficult to associate this with a straightforward function for the stud (or 'nail', though it is fairly flimsy), especially as a further change in direction takes place immediately next to the underside of the head. This is at an oblique angle to the preceding grain and may be due to vegetation other than wood; there appears to be some difference between its structure and the rest, and there are also fragments of what might be plant or root stems of small circular section in this area. If these latter can be regarded as intrusive, however, the rest of the evidence might be explained by some form of woodworking involving plywood or veneering. A small amount of straight-grained fibrous residue similar to the 'grass-like' areas on the underside is also present on the surface of the head. This is free from any other deposit except some sand grains embedded in the surface of the corrosion products, which, on this side at least, are comparatively thin, even though the object itself appears to have been mineralized throughout its entire thickness.[1] This description, which suggests the use of something perhaps approaching plywood, might apply to a variety of different articles, but it should not be forgotten that some shields were made up of composite layers of plywood and leather (*Dura-Europos*, VI (1932–3), p. 456).

(*)28. Fragment of a much-corroded bronze plate, tapering towards one end, and with countersunk perforations (?). From G II, 15 (AM 600339).
No structure remained under the bronze to suggest what material had been present, but from experience the disposition and nature of the stained sand below are consistent with wood or leather having been there. The fragment may well represent the remains of some strap or binding. There appears to be some evidence for iron at least inside one of the holes, although the other loose (and now hollow) pin or rivet was clearly of bronze. (See p. 230.)
Numerous other small and badly corroded fragments suggesting plates, studs and rivets came from this layer (AM *600309, *600312, *600314–15, *600329, and *600313).

*29. Small dome-headed stud with a square-sectioned shank. From G II, 13 (AM 600308).

(*)30. Dome-headed stud. From G II, 6 (AM 600304). *On the underside, round the shank are black fibrous residues consistent with the presence of leather which had been charred.*

31. Plate fragment from G II, 19 (AM 600317). *Although apparently 'folded', the manner of folding makes it difficult to accept the find as one fragment, and another may have become corroded on to it, sandwiching some black (probably charred organic) material between them.*

Many other small, fragmentary pieces were found in the last three layers and in others associated with this building. *Several showed evidence for burial in contact with wood or leather.*

THE BROOCHES (fig. 39)

The late Mr E. J. W. Hildyard, F.S.A., before his death, very kindly wrote the following descriptions for the first three *fibulae*:

The three *fibulae* to be described form a remarkable parallel to the trio of the same three types found at the Rudston villa and published elsewhere.[2] That note will be referred to here

[1] This appearance may, in the circumstances, possibly be produced by a single piece of wood with a very broad grain, such as oak. The size and state of the residue precludes certain identification at present, but further work may clarify this important point.

[2] *Antiq. J.*, XXXIV, 73–5.

as R.F. The repetition is not, of course, a coincidence; it merely goes to prove that all three types were current and popular in the locality, a fact confirmed by the hoard of *fibulae* at South Ferriby.[1]

(*)32. From B V, 31. Winged specimen of the well-known Hod Hill type (Collingwood Group P; Camulodunum Type XVIII B). As was shown in R.F. there are a number of examples in northern England to which this is an interesting addition.

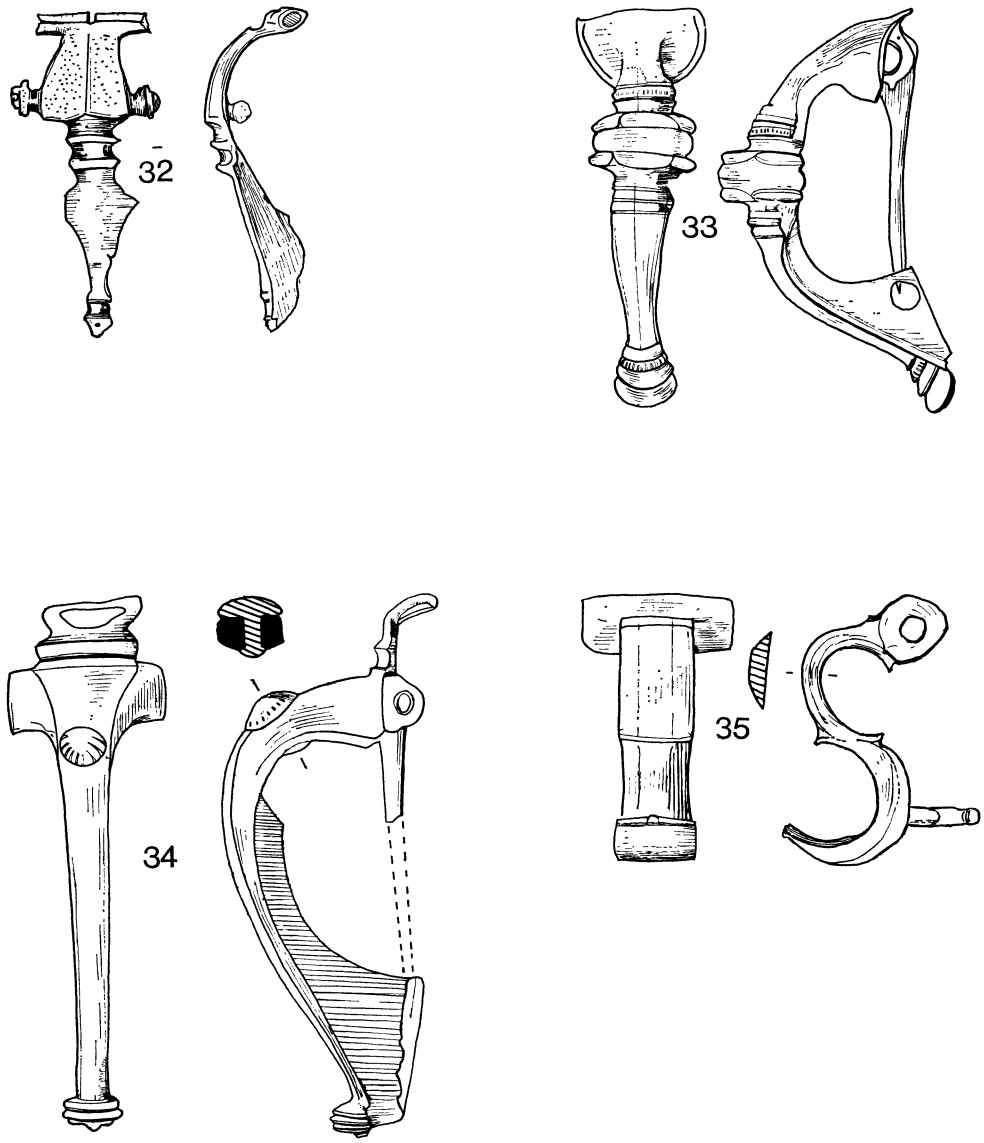


FIG. 39. The brooches ($\frac{1}{1}$)

[1] *Hull Museum Publications*, no. 39 (1907).

The brooch itself is a rather small example but well made; the upper part of the bow, slightly splayed downwards, having three ribs, the knobs or wings emerging from its base. The lower part is diamond shaped. These brooches are so varied in detail that I have not found an exact parallel, a combination of all the same features. It confirms the statement in R.F. that 'such a popular type was sufficiently numerous to survive in use, if not in manufacture, into Flavian times or even later'.

33. From B I, 38. Trumpet brooch. This is one of the borderline cases between Collingwood's R ii and R iv, the central moulding being partially carried round the back of the bow. The poor condition of the bow (spring and wire headloop are missing) does not conceal the good style exemplified by the three bands of fine beading above and below the acanthus moulding and repeated above the foot.

The perforation in the catchplate, however, is puzzling. This is a feature that is almost unknown on trumpet *fibulae*[1] and it seems reasonable to seek an explanation. A possible answer presents itself. The catchplate is sheared off clean before the turnover and at an angle that does not correspond with that from which the pin must have hung. It is tempting, therefore, to see in the perforation a stud-hole to hold a repair piece for the catchplate[2] now missing. The brooch may be dated slightly earlier than no. 2, but its 'life' may have been very considerable.

34. Unstratified (from near A I). Head stud brooch. (Collingwood Group Q). This is in general very much like the Rudston example, though a less elaborate specimen, with cast, not wire, headloop. An exact parallel (perhaps brought from the same source) comes from South Ferriby only two miles distant across the Humber.[3] Unlike the majority of this type, it lacks enamel on the bow. The head stud, which is a genuine stud penetrating the bow, is decorated with radial ribs. A most curious feature is that the hinge for the pin and the pin itself are of iron encased in bronze.

Typologically this is a late specimen, probably mid second-century.

Mr D. F. Mackreth has kindly reported on the fourth example:

35. From F XXVII, 8. The head of the brooch forms a cylindrical spring case, open at the back and with closed ends. The spring, and pin, is now fastened into position by means of a bar which passes through the coils of the spring and through the plates at the ends of the spring case. The pin is missing. The bow of the brooch is, in cross-section, rectangular with bevelling down the sides at the front. The lower part of the bow is recurved to a marked extent, and this gives the profile of the bow in side elevation an 'S' shape. The junction of the bow with the head is marked by a step on top and a projection below, following the curve of the back of the bow. The point of recurve about half way down the bow is marked by another moulding which projects forward slightly. The back of the bow at this point also has a step in it. The foot of the brooch is turned up and has a transverse groove on the under side. In the centre of the foot is what looks like a little piece of untrimmed 'flash' marking the joint in a simple two-part mould. The catch for the pin behind the foot is a flat plate with the catch slot cut in it.

Close parallels for this brooch are few. The following series is arranged in descending order of closeness: Chesterholm (*Arch. Ael.*,[4] XI (1934), 195, no. 2, pl. XXIX.c.2); Woodeaton (*Oxoniensia*, XIV (1949), 11, no. 21, fig. 2.10); Bingham, Notts. (unpublished); Lydney

[1] I have only found two, both trumpet variants. B.M. *Guide* (1951), fig. 9, 14. Ditchley Villa; *Oxon.*, I, pl. IX, 1. There is a specimen with elaborate open work catchplate from Risingham, *Arch. Ael.*,[3] XXI, pl. V, fig. II.

[2] *Vide* R.F., the Hod Hill brooch. Other instances are known.

[3] Ibid., pl. XXVI D. See also *Richborough*, IV, nos. 36 and 37.

(*Lydney*, p. 77, fig. 12.21); Corbridge (2 examples: *Arch. Ael.*,[3] v, 402, fig. 18, 'type 4'; *Arch. Ael.*,[3] vii, 182, fig. 18). Of these only the brooch from Lydney was published as coming from a datable context, being found with material mainly of the third and fourth centuries. Very few knee brooches with a reasonably dated context have been found (e.g. *Richborough*, iv, pl. XXIX, no. 52, p. 118, before *c.* 275–300) and a date somewhere in the third century would seem to be acceptable, although the type may have been introduced from the continent towards the end of the second century A.D.

OBJECTS OF IRON

(Figs. 40–3)

1. Knife-blade of triangular shape and flat, pointed tang. *Mineralized fibrous residues deep in the corrosion products suggest burial with vegetable debris.* From B I, 39 (AM 580155).

(*)2. *Square or (?) diamond-shaped fragment of plate. It might have been cut from a sheet, possibly with a chisel, and somewhat irregularly.* From B III, 44 (AM 580151).

(*)3. Thirty-four dome-headed studs found lying together in a row 12 in. long, suggesting a strap with a slight bend 2 in. from one end. They were lying on their sides, but with their points not all facing the same way, as though the strap had twisted. The studs are similar to the hob nails used on boots. *They carry a dark deposit under their heads, but no structure remains. It suggests, however, a kind of residue which is associated with leather rather than textile.* From B IV, 4 (AM 580152).

4. A 4 in.-long nail with the shank curved in a manner suggesting withdrawal from timber by means of a claw-hammer. As it was found in the rampart core of Period IV near the *porta decumana* it could have been derived from the demolition of the gate of the Period II A fort. From B I, 23 (AM 580167).

5. *Nail with copious residues due to wood along the whole length, present in a mineralized form. These clearly indicate that the nail was hammered to its full depth into a massive structural timber with the grain at an oblique angle of about 30° to the shank.* From B IV, 7, post-hole pit of Period II A *porta decumana* (AM 580178). *The wood is not identifiable.*

6. A fragment of a bucket-handle from B I, 16 (AM 580188).

7. Shaft of bent nail from Period V rampart, B I, 50 (AM 580193).

8. 6 in. nail from B VII, 8 (AM 580180), post-hole of the Period V west gate. Like no. 4 it shows evidence of having been withdrawn when the gate was dismantled. *Mineralized woody grain is very prominent around the bottom half of the nail, running at right angles to the shank. The wood is not identifiable.*

9. Shank of a large bent nail from A XI, 21 (AM 580191).

10. Fragment which seems to be part of a plate-type of fitting from A V, 6 (AM 580150).

11–13. Collection of nail and plate fragments from A V, 25 (AM 580190), of which three sample pieces are illustrated. The nails are bent near the point, showing evidence of withdrawal.

14. Ring with flat section from A V, 32 (AM 580174).

15. Part of a large flat plate with *punched nail-hole at right-hand end. The nail associated with the plate fits this hole. There is no evidence of attachment to any object as there are no traces of woody or other organic 'grain', but a greenish-yellow mortar appears on both sides.* From A V, 6 (AM 580148). It may have come from the door of the gate.

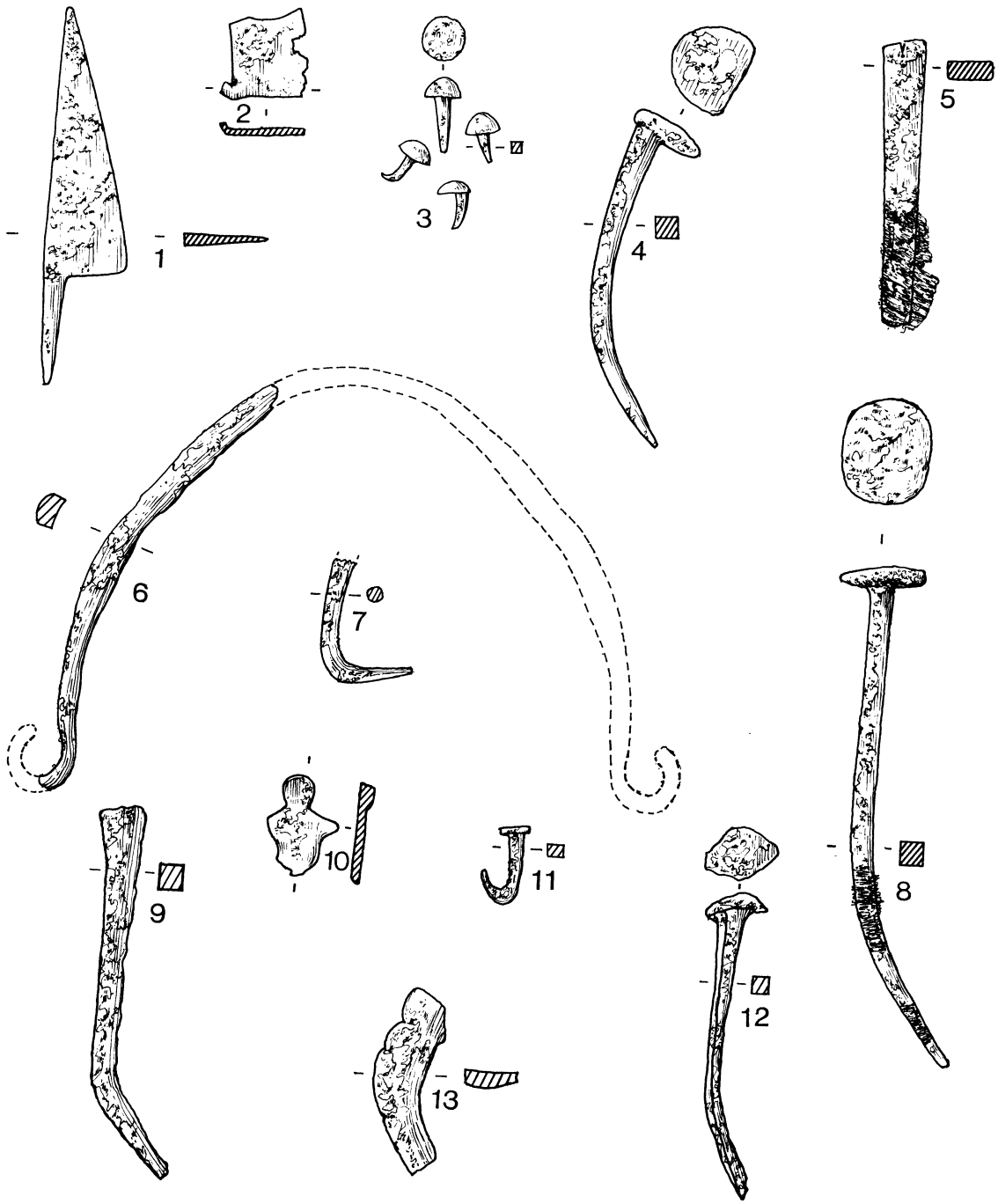


FIG. 40. Objects of iron ($\frac{1}{2}$)

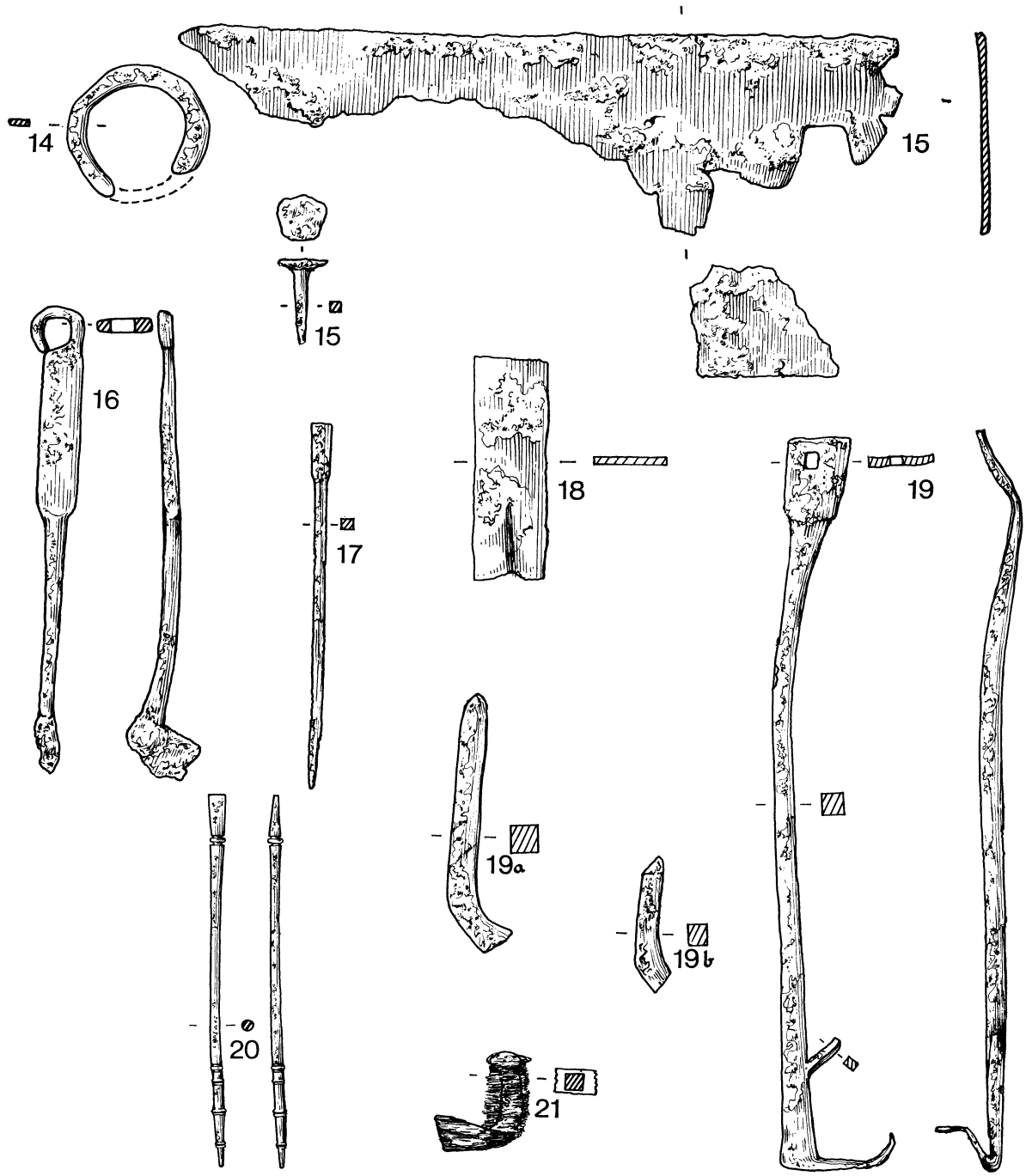


FIG. 41. Objects of iron ($\frac{1}{2}$)

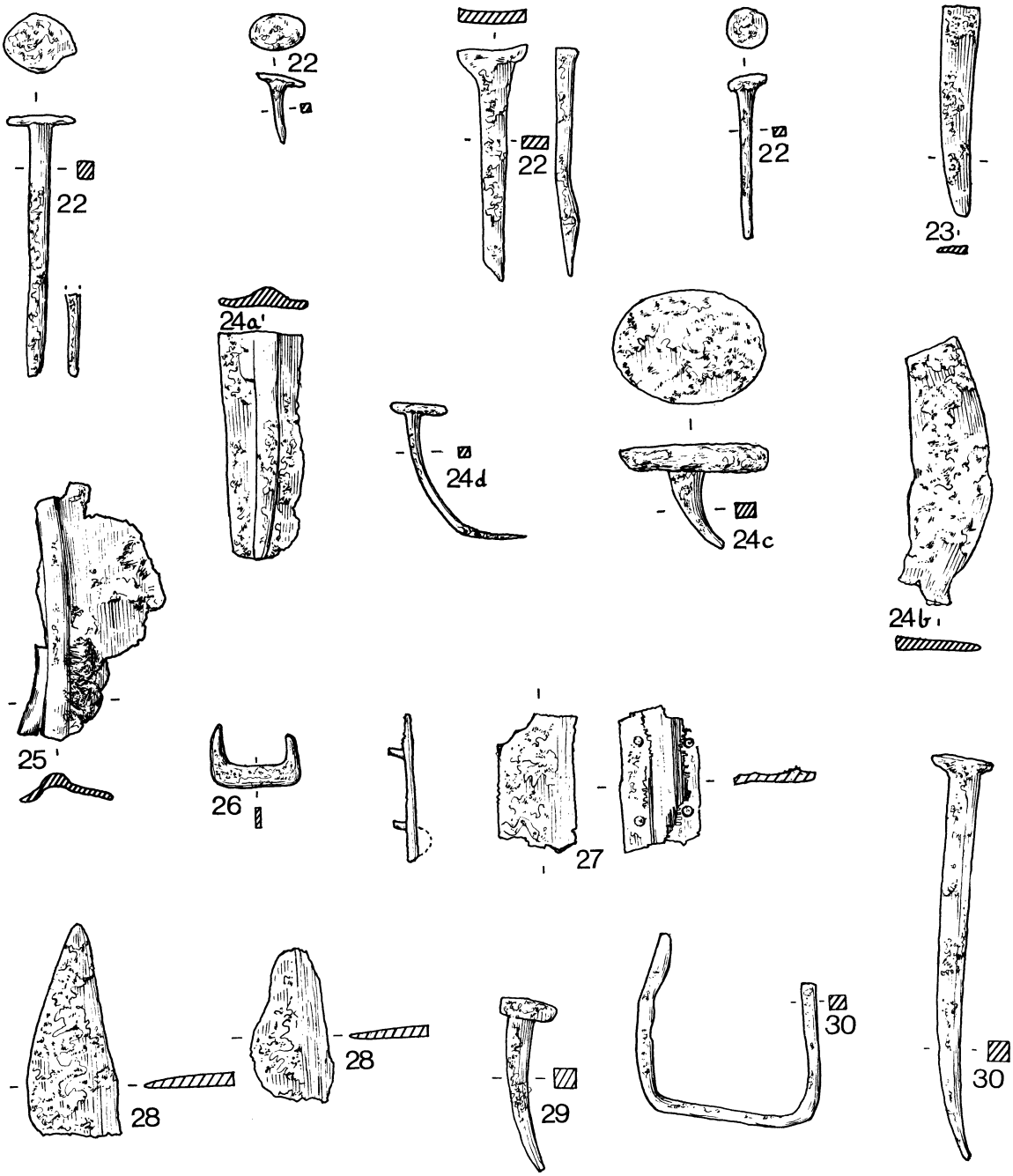


FIG. 42. Objects of iron ($\frac{1}{2}$)

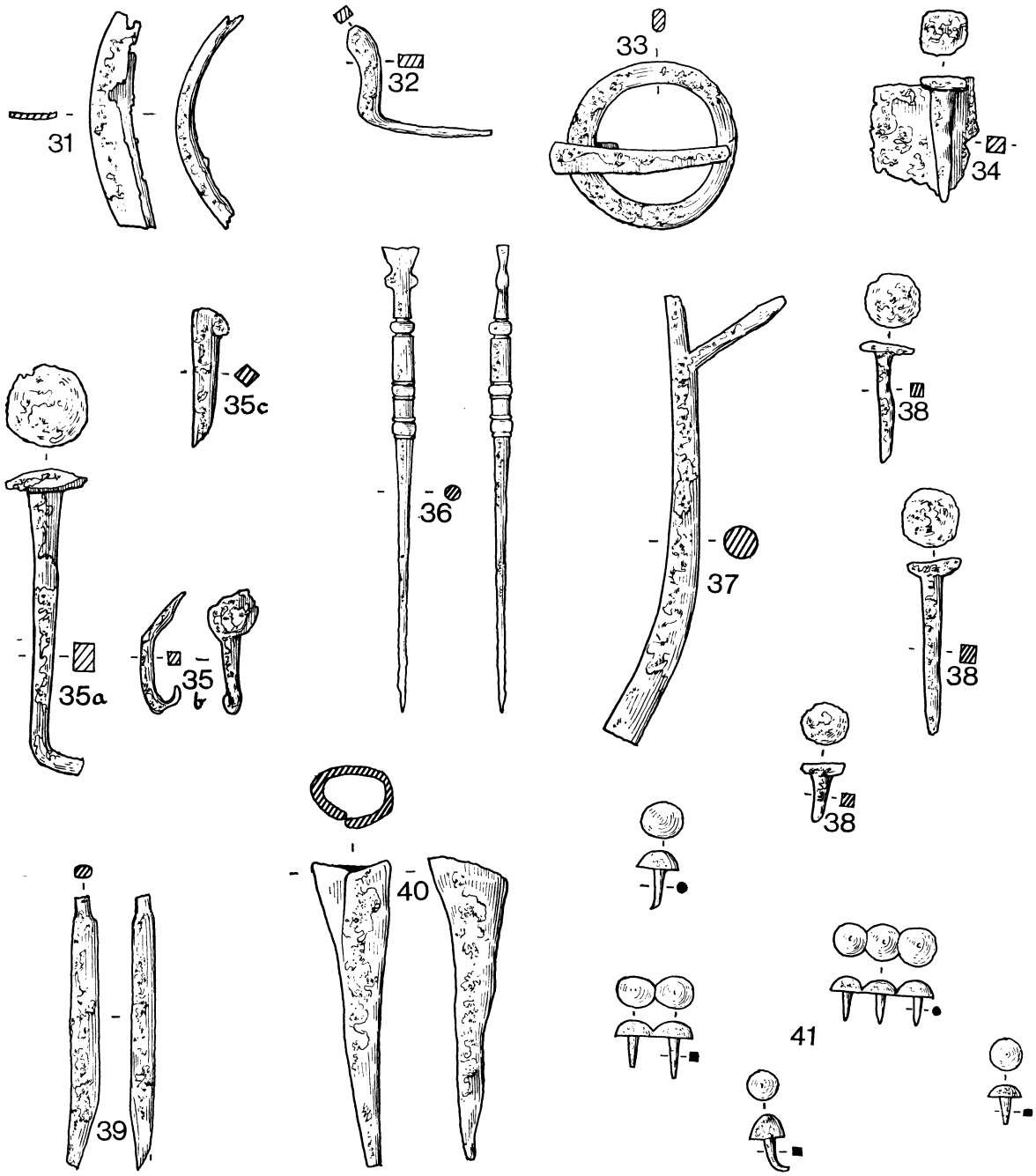


FIG. 43. Objects of iron ($\frac{1}{2}$)

16. Key or latch-lifter from A XI, 3 (AM 580149).
17. A stylus with probably plain undecorated shank from A XI, unstratified (AM 580189).
(*)18. A flat plate which is *not a knife fragment as it might appear*; part of a strap or tool? From D I, 13 (AM 9992).
19. A flesh-hook from A I, 6 (AM 580187). *Copious vegetable debris, some definitely wood, noted in the corrosion products.* Two nail fragments are not functionally associated with it.
20. Stylus from A I, 49 (AM 580153).
21. Bent nail from A I, P.H. 2 (AM 580186), with much mineralized woody matter adhering to it. *The wood is probably Beech* (Fagus sylvatica).
(*)22. A large group of nails and fragments from A I, 36 (AM 580181) of which four specimens are illustrated. *One example has dark, charred material adhering, but as there is no visual or X-radiographic evidence of the nail having passed through a fire this is unlikely to represent timber burnt with the nail* in situ. *Two others have traces of mineralized vegetable fibres, possibly grass or roots.*
(*)23. Slightly curved and pointed plate, possibly a headless spike, from A I, 39 (AM 580156). See no. 5.
(*)24. Two plate-like fragments and two nails from B II, 19 (AM 580171). (*a*) *This has a rib reinforcement and may be part of a cauldron to which* (*b*) *may also have belonged, since it is similar* (see also no. 25). *Embedded in the corrosion products are fragments of charcoal and unburnt vegetable residues, some due to grasses.*
(*)25. Fragment rather similar to 24a with a curving rib, from B II, 4 (AM 580169) and also perhaps part of a cauldron. *No evidence of a join can be detected visually or X-radiographically between the rib and body, and it is probable that it is integral with the rest of the sheet, produced by doubling or forging-on. Abundant evidence of vegetable debris was visible, mainly of grasses but with some woody material; also charcoal, oystershell, flint and mortar, clearly indicative of burial in rubbish or similar material.*
(*)26. Staple from G II, 19 (AM 600345).
*27. Part of flat rectangular plate, with four studs or small nails set near the corners and probably part of a series down each long edge. There are considerable traces of mineralized wood grain on the side where the studs protrude, although the wood was unidentifiable. It would appear to be a strap or fitting from a box or other wooden object. From G II, 19 (AM 600358).
*28. Two possible triangular-shaped knife-blades from G II, 19 (AM 600357/8).
(*)29–30. Two nails and a large staple from G II, 21 (AM 600347).
*31. Fragment of a large iron ring together with a number of small nails (not illustrated). From G II, 25 (AM 600352).
(*)32. A number of nails, mostly bent, *and also burnt*; one illustrated. From G II, 18 (AM 600354).
33. Large pennanular buckle from G III, 25 (AM 600348).
34. *Conglomerate of three nails in consolidated rubbish deposit containing vegetable debris, charcoal and bone fragments.* From F VIII, 6 (AM 590002).
(*)35. *Three nails, two of which show wood grain across the shank axis.* 35c has the head squashed to an oblique angle with the shank. From F VIII, 5 (AM 9997).
36. Stylus from F IX, 3 (AM 9993).
(*)37. Thick, slightly curving iron bar, which tapers towards one end. A short distance from the latter end another short length branches out at an angle of about 60°. From F X, 7 (AM 9997).

(*)38. Three nails of varying proportions. From F X, 7 (AM 9995).

(*)39. Short length of roughly square-sectioned bar, tapering at both ends. At one end the section changes to an oval shape. From F XII, 3 (AM 9998).

(*)40. Ferrule with solid, sharply-tapering point. From F XIV, 3 (AM 590003).

41. A large number of dome-headed boot-studs, found in position showing the rough shape of a boot sole, and cemented together by the corrosion products. A sample number of the studs are illustrated. From F XXVII, 8 (AM 600364).

OBJECTS OF LEAD

(Fig. 44)

1. Fused mass of metal from B I, 16. *Fragment of melted run waste* (AM 580197).

2. A slightly unusual type of lead rivet attached to a small fragment of samian form 37. From D V, 9.

3. A small disc cut from a sheet of metal, about 1.3 mm. thick, with a chisel-type implement. Three different length grooves have been punched on the 'upper' surface with a sharp tool, having one face curved and the other flat. On the reverse side there are three fainter marks which do not coincide with the placing of those on the other. Weight 9.25 g. (i.e. only 0.22 g. less than 1/3 oz.). From A V, unstratified (AM 580199).

4. A lead disc $2\frac{1}{4}$ in. diameter, $\frac{1}{16}$ in. thick, from A III, 1 (AM 580198).
Visual appraisal of corrosion products, and of the nature of surface deformation produced by the graffiti *and by other 'working' of the object, suggests that the material is virtually pure lead.* Mr R. P. Wright, F.S.A., has kindly provided the following comment on the inscription:
Obverse. The central device has a rectangle with rays enclosed in a roughly circular frame. Below this there is one line of cursive letters reading: AMICAVIMI or perhaps AMICAVOM. The sequence of the strokes shows that the letters were cut from left to right. Experts in various languages have, on consultation, confirmed that the text is not Indian, Iranian, Semitic, runic or Anglo-Saxon. Provisionally the language seems to be Latin, but Professor E. G. Turner emphasizes that 'the forms of the letters are so roughly scratched and difficult to parallel that it must not be taken as certain that the writer was trying to express himself in Latin.'
It is possible that the central device had magical significance and that the text is a magical formula which has suffered some distortion when copied by more than one hand.
Reverse. Part of the guide-line used to define the roundel survives near the margin and the ends of three lines which have overlapped from the larger sheet of lead are preserved. After the roundel was made two figures were added; some of their grooves form a lip of lead at the margin. One resembles an M with four verticals connected by a horizontal top stroke and the other might be an N formed by two verticals linked by a top stroke with rounded angles. It is not clear whether these are symbols or represent the letters MN.

5. A thin rod which has been carefully twisted in the middle section, suggesting that it may have been formed by twisting and consolidating a thin strip of metal. From G I, 7 (AM 600365). Spectrographic analysis, kindly carried out by courtesy of Mr Peter Wright at the laboratories of Capper Pass Ltd., showed the presence of only 0.05 % tin and 0.002 % silver.

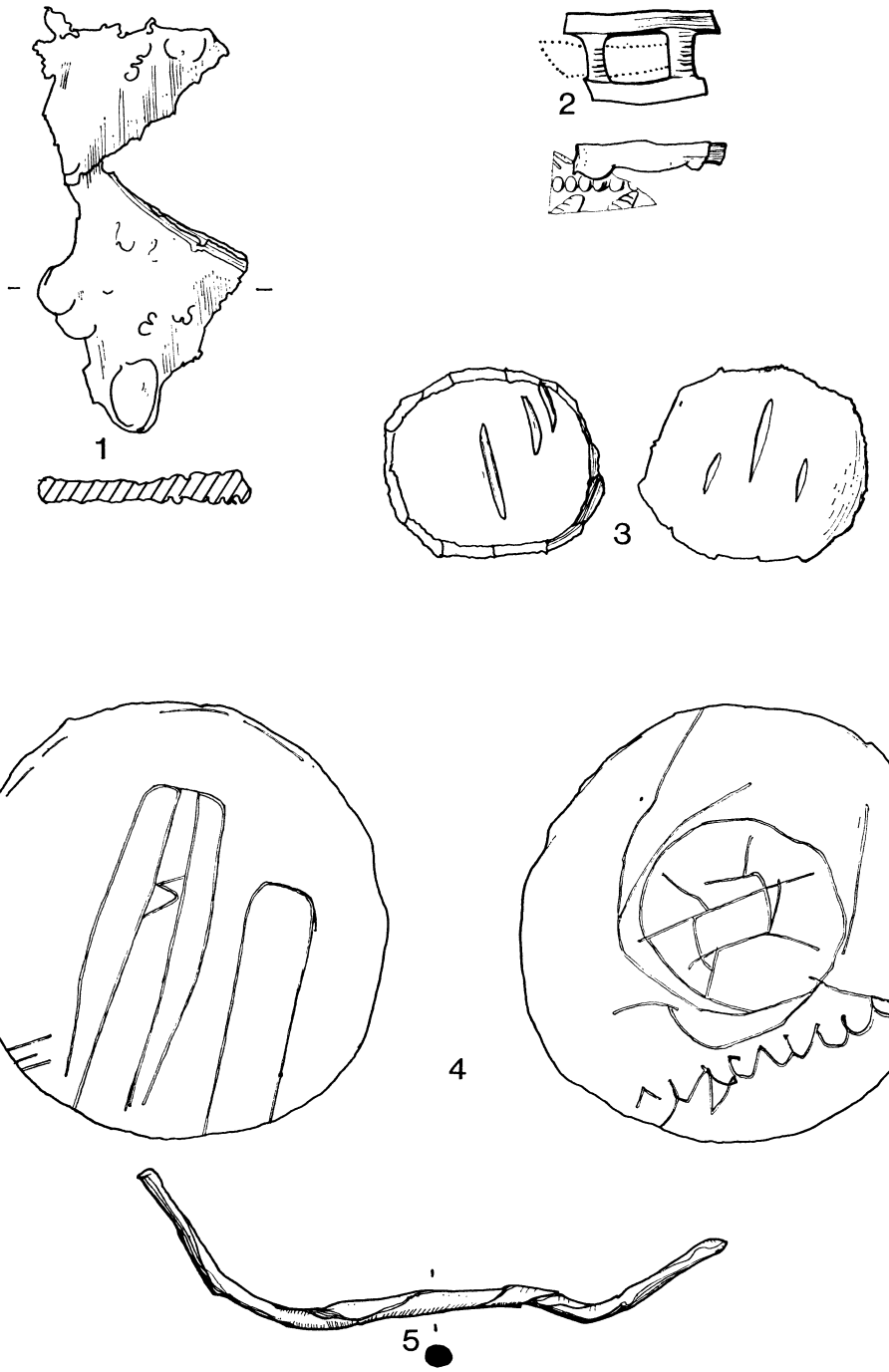


FIG. 44. Objects of lead (1–4, $\frac{1}{1}$; 5, $\frac{1}{2}$)

OBJECTS OF STONE

(Figs. 45–6)

The geological identifications have kindly been supplied by Dr F. W. Anderson, F.S.A.

1. Small whetstone in fine-grained hard sandstone. From A I, 49.
2. Small whetstone in similar stone to 1. From B VI, 20.
3. Small whetstone as 1 and 2. From F XIV, 2.
4. Whetstone in hard red-brown medium-grained sandstone. From D V, 10.
5. Whetstone in hard brown micaceous sandstone. From G IV, 5.
7. Whetstone in white sandstone, medium grained, limonitic cement. Probably of Carboniferous age and from a local source to west of Vale of York. From J II, 9.
8. Lower stone of slightly domed quern in Niedermendig basalt. From G II, 18 and 21.
9. Fragment of a flat quern in similar stone to 8; much less worn than 8. From G II, unstratified. Two other small, shapeless fragments of this basalt came from B V, 9 and E I, 34.
10. Upper stone of quern in coarse gritstone (Jurassic). From A I, 72.
11. Diamond-shaped roofing-slate in flaggy micaceous sandstone (Elland flags?). From F VIII, 3. A much smaller fragment, broken across the hole, came from G V, 2.
12. Circular jet bead with twin parallel holes bored through from the edge of the circumference as chords of the circle. From A V, 1.
13. Small, roughly-cut disc of jet from A I, 36.
14. Fragment of a bituminous shale bracelet with bevelled inside, and rounded outside edges. From F XIV, 4.
15. Fragment of a bituminous shale bracelet with oval cross-section. From F XX, 4.
16. Fragment of a shale object which has become delaminated and separated from the remainder; one side has a smoothed, curving, moulded surface, with that opposite to it smoothed and flat. The remaining surface has been cut but not smoothed. From F XXIII, 2.
17. A flat, nearly rectangular panel of bituminous shale with bevelled edges. From F VIII, 2.

Not illustrated: a pebble of poor quality, almost shale-like jet which had been cut, leaving one flat surface. This might suggest that working in jet and shale was carried on at Brough.

STONE IMPLEMENTS (PREHISTORIC)

By D. D. A. Simpson, F.S.A.

(Fig. 46)

18. Fragmentary blade of grey Wolds flint. Length 1.55 in. (4 cm.). The percussion end has been considerably battered and bears two small bulbs of percussion suggesting the use of an organic rather than a stone hammer to detach it. There are no traces of secondary working. From B II, 7.
19. Blade of grey Wolds flint. Length 2.4 in. (6.1 cm.). There are no traces of secondary working. From B I, 14.

Neither blade form is sufficiently diagnostic to enable it to be closely dated or assigned to a particular culture. Blades of this type were used by Mesolithic groups in northern England (e.g. Clark, *Starr Carr* (1954), p. 113, fig. 45) and in the Pennine 'Broad Blade' industries (*P.P.S.*, xxx (1964), 1–24) but the

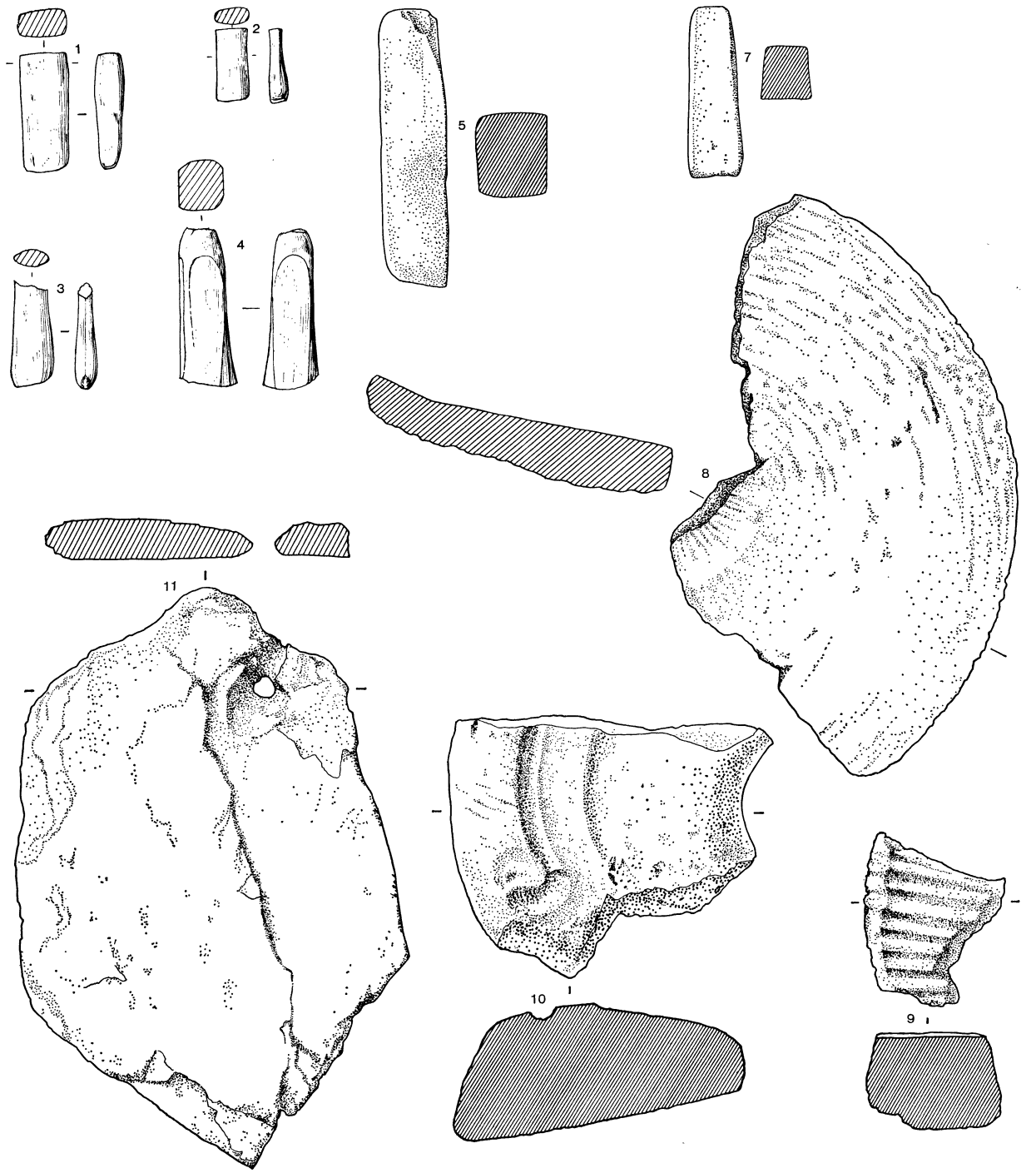


FIG. 45. Querns and whetstones ($\frac{1}{4}$)

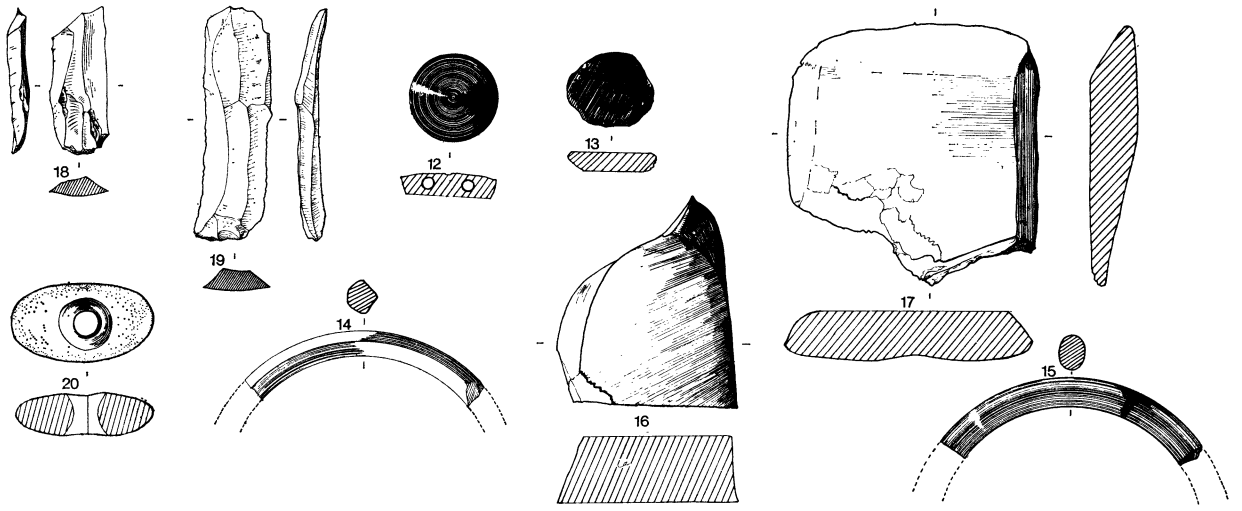


FIG. 46. Prehistoric implements and objects of shale and jet (12–19, ½; 20, ¼)

form persists in Early and Middle Neolithic contexts in Britain (Smith, *Windmill Hill & Avebury* (1965), p. 89), to be replaced by broad, squat flakes in Late Neolithic assemblages.

20. Pebble mace head from D I, 14. Length 2.9 in. (7.5 cm.). The object consists of a natural pebble of pink febrite (drift) having a central hour-glass perforation. There are no further traces of working or utilization on the object. In south-east England it has been demonstrated that such objects occur in Mesolithic contexts (Rankine, *The Mesolithic in Southern England* (1956), p. 29), although elsewhere similar forms have been proved to be later in date (Roe, in Coles & Simpson (ed.), *Studies in Ancient Europe* (1968), p. 146).

MISCELLANEOUS SMALL OBJECTS

(Fig. 47)

1. Head of a bone pin; the head is quite plain. From B II, 7.
2. Head of a bone needle with elongated eye. From F XXVII, 5.
3. Point of a bone pin or needle. From D I, 30.
4. Composite three-part head of a bone pin. The shank is secured through a cone-shaped piece by means of the taper. The apex of the cone faces towards the head and a circular disc is placed immediately below the cone base. From F VIII, 5.
5. Fragment of decorated wall-plaster from F XIV, 3. This was the only piece of painted wall-plaster found.[1] There are two surfaces, one superimposed on the other. The lower appears to be a plain, pale grey colour; the upper is white with a curving band of red on it.
6. A fragment of carbonized wood identified by G. C. Morgan as Poplar, *Populus* sp., which was confirmed by the Forest Products Research Laboratory, who also noted damage to the wood, before carbonization, by the common furniture beetle, *Anobium punctatum*; could have been part of an item of furniture, or perhaps a staff, with a tenon joint at one end

[1] The writer was told that other fragments were found associated with the building partly excavated in Grassdale (p. 71). Dr Corder also found a piece *in situ* in 1937, in Building I (*Brough*, v, 39), and fragments in 1936 (*Brough*, IV, 33).

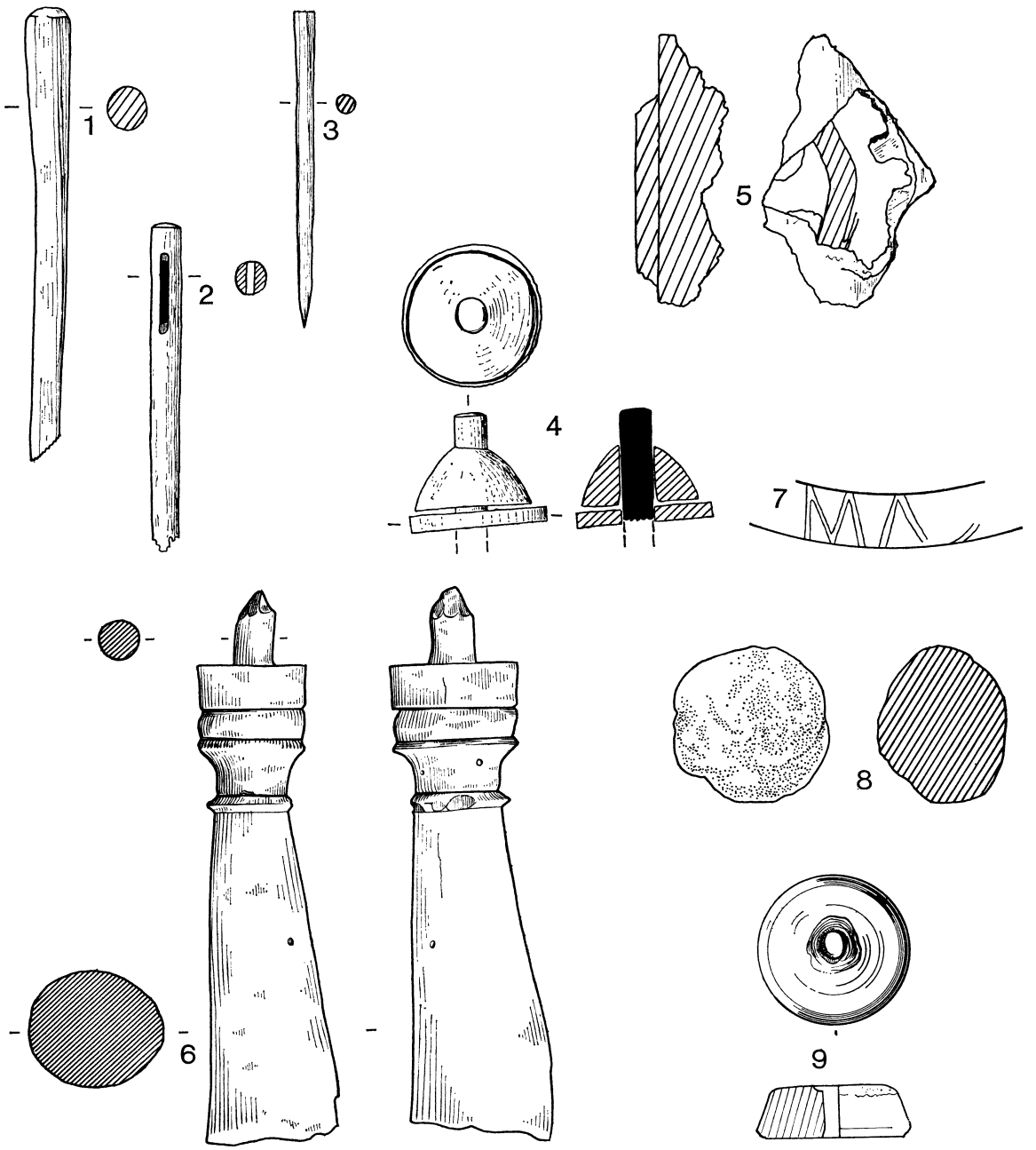


FIG. 47. Miscellaneous small objects (1–4, 6–9, $\frac{1}{1}$; 5, $\frac{1}{2}$)

presumably for fitting into a mortise on another member. The waist, and part below the tenon, carry low mouldings round the circumference (pl. XVI *a*). From G II, 13.

7. A graffito on the underside of a footring of a samian form 38, reading MAS[; the word was never finished and the last letter was itself left incomplete. From F XXVII, 5.
8. A small, uneven ball of baked clay. Possibly a sling-stone, but it could equally well have been due to the accidental firing of a clay ball. From G I, 7.
9. A spindle-whorl made from the pedestal base of small grey-ware beaker. From F XII, 3.

