Middle Saxon Palaces at Northampton

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FRONTISPIECE: *Trench AA. The Phase 1 timber hall from the east with St Peter's Church in the background. The excavators are standing at the corners of the main modules of the hall.*

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INTRODUCTION

by John H Williams and Michael Shaw
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This volume deals with the successive middle Saxon timber and stone palaces and associated structural remains excavated to the east of St Peter's Church, Northampton, between 1980 and 1982. The discovery of this complex, so far unique in English archaeology, was the culmination of a decade's investigation into the origins and early development of the Anglo-Saxon and medieval town of Northampton. The programme of work, undertaken by the archaeological unit of Northampton Development Corporation, with financial support from the Department of the Environment, has demonstrated that it is possible to formulate and execute a research programme of excavation within the constraints of 'rescue archaeology'.

In 1973-4, as one of the first excavations undertaken by the unit within Northampton, a large area on both sides of St Peter's Street was investigated (Williams J H 1979). A detailed sequence of development was recorded for the whole of the medieval period for the properties fronting the street. There was also, however, and probably more importantly, extensive structural and artefactual evidence for the late Saxon period and three mechanical mortar mixers and other remains belonging to the middle Saxon period were excavated. Large scale redevelopment was proposed for the area around St Peter's which lies in what was almost certainly the south-west quadrant of the late Saxon town (*cf* Lee 1954; Williams 1982a, 9, 21-8) and which was now found to contain intriguing remains of middle Saxon settlement. A policy decision was made to excavate a broad swathe across this early nucleus of settlement in order to discover as much as possible about Saxon Northampton — to investigate the overall layout and 'dynamics' of the settlement rather than look merely at the chronological sequence within a single restricted site.

Excavations were undertaken, as circumstances and finances permitted, in Horseshoe Street in 1973 (as yet unpublished), Chalk Lane in 1975-8 (Williams and Shaw 1981), Marefair in 1977 (Williams F 1979), Gregory Street in 1978 (Yates forthcoming), Black Lion Hill in 1982 (Shaw forthcoming a) and the Green in 1983 (Shaw forthcoming b) as well as further investigations of the area immediately to the north of the 1973-4 excavations (the present volume).

The work in 1973-4 had been commenced in the belief that redevelopment was imminent. With the discovery and interpretation of the three Saxon mortar mixers (Williams J H 1979, 118-34, 138-40) two trial trenches were cut by machine at the end of the excavation programme immediately to the east of St Peter's Church to test whether the mortar could have been used for a precursor of the present church. Mortar similar to that found in the mixers was discovered and as a result of delays in the development programme it became possible in 1976 to open up a trench (N) to the east of the church. The east end of a stone building, identified as an early church, was uncovered as well as remains of earlier timber buildings. Further work was possible in 1980-1 (trenches V-Z) when the foundations (V68) and robber trench (W14) of a second middle Saxon stone building and traces of additional earlier timber buildings were located. Excavations were undertaken in 1982 (trench AA) to define the extent of the stone building. Initially an area *c.* 20m^2 was opened up but the excavations had to be extended eastwards twice before the complete plan of the building was revealed. Beneath the stone building traces of a large timber hall were uncovered.

The main part of this report concentrates on the Saxon structures and artefacts. The evidence for the medieval and later periods is summarised in the printed part of the volume but full layer lists, more extensive discussion of the pottery and catalogues of the other finds are contained in the microfiche.

ACKNOWLEDGEMENTS

The excavations were undertaken by the Archaeological Unit of Northampton Development Corporation with financial support from the Department of the Environment. We are most grateful to Frincon Holdings, the Friends Provident Life Office and Northampton Borough Council for access to the site and cooperation with the work. The excavations were directed by John H Williams and Michael Shaw. C Farwell, D Farwell, A Snell and S Parry acted as site supervisors during the excavation and C Farwell and D Farwell undertook much of the basic post-excavation work. Further post-excavation work was done by S Hardy. The drawings were prepared for publication by K Connor, H Lovett and I Lovett and much help in photographic matters was given by D Jardine. We are also grateful to all those who assisted in whatever way throughout the excavation and post-excavation processes. Thanks must also be recorded to staff and members of Northampton Development Corporation for help, support and encouragement not only during this project but over the years. We are grateful to P V Addyman and R Hall for reading sections of the report in draft.

THE SITE

THE EXCAVATION

by John H Williams, Michael Shaw, Christine Farwell and David Farwell

The Main Report, the Microfiche and the Archive

The information in this report is divided between printed text and microfiche with the main discussion appearing in 'hard copy' and back-up information on microfiche. For detailed analysis of the site both reports should be used. They are totally integrated and extensive cross referencing of all aspects of the site should allow easy re-examination of the stratigraphy and reconstruction of the finds groups.

The layer list contained in the microfiche is fundamental in reconstructing finds groups. Details of layer combinations are provided and all finds are listed by layer apart from the pottery and animal bone, which are organised separately by phase and layer order and phase order respectively. When layers have been combined finds are listed under the primary number of the combination.

Disturbed areas are shown on plan by means of a light tint. Unexcavated areas are indicated by the symbol ▲▽.

The full excavation archive including all finds and site records will be deposited in the Northamptonshire Archaeological Archive located within Northampton Museum.

Northampton's Position

Fig 1

Excavation Strategy

Fig 4

The areas which were investigated were situated midway between Marefair and St Peter's Street and comprised the yards and garden areas of medieval and later properties fronting on to the two streets. The western part of the site was excavated as a series of small trenches (V-Z) ranging in size from 16-130m^2. The method was dictated by the small area then available for soil disposal and the need to maintain access through part of the site. The results from trench N excavated in 1976 (Williams J H 1979, 9, 110-7) are not described here again in detail but are summarised and correlations between trench N deposits and those in trenches V-Z are noted in the trench V-Z layer lists contained in fiche. Trench AA was excavated as a single large area.

On the basis of experience during the 1973-4 excavations considerable disturbance of the archaeological strata, due primarily to medieval pit digging, could be expected; little meaningful stratigraphy after the Norman Conquest was likely to have survived and earlier deposits would only remain on the peaks between pits; this initial assessment was proved correct in the subsequent excavations. It was decided, therefore, for trenches V-Z, that the medieval levels should be summarily treated in order that the largest area of Saxon occupation deposits could be examined within the time and with the financial and other resources available. The overburden was removed by machine down to the top of the medieval levels which were then dealt with as quickly as possible. These deposits were recorded and studied and can be divided into broad phases; what has been lost are the finer details of the stratification. With the experience of trenches V-Z, as well as

Excavated Sites in Northampton

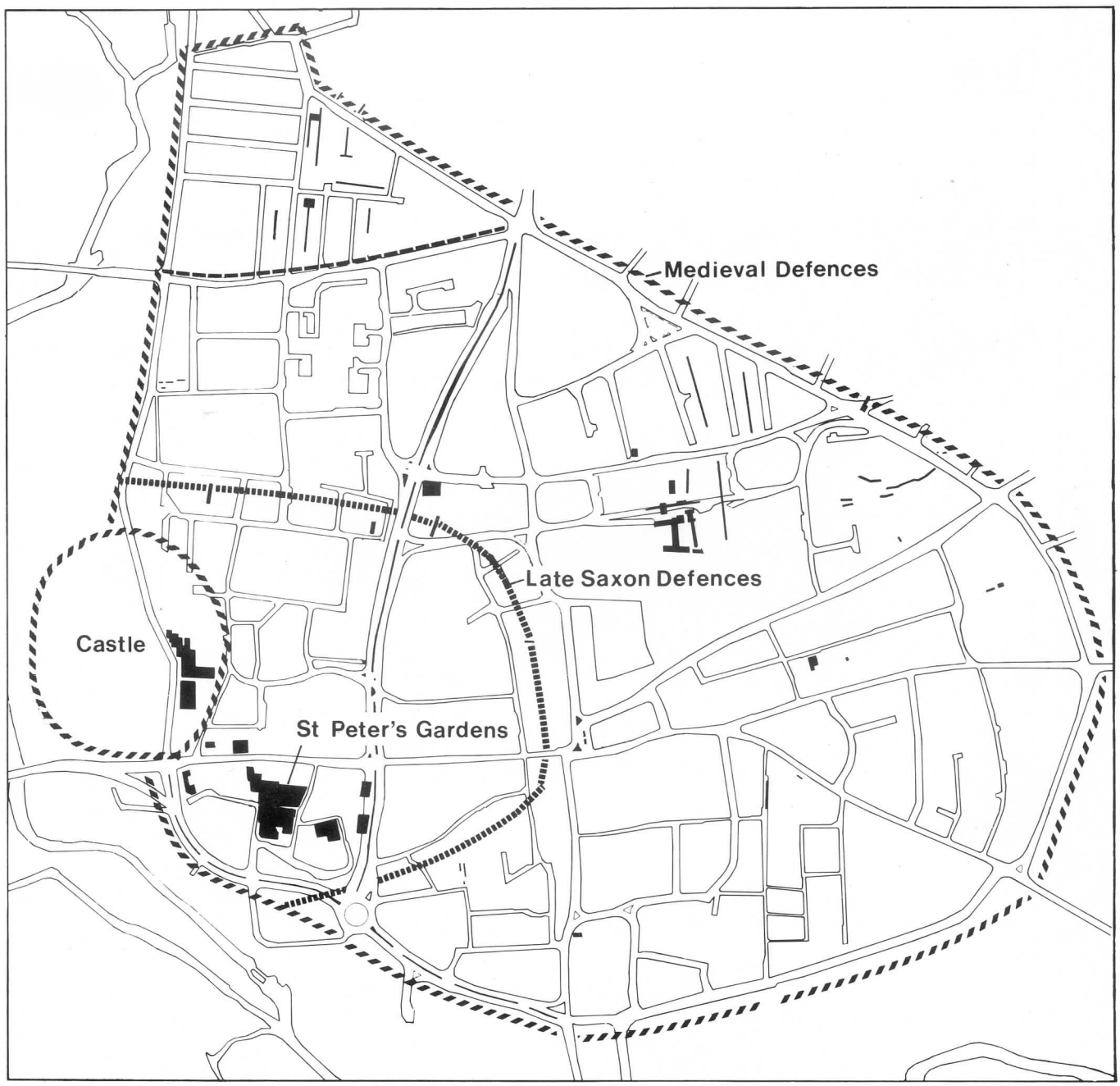


Fig 2

that of the 1973-4 excavations, a more drastic approach was adopted for trench AA and the site was stripped by machine to within a few centimetres of the late Saxon ground surface. Here the only medieval features examined were the pits, foundations and other features which were cut down below the late Saxon ground surface. In trenches V-Z and AA medieval pit fills were speedily removed; the deeper pits on the site were not fully excavated but generally taken down to a depth of between 0.5 and 1m below the late Saxon ground surface, but locally deeper. This ensured that any earlier stratigraphy surviving on the peaks between pits, whether general deposits or cut features such as postholes and foundation trenches, remained uncontaminated. The excavation policy means that the date assigned to the deeper pits and other features is based only on the artefacts from the upper fills. In practice, however, given the broad phasing adopted and the short life of most of the pits, only the dating of wells is likely to have been affected; they might be expected to have had a long life. Pre-Conquest levels were excavated in detail and an attempt was made to dissect meticulously and record all deposits relating to the middle Saxon period.

Phasing

The deposits on the site have been divided into four phases, the latest of which has been further divided. Phases 1 and 2 have been defined where possible by the stratigraphical relationship of features to:

a) Phase 1: the large middle Saxon timber hall, although earlier features are also included in this phase and

b) Phase 2: the middle Saxon stone hall and related deposits.

Some deposits have been assigned to these as opposed to later phases largely on the basis of associated artefacts. Finds in general and pottery in particular played a large part in the identification and separation out of the later phases since many of the features assigned to these phases were isolated stratigraphically from contemporary deposits in the initial site stripping. Some useful stratigraphy survived, however, especially for the Phase 3 levels. Phase 4 levels comprised mainly rubbish pits, probably containing much residual

Northampton in 1610 by John Speed

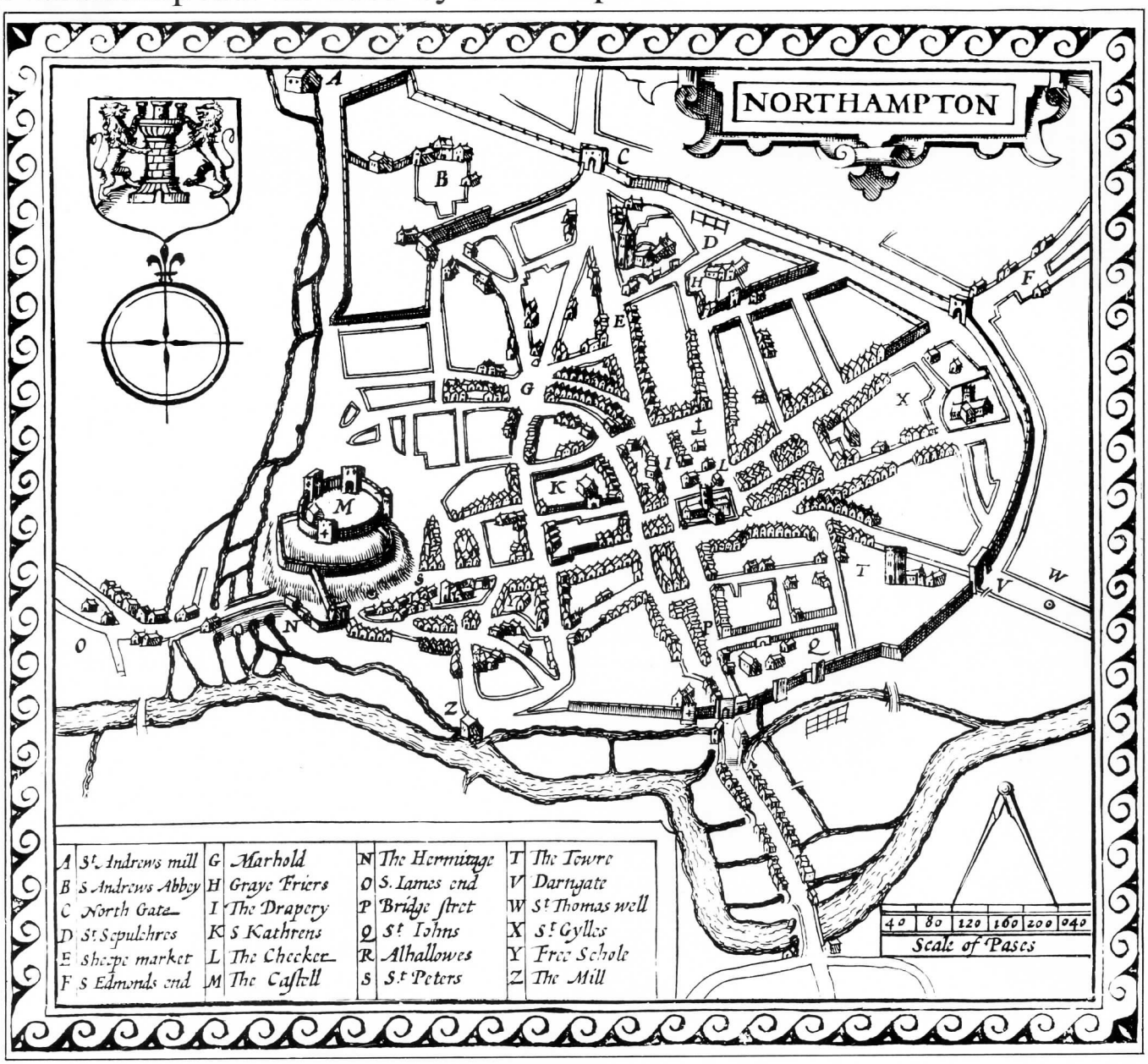


Fig 3

material, but the detailed examination of these deposits could not be justified as a cost effective exercise.

The phases into which the site was divided can be summarised as:

Phase 1:	Deposits predating the stone buildings of Phase 2.	
Phase 2:	The middle Saxon stone building and associated features.	
Phase 3:	Late Saxon *c.* 875-1100.	
Phase 4A:	Medieval	i) 1100-1400
		ii) 1400-1500
4B:	Post-medieval	i) 1500-1700
		ii) 1700-Present

The divisions of Phase 4 are based on pottery evidence. Phase 4Ai starts when pottery type T2 (medieval shelly wares) replaces T1 (St Neots-type ware) as the main fabric, at a date generally thought to be around 1100. Phase 4Aii represents the stage when W18 (Potterspury-type ware) starts to appear in quantity and replaces T2 as the dominant fabric (though the problems of residuality may mask this to some extent). Phase 4Bi sees the introduction of post-medieval fabrics such as Cistercian type ware (X2a), Midland Black ware (X2b) and stone wares. In Phase 4Bii late post-medieval, often factory produced, wares (Z fabrics) start to appear.

Doubtful features are preceded on the layer list by a question mark and are marked on plan with a dashed line. Where a feature definitely exists but its attribution to a particular category is doubtful a question mark is put after the feature. Features are only shown on plans of those phases to which they relate or probably relate.

Problems of Excavation in Phases 1 and 2

As with other sites in the west of Northampton considerable difficulties were encountered with the identification of early features. The underlying geology of the site comprised weathered beds of the Northampton Sands Ironstone which

Site Location

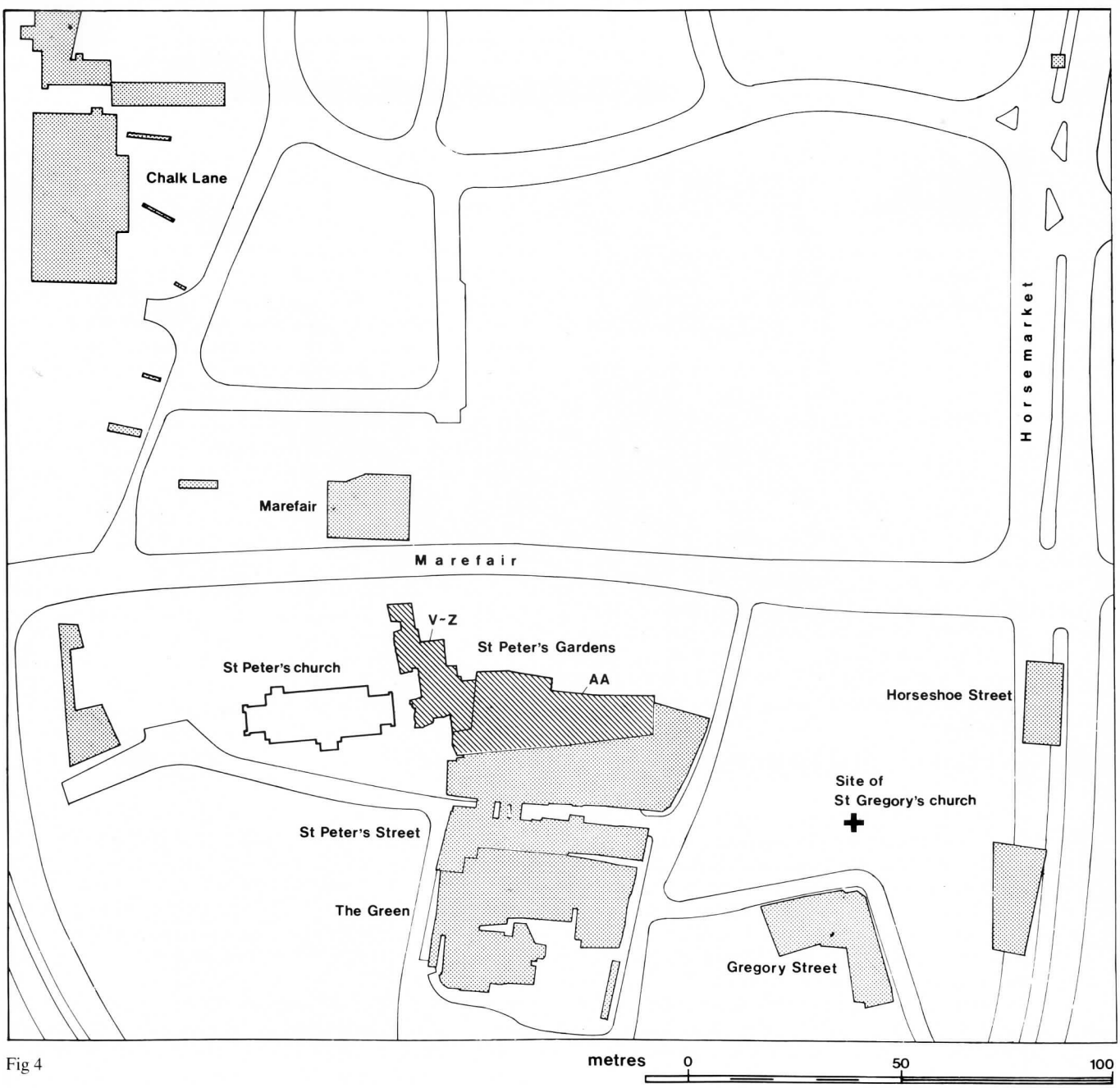


Fig 4

were fragmented, shaley and much disturbed and contained patches of sand. Above these was a strong brown sandy loam with some ironstone fragments, generally *c.* 0.2m thick but with a maximum thickness of *c.* 0.3m (V87 and AA233). This deposit, which possibly represents a buried soil, is found over the whole of the area around St Peter's and is really of subsoil type, but it is difficult to accept the layer as an actual subsoil and it has to be considered whether a process or processes such as mineralisation, reduction or leaching has or have chemically or physically altered the layer which was originally a topsoil (*cf* Williams and Shaw 1981, 95). Saxon and earlier artefacts were found in the layer but its top was almost certainly the middle Saxon ground surface. It was from this level that probably all the Phase 1 foundation trenches and postholes were cut, even though some postholes were only recognised at the base of this layer, cutting into natural. The process or processes discussed above has or have tended to affect cut features of middle Saxon date and earlier as well as their backgrounds, thereby blurring the edges of features which in most cases showed up as extremely subtle variations of texture and colour when the surface was damp and frequently sections were necessary for positive identification of features. The natural variation in the subsoil unfortunately aggravated the problem.

Phase 1 (up to *c.* 820)

Pre-Saxon Deposits

Figs 38, 49

A prehistoric presence is attested in the area of the site by 158 worked flints belonging to the mesolithic to early Bronze Age periods (p. 71) and a small Bronze Age collared urn, possibly an accessory vessel from a cremation burial (p. 46). The flints should be considered with the 176 found during the 1973-6 excavations (Bamford 1979a). The group as a whole is concentrated at the west of both sites in the area of the ditch excavated in 1973 (Williams J H 1979, 12-3). The ditch perhaps represents the quarry to a barrow or other ditched monument of the 2nd millennium BC. The flints and urn increase further the body of direct and indirect evidence for prehistoric occupation within and around Northampton on either side of the Nene valley (*cf* RCHM forthcoming).

Thirty four Roman sherds were also recovered as well as fragments of two glass vessels (GL1-2) and one coin (Nu1), and Roman tile was used in the construction of the middle Saxon stone hall (p. 70). No features definitely of Roman date were excavated but the finds, taken with similar material of Roman date from the immediate vicinity (*cf* Williams J H 1979, 139; RCHM forthcoming), suggest some form of Roman activity in the area. It has been suggested that Marefair immediately to the north may be on the line of the Roman road between Duston and Irchester (Williams J H 1979, 4) and, if so, the presence of Roman material may in some way relate to it.

Area AA: Saxon Features Predating the Main Timber Hall.

Fig 38

An early Saxon sunken-featured building is perhaps represented by AA441. A horizontal charcoal layer mixed with a dark yellowish clay loam was overlaid by dark brown loamy sand. These deposits, *c.* 0.45m thick in total, had been cut away on all sides; they clearly predated Phase 2 and almost certainly the Phase 1 large timber hall. It seems most probable that they were the deposits from the centre of a sunken-featured building. Early/middle Saxon pottery was recovered and a radiocarbon date of AD 470 ± 70 was obtained from the basal charcoal layers (HAR-5557; note: radiocarbon 'AD dates' quoted in this report utilize the Stuiver calibration curve — see below p. 64).