GLASS

By Miss Dorothy Charlesworth, f.s.a.

Not many glass fragments were found in the excavations. The majority were small and indeterminate, and none were thought worth illustration.

Fragments of a natural blue-green glass, which was used during the first and second centuries for a large number of different vessels, came from the following layers: convex fragments from flasks, beakers or bowls, D I, 30; G II, 14; G II, 25; G II, 32; G VIII, 6; G VIII, 8; fragments from bottles *c.* A.D. 70–150 (for discussion of square bottles see *Journal of Glass Studies*, VIII (1966), p. 26 ff.), A I, 54 (rim); A VI pit I (base); B I, 16; C II, robber trench of town wall (base); D I, 30 (handle); D II, 23; F XXVII, 3 P; G I, 6; G II, 34, G III, 10.

Colourless fragments from vessels occurred as follows:

A I, 25	Very worn piece with two wheelcut lines. First to second century.
A I, 39	Shattered fragments, probably the result of excessive heat; type of vessel unidentifiable.
A VIII, 11	Also with wheelcut lines and probably from a second-century carinated beaker.
B IV, 2 and C IV, 2	Joining fragments of a thickened rim. Probably second century.
E I, 7	Two cut lines.
D II, 20, 23	Two matching, unidentifiable fragments.
F XXVII, 3 P	Rim fragment in good quality metal, slightly thickened, rounded profile; part of a small bowl (*c.* A.D. 150–250).
G III, 23	Top of a small jug in colourless glass, rim rounded and drawn out to form spout; handle broken off; thin neck and shoulder of bulbous body. Height remaining, 5.3 cms. Late second- or third-century date. (C. Isings, *Roman glass from dated finds* (1957), p. 105, type 88 b).

Other vessels represented:

D II, 18	Part of a conical-bodied ribbed flagon in yellowish-green glass (*c.* A.D. 70–150).
G I, 7	Rim fragment in thin blue-green glass; probably second century.
G V, 26	Rim fragment in green glass, bent outwards and with the edge folded in to form a hollow tube.
G VIII, 5	Base of jar in green glass (late first to mid second century).

Window glass:

F XIII, 3	Colourless; 2 mm. thick.
F XXII, 3	Edge fragment of blue-green metal; 2.5 mm. (thickening at edge).

THE SAMIAN POTTERY

By B. R. HARTLEY, F.S.A.

(Figs. 48–51)

Unless indicated, pieces have not been illustrated

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
PERIOD II A				
B I, 77	S.G.*	27 or 35/6	Vespasianic	
	S.G.	—		Unusual form; too small to determine.
B I, 60	S.G.	35	Flavian	
	S.G.	Scrap	First century	
G IV, P.H. 1	S.G.	37	Flavian	(Fig. 49, no. 38).
G VIII, T.S. 1	S.G.	37	*c.* 70–80	
G VIII, 16	S.G.	27	Flavian	
G VIII, 18	S.G.	29	*c.* 60–75?	This is a most unusual bowl. The individual elements of the repeated decoration in the upper zone may all be matched in the work of Tiberian and Claudian potters, such as Catlus Stabilio, Bilicatus and Labio, but the ensemble does not seem to produce a parallel. The decoration is badly botched and may be from a very worn mould. (Fig. 48, no. 1).
	S.G.	18	Flavian	
G VIII, 23	S.G.	37 rim	Flavian	
PERIOD II B				
B I, 22	S.G.	18	Flavian, probably Vespasianic	
B V, 29	S.G.	Ritterling 12	Neronian or Vespasianic	Flange fragment.
B I, 24	S.G.	35	Flavian	
B I, 78	S.G.	18R	Flavian, probably Vespasianic	
	S.G.	29	Vespasianic	Heavily burnt; upper zone with small scroll of type current under Vespasian.
	S.G.	37	*c.* 75–90	Probably by Frontinus of La Graufesenque, who used this

* S.G. South Gaulish E.G. East Gaulish C.G. Central Gaulish

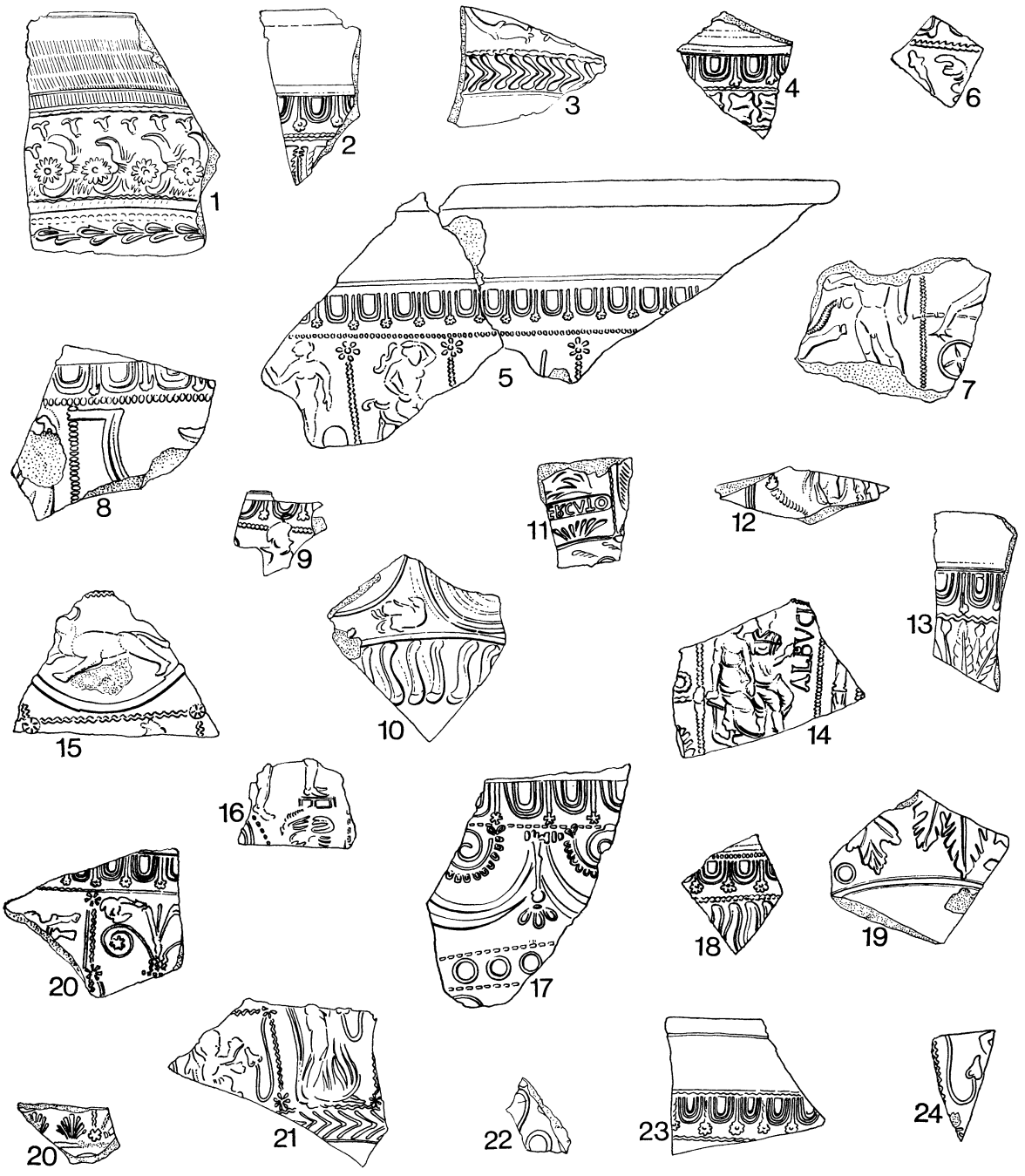


FIG. 48. Decorated samian pottery ($\frac{1}{2}$)

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
				ovolo and a medallion with toothed border similar to the festoon of this piece (cf. Hermet, *La Graufesenque*, pl. 85). (Fig. 48, no. 2).
	S.G.	18 (two or three)	Flavian	
	S.G.	15/17	Flavian	
B I, 80	S.G.	35/36	Flavian, probably Vespasianic	
B II, 36	S.G.	36 (two)	Flavian	
	S.G.	37	*c.* 75–90	See B II, 30. (Fig. 48, no. 3).
B II, 29	S.G.	27	Flavian	
	S.G.	35/36	Flavian	
	S.G.	37	Flavian	
PERIOD IV				
B I, 23	S.G.	35/36	Flavian, probably Vespasianic	
	C.G.	Curle 11	Probably Trajanic	
B I, 28	S.G.	37	*c.* 90–110	A typical late South Gaulish piece with trident-tongued ovolo and blurred cable borders: a wreath below may be matched in the work of Mercato. (Fig. 48, no. 4).
B I, 97	S.G.	29	*c.* 70–85	Gadroons in lower zone.
B II, 38	S.G.	35/36	Flavian	
B IV, 6	C.G.	37	*c.* 125–45	In the style of Quintilianus or a closely associated potter. For the general style, cf. *CGP*, pl. 70. The figures are O.158 (but with shield, as in the work of Ioenalis) and O.913. (Fig. 46, no. 5).
A I, 68	S.G.	27, 30(?), 37	Flavian	
	S.G.	37	*c.* 75–85	A small fragment from a bowl with large scroll: the ovolo is used by Memor (cf. *J.R.S.*, IV, pl. XIV, which also has the Nile goose) and the general style is common in the Pompeii hoard. (Fig. 48, no. 6).

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
B I, 16	S.G.	18 & 27	Both Flavian, probably Vespasianic	
B I, 15	C.G.	18/31	Trajanic or Hadrianic	
B I, 14	C.G.	27 & 18/31	Hadrianic	
	C.G.	31, 33, 36, 38	All Antonine	
	C.G.	Curle 15	Indeterminate date	
	C.G.	37	Antonine?	Scrap with ovolo only.
	C.G.	37	*c.* 130–50	Style reminiscent of the Sacer group, perhaps Attianus, who used the figure type (O.570), cornucopia in the field (cf. *CGP*, pl. 85, no. 9) and astragali across the junctions of panels. (Fig. 48, no. 7). Group *terminus post quem* certainly Antonine, but not necessarily very late in the period; *c.* 150–60 may be suggested.
G II, 40	S.G.	37	Flavian–Trajanic	Zone of festoons. (Fig. 49, no. 31).
G II, 46	S.G.	37	*c.* 80–105	
	S.G.	18 & 27	Flavian	
G II, 67	S.G.	18	Flavian	
G III, Pit 1	S.G.	18 & 27 (two)	Flavian	
PERIOD V				
B I, 50	C.G.	33	Trajanic–Hadrianic	The grooves on the outside below the lip are reminiscent of the broader ones in this position on South Gaulish varieties. Similarly grooved examples were made by the Trajanic–Hadrianic potters of Les Martres-de-Veyre, and they are also known on a very few late Hadrianic cups at Lezoux. The fabric of this

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
				piece suggests origin at Les Martres under Trajan or Hadrian.
B I, 65	S.G.	30	Flavian	No decoration.
PERIOD VI.	*The following layers are sealed by the rampart*			
A I, 45	C.G.	37	*c.* 150–80 (Antonine)	Style of Cinnamus (*CGP*, Fig. 47, ovolo 1). (Fig. 48, no. 8).
A VIII, 11	C.G.	18/31	Hadrianic	
	C.G.	31	Hadrianic or early Antonine	
	C.G.	18/31 or 31	Early to mid Antonine	Stamp of Regulus (p. 131, no. 15; fig. 51, no. 11).
D I, 30	S.G.	37	Flavian	
	S.G.	67	Flavian	
	S.G.	27	*c.* 65–75	
	C.G.	18	Trajanic	
	C.G.	27	Trajanic	
	C.G.	37	*c.* 125–45	By the Large-S potter, cf. *CGP*, pl. 76, 32. Gladiator D.582. This potter's work is rather more common than might be supposed from *CGP*, pp. 148 ff. He is certainly different from Stanfield's X–6, and has his own repertoire of figure types and motifs. His workmanship was better than X–6's and an orangy fabric is usual. There are points of similarity with the work of Drusus or Attianus, and he was certainly a contemporary, but I do not know of any pieces from a dated context. The probable range of his career is as given. (Fig. 48, no. 9).
D II, 18	S.G.	37	*c.* 70–85	Burnt rim only.
D II, 20	S.G.	37	Early Flavian	
	S.G.	35 or 36	Flavian	
	C.G.?	37	Probably second century	Only a tiny scrap.

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
D II, 23	S.G.	27	Flavian	
	S.G.	18	Flavian	
	S.G.	37	*c.* 75–95	Zone of festoons. (Fig. 48, no. 10).
	S.G.	37	*c.* 85–110	Winding scroll?
D III, 26	S.G.	29	Flavian	
	S.G.	18	Flavian	
	S.G.	36(?)	Flavian	
D IV, 14	S.G.	27	Flavian or Flavian–Trajanic	
	S.G.	36		
	S.G.	37		
	S.G.	37	*c.* 90–110	With the stamp of the Flavian–Trajanic potter, Mercato (p. 130, no. 9; fig. 48, no. 11; fig. 51, no. 7).
	C.G.	18/31	Trajanic or Hadrianic	
	C.G.	38	Antonine, probably early Antonine	
	S.G.	29		The fragmentary stamp]ISIO has not been identified (p. 131, no. 26).
D IV, 15	S.G.	36	Flavian	
	S.G.	37	Flavian	
	C.G.	38	Antonine	Same vessel as D IV, 14.
D V, 6	C.G.	38(?)	Antonine	
D V, 9	S.G.	37	*c.* 80–100	
	S.G.	37	Flavian	Small scrap with a rivet. (Fig. 44, no. 2).
	C.G.	18/31	Probably Hadrianic but could just be Trajanic	
A V, 43	S.G.	18	Flavian	Many fragments with the stamp of Virilis (p. 131, no. 22; fig. 51, no. 16).
A V, 19	C.G.	37	Antonine, *c.* 150–80	Large medallion with cornucopia and dancer. Possibly by Cinnamus. (Fig. 48, no. 12).

The following layers from the rampart core or base

A I, 27	E.G.	Curle 21	Late second or early third century	

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
A I, 65 (= 31)	See under A I, 39 (p. 116)			
	C.G.	18/31R	Probably Hadrianic or early Antonine	
D I, 14	C.G.	37	*c.* 125–50	Ovolo of the type used by Quintilianus and associates with wavy line borders of this kind.
	C.G.	33	Trajanic or Hadrianic	
D II, 15	S.G.	18	Late Neronian or early Flavian	Stamp of Secundus (p. 131, no. 18).
E I, 7	C.G.	31	Hadrianic or early Antonine	
	C.G.	33	Hadrianic or early Antonine	
The following layers are all earlier than the north gate of this Period				
A V, 37	S.G.	15/17 (or 18?)	Flavian	Another fragment in A V, P.H. 1.
A V, 36	S.G.	15/17	Flavian	As A V, 37.
	S.G.	27 (or 35?)	Flavian	
	S.G.	Indeterminate footring	Flavian	
A XI, 22	S.G.	37	Flavian	
	S.G.	27	Flavian	
	C.G.	27	Trajanic or Hadrianic	
	C.G.	18/31	Probably Trajanic or Hadrianic	
A XI, 21	C.G.	27	Trajanic or Hadrianic	
	C.G.	37	*c.* 100–20	The work of Stanfield's X-4 (Igocatus) whose activity may be put between the dates given. (Fig. 48, no. 13).
PERIOD VII	(*All the samian from the layers connected with this and later periods of the defences must be residual*)			
A I, 3	C.G.	37	Mid second century	
A I, 16	C.G.	27	Trajanic or Hadrianic	
	C.G.(?)	35/36	Second century	
A I, 13	C.G.	37	*c.* 125–45	Ovolo of Stanfield's X-6 (*CGP*, Fig. 18, 1).

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
B I, 48	S.G.	37	Flavian	
	C.G.	37	Mid second century	
	C.G.	37	*c.* 160–90	Rim with the typical ovolo of Casurius (*CW*², xxxv, pl. ix, 5). Undoubtedly an Antonine potter, some of whose plain ware may be earlier than 160, but his decorated ware has never been recorded in definitely early Antonine groups.
D I, 12	C.G.(?)	38(?)	Antonine	Stamped by Triumphus (p. 131, no. 21).
	C.G.	81	Antonine	
D II, 7	C.G.	18/31 or 31	Hadrianic or just possibly early Antonine	
	C.G.	37	*c.* 100–25	Large winding scroll with leaf-tips filling the concavities. This style was used by several of the Les Martres-de-Veyre potters (cf. *CGP*, under Ioenalis and Donnaucus).
D II, 12	C.G.	?	Probably Trajanic	
D II, 21	C.G.	27(?)	Probably Trajanic	
D III, 20	C.G.	18/32 (two)	One Hadrianic, the other Hadrianic or early Antonine	
D IV, 8	S.G.	37	Flavian	
	C.G.	37	*c.* 125–45	The ovolo is a common pre-Antonine one used by Sacer, the Large-S potter and their associates.
D VI, 4	S.G.	18	Flavian	
	S.G.	37	Flavian	
	C.G.	31	Antonine	
	C.G.	37	Antonine	Figure-type D.157.
A XI, 14	C.G.	33	Mid second century	
D I, 31	E.G.	38(?)	Late second or early third century	
A XI, 18	C.G.	37	Hadrianic or early Antonine	
	C.G.	37	*c.* 125–50	Style of Quintilianus or an associated potter. Figure-type O.153/6. (Fig. 48, no. 15).
A XI, 16	C.G.	31	Mid second century	

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
PERIOD VII B				
A III, 26	S.G.	37	Flavian	
PERIOD VIII				
A I, 8	S.G.	29	Flavian, probably *c.* 70–80	
A III, 16	C.G.	31	Antonine	
	C.G.	79	Late Antonine	Stamp of Mercator (p. 130, no. 10; fig. 51, no. 8).
A III, 10	E.G.	Uncertain	Probably late Antonine	
A XI, 10	C.G.	37	Probably Antonine	
D V, 11	C.G.	37	Trajanic	
The following groups come from the streets				
B III, 13	C.G.	37	Antonine	
B III, 12	C.G.	37	Antonine	
	E.G.	Indeterminate	Presumably Antonine	
B III, 21	C.G.	27	Hadrianic or Antonine	
	E.G.	31	Antonine	
B III, 45	C.G.	37 (two)	Antonine	Scraps only.
B VI, 4	C.G.	37	*c.* 125–45	The unusual light-coloured fabric is like that of the Quintilianus bowl of B IV, 6 and suggests an origin in the same workshop or same period. All vessels in this fabric that I have seen appear to belong to the first half of the second century. The figure types are D.55/O.92 and D.448/O.756 in a smaller version.
B VI, 20	C.G.	37	Antonine	
	C.G.	31	Antonine	
	C.G.	33	*c.* 140–70	Stamped by Mapillus (p. 130, no. 8; fig. 51, no. 6).
B V, 13	E.G.	33	End of second or first half of third century, probably	The base was not stamped.

Foot of colour-coated ('black' samian?) vessel. Probably from Lezoux, where similar fabrics are common. The form is uncertain; possibly a beaker or a carinated cup (cf. Pudding Pan Rock; *P.S.A.L.* (2nd Ser.) xxi, 273). Probably late second-century.

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
BUILDING A.I (*Phase B*)				
A I, 49	C.G.	18/31	Hadrianic	
	C.G.	27	Hadrianic	
	C.G.	33	Hadrianic	
Phase D				
A I, 39 (see also layers 31, 38)	C.G.	37		Large fragment assignable to Stanfield's X-6. Two other flakes join together and are almost certainly of the same bowl. These have the head of Neptune (D.14/O.13), the lower part of which may be seen on a flake from layer 38, also from the same bowl. Another flake adds a Pan mask (D.675/O.1214). This potter had several ovolos (cf. A I, 13 for another) and varied, though always untidy, schemes of decoration. His working life was predominantly Hadrianic, though sherds from Scottish sites suggest that he was still working in the 140s. A recent Lezoux find has the signature Catul[, probably written in the mould before firing. (Fig. 48, no. 17).
	C.G.	18/31R	Probably Hadrianic or early Antonine	
	C.G.	33	Consistent with an Hadrianic date, though some could be early Antonine also.	
	C.G.	Curle 11(?)		
	C.G.	37		
Abandonment of Building				
A I, 38 (See Layer 39)	C.G.	37	Probably mid second century	(Fig 48, no. 16).
	C.G.(?)	Scraps	Second century	

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
Destruction of Building				
A I, 22	C.G.	18/31R	Probably Hadrianic or early Antonine	
	S.G.	33	*c.* 70–85	Stamp of Paullus of La Graufesenque (p. 130, no. 13; fig. 51, no. 9).
BUILDING A III (*all residual*)				
A I, 17	C.G.	36	Hadrianic or Antonine	
	C.G.	37	Probably *c.* 140–60	Medallion with hare to left (D.950a/O.2116).
A I, 12	E.G.	31	Probably late Antonine	
BUILDING B I				
Pre-construction:				
B I, 17	S.G.	29(?)	Vespasianic	Scrap with scroll.
BUILDING B II (*all residual, except pre-construction*)				
Pre-construction:				
B II, 17 (P.H.)	C.G.	37	Probably early Antonine	Ovolo only.
B II, 11	S.G.	35/36	Flavian, probably Vespasianic	
	S.G.	37	*c.* 70–85	Scroll decoration in the general style of the Pompeii hoard.
B II, 30	S.G.	37	*c.* 75–90	With the large rosette ovolo tongue of the Pompeii hoard (*J.R.S.*, IV, *passim*), also common at Inchtuthil. Frontinus etc. (Fig. 48, no. 18).
Phase A				
B II, 25	C.G.	37	*c.* 145–65	Ovolo only, which was used by Cinnamus occasionally in his earlier work, when he was connected with Cerialis and Anunus, who also employed it.

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
B II, 19	C.G.	Unusual form Probably 15/31	Hadrianic or Antonine	(See B II, 12, below.)
	C.G.	31 (three)	Probably all Hadrianic–Antonine	
	C.G.	27 (two)	Trajanic or Hadrianic	
	C.G. or S.G.(?)	33	Flavian–Trajanic	
	S.G.	18	Flavian	
Phase B or C				
B II, 7	C.G.	27	Hadrianic	
		18/31		
		18/31 (R?)		
	S.G.(?)	18	Flavian	
	C.G.	80	Antonine	
	C.G.	33	Mid to late Antonine	Stamp of Beliniccus of Lezoux (p. 129, no. 2; fig. 51, no. 1).
	C.G.	37	Antonine, later than 150	With large scroll of the type used by Cinnamus (*CGP*, pl. 162; fig. 48, no. 19).
Phase D				
B II, 12	C.G.	Probably 15/31 and same vessel as B II, 19		
Building's abandonment				
B II, 4	C.G.	31 (several)	Antonine	One form 33 has an illegible stamp.
		31R		
		33 (two or three)		
		79 (two)		
		Mortarium (Curle 21?)		
	C.G.	37	Probably Antonine	No decoration.
	C.G.	18/31R	Trajanic or Hadrianic	

FIG. 49. Decorated samian pottery ($\frac{1}{2}$)

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
BUILDING G I				
Pre-construction:				
G IV, 10	C.G.	18/31	Flavian–Trajanic	
	C.G.	18/31R		
Phase A				
G II, 32	C.G.	37	Antonine	(Fig. 49, no. 30).
G IV, 6	C.G.	67	Probably Antonine	With cut-glass decoration.
Phase B				
G II, 30	C.G.	Curle 21	Late Antonine	
	C.G.	Curle 33		
G II, 19	C.G.	Curle 21	Late Antonine	As in layer 30.
	C.G.	33	Antonine	
		36	Second century	
G II, 21	C.G.	33 (two)	Hadrianic or	
		18/31	Antonine	
	E.G.	33	Probably Antonine	
G II, 25	S.G.	29	Flavian	
	S.G.	30		
G II, P.H. 7	C.G.	18/31	Probably Trajanic or Hadrianic	
Phase C (all residual)				
G II, 15	C.G.	Curle 21	Late Antonine	As in layer 30.
	C.G.	33	Antonine	Stamp c[.
G II, 18	C.G.	?	Second century	
G II, 10	C.G.	37	*c.* 150–80	Ovolo of Albucius.
	C.G.	37	*c.* 150–80	Scroll probably by Cinnamus.
G II, 14	C.G.	Curle 21	Late Antonine	As in layer 30.
	C.G.	33 (more than one?)	Antonine	
G IX, 8	C.G.	33	Probably Antonine	
BUILDING G II				
Pre-construction:				
G III, 33	S.G.	29 (rim)	Flavian	
	S.G.	27 (two)	Flavian	
	S.G.	46	Flavian	
G III, 42	S.G.	27	Flavian	
G III, 25	S.G.	37	*c.* 85–105	
	S.G.	37	Flavian–Trajanic(?)	
	C.G.	33	Early second century(?)	
	C.G.(?)	Jar		

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
G III, 29	S.G.	29 or 37	Flavian	
	S.G.	15/17	Flavian–Trajanic	
	S.G.	18/31	Flavian–Trajanic	
G III, 23	S.G.	27	Flavian–Trajanic	
	C.G.	33	Probably Trajanic or Hadrianic	
		18/31		
		Curle 11	Trajanic or Hadrianic	
G III, 11	C.G.	37	*c.* 115–45	Stamp of Chresimus (p. 129, no. 3; fig. 51, no. 2) internally on the base.
	C.G.	27	*c.* 120–45	Stamp of Littera (p. 130, no. 5; fig. 51, no. 3).
	C.G.(?)	18/31	Probably Trajanic	
	S.G.	37	*c.* 80–100	
	S.G.	37	Flavian	
	S.G.	18/31	Flavian	
G III, 9	C.G.	?	Probably late Antonine	
	C.G.	33	Antonine	
	E.G.	33	Antonine	
	E.G.	37	*c.* 180–250	Probably from Trier, judging by the fabric and the small spiral. (Fig. 49, no. 25).
	C.G.	18/31	Trajanic	
G III, 38	S.G.	27	Flavian	
		35/36		
		Curle 11		
		37	*c.* 70–85	With Pan (D.423) and Diana (D.85a). The high gloss and crisp, wavy border suggest the dates given. (Fig. 48, no. 20–4).
	S.G.	27		With stamp of an illiterate potter (p. 131, no. 23; fig. 51, no. 17).
G III, 39	S.G.	35	Flavian	
G III, 24	S.G.	29	*c.* 65–80	See G I, 7. (Fig. 49, no. 29).
	S.G.	27	Flavian	
	S.G.	35		
	S.G.	37	*c.* 90–110	Diana and hind. (Fig. 49, no. 28).
	C.G.	37	Trajanic(?)	
G VIII, 9		?	Probably Trajanic	

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
Contemporary with Building				
G III, 10	E.G.	37	*c.* 180–250	See layer G III, 9. (Fig. 49, no. 26).
	C.G.	37	Antonine	
		31 (two)		
		33 (several)		
		31	Late Antonine	
Post-destruction (residual):				
G VIII, 6	S.G.	18/31R	Flavian	
G VIII, 7	S.G.	37	*c.* 85–105	
	C.G.	31	Antonine	
G VIII, 5	S.G.	37	*c.* 85–105	
	C.G.	31	Antonine	
G VIII, 4	C.G.	27	*c.* 130–50	
	C.G.	37	*c.* 160–95	Perhaps by Iustus of Lezoux.
The following belong to an isolated building				
E I, P.H. 2	S.G.	18	Early Flavian	
The following are taken from a large number of pieces found in robber-trenches, topsoil, medieval layers and pits:				
A I, 1a	E.G.	30	*c.* 160–90	The ovolo and astragalus border are typical of the work of Cobnertus of Rheinzabern, whose bowls seem to be much commoner in this country than those of most East Gaulish potters.
A IV	C.G.	37	Late Antonine	Ovolo and wavy lines like those used by Servus.
A VI, Pit 1	C.G.	33	Late Antonine	Stamp of Severianus (p. 131, no. 19; fig. 51, no. 14).
B I, 2	E.G.	31R	Antonine	Stamp of Daccius (p. 130, no. 4).
	C.G.	31	*c.* 135–50	Stamp of Quintilianus of Lezoux (p. 131, no. 14; fig. 51, no. 10).
	C.G.	37	*c.* 150–80	Panel decoration with Cupid (D.236/O.401) and the small Cinnamus ovolo (*CGP*, fig. 47, 5).
	C.G.	37	*c.* 150–80	Panel decoration with Pan (D.413/O.711) and lion

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
				(D.753/O.1421) both used by Cinnamus; the ovolo, though badly blurred is also identifiable as one used by Cinnamus (*CGP*, fig. 47, 1).
	C.G.	37	*c.* 150–80	This also has a Cinnamus ovolo (*CGP*, fig. 47, 2), but the general style and the small double medallion with pygmy (O.696 A) are known on his early work.
	C.G.	37	*c.* 125–45	Fragment with leaf used by Stanfield's X-5 (*CGP*, pl. 67). This is not, however, sufficient to justify attribution to him. The piece is certainly pre-Antonine or very early Antonine, since a closing, wavy line at the bottom of the decoration does not occur on fully Antonine bowls.
B I, 3	C.G.	37	*c.* 160–95	Part of the stamp of Paternus (cf. *CGP*, pl. 49). Horse (D.906A/O.1911) already known on his work. There is no evidence for the use of the large ligatured Paternus stamp before A.D. 160 (p. 130, no. 12; fig. 49, no. 33).
B III, 1	C.G.	37	Probably Antonine	Not assignable. Warrior (D.103/O.177) and bear (O.1584?).
B VI, 1	C.G.	37	*c.* 135–50	Large scroll decoration, probably. The ovolo with blurred rosette-tongue was used by Sacer, Docilis and the Large-S potter, and perhaps by others. As Sacer is the only one of these potters known to use large scrolls, this piece may tentatively be assigned to him.

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
C II, 2	S.G.	37	*c.* 75–90	The straight wreath below the main panelled decoration suggests that this is the work of M. Crestio or Crucuro (cf. *Knorr*, 1952, Taf. 19, 20).
C II, R.T.	S.G.	37	*c.* 85–105	Repeated conventional grass-tufts of the kind used by most late South Gaulish potters, over a zone of ∫-shaped gadroons. The grass-tufts do not appear in the Pompeii hoard. The blurred wavy lines of this piece are also characteristic of that period.
D III, 6	C.G.	37	*c.* 150–80	Stamp of Albucius (p. 129, no. 1; fig. 51, no. 14).
E I, 11	C.G.	33	Late Antonine	Stamp of Scoplus (p. 131, no. 16; fig. 51, no. 12).
F IX, 3	C.G.	33	*c.* 160–200	Stamp of Namilianus (p. 130, no. 11).
F XIV, 3	C.G.	37	*c.* 145–65	From a bowl with large winding scrolls of the type used by Sacer in his late work and by Cinnamus, Paullus and other fully Antonine potters.
F XIV, 4	C.G.	Fragments from an enclosed vessel, perhaps an inkwell.		
G I, 6	C.G.	37	*c.* 145–75	Style of the Censorinus–Laxtucissa Group, probably by Laxtucissa in view of the beaded borders. (Fig. 49, no. 34).
G I, 7	S.G.	29	*c.* 65–80	Probably by the Bassus–Coelus workshop which, used all the motifs (cf. *Knorr*, 1952, Taf. 8, 1; Taf. 9c). See also G III, 24. (Fig. 49, nos. 36 and 37).
	S.G.	37 (two)	*c.* 80–100	(Fig. 49, no. 35).
G II, 3	C.G.	37	*c.* 140–70	In the style of Criciro.
G III, 16	C.G.	37	*c.* 125–45	Fine-beaded panels and ovolo in the style of Drusus II (Fig. 49, no. 27).

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
F XXVII, 5	E.G.	37	Late Antonine or early third century	(Fig. 49, no. 32).
	C.G.	33	*c.* 160–90	Stamp of Maior (p. 130, no. 6; fig. 51, no. 4).
The Sewer Trench				
H III, 2	S.G.	37	*c.* 75–95	With rivet. Zonal decoration, apparently with a conventional plant and festoons alternating in one zone. The general style was current by A.D. 79 (*J.R.S.*, IV, pl. XV, 77). (Fig. 49, no. 39).
J II, 3	C.G.	37	*c.* 105–25	Fabric suggests manufacture at Les Martres-de-Veyre. Bowls in this style are usually assigned to Ioenalis (cf. *CGP*, pl. 39, 456, etc.), but the truth of the matter is that the mould-makers' names are not known. (Fig. 49, no. 40).
J III, U/S	C.G.	27	*c.* 140–60	With stamp of Mammius (see p. 130, no. 7). (Fig. 51, no. 5).
	C.G.	37	*c.* 150	The decoration points at once to Cinnamus (*CGP*, pl. 158, 19; 159, 28, etc.), but this ovolo, used by the Sacer–Attianus Group originally, does not occur on his bowls at Lezoux and seems only to have been used in the Terre-Franche workshops at Vichy (*Rev. arch. du centre II*, p. 49). The red fabric of this piece matches Vichy products. The chronology of the Cinnamus firm is becoming very difficult to assess, but there is no reason to doubt that the Lezoux and Vichy workshops functioned concurrently. Certainly, for this

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
				piece, the link with Sacer–Attianus would suggest manufacture not long after A.D. 150. (Fig. 49, no. 42).
J III, 6	C.G.	37	*c.* 145–80	This seems to have the Cerialis–Paullus ovolo with beaded tongue. Large scroll decoration.
J III, 35	C.G.	37	Antonine	Fabric typical of Les Martres-de-Veyre. This is undoubtedly by Cettus, the Potter of the Small S, whose activity is normally held to be late Antonine, largely on the strength of the presence of a bowl or bowls in the Corbridge deposit usually assigned to A.D. 197 (*CGP*, p. 247). Various strands of evidence, too complicated to summarize here, now suggest the possibility that Cettus may have been at work well before A.D. 160, and it is best simply to date his bowls to the Antonine period without qualifying further. (Fig. 49, no. 41).
J IV, 5	S.G.	29	*c.* 75–85	Parallels for the large scroll decoration are to be found in the work of Biragillus, Flavius Germanus and Patricius (*Knorr* 1919, Textbild 20; *Knorr* 1952, Taf. 50; *Mainzer Zeitschrift*, VII, Taf. VIII, 10). (Fig. 49, no. 44).
J IV, 4	C.G.	37	*c.* 140–70	Almost certainly by Criciro of Lezoux (cf. *CGP*, pl. 117, 10, etc.). (Fig. 49, no. 43).
J IV, 6	S.G.	37	*c.* 75–90	Zonal decoration with a scroll over a hunting scene. The Pompeii hoard offers many general parallels with-

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
				out any particularly close one. An identical scroll appears at Camelon. (Fig. 49, no. 45).
J IV, 24	C.G.	Curle 23	Hadrianic–Antonine	Four joining fragments giving about half a dish with strap handles with a rosette-stamp (p. 131, no. 25). Lezoux ware. (Fig. 51, no. 18).
	C.G.	18/31	Hadrianic–Antonine	
	C.G.	37	*c.* 145–70	In the style of Tetturo, who worked at Lezoux, but also apparently sold moulds to potters at Toulon-sur-Allier. The relative frequency of his stamps on forms 18/31 and 27 shows that he was working well before A.D. 160, and a decorated bowl in a recent Alcester group may be put *c.* 150–60. (Fig. 49, no. 46).
J IV, 36	C.G.	37	*c.* 125–45	Yellowish buff fabric. Precise parallels are forthcoming from the Birdoswald Alley (*CW*,[2] xxx, 179 — assigned to Condollus in *CGP*), and one of the Hadrianic pits at Birdoswald (unpublished; with a lower wreath used by Secundinus). Carzield has also produced a piece in this same style. (Fig. 49, no. 47).
J IV, 49a	S.G.	37	*c.* 75–95	Four-pronged ovolo tongue used by Crucuro, M. Crestio and others.
J IV, 52	S.G.	37	*c.* 75–90	Ovolo only with large rosette-tongue used by Frontinus and perhaps Crucuro. There are many examples in the Pompeii hoard of A.D. 79, and they

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
				occur too at Camelon and Inchtuthil.
J IV, 72	S.G.	29	*c.* 70–85	Only a tiny fragment of decoration is left. The strongly everted rim is typical of the period A.D. 70–85.
K IV, 2		37	*c.* 180–200	Two joining fragments giving half of a very small example (diameter at the rim 13 cm.), in Lezoux fabric. These tiny bowls are typical of the latest second-century production of Lezoux and are often extremely poorly moulded and finished. They are not often stamped, but were certainly made by Iustus, Lucinus, and potters working in the Paternus tradition. The

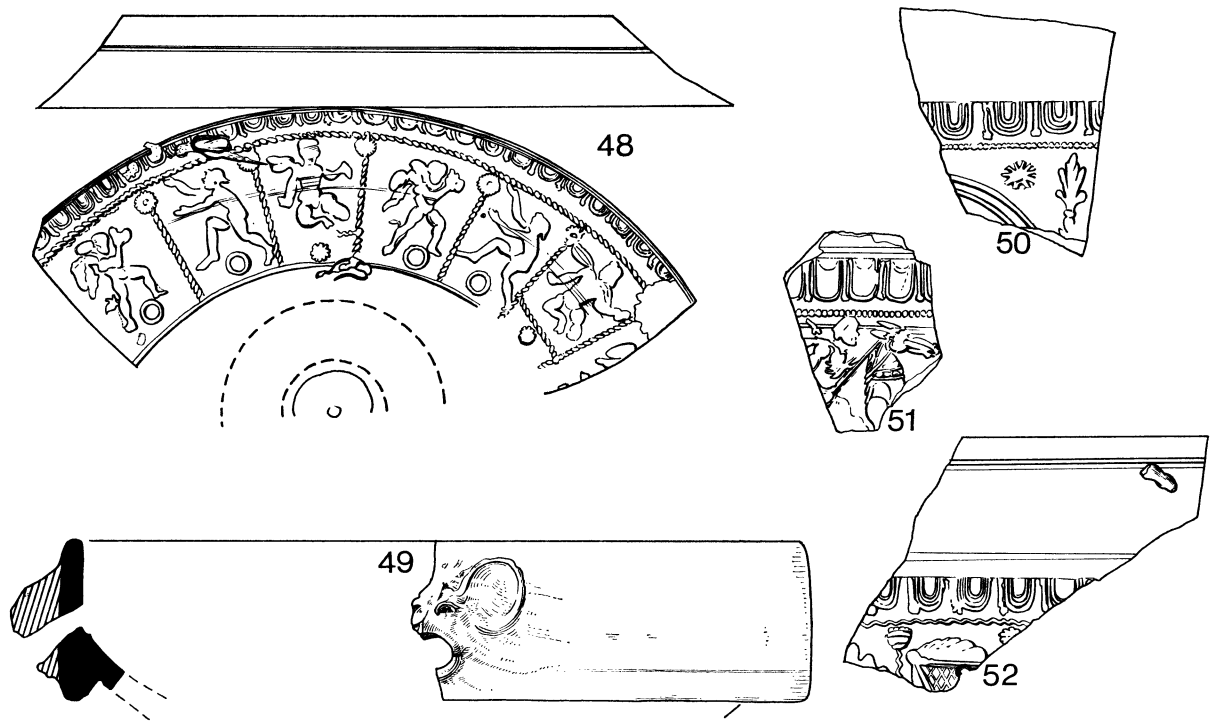


FIG. 50. Decorated samian pottery ($\frac{1}{2}$)

Site Ref.	*Origin*	*Form*	*Date*	*Remarks*
				diagonal border and figure types (D.264/O. 440, D.365/O.628, and a large version of O.667 A) link it with the latter group. (Fig. 50, no. 48).
K V, 2	E.G.	45	Late second or third century	Bat's-head spout. (Fig. 50, no. 49).
L I, 2	C.G.	33	Antonine	Stamped by one of the Secundini of Lezoux (p. 131, no. 17). (Fig. 51, no. 13).
L II, 1	C.G.	37	*c.* 150–90	The T-tongued ovolo and the leaf at the top of the vertical border point to one of the Censorinus associates, probably Laxtucissa. (Fig. 50, no. 50).
L III, U/S	C.G.	37	Hadrianic–Antonine	This ovolo with single border does not seem to be known on any stamped or signed bowls. It occurs at Lezoux in Hadrianic–Antonine groups. Horseman, D.158/O.249. (Fig. 50, no. 51).
L M.H. 15 A, 2	C.G.	37	*c.* 100–20	With rivet. Fabric typical of Les Martres-de-Veyre. Style is that of Stanfield's X–4, which includes bowls from moulds stamped by Igocatus. (Fig. 50, no. 52).

POTTERS' STAMPS ON SAMIAN

1. ALBVCI on form 37. Lezoux, *c.* A.D. 150–80. (D III, 6) (Fig. 48, no. 14).
2. BIILĨNICCIM on form 33. The only recorded example of this stamp, which certainly belongs to Beliniccus of Lezoux and not to the earlier potter of Les Martres-de-Veyre. There are several stamps of the Lezoux potter in Scotland, and others are on mid to late Antonine forms. (B II, 7) (Fig. 51, no. 1).
3. C-RESIM[II] on form 37. A stamp of Chresimus of Montans on the interior of the base. He used several similar stamps, some appearing in Scotland in Antonine contexts. A strong case may now be made for believing that several late Montans potters, such as Attillus, Chresimus, Felicio and Malcio worked under Hadrian and probably in the opening years of the Antonine period as well. *c.* A.D. 115–45 is the period most likely for Chresimus. (G III, 2) (Fig. 50, no. 2).

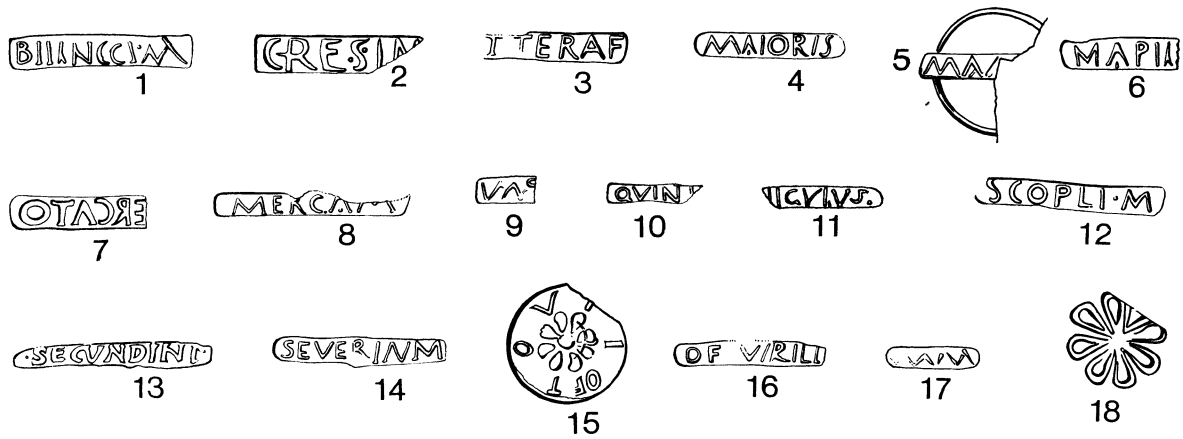


FIG. 51. Potters' stamps on samian vessels ($\frac{1}{1}$)

4. [D]ACCIVS.I on form 31R. This is a stamp of Daccius of Lavoye (Chenet and Gaudron, *Céramique sigillée d'Argonne*, p. 134), whose work is rarely found in Britain (otherwise only at Chester and York). Certainly Antonine, probably not much earlier than A.D. 160 (B I, 2).
5. [LI]TTERAF on form 27. Littera worked at Lezoux, where a similar stamp on a waster in a Hadrianic group has recently been noted. Mainly Hadrianic, as the die of the Brough piece is usually on forms 18/31R and 27, this stamp may still have been used in the early years of the Antonine period, since it occurs twice on form 38. *c.* A.D. 120–45 is the likely range. (G III, 11) (Fig. 51, no. 3).
6. MAIORIS on form 33 (burnt). Maior of Lezoux, entirely late Antonine to judge by his site-record (including Pudding Pan Rock) and forms. *c.* A.D. 170–200. (F XXVII, 5) (Fig. 51, no. 4).
7. MAM[MI·OF] on form 27. This is the original version of a stamp of Mammius of Lezoux from a die which was subsequently broken and finally gave stamps reading AMM·I (usually assigned to a non-existent Ammius of Lezoux). Both versions are now known from Brough (*Brough IV*, p. 47), and both are Antonine, the first being in use before A.D. 160, since it appears on form 27; the second was probably only in use after *c.* A.D. 160. (J III, U/S) (Fig. 51, no. 5).
8. MAPIL[LIM] on form 33. Mapillus of Lezoux. This particular stamp is only otherwise known on form 27 at London (BM), though a very similar one is on form 79/80 at Moulins Museum. As his decorated ware is indistinguishable from the early work of Pugnus (the style represented by *CGP*, pl. 153), a general date *c.* A.D. 140–70 seems likely. (Fig. 51, no. 6).
9. MERCATO, retrograde, on form 37. Mercato worked at La Graufesenque, and possibly also at Banassac. His bowls occur in Scotland, but not in Flavian I groups, so he cannot well have been exporting much before A.D. 90. *c.* A.D. 90–110 may be suggested. (D IV, 14) (Fig. 51, no. 7).
10. MERCAM on form 79R. Mercator of Lezoux. This die was almost always used on forms 79 and 80, and is certainly late Antonine. (A III, 16) (Fig. 51, no. 8).
11. [NAMILI]ANI on form 33. A stamp of Namilianus of Lezoux which also appears in the Pudding Pan Rock group. *c.* A.D. 160–200. (F IX, 3).
12. Part of the usual PATERNFE stamp of Paternus of Lezoux on form 37. *c.* A.D. 160–90. (B I, 3).
13. [OF]PAVL[I], retrograde on form 33. Paullus of La Graufesenque. This stamp, more usually on form 27, is certainly Flavian and probably to be dated *c.* A.D. 70–85 in view of the site-record (Caerleon (3), Castleford, Doncaster, York (2) and Nijmegen fortress). (A I, 22) (Fig. 51, no. 9).

14. QVIN̂T[IILIAN̂IF] on form 31. This stamp is evidently from a mis-cut die of Quintilanus. It is only otherwise known at Clermont-Ferrand (Coll. Suchon on form 27) and Moulins Museum (form 33). It evidently belongs to the well-known potter of Lezoux, but the high kick suggests the later part of his activity *c.* A.D. 135–50. (B I, 2) (Fig. 51, no. 10).

15. [R]IIGVLVSI on form 18/31 or 31. Probably a stamp of Regulus of Lezoux, though it has not yet been found there, and it might just possibly belong to a potter of Les Martres-de-Veyre (*Germania* 32, p. 175). The same stamp is on form 27 at Corbridge, but it also appears on form 80 at Arentsburg and Poitiers. In view of this an early to mid Antonine date is likely. (A VIII, 2) (Fig. 51, no. 11).

16. SCOPLI·M on form 33. Scoplus of Lezoux, who worked in the late Antonine period, as his forms (including 31R, 79 and 80) and the frequency of his stamps on sites reoccupied *c.* A.D. 160 confirm. (E I, 11) (Fig. 51, no. 12).

17. ·SECVNDINI on form 33. A stamp of the Lezoux potter always on form 33. Two examples from South Shields suggest mid or late Antonine date. (L I, 2) (Fig. 51, no. 13).

18. [OFSE]CVND on form 15/17 or 18. Secundus of La Graufesenque. This stamp is more usually on form 29, occasionally on form 18. The associated styles of decoration suggest late Neronian or early Flavian date. (D II, 15).

19. SEVERINM on form 33. Oswald (*Index of Stamps*, p. 296) assigned this stamp to Severinus of Lezoux, where it is now known. In view of the sloping N it is perhaps more likely to be a stamp of Severianus. In either case it should be late Antonine. (A VI, Pit 1) (Fig. 51, no. 14).

20. TOVTI·OF or OF·TOVTI, circular on form 38 or 44. Oswald's attribution of Toutus to Lezoux is now confirmed by the discovery of two stamps there (both TOVTI·OF). The Brough stamp is so far unique, but the form, and a different stamp on form 80 at Poitiers, point to the mid or late Antonine period. (Fig. 51, no. 15).

21. TR[IVMPHIM] on form 38 or 44. In view of a record at Orleans, Central Gaulish origin is likely, even though the reported Moulins stamp (Oswald, *Index of Stamps*, p. 321) is a misread stamp of Tribunus. Otherwise this stamp is only at London (G.H.) and York, on forms 33 and 38. The fabric is usually orange and the glaze very velvety. Antonine. (D I, 12).

22. OFVIRILI on form 18. Virilis of La Graufesenque. This stamp was in use *c.* A.D. 70–90 to judge by the site-records and its use once on form 24. (A V, 43) (Fig. 51, no. 16).

23. VIWM on form 27. An illiterate stamp of the kind particularly common on South Gaulish cups of form 27 of the Flavian and Trajanic periods. (G III, 35) (Fig. 51, no. 17).

24. A blurred, but almost certainly illiterate stamp on a Central Gaulish form 33 of the Antonine period. (B II, 4).

25. Rosette stamp on Curle 23 with strap handles. Rosette stamps of this kind are particularly difficult to match precisely, but this is probably from a die used at Lezoux, where it is on Curle 23 and form 46 in Hadrianic–Antonine groups. (J IV, 24) (Fig. 51, no. 18).

26.]ISIO? on form 29. South Gaulish, but not identified. (D IV, 14).

A few corrections to the former Brough records of potters' stamps (summarized in *Petuaria*, 1, 30) may be noted.

1. ·AMMI· on form 33 is from the broken die of Mammius noted under no. 6 above.

2.]RTIM on form 80 is a stamp of Libertus II of Lezoux working in the late Antonine period.

3. MAR[on form 27 reads MARCIILINI in full and is a stamp of Marcellinus of Les Martres-de-Veyre. Hadrianic.

4.]ECVN[on form 18 is a stamp of Secundus of La Graufesenque reading OFSECVND. Late Neronian or Vespasianic.

5. OI:ZVRILLI on form 27 is a stamp of Sabinus of La Graufesenque reading OI:SABINI retrograde. *c.* A.D. 70–95.

Many of the Central Gaulish stamps were dated rather too early, including those of the Antistii, Celsianus, Censorinus, Maritumus, Martius, Mercator and Paterclinus, which are all certainly Antonine and mostly late in the period.

STAMPED MORTARIA

By MRS K. F. HARTLEY

(Fig. 52)

1. From A I, 65. Fine-textured hard brownish-orange fabric, with faint trace of grey core; cream slip. Sparse medium-sized brown sandstone grit.

The incompletely impressed stamp reads]NIAL for GENIALIS. In Britain stamps reading GENIALIS, more or less fully, are at present known from five different dies: A. Bainbridge; Caerhun; Elsham, Lincs.; Leicester; Rocester, Staffs.; Water Newton; B. Brough-on-Humber (2, including this); University Museum of Archaeology and Ethnology, Cambridge (Bateman Coll. and so perhaps from York); Lease Rigg, E. Yorks.; Leicester; Norton, Yorks.; Slack; York; C. Wilderspool; Leicester; Ambleside; D. Caister-by-Norwich (2); E. High Cross; Wilderspool. Of these A and B clearly belong to one potter (Genialis 1). The character of the stamps C and E, which have no decorative borders, is markedly different, and this may well indicate that they belong to a different potter or potters. The fabric and forms of the mortaria on which they occur, without being identical, have something in common with those of Genialis 1. The stamps from die D certainly belong to a different potter, probably East Anglian.

The stamp Genialis 1 from Slack shows that he was working before the Antonine period, when the site was not occupied, and the Bainbridge stamp should be dated earlier than A.D. 125. At Brough (*Brough*, IV, 61, 100 — misread as SIVIAF) and Leicester (*Jewry Wall*, p. 217, 8), his stamps were found in residual deposits with material not later than Hadrian's reign. The Caerhun stamp (*Arch. Camb.*, LXXXIX, 39, 38) was from a deposit in which the decorated samian is all Flavian–Trajanic in date, but some of the plain samian and coarse ware is, in the opinion of B. R. Hartley, Hadrianic. Taking into consideration the fabric and the rim-sections of this potter, it seems likely that A.D. 100–40 would cover the period of his work.

The distribution of the stamps of Genialis 1 and his use of red or brown sandstone grit strongly suggest that he worked in north-east Leicestershire or Nottinghamshire, possibly near the Trent, which may have served as a means of distributing his products.

2. From B I, 78. Hard light-brown fabric with self-coloured slip and small grey and white flint grit, very sparsely distributed. There is an incomplete stamp of Privatus; the first six letters are ligatured in two groups, P reversed but not registering fully here; the triangular stop before the P is presumably a space-filler.

This is the only stamp of Privatus to have been found in Britain, but several from the same die have been recorded at Bavai in Gallia Belgica, where he probably worked. A handful of stamps of other potters such as Adivtor, Vxpuro and Virilis, who worked in the same region, have also been found in Britain. Unfortunately we do not know if these potters were all contemporaries, and so it is difficult to know whether the mortaria are chattels brought over, or whether they represent a limited trade.

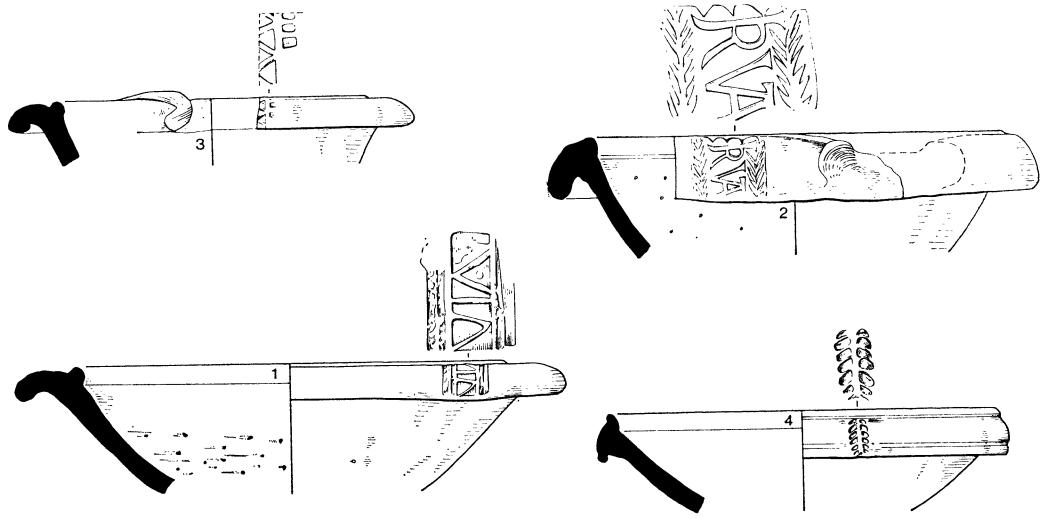


FIG. 52. Stamped mortaria ($\frac{1}{4}$ for vessels; $\frac{1}{2}$ for stamps)

A first-century date is suggested by the form of the Brough-on-Humber example, and as there is no evidence that mortaria were stamped much before the Flavian period, this is likely to be dated A.D. 65–95.

3. From G II, 15 and G II, 14. (Four fragments, two from each deposit). Four very heavily burnt fragments, in all probability from the same mortarium, though none join. The broken stamp is from the same die as one from Corbridge, reading -MA. MA could be the complete stamp, but the initial border is not preserved.

The forms used point to an Antonine date, and the fabric and distribution to an origin in northern England.

4. From G II, 15 (4 pieces) and G II, 3, all from the same vessel. All are heavily burnt, but the fabric was undoubtedly red-brown with a thick dark-grey core and cream slip. Both of the small herringbone stamps are preserved, but no other examples are known from the same die.

The form may be compared with one favoured by Bellicus (*Arch. Ael.*,[4] XXVI, 202, no. 5v), whose work is to be dated A.D. 175–200. Such a rim-profile is unlikely to have been produced before A.D. 160 at the earliest and a date of A.D. 170–200 is more likely.

Similarity in form and fabric to some mortaria from kilns at Cantley near Doncaster suggests that this mortarium could have been made there, though there are likely to be other sources further north. Several unstamped mortaria at Malton have all the characteristics of the Brough example and are fairly certainly from the same source.

THE COARSE POTTERY

(Figs. 53–82)

Much of the coarse pottery from Brough can be readily distinguished by its local nature, and most of the vessels must have been manufactured in Yorkshire. Consequently it has been considered ill-advised to draw too many parallels with types outside the area, unless these

belong to easily recognizable forms and fabrics. As a result, the task of sorting and cataloguing the pottery from Brough is made more difficult by the absence of closely dated kiln-groups, and it has been thought unwise, at this stage, to attempt the compilation of a type series. Nevertheless, some general remarks can be made. As far as possible, analogies have been drawn with the products of various kilns, even though these may not yet be readily datable, but in the hope that the Brough pottery, dated by more widely distributed wares, may help to provide such evidence for the period of activity of the East Yorkshire potteries. For this reason a wide selection of stratified groups has been illustrated, although it should be borne in mind that, eventually, some of the pieces shown may prove to be residual in the context in which they occurred. Attention has been concentrated in particular on third- and fourth-century wares which made a poor showing in the 1933–7 excavations, and also because they reflect most closely the final days at Brough.

The tradition of manufacturing calcite- and shell-gritted hand-made wares lasted throughout the Roman occupation. Examples were found in all periods from that of the earliest military down to the fourth century. But even here distinctions have been made according to the type of grit inclusions, which may one day indicate where they were manufactured. Apart from these vessels, the majority of Flavian–Trajanic pieces consisted of wide and narrow-mouthed jars in reduced grey wares, fired almost to the point of vitrification. The fabric contained much coarse sand, which gave a harsh and gritty texture. When smoothed, the surface assumed an apparently metallic sheen. Decoration assumed the form of various kinds of rustication and barbotine work, but more often this was replaced by incised wavy lines and zones of stabbing or notching. The bases were usually of small diameter compared with that of the rim, and were often modelled on pedestal forms. No. 93 is a complete and typical example. The common practice, noted on these types, of smoothing the surfaces in a series of horizontal bands between $\frac{1}{8}$ in. and $\frac{1}{2}$ in. wide, leaving unsmoothed bands between, is very characteristic of the Throlam wares of later date, and in contrast to Norton wares which were more usually smoothed all over. This might suggest that there are early kilns still to be found in the Throlam region, which supplied the fort at Brough. Certainly the jar (no. 97), which was found in the sewer trench with other Flavian pieces, closely resembles the series of narrow-mouthed jars made later at Throlam.

The later second century, after the final abandonment of the fort, saw the introduction of more vessels which, in general, have a distribution well outside Yorkshire. It should however be noted that Gillam's category one, black-burnished ware cooking pots are rare, although there are two interesting vessels possibly in this fabric (nos. 103–4, 396). But bowls and dishes in the same fabric are much more common, although probably of later date than the cooking-pots (*Aldborough*, p. 67). It should perhaps be added here that, rather than use the lengthy terms: black-burnished ware, category one or two, the phrases 'black-burnished' and 'grey-burnished' replace them respectively and with equal connotations.

When Corder first considered the date of the Throlam kilns, he tentatively ascribed the period of their activity to the third century, terminating about A.D. 280 (*Throlam*, p. 32). It has already been suggested that pottery was manufactured in the area at a much earlier date, but the earliest pieces at Brough which can be positively identified as Throlam wares do not occur until towards the end of the second century. Nos. 125, 182(?), 185, 202(?), 228 could all have been made there and are sealed below the Period VI rampart. Other

examples were found in the rampart itself and also associated with the latest phases of Building A.I. It is also now clear that the Throlam kilns were active for much longer than Corder first suggested, and certainly continued in production during the first half of the fourth century (cf. p. 189 for a note on F XII, 3 which contains many Throlam pieces as well as others which can probably be dated to A.D. 350–70). As yet, not enough is known about the occurrence of the different Throlam forms to be able to distinguish specific dated types.

Although Corder reported that Throlam wares did not reach Malton, Norton pots were carried in the reverse direction to Brough, where they occur, but not, as might be expected, in the same quantities as those from the local potteries. Hayes and Whitley considered that the Norton kilns were active between A.D. 220–80 (*Norton*, p. 35–7), but it should be recorded here that a very distinctive Norton vessel — the folded beaker (*Norton*, type 9) — appeared in the body of the Period VI rampart. Moreover, other Norton types occur in the F XII, 3 groups mentioned above and dated to the the period A.D. 350–70.

Unlike Norton wares, which reached Brough in some numbers, the third-century products of the Knapton kilns did not, and only four pieces were found. At this time, most of the cooking pots in use at Brough were of the Dales-ware type, perhaps being brought across the Humber from Lincolnshire kilns. These were ultimately displaced by the Huntcliffe-type jars and their prototypes.

One additional point should be mentioned. Among the Throlam vessels of differing fabrics, one particular variety stood out. It was always fully reduced, with a dark grey core, but the dark surfaces were invariably separated from the core by sharply-demarcated paler bands, often almost white. Both coarse, and finer, polished wares occur, and for the time being, the convenient name of 'sandwich' ware has been used as a generic term to describe them. Whether all these vessels originate at Throlam must await further enquiry (but see the reservation made for no. 742).

The occurrence of Crambeck and the latest Nene Valley wares is the subject of a special note on p. 205.

PERIOD I

From the surface of the undisturbed sand in the Welton Road sewer trench, between Manholes 22 and 23:

1. Rim and wall of a jar in soft reddish-brown vesicular ware; rather leathery texture; hand-made, with very irregular surface.

From the filling of the circular ditch, A I, 90*:*

2. Base of jar in fabric similar to 1, but containing more grits and showing vertical finger striations.

These two vessels are typical of the pre-Roman Iron Age in Yorkshire, occurring at North Ferriby,[1] Brough,[2] and at many other sites. There is also a close similarity with the 'Brigantian' wares.[3] Such dating evidence as there is, which is very wide, would not be out of place

[1] *Antiq.J.*, XVIII, 269 (nos. 27–8).
[2] *Brough*, IV, 56 (no. 76).
[3] *Stanwick*, p. 38.

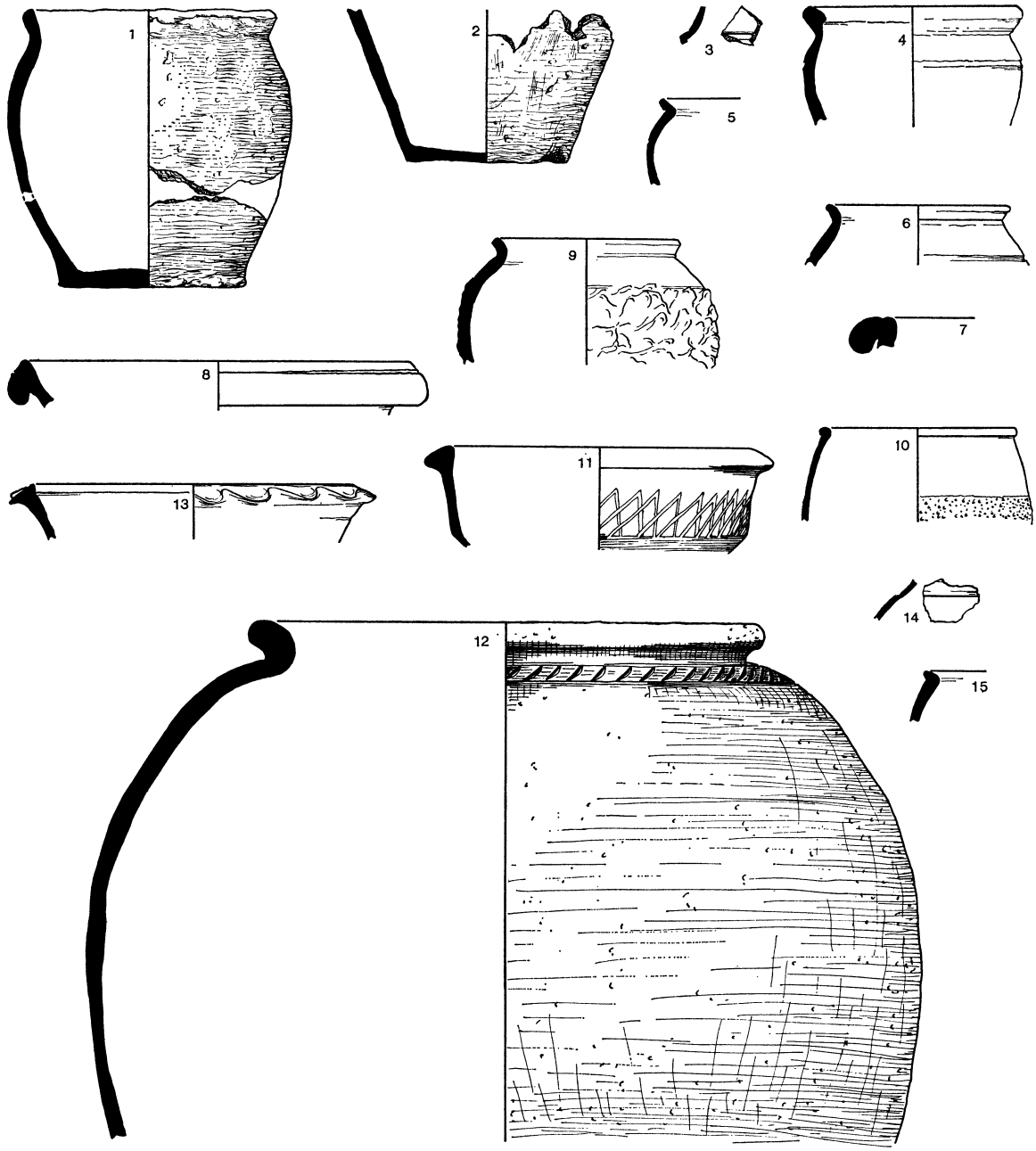


FIG. 53. Coarse pottery ($\frac{1}{4}$)

in the early part of the first century A.D., and there is no doubt that the type continued virtually unchanged throughout the Roman period in East Yorkshire, a fact already noted elsewhere[1] and amply borne out by the present excavations.

PERIOD II A

From B VI, 43; *cut by foundations of Period II A building below* via decumana:

13. Flanged dish or bowl with pie-crust rim; hard orange ware, rather sandy and coarse. This type of vessel is normally associated with the tazza or incense cup form.[2]

From B I, 91; *below Period II A rampart* (?):

43. For this sherd see B I, 25, which contains a matching fragment.
14. Shoulder fragment of small carinated jar or bowl in thin black ware; very smooth and fine textured.
15. Rim of jar in hard pale grey ware.

From B I, 77; *pit below Block 2 (Period II B)*:

8. Rim of wide-mouthed jar or bowl in hard pale fawnish-pink ware; fabric contains largish grits which extrude through the outside surface; tapering groove on the outside of the top of the lip. This could be an outsize derived version of a common first-century type (*Camulodunum*, type 161), or an imitation of Loeschcke type 7 and 8 (*Camulodunum*, type 57).
9. Rim and wall of rusticated jar in fine hard dark grey ware.
10. Rim and wall of rough-cast beaker in fine black ware with a red core.

Gillam gives A.D. 80 as the earliest date for the appearance of this form in the north (type 72) (although the fabric is different). But undoubtedly the type does occur earlier, although the fabric is usually different and the vessels are colour-coated (*Camulodunum*, p. 235, form 94). But see Newstead, from the ditch of the early fort (J. Curle, *Newstead* (1911), pl. XLIX A, no. 9) for a coarse ware copy.

11. Rim and wall of bowl or dish in hard, slightly harsh, pale grey ware with burnished interlocking zig-zag pattern. Heavy triangular-sectioned rim.
12. Rim and shoulder of large storage jar in softish calcite-gritted 'native' fabric. A burnished line occurs below the lip but above a zone of diagonal incised grooves set between parallel, horizontal grooves. This type of large storage jar frequently occurs on early military sites of the Claudio-Neronian periods: e.g. *Margidunum*, p. 20; Thorpe (unpublished), but its apparent absence from northern military sites (Gillam gives no examples and none are represented at Malton) suggests that its life did not extend far into the Flavian period.

From the filling of the ditch inside the Period II B rampart.

B I, 26:

3. Fragment of carinated beaker or jar in fine, hard grey ware.

B I, 27:

4. Rim and shoulder of jar in heavy rough-textured dark grey ware; some very fine grit.
5. Rim and shoulder of small jar in fine blackish ware with a red core.
6. Rim of jar in hard grey calcite-gritted fabric.

[1] *Langton*, p. 32.

[2] *Roman Colchester*, p. 283, form 198.

7. Rim of a mortarium in hard heavy orange ware with a dark grey core. Mrs K. F. Hartley has kindly reported as follows: this rather unusual form is closely paralleled in mortaria stamped by Juvenalis, from Richborough and Canterbury (neither rim-section is published), and the fabric, though different, is in the same orange- and pink-brown range. Juvenalis may have worked in Kent, or less probably in Gaul.

A stamp from Richborough is recorded from a pit filled *c.* A.D. 90 (*Richborough IV*, p. 244, no. 43, a stamp on a storage vessel or amphora made by Juvenalis). A date *c.* A.D. 85–125 should include the period of his activity.[1]

There is no reason to suspect trade between Kent and Petuaria, and if the mortarium was made in Kent one should assume that it was a chance carry.

B IV, 5:

18. Shoulder of jar in hard sandy grey ware; polished outer surface with zones of wide-spaced shallow rouletting.

POSSIBLE PERIOD II (connected with the stores depot)

From G VIII, 16; *probably connected with the destruction:*

16. Rim and neck of jar in black-burnished ware with a dark grey core; internal sandy texture. Probably Hadrianic (*Gillam*, types 120–5).

From the slot-filling, G VIII, T.S.1:

17. Rim of jar (or bowl?) in hard grey ware.

PERIOD II B

From A I, 73; *below rampart:*

19. Cup in lightly-burnished grey ware in imitation of samian form 27.

From rampart levels.

B I, 22:

20. Base of amphora in much-gritted pinkish-brown ware.

B I, 23a:

21. Fragment of roughcast or rusticated jar with burnished slate-coloured surface and dark grey core. See no. 10.

From Block 2.

Latest hearth, B I, 24:

22. Fragment of pale fawnish-grey jar of hard sandy texture, with zig-zag line cut below a shoulder groove.

23. Body sherd of large jar in ware similar to 22. Zone of rouletted decoration.

From floor and occupation.

B I, 78:

24, 25, 26. Rims of jars in hard grey ware, harsh and gritty texture.

See also STAMPED MORTARIA, no. 2 (p. 132).

[1] But its presence in this context might suggest an earlier starting date (J.S.W.).

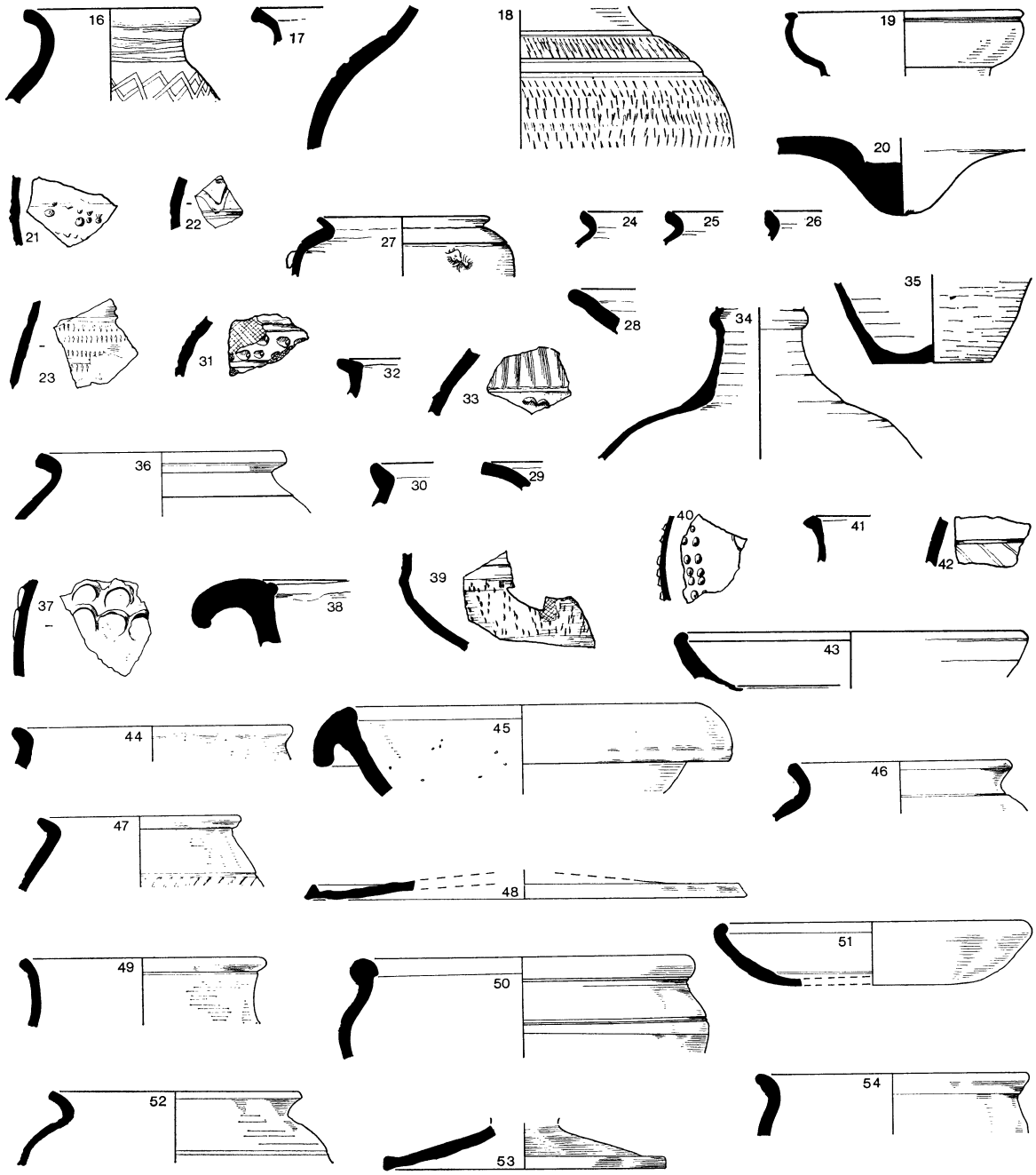


FIG. 54. Coarse pottery ($\frac{1}{4}$)

B I, 80:

27. Rim and shoulder of jar in hard blackish ware with fawn core. Polished above shoulder groove; discontinuous rustication below.
28. Flaring rim of large bowl in soft coarse black ware with much shell grit.

From B I, 94; *eaves-drip channel to the east:*

29. Rim of bowl in hard dark grey ware; coarse texture.
30. Rim of jar or cooking-pot in soft black native fabric.

From destruction layers.

B II, 36:

31. Fragment of jar in hard dark grey ware. Two burnished areas are separated by a zone with two rows of stabbed decoration and flanked by horizontal grooves.

B II, 29:

32. Small everted rim of jar in coarse dark grey ware.
33. Wall fragment in hard sandy black ware. Decorated with a zone of vertical combed lines, below which a horizontal groove separates them from stabbed decoration.

From B III, 39; *a post-pit at the* porta decumana:

34. Neck and shoulder of ring-necked flagon in pinkish-orange ware with a grey core in places. Traces of a fawn slip occur round the neck.

From B VI, 29; *wash off metalling south of* via decumana:

35. Base of jar in hard sandy pale grey ware.

PERIOD IV

From Block 2.

B II, 35; *foundation trench:*

78, 79. Rim and base sections, probably of same jar, in hard dark grey ware, with pale grey core; central zone of heavy rustication, above and below which the surface is burnished.
80. Wall fragment from the shoulder of a jug, with base of applied hollow handle; grey ware with pale buff-grey core. Three horizontal grooves are obscured where the handle meets the body, but can be seen in the hollow area.

B II, 38; *foundation trench:*

82. Rim of small jar in hard dark grey ware with paler grey core; an external low cordon round the neck above a burnished line.

B I, 93; *foundation trench:*

76. Wall of jar in dark grey gritted ware with burnished outside surface, diagonal incised patterns above a horizontal groove.
77. Flaring rim of jar or beaker in hard grey sandy ware with burnished outer surface.
81. Base in hard pale buffish-grey coarse ware; strong wheel-marks.

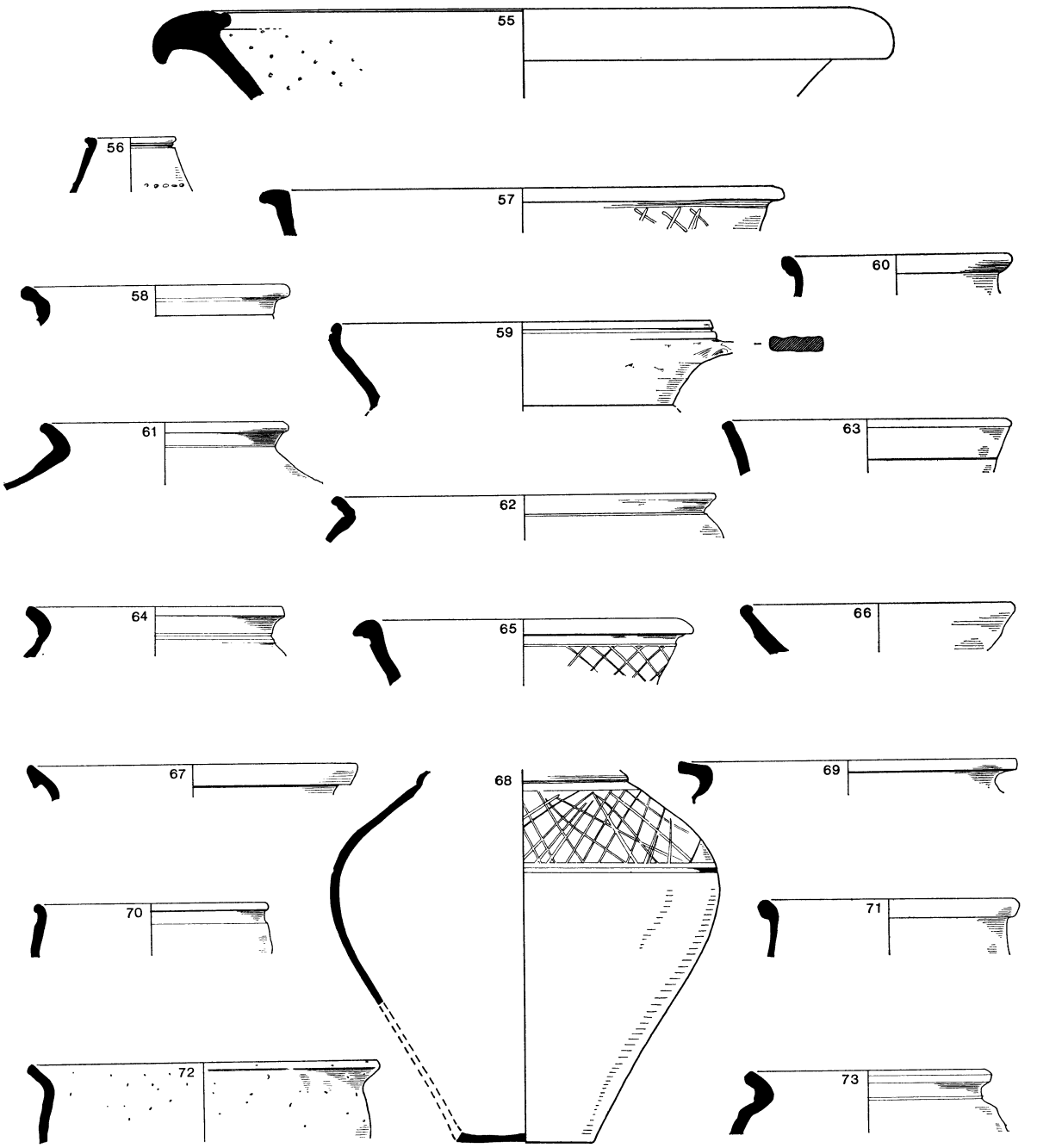


FIG. 55. Coarse pottery ($\frac{1}{4}$)

From Block 1.

B I, 76; *floor:*

74. Rim of large amphora.
75. Rim of jar in coarse, rather soft, reddish-orange ware, with black core; much grit and rather bumpy and irregular surface. Is very like the native fabrics, but seems to be wheel made.

B I, 37; *eaves-drip to west:*

68. Narrow-mouthed jar in sandy light grey ware; a zone of burnished lattice on the shoulder between a neck cordon and a girth groove; lightly burnished surface below groove. This type is normally dated Hadrianic–Antonine (*Gillam*, type 28), but can be earlier (*Jewry Wall*, p. 97).

From B IV, 6; *post-pit at* porta decumana:

83. Base of flagon in hard sandy orange ware.

The following layers seal destruction deposits of Period IV.

B I, 25:

38. Mortarium in cream ware with a pinkish core.
39. Fragment of bowl, imitation Form 29, in fine hard pale grey ware, with a lower zone of vertical haphazard small stabbings (*Gillam*, type 193, dated Flavian–Trajanic).
40. Wall of beaker with applied barbotine decoration; shiny light grey exterior with darker core. *Gillam*, type 67, dated, 70–100.
41. Rim of jar in hard fine pale grey ware.
42. Wall fragment of jar in shiny black ware with dark grey core.
43. Small dish in polished black ware, with darker grey core.

B I, 16:

44. Small jar of native fabric.
45. Mortarium in sandy buff ware; sparsely gritted with small quartz-like fragments on inside and over flange. Antonine?
46. Rim of jar in hard pale grey ware, with pinkish external colouring.
47. Rim of jar in hard sandy grey ware; polished externally below rim and above a zone of oblique incised lines.
48. Shallow lid in pale grey ware; burnt black near lip.
49. Upper part of carinated (?) bowl in pale grey sandy ware; external polish.
50. Jar with heavy moulded rim and internal bead, in hard sandy grey ware.
51. Imitation Gallo-Belgic platter in hard pale grey ware, with darker surfaces; outside smoothed; inside roughly polished.
52. Rim and neck of jar in hard pale grey ware with alternating burnished and unburnished horizontal bands on the shoulder.
53. Lid in hard pale grey ware.
54. Rim of wide-mouthed jar in hard pale grey ware; slightly rough appearance.

B I, 14:

55. Mortarium in pinkish-cream ware with darker core. Small sparse grit, containing both quartz-like fragments and a dark brown stone.
56. Rim of Castor-ware beaker with light metallic pinkish-grey slip over white body; upper row of barbotine dots. Probably late Antonine (*Gillam*, type 85 or 88).

57. Dish or bowl in black-burnished ware with lattice pattern. Probably Hadrianic–Antonine (*Gillam*, type 306).
58. Rim of jar in reddish-brown sandy ware, with light grey surfaces.
59. Handled bowl, or possibly large jug, in fine creamy-white pipeclay. Possibly *Gillam*, type 60.
60. Rim of jar in smooth sandy pale grey ware.
61. Jar in very hard dense sandy ware with burnished zones on shoulder.
62. Rim of jar in fabric similar to 61.
63. Rim of bowl or dish in very pale grey ware, slightly harsh to the feel, but with a smooth polished exterior surface.
64. Rim of jar in pale grey burnished ware. Probably late Antonine (*Gillam*, type 133–5).
65. Lattice-pattern dish or bowl in fabric like 64. Probably late Antonine (*Gillam*, type 309).
66. Shallow bowl in grey sandy fabric, with darker polished surfaces (cf. no. 43).
67. Jar in light grey sandy ware with reddish surface patches. Is softer than many of the sanded grey wares. Probably Hadrianic (*Gillam*, type 109).
69. Rim of wide-mouthed jar in reddish-grey ware with polished grey surfaces.
70. Small jar in black-burnished ware. Probably Hadrianic.
71. Rim and neck of wide-mouthed jar in dark grey ware with light silvery-grey — almost white — surface; darker grey sandy grits give a speckled appearance and there is a sheen-like finish. This is an example of an apparently local product in a highly characteristic fabric. Other similar pieces came from D II, 18 and 20. *Brough*, IV, p. 58, no. 79.
72. Rim of jar in gritted native fabric — including both shell and chalk grit; coarse, dark grey and hand-made appearance.
73. Jar in hard, dense, sandy, pale grey ware; partly burnished exterior.

Not illustrated: A fragment of rough-cast beaker in cream fabric and dark, metallic slip; rim of dish or bowl as *Gillam*, type 225 or 312; base with small foot-ring of small flagon or beaker in pinkish-buff ware with external micaceous coating.

B VI, 22:

84. Carinated bowl in grey sandy ware with darker smoothed external surface. Probably Flavian, but could be second-century and Hadrianic. *Brough*, IV, no. 58.
85. Rim and neck of ring-necked flagon in dark grey ware with fine sandy texture; external surfaces are pale buff. Only one ring below rim. Probably a second-century type.
86. Flanged bowl with small bead in very soft and friable sandy red ware with grey core. The surfaces, although badly abraded, were probably dark grey.
87. Lid or possibly bowl (*Gillam*, type 301) in black-burnished ware. See also *Brough*, IV, no. 62–4, probably Hadrianic.
88. Shallow flat-bottomed dish in pale grey ware with darker polished surfaces.
89. Base of large jar in hard pale grey micaceous ware. The inner surface is 'blown'. *Brough*, III, A.15.
90. Rim of dish in black-burnished ware.

Not illustrated: A fragment of bowl or dish in black-burnished ware (*Gillam*, type 225); part of jar like *Brough*, III, A.15.

From the inner ditch filling.

A I, 67:

33. Rim of jar in very hard pale grey ware; harsh texture.

A I, 88:

37. Wall fragment of jar with regular pattern of roughly circular, contiguous rustication in hard very pale grey ware. *Gillam*, type 69, dated 100–50.

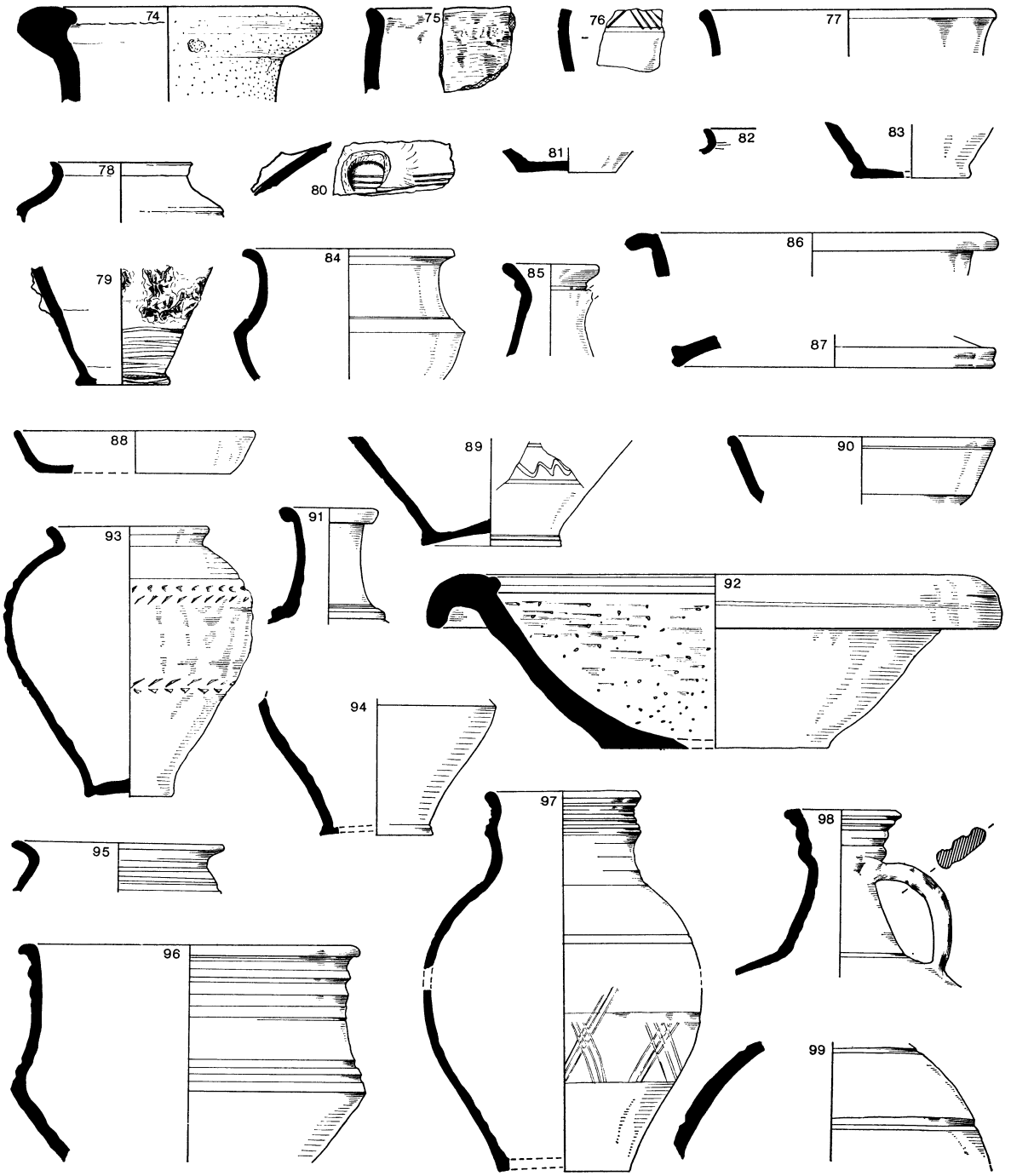


FIG. 56. Coarse pottery ($\frac{1}{4}$)

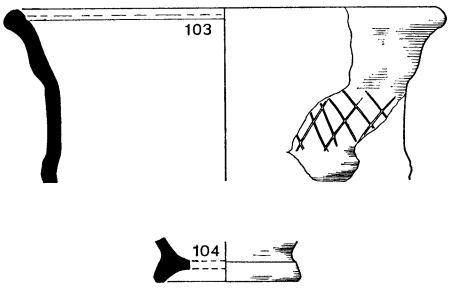


FIG. 57. Coarse pottery (¼)

From pits at the Manor House, probably associated with the stores depot.

G II, 40:

100. Dish in very hard sandy pale grey ware; lightly polished on the inside.
101. Jar in fabric similar to 100, but slightly darker colour.
102. Rim of bowl in fabric similar to 101.

G II, 46:

103–4. The upper part, and probably the base of the same vessel, of a beaker in hard, very dark grey, sandy ware (possibly black-burnished ware). The outer surface and top of the rim down to the internal groove are highly polished and there is a lightly impressed lattice pattern on the upper part of the body. This is undoubtedly an imitation of the Belgic girth beakers (cf. *Camulodunum*, types 84 and 85), but in a much devolved form. *Brough*, IV, no. 124 also.
105. Small globular jar in very hard sandy reddish-buff ware, with grey core.
106. Bowl, imitating a Gallo-Belgic platter in hard sandy grey ware; smoothed to a good finish internally, but outside left rather rough.
107. Base in very hard sandy pale grey ware.
108. Wall of jar or beaker in fabric similar to 100. The type is probably a variant of *Brough*, IV, no. 132.

G II, 67:

109. Gallo-Belgic-type platter in hard white fabric, with polished, very pale grey surfaces.
110. Jar in very hard pale grey sandy ware, with smoothed outer surface.
111. Base of jar in fine grey ware with darker outer surface; very dense and heavy.
112. Rim of large jar with folded-down rim in coarse reddish-brown ware (*Gillam*, type 100, dated 70–100).

G III, Pit 1:

91. Neck of handleless flagon in smooth greyish-buff micaceous ware.
92. Mortarium in light red sandy ware with a trace of grey core. Thickly applied grit of mixed character; inner surface heavily scored and abraded.

The following three groups, all from the surface of the undisturbed sand in the sewer trench, probably belong to the early occupation.

J V, 13; *between Manholes 10 and 11:*

93. Small jar in very hard grey sandy fabric; outside smoothed down to give slightly metallic sheen.

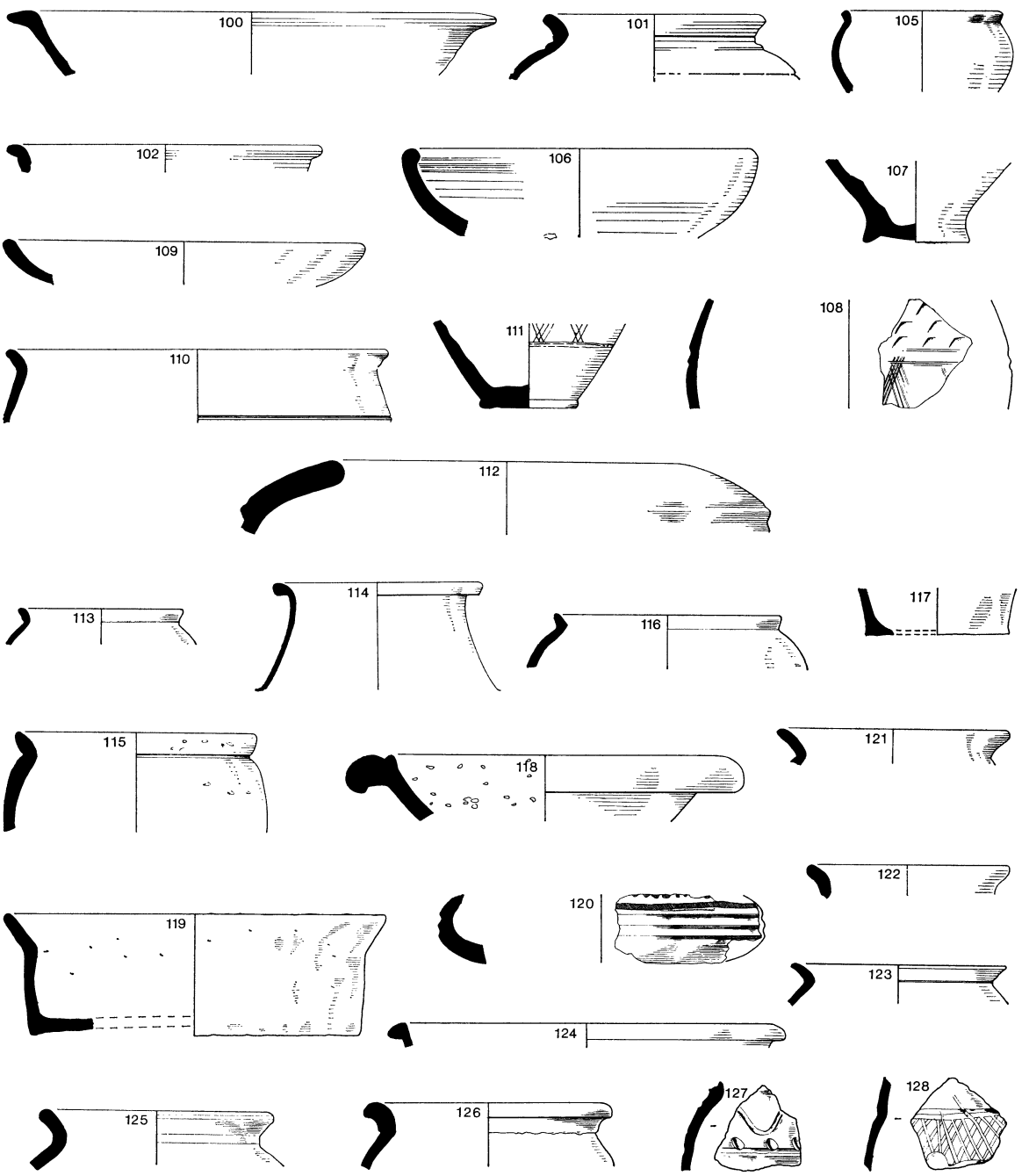


FIG. 58. Coarse pottery ($\frac{1}{4}$)

L III, 2; *40 ft. east of Manhole 15 A:*

94. Base of carinated beaker in hard sandy grey ware with paler core.
95. Rim in same fabric as 94 and possibly belonging to the same vessel; smoothed horizontal lines on the shoulder.
96. Very abraded sherds from a carinated bowl in sandy buff ware with black polished surfaces. This is a very Belgic type of vessel, although there is no exact parallel at North Ferriby. From its state, it could easily have been in circulation before the Roman occupation. (*North Ferriby*, p. 239, no. 28 is the nearest parallel).

L I, 2; *between Manholes 6 and 15:*

97. A narrow-mouthed jar in hard smooth lead-grey ware; slightly micaceous fabric; horizontal polished bands on top of the rim and shoulder.
This type of jar is reminiscent of the types produced at a later date at Throlam, but the ware is not as dense, nor is there a satisfactory parallel for the shallow neck grooves. Nevertheless, it may be a forerunner of such vessels produced in an earlier kiln.
98. Top part of ring-necked flagon in hard light orange-red ware with grey core and buff interior surface.
99. Shoulder of jar in coarse gritted dark grey ware with reddish-buff exterior; slightly micaceous.

PERIOD V

From the rampart, B I, 50:

113. Rim of small jar in smooth pale buff ware, with slightly grey core. The fabric is markedly different to the normal late first-century wares and more characteristic of the second century.

From the rapid silt in the ditch.

B I, 65:

114. Narrow-mouthed jar in very hard and thin pale grey ware; harsh sandy texture.
115. Jar in native gritted fabric (cf. nos. 1 and 2).

B I, 67:

116. Jar in smooth greyish-buff ware with grey surface. Similar to 113.

PERIOD VI

From the ditch below rampart foundation, A I, 45:

117. Base in native shell-gritted ware.
118. Mortarium in light reddish-buff ware with pale grey surfaces; large grits, with dark brown sandstone, limestone, and quartz-like inclusions. Antonine(?).
119. Bowl with flaring rim in native shell-gritted ware.
120. Part of flagon(?) in smooth creamy-white fabric, with a painted decoration in dark reddish-brown slip on the shoulder. Possibly *Camulodunum*, type 167.

See also A I, 65 (no. 231) for matching fragments from yet another vessel.

The following layers are all sealed by the rampart.

A V, 19:

121. Rim of grey-burnished cooking pot. Antonine.
122. Vessel similar to 121.

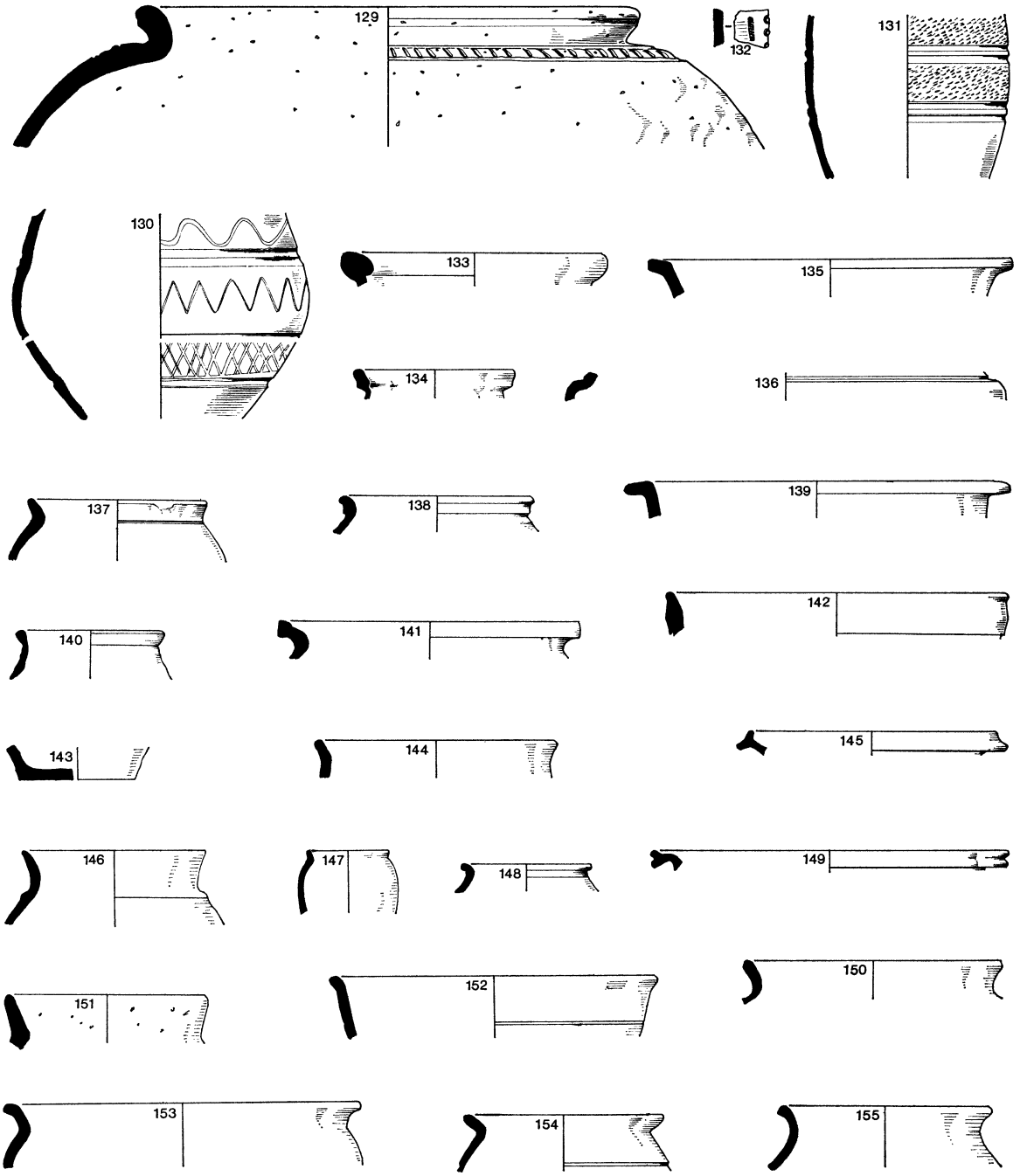


FIG. 59. Coarse pottery ($\frac{1}{4}$)

A V, 21:

123. Rim of jar in pale grey slightly sandy ware.
124. Rim fragment of a black-burnished bowl or dish (*Gillam*, type 223).

A VIII, 11:

125. Rim of jar in hard smooth lead-grey ware; burnished bands on outer surface and over top of rim; different from the general run of first-century fabrics in that it is not so harsh to the touch. Anticipating Throlam fabrics?
126. Rim of jar in fabric similar to 125, but the surfaces are not burnished.
127. Jar fragment in harsh pale grey ware with darker outer surface.
128. Wall fragment from near base of black-burnished jar with acute lattice pattern. Hadrianic?
129. Upper part of large storage jar in native calcite-gritted fabric, like no. 12.
130. Jar in smooth pale grey ware, similar to no. 125.
131. Imitation butt-beaker in fabric similar to 130, with zones of 'pecked' decoration between cordons. This type of decoration seems to be a *Norton* (pl. VI, A) characteristic.

A VIII, 10:

132. Small fragment of stamped 'Parisian' ware in highly-polished black ware with lighter grey, 'sandwich' core (see p. 195). The stamps are *P.W.*, no. 6 and a variant of 9.

D I, 27:

133. Heavy folded-in rim of jar in light sandy grey ware with darker surface. *Brough* V, 57, no. 2, below rampart foundation.
134. Rim of small jar in reddish-brown ware with grey surfaces.

D I, 30:

135. Bowl or dish in polished, leathery, greyish-brown, shell-gritted ware, with light grey core. This type of fabric, distinct from the normal native production, seems to become commoner at Brough from the middle of the second century onwards; it is used to imitate standard Romano-British forms and is almost certainly a local, East Yorkshire development of the native industry. *Langton*, p. 86, nos. 139–41 and 143–5.
136. Shoulder of jar(?) in softish fawn coloured ware with grey core; the surfaces have a speckled appearance from the inclusion of darker coloured sand or fine grit. An unusual fabric for Brough.
137. Jar in soft buff-coloured ware; slightly harsh to the touch, but much less so than earlier varieties of sandy fabrics.
138. Jar in hard light grey ware, with brownish surfaces.
139. Dish or bowl in black-burnished ware. *Gillam*, types 221 or 308. Antonine.
140. Small jar or beaker in hard sandy grey ware.
141. Jar in hard dark grey sandy ware; harsh to the touch. *Gillam*, types 149–51. Antonine.
142. Rim of bowl in light red ware with smoothed outer surface. Possibly an imitation form 30 or 37.
143. Base in softish light red fabric with darker red exterior surface.
144. Rim in fabric like 136 and possibly part of same vessel.
145. Shallow segmental flanged bowl in fine grey ware; buff coloured below flange.

D I, 33:

146. Rim and shoulder of very worn poppyhead beaker in light grey ware. Only traces of the polished surface survive. *Gillam*, type 71. Antonine.

D II, 18:

147. Small jar in smooth, fairly hard, lead-grey ware; polished externally. The fabric is similar to the late Antonine grey-burnished cooking pots.

148. Similar type of vessel to 147, but lighter coloured fabric.
149. Bowl in light grey ware with darker surfaces; very slightly sandy, but with top of rim and internal surface smoothed over. *Brough*, IV, p. 55, nos. 62–4 where it occurs in the ditch filling of the Period IV fort.
150. Jar rim in harsh light grey ware with darker outer surface; burnished horizontal line on neck.

D II, 20:

151. Rim of jar in native calcite-gritted fabric; dark grey with patches of reddish-buff on surfaces.
152. Bowl in soft buff-coloured ware with traces of darker red colour coat. Probably imitation form 35, and Antonine.
153. Jar in hard sandy pale grey ware; smoothed on top of rim. The fabric is normally associated with the earlier periods at Brough, but the form of the neck is more like those of Antonine types.
154. Jar in smooth lead-grey ware.
155. Narrow-mouthed jar in softish sandy greyish-buff ware.

Not illustrated: a wall fragment of a black-burnished cooking-pot with acute lattice pattern, probably Hadrianic; and a fragment of a similar grey-burnished vessel, probably Antonine.

D II, 23:

156. Jar in vesicular native ware with very large grits; light grey, with darker grey inside surface, and reddish-brown patches outside; hand-made. Similar to 1 and 2.
157. Jar with heavy everted rim in native shell-gritted fabric; same colours as 156, but it is much better made; probably wheel-turned.
158. Bowl in smooth light reddish-buff ware; slightly micaceous; grey core. A 'Parisian' type; cf. *Brough*, IV, p. 48, no. 1.
159. Segmental bowl in smooth pale grey ware with darker core.
160. Roughcast beaker in white fabric with olive green metallic slip. Probably late Antonine.
161. Bowl in black-burnished ware, with acute lattice pattern. *Gillam*, type 221: Antonine.
162. Segmental bowl in sandy greyish-buff ware with light grey core, smoothed internally.
163. Jar in grey calcite-gritted native fabric.