AA496, 497, 766.2 and 767 perhaps represent the foundation trenches of a timber building predating the main timber hall, as does AA688. A number of postholes and other features found within the area of the main timber hall probably also predate it.

Area AA: The Main Timber Hall and Associated Deposits.

Figs 5-7, 14-15, 38; Frontispiece; Pls 1-3

A large timber hall measuring *c.* 29.7 by 8.6m was located. It comprised a main central section with smaller annexes at each end and was constructed with vertical posts set into a substantial continuous foundation trench. The main hall was situated in the back garden and yard area of the medieval properties which fronted on to St Peter's Street to the south (see Williams J H 1979) and Marefair to the north. Consequently there was considerable disturbance from pits of late Saxon date onwards and the actual middle Saxon ground surface only survived over a limited part of the site. The contour survey of the area within the hall (Fig 5; *cf* also Fig 38), produced after the excavation of the construction trenches, clearly demonstrates this and it is only because of the massive nature of the building, with its deeply cut trenches, that a clear plan is possible.

After the removal of the later pits and remains of the stone hall the surviving ground surface and the sides of excavated pits were carefully cleaned for evidence of timber structures. These were revealed as very slight textural or colour variations in the weathered ironstone subsoil and the overlying strong brown sandy loam (AA233). The main construction trenches were first recognised to the north-west and south-west and subsequently traced eastwards. Meticulous cleaning of the surface of the trench while it was kept damp enabled many post positions to be identified through faint differences of texture, although in the east wall of the east annexe only three posts could be located. Six postholes (465.6, .8; 664.1, .2, .3, .6) showed up as voids or partial voids. No evidence was found for stakeholes nor were there any other structural indications, such as the presence of daub, as to the method of walling between the main posts.

The definite attribution of other features to Phase 1 was considerably more difficult than might first be apparent. Phase 2 is defined as the stone hall and associated remains with Phase 1 primarily the large timber hall. Many other features, however, particulary postholes, could be assigned stratigraphically to either phase. At the west end of the stone building a series of make-up and floor levels survived which sealed and thus post-dated some earlier timber features (see below) but over the east part of the site medieval and later disturbance had eroded these levels. Features were generally cut either through the bottom sandy loam level AA233, interpreted as the middle Saxon topsoil or indeed only through the underlying subsoil. Features overlaid by the wall of the stone hall or its robber trench or the 'general' levels associated with Phase 2 (*cf* Figs 41, (M) 1-5) can be clearly allocated to Phase 1.

A further approach to the problem of phasing was to consider the presence of mortar within postholes. The postholes in the area of the main timber and stone halls showed that mortar flecking was widespread and possibly introduced by animal, root or similar action. The presence of larger lumps of mortar is more difficult to explain. Such material was found, following the walls in a clockwise direction, in AA456, 910, 974, 975, 989, 961, 979, 940, 941, 927, 942, 943, 956. The position of many of these postholes suggests possible scaffolding positions associated with the construction of the stone building but AA927 and 942 clearly do not fall into this category, being overlaid by the wall and its robber and so

PLATE 1: *Trench AA. The Phase 1 timber hall from the east. See also the frontispiece.*

Phase 1 Hall

Contour Survey after Excavation

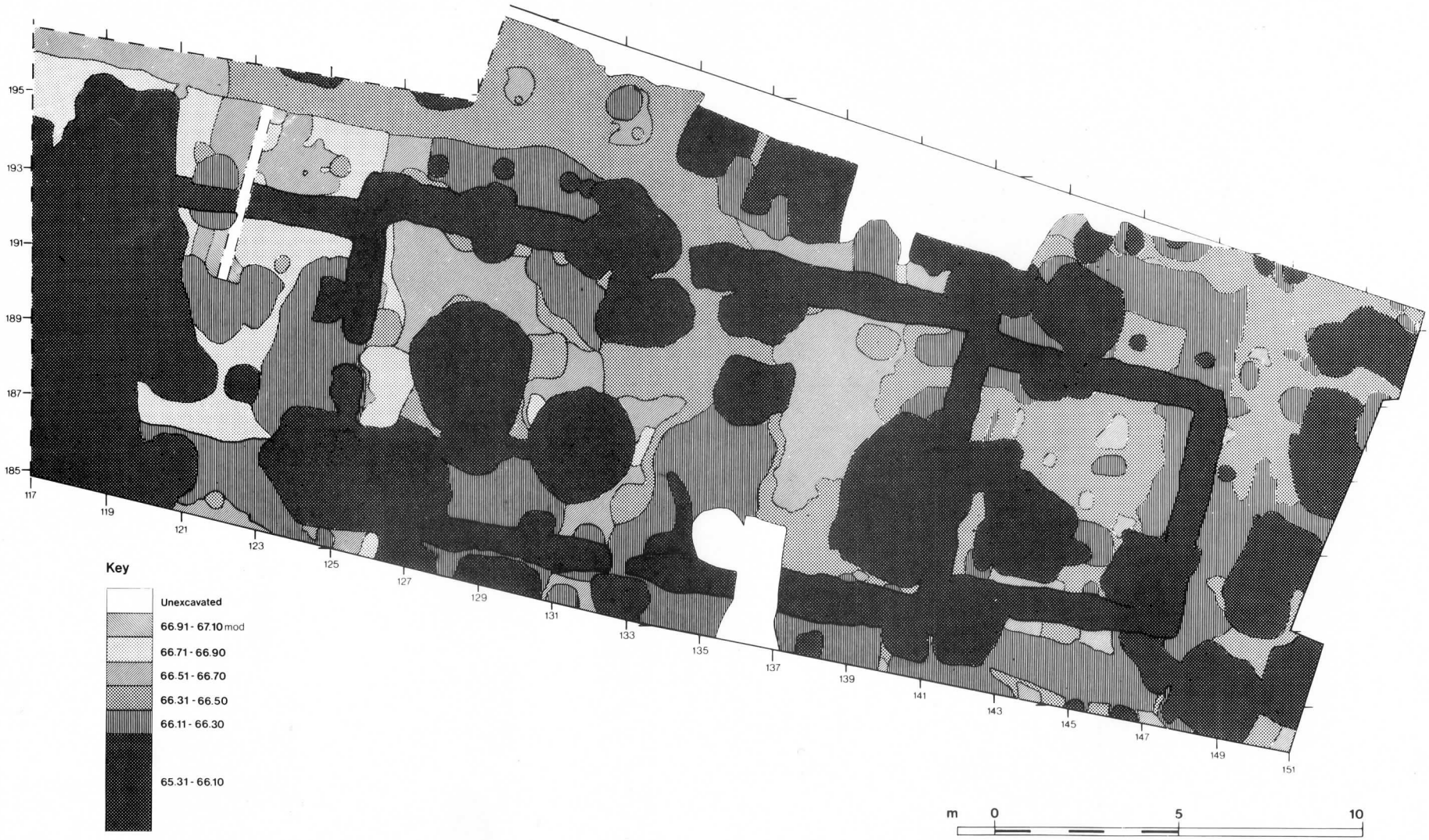


Fig 5

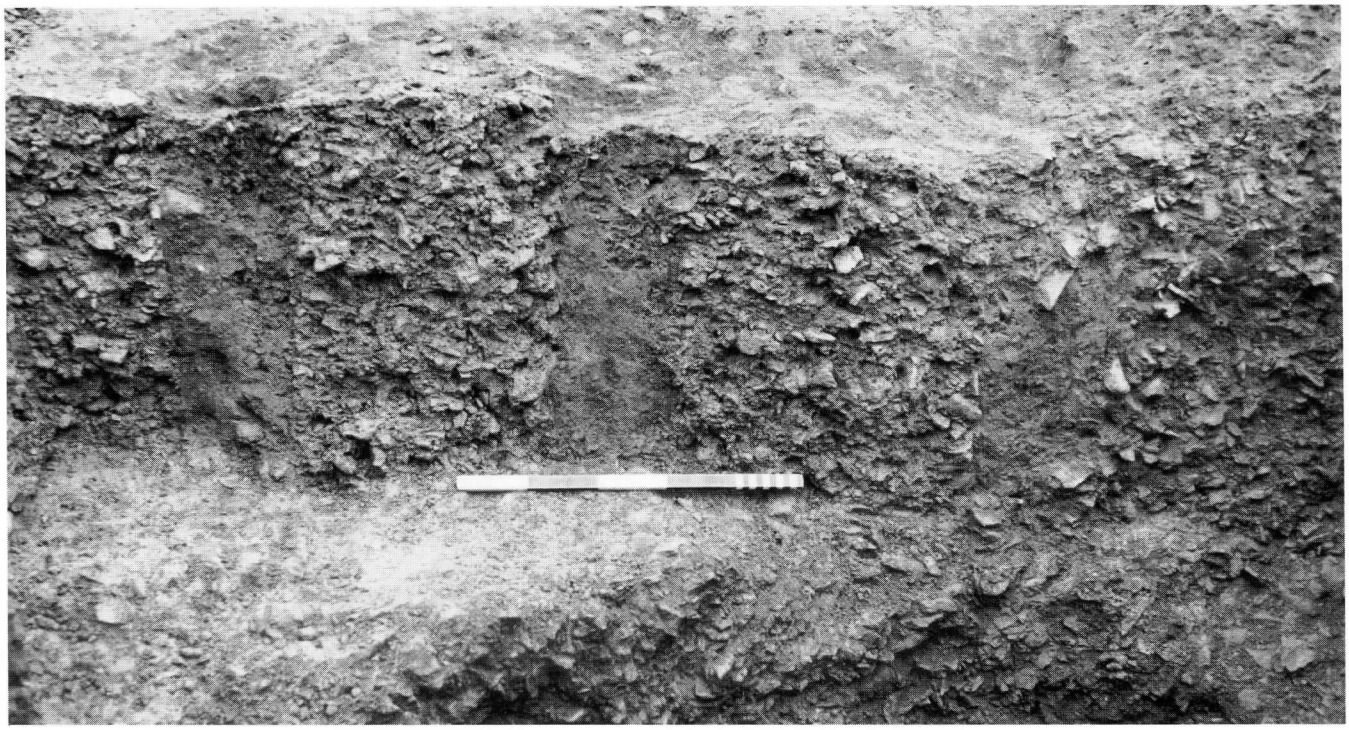


PLATE 2: *Trench AA. The Phase 1 timber hall; longitudinal section of part of foundation trench AA479, showing, from left to right, post-pipes AA479.15, 479.14 and 479.13.*

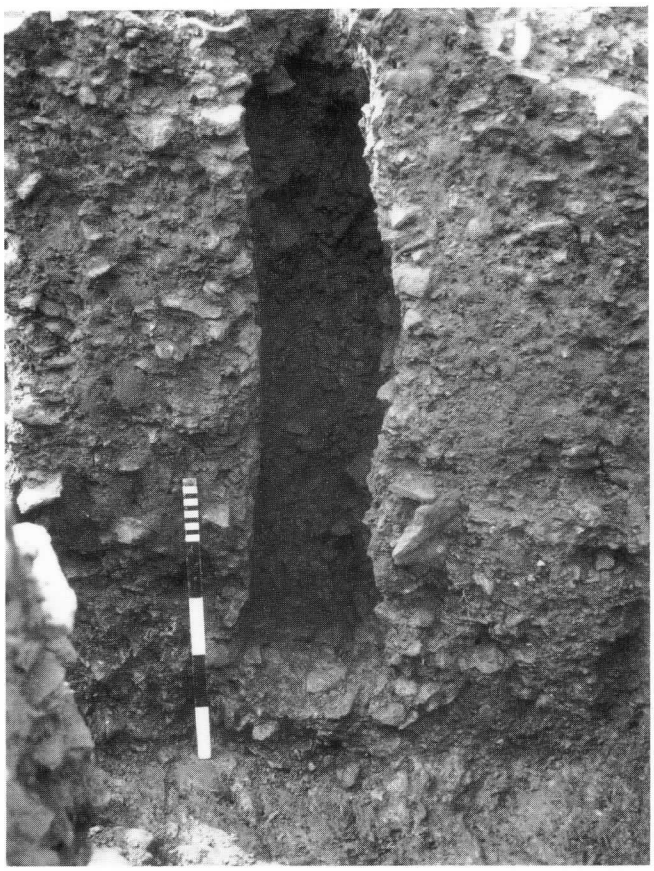


PLATE 3: *Trench AA. The Phase 1 timber hall; section through post-pipe AA465.8 which survived as a void.*

assignable to Phase 1. It is possible that after the extraction of at least some of Phase 1 posts prior to the construction of Phase 2 the voids left by the removal of the posts remained open and a ready receptacle for waste mortar from the Phase 2 construction deposits.

The postholes were carefully examined for evidence of post-pipes but these were only identified in five cases (AA940, 941, 956, 972, 973). The outlines of the pipes, though rather indistinct, suggested that the posts were set vertically.

The postholes (excluding some fairly insignificant ones within the wall lines of the buildings of both phases) seem to have been concentrated in a linear fashion just outside the timber hall. While it can be argued that those outside the east and south walls lie in a similar relationship to the stone hall because of the coincidence of those walls in both phases, those to the north (excepting AA456) appear to relate to the north wall of the timber rather than the stone hall. The general disposition of the posts suggests that most were for shoring purposes but apart from in the case of AA972 and 973 to the north and 925 and 927 to the south of the east annexe (see below) no regular pattern emerges.

All postholes and possible postholes belonging to or probably belonging to Phase 1 are included on the Phase 1 plan. They are not repeated on the Phase 2 plan although it is perhaps possible that some do belong to Phase 2. Within the construction trench of the large timber hall, although the individual post positions could be fairly clearly distinguished in the vertical sections, definition of their exact shape was much more difficult in plan. Indeed in a few places the evidence of the plans and sections is not totally consistent but an attempt has been made to indicate areas of uncertainty on the published drawings through the use of a dashed line. Generally, and with the obvious exception of AA479.17, the posts appeared to have been squarish, but it is impossible to say precisely how well squared they were. Analysis of the dimensions of the clearer postholes suggests that the posts were normally just under 0.20m across and almost always in the range 0.17-0.23m.

The bottom of the trench maintained a basically constant level, not normally varying by more than 0.2m. The trench of the north-west corner of the main hall survived to a maximum depth of 1.2m, that of the north wall of the west annexe to a depth of *c.* 1m, that of the north-east corner of the main hall to a depth of 0.95m and that of the north wall of the east annexe to a depth of 1.05m. Assuming a constant floor level within the building the trench would appear to have been dug out originally to a depth and width of *c.* 1m. After positioning the

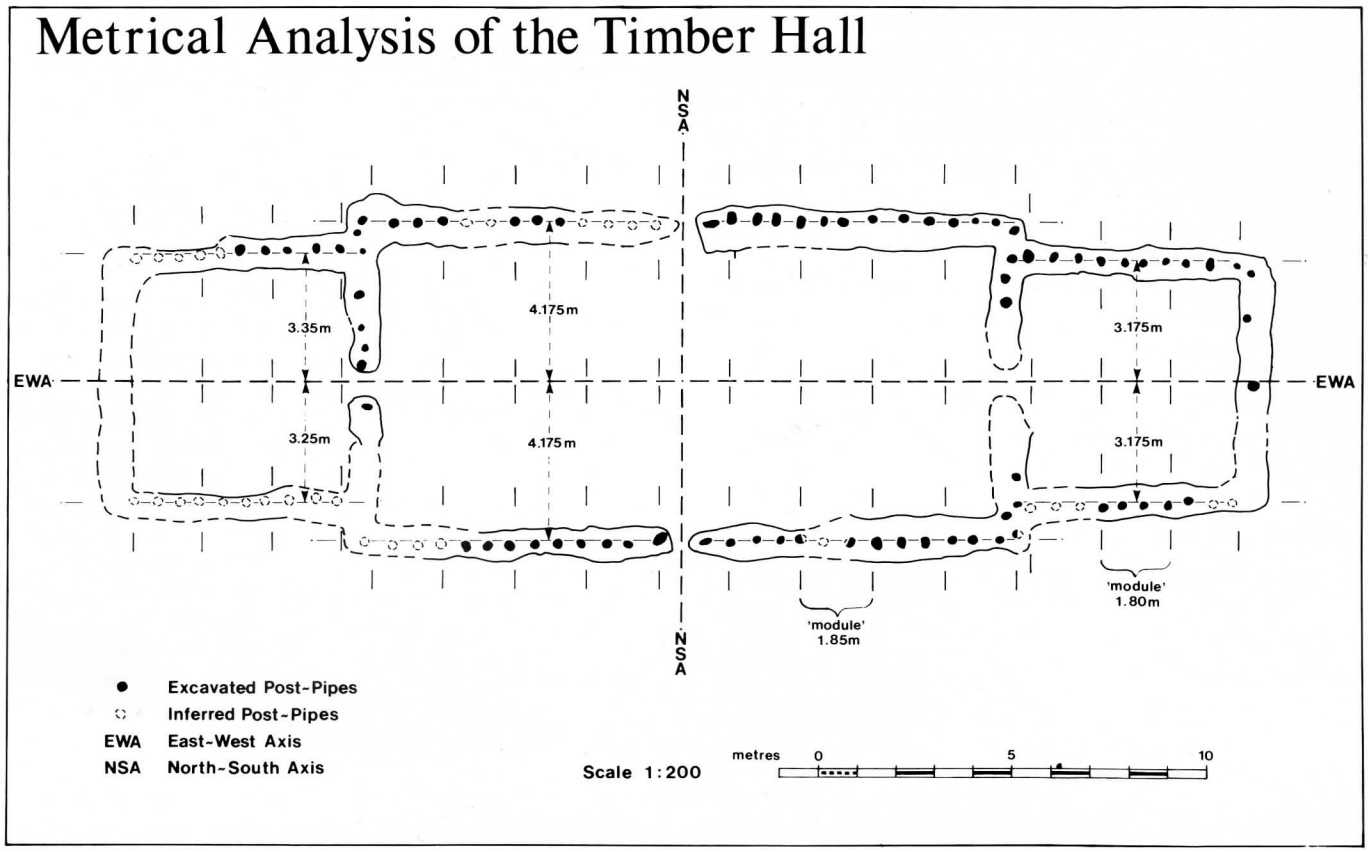

Metrical Analysis of the Timber Hall
NSA
EWA
EWA
NSA
3.35m
4.175m
3.175m
3.25m
4.175m
3.175m
'module'
1.85m
'module'
1.80m
Excavated Post-Pipes
Inferred Post-Pipes
EWA East-West Axis
NSA North-South Axis
Scale 1:200
metres 0 5 10

Fig 6

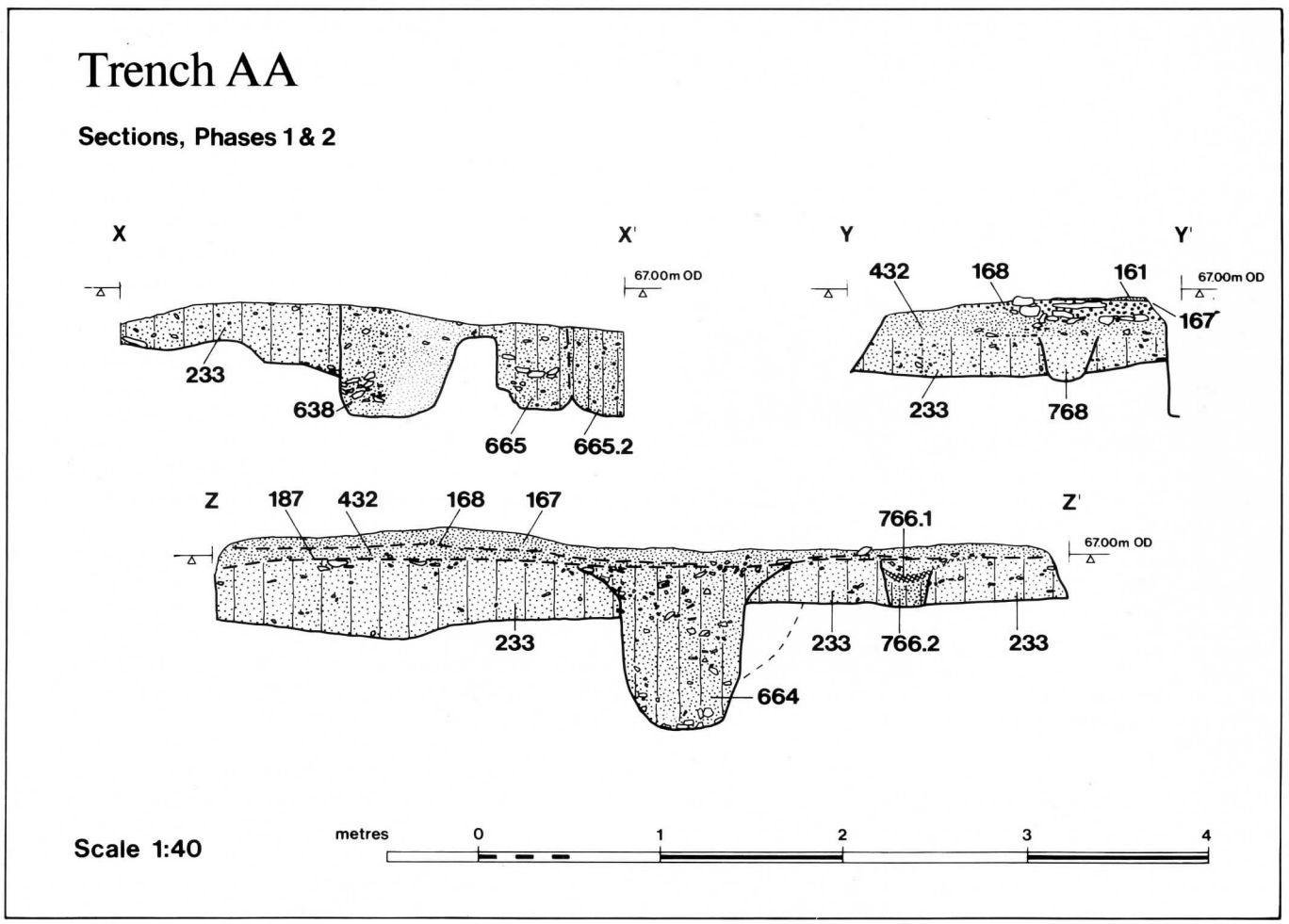

Trench AA
Sections, Phases 1 & 2
X
X'
67.00m OD
233
638
665
665.2
Y
Y'
432
168
161
167
67.00m OD
233
768
Z
187
432
168
167
766.1
Z'
67.00m OD
233
233
766.2
233
664
Scale 1:40
metres 0 1 2 3 4

Fig 7

posts the trench was immediately backfilled with the excavated material.

Two pits (AA464 and 466; not on plan) are a problem. They cut through foundation trench AA465 immediately to the east of the north-west corner of the main module of the hall. Their fills clearly suggest that they belonged to Phase 1 or 2 and their positions seem to indicate some association with the foundation trench, but their function or purpose cannot be explained satisfactorily.

In plan the hall comprised three rectangular modules. The following approximate overall dimensions can be given for:

a) the distance between walls based on lines most nearly bisecting each post position within a trench (marked on Fig 6).
b) the external distance — to the outside of the trenches.
c) the internal distance — to the inside of the trenches.

	a	b	c
Central hall length	16.70m (54.79ft)	17.60m (57.74ft)	15.80m (51.84ft)
Central hall width	8.35m (27.40ft)	9.20m (30.18ft)	7.20m (23.62ft)
E. annexe length	6.35m (20.83ft)	7.40m (24.28ft)	5.60m (18.37ft)
E. annexe width	6.35m (20.83ft)	7.20m (23.62ft)	5.50m (18.04ft)
W. annexe length	5.60m+ (18.37ft+)	6.40m+ (21.00ft+)	4.80m+ (15.75ft+)
W. annexe width	*c.* 6.50m (21.32ft)	*c.* 7.30m (23.95ft)	5.60m (18.37ft)

Assuming that the west annexe was roughly square in plan the overall dimensions of the hall to the outside of the actual walls would appear to have been *c.* 29.7m (97.44ft) by 8.6m (28.22ft). It is particularly noticeable that the central hall is an exact double square and the eastern annexe is almost an exact square. Whether the slight tapering to the east was intentional is uncertain. The western annexe may similarly have been a square. Breaks in the trenches indicated opposing doorways almost directly in the centre of each of the long sides of the central hall. A gap in the middle of the west wall indicated another doorway here and presumably there was one in the eastern wall but the relevant area had been totally disturbed by later pitting. Trench AA650 and AA671, the butt end of a possible trench, may perhaps also relate to the hall but the considerable disturbance in that area precludes any positive association.