Not illustrated: two rim fragments of vessels like 142, but in different fabrics (the fabric of one is similar to 158); rim of grey-burnished cooking pot (*Gillam*, type 139–40; late second century).

D II, 25:

164. Rim of black-burnished bowl (*Gillam*, type 221: Antonine).

D III, 19:

165. Carinated bowl in hard fawn-grey ware with orange core.
166. Jar in smooth grey ware. Probably a waster.
167. Jar in pale grey ware with darker core. *Brough*, IV, p. 54, nos. 26–7.
168. Jar in hard sandy grey ware. Flavian.
169. Jar in coarse calcite-gritted grey ware.
170. Rim of jar in soft shell-gritted native ware.

D III, 23:

171. Rim of jar in fine hard grey ware.
172. Rim of jar in black native calcite-gritted ware; polished externally.
173. Rim of jar in finely-gritted black ware; polished externally.
174. Rim of jar in dark grey ware with paler core.
175. Shallow dish in soft, greyish-red ware with black surfaces.
176. Jar in smooth grey ware with burnished lattice pattern below shoulder.

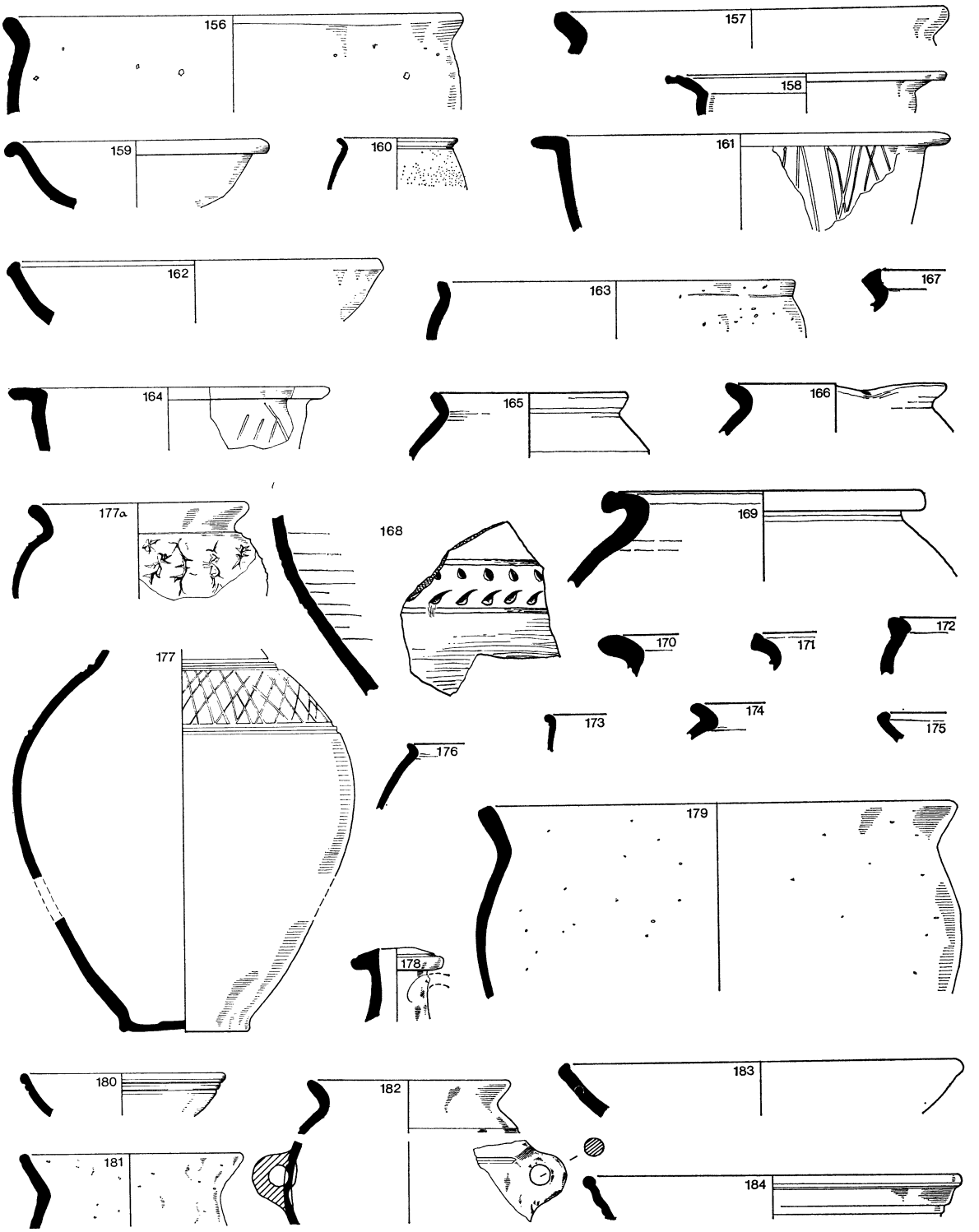


FIG. 60. Coarse pottery ($\frac{1}{4}$)

D III, 26:

177. Narrow-mouthed jar in sandy pale grey ware; smoothed externally above and below the cordons (cf. no. 68).
177a. Rusticated jar in sandy grey ware.
178. Disc-rim flagon in creamy-white ware, with red (crushed pottery?) grits; very worn and abraded, but traces of buff-coloured slip survive.
179. Jar in light grey native ware with mixed calcite and shel lgrit and smooth dark grey surfaces.
180. Shallow bowl in very hard brick-red ware with smooth, polished surfaces.
181. Jar in fabric like that of 179, but the surfaces are left rough and unsmoothed.
182. Handled jar in smooth hard lead-grey ware. Possibly an early example of the larger handled jars produced at Throlam in the third century.
183. Bowl in hard sandy light grey ware with darker surfaces; smoothed internally.
184. Bowl in hard sandy light red ware with grey core.

D IV, 12:

185. Bowl in hard pale grey ware, with smoothed horizontal bands on the outside.

D IV, 14:

186. Jar in hard sandy pale grey ware; smoothed externally and over rim.
187. Jar in uneven grey ware with darker surfaces; shoulder smoothed and almost polished.
188. Small carinated cup in sandy buff ware with grey surfaces; smoothed externally. Another sherd in D IV, 15.
189. Narrow-mouthed jar in pale grey ware with darker surfaces.
190. Jar in hard sandy pale grey ware, smoothed externally and over rim.
191. Small jar in softish sandy buff ware with dark grey surfaces.
192. Small carinated beaker in hard sandy pale grey ware, with dark grey surfaces.
193. Jar in soft pale grey ware.
194. Carinated beaker in hard sandy pale grey ware; horizontal smoothed bands on the outside. *Brough*, IV, p. 55, no. 58.
195. Small jar in pale grey ware with dark grey polished surfaces.
196. Jar in fabric similar to 195.
197. Jar in hard sandy pale grey ware.
198. Shallow bowl or dish in fabric similar to 195; polished internally.

Not illustrated: a jar as *Brough*, II, p. 24, no. A.2, and no. 93 above.

There is little in this group which need not be Flavian or Trajanic in date, although three plain sherds from a jar in smooth grey ware are more reminiscent of the later second-century fabrics. Moreover, there is a single sherd from what could be a late second-century cooking-pot (*Gillam*, types 135–40).

D IV, 15:

199. Wall fragment of jar in hard and harsh-textured pale grey ware.
200. Upper part of small, straight-sided jar in black-burnished ware with acute lattice pattern (*Brough*, II, p. 31, no. 9). Hadrianic?
201. Small jar in fine grey ware with smooth, darker surfaces. Rather abraded and may have been grey-burnished ware. Can hardly be earlier than Antonine and is more likely to be late second- or even early third-century in date.

Not illustrated: three wall sherds of grey-burnished cooking-pots (*Gillam*, types 135–40), late Antonine.

D V, 9:

202. Wide-mouthed jar in hard sandy grey ware with dark outer surface. This vessel is undoubtedly anticipating similar jars and bowls made at Throlam in the third century. Here,

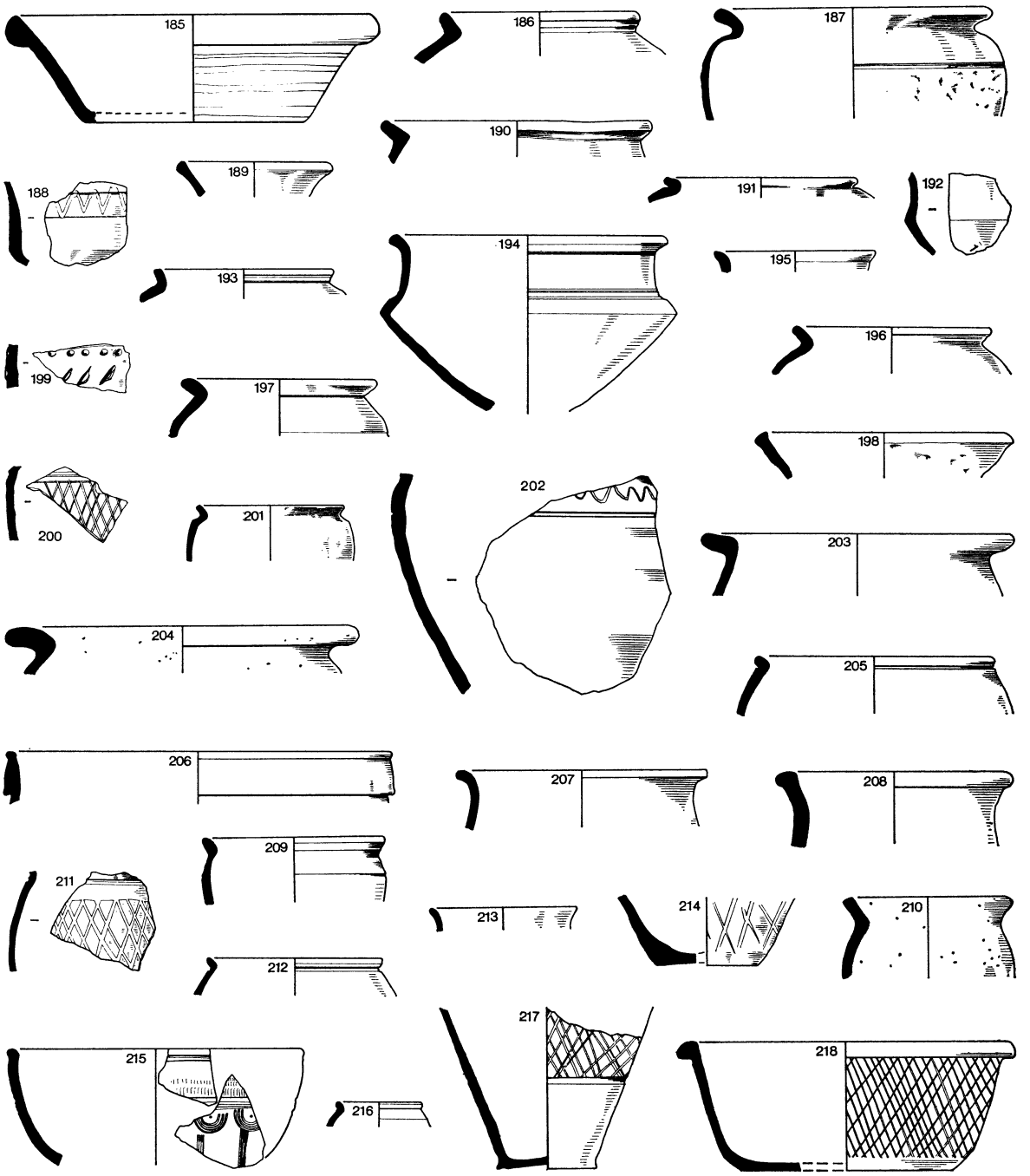


FIG. 61. Coarse pottery ($\frac{1}{4}$)

however, the fabric and the incised wavy line contrast with the smoother, denser, Throlam fabrics and the tendency there for the wavy line to be burnished rather than incised (*Throlam*, no. 170, p. 22). But compare no. 753 below. See also *Brough*, III, p. 34, no. A.16, for a similarly shaped vessel from the town-wall bank. This vessel is probably best assigned to the later second or early third centuries.

203. Jar in heavy dark grey goose-pimply ware.
204. Jar in greyish-buff shell-gritted fabric.
205. Small jar in soft drab grey ware; slightly micaceous.
206. Bowl in form and fabric similar to 142.
207. Narrow-mouthed jar in smooth reddish-buff ware.
208. Jar in sandy dark grey ware.
209. Small wide-mouthed jar in unsmoothed sandy red ware with greyish-buff surfaces.
210. Jar in greyish-buff native calcite-gritted ware; reddish-brown shading to grey and with darker grey surfaces.

Not illustrated: rim of grey-burnished cooking pot like *Gillam*, types 138–9.

E I, 34:

211. Grey-burnished cooking-pot. Late second century.
212. Beaker in white fabric with reddish-brown colour coat. Castor ware; late second century.
213. Rim of small jar or beaker in soft, sandy, dark grey ware, covered by a smooth white slip. An unusual fabric.
214. Base of cooking-pot as 211.
215. Imitation form 37 in light grey ware with smooth matt dark grey surfaces.
216. Rim of small jar or beaker in pale grey ware; polished externally. Second century and probably Antonine.
217. Base of jar in smooth buff-coloured ware with pale grey surfaces. This is not the normal fabric or basal shape of the late second-century grey-ware cooking-pots, but there are affinities.
218. Bowl in grey-burnished ware. The shape most closely resembles *Gillam*, type 225, but the lattice pattern appears on type 222. The date probably lies between *c.* 180 and 240, and since the whole vessel was found in this level, its *terminus post quem* probably reflects most closely the date of construction of this rampart.
219. Bowl in black-burnished ware.
220. Base in very smooth stony-hard pale grey ware.
221. Wide-mouthed jar in pale grey ware with smooth dark grey surfaces.
222. Jar in smooth lead-grey ware.
223. Lid in sandy grey ware.
224. Bowl in brownish-buff ware with grey core; smooth surfaces.

E I, 36:

225. Bowl in pale orange-red ware with grey core; inner surface and flange smoothed over and covered with a series of closely-spaced lines in dark red paint. See also nos. 242, 254, 683 for vessels in similar fabric. This type of fabric is uncommon and seems to be confined to Yorkshire, and most pieces have been found at Brough. *Brough*, V, p. 61, no. 25. They have been tentatively dated to the Flavian–Trajanic period, but it should be noted that all the present fragments have been found in much later contexts.
226. Bowl in drab brownish-grey hard sandy ware. This again seems to be a local form with Iron Age antecedents. *Brough*, IV, p. 55, no. 61 and p. 50, no. 3.
227. Jar in hard grey ware, similar to that used for late second-century cooking pots.

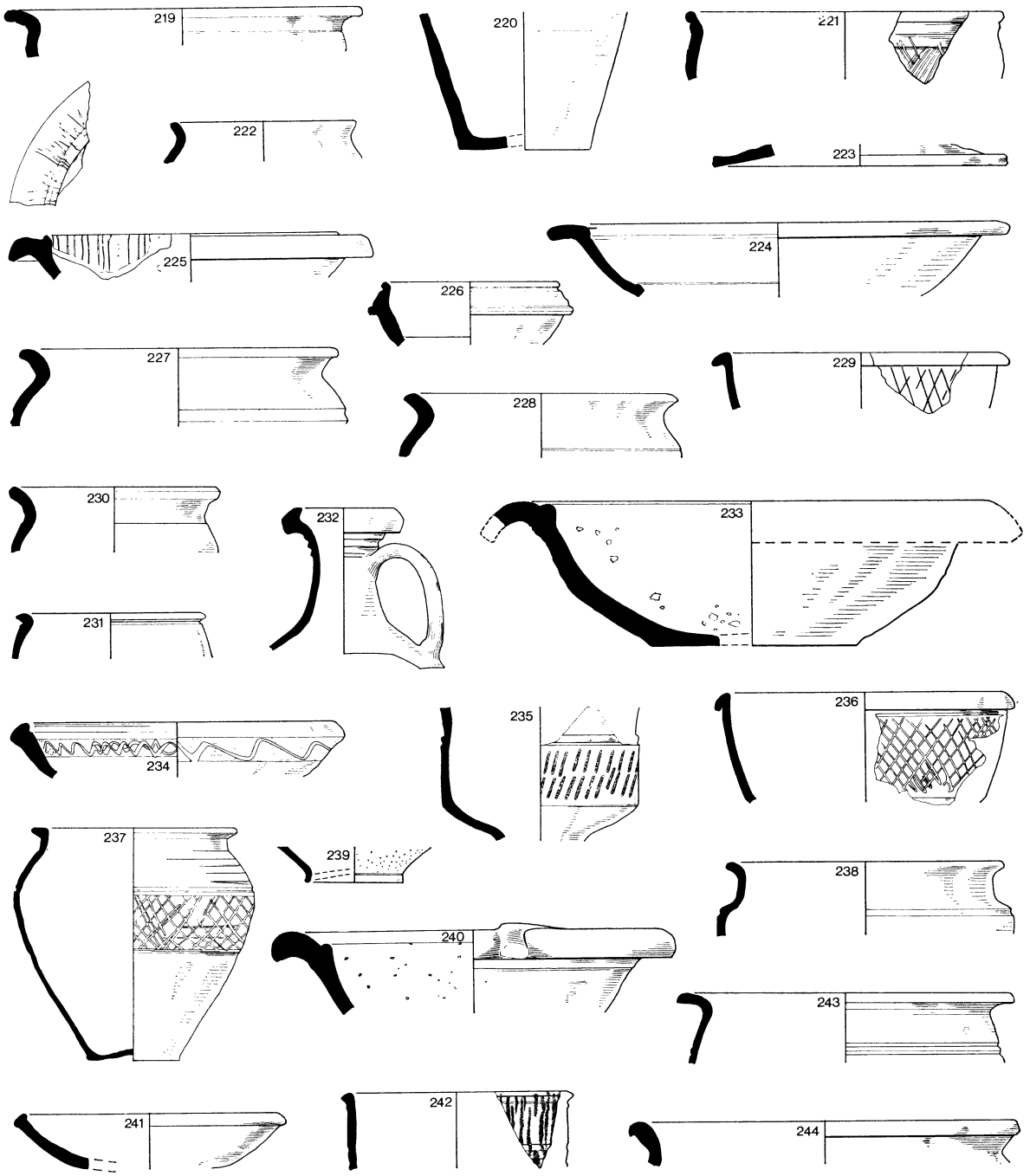


FIG. 62. Coarse pottery ($\frac{1}{4}$)

228. Jar in smooth stony-hard lead-grey ware. This is very like a Throlam form and fabric, and if so would date the earliest production of the most characteristic fabrics to the later second century.
229. Bowl in black-burnished ware (*Gillam*, type 222); late Antonine.
230. Rim of grey-burnished cooking pot. Antonine.

From the rampart core and base.

A I, 65 (= 31):

231. Abraded rim sherd of beaker in reddish-orange ware with darker red colour coat. Hadrianic–Antonine.
232. Ring-neck flagon in reddish-buff ware with grey core; creamy-white slip. The rings are badly developed as opposed to the rim (*Gillam*, type 7); Antonine.
233. Mortarium in smooth creamy-white ware, with sparse, rather large, red sandstone grit; traces of yellowish-buff slip near the base. Possibly *Gillam*, type 253 (Antonine). The size and position of the bead is matched by some from *Cantley* (p. 369), but the fabrics are not the same.
234. Shallow bowl in smooth stony-hard very pale grey ware. Like 228 above, the fabric and use of the burnished wavy line decoration are similar to some Throlam wares.
235. Bowl, imitation form 30(?), in smooth high quality dark grey ware with polished and glossy outer surface. This is a typical vessel of the 'Parisian' stamped ware class, and is probably a survival. See p. 195 below for some further notes on this type of ware. This is not a stamp figured by Corder in *P.W.*
236. Bowl in black-burnished ware (*Gillam*, type 222); late Antonine.
237. Wide-mouthed jar in fine sandy reddish-brown ware with pale grey surfaces; smoothed outside on rim and shoulder, but not below the band of latticing. An unusual vessel for which no precise parallel can be found.
238. Wide-mouthed jar in very dark grey sandy ware; smoothed inside rim and on shoulder.

See also STAMPED MORTARIA, no. 1 (p. 132).

C I, 5:

239. Base of rough-cast beaker in pale reddish-buff ware with dark, brownish-grey colour coat.
240. Mortarium in smooth creamy-white ware with sparse white grits. Probably Antonine.
241. Bowl or dish in hard sandy grey ware; smoothed internally and on rim.
242. Bowl, imitation form 37; fabric and decoration as for 225 above.
243. Wide-mouthed jar in hard, slightly sandy, pale grey ware; cf. 228 and 234 above.
244. Jar in hard grey ware.
245. Narrow-mouthed jar in harsh sandy grey ware with lighter core; burnished lines on top of the rim.

Not illustrated: rim fragment of grey-burnished cooking pot; Antonine.

D I, 14:

246. Rim in hard greyish-buff sandy ware with reddish core.
247. Small badly-made jar in sparsely gritted native fabric; dark grey, with polished outer surface.
248. Base of flagon in sandy buff ware.
249. Neck of small bottle in rough greyish-buff ware.

D II, 15:

250. Shallow bowl or dish in fabric similar to 243, 234 and 228.
251. Imitation form 30 or 37. Fabric similar to 158.

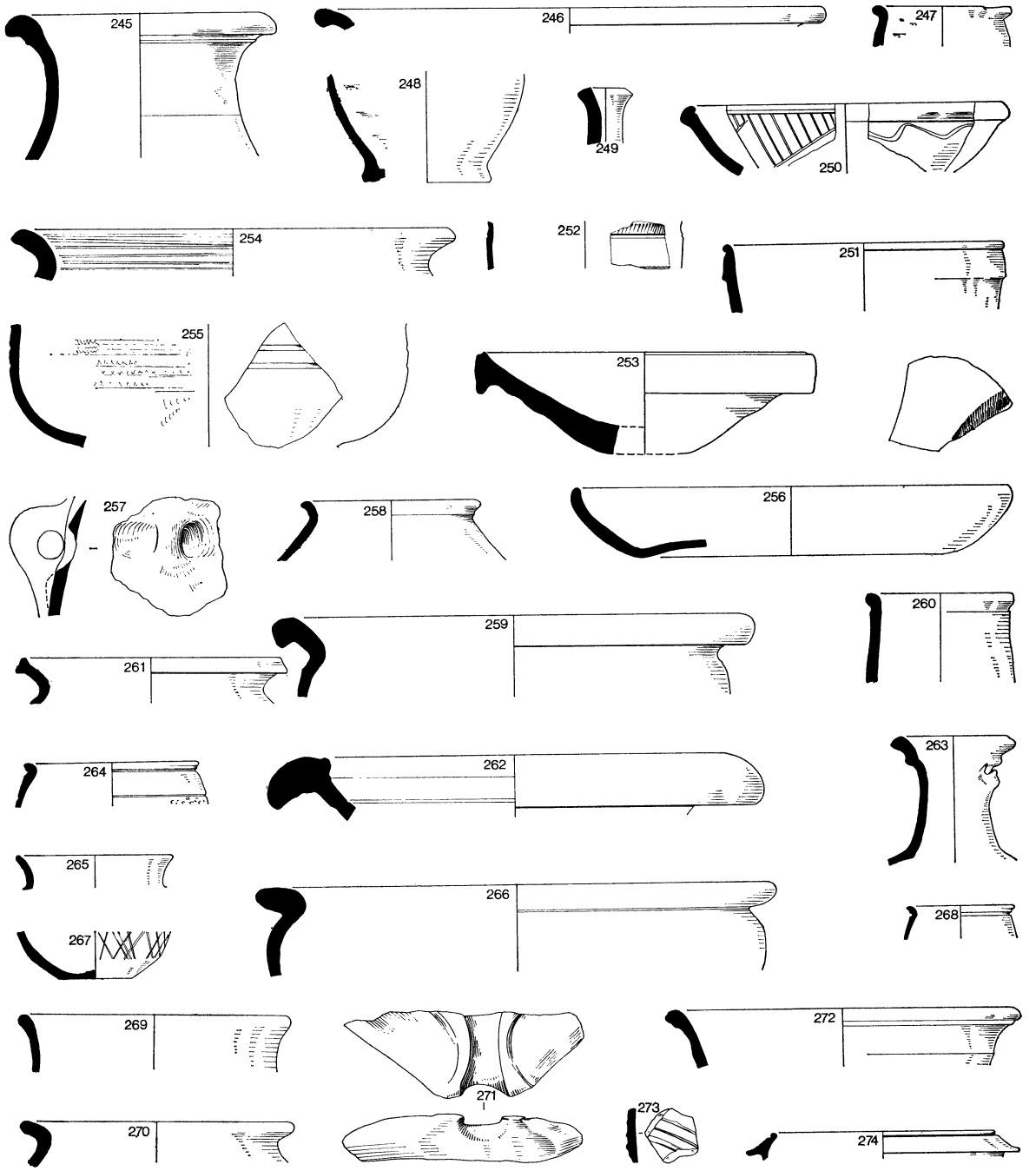


FIG. 63. Coarse pottery ($\frac{1}{4}$)

E I, 7:

252. Fragment of beaker(?) in very hard red ware, slightly harsh to the touch. The inner surface is dark grey and there are traces of a darker red slip.

E I, 5:

253. Wall-sided mortarium in hard rough whitish-buff ware; fine, evenly dispersed, small white grit. Late second to third century (*Colchester Kilns*, fig. 94, 44).

E I, 27:

254. Wide-mouthed jar in fabric like that of 257; burnished line on neck and over top of rim. The fabric is also similar to 259.
255. Bowl, imitation form 37, in fabric and decoration as 225.
256. Gallo-Belgic platter in pale white fabric, with very smooth grey surfaces. Almost certainly residual.
257. Jar with a loop-handle in hard sandy grey ware; burnished externally, especially on the handle. Handled jars occur both at *Norton*, fig. 10 and at *Throlam*, fig. 14, where loop handles were the normal production, as opposed to Crambeck where they were countersunk.
258. Jar in hard, slightly sandy grey ware; smoothed externally and over the rim.
259. Wide-mouthed jar in dense hard lead-grey ware; smoothed over rim and on shoulder. This must represent early production at either Throlam or Norton: more likely the latter where jars with more marked shoulders occur (*Norton*, fig. 10, no. 6c).
260. Neck of beaker(?) in smooth pale grey ware; burnished externally.
261. Jar in harsh reddish-buff ware with predominating dark grey surfaces.
262. Mortarium in pinkish-buff fabric containing small pieces of white lime or chalk in the body. Medium sized mixed grit (*Gillam*, type 266(?)). Late second century.
263. Ring-necked flagon in orange-buff ware with dark grey core.
264. Roughcast beaker in pale pink fabric with dark brownish-orange colour coat.
265. Rim of poppy-head beaker in dark grey 'sandwich' ware, very like that used for the manufacture of 'Parisian' stamped ware (see note after no. 626). Late second century.
266. Heavy wide-mouthed jar in coarse dark grey ware.
267. Base of grey-burnished cooking pot. Antonine.
268. Rim of Castor-ware beaker. Late second to early third century.
269. Jar in hard sandy pale grey ware with burnished lines externally.
270. Jar in fabric like 259.
271. Mortarium in slightly sandy yellowish-white ware.
272. Bowl in smooth hard pale grey ware with burnished lines internally and similar zones externally.
273. Fragment of Castor-ware beaker of *Gillam*, type 79, 80, or 88. Most probably early third century as the sherd is rather abraded.
274. Bowl in fabric like 158. Probably residual.

Not illustrated: a small sherd of a Rhenish beaker (late second or early third century); some body sherds of an indented beaker in hard sandy dark grey ware like *Norton*, fig. 10, no. 9.

From the street contemporary with the north gate, A V, 36:

275. Narrow-mouthed jar in sandy grey ware with smoothed darker grey surfaces.
276. Small jar or beaker in fabric similar to 147.

Not illustrated: small body sherd of grey-burnished cooking pot.

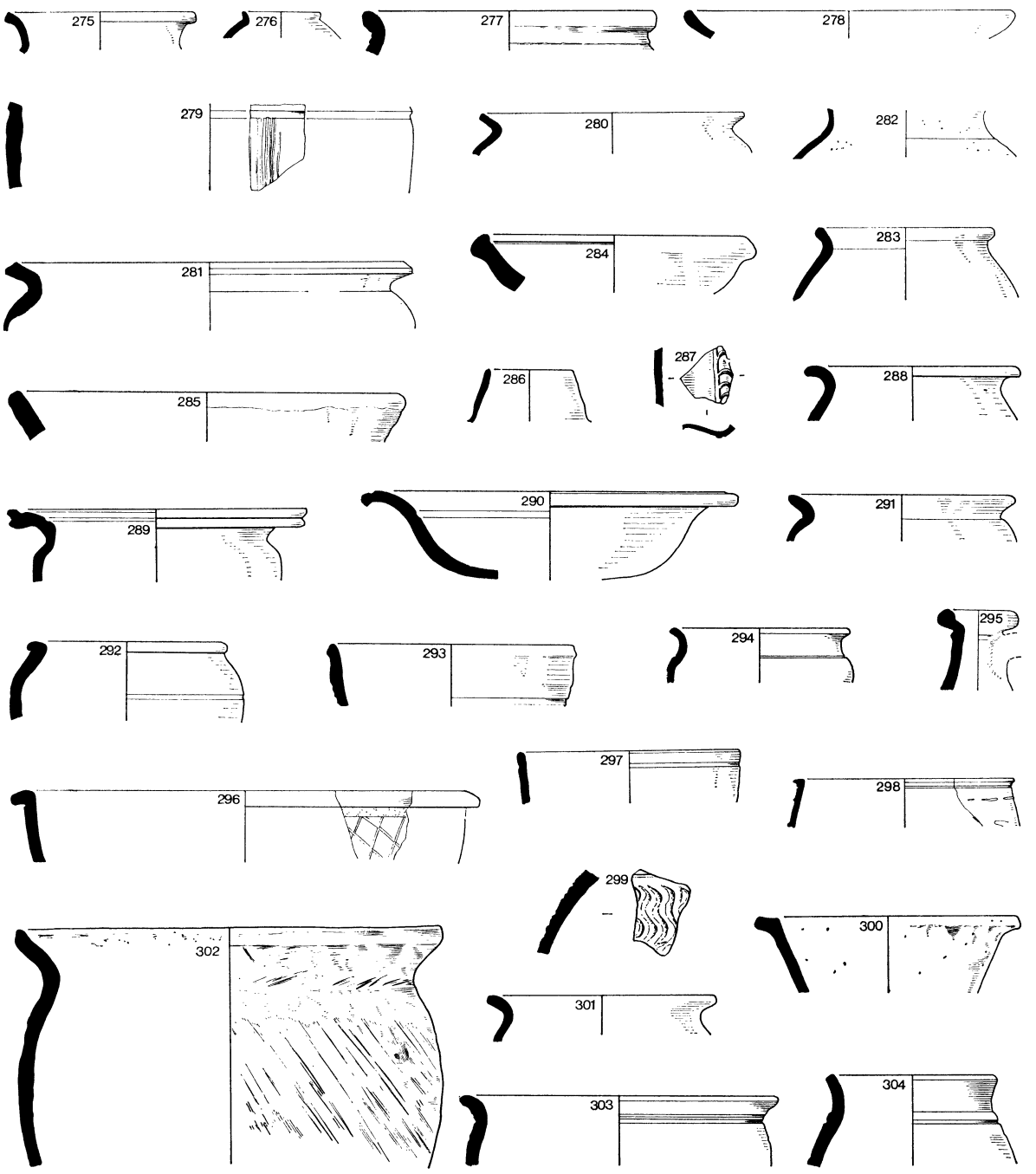


FIG. 64. Coarse pottery ($\frac{1}{4}$)

The following sherds are all earlier than the north gate:

A XI, 19:

277. Jar in hard pale grey ware with buff inner surface and sparkling grit. This fabric, not so far described in this report, is not unlike that used for some Derbyshire-ware jars.

A XI, 23:

278. Rim of Gallo-Belgic platter in creamy-white ware with smooth pale grey surfaces.

A XI, 22:

Not illustrated: fragment of tazza in fabric and slip like the mortarium, no. 233.

PERIOD VII

All layers associated with Building A.I and its destruction predate the rampart of this period. The pottery is illustrated in figs. 64–5.

From rampart layers or Wall construction trench:

A I, 3:

279. Jar in stony-hard sandy pale grey ware; unsmoothed except for the part above the groove and the zones of vertical combed lines.
280. Jar in sandy grey ware with paler surfaces; smoothed on rim and shoulder.
281. Jar in fabric very similar to 279.

Not illustrated: rim of wide-mouthed jar in *Throlam*-type fabric (fig. 12), and shoulder fragment with double external grooves in similar fabric.

A I, 13:

282. Narrow-mouthed jar in thin, hard, pimply, pale grey ware.
283. Grey-burnished cooking pot, but in harder fabric and with a weaker shoulder than usual. Perhaps *Norton*, fig. 13.

A I, 16:

284. Heavy shallow bowl in soft, slightly sandy, pale grey ware with darker surfaces.
285. Rim of jar in hard native ware with small white grits; dark grey with buff surface patches.
286–7. Rim and wall sherd, probably of same vessel, in Castor ware with dark olive-grey matt colour coat. Probably *Gillam*, type 53 and dated 240–320.
288. Jar in fabric similar to 283.

A VIII, 5:

289. Wide-mouthed jar with reeded rim in hard pale grey ware, with darker surfaces. Probably residual.
290. Shallow bowl in fabric identical to the jars 283 and 288.
291. Grey-burnished cooking pot. *Gillam*, type 134, dated 160–230. Rim from another vessel not illustrated.
292. Bead-rim jar in slightly sandy grey ware.
293. Bowl, imitation form 37, in sandy reddish-buff ware; smoothed internally and in bands outside.

A X, 5:

294. Castor-ware beaker with matt orange colour coat which appears darker red internally. An irregularity in the wall below the shoulder suggests that it is part of an indented beaker. *Gillam*, type 92, dated 190–270.

B I, 48:

295. Ring-necked flagon in reddish-buff ware with traces of a creamy-white slip. Late second century.

296. Bowl in black-burnished ware.

297. Dish with grooved rim in black-burnished ware. Late second or early third century.

298. Castor-ware beaker, possibly a Hunt cup, with matt dark brown colour coat, thinning to orange over high spots. Late second or early third century.

Not illustrated: a fragment of an indented beaker in pale reddish-brown fabric and bright red colour coat, which is glossy on the outside. This is very like Thames Valley fabric, but the form of vessel is not consistent with types known there.

B I, 56:

299. Shoulder of jar in coarse native ware with grits of rounded oolite grains; brownish-grey with dark grey outer surface. This is obviously a local product and it does not resemble the jars of earlier periods with incised wavy lines.

D I, 17; *Wall footings:*

300. Dish in native shell-gritted ware. The surface is reddish-brown and has a polished leathery appearance; the core is grey. See no. 135.

301. Grey-burnished cooking pot. *Gillam* type 140, dated 180–270.

D II, 7:

302. A most unusual vessel and one of the Brough oddities. The fabric is not unlike the black-burnished ware of cooking-pot type. The form perhaps most closely resembles the late third- or early fourth-century forms, where the rim diameter is as wide or wider than that of the body. A return to this fabric is also made then. But it is not a cavetto rim. The vessel was hand made and the irregularities were then smoothed out, partly on a wheel (the rim) and partly by knife-trimming (the outer part below the neck). In this way a burnish was applied to the high spots of the vessels, the 'valleys' being left unburnished. It is difficult to see how such a vessel could be earlier than the middle of the third century. See p. 194 for a technical report on this sherd.

303. Wide-mouthed jar in stony-hard pale grey ware; smoothed on rim and on outer surface below neck.
This would again appear to be a *Throlam* product (fig. 12, no. 47).

Several other fragments in a similar fabric have not been illustrated.

D II, 12:

304. Narrow-mouthed jar in slightly sandy reddish-buff ware with light grey patches on the surfaces; the outside and the rim are smoothed. The fabric is micaceous.

D III, 11:

305. Bowl in sandy drab grey ware; horizontal smoothed zones externally above a girth groove. *Throlam*, fig. 11, nos. 32–3.

D III, 20:

306. Bowl, imitation form 37, in sandy orange-buff ware with grey core. Another fragment in D III, 11 (not illustrated).

307. Heavy bowl in sandy pale red ware; smoothed externally; blackened around rim. An unusual form.

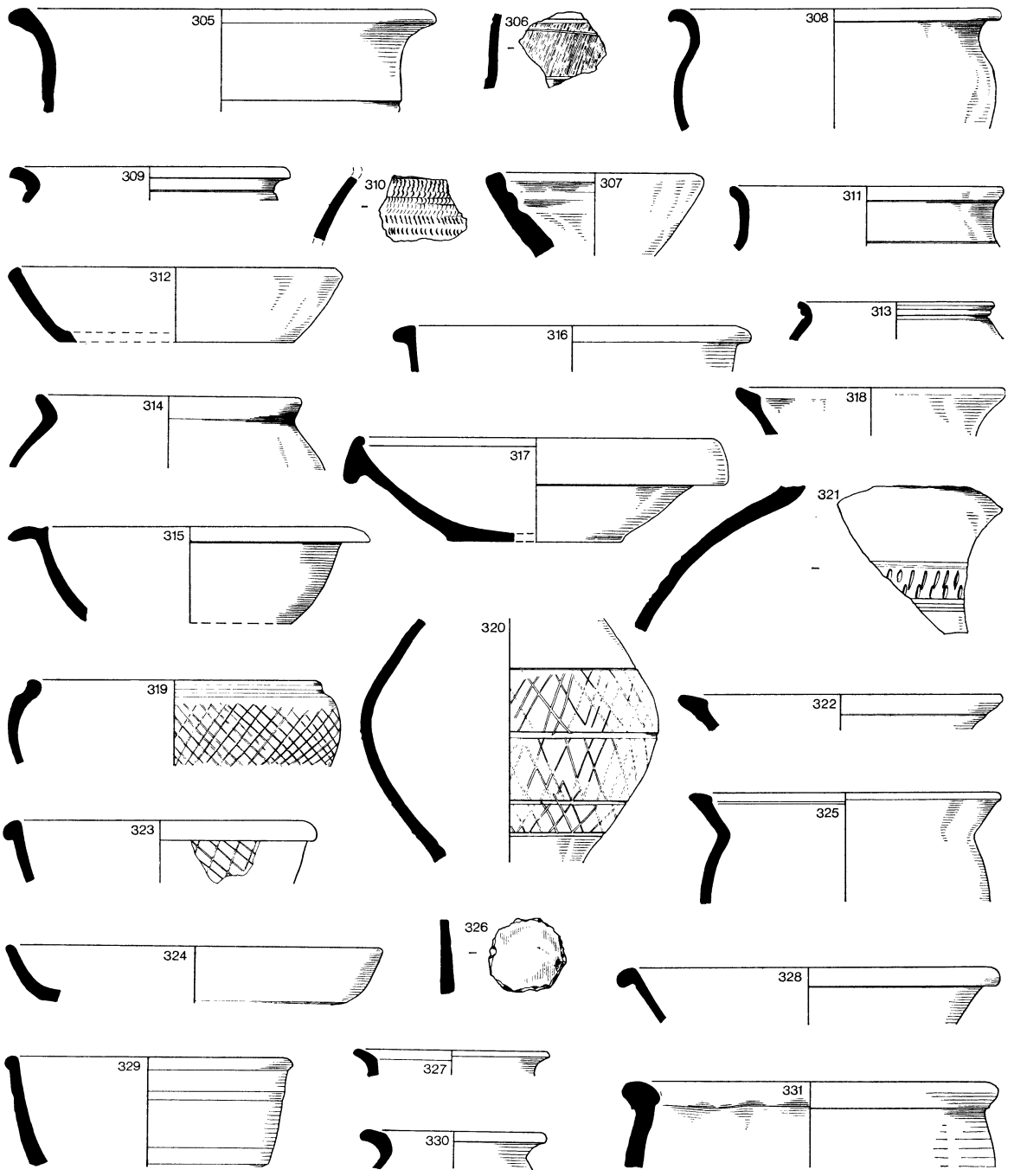


FIG. 65. Coarse pottery ($\frac{1}{4}$)

D IV, 8:

308. Wide-mouthed jar in typical Throlam ware, although the form with its well-formed neck is not easy to parallel.
309. Jar in fabric similar to 308, but slightly darker colour.
310. Jar(?) in sandy greyish-brown ware with black inner surface.
311. Narrow-mouthed jar in *Throlam* (fig. 15, nos. 97–8) fabric; pale grey.
312. Bowl in slightly sandy light grey ware with bluish-grey surfaces; smoothed internally.
313. Jar with cornice rim in hard sandy grey fabric with dark grey surfaces.

D VI, 4:

314. Jar in hard sandy pale grey ware; unsmoothed.
315. Bowl in sandy pale brownish-grey ware with darker surfaces. Probably *Gillam*, type 294, dated 120–50, and residual; the sherd is very worn.

A II, 9; *layer cut by Wall footings:*

316. Bowl in black-burnished ware. *Gillam*, type 225, dated 190–240.

A XI, 14; *layer probably contemporary with Wall build:*

317. Wall-sided mortarium in creamy-white, slightly sandy ware, smoothed externally and on the flange; very fine sparse mixed grit. Third century.

Not illustrated: rim of bowl in black-burnished ware. *Gillam*, type 225, dated 190–240.

A XI, 16; *layer contemporary with Wall build:*

318. Rim of shell-gritted Dales-ware cooking pot. *Gillam*, type 157, dated 280–340, although Mr J. May has told me that he has found one in an Antonine context at Dragonby.
319. Bead-rim jar in black-burnished ware. Probably Hadrianic–Antonine and residual.
320. Biconical jar or beaker in hard sandy pale grey ware with dark grey surfaces; unsmoothed except for the lattice pattern and below it. Possibly a poor imitation of a Belgic globular beaker (*Camulodunum*, no. 92b).

PERIOD VII B

From the guardroom.

A III, 26; *antedates construction:*

323. Bowl in black-burnished ware. *Gillam*, type 222, dated 170–210.

A III, 17; *below doorstep:*

321. Large jar in stony-hard pale grey ware, smoothed outside above the zone of stabbing. Stabbed ware of this kind does not figure at Throlam, but sherds with a single row of marks between grooves were found at *Norton*, pl. VIa.

See also A III, 16 (no. 358) for a Dales-ware cooking pot, part of which came from this layer.

A III, 20; *the west wall:*

322. Rim of Dales-ware cooking pot. *Gillam*, type 157, dated 280–340.

PERIOD VIII

A I, 2; *rampart layer antedating construction of the guardroom:*

324. Shallow dish in stony-hard pale grey ware with darker core and surfaces; slightly sandy texture, but smoothed outside and over base inside.

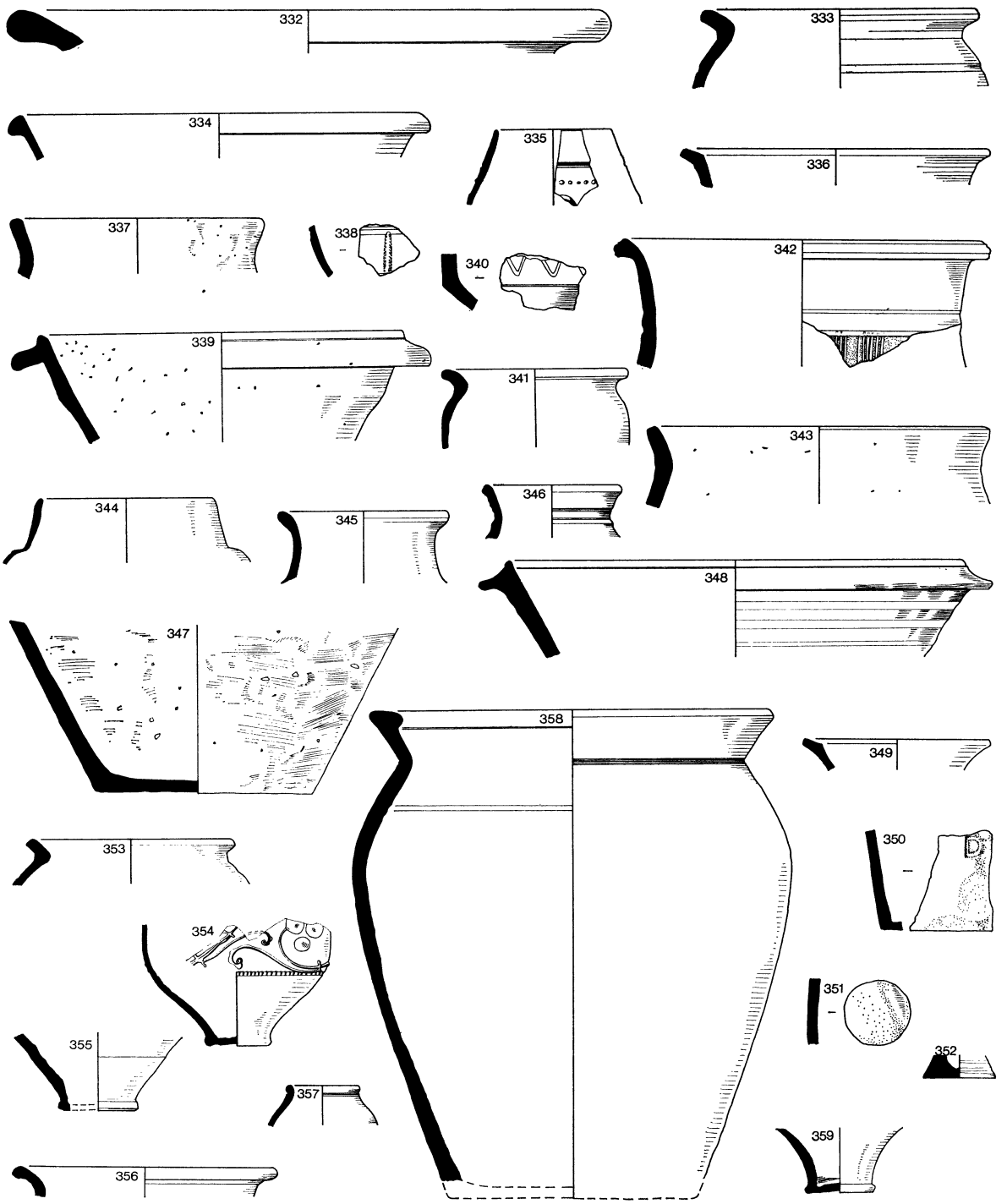


FIG. 66. Coarse pottery ($\frac{1}{4}$)

A I, 6; *hearth below layer 2:*

325. Cooking pot in Dales ware. *Gillam*, type 157, dated 280–340.
326. Roughly cut disc shaped from a piece of brick or base of a pot in sandy red ware.
327. Rim of Dales-ware pot; as no. 325.
328. Dish in black-burnished ware; no lattice. *Gillam*, type 312 or 313, dated 190–240.

See also A I, 11 (fig. 66) for another group from this hearth.

A I, 8; *destruction debris of Period VII B guardroom:*

329. Bowl in finely gritted native ware; pale grey with darker surfaces; inside smoothed.
330. Jar in hard greyish-buff ware; micaceous.
331. Large jar in hard pale grey ware with darker surfaces; finely sandy, but with some larger grits.
332. Rim of large storage jar in light grey sandy ware with reddish-brown surfaces and a pale grey slip. See no. 653 for a jar in similar ware.
333. Jar in stony-hard pale grey ware; smoothed externally and on rim. *Throlam*, fig. 12, no. 47.
334. Bowl in black-burnished ware. *Gillam*, type 225, dated 190–240.
335. Castor-ware beaker with dark brown colour coat externally and orange internally. *Gillam*, type 80, dated 200–70.
336. Dales-ware type jar rim, but without the internal bead.
337. Jar in vesicular gritted native ware.

Not illustrated: rim of Dales-ware jar, *Gillam*, type 157 (A.D. 280–340).

A I, 11; *hearth below layer 2:*

338. Jar, bowl or beaker in slightly sandy, hard, very pale grey ware; smoothed externally. Stamped impression (*P.W.*, no. 1) below two grooves. *Brough*, IV, fig. 16, no. 1. Probably late first or early second-century date and residual, but see p. 195.

A II, 6; *foundation trench of east gate-tower:*

339. Flanged bowl in irregular calcite-gritted native fabric with black-brown polished surfaces in imitation of *Gillam*, type 228 (A.D. 310–70). Although an imitation of a type which is habitually dated to the early fourth century, there seems no reason why they should not be slightly earlier, and one came from the carbonized wheat layer at *Malton* (fig. 6, no. 10). See no. 135 and no. 300 for an imitation of another form of bowl in similar fabric, and *Langton*, fig. 27, no. 138.
340. Carinated bowl or jar in sandy greyish-buff ware, smoothed below the carination.
341. Jar in calcite-gritted dark grey ware. Is reminiscent of the late Huntcliffe-type cooking pot fabric. Possibly a small version of *Gillam*, types 160–1 (dated 300–70), and possibly originating from Knapton.
342. Large carinated(?) bowl in stony-hard sandy blue-grey ware with burnished lines on the rim and neck. The fabric most resembles the *Norton* pottery, possibly fig. 12, no. 15. But see also *Brough*, III, p. 35, B.6; and nos. 602–3.
343. Jar in reddish-brown shell-gritted native ware.
344. Castor-ware beaker with matt dark grey colour coat. *Gillam*, type 54, dated 260–330.

A I, 20 and A II, 8; *predate construction of guardroom:*

345. Narrow-mouthed jar in hard sandy reddish-buff ware, with dark grey surfaces; unsmoothed, except for some bands on the neck. *Throlam*, no. 97.
346. Jar in stony-hard, fine, pale grey ware with dark grey surfaces; polished externally and over rim. *Throlam*, no. 100.
347. Base of jar in calcite-gritted ware.

The following layers represent floors and occupation levels in the guardroom of this period.

A III, 2:

348. Flanged bowl in dark grey ware; burnished on flange and internally, but only in bands on outer surface. First half of fourth century(?).
349. Rim of Dales-ware type jar in finely-gritted fabric. Better made than the normal vessels in this ware.
350. Base of jar in sandy pale grey ware with darker outside surface. The letter D is scratched on the outer surface.
351. Pottery gaming piece or counter in pale grey ware.
352. Small pedestal base in stony-hard pale grey drab ware with darker polished outer surface. *Throlam*, fig. 16.

A III, 13:

353. Jar in fabric similar to 352, but darker colour.
354. Castor-ware beaker with matt dark colour coat and barbotine decoration in creamy-white slip (*Nene Valley*, fig. 4, no 6). The thin fabric used for this vessel suggests that it belongs to the early fourth century as opposed to the thicker, coarser wares of the later part of that century.

From layers associated with the destruction of the Period VII B guardroom.

A III, 15:

355. Castor-ware beaker with brownish-orange colour coat. Late third to fourth centuries.

A III, 16 and 17:

356. Rim of jar in Throlam fabric.
357. Small jar or beaker in sandy pale grey ware.
358. Large jar in shell-gritted greyish-buff Dales ware. A.D. 280–340.

From the gate-tower footings in A IV:

359. Base of Castor-ware beaker with dark shiny colour coat. Third century.

From the street layers contemporary with the latest phases of the north gate.

A XI, 3:

360. Cavetto-rim cooking pot in black-burnished ware (*Gillam*, type 147, dated 290–370).
361. Rim of Dales-ware type jar.
362. Flanged bowl in stony-hard, very light grey ware; burnished inside, on the flange and in bands outside. A Throlam rather than a Crambeck fabric. It lacks the internal wavy line characteristic of the latter potteries in their latest period and which was uncommon at Throlam. It probably dates to about the middle of the fourth century.
363. A wide-mouthed jar in sandy blue-grey ware; smoothed in bands on the rim and shoulder. *Throlam*, fig. 12, no. 46.
364. Castor-ware beaker with orange colour coat internally and gun-metal grey externally. Third or early fourth century.

A XI, 13:

365 and 366. Base and wall fragment, probably of the same vessel, of a beaker in hard smooth pale grey ware, stamped with a rosette pattern (*P.W.*, no. 12). The fabric is similar to another stamped piece, no. 338.

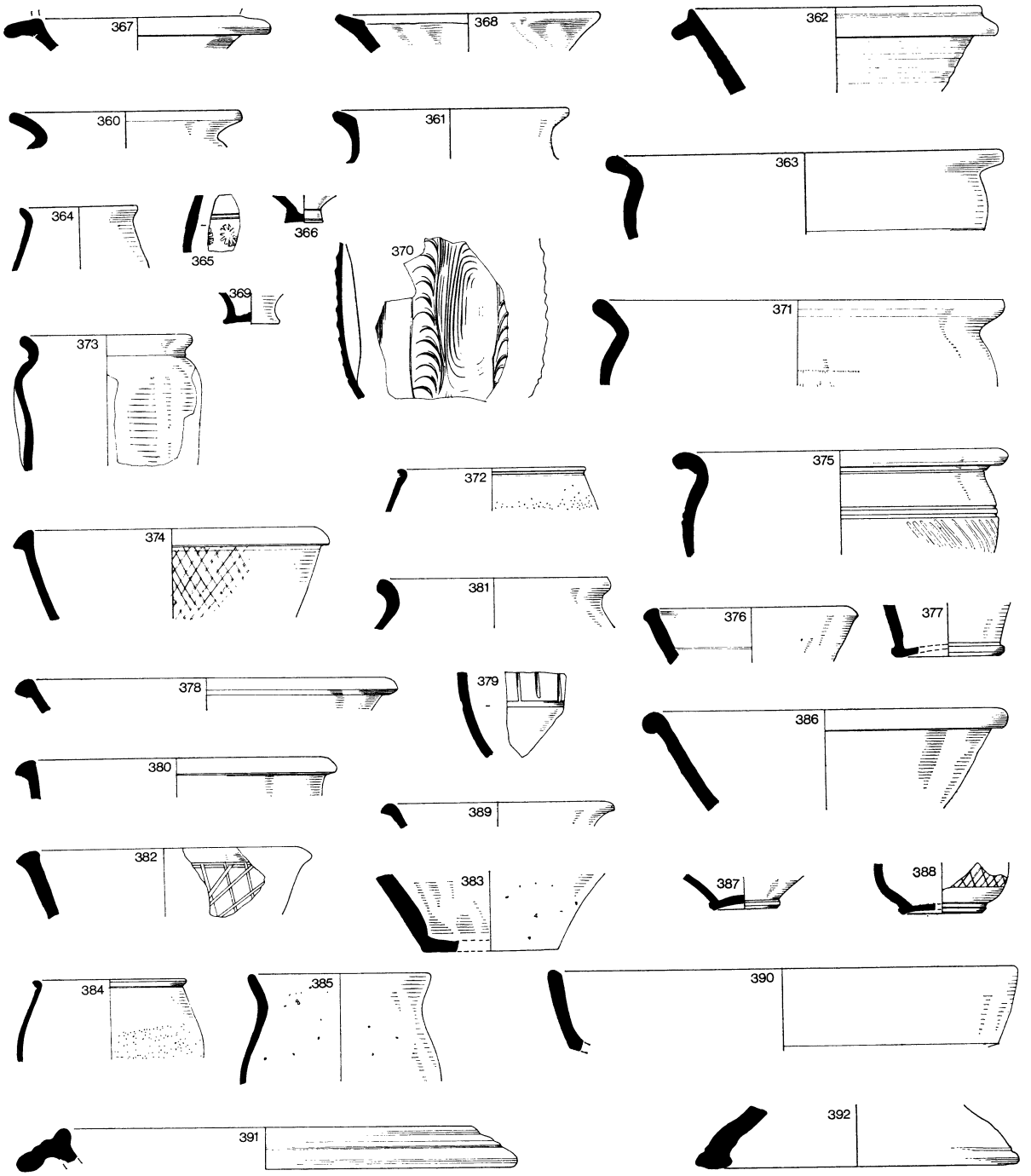


FIG. 67. Coarse pottery ($\frac{1}{4}$)

A XI, 10:
Not illustrated: a square-sectioned rim sherd in irregular, very hard, gritted, grey ware. *Knapton*, fig. 30, no. 8.

A V, 25; *the 9th street surface at the north gate:*
367. Flanged segmental bowl in Castor ware with greenish-orange colour coat. The rim above the flange has been cut down and smoothed over, suggesting a longish life. *Gillam*, types 205 and 206, dated 360–400. The thick, heavy fabric places it among the productions of the Castor kilns during the second half of the fourth century. This sherd is one of the latest found properly stratified in the north gate area.
368. Dales-ware rim (A.D. 280–340).

E I, 23; *the filling of the Inner ditch of Periods VI and VII:*
369. Base of Castor-ware beaker with bright orange matt colour coat, shading to dark grey in patches on the outside.

The following groups were specifically related to the streets.
To the west gate.

B III, 13; *the latest silt layer* (= B III, 21):
370. Indented Castor-ware beaker with dark, slightly shiny colour coat externally, showing orange internally. *Gillam*, type 53, dated 240–320.
371. Jar in sandy reddish-buff ware with dark grey to black surfaces. The rim is highly burnished internally to just below the neck and to the edge of the lip; the shoulder below the neck and above a burnished lattice pattern is treated similarly. The form and fabric of this vessel are almost identical to no. 302, although the finish is much superior and no trace of knife-trimming can be seen, and the fabric is harder and more red. See no. 487 for bowl in similar ware.
372. Roughcast beaker in stony-hard dark grey ware with shiny surface. The appearance is probably due to over-firing.

B III, 12; *below the top road surface:*
373. Indented jar or beaker in hard grey ware with darker grey outer surface; burnished on shoulder. *Norton*, fig. 10, no. 9.
Not illustrated: a small sherd of a Rhenish beaker.

B III, 14:
374. Bowl in black-burnished ware. *Gillam*, type 222, dated 170–210.
Not illustrated: a fragment of indented beaker similar to no. 373, but in reddish-buff fabric with dark grey surfaces.

B VI, 3; *the silt below Street 8:*
375. Wide-mouthed jar in sandy reddish-brown ware with grey surfaces; polished on rim and shoulder. The fabric is most closely matched by no. 371 above although the surface treatment and appearance are very different. Oblique burnished lines as distinct from a lattice pattern occur at *Norton*, fig. 13, nos. 4e and 4f but only two examples are quoted.
376. Bowl in stony-hard sandy light grey ware with dark surfaces; smoothed only on top of the rim.
377. Base of Castor-ware beaker in rather thick, heavy ware; orange colour coat internally, dark grey externally.

B VI, 4; *Street 7:*
378. Dish in black-burnished ware. *Gillam*, type 313, dated 190–240.
379. Wall of large jar in hard grey ware with darker outside surface. Possibly *Throlam*, fig. 14, no. 73.

B VI, 7; *Street 6:*
380. Bowl in black-burnished ware. *Gillam*, type 225, dated 190–240.

B VI, 8; *Street 5:*
381. Jar in pale grey unsmoothed ware.

B VI, 20; *equivalent to, or later than Street 6:*
382. Bowl in hard grey ware; burnished on rim and shoulder above lattice.
383. Base of jar in very irregular shell-gritted ware; dark grey internally, reddish-brown externally.
384. Roughcast beaker in white fabric with orange-red colour coat.
385. Jar in rough hand-made calcite-gritted fabric; greyish-buff colour.
386. Bowl in stony-hard light grey ware with burnished zones both inside and out. The fabric is most closely matched by the Crambeck potteries, but the piece does not occur in the latest groups. But see *Brough*, IV, p. 66, no. 142, where a similar vessel occurred with late third-century pottery and coins.
387. Base of colour-coated beaker, so heavily over-fired that it is difficult to make out the colour of the fabric or the coat.
388. Small jar in smooth hard light grey ware, burnished below the lattice.

B VI, 23; *drain beside Street 6:*
389. Small bowl or dish in reddish-brown sandy ware with dark grey surfaces; burnished on the rim and outside. The fabric is similar to the jar no. 375.

To the north gate.

B V, 9; *Street 8:*
390. Dish in stony-hard sandy light grey ware with darker surfaces; smoothed internally.

B V, 20; *silt layer below Street 5:*
391. Mortarium in reddish-buff ware with grey core, although this colour is more likely to have been the result of later heating. *Gillam*, type 278, dated 270–350.

B V, 25; *Street 2:*
392. Lid in shell-gritted native ware; reddish-buff with dark grey surfaces.

BUILDING A.I

Phase A.

A I, 63; *floor level:*
393 (and 394). Rim (and base) of small poppy-head beaker in pale grey 'sandwich' ware with dark polished surface. *Gillam*, type 70–1 (Hadrianic–Antonine).

Phase B.

A I, 49; *floor level:*
394. See no. 393 above.

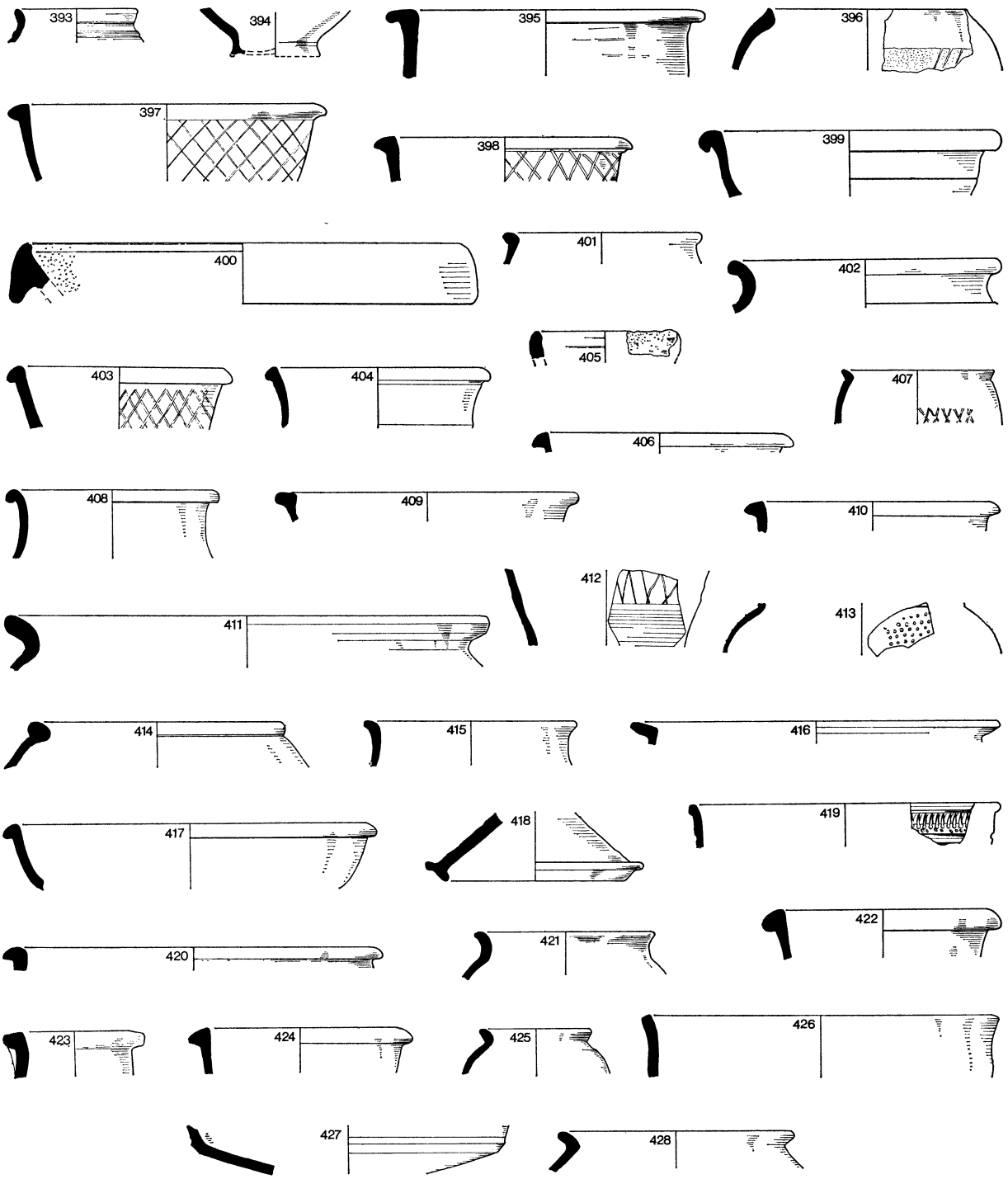


FIG. 68. Coarse pottery ($\frac{1}{4}$)

395. Bowl in smooth grey ware with burnished horizontal lines below rim outside. Probably Hadrianic–Antonine.
396. Neckless jar in black-burnished ware. Unburnished zone below shoulder with oblique burnished lines. Probably Hadrianic, but see examples from the *Signal Stations*, p. 241.
397. Bowl in black-burnished ware. *Gillam*, type 222, dated 170–210.

Phase C.

A I, 60; *floor level:*
398. Bowl in black-burnished ware as 397.

Phase D.

A I, 36; *floor level:*
399. Bowl in fabric similar to 395; polished on rim and below shoulder.
400. Wall-sided mortarium in creamy-white ware with a pink core; mixed grit but predominantly small pinkish-white quartz-like pieces extending halfway down the flange. Probably closest to *Gillam*, type 272 (A.D. 190–300), but see *Langton*, p. 77, no. 1, which is a better parallel to this example, but which is equated with a late third-century example from Birdoswald. See also Ilkley (*P. Leeds Lit. & Phil. Soc.*, XII, fig. 12, no. 87) for an unstratified heavier example. *Roman Colchester*, no. 498, gives late second–third century; examples were found in Kiln 25 (*Colchester Kilns*, fig. 89).
401. Small jar in smooth grey ware with darker outside surface; burnished on rim and below neck externally.
402. Cooking pot in grey-burnished ware. *Gillam*, type 142, dated 190–280.
403. Bowl in black-burnished ware. *Gillam*, type 222, dated 170–210.
404. Narrow-mouthed jar in dark grey ware; burnished on rim and neck.
405. A small crucible fragment.
406. Bowl as no. 403.

A I, 39; *occupation level:*
418. Lid in sandy reddish ware with dark grey surfaces. *Brough*, IV, p. 56, no. 71, from filling of Period IV ditch.
419. Bowl, imitation form 37, in hard white ware with smooth dark grey surfaces; beautifully finished.

This is the same fabric from which the Gallo-Belgic bowls and platters were made. It is probably residual in this context.
420. Bowl in sandy pinkish-grey ware with smoothed grey surfaces.
421. Grey-burnished cooking pot. *Gillam*, type 140, dated 180–270.
422. Bowl in black-burnished ware. *Gillam*, type 222, dated 170–210.
423. Flagon top, with thickening for the handle just below the rim, in creamy-white ware with buff shading on the surfaces. Second half of second century.

The following groups represent the building's abandonment.

A I, 25:
407. Small jar or beaker in grey-burnished ware. Probably Antonine.
408. Narrow-mouthed jar in pale pinkish-grey ware with dark grey polished surfaces.
409. Bowl or dish in smooth pale grey ware; burnished line outside below rim.

Not illustrated: dish of *Gillam*, type 310, dated 170–210, which is possibly a fragment of no. 410.

A I, 28:
410. Dish in black-burnished ware. *Gillam*, type 310 (cf. no. 409 above).

A I, 30:

411. Jar in reddish-brown ware with pale grey core and grey surfaces.
412. Lower wall fragment of grey-burnished cooking-pot. Late second or early third century.
413. Fragment of poppy-head beaker in fabric similar to nos. 393–4, although it is not the same vessel. Antonine.

Not illustrated: wall fragment of indented beaker like *Norton*, type 9.

A I, 37:

414. Bead-rim jar in hard sandy reddish-brown ware with unsmoothed dark grey surfaces.

A I, 38:

415. Narrow-mouthed jar in hard sandy dark grey ware; smoothed bands on neck and over rim.
416. Jar (or bowl) in light grey goose-pimply ware.
417. Dish in black-burnished ware. Late second or early third century.

Not illustrated: two more sherds of the poppy-head beaker, no. 413.

A I, 40:

424. Bowl or dish in black-burnished ware. Possibly *Gillam*, type 310.

Not illustrated: two fragments of grey-burnished cooking pot (*Gillam*, types 133–43).

The following group represents the building's destruction.

A I, 22:

425. Small jar in sandy grey ware with dark outer surface.
426. Bowl in grey calcite-gritted native ware with reddish inside surface.
427. Base of bowl in black-burnished ware. Possibly *Gillam*, type 224, dated 190–240.
428. Jar in hard pale grey ware; smoothed on rim and shoulder. Possibly Throlam.

Not illustrated: rim of jar also in Throlam fabric.

BUILDING A.III

A I, 12; *occupation:*

429. Dish in smooth, stony-hard, light grey, micaceous ware. The fabric is most closely matched by Crambeck ware; moreover this type of vessel was mainly absent at *Throlam*, p. 32, no. 110. Most Crambeck examples though have a more tapering and less square cut rim (*Crambeck* (1928), pl. III, nos. 50–3). But Hull noted that they were far from numerous at the *Signal Stations* (p. 237, type 17) and it would perhaps be more correct to date them earlier than the main production, to a period during the first half of the fourth century.
430. Flanged bowl in sandy reddish-drab ware; polished in horizontal zones internally, over the rim and on top of the flange. But only the lower half is polished outside. *Throlam*, p. 20, nos. 10 or 11.
431, 433, 436–7. Dales-ware type jars with varying gradations of coarseness; 433 is the better finished.
432, 434–5. Dishes in calcite-gritted fabric. The first two are smoothed on top of the rim only. No. 435 has a good smooth, overall, dark grey finish.
438. Jar in hard, unsmoothed, sandy, dark grey ware.

Not illustrated: indented Castor-ware beaker. Probably *Gillam*, type 92, dated 190–270.

A I, 17; *filling of ditch below floors:*

439. Small jar or beaker in very fine dark grey ware with a clearly-defined white layer separating the core from grey surfaces ('sandwich' ware); the outside is smoothed. This is normally the fabric associated with some 'Parisian' stamped wares. See no. 626 (note) and p. 135.

440. Bowl or dish in black-burnished ware. Late second to early third centuries.
441. Bowl in grey-burnished ware. *Gillam*, type 224, dated 190–240.

A I, 18; *layer cut by above ditch:*
Not illustrated: rim fragment of Dales-ware jar as no. 431. Base of large jar in very hard blue-grey ware; rather irregular (a waster?); probably a Throlam product.

A I, 19; *wall foundations:*
442. Grey-burnished cooking pot. *Gillam*, types 143 or 144, dated 190–280.
Not illustrated: rim of smaller vessel than no. 442, but in the same fabric; more upright rim.

BUILDING B.I

B I, 13; *floor in the western room:*
443. Bowl in native shell-gritted ware; light reddish-grey with dark grey burnished surfaces.
444. Jar in sandy greyish-brown ware with dark grey surfaces; burnished horizontal lines below rim have been so firmly applied as to produce a rilled effect. The elongated neck with rilling all the way to the rim might suggest that it is a later derivative of *Brough*, IV, p. 52, nos. 24–5. Probably second century (but see first-century examples: *Aldborough*, fig. 25, no. 28–9).
445. Dish in smooth light grey ware with darker core and surfaces. Possibly *Gillam*, type 319, dated 200–50.
446. Roughcast beaker in orange ware with dark greyish matt colour coat, showing purplish inside. *Gillam*, type 72, dated 80–130.
447. Dish or bowl in hard dark grey ware; polished on rim and for a short way inside. The fabric more closely matches Flavian–Trajanic pieces from Brough, but the form and decoration suggest *Gillam*, type 314, dated 220–360.
448. Large heavy jar in dense, very hard, light grey ware; smoothed on rim and shoulder. A *Throlam* (p. 29) product.
449. Mortarium in creamy-white ware with a yellowish-buff slip on the flange; sparse, very large mixed grit of red sandstone and quartz-like particles. The fabric is the same as no. 233, but that has a less heavy flange. Probably first half of second century.
450. Jar in very hard, slightly sandy, pale grey ware; smoothed lines on rim and body. A *Throlam* (p. 23) type.
451. Large jar in shell-gritted fabric like nos. 170, 204 and 266.
452. Small jar or beaker in unsmoothed grey ware.
453. Jar in fabric similar to no. 444, although the surfaces are not so dark.
454. Flake from a mortarium in pinkish-buff ware with yellowish surface; medium to small black and white grit on the flange. A later second-century type than no. 449.
455. Narrow-mouthed jar or flagon in hard pale grey ware; smoothed outside. *Throlam*, p. 30, no. 97.
456. Wide-mouthed jar in similar fabric to no. 453. In both, there are burnished lines on the rim and shoulder. See *Brough*, IV, p. 34, no. 131. from the hypocaust of Building IV and *Brough*, V, p. 58, no. 10, from beneath Period VI rampart.
457. Part of a tazza in smooth white ware. The inside surface below the carination is blackened by burning. Probably second century.
458. Part of a carinated jar or bowl in reddish-brown ware, with a grey core and dark grey surfaces. The lattice pattern above the carination is incised and not burnished, and was executed after the outside had been smoothed. Possibly a local imitation of a common Hadrianic form (*Gillam*, type 218; *Brough*, IV, p. 60, no. 88).

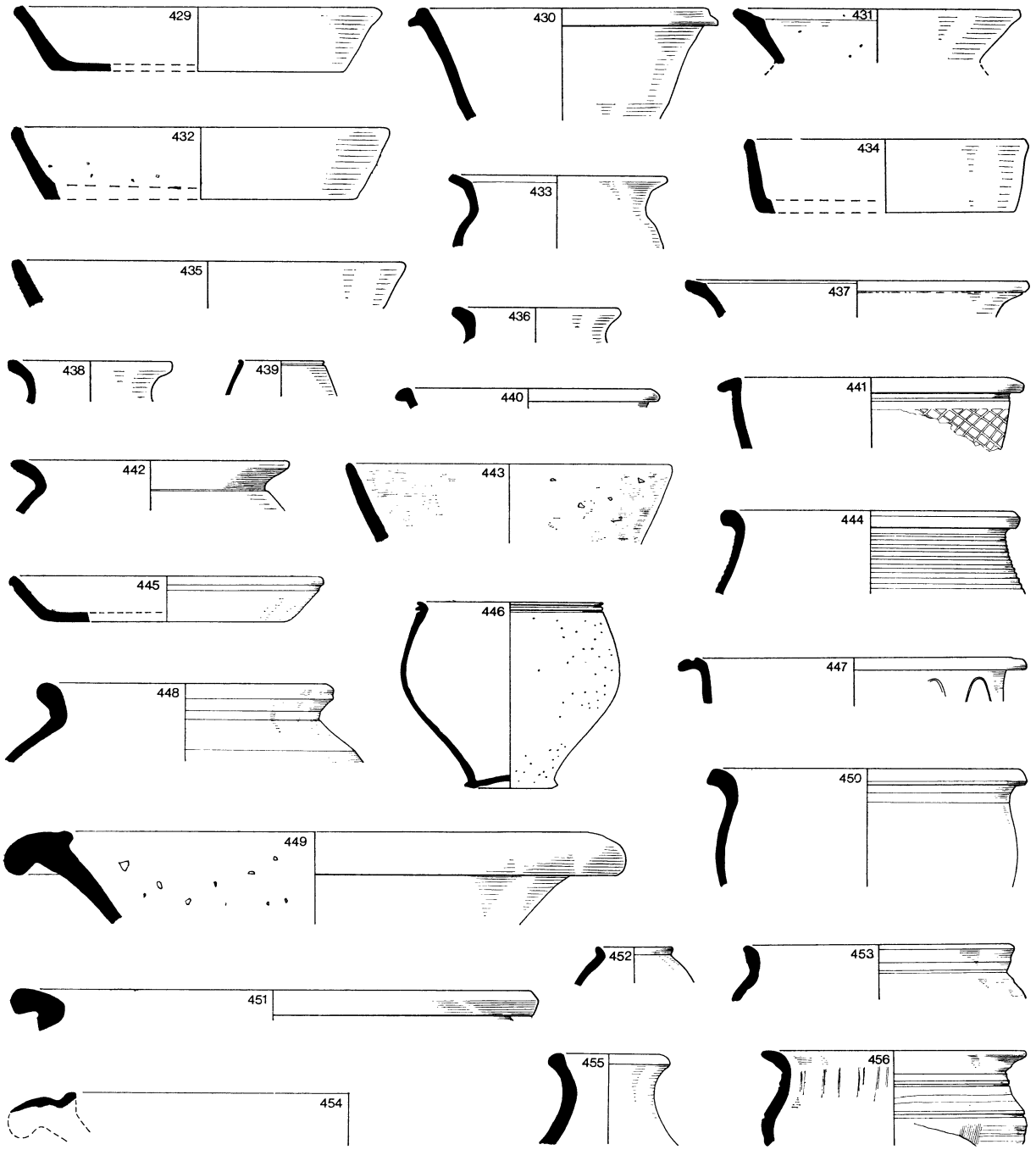


FIG. 69. Coarse pottery (¼)

459. Lid in coarse sandy dark grey ware with 'pimply' inner surface.
460. Rim of small jar or beaker in fabric similar to that used for the poppy-head beakers, nos. 393–4, 413.

Not illustrated: a body sherd of a Rhenish ware indented beaker; a jar, and a bowl with a lightly grooved rim in the same fabric as the lid no. 459, which fits the bowl; a dish in grey-burnished ware (*Gillam*, type 309, dated 160–200).

B I, 8; *floor in the eastern room:*

461. Jar in very rough hand-made native fabric containing very large (up to 1 cm.) spar-like fragments. Heavily sooted on the inside of the rim.
462. A Castor-ware beaker with scale pattern decoration and a shiny dark olive-green colour coat. Probably third century (*Jewry Wall*, p. 194, no. 5, dated 200–250).
463. Pinched-neck flagon in hard fine dark grey ware.

B I, 7; *floor in the eastern room:*

446 (B I, 13). Parts of this vessel occurred in both layers, and it is illustrated under the latter layer.

Not illustrated: bowl in black-burnished ware (*Gillam*, type 223, dated 180–200); small fragment of Throlam ware bowl with burnished wavy line.

BUILDING B.II

Two groups which antedate the construction.

B II, 30 (Pit I):

464. Grey-burnished ware cooking pot. A derivative of *Gillam*, type 138, dated 180–250.
465. As no. 464, but with a better finish, and no shoulder.

B II, 21:

466. Rusticated jar in sandy pale greyish-buff ware with a very pale grey exterior, burnished except for the central area of rustication; the fabric is micaceous. The rather squat, globular form, the type of fabric and the well-developed neck set this vessel apart from the normal run of rusticated jars at Brough. See *Camulodunum*, p. 236, nos. 98–9, dated Nero; *Margidunum*, p. 20, no. 11 and p. 30, no. 3, dated Nero-Vespasian and *Richborough*, III, no. 287, dated similarly, but with a less well-developed neck.
467. Small lid in smooth cream-coloured ware with a slight greenish tinge; small pinched-up finger grip. This type of fabric is frequently colour-coated, but no trace exists here. *Camulodunum*, pl. LXXXV, nos. 12–14, dated Claudius-Nero; also Cirencester fort ditch (unpublished), dated A.D. 60–5. This type of fabric is rare in the Flavian period, and is the only piece from the present excavations.
468. Roughcast beaker similar to no. 446, but with dark purplish colour coat.
469. Globular jar in dark reddish-brown ware with coarse sandy grit and dark grey, pimply surfaces. The top of the rim and a band 1 cm. wide on the shoulder are burnished. Possibly *Brough*, I, p. 30, no. 1. For vessels in similar fabric see no. 459 (B I, 13).

Phase A

B II, 22; *hearth:*

470. Bowl in black-burnished ware. *Gillam*, type 222, dated 170–210.

B II, 19:

471. Jar in stony-hard sandy grey ware; polished on rim and shoulder.

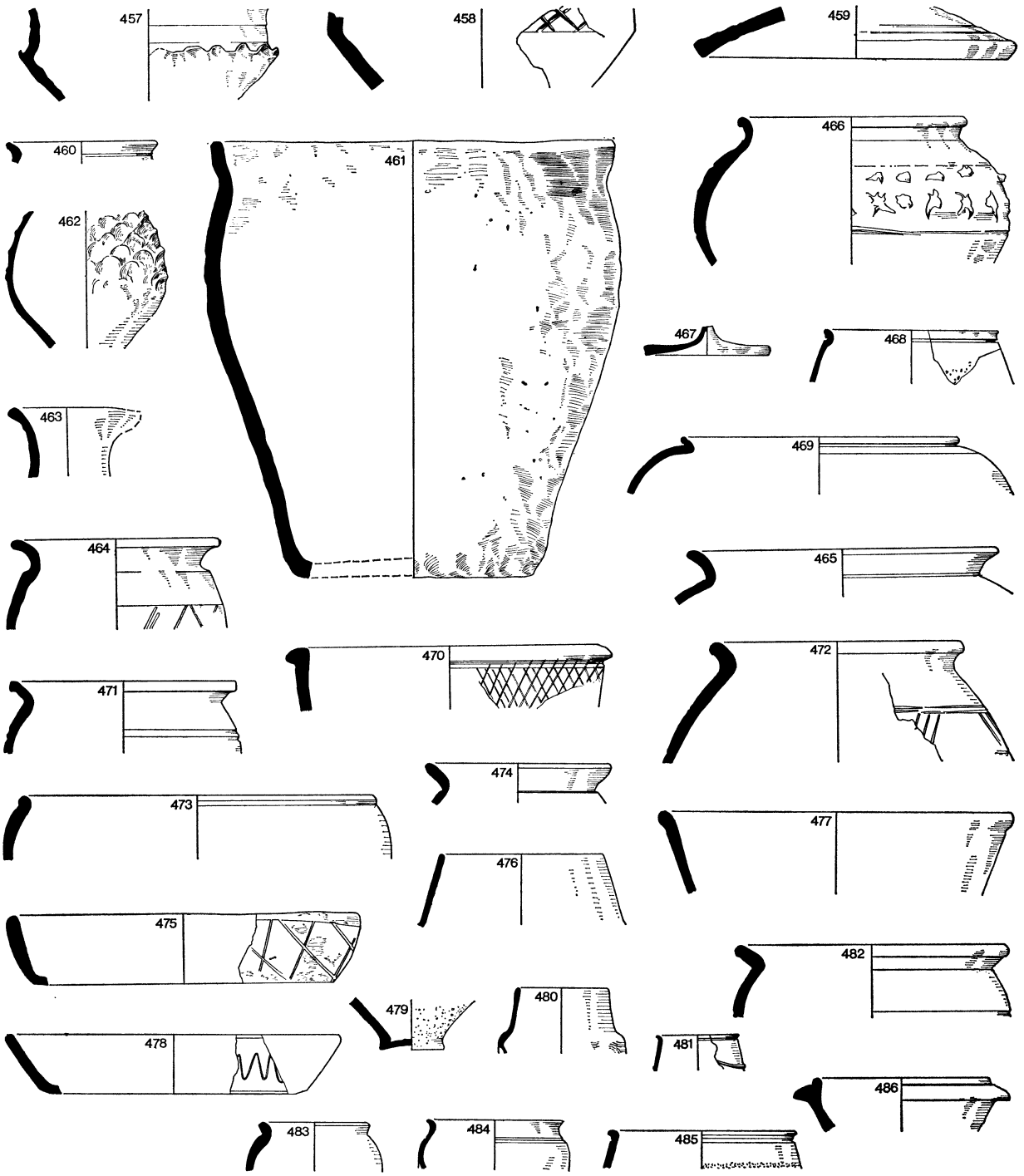


FIG. 70. Coarse pottery (¼)

472. Large jar in hard, slightly sandy, bluish-grey ware; smoothed on rim and shoulder. *Throlam*, fig. 14. See no. 754 for a complete example.
473. Bead-rim jar in black-burnished ware.
474. Jar in fabric and finish like no. 471.
475. Dish in black-burnished ware. *Gillam*, type 327, dated 130–180.
476. Castor-ware beaker with matt dark grey colour coat. Mid third century.
477. Dish in black-burnished ware.
478. Dish in black-burnished ware. *Gillam*, type 328, dated 160–200.
479. Base of roughcast beaker in pinkish-white ware with dark greyish-brown colour coat.
480. Indented Castor-ware beaker with dark greyish-green colour coat. *Gillam*, type 54, dated 260–330.
481. Castor-ware beaker with matt colour coat in dark grey. Probably third century.
482. Jar in hard sandy pale grey ware with darker polished outer surface. *Throlam*, fig. 12, no. 47.
483. Rim of bead-rim jar in black-burnished ware.
484. Indented beaker in Castor ware with matt dark grey colour coat. *Gillam*, type 92, dated 190–270.
485. Roughcast beaker in Castor ware with silvery-grey colour coat, shading to orange.
486. Segmental flanged bowl in stony-hard light grey ware; polished externally. *Jewry Wall*, p. 90, no. 6, mid second to mid third century. The fabric is like some of the Throlam examples.

Not illustrated: wall fragments of Castor-ware beaker (*Gillam*, type 53, A.D. 240–320); jar, *Throlam*, type 97; jar, *Throlam*, type 53.

Phase C

B II, 7:

487. Hand-made bowl in fabric similar to the jar nos. 371 and 375. The highlights of the vessel are highly burnished.
488. Jar in sandy reddish-grey ware with dark grey surfaces; polished on rim and shoulder. *Throlam*, fig. 14.
489. Bowl or dish in hard sandy dark grey ware; burnished lines on top of rim.
490. Colour-coated beaker (possibly indented) in orange-red ware with a darker red slip.
491. Castor-ware beaker with raised lattice pattern; metallic grey colour coat outside, showing brown inside. See *Nene Valley*, fig. 4, no. 3, dated mid third century.
492. Jar in rough dark grey calcite-gritted ware.
493. Smooth drab grey bowl. The circular stamp is matched by *Brough*, IV, p. 68, no. 4. The other decoration carries a lozenge-shaped (?) panel of stab marks. This type of decoration occurred frequently on pottery from *Norton* (pl. VIa). See p. 195 for notes on stamped wares.
494. Dish in black-burnished ware. *Gillam*, type 312, dated 190–240.

Phase D

B II, 5; *soil to east of retaining wall:*

495. Bowl in stony-hard pale grey ware. The inner surface has flaked away. The fabric could possibly be of Crambeck type, but bowls of this form which are derived from the shoulderless wide-mouthed jar series are rare and seldom have the grooves so near the rim (*Crambeck* (1928), pl. VI, nos. 153–6). *Throlam* (fig. 11) wide-mouthed jars probably have weaker shoulders than Crambeck examples, but no exact analogy can be found for this one, although the fabric would not be out of place there; or possibly *Cantley*, no. 147.
496. Small fragment of beaker in orange-red ware with metallic grey colour coat, showing dark red internally; thick slip decoration in reddish-buff. Late third or early fourth century.

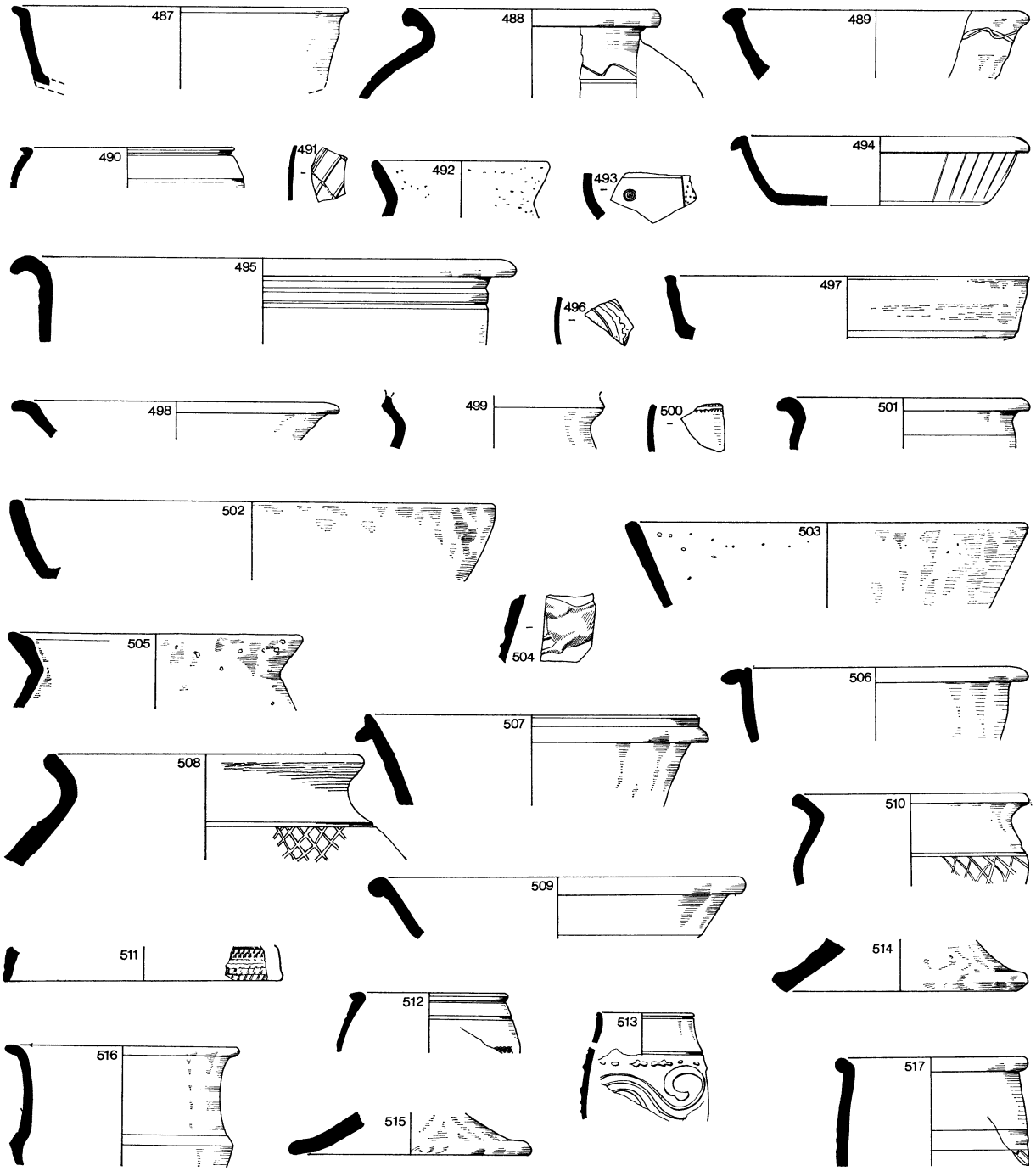


FIG. 71. Coarse pottery ($\frac{1}{4}$)

497. Dish in dark grey ware containing coarse sandy grit and a little shell; the rim, outside basal angle and internal surfaces are polished. The unpolished surface has a goose-pimply appearance.

498. Dish or shallow bowl in fabric similar to 497, but unpolished.

Not illustrated: cavetto-rim jar with high, curving neck in similar fabric to nos. 497–8. The fabric of these three vessels is not unlike that used for Derbyshire-ware jars, although the finish is on the whole rather better. It is also used on much earlier types of vessel, e.g. nos. 459, 469. It should be noted that, in this fabric, the grit particles, although large, are rarely exposed in the surfaces.

499. Fragment from neck of a bell-mouthed flagon in pale grey ware; smoothed but not polished. *Throlam*, fig. 13, no. 69.

500. Colour-coated beaker, possibly the same as no. 496.

501. Wide-mouthed jar in fabric similar to, but slightly sandier than no. 495. *Throlam*, fig. 12, no. 42.

B II, 4:

502. Dish in stony-hard grey ware; some large pieces of grit; burnished bands inside. The slight rise in the base at the break suggests that it was a cheese-squeeze. Throlam type fabric, but only one fragment came from the kilns. *Throlam*, p. 32.

503. Dish or bowl in hard dull reddish-brown ware with grey core; the surfaces are polished but heavily pitted.

504. Fragment of a Hunt cup beaker.

505. Dales-ware type cooking-pot, but without the internal bend at the rim. Probably early to mid fourth century.

506. Flanged bowl in black-burnished ware, but with the outside re-fired to a reddish-brown colour. *Gillam*, type 226, dated 220–270.

507. Flanged bowl in stony-hard pale grey ware with darker surfaces; polished bands both inside and out. *Throlam*, fig. 10, no. 12. Probably first half of fourth century.

508. Large jar in stony-hard bluish-grey ware; rather roughly finished; polished on rim, neck, shoulder and lattice. This is more likely to be a Crambeck rather than a Throlam vessel. Lattice patterns rarely, if ever, occur on this form at Throlam, while an outcurving rim without thickening above the neck is more closely matched by the Crambeck jars; but even then a lattice pattern is rare (*Signal Stations*, p. 240, type 24). Hull noted that they might belong to the earlier occupation at the Signal Stations. In this respect it might also be noted that such a jar was found at the bottom of the Langton well, associated with a coin of Constantine I (A.D. 335–7) (*Langton*, p. 54, no. 2).

509. Dish in black-burnished ware. *Gillam*, type 313.

510. Jar in hard greyish-buff ware, with darker outer surface; polished on rim, shoulder and lattice.

511. Lid of Castor-ware box. *Gillam*, type 341, dated 180–320.

512. Red colour-coated beaker in greyish-buff ware with a band of rouletting on the body.

513. Castor-ware beaker with metallic grey colour coat and scroll ornament in barbotine. *Gillam*, type 88, dated 190–260.

514–5. Lids in greyish-buff shell-gritted ware. Both appear to be wheel-made.

516. Carinated beaker in fine pale buff micaceous ware with polished bluish-grey rim and outer surfaces. This type could be Flavian at the earliest; *Langton*, p. 31, no. 18 from the early ditched enclosure. But a longer necked variety, more like the one from Brough, came from near the surface in the North ditch (*Langton*, p. 83, no. 96) while another (ibid., p. 48, no. 6) was with a group of late third-century pottery in the filling of a stokehole in the bath building. The Brough piece is comparatively large and undamaged, so it might be well to keep an open mind on the dating. See also *Brough*, II, p. 31, no. 10.

517. Bowl in stony-hard, slightly sandy, very pale grey ware; smoothed on rim and shoulder with burnished lattice below two girth grooves.

Not illustrated: numerous small fragments of Castor ware of the types which date before 350; a fragment of a Rhenish beaker; a rim of a wide-mouthed jar (*Throlam*, fig. 11, no. 40); a handle of a Castor-ware jug or flagon (*Gillam*, type 19 or 62 or *Nene Valley*, p. 24, no. 8).

This group, a comparatively large one, throws some light on the latest occupation at Brough. The majority of pieces fall into the period mid third to mid fourth century. There is nothing that need date much later than 350.

BUILDING G.I

Layers predating the construction, in addition to G II, 40, 46, 67 (fig. 58).

G IX, 11:

518. Dish in pale greyish-buff Belgic ware with smooth polished dark grey surfaces. Flavian.
519. Small jar or beaker in hard smooth orange ware. *Gillam*, type 167, dated 80–120.

G IV, 10:

524. Carinated beaker in very hard unsmoothed dark grey ware. This is a vessel very like that (no. 516) discussed above, except that this fabric is very different and the neck is more sharply recurved (*Langton*, p. 31, no. 17).
525. Dish in black-burnished ware. *Gillam*, type 310, dated 170–210.

G IV, 5; *layer earlier than the street north of the building:*

520. Jar in polished greyish-buff shell-gritted ware with leathery appearance. See comments on this fabric under no. 135.
521. Dish in stony-hard smooth pale grey ware. Probably a Norton vessel.
522. Jar in dark grey shell-gritted ware. Much coarser than no. 520.
523. An unusual pedestal base in hard buff ware with shiny olive-green colour coat, shading to orange in places where it thins out.

Layers intermediate between Phases A and B

G II, 30:

526. Bowl in sandy dark grey ware.
527. Bowl in fabric similar to no. 526. *Brough*, IV, p. 56, no. 64; *Gillam*, type 301, dated 80–130.
528. Jar in hard, slightly gritted, dark grey ware.
529. Jar in similar fabric to no. 528.
530. Screw-neck flagon in bright reddish-orange ware with grey core (*Clausentum*, fig. 23, no. 11, dated 150–180).
531. Wide-mouthed jar in hard grey ware; polished bands on neck and shoulder. The decoration is incised not burnished. The type is perhaps best represented by *Brough*, V, p. 58, no. 10, which could be as late as the late second century. This might again be an early forerunner of the Throlam type wares; it might be noted that, in general, scored or incised decoration seems to be later replaced by burnished lines.

G II, 34:

534. Castor-ware beaker decorated with overall scale ornament. See no. 462; probably late second or early third century.

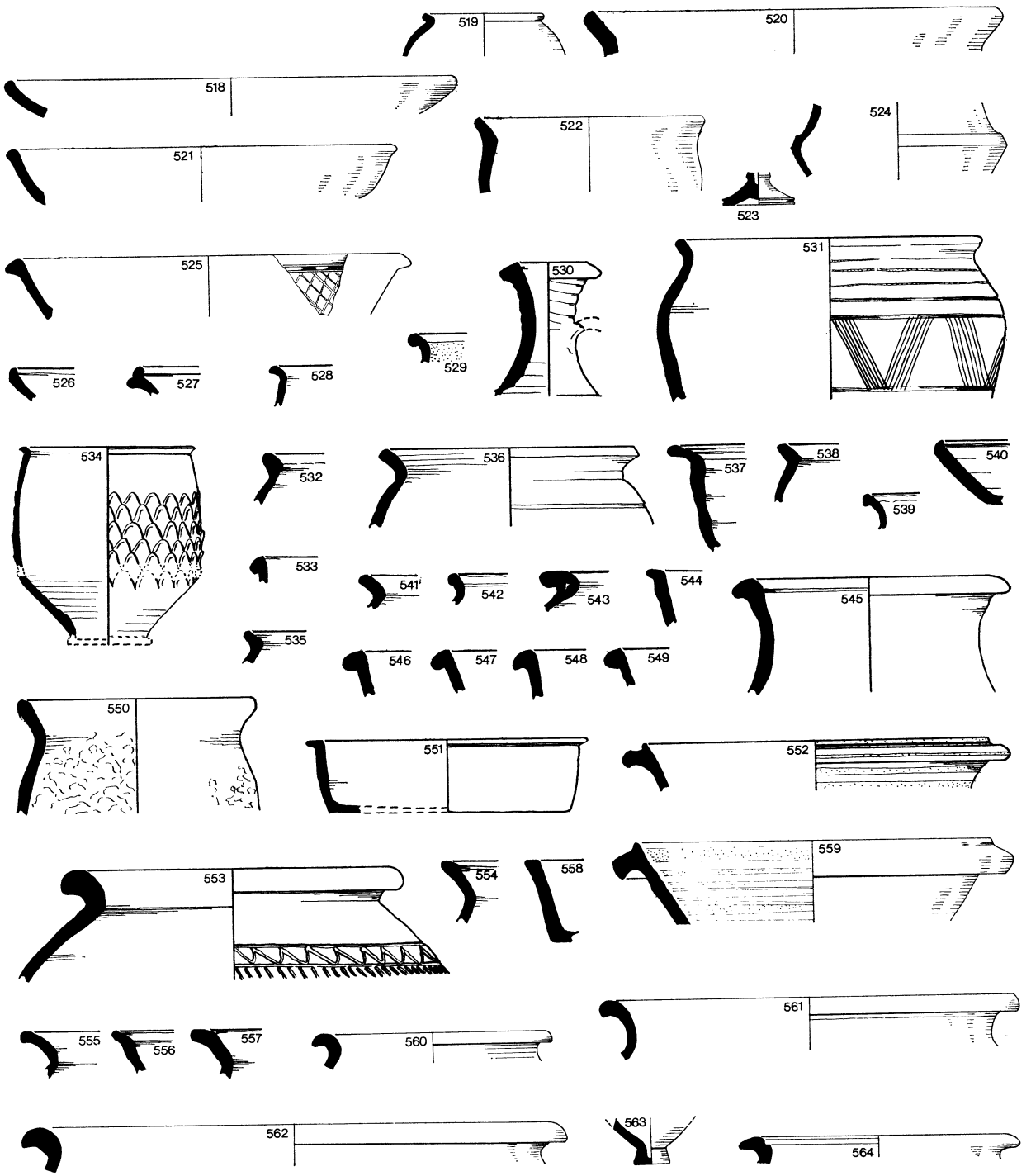


FIG. 72. Coarse pottery ($\frac{1}{4}$)

Phase B

G II, 19:

532. Jar in gritty brownish ware with reddish-orange core. The form is *Brough*, IV, p. 54, nos. 40–1.
533. Bowl or dish in black-burnished ware. *Gillam*, type 222, dated 170–210.

G II, P.H. 7:

535. Black-burnished cooking pot. Hadrianic–Antonine.

G II, 25; *floor:*

536. Wide-mouthed jar in hard grey ware. The bulge at the neck — not quite a cordon — is like that which appears so frequently on these vessels from *Throlam* (figs. 12, 16).
537. Bowl in fabric like nos. 469, 497–8.
538. Jar in sandy grey ware.
539, 541–2. Jars in hard grey ware with dark grey surfaces.
540. Dish in dark grey ware.
543. Jar in coarse dark grey ware.

Phase C

G II, 14/15; *floor:*

544, 551. Bowls in sandy reddish-brown ware with uneven polished dark grey surfaces. See nos. 371, 375, and 487.
545. Jar in lightly gritted orange-red ware with grey core and grey-brown surfaces. Similar to *Throlam*, fig. 15, nos. 95–6.
546–9. Bowls or dishes in black-burnished ware. Nos. 546, 548 are probably *Gillam*, types 225 and 224 respectively, dated 190–240. Nos. 547, 549 are probably types 312 and 313 with the same date range.
550. Jar in rough calcite-gritted hand-made ware; brownish colour with crackled surface.

See also STAMPED MORTARIA 3 and 4 (p. 133).

G II, 10; *occupation layer:*

552. Flanged bowl in hard dark grey ware; burnished on rim, flange and in bands round the outside. *Throlam*, fig. 10, no. 10.
553. Large jar in hard grey ware with deeply incised decoration on the shoulder. Probably a forerunner of the burnish-decorated Throlam jars (*Throlam*, fig. 14), but might be Norton.
554. Dales-ware type cooking pot.

G II, 13; *occupation layer:*

555. Black-burnished cooking pot. *Gillam*, type 147, dated 290–370.
556–7. Jars in coarse calcite-gritted ware; dark grey with reddish core. Late third to mid fourth centuries.

G II, 6; *occupation layer:*

558. Dish in fabric similar to nos. 544, 551.

Phase D

G IX, 6; *accumulated ash layer:*

559. Flanged bowl in hard pinkish-drab ware; smoothed on flange and in bands on the inside surface. The rather heavy squarish flange is matched by several from *Throlam* (fig. 10).
560. Wheel-made cooking pot in Huntcliffe-type fabric, but without the internal ledge on the rim. *Gillam*, type 161, dated 300–70.
561. Wide-mouthed jar in stony-hard sandy pale grey ware with dark bluish-grey surfaces; smoothed internally and on top of rim. *Throlam*, fig. 11, no. 21.

562. Similar vessel and fabric to no. 561. *Throlam*, fig. 11, no. 25.
563. Small pedestal beaker in hard, pale greyish-white ware with smooth grey outer surface. Perhaps the base for a beaker of *Crambeck* (1928), pl. IV, no. 93 type.
564. Huntcliffe-type cooking pot. *Gillam*, type 163, dated 360–400.
565. Wide-mouthed jar in fabric like nos. 561–2, but slightly coarser; small 'blow-holes' in surfaces; burnished wavy line; *Throlam*, fig. 11.
566. Dish in stony-hard lead-grey ware; smoothed inside and out. This type was rare at Throlam and is more likely a Crambeck vessel, especially in a context of this date, which would tend to rule out Norton as the place of origin. See *Crambeck* (1937), 399, type 2a. *Gillam* (type 333) gives 350–400 as the date range.
567. Huntcliffe-type cooking pot. See no. 564.
568. Handled jar which was probably grey but which has been re-fired to a reddish-buff colour; polished bands on rim and shoulder. *Throlam*, fig. 14, no. 79.
569. Large jar in hard greyish-buff ware with moulded neck (not illustrated: a wall fragment with similar notched decoration). Although jars of this type were made at *Throlam*, (fig. 13), notches do not feature in their decoration (but see *Langton*, p. 81, no. 74). There they occur on narrow-mouthed jars on the rim and shoulder (*Throlam*, fig. 15, nos. 91–2). They also occur on some Norton types (*Norton*, fig. 11, nos. 7d, e). Perhaps *Signal Stations*, 227, type 3, attributed to Crambeck by Hull, although he recorded it as rare in the Signal Station groups.

This again is one of the latest stratified groups yet found at Brough. But it should be noted that, although it includes pieces of Huntcliffe type and Crambeck ware, none of the very latest wares are represented, and the date for the group would best lie between 360 and 370.

BUILDING G.II

The following layers predate the construction.

G III, 25, *sealing Flavian Pit 1:*

570. Small jar or beaker in coarse black gritty ware. *Gillam*, type 168, dated 120–60.

G III, 29; *sealing Flavian Pit 2:*

571. Jar in hard grey ware; smoothed on rim, neck and shoulder.
572. Jar in rough 'native' ware containing large particles of spar or quartz-like matter; reddish-brown with dark grey core and internal surface.

G III, 8:

573. Bowl in black-burnished ware. *Gillam*, type 218 or 219, dated 125–50.

Not illustrated: a fragment of a Hunt cup with glossy olive green colour coat (late second or early third century); rim fragment of a bowl, *Gillam*, type 222 (A.D. 170–210); part of a grey ware indented beaker, *Norton*, type 9.

G III, 11:

574. A rusticated jar in hard pale grey ware; smoothed on rim and shoulder; very weak rustication. *Gillam*, type 98 or 99, dated 80–130.
575. Bowl in sandy grey ware; polished inside and on rim.
576. Small jar in hard, slightly sandy, drab grey ware with darker surfaces; polished on rim, shoulder and just above the base, with a zone of oblique burnished lines on the body. Possibly *Norton*, fig. 13, type 4f.