The spacings between the centres of the posts in the long sides of the structure were analysed:

	No. of measurements	Arithmetic mean	Sample standard deviation
N. side main hall	18	622.2mm	98.2mm
S. side main hall	19	612.6mm	74.8mm
Both sides main hall	37	617.3mm	85.9mm
N. side E. annexe	9	612.8mm	65.6mm
S. side E. annexe	4	560.0mm	58.8mm
N. side W. annexe	5	616.0mm	87.6mm
Annexe sides combined	18	600.0mm	70.3mm
All long sides	55	611.6mm	80.9mm

The posts were thus very regularly spaced at a distance approximating to two modern feet (= 609.6mm) and were clearly arranged in pairs across the span of the building. The distance between fifteen matching pairs across the main hall and five across the east annexe could be measured and again indicated very accurate surveying:

	No. of measurements	Arithmetic mean	Sample standard deviation
a) Across main hall	15	8.35m (27.40ft)	0.12m
b) Across main hall (eliminating one measurement from a)	14	8.37m (27.50ft)	0.07m
c) Across E. annexe	5	6.36m (20.87ft)	0.08m

The evidence regarding the spacing of posts in the cross walls was limited and showed more variation but the posts were set at a similar distance apart to those in the long walls.

It is possible to develop the structural analysis a little further. A number of postholes lay around the edge of the timber structure, the former posts perhaps in some way supporting shoring. Particularly noticeable in this respect were AA925 and AA927 on the south side of the east annexe and AA972 and AA973 on the north side of the east annexe. These were all set opposite posts which were within the foundation trench and the spacing would suggest that every fourth post was significant. This hypothesis was applied to the main hall. Interpolating on the basis of matching cross pairs and a standard distance of *c.* 0.617m (or 2'ft') between post centres it can be calculated that each long side contained 27 posts, 14 to the east of the central doorway and 13 to the west. Since there was a double space at the doorway with no posthole the walls divide into 27 standard space units. These could be grouped, in the fashion suggested by the eastern annexe, into nine modules of 6'ft' length, each comprising three space units (3 × 0.617m = 1.85m; see Fig 6). No problem is encountered with such a spacing at the central doorways. The system also seems to work for the east annexe which would seem to have comprised three modules, although here a slightly reduced length of 1.80m (3 × 0.60m; see above) has been applied to Fig 6. The end wall of the annexe, however, would have been one space unit beyond the final significant post. To the north and south of the main hall are a number of postholes apparently set in lines parallel to the axis of the hall. It has been argued that most if not all of these relate to the timber hall as supports for shoring, but, if this is the case, it must be noted that they were certainly not positioned opposite each significant post as the analysis below of the main part of the hall indicates.

```
                BB BB   BB        BBB         B
N. wall   ! . . ! . . ! . . ! . . ! E . ! . . ! . . ! . . ! . . !
S. wall   ! . . ! . . ! . . ! . . ! E . ! . . ! . . ! . . ! . . !
                B                   B         B B B
```

B = buttress
! = significant post
E = entrance
= other posts

The analysis is complicated by the problem of disturbed areas but, having made allowance for this, there is no reason to suppose a regular system of buttresses outside each long wall based on the modular system suggested above. The postholes could, however, represent shoring applied to points of structural weakness, probably of the roof, during the life of the building. The spacing of similar postholes to the north of the west annexe similarly fails to respect the proposed modular system and casts doubt on the significance of the spacing of such features to the north and south of the east annexe. It is not, however, just the spacing of these postholes in the long sides of the hall which tends to favour a regularly modular system of construction.

The evidence of the spacing of the posts within the construction trenches suggests the use of a foot unit of measure

roughly approximating to the standard modern foot and it would appear that in the Saxon period a precise standard had not been established (Grierson 1972). If we make allowance for Saxon surveying errors, subsequent movement of vertical timbers and the difficulty of establishing precisely where the actual Saxon wall lines were it is possible to postulate the following scheme for the laying out of the building: initially a double square 54 by 27'ft' was established. At each end the wall lines were stepped in 3'ft' and a square then set out 21'ft' by 21'ft'. The building was divided into modules of 6'ft' length with individual structural posts being spaced at 2'ft' intervals.

At the end of its life span the hall was probably systematically demolished. Patches of charcoal and burnt sand (AA439 *etc*) within the hall on the surface of AA233, probably the floor level of the hall, are insufficient evidence to suggest its destruction by fire and no substantial quantities of charcoal were found in any of the postholes within the foundation trenches. Where the wall lines of the timber and stone halls coincided it would seem most logical that the posts were removed before construction of the stone walls began and such activity could help to explain the presence of mortar within postholes almost certainly belonging to Phase 1 (see above).

Finds associated with the hall were few, comprising 36 sherds of early/middle Saxon pottery and animal bone. The dating of Phase 1 is considered after Phase 2.

Trench AA: Timber Structures to the North-West of the Main Hall

Fig 38

The area to the north-west of the main timber hall produced extensive yet enigmatic evidence of successive timber buildings probably at least partially contemporary with the main timber hall although some indeed may have predated it. There is little likelihood, however, that these buildings post-dated the timber hall in that most of their component features appeared to have been overlaid by the general levels associated with the construction of Phase 2. Considerable difficulties were encountered in attempting to disentangle the various phases of building because of:

1) the large-scale removal of relevant deposits by subsequent pitting and other disturbance.
2) the close similarity of and in many cases identical nature of the fills of intercutting foundation trenches.
3) the close similarity of the foundation trench fills to the background into which they were cut. Here, as elsewhere, several features were only recognised after the removal of the sandy loam horizon (AA233) down on to the natural weathered ironstone sub-surface.

Unlike in the main timber hall postholes were rarely recognised within the foundation trenches. The description of the individual features is contained in the layer list in microfiche.

Two areas were particularly crucial to the sorting out of the sequence and plan of the buildings:

1) The junction of AA665, 638, 677 and 690: AA677 was clearly cut by 690. The area of AA690, on initial cleaning, revealed possible posts *c.* 0.30m across in the east half of the trench but the evidence was tenuous and inconclusive. The various deposits have been grouped together under AA690. AA690 appeared during excavation to be cut by AA638 and the bottom of AA690 was higher than that of AA638. The natural ironstone between AA638 and 665 was cut at this point, thus providing an eastern edge to AA690; nor did AA690 appear to extend south beyond AA638. The relationship between AA690 and 665 was not established. It is probably best to associate AA665 with 677 which continues as AA672, and AA638 with 690.

2) The junction of AA638, 665, 655, 684, 716, 661, 665.2 and 697: at this point trenches relating to several phases of construction intersect on a virtual island set in the middle of later disturbance. AA638 probably continued east until cut by a later pit and itself cuts AA655. AA655 is probably the continuation of AA614.2, although of a different width, and cuts AA716, 665 and 684. It either turns eastwards along the line of AA638 or perhaps continues a little further south before continuing eastwards along the line of the later stone wall. Either course is possible, taking into consideration eroded levels but other alternatives are improbable.

AA658 continued south as AA716 and 684 and was cut by AA665, 661, 655 and 638; it then probably turned east along the line of AA638 or the later stone wall (*cf* AA655 above).

AA697 was apparently cut by AA655 but a reverse relationship is possible. It is probably best to regard these deposits as representing the corner of a building (comprising wall trenches AA638 and 683) which cut AA665 which presumably continued eastwards at this point.

AA661 and 665.2 are isolated features, AA661 certainly being later than AA658 and AA665.2 also being later than AA665.

The following building sequence can be put forward:

1) AA658, 684, 716
2) AA665, 677, 672
3) AA614.2, 655
4) AA638, 690, 704, 697, 683. It should be noted that trenches AA638 and 704 are certainly similar in character.

The relationship of trench AA637 to this sequence is unknown.

It is possible that parts of the above interpretation are in error but it represents the best assessment of the available evidence. Apart from AA672/677 there is no evidence for any of the trenches continuing south beyond northings 194-6. No complete building plan emerges. That represented by trench AA637 is *c.* 8m across and that defined by trenches AA638, 690, 704, 697 and 683 is about 4.5m across. Only one or two wall lines have been identified for other buildings. The plan of the building for which AA655, 672 and 677 are wall trenches presents a problem in that the south and east walls should be expected in the area of the main timber hall, but no traces of such walls were located.

Trenches V-Z

Figs 8, 40; Pl 14

The Phase 1 features can be divided into three groups:

a) sunken-featured buildings probably of early Saxon date.
b) foundation trenches for timber buildings.
c) other features.

One certain (Z60) and one probable (Z63) sunken-featured building were identified. Both were badly disturbed but sufficient remained of Z60 to show that it had a length of over 3m, a width of 2.6m and a surviving depth of 0.29m. Thirty nine sherds of early/middle Saxon pottery and a double-sided composite comb (WB75) were recovered from its fill. Most of Z63 lay under the west baulk and hence no dimensions for it could be obtained. Nine sherds of early/middle Saxon pottery were recovered from its fill.

The foundation trenches (N155, 158, 160, 199, 211; V76, 77; W156, 169; probably Y234) all respect a similar alignment and, with the possible exception of N160, probably all belong to a single multi-phase building. All the trenches were rigorously examined for evidence of postholes within them but only in area N could any possible ones be identified. Trenches W169 and V77, however, both had noticeably sandier and less stony fills on their outer edges (Fig 8). It may well be that these less stony deposits represent an area of decayed timber planking

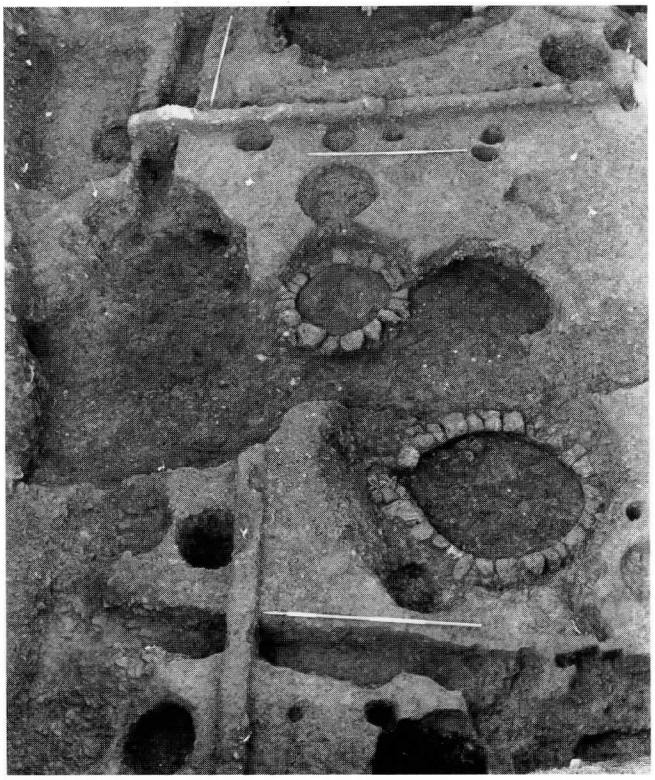


PLATE 4: *Trench W from the south showing Phase 1 foundation trenches W169 and 156.*

set against the outside of the trench while the inner side was backfilled with mixed soil and stones. The absence of a wall parallel to W169/N199/N211 to the east is difficult to explain; the traces of a return wall could be seen at the east end of V77 but its continuation further north could not be traced. Its projected line, however, lay mainly in areas of disturbance. Despite the problems a major timber building is probably indicated constructed with substantial foundation trenches *c.* 0.25-0.60m wide and surviving to a depth of up to 0.70m. Its form of construction suggests it belongs to the same phase as the main timber hall. Although dating evidence is lacking, with only one sherd of pottery, of early/middle Saxon date, being recovered from the foundation trenches, the structure clearly predated the stone building levels.