G III, 9:

577. Wide-mouthed jar in hard, sandy, dark bluish-grey ware; smoothed on rim and shoulder. *Throlam*, fig. 11, no. 28?

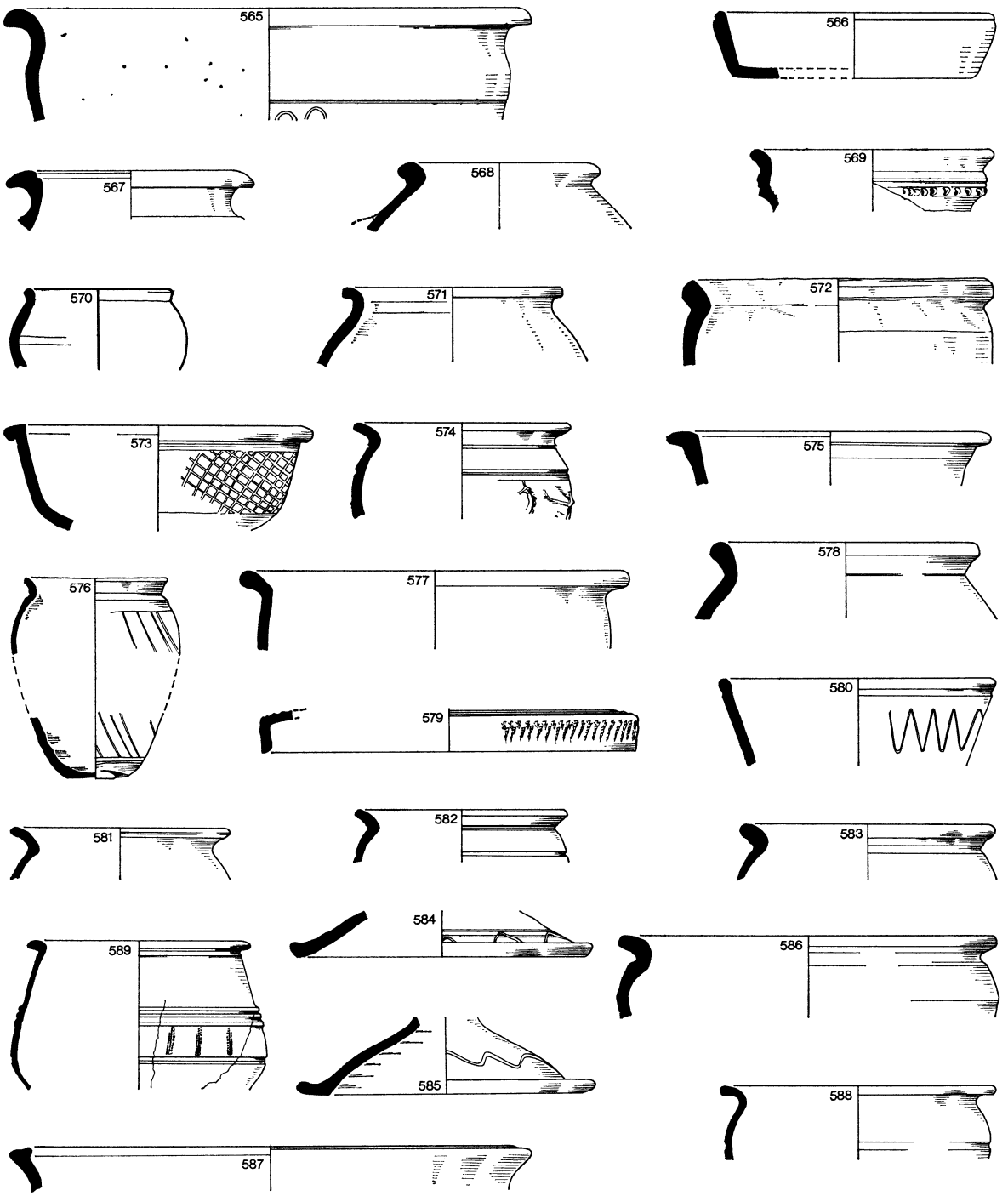


FIG. 73. Coarse pottery ($\frac{1}{4}$)

578. Large jar in hard pale grey ware with dark bluish-grey surfaces; smoothed inside neck, on rim and shoulder. *Throlam*, fig. 14, no. 76?
579. Lid of Castor box in good quality white ware with shiny dark colour coat, shading to orange. *Gillam*, type 341, dated 180–320. The quality would place it early in the dated range.
580. Bowl in black-burnished ware with burnished wavy line on outside wall.
581. Jar in very hard light grey ware; smoothed on rim and outside.
582. Jar in similar fabric to no. 581.
583. Jar in hard, slightly sandy, drab grey ware; smoothed on rim and shoulder. The bulge on the neck is a Throlam indication.

Not illustrated: grey-burnished ware bowl, *Gillam*, type 224, dated 190–240; black-burnished ware bowl, *Gillam*, type 225, dated 190–240; wide-mouthed jar, *Throlam*, fig. 12, no. 55.

G VIII, 8 (another fragment in G VIII, 5):

589. Carinated bowl in thin, fine quality, reddish-brown ware with a light grey core and dark grey surfaces. The rim and outside of the bowl are very smooth, but they do not have the high polish of some of these types. There is a zone of stamped impressions (this is not one which figures in *P.W.*) just above the carination, and the vessel is typical of the 'Parisian' stamped wares (see p. 195).

G III, 10; *overlying floor level 12:*

584–5. Lids in similar fabrics and drab and dark grey colour respectively; a burnished wavy line occurs on each. *Brough*, I, p. 30, no. 3; *Norton*, fig. 13, no. 18, but neither are precise analogies.
586. Jar in brownish shell-gritted ware with dark grey surfaces.
587. Jar in hard finely-gritted grey ware; irregular shape; smoothed on neck. This type of vessel was made at both *Norton* (fig. 11, nos. 8a, b) and *Knapton* (fig. 30, nos. 1–9).
588. Wide-mouthed jar in thin hard grey ware. This probably is an earlier form and residual.

G VIII, 5; *post-dates robbing of wall:*

590. Jar in hard light grey ware with darker surfaces. The rim and body below the neck are beautifully smoothed as is the foot-ring and underside of the base. The fabric is not dissimilar to that used for 'Parisian' stamped ware, and the vessel could date to an earlier phase and so be residual. Yet there are similarities between it and *Throlam*, fig. 16, nos. 99–100 and *Norton*, type 5; but both the latter lack the foot-ring. While ultimately derived from Belgic prototypes (*Camulodunum*, type 204), they continued to be made certainly until the Antonine period (ibid., type 206), and the poorly developed foot-ring on the Brough piece suggests a second-century or later date.

Not illustrated: a fragment of *Throlam*, fig. 12, no. 49.

G VIII, 4; *post-dates wall robbing:*

591. A shallow flanged bowl in smooth white ware with orange-brown blobs of paint on top of the flange. This is not so typical of Crambeck types, either in form or decoration, and it could be more closely allied to wares either from the Castor or Nuneaton regions. *Jewry Wall*, p. 92, type F, dated to 200–325.

BUILDING F.I

The following layers were cut by the wall-footings.

F XII, 3:

592. Wide-mouthed jar in hard grey ware with dark bluish-grey outer surface. *Throlam*, fig. 11, no. 38.
593. Dales-ware jar in shell-gritted grey ware. *Gillam*, type 157 (A.D. 280–340).

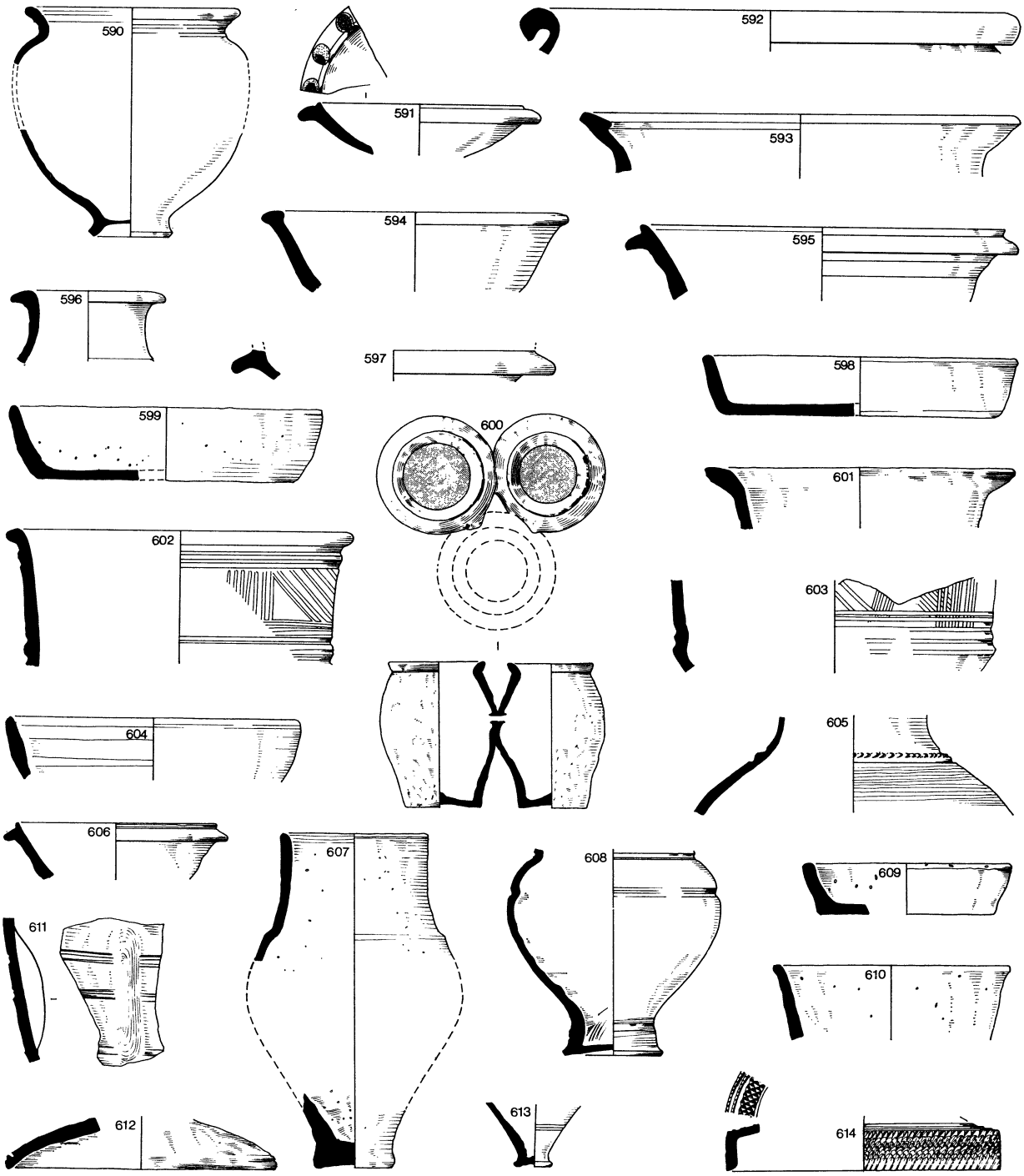


FIG. 74. Coarse pottery (¼)

594. Hand-made bowl in smooth, leathery, brownish-grey, sparsely shell-gritted ware. See no. 135.
595. Flanged bowl in hard drab grey ware with darker surfaces; smoothed inside and on the flange. *Throlam*, fig. 10, no. 12.
596. Narrow-mouthed jar in hard bluish-grey ware; smoothed on rim and in narrow bands on neck. *Throlam*, fig. 15, no. 96.
597. Flanged segmental bowl in soft sandy buff ware with smooth orange surface and trace of a red colour coat. *Crambeck* (1937), 401, type 5.
598–9. As no. 594, but only smoothed in bands on outside of no. 599.
600. Triple vase in hard light drab grey ware with smoothed leathery external surfaces; some shell grit. No obvious parallel. At Colchester, the form where all three vases are joined at the wall is dated to the fourth century (*Colchester Kilns*, type 495). But the Brough example is clearly made in a local fabric.
601. Jar in very hard reddish-brown calcite-gritted ware with uneven pimply grey surfaces.
602–3. Probably fragments of the same vessel. A carinated bowl in thick, stony-hard, dense, pale grey ware with burnished decoration on the part above the carination and shading to a bluish-grey on parts of the surfaces. An unusual vessel and one not easy to parallel. The fabric is undoubtedly of the type which occurs in East Yorkshire during the third and fourth centuries. Plain carinated bowls appear at both *Throlam* (fig. 16) and *Norton* (type 10), while the inward-sloping shoulder of one of the latter has a burnished lattice. See also *Brough*, III, p. 35, no. 6 and *Brough*, IV, p. 64, no. 124. The type would seem ultimately to owe its origin to the Belgic girth-beaker (see nos. 103–4 for an earlier (?) example in black-burnished ware) and demonstrates yet again the highly conservative nature of the local pottery industry.
604. Dish in stony-hard off-white ware with lead grey surfaces, smoothed in bands. *Crambeck* (1937), 399, type 2a. See no. 566 for similar vessel and the dating of this form.
605. Shoulder of jar in hard drab grey ware; smoothed in bands on the shoulder and with a notched cordon at the base of the neck. The impressions are very sharp and have been made with a striated tool. Although this decoration occurs on jars from *Throlam* (fig. 15, no. 91) and *Norton* (fig. 11, no. 7d, e) this particular example is more likely to have come from the former site.
606. Small flanged bowl in unsmoothed drab grey ware. *Throlam*, fig. 10.
607. An imitation Castor-ware bulbous beaker in reddish-brown, finely shell-gritted fabric, with a polished dark grey exterior. See no. 135 for comments on the fabric.
608. A globular jar in stony-hard dense grey ware with darker bluish surfaces. It is fired almost to the point of becoming stoneware. The outside is entirely smoothed. It might be *Throlam*, fig. 16, no. 99, but is far more likely *Norton*, fig. 13, no. 14.
609. Small dish in fabric like no. 135; dark grey.
610. Bowl in fabric similar to, but with finer grits and more brownish colour than, no. 609.
611. Indented beaker in fabric like no. 608. *Norton*, fig. 10, no. 9.
612. Lid in calcite-gritted ware.
613. Base of beaker in orange-red ware with slightly shiny dark grey colour coat.
614. Lid of Castor-ware box, with purplish-red colour coat.
615. Calcite-gritted jar in pinkish-buff ware. *Gillam*, type 159, dated 290–350.
616. Narrow-mouthed jar or flagon in drab grey ware; smoothed bands on rim and neck. Probably a *Throlam* type (fig. 13, no. 68?), but a Crambeck origin cannot be ruled out (*Langton*, fig. 26, no. 67, attributed to Crambeck).
617. Narrow-mouthed jar in stony-hard bluish-grey ware; smoothed on rim and inside neck. *Throlam*, fig. 15.

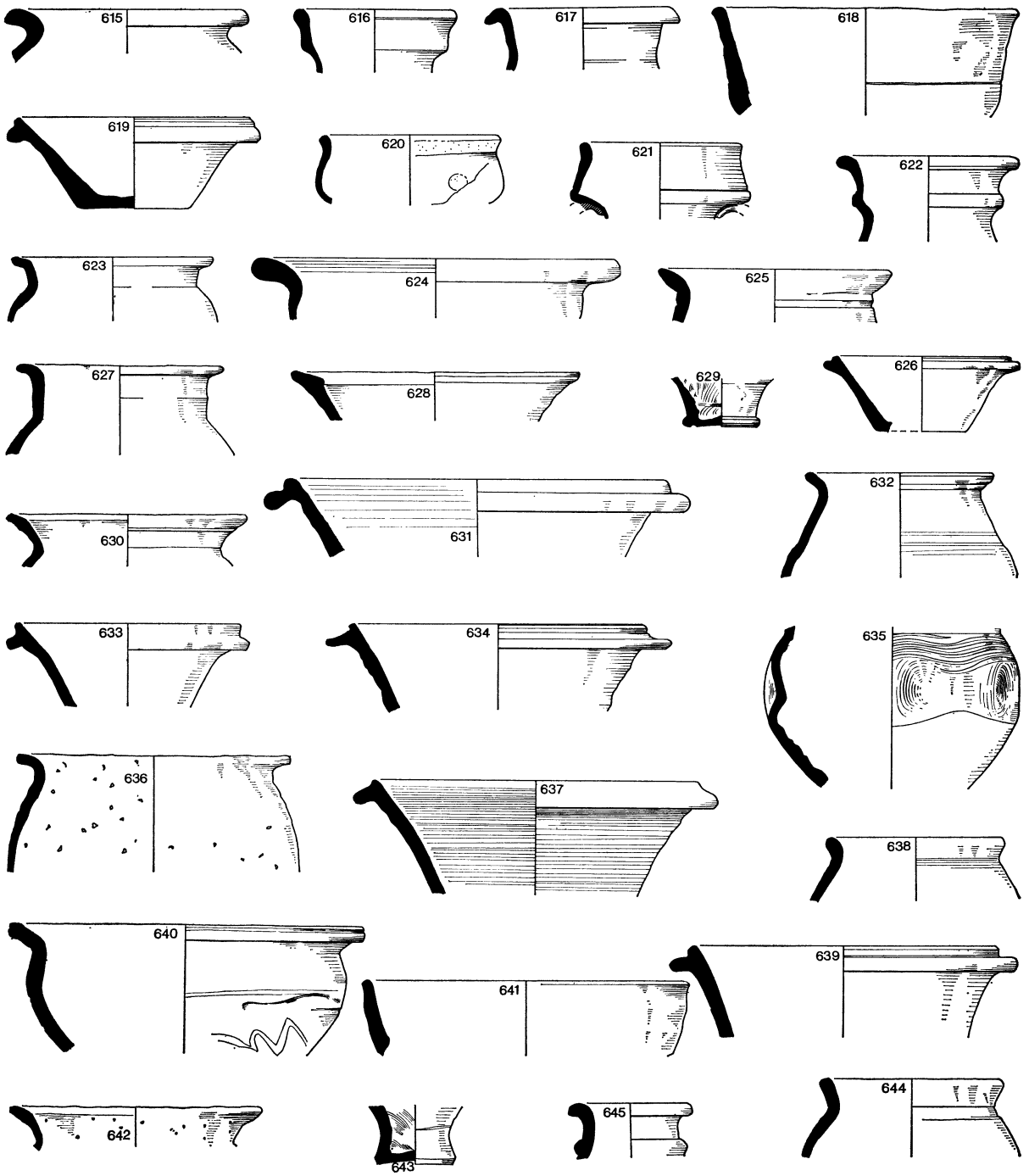


FIG. 75. Coarse pottery ($\frac{1}{4}$)

618. Bowl in brownish-buff shell-gritted ware with black polished surfaces. See no. 135.
619. Flanged bowl in dense stony-hard dark grey ware, with bluish tinge on surfaces; smoothed inside and on rim and flange. Probably *Throlam*, fig. 16, no. 109, although the short stubby flange and marked thickening of the wall towards the base is better matched by some *Crambeck* (1928) (pl. I) examples.
620. Small bowl in micaceous orange-red ware; polished inside rim and on body; a band of white slip covers the neck and there are blobs of similar slip on the body. Reminiscent of some New Forest and Thames Valley types, but the fabric is not right for them. Probably *Crambeck* (1928), pl. II, no. 33 for form, but no. 36 for fabric. White slip decoration on a nearly similar bowl at Catterick (*Y.A.J.*, XXXIX, 259, no. 45).
621. Double(?)-handled jar in stony-hard dark grey ware; polished bands on and below rim. *Throlam*, fig. 13.
622. Jar in hard drab grey ware, with darker grey exterior; smoothed bands on neck. Although, as in no. 616, the fabric most closely resembles Throlam types, the form is more nearly *Crambeck* (1937), 405, type 14a.
623. Jar in dark grey calcite-gritted ware. *Gillam* type, 160, dated 300–70.

This is an interesting group, since it is one of the largest of fourth-century date from a stratified deposit. But certain absentees should be noted. In an area of the site where Huntcliffe-type cooking pots were comparatively common in late levels none are represented here. Although some of the sherds can be attributed to Crambeck, none (except perhaps no. 622) is of the forms explicitly restricted to the latest Crambeck groups; indeed such types, like the Huntcliffe pots, are altogether absent. Therefore it might be reasonable to assume that this group was formed before A.D. 370, and that it would most likely date to the period A.D. 350–70. The high proportion of Throlam types and the few from Norton still in use at this date should be noted (10 positive identifications from Throlam and Norton as against 3 from Crambeck).

F XII, 4:

624. Bowl in stony-hard dark grey ware with a thin band of palest grey separating the core from light bluish-grey surfaces; smoothed on rim and in bands on the shoulder. *Throlam*, fig. 12, no. 46.
625. Wide-mouthed jar in similar but drabber fabric to no. 624. *Throlam*, fig. 12, no. 48–9.
626. Flanged bowl in identical ware to no. 624, which strongly suggests a *Throlam* origin, although it is difficult to match the upswept flange on so small a bowl; perhaps fig. 10, no. 9 or 14.

These three vessels show one of the more interesting characteristics of what appear to be of Throlam wares: the sandwich effect of a whitish layer between a dark core and surface. It should be noted that much of the 'Parisian' stamped ware is made of this type of fabric, although in these the surface is darker and smoother. But it may be a pointer to where some of it was made, although an origin at Norton cannot be ruled out (see no. 742).

F XIII, 6:

627. Narrow-mouthed jar in dark grey ware with smoothed bands on the rim, neck and shoulder. The fabric is heavily charged with small rounded particles of calcite grit, so that the surfaces, even where smoothed, have a pimply appearance. It seems to be an imitation of *Throlam*, type 96–8.

F XIII, 7:

628. Dales-ware cooking pot (A.D. 280–340).

629. Base of beaker in bright orange fabric with greenish-drab colour coat, thinning to orange in places, and dark reddish brown inside. Possibly *Colchester Kilns*, form 409, dated to the fourth century.
630. Dales-ware type cooking pot with thin tapering rim.

Not illustrated: *Throlam* type wide-mouthed jars, no. 47 and 50.

F XIV, 4:

631. Flanged bowl in light drab grey ware; smoothed bands inside and out. *Throlam*, fig. 10, no. 10.
632. Beaker in grey ware; smoothed on lip and below neck. *Brough*, IV, p. 58, no. 79, but in different fabric. Perhaps *Throlam*, fig. 16, no. 106 with rim type derived from the carinated bowls.
633. Similar to no. 631 but with darker outside surface which is entirely smoothed over. *Throlam*, fig. 10, no. 13.
634. Flanged bowl in fabric like no. 626. *Throlam*, fig. 10, no. 11.
635. Indented globular jar in hard grey ware with dark bluish-grey outer surface; smoothed above and below the indentations. The fabric is like no. 608 and the shape is also like the Norton globular jars. Since indented beakers formed part of the *Norton* repertoire, it seems likely that this vessel came from there.
636. Jar in rough calcite-gritted black ware.
637. Flanged bowl in hard drab grey ware; smoothed bands on all surfaces. *Throlam*, fig. 10, no. 5.
638. Jar in light grey ware with darker outside surface; smoothed on rim and shoulder. *Throlam*, fig. 16, no. 101.
639. Flanged bowl in fabric similar to no. 637. *Throlam*, fig. 10, no. 12.
640. Wide-mouthed jar originally in grey ware, but refired in parts to a reddish-brown; smoothed bands on rim and shoulder; smoothed wavy line on body. *Throlam*, fig. 12, no. 46.
641. Dish in brown, sparsely calcite-gritted ware; smoothed internally.
642. Jar in dark grey calcite-gritted ware similar to no. 630.
643. Base of Castor-ware beaker in fawn-coloured ware with shiny metallic-grey colour coat.
644. Wide-mouthed jar in drab grey ware. *Throlam*, fig. 12, no. 54.
645. Neck of flagon in coarse pitted grey ware; smoothed externally and over rim. This is more like a Crambeck piece: *Langton*, p. 81, no. 72; *Crambeck* (1937), 405, type 14, although normally in these the rim is not so sharply everted. But there does not seem to be anything to resemble it in the Throlam range of vessels.

F XV, 5:

646. Fragment of Castor-ware beaker or flagon with dark matt colour coat and white slip scroll decoration.
647. Dales-ware type cooking pot.
648. Jar in dark grey calcite-gritted ware. *Gillam*, type 161, dated 300–70.

F XV, 6:

649. Bowl in heavy and dense light grey ware, smoothed all over. Probably Crambeck (*Signal Stations*, 237, type 17).

The following sherds were associated with isolated building remains.

F IX, P.H. 1:

650. Jar in sandy grey ware with darker smoothed outside surface. Flavian–Trajanic.

E I, P.H. 2:

654. Lid in drab grey sandy ware with burnished lattice on top.

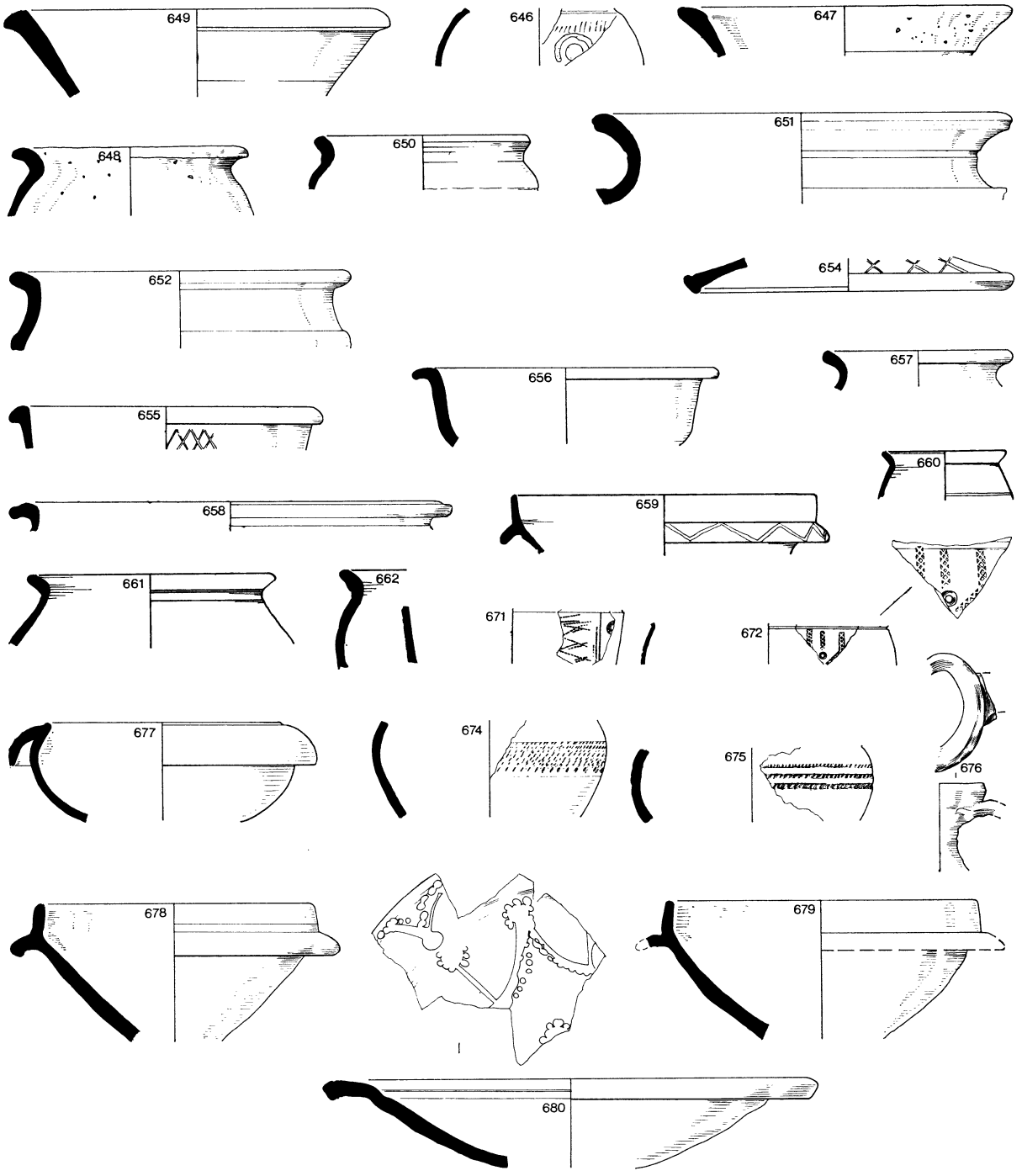


FIG. 76. Coarse pottery ($\frac{1}{4}$; stamps on no. 672, $\frac{1}{2}$)

B V, 35, *the destruction debris of the enclosure (?) wall:*

652. Wide-mouthed jar in very hard grey ware with some calcite grit added; the surfaces are smoothed.

651. Large wide-mouthed jar in stony-hard sandy reddish-brown ware with a grey core and a pale grey slip. See no. 332 for a jar in similar fabric. The form is a Crambeck one (*Crambeck* (1928), 145; *Crambeck* (1937), type 4), but the fabric is unusual for those kilns.

The three following groups are associated with the Haven:

J I, 6; *the layer of shingle below the mud on the foreshore (Sewer Trench):*

655. Bowl in black-burnished ware. *Gillam*, type 222, dated 170–210. Weathered but only very slightly water-worn.

656. Bowl in fabric like no. 624–6, but with dark grey surfaces, probably smoothed originally. *Throlam*, fig. 12, no. 43. This piece shows definite signs of wear round the broken edges.

657. Grey-burnished cooking pot. *Gillam*, type 140, dated 180–270. The broken edges again show signs of smoothing and wear.

658. Wide-mouthed jar or bowl in sandy, very pale grey ware with light grey surfaces; smoothed on rim. Possibly *Throlam*, fig. 11, no. 27; also *Brough*, IV, p. 61, no. 99, from below stone bottoming of Period VI rampart. This sherd shows rather more evidence of wear than the three preceding.

Not illustrated: fragment of a Castor-ware vessel with dark grey colour coat over a white body — very worn; several other small nondescript sherds of grey ware show greater wear than those described.

G I, 6 (warp layer):

659. Segmental flanged bowl in hard greyish-white ware; red painted wavy line on top of the flange. *Crambeck* (1928), pl. 1; 229, fig. 3, *Signal Stations*, 229, fig. 3.

G I, 7 (warp layer):

660. Small jar or beaker in thin hard pale orange ware.

661. Wide-mouthed jar in hard grey ware. *Throlam*, fig. 12, no. 49.

662. Wide-mouthed jar in hard pale grey ware. *Throlam*, fig. 12, no. 47.

The following stratified group is included because of the intrinsic interest of no. 663, and the date which the other vessels give to it.

G III, 6:

663. (Pl. XVI*b*). Wide-mouthed jar with upright neck and slightly thickened rim in fine calcite-gritted ware. The colour shades from brownish-buff to dark grey and black. The inside of the neck is burnished and the outside is similarly treated in horizontal bands. The body is lightly corrugated and the peaks are also burnished, leaving the troughs rough. There is a suggestion of small crescentic stamps on the first corrugation below the neck.

This unusual vessel has no parallel at Brough. The fabric does not appear to be the same as the locally made calcite-gritted wares, although the technique of using alternate burnished and rough horizontal bands occurs frequently, but without the corrugated surfaces. Dr J. N. L. Myres has kindly contributed the following note:

'Although I cannot quote any close parallels to the form or finish from Germanic contexts in this country, I think it is just possible that these features could be related to those which are characteristic of some types of the proto-Anglian pottery of Schleswig-Holstein and southern Jutland in the second to fourth centuries. It is quite common in that complex to find pots with a zone of flat horizontal rilling

on the neck and shoulder, sometimes extending right down the pot: it is, I suppose, the beginning of the fashion for continuous grooving, or what I call corrugation and the Germans *Kannellierung*, that is common on Anglian pottery of the fourth to fifth centuries.

'There are a number of pieces from the Århus area of south Jutland (H. Norling-Christensen, *Katalog over aeldre Romersk Jaernalders Grave i Århus Amt* (1954)), chiefly from Skønsbjerg (pl. 37, 14), Bulbjaerg (pls. 41, 12; 44, 11 and 52, 8) and Bliksbjerg (pl. 49, 2), all of which are said to have a "faceted" surface very like the Brough pieces; they all fall in Period B II, which seems to mean the third century. The same treatment appears on vessels of the Oberjersdal culture of north Schleswig at much the same time (see F. Tischler, *Oberjersdal* (1955), Taf. 9, Grave 28: Taf. 11, Grave 32: Taf. 12, Grave 35: Taf. 13, Grave 39 especially the rim sherd at the bottom: Taf. 14, Grave 42: Taf. 15, Grave 48, and several others, where this "faceting" or "rilling" is combined with other ornament). These Oberjersdal people are certainly one of the cultural predecessors of the later Angle/Jute complex. There is the same feature in the cemetery of Fuhlsbüttel (F. Tischler, *Das Graberfeld Hamburg-Fuhlsbüttel* (1954), especially Taf. 29, 231, where the form of the urn itself is not unlike the Brough one). Perhaps the closest of all both in form and treatment is a vessel from Pölitz, Kr. Stormarn, and another from Gleschendorf, Kr. Eutin in Holstein which are conveniently dated by associated brooches to A.D. 275–350 (A. Genrich, *Formenkreise und Stammesgruppen in Schleswig-Holstein* (1954), Taf. 24,A and Taf. 10,B).'

Clearly further investigation was required before it could be said that this vessel was a Germanic import. A fragment was sent to Dr A. Genrich, who noted that the type of external working is certainly found on the continent, but is not very common. He also sent, most kindly, some samples from Perlberg[1] burial-ground for comparison by thin-sections. A request has also been made to Schleswig Museum for some samples from Gleschendorf and Pölitz. Unfortunately these had not arrived by the time the preliminary examinations were made, the provisional report on which is given below. Since these enquiries must embrace samples of all locally-made calcite-gritted fabrics from both East Yorkshire and Lincolnshire, it will be some time before any final conclusions can be drawn, which will have to be the subject of a separate paper. But it has been thought worthwhile to include the results available at the present time. The following preliminary report on the thin sections, which included a sample of no. 302 (p. 161), has kindly been prepared by Miss L. Riller, G. C. Morgan, and L. Biek (Ancient Monuments Laboratory):

Four type specimens were submitted for comparison with other, typologically similar, pottery and with a request for suggestions of possible sources for both pot and clay.

In the course of a more general investigation,[2] altogether 22 sherds were mounted in epoxy resin blocks which were sawn to produce vertical cross-sections (profiles) of the specimens. These were compared under the microscope at magnifications of up to 80 times and provided an adequate basis for a preliminary evaluation.

Thin sections were then prepared from the blocks, and examined, in the usual way.[3] Certain features were distinctive in thin section and made possible the provisional classification shown in the table below.

Dr F. W. Anderson, Institute of Geological Sciences, considers that the shell in 580367 (not illustrated; from A II, 8) is fossil and integral with the Lower Lias clay from which the pot could have been made, and which outcrops in Lincolnshire across the Humber from Brough. This type of 'normal' Brough coarse ware (also represented by AM 590457; see no. 135 (p. 149) for a general note on the type) is clearly distinct from the other two specimens from Brough, but is similar to Type 1 fabric from the

[1] Perlberg is a considerable distance from the sites in Schleswig which have produced the closest parallels to the Brough sherds. Consequently a marked degree of correlation between the fabrics is not necessarily to be expected.

[2] The initial phase of a general, comparative thin-sectioning project has been concerned mainly with 'Dales ware' and 'gritty ware' from Winterton and Old Winteringham and will be published in the report of excavations on these two sites.

[3] E.g. Shepard, A. O., *Ceramics for the Archaeologist*, 1956, Carnegie Institution.

related sites of Winterton and Old Winteringham in Lincolnshire.[1] It contains abundant fossiliferous material in addition to the shell fragments, as well as some large quartz grains. An 'unusual' pot from Brough (no. 663 above; AM 590458) which was thought to be typologically paralleled by some German pottery (e.g. Perlberg, 680523) showed no similarities with this or any of the other specimens examined. It contained similar material to that present in 590457 but differed in the additional content of some oolite and rocky conglomerate fragments which make it distinctive. A 'unique knife-trimmed' ware, found at Brough but not considered to be native to the site (no. 302 (p. 161); AM 590456), could not be matched either although it shares with the Perlberg material a total absence of shell and fossiliferous debris.

The investigation is continuing and it is hoped to publish further data with the Winterton material, but it was felt that the present provisional note might prove useful.

Classification of fabrics from thin section characters

AM No.	*Site reference*	*Shell frags.*	*Micro-fossil frags.*	*Quartz (large)*	*Feldspar minerals*	*Mica*	*Opaque minerals*	*Con-glomerate frags.*	*Oolite*
590456	Brough D II, 7 (no. 302)			+			+		
590457	Brough F XIV, 1	+	+	+			+		
590458	Brough G III, 6 (no. 663)	+	+	+			+	+	+
680511	Winterton WR/AN, 1	+	+	+			+		
680523	Perlberg			+	+	+	+		

664. Small wide-mouthed jar in hard dark grey ware. Smoothed on rim and in bands outside. *Throlam*, fig. 12, no. 47.
665. Narrow-mouthed jar in dark grey ware; smoothed on rim and neck. *Throlam*, fig. 15, no. 98.
666–7, 670. Flanged bowls in fabric like no. 675. *Throlam*, fig. 10.
668. Jar in similar fabric to nos. 675–7. *Throlam*, fig. 14, no. 81.
669. Lid in dark brownish-red calcite-gritted ware.

All the following are unstratified, in topsoil or robber trenches, and are included either for their intrinsic interest or because they are representative of the last phases of occupation and the final abandonment of Brough.

671–2. From B I, 2; B VI, 24 and
674–5. F XXI, 7; F XXVIII, 8 respectively. The first two pieces are in the typical 'Parisian' stamped ware fabric with a dark grey core between light greyish-buff layers and with dark grey surfaces. The surfaces are beautifully smoothed but hardly polished. Fragment no. 671

[1] Stead, I. M., *Excavations at Winterton and Old Winteringham, Lincs.*, 1960–8 (forthcoming).

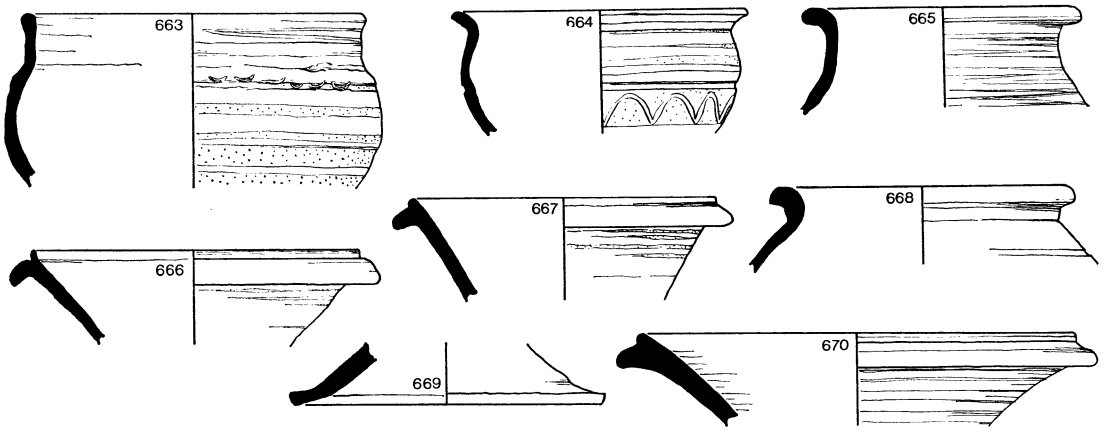


FIG. 77. Coarse pottery ($\frac{1}{4}$)

would seem to come from a bowl imitating samian form 37 (the round stamp is not shown in *P.W.*); no. 672 from a beaker or small jar (*P.W.* shows neither stamp). In contrast, the last two fragments, although basically in the same 'sandwich-ware' fabric, are not smoothed on the inside, but the outside surfaces, especially of no. 674, are polished so finely as to imitate polished ebony. Both are decorated with zones of rouletting in place of a series of stamps.

The so-called 'Parisian' stamped vessels occur mainly in two different classes of fabric. There are those which appear in the smoothed, and sometimes glossy, 'sandwich' ware with black or very dark grey surfaces; this fabric, as already noted on p. 158, is also used to make other types of vessels such as the poppy-head beakers (nos. 393–4, 413), imitations of samian forms, and those like nos. 674–5 with continuous lines of rouletting or notching. There are also coarser versions like nos. 624–6. The other main class of stamped vessels is made in a hard smooth light grey fabric (nos. 338, 365–6, 493), and it should be noted that the tradition is carried on with the known *Crambeck* (1928), fig. 20 and Throlam varieties (nos. 736–8) and should include pieces from Aldborough (D. Charlesworth in (ed.) Jarrett and Dobson, *Britain and Rome* (1965), p. 43) and Catterick (unpublished) with embossed rosette stamps. Also from Brough is the piece (no. 704) using circular roundels on calcite-gritted ware, but this is almost certainly Anglo-Saxon.

In view of the different types of fabric noted above, at least two, if not three different production centres might be envisaged for these vessels. The proper 'Parisian' stamped vessels are normally attributed to the late first or early second century, and so far it is not known exactly where they were made. But since the tradition of stamped wares recurs in East Yorkshire during the (?) third and fourth centuries, there seems a strong possibility that the 'Parisian' wares were made here also, especially where there is a similarity of fabrics between early and later vessels, and despite the fact that the distribution of these wares is now known to be wider than it was originally. However, further work is desirable on all these wares before certainty can be reached about the places of manufacture.

676. Pinched-neck (?) flagon in the same creamy-white ware with a yellowish-buff slip as the flagon top no. 178, the tazza in A XI, 22 (p. 160), and the mortaria nos. 233 and 449. From B I, 2.

677. Bowl in creamy-buff ware. *Gillam*, type 192, dated 120–140. From J IV, 7 (sewer trench between Manholes 9 and 10).

678. Bowl, imitation samian form 38, in hard sandy orange ware; smoothed on outside of body. This is unlike the Crambeck bowls in rather similar fabric, as the bead does not rise high enough above the flange, nor does it have either a square-sectioned lip or a groove outside

immediately below the lip. However, it could still be a variant of *Crambeck* (1937), 403, type 5. From A III, 1.

679. A bowl of similar form to no. 678 but in a pinkish-buff fabric with an unevenly applied orange colour coat which has been polished. The overall effect is not unlike 'marbled' ware (see no. 684 for nearly similar fabric and colour coat). *Clausentum*, type BMW. 1, dated 390–fifth century. *Richborough*, II, pl. XXXII, no. 170. From A V, Pit I, robber trench of town wall.

680. Plate or shallow dish in drab buff ware with slightly greying core; smooth light orange-brown colour coat, with applied decoration in thick white slip. Probably imitating samian form 36. ?Castor ware (?derived from *Nene Valley*, fig. 4, no. 7). The fabric and colour coat can be matched by a platter from Holbeach Fen (*Antiq. J.*, XL, 226) and the line-and-dot decoration by the painted sherd from Sawtry (*Antiq. J.*, XLVI, 338). See also *Antiq. J.*, XXXIX, 91. From D I, 18, robber trench of town wall.

681. Flanged segmental bowl in fabric similar to no. 678 but with a grey core; white painted arcading on top of the flange. From F X, 10.

682. Mortarium in orange-red ware, with grey core and bright red colour coat, polished externally; medium-sized quartz-like grit. The fabric is almost certainly Thames Valley type; rather similar ones have been found in rubbish tipped at the back of the defences at Dorchester-on-Thames (*Arch. J.*, CXIX, fig. 18, nos. 213, 216), which were dated by two coins of Theodosius (A.D. 388+). Also *Gillam*, type 287, dated 360–400. From F IV, 4.

685–6. Are similar fabric and colour coat to no. 682 and also probably originate from the Thames Valley. No. 685 is the typical 'banana bowl' type. From F VIII, 1 and G V, 3, respectively.

683. Bowl, imitation form 37, in fabric and decoration like that of no. 225. From J IV, 6, between Manholes 9 and 10 in the sewer trench.

684. Fragments of a small beaker in hard pinkish fabric with a highly polished orange colour coat externally. Mr A. P. Detsicas, F.S.A., has kindly commented as follows: this is probably not Argonne ware. A rouletted beaker from Leicester (*Jewry Wall*, fig. 27, no. 38) in orange-brown fabric, though much thicker in section, was dated *c.* A.D. 220–50. These small pots, particularly those in red fabrics, can possibly be likened to samian form 72, which often bear rouletted decoration. There is a sherd from a rubbish deposit at Eccles in virtually identical fabric and thickness, and this cannot date much later than *c.* A.D. 200. From G IV, 6.

687–8. Two hammer-head mortaria in hard white ware with pinkish-buff slip. The grit on no. 687 is black; none shows on no. 688. *Gillam*, type 278, dated 270–350. This type (see also no. 391) is rare at Brough. Both from A I, 1a.

689, 705–6. Jars in stony-hard dark grey ware with fine calcite grit; hand-made and with reddish brown surfaces. These are Knapton-type vessels (*Langton*, fig. 30). The grooved rim of no. 697 is matched by *Malton*, fig. 6, no. 9, from the carbonized wheat layer. From B I, 2a, A X, 6 and A XI, 6, respectively.

690, 695–702. Cooking pots or wide-mouthed jars of Huntcliffe type. *Gillam*, types 163–4, dated 360–400. No. 699 is unusual in having a wavy line scored along the top of the rim. From A II, 3; G II, 3; G V, 2; G V, 3; G V, 3; G V, 2; G IX, 5; G IX, 4; G IX, 5, respectively.

691. Cooking pot in Huntcliffe-type ware, but without the internal groove on the rim. *Gillam*, type 161, dated 300–70.

692. Narrow-mouthed jar in very hard pale grey ware with fine calcite grit; hand-made; smoothed inside neck and over the outside. The fabric is most closely matched by the Knapton jars, but so far this form has not been recognized as being made there. Neither does it appear at Langton or Malton. It would seem to be a developed copy of the common *Throlam* types, fig. 15. From A X, 6, robber trench of town wall.

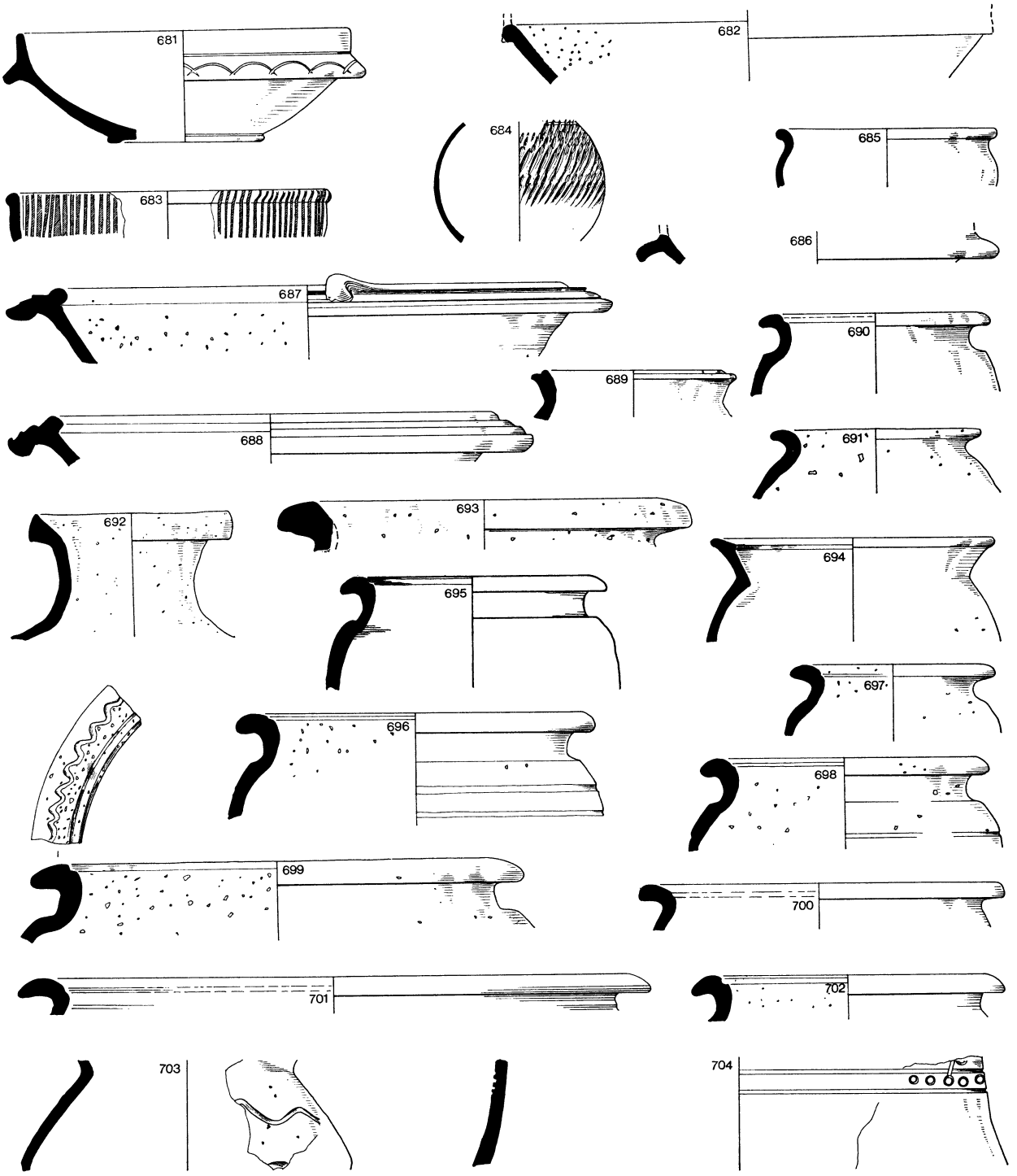


FIG. 78. Coarse pottery ($\frac{1}{4}$)

693. A massive rim of a wide-mouthed jar or bowl in Huntcliffe-type fabric. A chamfered surface replaces the more normal groove on the inside of the rim. From B II, 2.

694. Dales-ware cooking pot from B II, 2.

703. Shoulder of jar in Huntcliffe-type fabric with a scored wavy line. *Langton*, fig. 27, no. 101. From A I, 4.

704. Wall fragment of a very large urn in shell-gritted ware with light grey core between reddish-brown layers and dark grey surfaces. The outside is decorated with bands of sharply impressed circular stamps set between horizontal and vertical grooves. The fabric and decoration are identical with *Brough*, v, p. 44, no. 9, attributed to the Anglo-Saxon period. Dr J. N. L. Myres (op. cit.) considered then that it belonged to the East Yorkshire series of vessels with tall, conical, concave necks with line and stamp decoration. He has also seen the present piece and considered it to be, with very little doubt, part of the same urn, and that such vessels would not be out of place in a collection from an Anglo-Saxon cemetery, like that only about 8 miles north of Brough at Sancton. From B I, 3.

707. Well-made jar in greyish-buff ware with much coarse sand and some larger calcite grit. From B I, 3.

708. Jar in dark grey ware with much sparkling spar or quartz-like grit. Both the inside and outside are carefully smoothed and in addition the outside, neck and lip are polished. From E I, 1.

709. Very roughly made jar in reddish-grey ware with much large calcite grit. From E II, 1.

710. Heavy lid in Huntcliffe-type fabric. From G V, 3.

712. Dish in finely-gritted ware; trace of polishing on inside of rim. From A I, 4.

713. Neckless cooking pot in shell-gritted greyish-buff ware. From A I, 4. See no. 396 for a black-burnished variety. *Aldborough*, fig. 25, no. 26.

714. Dish in grey polished calcite-gritted ware. See no. 135. From G IX, 2 and another joining fragment from G IX, 5.

715–16. Two hand-made lids in dark grey, finely shell-gritted ware, but with other grits mixed in. See no. 612 for a similar lid. Possibly *Knapton*, fig. 30, nos. 11–13. From B I, 3 and 2, respectively.

717. Jar in very hard sandy drab grey ware with dark outer surface; smoothed uneven neck and rim; burnished lattice below a girth groove in an unsmoothed area. From A I, 1a. See no. 722.

718. Wide-mouthed jar in light drab grey ware; smoothed in bands on rim and shoulder. *Throlam*, fig. 11, no. 21. From A I, 1a.

719. Wide-mouthed jar in hard sandy dark grey ware. Perhaps *Throlam*, fig. 16, no. 101. From A I, 1a.

720. Narrow-mouthed jar in hard pale grey 'sandwich' ware; smoothed on rim and shoulder. *Throlam*, fig. 14, no. 86. From A I, 1 a.

721. Jar in fabric similar to no. 720 but with darker surfaces. *Throlam*, fig. 14, no. 73. From A I, 1a.

722. Jar in fabric identical to no. 717, but with rather better finish. A burnished wavy line replaces the lattice pattern. *Throlam*, fig. 14, no. 76. From A I, 1a.

723. Small jar or beaker in slightly sandy dark grey ware; smoothed rim and external bands. A Throlam fabric but no precise parallel for the form. From G IX, 5.

724. Jar in stony-hard dark grey ware; smoothed bands on rim and shoulder. *Throlam*, fig. 15, no. 89 or 90. From G V, 2.

725. Jar or beaker in very hard grey ware; polished inside neck, over rim and outside. Neither the fabric nor its treatment can be closely matched at Throlam or Crambeck. Perhaps Norton, although again there is no obvious match for the form. From G VIII, 3.

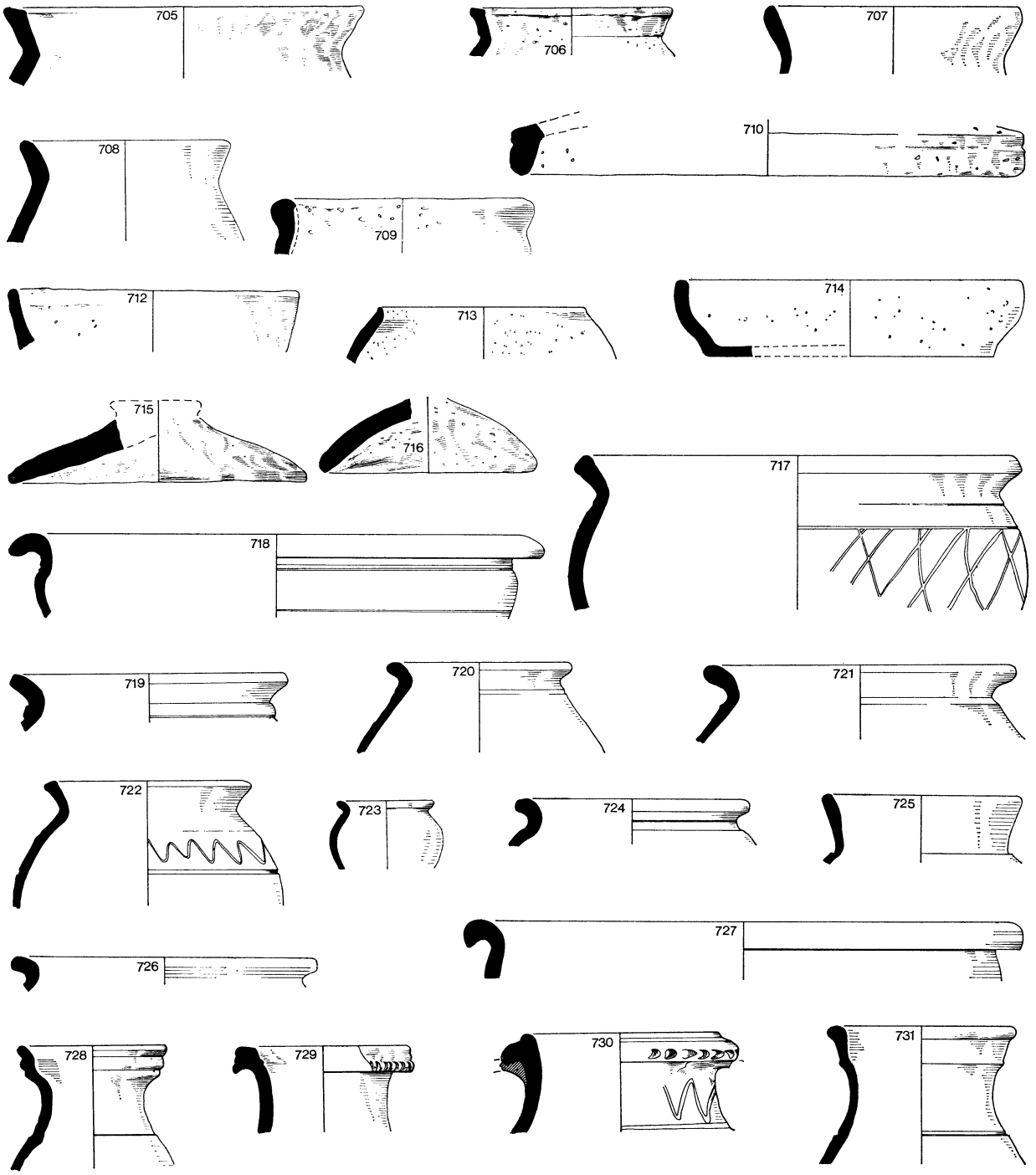


FIG. 79. Coarse pottery ($\frac{1}{4}$)

726. Wide-mouthed jar in drab grey ware. *Throlam*, fig. 11, no. 28. From G IX, 4.

727. Similar vessel in stony-hard dark grey ware. *Throlam*, fig. 11, no. 36. From G IX, 5.

728. Moulded-rim jar in hard, slightly sandy grey ware with smoothed darker grey external surface. Probably *Throlam*, fig. 13, no. 69, but *Crambeck* (1928), pl. VIII, no. 171 cannot be ruled out. From A II, 3.

729. Jar in hard but rather coarse and sandy dark grey ware; only smoothed on rim, which has a sharply-notched moulding at its base. No obvious parallel at Throlam. Possibly smaller example of *Crambeck* (1928). Pl. VII, no. 191. See *Aldborough*, fig. 10, no. 20 for an example from rubbish tipped at the back of the town bank. From B I, 1.

730. Narrow-mouthed handled jar in drab dark grey ware; burnished wavy line on neck; smoothed on rim. *Throlam*, fig. 15, no. 91. See also no. 732. From F XXVII, 2.

731. Jar similar to no. 728. From G V, 2.

732. Three-handled jar in similar fabric to no. 730. The short strap-handles have four deeply impressed grooves. *Throlam*, fig. 15, no. 92. From F VIII, 2.

733. Probably similar type of jar to no. 732, but with much narrower handle having only two grooves. Both have a burnished wavy line on the neck. From A V, Pit 1.

734. Countersunk handle of jar in light drab ware with dark grey surfaces; polished above and below the handle and with a burnished loop line on the same level with it. *Crambeck* (1937), type 3. From A V, 1.

735. Handled jar in hard grey ware with darker surfaces; bands of shallow notching between zones with burnished wavy lines. Although notched decoration does occur at *Norton*, fig. 11, it seems to be commoner at Throlam, although no parallel can be found for this variety. From B I, 3.

736. A jar in stony-hard grey ware of typical *Throlam* type (fig. 13, no. 70) but with most unusual decoration. The moulded rim is unsmoothed but has a burnished wavy line on it, instead of in the more usual position on the neck. The top and bottom edges of the rim have impressed notches made with a very sharp, hollow implement, which has also been used around an applied, curving strap. This strap projects above the level of the rim and may have been part of an applied face mask (see nos. 737–8). The neck is smoothed. From F XIV, 3.

737. Part of a jar in hard, slightly sandy grey ware. A roughly executed face has been worked on the body; the nose has been pinched out from the wall and pellets of clay (one missing) pressed into the cavities on either side to represent eyes; the mouth is a wide shallow gash; hair and beard are represented by using a sharp horseshoe-shaped stamp. Above the face the surface is smooth, and beside it are the lines of a burnished lattice. Like no. 736, a Throlam origin is the most likely, as the majority of Crambeck face jars have applied strip decoration incorporating rosette-type stamps (*Crambeck* (1928), fig. 20; *Crambeck* (1937), pl. L XXXVII, no. 3; also Catterick (unpublished)). From F VIII, 2.

738. Small fragment of a face from a jar or jug in similar fabric to no. 736. The nose is formed from an applied strip of clay; the eyes are the merest slits and the hair is represented by another applied strip stamped with the same type of sharp hollow implement as in nos. 736–7; nostrils are shown in the same way. In view of the foregoing arguments about the use of this stamp, a common origin can probably be sought for all three pieces; but whether from Crambeck, Norton or Throlam cannot be stated with surety although the last site would seem most likely. A rather similarly executed piece was found in the carbonized wheat layer at *Malton* (fig. 6, no. 22). From F XXVII, 1.

739. Jar fragment in dark grey ware; two low cordons decorated with rows of oblique cuts in contrasting directions and between smoothed areas. From A V, Pit 1.

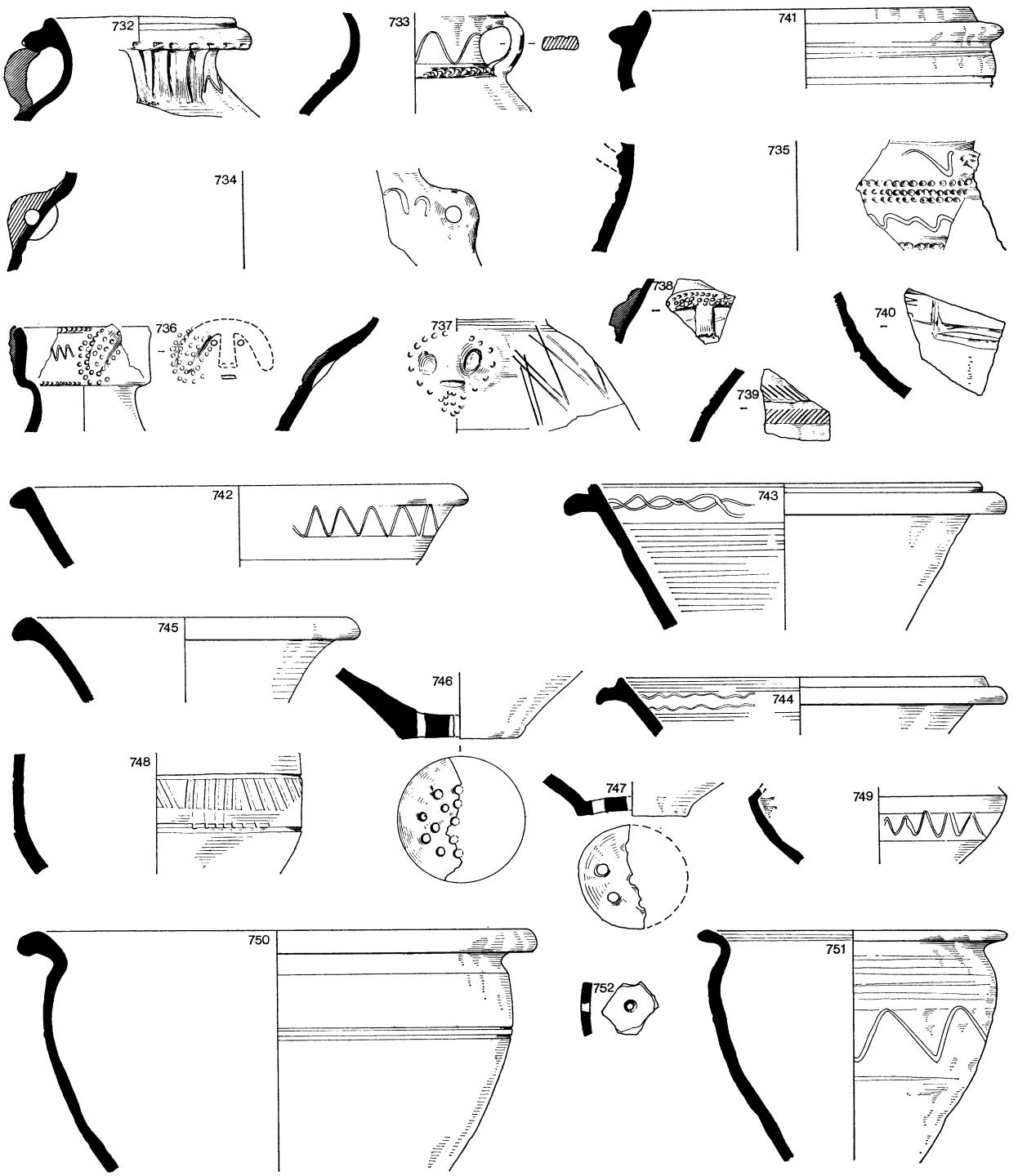


FIG. 80. Coarse pottery ($\frac{1}{4}$)

740. Wall fragment of large jar in slightly sandy buff ware with grey core. It is decorated with a pattern of applied strips and grooves. Although the fabric is oxidized it would seem to belong to the class of vessel, a number of fragments of which have been found at Malton, and which may have been made at *Norton* (types 11, 12, 19; pl. VI, b). But it should not be forgotten that similar vessels were made elsewhere, notably at Corbridge. See *Y.A.J.*, XLI, 247, no. 145, for a vessel from Malton (Norton), employing the same techniques, and occurring in a third-century level. From B I, 2.

741. An unusual flanged bowl in drab dark grey ware; smoothed in bands on rim, flange and body in the Throlam manner. From A V, Pit 1.

742. Bowl or dish in hard smooth grey 'sandwich' ware with a burnished wavy line below the rim. *Norton*, fig. 13, no. 2d. Although the form and decorative finish of the fabric are specific Norton characteristics, the ware is not and is more like a Throlam fabric (see note after no. 626). But complete certainty will only lie in finding the kiln which made such vessels. From A I, 1a.

743–4. Flanged bowls in reddish-grey ware; both are micaceous and smoothed, except for zones just below the lip inside, which have double wavy lines burnished on them. The internal wavy line is rare at Throlam and these bowls are probably *Crambeck* products (1937, type 1b). From G V, 2 and F XXVIII, 3, respectively.

745. Dish in hard drab grey ware with smoothed zones on both surfaces. *Throlam*, fig. 16, no. 108. From A I, 4.

746–7. Colanders in drab grey ware; no. 747 is harder and more sandy. Probably *Throlam*, fig. 12; nos. 45–6. From A III, 8 and G IV, 2, respectively.

748. Carinated bowl in pale grey ware; smoothed below carination and with broad burnished lines on a rough zone above. Probably a Norton type. From A I, 1a.

749. Carinated bowl in hard sandy dark grey ware. From J IV, 6, sewer trench between Manholes 9–10.

750–1. Wide-mouthed jars in hard dark bluish-grey ware; smoothed on rims and shoulders. No. 751 has a burnished wavy line below the shoulder. These are most likely to be Throlam products, although Crambeck cannot be entirely ruled out. From B III, 2.

752. Spindle-whorl in grey ware. From A IV, Pit 1.

753. Wide-mouthed jar in stony-hard, good quality, smooth, pale grey ware. Like nos. 750–1 this is almost certainly a *Throlam* product (fig. 11, no. 21). In general, Throlam vessels of this type have a greater height: rim-diameter ratio than the similar class of wares from Crambeck. From B III, 2.

754. Large handleless jar in hard drab grey ware. A burnished lattice occupies an unsmoothed zone on the body in place of the more normally found vertical or oblique lines. Jars like this without handles were commoner at *Norton* than those with handles, perhaps suggesting an origin (type 4). From B VI, 1.

755. Narrow-mouthed jar in stony-hard light grey ware with darker surfaces; smoothed on rim, and shoulder, but only in bands below the zone of burnished oblique lines. *Throlam*, fig. 15, no. 95, but without handles. From F XIII, 3.

756. Base in thick fabric, typical of the late Castor-ware production; dark matt colour coat. From A I, 1a.

757. Base of red ware beaker with dark metallic colour coat outside. *Gillam*, type 57 or 58, dated 300–400. From G IX, 5.

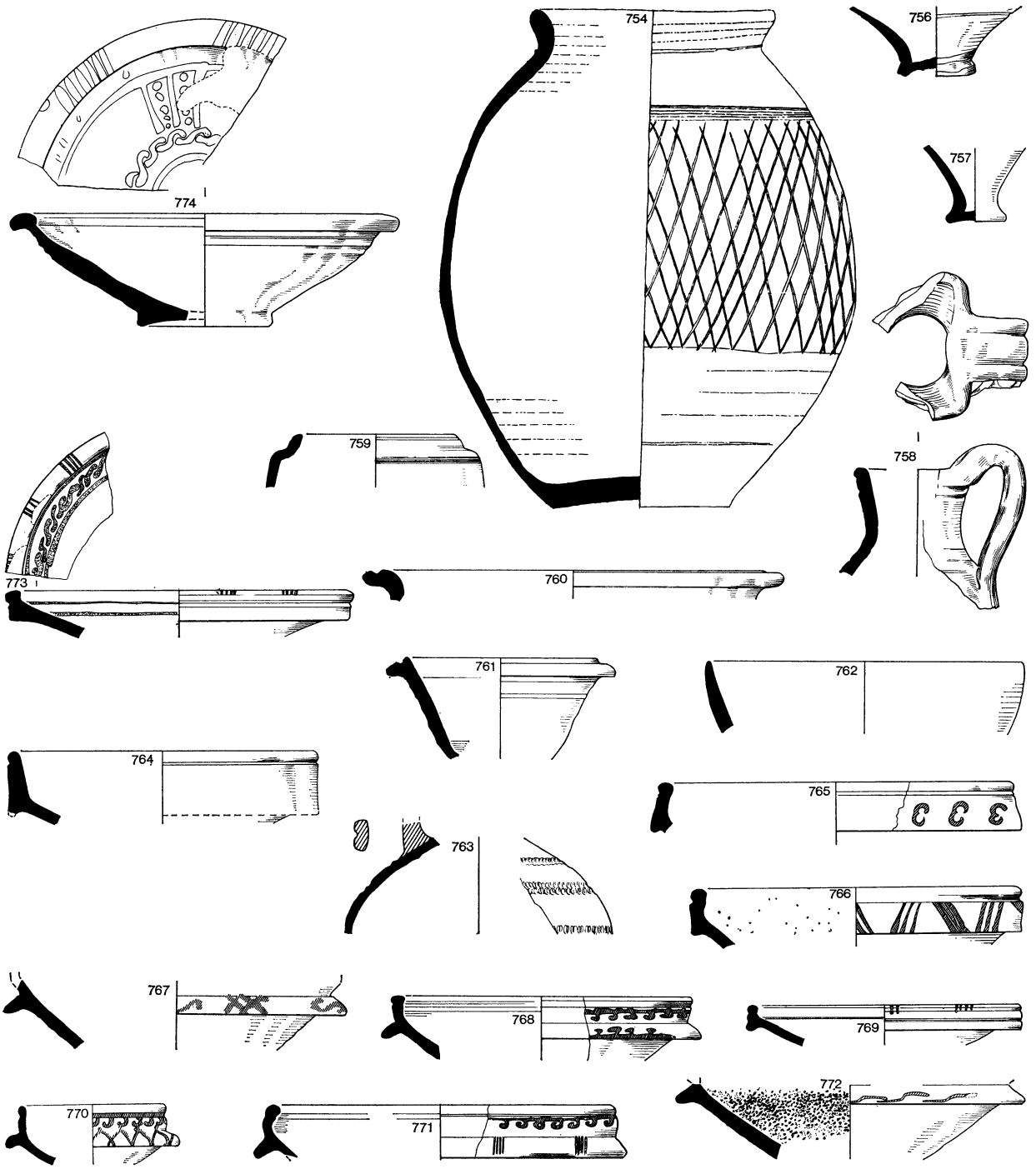


FIG. 81. Coarse pottery ($\frac{1}{4}$)

758. Pinched-neck handled jug in Castor ware with coppery-red colour coat. From B I, 3. Part of the handle of another similar jug came from A VI, 1. These would, on the basis of fabric and colour coat, appear to be late forms.

759. Small Castor-ware box in thick heavy fabric with metallic greenish colour coat. From A VI, Pit I.

760. Castor-ware bowl derived from samian form 36. Colour coat as for no. 758. From A I, 1.

761. Castor-ware flanged bowl with colour coat like nos. 758 and 760. *Gillam*, type 230, dated 360–400. From G V, 3.

762. Castor-ware dish in thick heavy fabric with dark, slightly glossy colour coat. *Gillam*, type 333, dated 360–400. From G IX, 4.

763. Castor-ware bottle with colour coat as nos. 758, 760–1. Probably *Gillam*, type 19, dated 350–400, but without white slip decoration. From A V, Pit 1.

764. Very worn wall-sided mortarium in Castor ware with dark grey colour coat. *Gillam*, type 287, dated 360–400. From G IX, 3.

Nos. 756–64 are all in the rather thick and heavy fabric which is typical of the latest Nene Valley production. Ten other smaller fragments were not illustrated, which makes the total only 22 pieces for the whole of the 1958–61 excavations.

766–72. Crambeck mortars in creamy-buff ware with fine black grit and red paint decoration. *Crambeck* (1928), pl. v, nos. 130 and 139, respectively. From G IX, 2 and G V, 2, respectively.

765, 767–71, 773. Crambeck bowls in similar fabric to the mortars and with the same type of decoration. *Crambeck* (1928), pls. III and v. From F XIV, 1; A II, 3; F XII, 2; G V, 2; G IX, 2; F XX, 4; G V, 2, respectively.

774. Bowl in oxidized red Crambeck fabric with a grey core and with white paint decoration. This seems to be the type which normally appears unpainted. *Crambeck* (1928), pl. III, nos. 58–9 (but note white paint on red ware for no. 79). From F IX, 3.

In addition to these ten examples of the very latest Crambeck production, five more are not illustrated, so that only fifteen pieces came from these excavations.

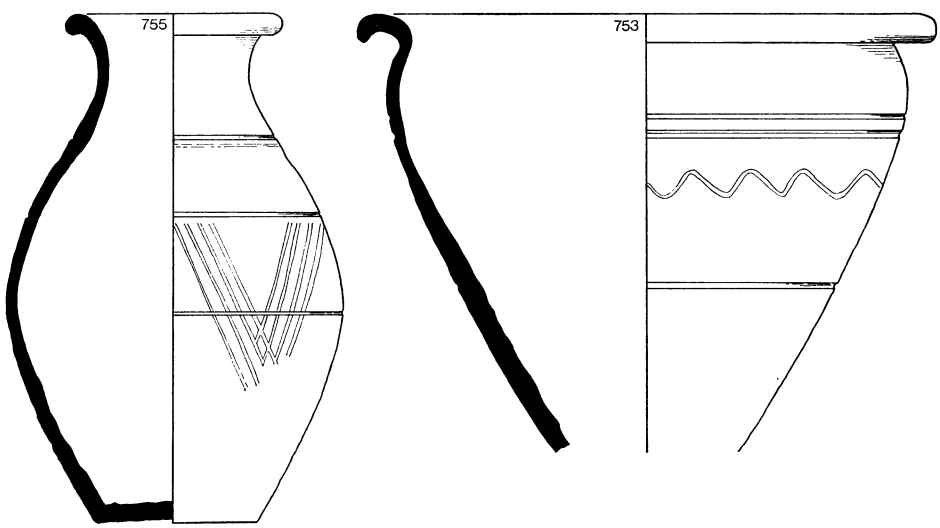


FIG. 82. Coarse pottery ($\frac{1}{4}$)

Pieces 756–74 and the other unillustrated examples must be taken as the indicators for the lack of strength in the post-370 occupation at Brough. They represent a total of only 37 pieces from over 750 illustrated sherds of all periods, while the total number of sherds from these excavations is probably about 5,000. It should also be noted that predominantly all the late pieces come from sites F and G (the Manor House), and this is even more true of the Crambeck than the Castor wares, while none were found on sites D and E (south-east corner). This analysis might suggest that the latest Castor-ware forms were coming into production slightly earlier than the Crambeck wares and just before the run-down in strength at Brough began. If the Crambeck painted wares are considered in isolation, the approximate percentage occurrence given by the figures above is about 0.3 %, which is about one-tenth of the frequency in the Signal Stations (*Crambeck* (1937), p. 411). On adding together all the wares, both illustrated and unillustrated, representative of the period 350–400, the following total is arrived at:

Castor ware	22
Crambeck white or red ware ..	15
Huntcliffe-type jars	17
Thames Valley type	7
	61

which is just over one per cent of the total number of sherds found, representing a time span which is 15% of the Roman period at Brough.

SOILS AND ECOLOGY

By L. Biek

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Method

The site was visited but it was possible to study only the sections in Trench G III in any detail. Other samples were supplied by the excavator, either to supplement the basic data from G III or with specific questions, from all parts of the excavation. All samples were examined visually and by ignition,[1] many also by sedimentation[1] or for certain properties (grading, phosphate content), by Mr G. C. Morgan at the Ancient Monuments Laboratory (Tables 1–2; figs. 84–7).

Samples of 'soil' were submitted to Dr D. D. Bartley for pollen analysis and to Dr J. G. Evans for study of the mollusc fauna; specimens of mosses were examined by Dr D. H. Dalby, seeds and other plant remains by Mr J. R. B. Arthur, wood and charcoal by Mr Morgan. Their reports appear below and I am grateful for valuable discussion to them and to Professor G. W. Dimbleby (Institute of Archaeology, University of London), Dr L. Penny (Department of Geology, University of Hull), Dr F. W. Anderson (Institute of Geological Sciences) and Dr B. Matthews (Soil Survey, Leeds).

[1] L. Biek, *Archaeology and the Microscope* (1963), p. 223.

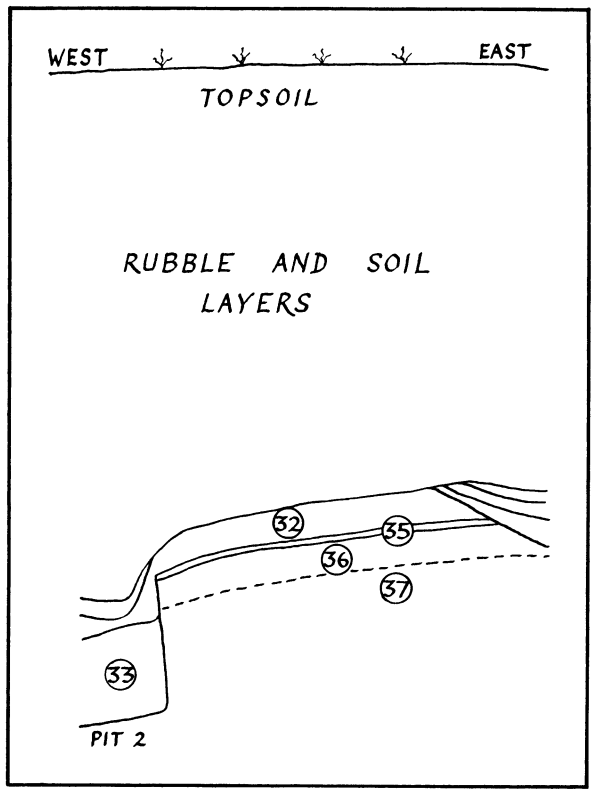


FIG. 83. Diagrammatic sketch from the north section of trench G III, showing the position of the buried surface (layer 35)

Results

GROUP 1

The primary information on soil conditions in Roman times comes from G III, where a short stretch of seemingly complete profile (Layers 35–37; AM 9714, 9716) was buried by upcast from Pits 2 and 3 (fig. 83). The profile shows a well-developed gley podzol[1] of considerable depth, most of the four-foot thickness being occupied by a diffuse and undefined, mottled horizon.[2] The parent material is fine, mainly angular, silica sand of which 66% passes 72 mesh, and 93% passes 36 mesh sieves (Table 2), and which contains no carbonate. The pH of the A_2 horizon is 4.5. An adjacent section seems to indicate a similar but truncated and contaminated profile (AM 9715) which supports one of several artificial or transitional surfaces that were seen to contain occupation material and relatively 'wet' lenses of brown clay with charcoal.

[1] W. L. Kubiena, *The Soils of Europe* (1953), p. 253.

[2] This appeared to represent the merging of A_2 into C by way of gleyed areas of B.

TABLE 1

Results of analyses on soil samples

(For explanatory notes see p. 211, below)

Group	*A.M. No.*	*Site Ref.*	*Relative amounts* of*			*Carbonate*	*Phosphate (of the order of % P)*	*Sedimentation*		*General Description*	*Interpretation*
			Iron	*Unfired control*	*Organic matter*			*Height*[h]	*Munsell*[m]		
1	9714: (monolith)	*G III*									
	Top	32	LM	L	L	—	0·1			Pale yellow sand	Disturbed subsoil (upcast)
	Middle	35	VL (min.)	M (grey)	M	—	0·1			Dark grey-black sand	Buried soil (A_0+A_1)
	Bottom	36	VL	VL	VL	—	tr.			Off-white sand	Leached horizon (A_2)
	9715: (monolith)	*G III* Mottled area east of pit									
	Top		M	M (brown)	M	—				Dirty yellow sand with black specks (charcoal)	Disturbed 'surface' with occupation material
	Middle		L	VL	VL	—				Dirty white sand	Leached horizon (A_2) slightly contaminated
	Bottom		H	M (brown)	VL+	—				Yellow brown sand	Unleached subsoil ('gley mottle')
	9716	G III 3′ 10″ below 35	VH	H (orange)	H° (max.)	—				Brown sand	Unleached subsoil (C)

Group	A.M. No.	Site Ref.	Relative amounts* of			Carbonate	Phosphate (of the order of % P)	Sedimentation		General Description	Interpretation
			Iron	Unfired control	Organic matter			Height[h]	Munsell[m]		
		G I 6 and 7:									
2	9718/1	*datum* (watertable)	L	H (grey)	H	H	0.16[t]			Black sandy soil with chalk and burnt pebbles	Water-whirled sand containing debris from foreshore erosion and occupation
	9718/2	−4″	L	H	LM	H				As above, with charcoal	As above
	9718/3	−8″	L	LM[x]	LM	H				Greyish soil, as above	As above
	9718/4	−1′	L	LM	LM	H				Whitish sand with charcoal and chalk; some wood	As above
	9718/5	−1′ 4″	HM	M	M	H				Yellowish white sand with roots and charcoal	As above
	9718/6	−1′ 8″	HM	M	H	H				Yellowish black clayey sand with wood, chalk and pebbles	As above
	9718/7	−2′	H	M	HM	+				Dirty yellow sandy soil	As above
	9718/8	−2′ 4″	L (min.)	H (grey)	M	tr.				Greyish sandy soil with wood	Leached foreshore surface merging into unleached subsoil
	9718/9	−2′ 8″	HM	L	L	—				Fine yellowish white sand	
	9718/10	−3′	VH	VH (orange)	VL[+]	—				Orange brown sand	Unleached subsoil

Group	A.M. No.	Site Ref.	Relative amounts* of			Carbonate	Phosphate (of the order of % P)	Sedimentation		General Description	Interpretation
			Iron	Unfired control	Organic matter			Height[h]	Munsell[m]		
		J I									
3	610806	4 (−4′) (Top of grey sludge)	HM	M	H (max.)	H		f. ¼ c. 1	3/3 3/2	Brown grey soil Dark brown Brownish black	Highly organic muddy silt
	610807	4 (−5′ 6″) (Bottom of grey sludge)	HM	H	H	H	tr.	f. ¼ c. 1	2/2 2/1	Brown grey soil Brownish black Black	As above
	610808	5 (−7′) (Dirty sand)	M	LM	M	H		v.f. 1/16 f. 1	5/3 5/3	Buff brown dirty sand and clay Dull yellowish brown As above	Organic muddy sand
	610809	6 (−7′ 6″) (Sandy shingle)	M	LM	M	H		v.f. 1/16 f. 1	5/3 5/3	Sandy (flint) shingle containing chalk Dull yellowish brown As above	Sand fraction as above – shingle beach
	610810	7 (−3′) (Mud with stones)	L	L	L	H	0.6	f. ⅛ c. 1	5/3 4/2	Buff grey soil and shingle; some snail shell frags. Dull yellowish brown Greyish yellow brown	Shingle beach similar to above, partly submerged in muddy silt (cf. 610806)
	610811	8 (−7′ 10″) (Clean orange sand)	H	HM	VL+	tr.	tr.	v.f. 1/16 f. 1	5/6 5/4	Clean orange sand Yellowish brown Dull yellowish brown	Unleached, undisturbed subsoil

Group	*A.M. No.*	*Site Ref.*	*Relative amounts* of*			*Carbonate*	*Phosphate (of the order of % P)*	*Sedimentation*		*General Description*	*Interpretation*
			Iron	*Unfired control*	*Organic matter*			*Height*[h]	*Munsell*[m]		
4	8706	B I, 50 Turf rampart from revetment	L	H	VH	tr.	0·3			Dark grey brown sandy soil with 'rustflecks' and charcoal/roots	Consistent with 'turf'
	8707	B I Undisturbed sand	H	M (light brown)	L	tr.	tr.			Orange brown sand	Undisturbed subsoil (control)
	600412	A I, 27 Turf from rampart revetment	LM	H (brown)	H	+	0·3			Sandy clay silt with 'rustflecks' and charcoal/roots; snail shells	Consistent with 'turf'
	600413	B I, 94 Eaves drip channels between barrack blocks ('urinal'?)	M	M (greenish yellow)	M	+	0·3			Green stained sand	Consistent with 'animal waste', or (?)peat roof run-off
	600414	B I, 94 White lumps in above matrix (600413)	VL	L	LM	VH	0·59[t]			White deposit	Consistent with 'coprolite'

Group	A.M. No.	Site Ref.	Relative amounts* of			Carbonate	Phosphate (of the order of % P)	Sedimentation		General Description	Interpretation
			Iron	Unfired control	Organic matter			Height[h]	Munsell[m]		
5	9717	G II, 22 'Fuller's Earth'	VL	VL	VL	VH	0·3			Very fine pale buff powder	Very finely divided calcium carbonate (? 'whiting')
	600415	F VIII, 6 Ash from oven or kiln	VL	L	L	VH	0·6			Light grey brown powder	Consistent with 'ash'
	600416	F X, 10	L[n] (9718/1)	L[n] (600415)	L[n] (600419)	VH	0·6			Grey sandy soil with many calcareous worm casts and/or fossils	Undisturbed (?)lacustrine sand
	600417	D V, 16 Grey black silt with fragments of wood	L	H	HM	+	tr.			Very dark brown 'wet' humic sand	Organic muddy sand (cf. 9718/1)
	600418	D V, 20 Stones, close packed, some gravel, dirty sand	M	M	M	+	tr.			Dirty brown 'wet' sand	Similar to above but less organic (cf. 9718/9)
	600419	D VI Undisturbed sand (control for above: 600418)	HM	L	LM	+	tr.			Dirty yellow sand	Consistent with 'undisturbed sand', but some penetration of organic matter

+ = present; c=coarse; f=fine; H=high; L=low; M=medium; max.=maximum; min.=minimum; tr.=trace; v, V=very.
* = amounts as indicated by *relative* colour hues, within each group (see L. Biek, *Archaeology and the Microscope*, p. 223); unfired hue depth given as control.
[+] = no reduction obtained; a faintly chocolate brown colour develops, instead of the normal grey, when the organic content is so low that it cannot support a reducing atmosphere under the conditions of test (exclusion of air).
[o] = anomalous ('high': very high iron content gives appreciable grey under reducing conditions (magnetite) which is not removed by an oxidation/reduction cycle and can in this way be distinguished from organic matter).
[x] = general impression: really, L with dark specks.
[h] = height (in.) of sediment (see reference given under * above).
[m] = Munsell colour (all 10 YR) determined on the *bulk* of the sedimented fraction, *in water*, by reference to 'Revised Standard Soil Color Charts' issued by the Ministry of Agriculture and Forestry, Japan, in 1967.
[n] = comparison is made with samples from other groups (sample numbers in brackets).
[t] = calibration checks provided by the Laboratory of the Government Chemist. (N.B. 0·16% P ≡ 0·36% P_2O_5; 0·59% P ≡ 1·36% P_2O_5)

TABLE 2 (Fig. 84)

Grain size distribution in sand and shingle (% *weight*)

A.M. No.	*Site Ref.*	Sieve mesh (per in.)					
		Retained on 5	*Retained between*				*Passing 72*
			5 & 10	*10 & 18*	*18 & 36*	*36 & 72*	
9715 (bottom)	G III Sand from mottled area east of pit	1.39	0.08	0.57	4.98	26.8	66.18
610809	J I, 6 Sandy shingle	64.2	3.57	1.19	3.74	15.1	12.2
610810	J I, 7 (Sandy shingle from) Mud with stones	40.0	9.6	4.5	5.8	6.1	34.0

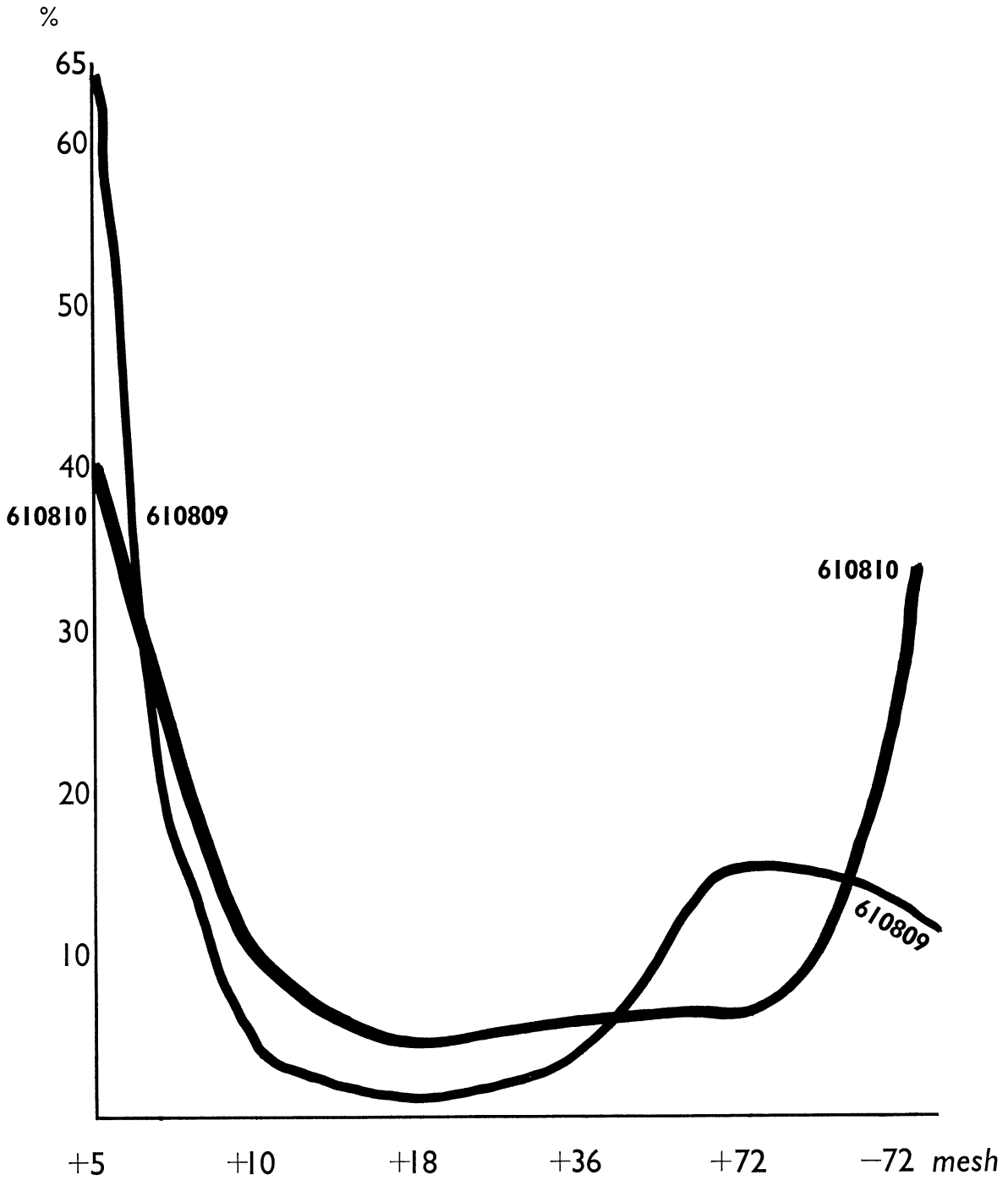


FIG. 84. Grading of shingle, J I, 6 and 7 (Table 2)

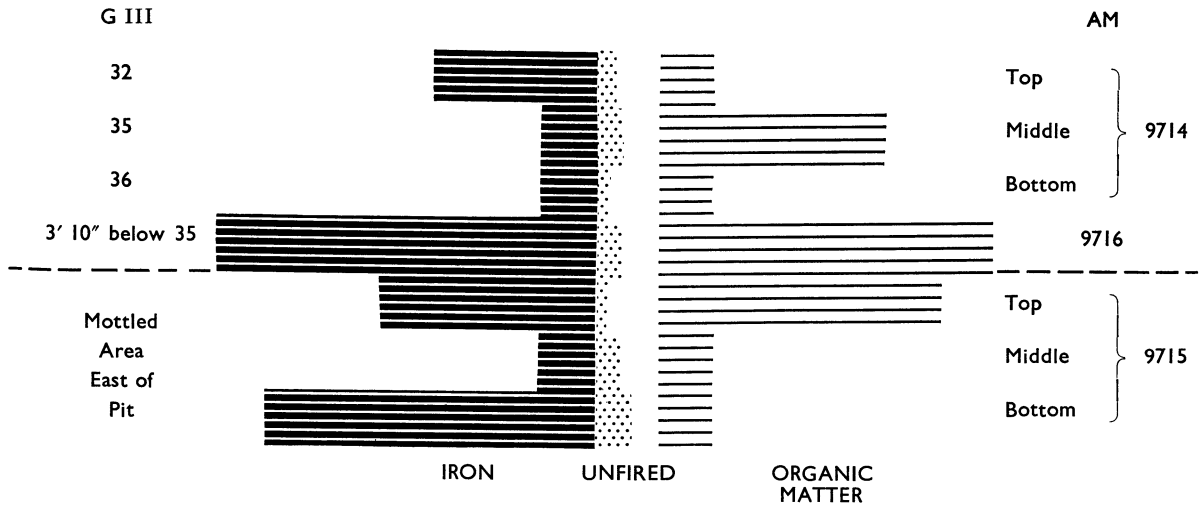


FIG. 85. Results of Ignition Tests on Soil Samples. Group 1 (Table 1)

GROUP 2

Samples from Trench G I (AM 9718) gave no comparable pattern, but the presence of many charcoal and even wood and leather fragments throughout almost the whole of the three-feet deep profile rules out pedological continuity in any case. The main interest here lies in the presence of often quite large fragments of chalk down to — 2 ft., but not below, in a sandy matrix which is essentially similar to that of G III.

GROUP 3

In the Sewer Trench section (J I) the shingle in Layer 7 (AM 610810) closely resembles that in Layer 6 (AM 610809; fig. 84) except that it contains fragments of snail shells and lime mortar in place of chalk. There is little variation from top to bottom in Layer 4 (AM 610806/7) which is a highly carbonateous mud but has so far yielded no characteristic inclusions. The lighter fraction in Layer 5 (AM 610808) corresponds to Layer 4 above it, and the heavier fraction to the sand in the shingle below (Layer 6). Materials AM 610808, — 07 and — 06 could thus have settled out from relatively slack water on to 610809 in that sequence and substantially at the same time. No chloride was detected in any of the samples. The basal sand layer (Layer 2; AM 610811) corresponds to the general matrix (cf. 9716, 9718); otherwise this section is quite different from that in G I.

GROUP 4

The 'turf' sample from B I, 50 (AM 8706) shows a trace of carbonate and high organic with low iron contents which are significant by comparison with a control here ('subsoil blank': AM 8707) and also with the general background (Group 1). The same pattern

appears in a similar 'turf' sample from A I, 27 (AM 600412) but less sharply. Some snail shells were found here. About fifteen times as much phosphate as in the same control (8707) was present in a region of greenish stain in B I, 94 (AM 600413), with a little carbonate, and nearly thirty times as much in a white, highly calcareous deposit (AM 600414) located within this greenish stain.

Group 5

Two of the miscellaneous samples resemble each other in showing the same lack of colour, iron and organic matter, with strong carbonate reaction. One, 'ash' from F VIII, 6 (AM 600415), is a rare sample of a 'white' substance that is less coloured after oxidative ignition than before. This indicates a remarkable lack of contamination, even by burial, except for traces of organic matter, here probably charcoal.[1] The other, the 'Fuller's earth' from G II, 22 (AM 9717), consists almost entirely of very finely divided calcium carbonate, but is rather 'greyer' and contains somewhat more organic material. A sample from F X, 10 (AM 600416) is basically a sand but appears similar owing to abundant calcareous 'fossils'.

Work on the Ditch in D V confirms field observation, demonstrates the presence of carbonate, and also raises two significant points. First, there would seem to have been some penetration of organic matter from the basal ditch fill (Layer 20; AM 600418) into the

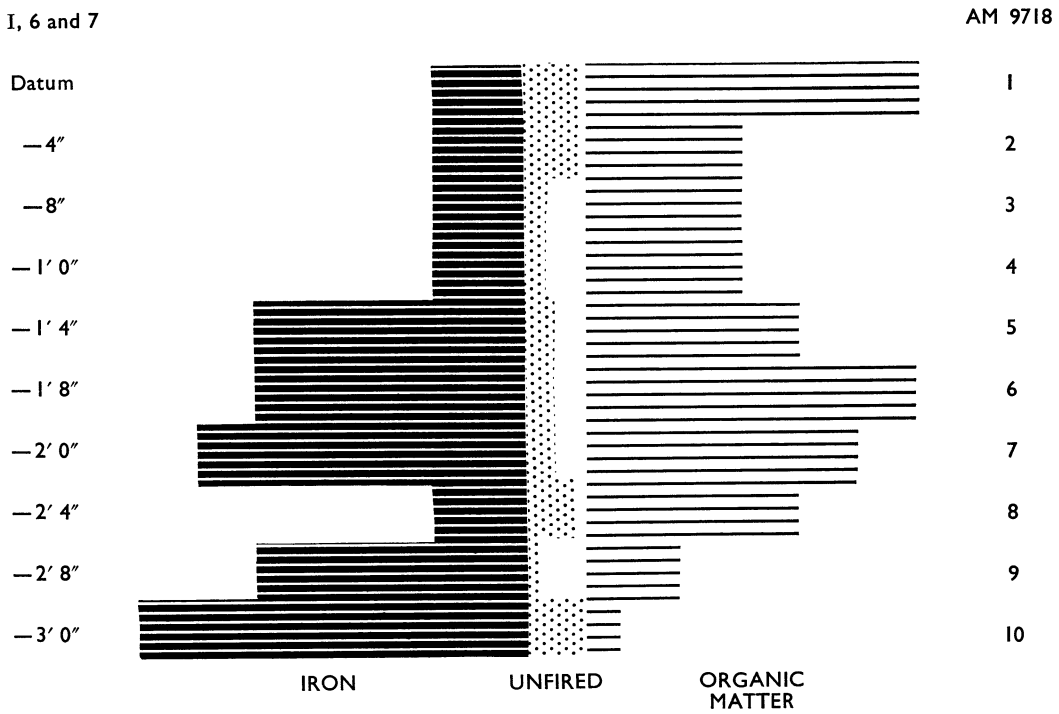


Fig. 86. Results of Ignition Tests on Soil Samples. Group 2 (Table 1)

[1] Cf. *Oxon.*, xxvi/xxvii (1961/2), 189.

'undisturbed sand' (600419); this may, but need not, be connected with the lower iron content in this sand compared with the others (9716, 8707). Secondly, the 'dirty sand' of the basal ditch fill (600418) resembles that in the Sewer Trench (610808) except that it is even 'dirtier' though it lacks the mud; it is also very similar to the lowest, least 'disturbed', layer in G I (AM 9718/9). 600418 came from among 'close-packed stones, with some gravel', and was overlain by '*water-worn gravel*' (not examined). A higher, 'grey-black silt with fragments of wood' (Layer 16; AM 600417) in the same ditch is almost identical with the highest and most disturbed layer in G I (AM 9718/1).

Discussion

The following interpretation leans heavily on the specific data obtained by investigation, which are all considered together. It should be seen in conjunction with the section on the River Humber (p. 76) but any attempt to link it firmly with this or the published geological information must ultimately fall short because no qualified geologist was able to visit the excavation.[1]

The Geological Survey map shows the solid rock underlying the whole of the site, except for the sewer trench, as oolitic limestone (presumably the Wrights' 'Cave oolite', p. 76). Just to the east of Grassdale this gives way to calcareous sands and clays for some 300 yards, where a narrow band of Kellaways Rock separates them from the Oxford Clay beyond. The whole of this area is shown as covered by lacustrine sand and gravel. West and south of the site, including the sewer trench and the presumed natural inlet, there are superficial deposits of 'warp' (estuarine silt) and lacustrine clay.

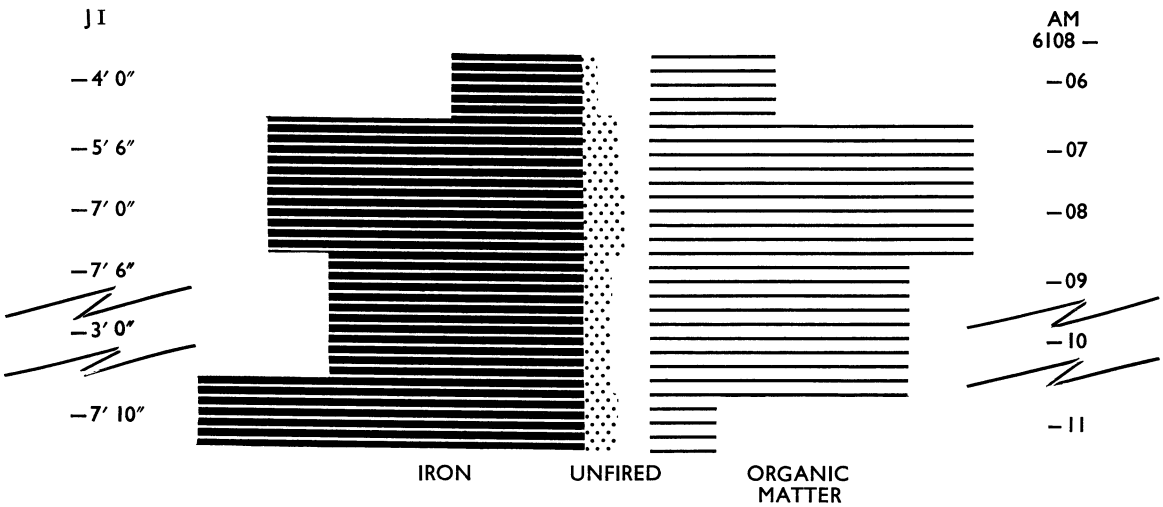


FIG. 87. Results of Ignition Tests on Soil Samples. Group 3 (Table 1)

[1] The succession is exceedingly complex owing to the confluence of outwash from the Vale of York glacier and Scandinavian glacial deposits.

The sandy matrix met in Groups 1 and 4 would appear to indicate, however, that the surfaces found by the Romans in the area sectioned by G III, and those stripped of turf for the ramparts found in B I (almost certainly) and A I (most probably), even as late as Period VI were of glacial origin—whatever their immediate environment of deposition may have been. Soil development here was clearly determined by groundwater gleys, due to lateral tidal pressure, and had resulted primarily in an acid gley podzol (as in G III) which evidently became calceolated in the other two areas mentioned. The former surface (G III) supported part-cleared, mixed forest with hazel scrub and some grass, (at least one of) the others marshy grassland.

Against this background must be seen the material in the other three groups which, by contrast, was dominated by carbonate. The single sample in Group 4 which belongs to this category (AM 600414) clearly represents an intrusive deposit and the same applies to some samples in Group 5 (600415: charcoal ash; 9717: ? powdered chalk or whiting) while another (600416) seems to be the only sample of undoubtedly lacustrine origin from the whole site.[1]

In the remaining samples, carbonate has an environmental significance which may well provide the key for a total interpretation of the soil evidence from this site. The whole of the section in both G I and the sewer trench is saturated with carbonate, including fragments of chalk, except for the lowest, 'undisturbed' levels which only contain traces. If carbonate could be related to tidal ingress, both normal and abnormal, then the extent of any such water movement could be assessed in this way.

In view of its importance, all the evidence for carbonate (including any on metal objects) was carefully considered, particularly in relation to permeability of the soil. The snail shells in A I 'turf' (Period VI; AM 600412) indicate conditions which enabled the animals to live on this originally calcifuge surface and their shells to survive burial in it. In B I 'turf' (Period V: AM 8706) there were no shells, but carbonate was detected here as well as in the subsoil (8707), if only in traces. It is difficult to imagine a change from G III to B I and A I surface conditions in the time available but it is just conceivable that this might have been 'forced'.

On the other hand, the evidence in the G III buried surface, protected by some six inches of (equivalent) upcast, has not been affected for some 500 years by percolation from some five feet of medieval make-up containing much calcareous material. Such percolation must in any case have been relatively slight. Some penetration of organic matter through sand has evidently been possible (cf. 600418–9). The resistance of the ash (600415), the 'whiting' (9717) and the 'coprolite' (600414) to contamination, and hence presumably also to solution in a predominantly acidic matrix, may thus be due in some measure to their finely divided state which enabled them to form compact and relatively non-porous masses. This could not be so, however, for the chalk, mortar and limestone fragments. The general impression is that the gleying conditions have impeded gravitational drainage, and movement has been slow and largely diffusive.

Similar considerations apply to phosphate, especially in presence of calcareous material. The relatively very high phosphate level in the white deposit AM 600414, and the high

[1] Cf., e.g. report on a similar deposit (AM 660452) found at Baston, Lincs. in 1966 (forthcoming).

level in the surrounding sand (600413), make it reasonable to regard these as 'animal' residues. The absence of any structure[1] is a drawback but 'unmistakable' shapes of coprolites have been found that consist entirely of calcium carbonate.[2] Layer B I, 94, which contained these remains, was sealed by layers 75 and 78: 'dirty sand and clay with occupation material, including burnt bone.' Diffusion of phosphate from here into 600413 cannot be entirely ruled out but is unlikely, for the reasons given above, to have produced the concentration that was found. This might, however, conceivably be due instead to downwash off a peaty roof.

These first, requested, results prompted further work and should be seen against the wider background it provides. 'Very high' phosphate was found also in the ash (600415) and the 'lacustrine sand' (600416); 'high' levels also in the 'turves' (8706, 600412) and the 'whiting' (9717). The presence of phosphate in all these, except the last, is perhaps not surprising. The relative quantities indicate the care which is needed in interpretation. It seems impossible to distinguish on this basis between 'coprolites' and 'ash' (even considering silica content), or buried surfaces and 'animal waste' residues.