In addition there is a diverse collection of postholes, trenches, gullies and poorly defined features which appear as a meaningless jumble with no cohesive plan. The vaguer features, possibly natural phenomena or caused by animal action, are shown on the plan with dashed lines. Evidence of settlement activity is clearly present but its nature is not defined. One possible building line, however, can be discerned: postholes W209, 210, 229, 208, 172, 173 and 218 may form one wall of a free-standing posthole building. Shorter alignments can be formed with other postholes. Early/middle Saxon pottery was recovered from Y220, 223, 225 and 263; in the absence of other dating evidence it seems best to regard most if not all these features as early/middle Saxon.

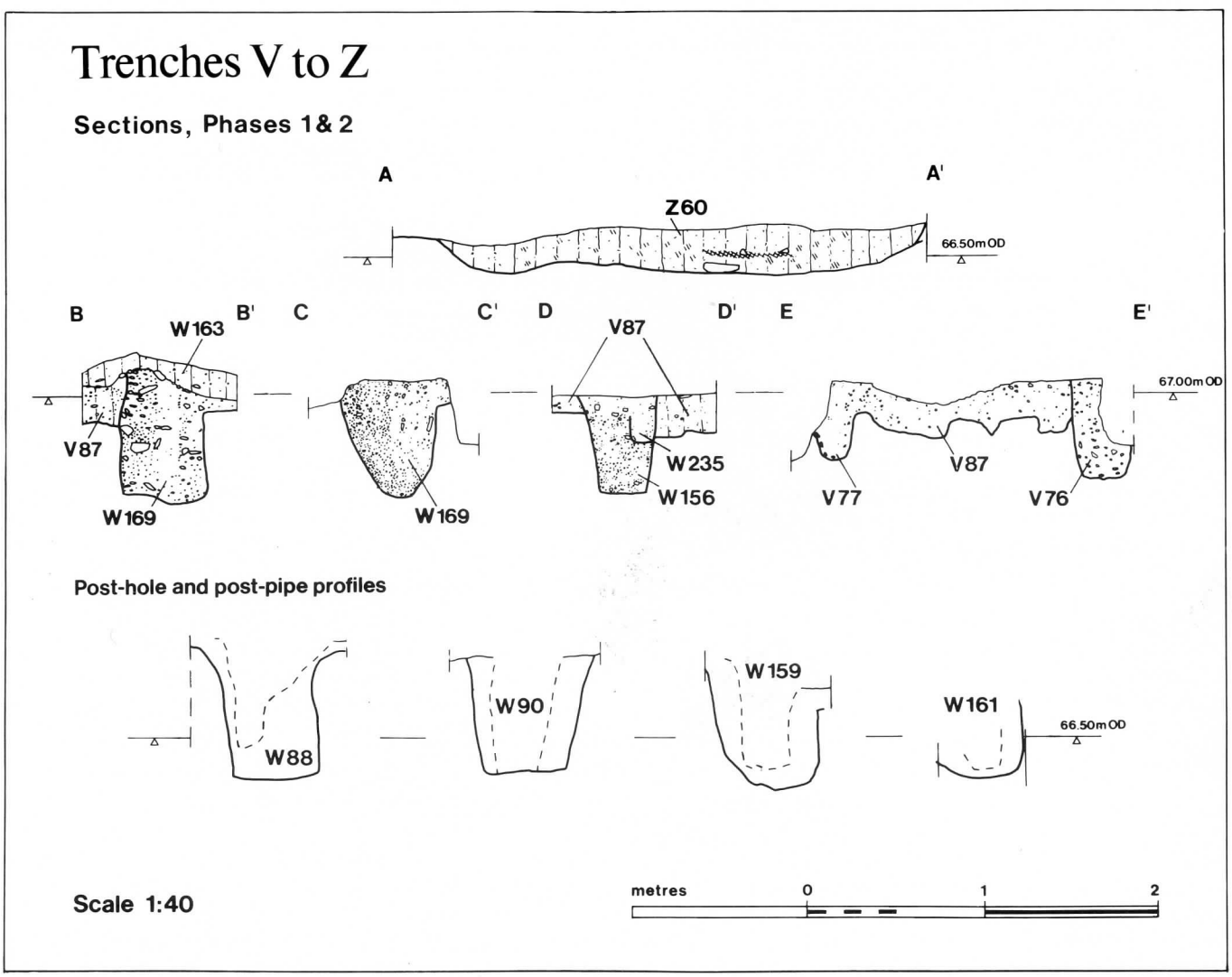


Fig 8

Area W: A Timber Structure of Phase 1 or 2

Figs 8, 40, 42

Four postholes — W88, 90, 159, 161 — could be separated out by their distinctive nature and characteristic fills. All four provided evidence that substantial posts, *c.* 0.2m in diameter, had been set in post-pits, *c.* 0.6m in diameter to a maximum surviving depth of *c.* 0.8m. The post-pits were filled with brown soil and ironstone fragments and were sealed by a layer (N14, W198), containing mortar, interpreted as probably construction or destruction debris for the Phase 2 stone buildings. The post-pipes, however, showed through this layer and their fill included mortar fragments and limestone blocks. These features could therefore belong to a late period of Phase 1 before the construction of the Phase 2 stone buildings, though the stumps of the posts would still have had to have been surviving when N14/W198 was deposited; otherwise they must belong to Phase 2.

The posts were set in a square with sides 2m in length. Their thickness and depth would suggest that they formed a structure of some height — possibly some kind of ceremonial structure or a tower, perhaps even a bell-tower.

Phase 2 (*c.* 820-875)

Phase 2 is defined as a major stone building horizon with construction works dating to the early 9th century and the buildings themselves probably continuing in use up to the late 9th century. The main components of the phase were:

i) a large stone hall
ii) a probable minster church
iii) two mortar mixers

The Large Stone Hall

Figs 9, 41, 42; Pls 5-14

The large stone hall originally formed a perfect rectangle and measured approximately 37.6 by 11.4m externally. The foundation trenches were 1.2 to 1.3m wide by approximately 0.6m deep. Over much of its length the wall (AA127) was represented by a robber trench (AA123); both foundations and robber trench had been totally removed in many places through subsequent pitting and other disturbance. Where they survived the foundations comprised neatly laid slabs of ironstone and limestone incorporating some re-used material,

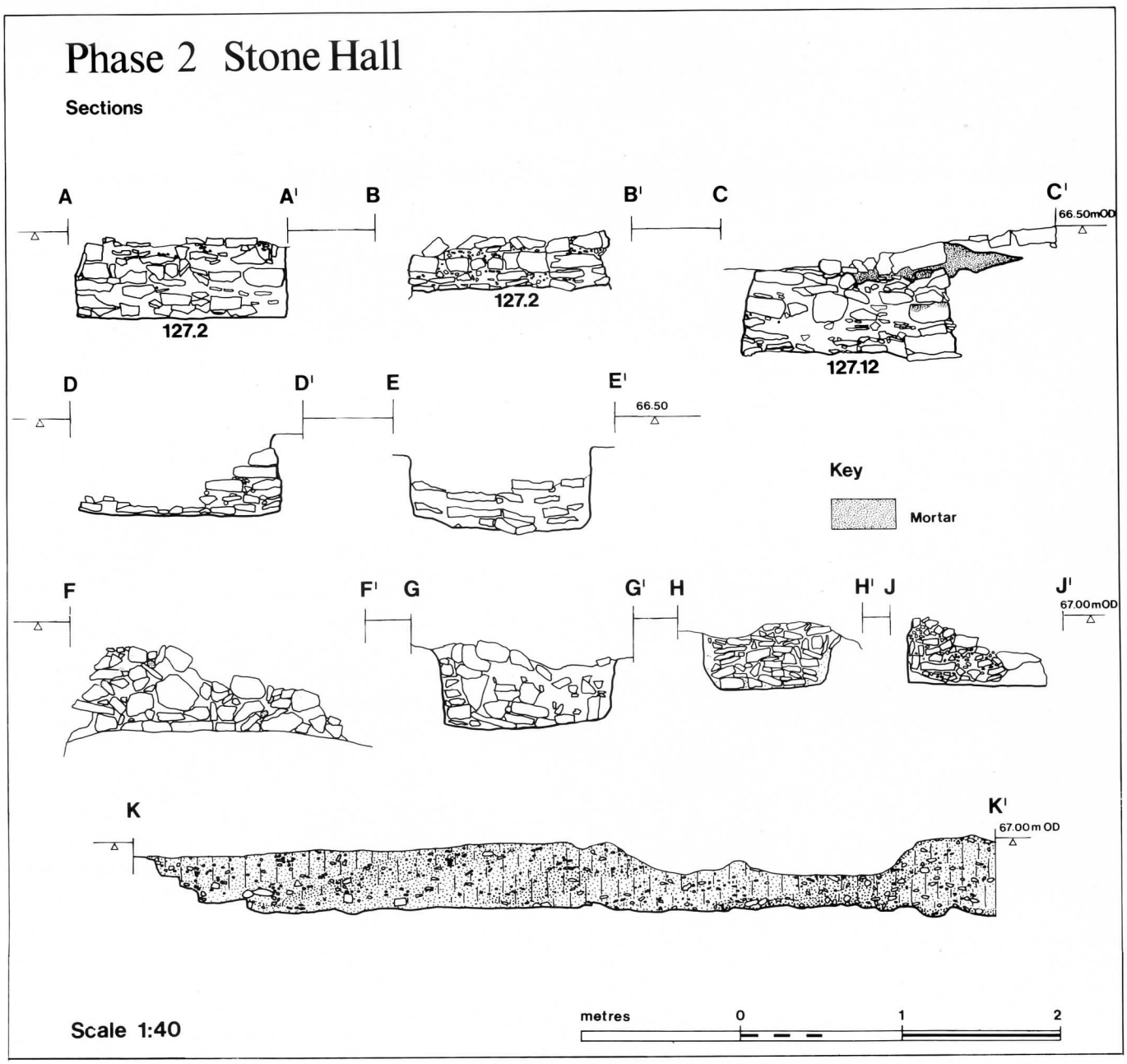


Fig 9

PLATE 5: *Trench AA. The western part of the Phase 2 stone hall from the south-east.*