The 'whiting' may originally have been mixed with powdered animal glue, of which phosphate may be the only remaining indicator. The 'lacustrine sand' might owe its 'very high' level of phosphate (unaccompanied by organic matter) to possible fossil (? fish) residues. But since both of the only two samples from Area F gave 'very high' phosphate values, and the whole area showed shallow, disturbed sections and had been extensively cultivated as a garden in modern times, these results should be considered with reserve.

In bringing all the present data to bear on the 'transgressional' problem, two major factors need to be considered. First, the carbonateous evidence is focussed by grading its significance according to depth and association, size and nature. Thus a large fragment of chalk at the bottom of a disturbed level in G I suggests free water action at some depth below the present low water mark. On the other hand, veins of secondary calcification in the corrosion products of an iron object at a higher level may merely indicate limited translocation from an 'intrusive' lump of mortar nearby.

Secondly, interpretative confidence is guided throughout by the degree of interplay between the different kinds of evidence. Carbonate has provided the main framework. But sedimentation tests have established on it the key river beach section; and pollen without carbonate in G III, as against snails without pollen in A I 'turf', have confirmed both the presence of, and the difference between, the buried surfaces that were revealed by ignition. This difference is also reflected in the phosphate levels which can in turn, be related to conditions on the upper buried beach surface and in the lower waterlogged layers in G I. Again, this correlation is further developed by the mosses, seeds and other plant remains that are clearly flotsam. The overall picture emerges clearly enough to justify some tentative generalizations.

On that basis, there is no evidence of 'transgression' in G III, nor in the areas where the examined 'turves' from A I and B I ramparts were stacked (*or* cut, for that matter, although on the present evidence both ramparts must be considerably earlier than any possible

[1] Cf., e.g. Brothwell and Higgs (eds.), *Science in Archaeology* (1969), pp. 235–50.

[2] Cf., e.g. specimen (AM 571083) found at Water Newton, Hunts. in 1957 (report forthcoming).

transgression). This is particularly clear in B I, and perhaps especially significant in A I which indicates *marshy* grassland. Both G I and D V were evidently affected although they escaped the mud. G I would appear to have been located at a peripheral pocket subject to strong currents. The Ditch in D V may have banked up with similar sandy silt as its exit became blocked by the rising flood.

In the sewer trench we have a 'transgressive' mud sandwiched between two sandy shingle beaches. The pebbles are presumably again derived from glacial rather than lacustrine deposits but the fragments of mortar, of chalk and even of larger stones (not examined) must be the result of tide and flood. The upper beach has partly sunk into the mud, which was described on excavation as a sludge and is thus unlikely ever to have been really dry for very long; the pressure of the overlying levels may therefore have been at least partly responsible, *after* burial, for the submergence of the beach. But the surface layers of the mud must have been firm enough, when the beach was laid down, at least to contain both the beach and the larger stones. It is tempting to suggest that these stones and the mortar fragments came from some structure undermined by the flood. The pottery fragments (p. 192) also indicate a firm surface.

A special effort has been made to extract the maximum of information from the present evidence, in order to show both the dearth and the value of data on the extent and nature of the Humber's buried Roman foreshore, clearly of cardinal importance to both the archaeology and the geomorphology of the region. It is to be hoped that an opportunity will arise before long for a study of such another section to be carried out more comprehensively and in far greater detail than has been possible in this case.

THE POLLEN

By DAVID D. BARTLEY
(*Department of Botany, University of Leeds*)

Samples 8706 (B I, 50) and 600412 (A I, 27) contained no recognizable pollen. There was much finely divided plant material, consisting of only one or, at most, a few cells and completely unidentifiable. Table 3 shows results for the monolith 9714 (G III). All the pollen in all the samples is very badly corroded and a large proportion of the grains are, again, quite unidentifiable. This may have led to overrepresentation of *Alnus* which is easily recognized even when corroded while types such as *Quercus* tend to be very difficult to identify under these conditions.

Within these limits, the most significant feature of the three pollen spectra is that the top (T) and bottom (B) samples are, apart from certain minor differences, remarkably similar, and stand out as being different from the middle dark layer (M), thus supporting the idea that they are in fact the same and that T has been excavated from layer B nearby. The absence of *Ulmus* pollen suggests formation during or later than zone VIIb (Sub-Boreal) while the high *Tilia* values suggest zone VIIb.

The middle layer has a higher proportion of *Quercus*, *Betula* and *Corylus* and contains also some indicators of forest clearance — *Rumex acetosa*, and agriculture — *Plantago major*.

The pollen spectrum in B probably accumulated before podzolization had taken place at a time when the forest was dominated by alder with lime, oak and birch. The middle layer, M, appears to represent a period of slight forest clearance and the forest at this stage was still dominated by alder with less lime but with much more oak and rather more birch. The increase in hazel and the variety of herbaceous types suggests the possibility of regeneration in a rather more open forest than at B. The *Calluna* present may reflect a component of this community rather than heathland nearby. The top sample, T, while having tree pollen values similar to those in B also shows similarity to M in the larger values of grass and herb pollen.

TABLE 3

Pollen Spectra for Buried Soil in G III

(AM no. 9714)

Percentages of Total Tree Pollen

		TOP	*MIDDLE*	*BOTTOM*
Total Tree Pollen	*Betula*	12	15	10
	Pinus		1	
	Ulmus	1	1	
	Quercus	12	27	12
	Tilia	11	7	15
	Alnus	61	49	62
	Fraxinus	2		1
	Corylus	77	111	83
	Salix	2	5	2
	Hedera	+		
	Gramineae	55	54	35
	Cyperaceae	29	12	11
	Calluna	2	9	1
	Succisa	+	1	+
	Caryophyllaceae	6	1	5
	Rosaceae	7	5	1
	Taraxacum	12	1	1
	Filipendula		3	
	Plantago major		1	
	Rumex acetosa		1	
	Lonicera		1	
	Umbelliferae		1	
	Knautia		1	
	Pteridium		1	
	Polypodium		1	+

Percentages of Total Pollen

	TOP	*MIDDLE*	*BOTTOM*
Trees	33	33	40
Shrub	27	38	36
Herb	40	29	24

Comment (D.D.B. and L.B.):

The vegetation found by the Romans at the place examined could have been mixed forest dominated by alder with some hazel scrub and grass (B). This place would appear possibly to have been at the edge of the forest, or of a clearing, as conditions only a matter of feet away to the east were decidedly more grassy by comparison (T). The situation, if not unaffected by man, was at least more undisturbed than M.

Clearance by fire, and subsequent moderate agricultural activity followed by regeneration, could even in a relatively short time produce a standard oak cover with enhanced hazel and grass (M). Alternatively, it is possible that the Romans arrived at some stage after the establishment of these conditions. This surface was then possibly cleared in turn, but in any case obviously covered by upcast from digging a series of pits nearby. The upcast was inevitably a mixture of material but appears to lack certain significant indicators present in M; i.e. either this surface had originally escaped clearance or, more likely, no surface material was present in the upcast.

Finer interpretation must hinge on appraisal of the podzolic profile. Its development may be reasonably supposed to have (*a*) been associated with the establishment of condition M, i.e. with clearance, and (*b*) taken of the order of 1000 rather than 100 years. Present knowledge does not allow decision on these points but it seems far more likely — also by comparison with dated pollen spectra — that clearance was prehistoric and regeneration progressive, establishing M well before the Romans arrived.

THE TERRESTRIAL MOLLUSC SHELLS

By John G. Evans

(*Institute of Archaeology, University of London*)

Three 'soil' samples were examined — AM 600412 (A I, 27); AM 8706 (B I, 50); AM 610810 (J I, 7) — with the following results:

AM 600412

Lymnaea truncatula (Müller)	1
Succinea cf. *putris* (Linné)	10
Cochlicopa spp.	6
cf. *Columella edentula* (Draparnaud)	1
Vallonia costata (Müller)	2
Vallonia pulchella (Müller)	1
Vallonia spp., probably *pulchella*	15
Limacidae	7

Although not large, the assemblage would not be incompatible with an environment of open, marshy grassland.

No snails were found in the other samples (8706; 610810).

THE MOSSES

By D. H. DALBY
(*Department of Botany, Imperial College of Science and Technology*)

The most abundant species is *Leptodictyum riparium* (Hedw.) Warnst. This is present in 600479 (G I, 7; organic matter, peaty) and in 600480 (G I, 7; organic remains, ? moss). This is a widespread moss, growing in wet sites, as for example in slow-moving or stagnant water, attached to stones or timber, bases of trees, sluices, etc. The second species (only in 600479) is *Acrocladium cuspidatum* (Hedw.) Lindb., a very common plant from wet sites, though not growing submerged. It is common in wet grasslands, margins of streams, at the base of tall vegetation in fens and fen carr and similar sites. These two species suggest to me sedimentation in a slow-moving river or infilling lake, probably near the margin.

From the general appearance of sample 600479, with its mixture of seeds, stem fragments, etc. (see below), I would have expected it to have been formed perhaps in slow-moving water on, say, a silt bank close to rapidly running water currents. I have seen this kind of accumulation formed by the sorting action of running water adjacent to calmer areas. This is just a comment and goes further than can be derived from the supposed habitats of the mosses. These latter, like the seeds and stem fragments, must surely have been moved from their original place of growth, though possibly not very far.

THE SEEDS AND OTHER PLANT FRAGMENTS

By J. R. B. ARTHUR, F.L.S.
(*Littlehampton, Sussex*)

AM 580195 (A I, 19):

Prunus spinosa L. (Blackthorn). Stone broken into very small pieces but showing the overall globose nature; slightly pitted, very much charred. Not tolerant of dense shade.

AM 600479 (G I, 7):

Most of the plant remains in this sample are less charred than is material in samples 580195 or 600480. The following are present:

Corylus avellana L. (Hazel). Charcoal adhering to the outside of broken nutshells only.

Galium aparine L. (Goosegrass). Fragmented stems and seeds clearly characteristic, only slightly charred.

Polygonum convolvulus L. (Black Bindweed). A coating of charcoal adhering to the testa of the nut (seed).

Urtica dioica L. (Stinging Nettle). The seeds of this plant are carbonized and a little distorted. Thrives in soils rich in phosphorus and nitrogen, and especially in decaying organic debris.

AM 600480 (G I, 7):

Iris pseudacorus L. (Yellow Flag). This plant is very much in evidence. Fragmentary terete stems, and mostly whole, but some broken, seed. Very much charred. Habitat: marsh, where the substratum has an inorganic or muddy basis, or edges of rivers.

AM 610815 (J I, 7):

Pteridium aquilinum (L.) Kuhn (Bracken). The pinnules very much broken and covered with other organic material.

Veronica hederifolia L. (Speedwell). Rather corroded seed.

AM 610815A (J I, 7):

Plant remains of a woody nature (in this case finely broken[1]) predominantly Alder, *Alnus glutinosa* (L.) Gaertn. Also present, but in minute quantity: Restharrow, *Ononis spinosa* (L.). Plant fragments show distinctly triate stems with a few spiny secondary stems prominently attached.

WOOD AND CHARCOAL

By G. C. Morgan

(*Ancient Monuments Laboratory*)

AM 600475 (A I, 60): 'Mineralized' fragment. No recognizable structure remains — probably Lignite.[2]

AM 600473A (G I, 7): Many fragments of wood and bark (with leather). Some of the fragments are Oak (*Quercus robur* type), others are unidentifiable.

AM 600476 (G I, 7): Oak — two specimens *c.* 1½ in. dia.

AM 600477 (G I, 7): Worked fragments of Oak (4 in., 2 in. and 2 in. dia.) and Willow (*Salix* sp., ½ in. dia.).

AM 600410 (G II, 14): Charcoal derived from a branch of Ash (*Fraxinus excelsior*) more than 4 in. dia.

AM 600411 (G II, 18): Charcoal derived from a branch of Oak more than 4 in. dia.

AM 600813 (J I, 4): Perforated wooden disc ('wheel') of Ash.

AM 600814 (J I, 7): Two specimens of Alder (*Alnus* sp.) 1 in. dia.
One fragment of worked softwood, *c.* 4 in. dia. This is probably Larch (*Larix* sp.)[2],[3] although the possibility of its being Spruce (*Picea* sp.) cannot be excluded).
(Also leather fragments.)

AM 600815 (J I, 7): Specimens of Poplar (*Populus* sp.; 1 in. dia.) and Hazel (*Corylus avellana*; 3 in. dia.) and many unidentifiable fragments of wood and bark.

[1] This could presumably be due to natural agencies, e.g. crushing of decayed driftwood among rolling shingle? (L.B.).

[2] Identifications kindly confirmed by Mr F. Richardson, Royal Botanic Gardens, Kew.

[3] Not native to Britain in Roman times. Possibly driftwood or an import? (L.B.).

NOTE ON 'BURNT BREAD' FROM G II, 10 (AM 600409)

By J. M. Cooper
(*Morganite Research and Development Limited*)

A small sample was vacuum-impregnated with an epoxy resin which did not fill the majority of pores but prevented the material from crumbling. Pl. XVII *b* shows the nature and distribution of the porosity. The material shows no change in response in any direction when viewed under reflected polarized light. It is therefore either an amorphous substance, or a material with an isotropic crystalline structure. Its cellular structure is not that of wood charcoal, but could be that of charred 'bread'.[1]

THE MORTARS

By J. Bennett and L. Biek
(*Ancient Monuments Laboratory*)

Six samples were submitted for analysis, three each from the 1958 and 1959 excavations. Each sample was visually examined, and acid-insoluble aggregates were compared in the usual way.[2] Two specific questions were asked by the excavator: (i) Were samples 1 (Curtain Wall) and 2 (Gate Tower) of the same composition?; (ii) Was Sample 3 (C II, 1, rubble, no earlier than either) from a construction mix for one or both of them, or the result of later destruction?

Results

In grading, samples 2, 3, 5 and 6 appeared to be similar (especially if the possibly fortuitous distribution of coarse aggregate was ignored), but they differed from each other either in colour or content or both.[3] Samples 1 and 4 were both 'odd' ones. Small fragments of glass were observed in 1 and 3; oolitic limestone chips in 1, 2 and 3; slag in 2 and 5; and charcoal in 1 and 4. The percentage of insolubles in samples 1–3 ranged from 26–36%; in 4–6 from 44–65%.

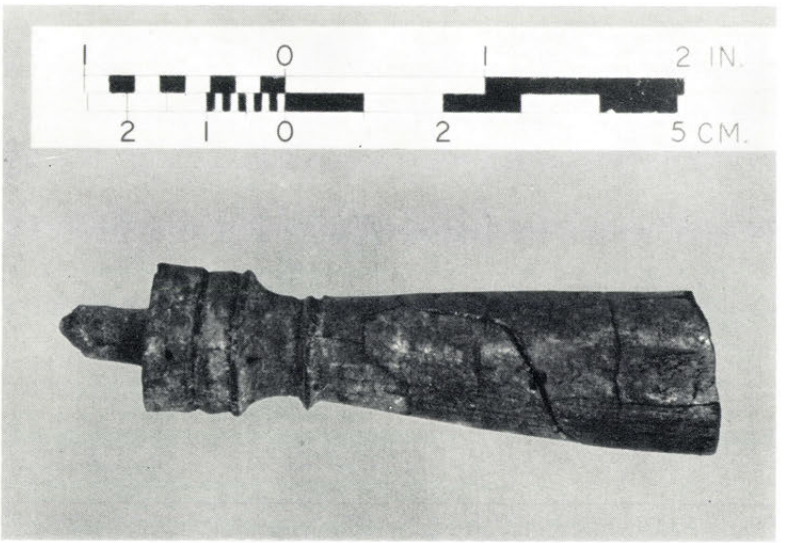
Conclusions

It can be seen from the graphs in fig. 88 that the Curtain Wall and Gate Tower mortars are totally different and so probably not contemporary. Again although samples 2 and 3 had similar grading characteristics they differed in nature and clearly were not from the same mix. However, sample 3 was not coherent and contained re-used or intrusive material,

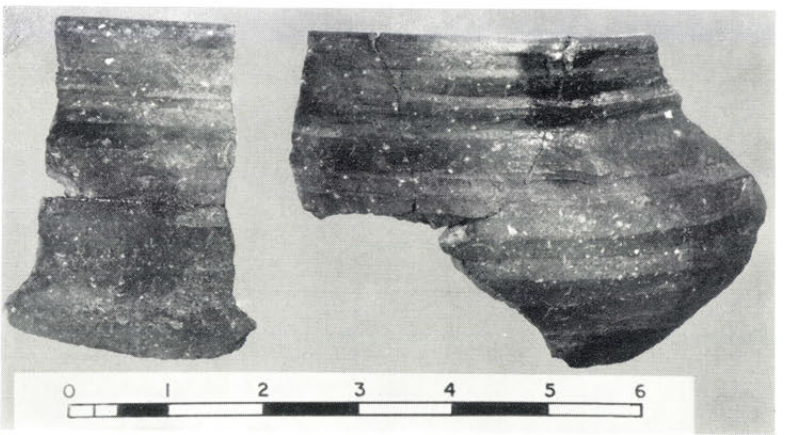
[1] Charred bread has been found at Maiden Castle (R. E. M. Wheeler, *Maiden Castle* (1943), p. 375) and at Glastonbury (Bulleid and Gray, *Glastonbury Lake-Village* II, (1917), p. 629) in Iron Age contexts (J. S. Wacher).

[2] E.g. in L. Biek, *Archaeology and the Microscope* (1963), p. 233.

[3] This emphasizes the importance of considering all factors and not relying on the grading results alone.

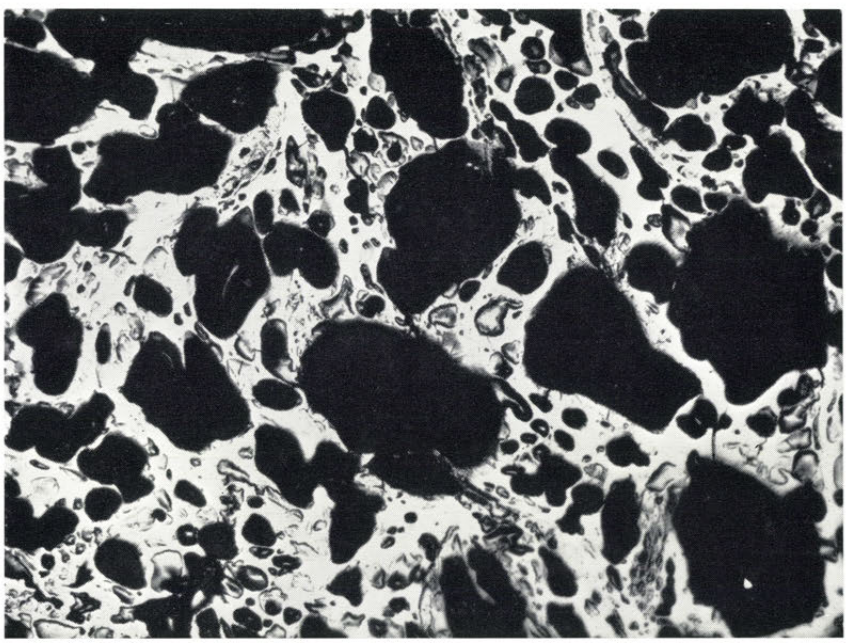


a. Fragment of carbonized wood
(*Miscellaneous Objects*, no. 6; p. 104)



b. *Coarse pottery*, no. 663 (p. 192). Scale of ins.
(*Photograph by M. B. Cooke*)

a. Photomicrograph of a bronze rivet showing traces of possible plywood grain (x 6) (*Bronze Objects*, no. 27; p. 91)



b. Photomicrograph of 'burnt bread' from G II, 10 (AM 600409). Partially impregnated section, incident light, x 60. Black areas are cavities, white material is carbon, half-tone areas are small holes impregnated with resin. (*Morganite Research and Development Limited*)

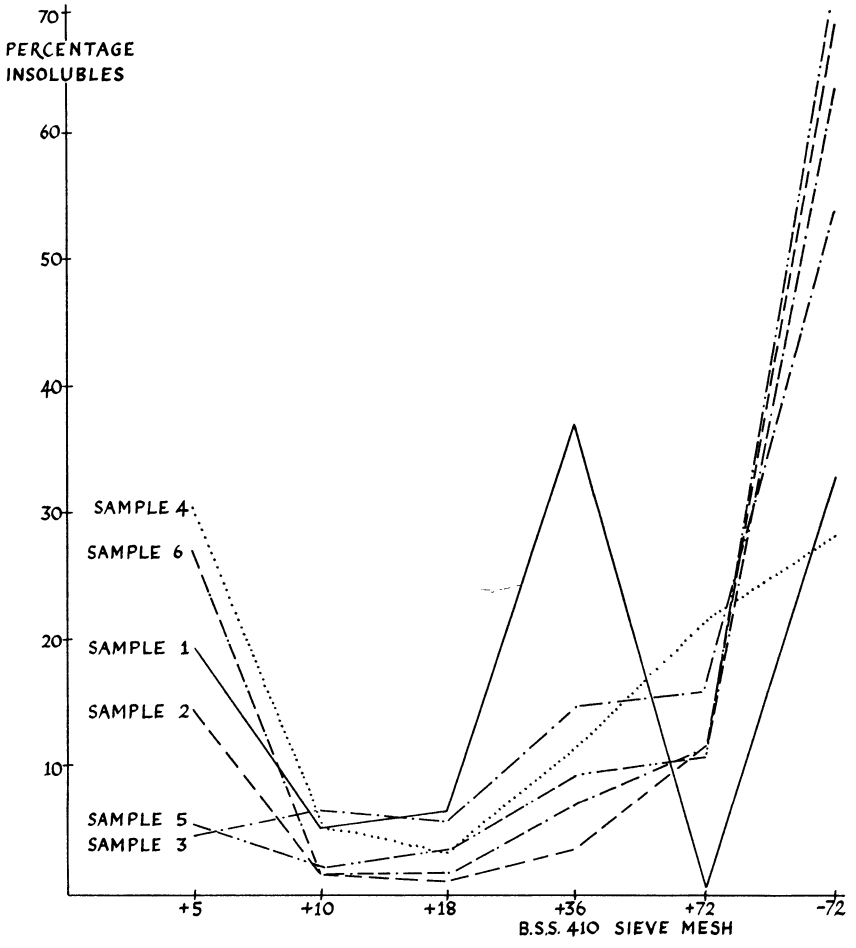


FIG. 88. Aggregate grading of the mortar samples

e.g. crushed tile. Overall, the evidence is not inconsistent with 3 being a mixture of 1 and 2, resulting from their simultaneous destruction. Judging from the appearance of samples 1–3, and the high proportion of carbonate present, it would appear that chalk was added as aggregate in these cases,[1] although some of the dissolved carbonate will have come from masonry fragments of oolitic limestone.

Sample 4 (F X, 10) was clearly *opus signinum*. Sample 5 (F XIII, 4) had several pieces of burnt clay and slag intermixed — one piece being in effect slagged burnt clay. All the fragments of burnt clay showed signs of considerable heat, suggesting an origin in a furnace lining. Some material in Sample 6 (D I, 15) also showed signs of burning, as for instance in a fairly large fragment of oxidized-fired limestone. Samples 5 and 6 may represent coarse flooring materials weakly cemented together with lime.

[1] The initial run for sample 3 was interrupted, and the sensibly larger pieces of free chalk which could be observed were removed. Of these, 95% were retained on the +5 sieve and the residual 5% on the +10 sieve. The second run was carried right through, with the results shown in the table below.

TABLE 4. 'MORTAR' ANALYSIS RESULTS

Sample No.	*A.M. No.*	*Site Ref. No.*	*Wt. Used*	*Aggregate Wt./%*	*Mesh No.*	*Wt.*	*%*	*Description*
1	580352	A II, Curtain Wall	100.99 g.	26.49 g. 26.2%	+5	5.21 g.	19.7%	Coarse brown mortar, containing numerous small white flints, pebbles, and lumps of partly slaked lime[1] and (fewer) chalk. A piece of charcoal and four flakes of glass were observed.
					+10	5.36 g.	5.1%	
					+18	1.74 g.	6.6%	
					+36	9.85 g.	37.2%	
					+72	0.10 g.	0.4%	
					−72	8.23 g.	62.1%	
2	580353	A II, Gate Tower	81.90 g.	25.78 g. 31.5%	+5	3.73 g.	14.5%	Dark decayed mortar, containing fewer and smaller pieces of flint and 'lime', and a much larger quantity of chalk than sample 1. Flakes of oolitic limestone, and a small piece of slag, were observed.
					+10	0.39 g.	1.5%	
					+18	0.27 g.	1.0%	
					+36	0.96 g.	3.7%	
					+72	3.05 g.	11.8%	
					−72	17.38 g.	67.4%	
3	580354	C II, 1	42.22 g.	15.32 g. 36.3%	+5	0.71 g.	4.6%	Very decayed brown sandy mortar, containing few flints, large pebbles, finely crushed tile, small lumps of 'lime', and larger lumps of chalk than any of the other samples in this group. A small piece of glass was observed.
					+10	1.01 g.	6.6%	
					+18	0.90 g.	5.9%	
					+36	2.29 g.	14.9%	
					+72	2.30 g.	15.0%	
					−72	8.11 g.	52.9%	
4	590026	F X, 10	102.73 g.	58.86 g. 57.3%	+5	17.78 g.	30.2%	Pink *opus signinum*, containing a large amount of crushed tile, some 'lime', and small pebbles. Several particles of black stone and a piece of charcoal were observed.
					+10	3.22 g.	5.8%	
					+18	1.80 g.	3.1%	
					+36	6.74 g.	11.5%	
					+72	12.80 g.	21.7%	
					−72	16.52 g.	28.1%	
5	590027	F XIII, 4	100.12 g.	65.50 g. 65.4%	+5	3.45 g.	5.3%	Decayed 'fired clay' — not a mortar — containing lumps of yellow earth pieces of slag, and a sherd of burnished pottery. A large piece of slagged 'fired clay' was seen.
					+10	1.28 g.	2.0%	
					+18	2.18 g.	3.3%	
					+36	6.20 g.	9.5%	
					+72	7.09 g.	10.8%	
					−72	45.30 g.	69.2%	
6	590028	D I, 15	104.43 g.	45.92 g. 44.0%	+5	7.80 g.	17.0%	Brownish-red lime-consolidated rubble, containing a fair proportion of 'lime', a large amount of chalk, and a few pebbles. After drying, small white particles were observed, but acid treatment proved these not to be chalk or lime.[2]
					+10	0.63 g.	1.4%	
					+18	0.76 g.	1.7%	
					+36	3.22 g.	7.0%	
					+72	5.22 g.	11.4%	
					−72	28.29 g.	61.6%	

[1] These are due to inefficient slaking and are not properly mixed into the mortar. They are usually distinct from chalk.

[2] These have been previously noted and appear to consist of acid-soluble silica reprecipitated on dilution and washing.

METAL-WORKING AT BROUGH

By L. Biek and J. S. Wacher

Three internal buildings at Brough, which have now been subjected to more than just trial-trenching, produced features, 'metal objects' (some not illustrated) and slag which deserve special mention. These buildings are widely spaced inside the walled area: one (Building A.I) being near the north gate; another at the Manor House (G.I); the third, excavated by Dr Corder in Bozzes Field, not far from the east gate (*Brough*, v, fig. 7, p. 37). The evidence from each building will be considered in turn. Apart from the presence of hearths and similar features, the result of close examination of the metal fragments points to prolonged periods of metal-working, sometimes on a large scale, in at least two (and probably all) of the three mentioned. In addition, there is some definite, but isolated, evidence from the fort area (mainly of Period IV), revealed in trenches B I and B V.

In the absence of specialized features, such as smelting furnaces, which are firmly linked by construction or associated finds to a recognized activity, it is impossible to be specific or conclusive. All the evidence is fragmentary and relatively sparse. While some of it is indisputable (slag and melted waste), some is inferential (part-worked objects and 'wasters' — designated *probable*), and the remainder has *possible* relevance. In the circumstances, a careful scrutiny has been both necessary and worth while. Though the resultant picture is not as clear as one might have hoped, it is within its limits reliable and provides a useful basis for a more general appraisal of 'domestic' metal-working in a settlement of this type.

It has recently been suggested[1] that a distinction between smelting and smithing slag is not possible unless large, complete and distinctive shapes ('cakes', 'buns') are present. While accepting this, we can find nothing in the evidence to suggest smelting. On the other hand, there are strong circumstantial pointers to both iron and bronze working and the extensive use of coal.[2]

Building A.I

A large number of hearths and ash tips spanned the whole of its life and probably included the bowl-shaped oven (A I, 81) which had been made north of the building during Phase A. From A I, 44 (Phase C) came a roughly squared iron plate (AM 580173), obviously worked but probably unfinished. It is embedded in a sandy deposit containing charcoal, different forms of slag and areas rich in hammer scale. Fragments of coal and ? clinker are also present in such a way as to suggest that coal may have been used at least partly as the fuel. Certainly coal[2] was found in layers A I, 28, 31, 35, 38, 39 associated with the building. A small lump of conglomerate from A I, 42 (AM 580145), consisting of sand and copper alloy metal (inferred from X-radiograph) with copious, mineralized green fibre residues, probably indicates bronze working, too, in Phase C.

[1] R. Pleiner. Private communication.
See also R. F. Tylecote, et al., *J. Inst. Metals*, 95 (1967), 235–43, concerning 'iron' slags found recently on (ancient) copper smelting sites.

[2] The coal from this and other Roman sites nearby is to be examined in detail, as part of a separate investigation. The nature and extent of its presence here argues a conveniently local origin, perhaps in the Leeds–Castleford area or elsewhere around the flanks of the Pennines where coal outcrops.

Apart from a small rim fragment of a crucible[1] from A I, 36 (Pottery, no. 405), all the evidence from Phase D is associated with iron working: medium dense, relatively non-porous slag with a reddish, once totally molten surface was found in A I, 39 (AM 580184); and also in A I, 25 (AM 580182) and 38 (AM 580183), both associated with the abandonment of the building. A cut fragment from A I, 31 (AM 580166) probably belongs to this group. A I, 36 also produced a collection of nails (AM 580181) and a fragment of ? brown coal (AM 580181C) that are possibly connected with this activity.

A gritty ash tip was found connected with *Building A.II* (A V, 19), possibly the result of coal burning (cf. G IX, 6). From A XI, 36, in the area of this building, but below it and probably belonging to Period 1, came a conglomerate — comprising sand, mineralized green fibre residue and (from the X-radiograph) a bronze ? ring and various other small fragments, including a tiny stud head (c. 3 mm. diameter) — which probably indicates bronze-worker's refuse.

By contrast with Building A.I, all the evidence from the B trenches pointed to copper alloy working. B V, 31 (Period II B or IV: fort, small ditch) contained a fragment of as-cast bronze (AM 580145), much corroded but with small areas of bright metal showing the typical dendritic structure, and clearly dropped or run-out waste. From the second fort (Period IV) came a stud (fig. 37, no. 5) on to which such waste had splashed; as well as a hollow cylinder (no. 6), and a ring (no. 7) which showed the same dendritic surface pattern — both the latter probably unfinished, or discarded unused. The brooch (no. 17) from a late Roman context probably also belongs in this category.

Only iron-working is indicated by finds in the area of *Building F.I* and related areas in F trenches. From early fourth-century, pre-building levels (F XII, 3; F XIV, 4) came fragments of slaggy material associated with iron objects. They consisted of medium-dense red material (AM 590008, cf. 580184 above), and very porous aggregates of once fully molten 'bubbly' skin (AM 590005), respectively. An iron strip (AM 9998) was found with the former, though no slaggy debris could be seen to adhere to it; an indeterminate object (AM 9999) accompanied the other. Porous slaggy material also came from third- to fourth-century levels in F IX, 7 (AM 590007) and F VIII, 5 (AM 590006). An implement (fig. 43, no. 37) can probably be associated with this activity. The composition given in Table 5 suggests that slaggy material from F XXVII, 3 (AM BRO 93) represents fuel-ash slag; in view of the presence of sodium (possibly in some quantity) this is probably derived from charcoal. Although such fuel slag is not necessarily connected with iron working[2] it is only formed at elevated temperatures such as obtain in forge or furnace. Very similar material from F XXVII, 4, and probably also another slaggy specimen from layer 5 (not examined), can be related to the same context.

Building G.I

Like Building A.I, this also produced a large number of hearths and ash pits in each phase. There was some evidence from G II, 45, which predates the building and must be connected

[1] No investigation of this could be attempted in time as the small fragment could not be found shortly after the drawing had been made.

[2] For a full discussion see *Chew Valley Lake Excavations, 1953–5* (H.M.S.O.), forthcoming.

with the earlier Stores Depot. It consisted of fragments of an indeterminate copper alloy object (AM 600336–7) carrying, in the corrosion products, copious green mineralized fibre remains, charcoal fragments and isolated ? calcined bone. As in many of the other fragments previously described, the very poor state of preservation is consistent with possibly overheated, discarded material, buried in an ('ashy') environment of forge or hearth refuse.

Building G.I produced by far the most consistently convincing metal-working evidence on the site. Viewed as a whole, this evidence at first sight suggests a clear-cut sequence of alternating activities. Phase A seems concerned, like the pre-building operations, with bronze alone; Phase B is completely iron-oriented; Phases C and D revert to bronze. On closer examination it becomes clear, however, that iron and bronze working are always very closely interwoven.

A large hearth of Phase A (G II, 32) produced a number of bronze fragments (AM 600328–30). In the surface deposits on the several objects in group no. 600328 were found isolated tiny fragments of (*iron*) hammer scale, various signs of burning, vesicular materials probably derived from fuel, and green mineralized fibre; associated debris included small fragments of coal, burnt clay and ? shell. AM 600330 — a number of rivets and small fragments — showed similar evidence but in addition a fragment of (once molten) slaggy material was present. Many of these and other fragments of studs and plates, etc., that were found in Building G.I, carried dark organic matter, in places suggesting charred residues of wood or leather to which they had been attached. This may reflect a centralized repair and disposal system dealing with standard harness, belt, box and chest fittings. Other groups of fragments came from G II, 38 (AM 600333) and G II, 36 (AM 600335). Some of the latter were shapeless, light in weight and vesicular in appearance (as 600328), a few others appeared to be the remains of rods — or nail or stud shanks(?) — hollowed out by severe corrosion. A conglomerate of a massive iron lump with variegated debris, also from the hearth (G II, 32; AM 600353), and containing charcoal, coal and chalk fragments and vegetable debris in a slightly ashy context, probably belongs to this group.

The highest density of material occurred in G II, 19, representing Phase B and comprising AM 600338 (copper alloy; all the rest are iron); 600343, 600344–6 (cf. fig. 42, no. 26) and 600356–8. In addition some very similar finds came from related layers above (G II, 18: fig. 43, no. 32) and below (G II, 21: fig. 42, no. 29–30; G II, 25: fig. 43, no. 31, and AM 600350) and the general context appears to justify the consideration of all this material together.

In all there are twelve groups containing some three dozen 'objects' and fragments that include nails, strips, plates and staples. In each case there is some indication or other of 'waste' — some appear to be broken or cut off, others are burnt; all carry traces of charcoal or coal (or both), and nearly all ash, in the surface layers — and the state of preservation is generally very poor (cf. pre-building phase, above). Vegetable and other debris, such as bone and fired clay, is prominent in half the groups, underlining the 'tipped' nature of these deposits.

Specific metal-working evidence is present in three-quarters of the groups. No. 31 carries traces of slag, and there is a substantial fragment of slag associated with no. 29–30; there is slag and bronze on 600343, and both these occur with hammer scale on 600350. Hammer scale is also visible on 600346, whose X-radiograph additionally shows bright radiopaque

specks such as are, in these circumstances, strongly suggestive of bronze filings or shavings,[1] and are seen also on the X-radiographs of 600344, 600356 and 600358.

It is possible that the deposit of very pure and finely divided calcium carbonate found in G II, 22 (AM 9717; see p. 215) also has some connection with these activities. Two different kinds of use suggest themselves. The material is a good scouring or polishing powder. Alternatively, if powdered glue was originally also present (p. 218), the substance might have been used for making simple moulds in investment casting.

Nails from a similarly ashy environment containing charcoal and coal were found in G II, 10 (AM 600351) and G II, 6 (AM 600359) of Phase C to which some fragments of bronze sheet and studs from G II, 13 and 15 also belong. These all show the kind of evidence of heat previously described (viz., charred material attached to the underside, charcoal and in some cases coal, and burnt clay) and two (fig. 38, no. 29 and 28: 600314) additionally carry a 'micro-clinker', indicative of either a fragment of a larger piece of such material, or a tiny hot spot, but in any case the result of elevated temperature. All the fragments are very badly preserved, once again, many being hollowed out, and they have on their surfaces the usual

TABLE 5

ANALYSES OF SLAG AND ASH

(Kindly carried out at the Laboratories of Capper Pass Ltd., by courtesy of Mr P. Wright)

Site Ref.	F XXVII, 3				G IX, 2	G IX, 6
Type	*Chemical*	(%)	*Spectrographic (major constituents only)*			
	Fe_2O_3	7·7	Fe	present	high	present
	SiO_2	62.2	Si	high	present	high
	Al_2O_3	8.1	Al	large trace	trace	large trace
	CaO	4·35	Ca	small quantity	small quantity	present
			Na	present	—	—
	(Total	82.35)				
Interpretation (L.B.: inc. visual appraisal)			charcoal ash slag		iron slag	coal ash

[1] L. Biek, in J. S. Wacher, *Catterick Excavations*, 1959 (forthcoming). See also S. S. Frere, *Verulamium* (forthcoming).

vegetable and other debris associated with a rubbish deposit. A piece of coal was also recovered.

Phase D is represented probably by G II, 3, which produced a lump of copper corrosion products in an earthy concretion with mineralized green fibre clumps, charcoal, ? coal and (below the surface) small bundles of fine white fibre.[1] No metal remains and the core of the lump consists of cavernous malachite, occasionally seen to enclose dark purple or (rarely) fine specular agglomerates of cuprite crystals. The concretion was probably formed by molten copper alloy dropping and solidifying on the usual environmental debris described above, and then corroding into a single vesicular lump.

The thick gritty ash tip, G IX, 6, also belongs to this phase (cf. similar tip in Building A.II: A V, 19). Analysis of a sample (AM 600481: Table 5) suggests that it resulted from coal burning,[2] and the laminated appearance of the tip points to continuous use over an extended period. Two fragments of medium-dense reddish slag (600363) came from the layer below (G IX, 7), and a specimen of heavy iron-rich slag of the *fayalite* type found in a post-destruction level (G IX, 2: Table 5) can probably also be taken with this group.

A similar lump of slag was taken from an early level in G VIII, 8 (*pre-Building G.II*, mid second century). Another isolated find of slag, this time with an iron plate fragment (600349) which showed some of the usual refuse characteristics (charcoal, burnt clay, vegetable debris), was made in G III, 10.

Brough 1937; Building I

Around a hearth in the Period 2 building, more than sixty scraps and clippings of bronze were found together with several pieces of slag and clinker. The hearth should date to the Antonine period at the earliest.

Clearly metal-working industries had a place of importance at Brough. A group of five pigs of lead may also be related to this activity; four were found together at Haven Avenue (fig. 1), just north of the walled area. It may all be connected with ship building or repair yards (as already suggested on p. 26 for the lead) but if this is so at least part of the work must have been concerned very largely with the production and repair of more general metal-studded leatherwork and wooden fittings. It cannot be said whether these industries were purely civilian in character, or were being run by marine or naval detachments. But although no expressly 'military' equipment was prominent it is clearly probable that much, if not all, the production was designed to serve the more domestic needs of the armed forces.

ANIMAL BONES

By R. A. HARCOURT, B.V.M.S., M.R.C.V.S.

Introduction and Methods

The collection comprises less than 200 specimens. These come from several different sites and, in time, are spread over more than 300 years. From this it is evident that any sort of analysis is out of the question and the report must be purely descriptive.

[1] Microscopic examination by G. C. Morgan, A.M. Lab., showed this to be a bast fibre, probably flax.

[2] cf. D. W. Brown in E. Greenfield, *T. Leics. A.H.S.*, XL (1964–5), 38–9.

Proximal and distal widths of long bones are measured across articular surfaces and all measurements are in millimetres. Sex determinations of cattle were made by the calculation of breadth/length indices (Howard 1964)[1] and heights by the method of Boessneck (1956).[2]

Description of Material

The bones were well preserved and the species represented were cattle, sheep, pig, horse and dog.

The measurements of the cattle long bones are given in Table 6 and show them to have been from animals similar in height to Chillingham cattle.

TABLE 6

Measurements of Cattle Long Bones

t.l.	*p.w.*	*m.s.d.*	*d.w.*	*100 m.s.d./t.l.*	*100 d.w./t.l.*	*sex*	*Height* *cms.*	*ins.*
Metacarpals								
188	49	—	54	—	28.6	♂	120	47.5
195	61	34	63	17.4	32.3	♂	125	49.5
Metatarsals								
214	47	29	58	13.5	27.1	♂	122	48.3
215	42	24	49	11.2	22.8	♀	121	47.9
Radius								
275	68	36	57	—	—	—	—	—
Humerus								
235	—	33	64	—	—	—	—	—

t.l. = total length. p.w. = proximal width. m.s.d. = mid shaft diameter. d.w. = distal width. ♂ = Steer. ♀ = Cow.

The cattle remains included many waste bones, portions of skull, jaws, metapodials and phalanges. This suggests that the animals were brought in on the hoof, and slaughtered, rather than as already dressed carcases.

TABLE 7

Sheep Long Bones

	t.l.	*p.w.*	*m.s.d.*	*d.w.*
Radius	145	25	14	21
Metacarpal	113	19	12	20
	115[3]	19	17	21
Tibia	214	—	15	22
Metatarsal	119	16	10	18
	131	17	11	21

[1] Margaret M. Howard, 1964, in A. C. Mourant and F. E. Zeuner (eds.) 'Man and Cattle'; a Symposium on Domestication, *Brit. Anthrop. Inst.*, p. 91.

[2] J. Boessneck, 1956, cited by H. Baas, *1966 Doctoral Thesis* (Munich), p. 61.

[3] The relative stoutness of this specimen suggests that it may be from a goat.

These are very similar to those of the Soay and suggest long-limbed slender animals.

There were only two specimens of horse, a complete radius of 333 mm. and a humerus of 257 mm.; both these would have come from ponies of less than 13 hands.

The few pig remains do not merit special comment.

The only specimen of dog was a slightly damaged skull, the dimensions of which are shown in Table 8, compared with those of a beagle in the writer's private collection.

TABLE 8

Dimensions of Dog Skull

I	III	IV	X	XI	XIII	XIV	XV	M_1	
153	71	86	52	52	114	44	59	20 × 8	Brough
160	76	88	50	59	120	45	68	19.5 × 7.3	Beagle — 67.4

I	Occipital protuberance to alveolare.
III	Posterior junction of nasals to alveolare.
IV	Bizygomatic breadth.
X	Greatest breadth of palate at junction of PM^4 and M^1.
XI	Maxillary tooth row.
XIII	Condyle — Infradentale.
XIV	Vertical Height of the coronoid process.
XV	Mandibular tooth row.
M_1	Lower first molar.

Dogs in Roman times varied very considerably, ranging from the size of a Jack Russell terrier to that of a big male alsatian (Harcourt; *forthcoming*). The very small ones must have been house pets and the very large possibly hunting or guard dogs. The functions and uses of those in the middle range must remain conjectural.

HUMAN REMAINS

By Rosemary Powers and Don Brothwell

British Museum (Natural History)

1958 excavations (see also Table 9 and Fig. 89):

There are four skeletons of birth size or younger, as follows:

A I, 8	Baby.*
Skull:	most of the skull and crowns of several teeth. Vault fragmentary.

* The term 'baby' is here used to include 7- and 8-month foetuses, for there is no way of determining whether these had in fact, been born prematurely. B II, 29 was undoubtedly a foetus, of 5 to 6 months intra-uterine growth, and incapable of survival. The others were all considerably larger, and calcification of the tooth germs should have begun in them providing the most accurate age indicator possible, but unfortunately they were only found in G V, 16, A I, 8, and B II, 21. Of these, B II, 21 alone shows a developmental age corresponding to birth (as shown on the modern charts). G V, 16, and A I, 8 look nearer 8 months. The latter is the smaller of the two, similar in size to two from F IX, 4, so presumably these were between 7 and 8 months with the rest spread in age between them and full birth development. The largest baby of the series, F X, 10, may have survived for a few weeks. It is too incomplete to measure.

TABLE 9

BROUGH. *Measurements of infant skeletons* (1958)

Maximum length of long bone shafts, their maximum breadth at mid-shaft, and other measurements, all in millimetres.

		A I, 8	A III, 13	B II, 29	B II, 21
Femur	length	68	—	52.5	78
	breadth	6.5	—	5	7
Tibia	length	61	69+	46	68
	breadth	6	7	5	7
Fibula	length	58	—	44	65.5
	breadth	3	—	3	4.5
Humerus	length	62	—	48	69
	breadth	5.5	6	4.5	6.7
Ulna	length	56.5	57+	44	62
	breadth	5	4.5	3	5.5
Radius	length	49	—	40	55
	breadth	4	4	3	5
Clavicle	length	44	38	34	45
	breadth	3.5	3.5	2.4	3
Iliac	height	28	—	20.5	32
	breadth	33.5	—	23	37
Mandibular ramus	length	46	—	38	48
Ex-occipital (condylar part)	length	25	—	—	27
Malar	height	17.5	—	—	18
Special remarks		Foetus *c.* 8 months		Foetus *c.* 5–6 months	

Skeleton: Vertebral bodies and half-arches, ribs, scapulae, clavicles, pelvis (lacking one ishium), all main long bones.
Associated: 2 potsherds and 3 fragments of animal bone.

A III, 13 Baby.
Skull: one mandibular fragment only.
Skeleton: Ribs, vertebral half-arches and bodies, scapulae, clavicles, upper halves of humeri. One each of radii, ulnae, tibiae.
Associated: 3 fragments of animal bone.

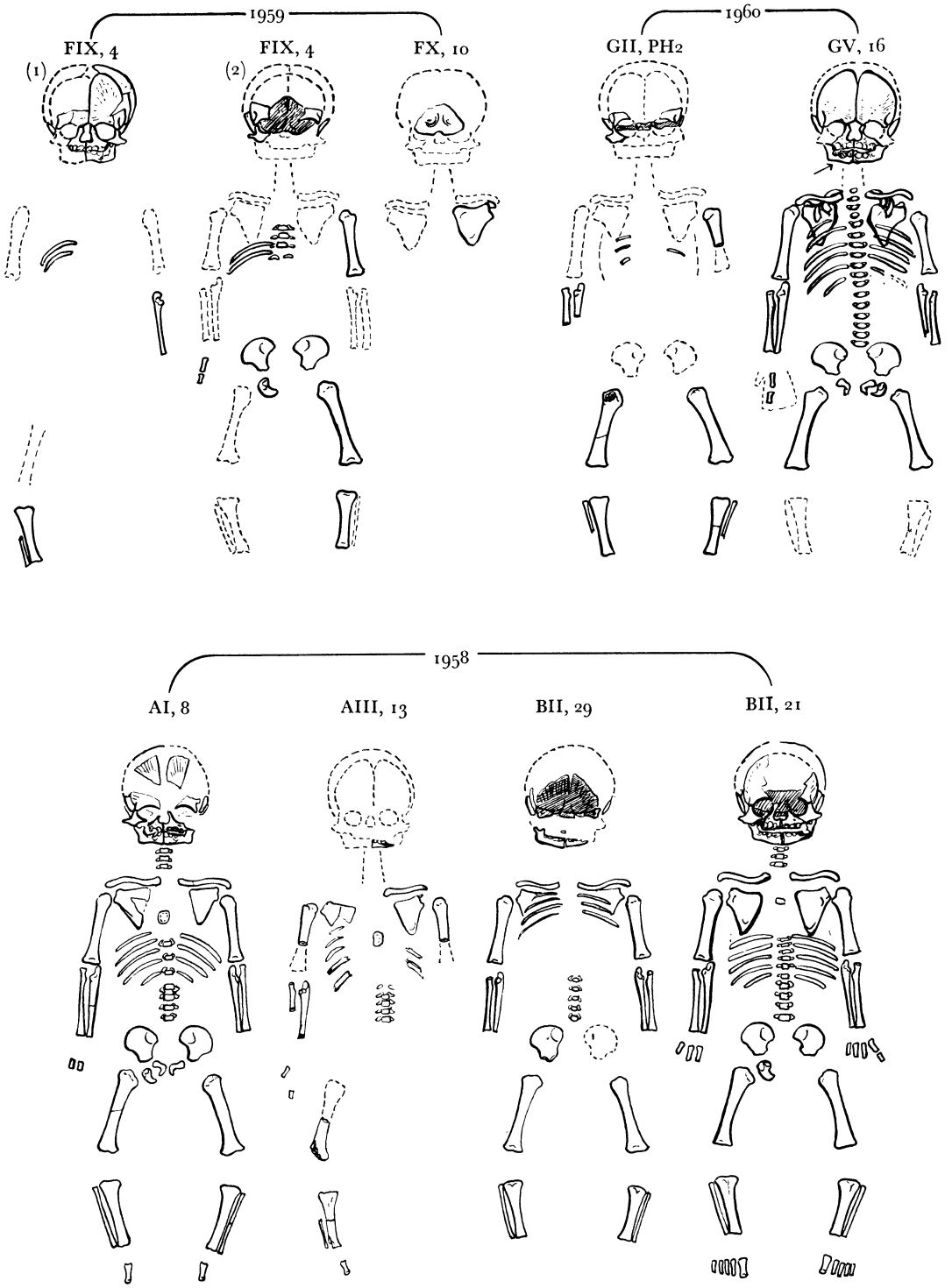


FIG. 89. Human skeletal remains

TABLE 10

BROUGH. *Measurements of infant skeletons* (1959–60)

Maximum length of long bone shafts, their maximum breadth at mid-shaft and other measurements, all in millimetres.

		G II, P.H. 2	G V, 16	F X, 10	F IX, 4; 1	F IX, 4; 2
Femur	length	75	76	—	—	70
	breadth	6.5	7	—	—	6
Tibia	length	66	—	—	67	60
	breadth	5	—	—	6	7
Fibula	length	—	—	—	—	—
	breadth	3.5	—	—	—	—
Humerus	length	—	6.5	—	—	59
	breadth	5	5	—	—	6
Ulna	length	—	61	—	55.5	—
	breadth	3	3.5	—	4	—
Radius	length	—	52	—	—	—
	breadth	3	4	—	—	—
Clavicle	length	—	45.5	—	—	—
	breadth	—	3.5	—	—	—
Iliac	height	—	32	—	—	30
	breadth	—	36	—	—	32.5
Mandibular ramus	length	—	48.5	—	51	—
*Ex-occipital (condylar part)	length	26	25	—	—	—
Malar	height	18	—	—	20	17
Special remarks			Second to largest	Largest		Smallest

* This measurement being the maximum length of the ex-occipital condylar segment before union with the other occipital segments.

B II, 29 Foetus.
Skull: fragments including maxillae, half mandible, occipital squama, petrous and squamous parts of temporal.
Skeleton: ribs, clavicles, scapulae, some half-arches and centra of vertebrae, one ilium, all main long bones.

B II, 21	Baby.
Skull:	most of the skull is present, though fragmentary.
Skeleton:	ribs, clavicles, scapulae, ilia, all main long bones.
Associated:	4 fragments of animal bone.

1959 and 1960 excavations (Fig. 89, Table 10):

There are five skeletons of infants, all about birth size, as follows:

F IX, 4	Skeleton of baby 1.
Skull:	parietal fragments, maxillae, left half of mandible, malar bone.
Skeleton:	ribs, left ulna, right tibia.
F IX, 4	Skeleton of baby 2.
Skull:	most of the skull vault, sphenoid wing and right malar bone.
Skeleton:	both ilia, one ishium, some vertebrae and ribs, right femur, tibia and humerus. This infant is the smallest of the five. A tibia belonging to baby 1 was found with it.
F X, 10	Skeleton of baby.
Skull:	occipital and other skull fragments, and left scapula.
G II, P.H. 2	Baby. Skull base and parts of vault. Tibiae, femora, fragments of fibulae, proximal ends of radius, ulna and humerus and rib fragments.
G V, 16	Baby.
Skull:	frontals, jaws and skull base but not the parietals. The skeleton is almost complete except for the tibiae, fibulae and feet.

Pseudo-pathology

Upon general examination, the only apparent pathology was noted in the mandibular region of the baby G V, 16. At the base of the crypts for the lower right milk molars was a puzzling irregular mesh of vessel-like structures. These were of variable thickness, but all were under about 1 mm. in diameter. In colour, they were creamy brown, and in general appearance suggested calcified tissue. However, a pathological explanation for these anomalies, restricted to the molar crypts of this young child, could not be found. Moreover, the specimen was submitted for examination to Professor A. E. W. Miles of the Department of Oral Pathology, London Hospital Medical College, who substantiated our own suspicions that these orally-placed structures were most unlikely to represent changes which had occurred at an ante-mortem date. A sample of this thin tubular material was then submitted to the Department of Mineralogy at the British Museum (Natural History), in order to ascertain its composition more precisely. The determination (X-ray analysis number 13426) kindly undertaken by members of the research staff, indicated that the tubes were mainly composed of quartz, with only a small percentage of calcite in addition. In view of this important evidence, it therefore seems most unlikely that these crypt structures are the result of oral disease, but instead have formed as a result of special post-mortem conditions existing in the region of this skeleton.

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