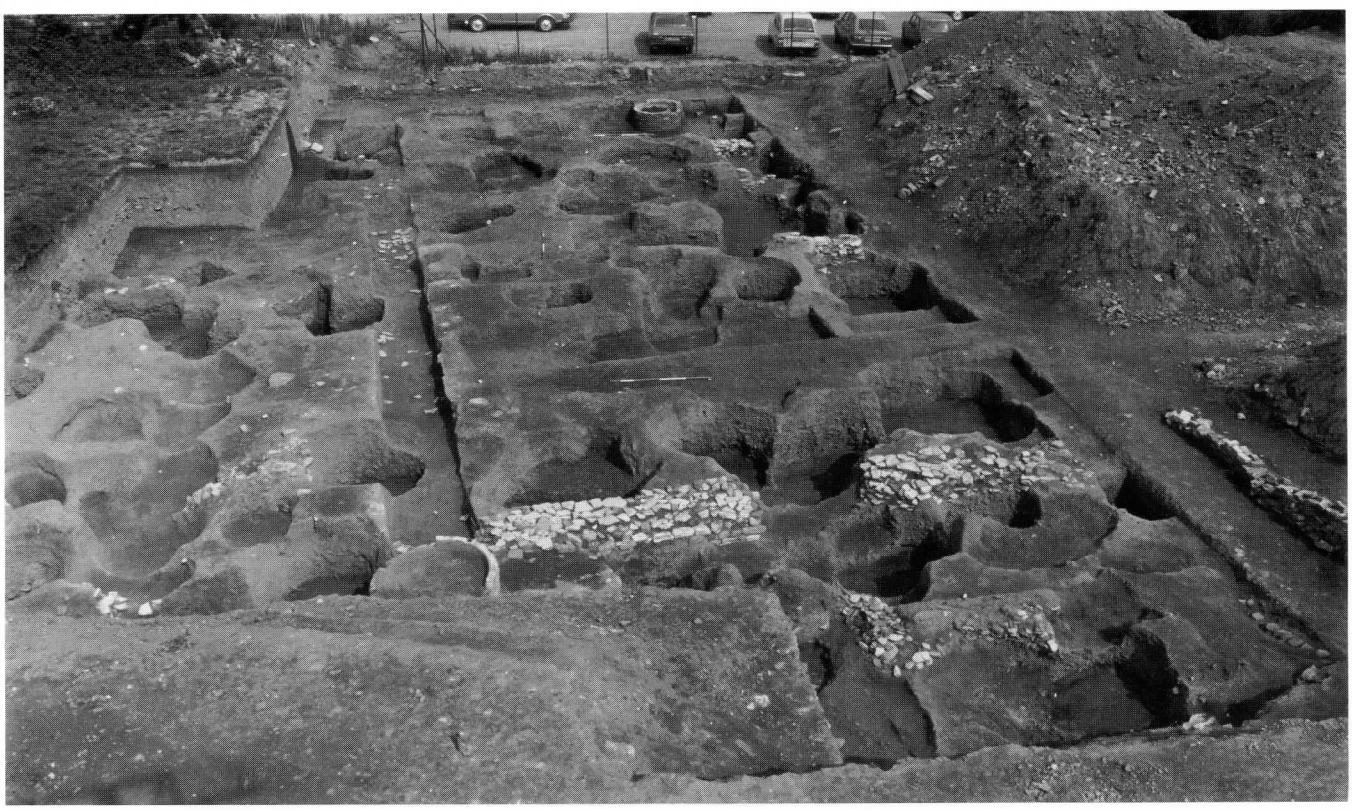


PLATE 6: *Trench AA. The western part of the Phase 2 stone hall from the west.*

well set in a sandy loam matrix. Limestone pieces were elsewhere found scattered along the base of the robber trench. The robber trench along the north and east sides of the hall (AA123.1-3), with its regularly sloping tip lines, seemed to indicate that parts at least of the building had been systematically demolished. A patchy sandy mortar spread (AA161) along the inside of the wall line at the north and north-west of the building and at AA127.12, and also just outside its north-west corner, was probably a construction deposit, perhaps indicating that the superstructure of the building was mortar-bonded. This is confirmed by the presence of mortar lumps within the robber trench of the building; the size and nature of the fragments suggest that the walls were either of roughly dressed stone or had a rubble core

PLATE 7: *Trench AA. The foundations of the west end of the Phase 2 stone hall (AA127.2) from the west.*

PLATE 8: *Trench AA. The foundations of the south-west corner of the Phase 2 stone hall (AA127.1) from the south.*

PLATE 9: *Trench AA. Section across the foundations of the west end of the Phase 2 stone hall (AA127.1) from the north.*

PLATE 10: *Trench AA. Section across the foundations of the west end of the Phase 2 stone hall (AA127.2) from the north.*

PLATE 11: *Trench AA. Foundations of the north wall (AA208) of the south room of the annexe of the Phase 2 stone hall from the east.*

PLATE 12: *Trench V from the south showing the west wall foundations (V68) of the north room of the annexe of the Phase 2 stone hall from the south.*

PLATE 13: *Trench V. Section through the stone foundations (V68) of the annexe of the Phase 2 stone hall from the south.*

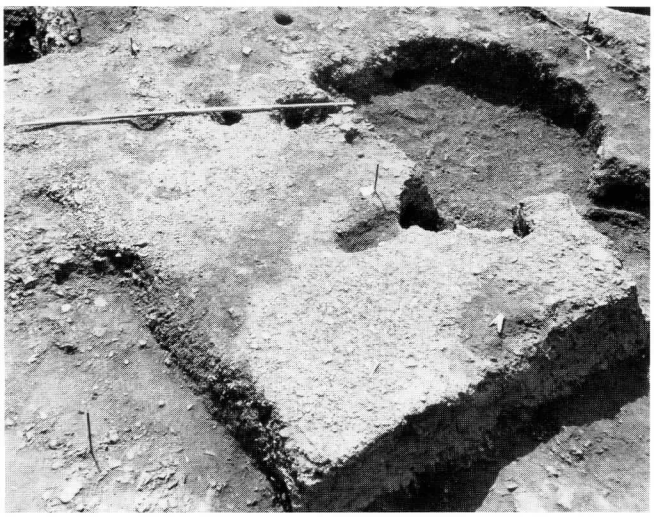


PLATE 14: *Trench AA. The compact flint pebble spread AA168, one of the make-up levels for the Phase 2 stone hall, at c. 131/192, from the north.*

(for a discussion of the mortar see p. 72 and (M)4/2-30). Numerous fragments of wall plaster with a white lime wash on one face, again mainly from the robber and within the area of the building, indicate that the wall had been rendered, at least on its inner face. Some pieces were composed of two superimposed layers of 'plaster' with limewashed face, perhaps suggesting refurbishment of the building (but see (M)4/26). Layer AA88, a mottled grey and brown clay deposit covering less than $1m^2$, was all that survived of the contemporary floor deposit: the overall disturbance to the stone palace levels is clearly seen in Fig 41.

Within the hall and to a lesser extent outside there was a build-up of deposits below mortar level AA161 (see Figs (M)1-5; also Fig 7, sections XX′ and YY′). The sequence from the top was

AA167 — strong brown sand
AA168 — a compact flint pebble spread (possibly the same as W112)
AA432 — strong brown to brown sand
AA187 — ironstone fragments scattered sparsely in a strong brown to brown sand

Although stratigraphically AA161 seems to have formed a single spread it contained mortar types which relate both to the main hall and the larger extension which was erected subsequently.

A strong brown to yellowish brown sand (AA179), present in some areas where AA168 was absent, should perhaps be equated with either AA167 or AA432. AA187 and 432 are best interpreted as upcast and levelling deposits derived largely from the excavation of the foundation trench of the building and AA167 also has the appearance of a levelling deposit. AA168, however, is more of a problem since it occurs as a well-compacted surface suitable for a yard or similar purpose both within the building and outside its north wall line.

AA187 clearly sealed the foundation trenches of the large timber hall; the way in which the plan of the stone hall respects that of the large timber hall suggests that the one was a direct replacement of the other and so all the deposits AA167, 168, 432, 187 and 179 have to be fitted into the tight chronology associated with the initial construction of the stone hall — after the demolition of the timber hall and before the use of mortar for the superstructure, at least along the north wall of the hall. AA168 can then only be regarded as a deliberately compacted make-up level for the floor of the hall. A number of postholes lying immediately within the wall line of the hall at the east and west ends of the building were almost certainly contemporary with it. It is not clear, however, whether they should be associated with the construction of the hall or whether they related rather to the internal arrangements of the hall.

To the west of the hall a trench with a number of postholes in it probably dates to after the construction of the hall (AA227, V79-81). The basis of the argument is the large quantity of mortar within the trench and the absence of the trench to the east of the main west wall of the stone hall, although in view of the problems previously discussed of mortar lumps within postholes probably belonging to Phase 1, it is impossible to be certain. A sceatta found at the bottom of AA227 (Nu2) is more in keeping with a Phase 1 rather than a Phase 2 date. Whether the trench represents a free-standing timber building or a timber annexe or fence is uncertain but it is interesting that it follows the line of one of the later annexe walls.

Two rooms were added to the west end of the hall to increase its overall external length to 43.4m. One room, wrapped around the north-west corner of the hall in the form of an L, had maximum internal dimensions of 3.9 by 4.7m. Perhaps an earlier line of AA151.2 is represented by AA183. The other room, outside the western end of the hall, was a simple rectangle with internal dimensions of *c.* 1.3 by 1.8m. The foundations comprised V68, AA151 and AA208 but in many places they were robbed (W14, AA206) or completely removed by later disturbance. At between 0.8 and 1.05m wide and between 0.4 and 0.5m deep the foundations were less substantial than those of the main hall. The form of construction — loosely packed uncoursed rubble — also constrasted with that of the main hall and the average stone size was also somewhat smaller. Many of the stones in AA151 had mortar adhering, indicating that they had been reused. A short length of possible foundation trench (X32) presumably again related to the western annexe of the stone building. The distribution of mortar types in the robber trenches of the two extensions suggests that the smaller extension predated the larger one but it should be noted that the foundations of the two extensions, while different in character to those of the main hall, were similar to each other and, in fact, to those of the minster church (see below).

A number of isolated pits and postholes may also belong to Phase 2.

The Minster Church

The remains of a probable stone minster church were excavated in 1974 and 1976 (Williams J H 1979, 110-114; see also p. 40-41 below for discussion of the building's status). A summary of the 1979 report is included here to aid the interpretation of the site as a whole.

The extreme east end of a stone building was defined by stone walls and foundations N3, 189 and 185. The structure was almost certainly the east end of a church, the walls lying immediately to the east of St Peter's Church and respecting its alignment. The foundations, *c.* 0.50m deep by 0.80m wide, of unbonded rubble with a small amount of soil as matrix, were similar to those of the extensions of the main hall. The walls above were slightly wider and formed of squared limestone blocks set in what appeared to be a yellow sand but which was possibly a very sandy mortar. The east wall had a thin mortar rendering on its inner face, *c.* 0.02m thick (N178B). Inside the building were traces of a slurry very rich in lime (N178).

Two postholes, N191 and 192, cut through the lime slurry. Outside the building was a thickish deposit of sand, mortar and tile, probably construction but possibly destruction debris. Finds from the area are few comprising mainly bone, tile and mortar.

The Mortar Mixers

Figs 11-13, 42; Pls 15-18

In 1974 three mortar mixers were found at the north-west of the St Peter's Street excavations (Williams J H 1979, 118-133). These each comprised a basin 2-3m in diameter cut into the natural ironstone and lined with wattle-work; a central post supported a beam from which was suspended a number of paddles. The beam was rotated by pushing around the central post. It would appear that the central post was fixed and that there was some form of bearing on the top, on which the portable paddle mechanism rested.

Two more mortar mixers were discovered during the excavation of trench W (W50 and W129).

Mixer W129 was cut down *c.* 0.20m into the surrounding ground surface. It had a diameter of *c.* 2.4m and a central post-pipe *c.* 0.35m across set into a posthole *c.* 0.6m across. At least two phases of mixing could be identified: a) .1 and b) .2 earlier deposits. The latest mix W129.1, a very pale brown coarse sandy mortar containing some small ironstone fragments, had at least two grooves in its surface, concentrically disposed around the central posthole at 0.85m (W129.10) and 1.05m (W129.9) centres. Rather fainter traces of other possible grooves were visible at a distance from the centre of *c.* 0.75m (W129.20), *c.* 0.65m (W129.19) and *c.* 0.35m (W129.11).

The underlying mix (W129.2), a brownish yellow sandy mortar, had two grooves cut into its surface (W129.12 and .14). These were filled with W129.1 and were set directly below W129.9 and W129.10 respectively. It would appear that the grooves in the surface of W129.1 are trail marks rather than score marks, formed as the 'fossilised' wake left behind by the rotating paddles in a very plastic mix (W129.1); W129.12 and .14 are the score marks cut by the rotating paddles in the underlying mix (W129.2) during the same mixing process. Further possible paddle marks (W129.13, .15 and .16) were also identified as cutting the Phase 1 mix. A mortar (W129.3), similar to but slightly darker than W129.2, survived against the sides of the mixer and is interpreted as material pressed against the sides by the action of the paddles during the mixing of W129.2. After its removal horizontal lines of yellow sand could be seen pressed into the soil behind (W129.8). These marks probably represented traces of wattlework round the edge of the bowl.

The layers below W129.2, namely W129.4, a lime rich deposit, and W129.5 and .6, predominantly sand with a sparse calcareous matrix, appear to have been essentially unmixed constituents in the base of the mixer. Paddle marks (W129.17 and .18) filled with W129.2 were cut into these deposits at *c.* 0.88 and *c.* 0.49m from the centre. These grooves relate to the mixing of W129.2. It would appear that the disposition of the paddles may have been changed between the mixing of W129.2 and W129.1.

Mixer W50, of at least two periods, was a little different to the other four mixers excavated in that it appears to have been constructed at ground level rather than having been cut down

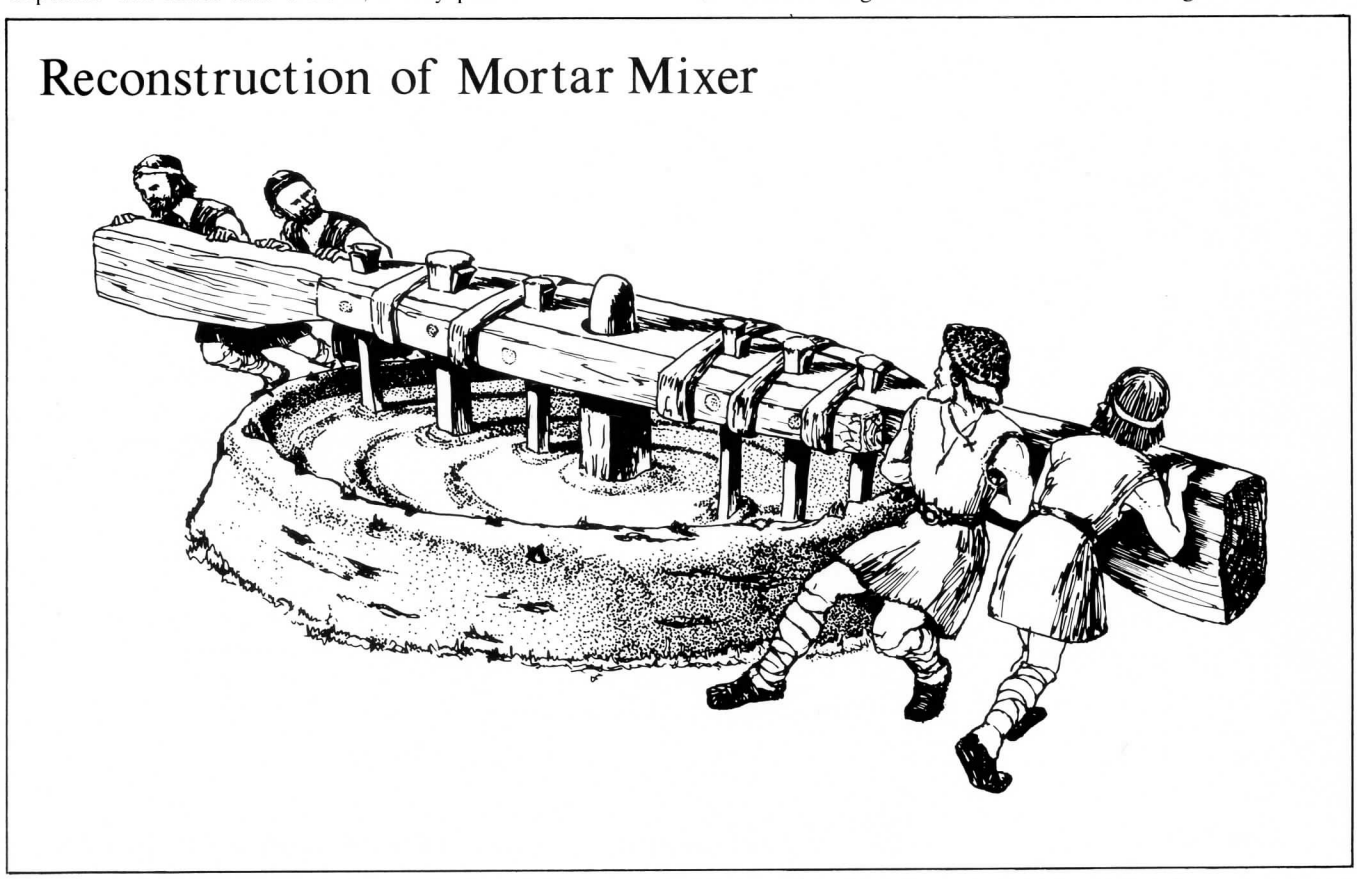
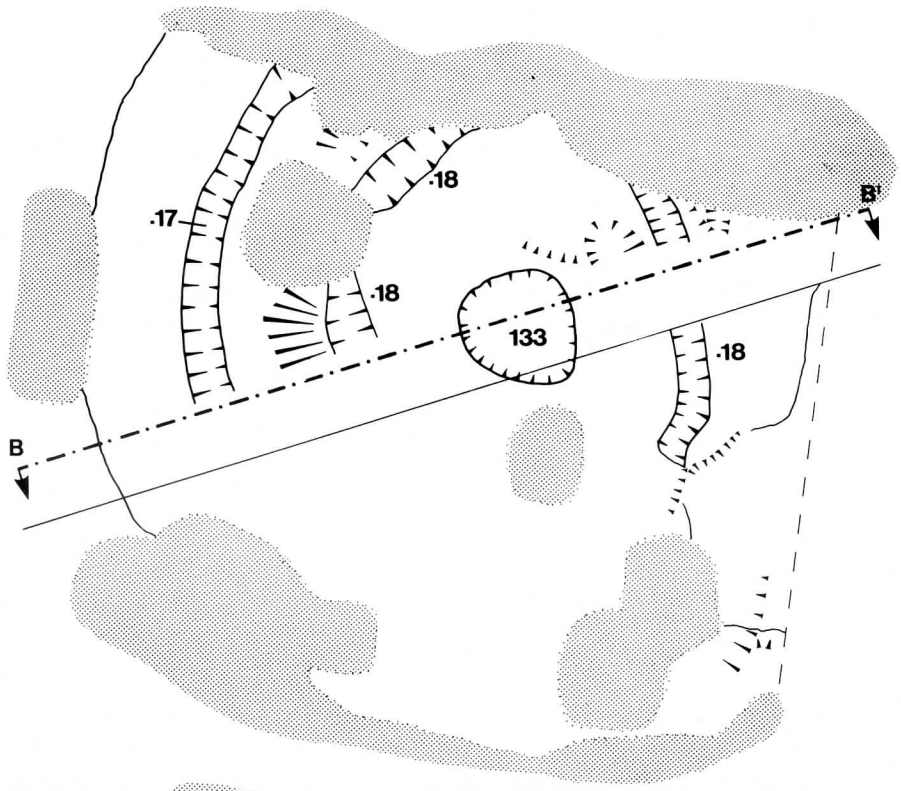
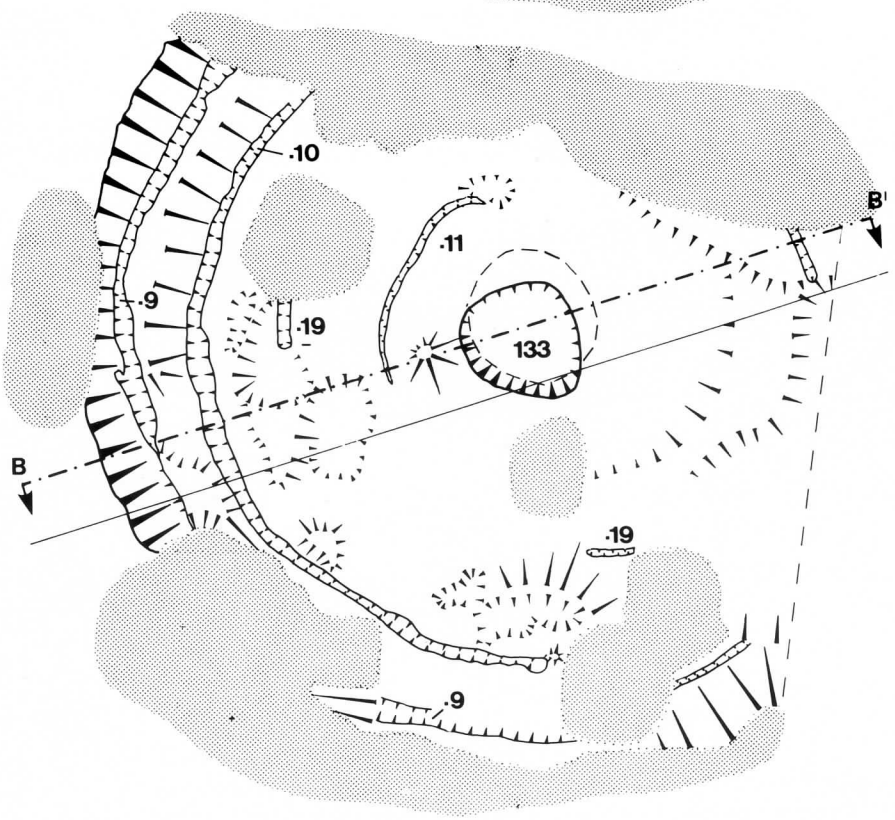


Fig 10

Mortar Mixer W129



Period 1



Period 2

NB:nos. preceded by '·' are parts of W129

Scale 1:20

metres 0 1 2

Fig 11

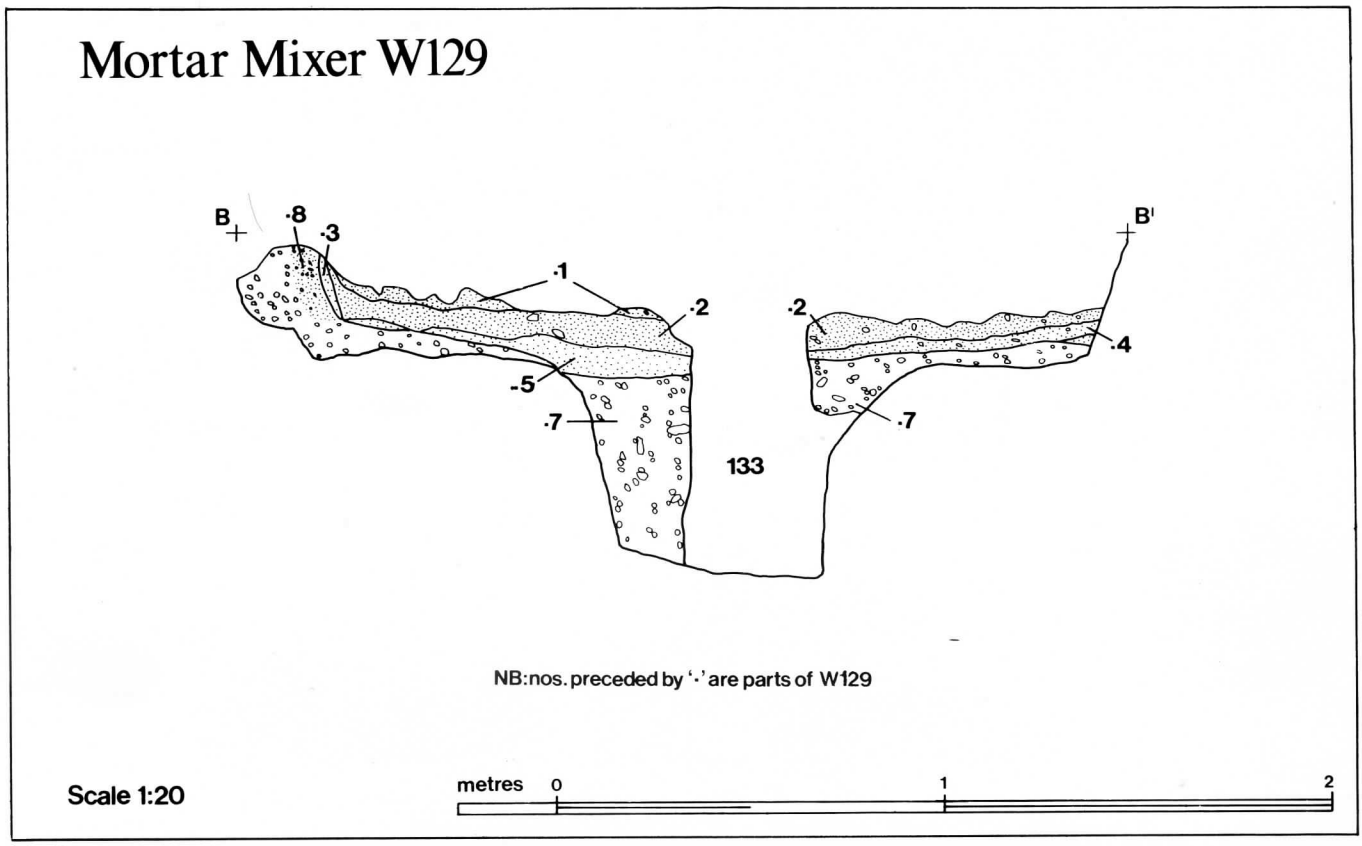


Fig 12

PLATE 15: *Trench W. Mortar mixer 4 (W129) from the east.*

PLATE 16: *Trench W from the west showing mortar mixer 4 (W129) top left, mortar mixer 5 (W129) bottom left and the robber trench of the west wall of the north room of the annexe (W14).*

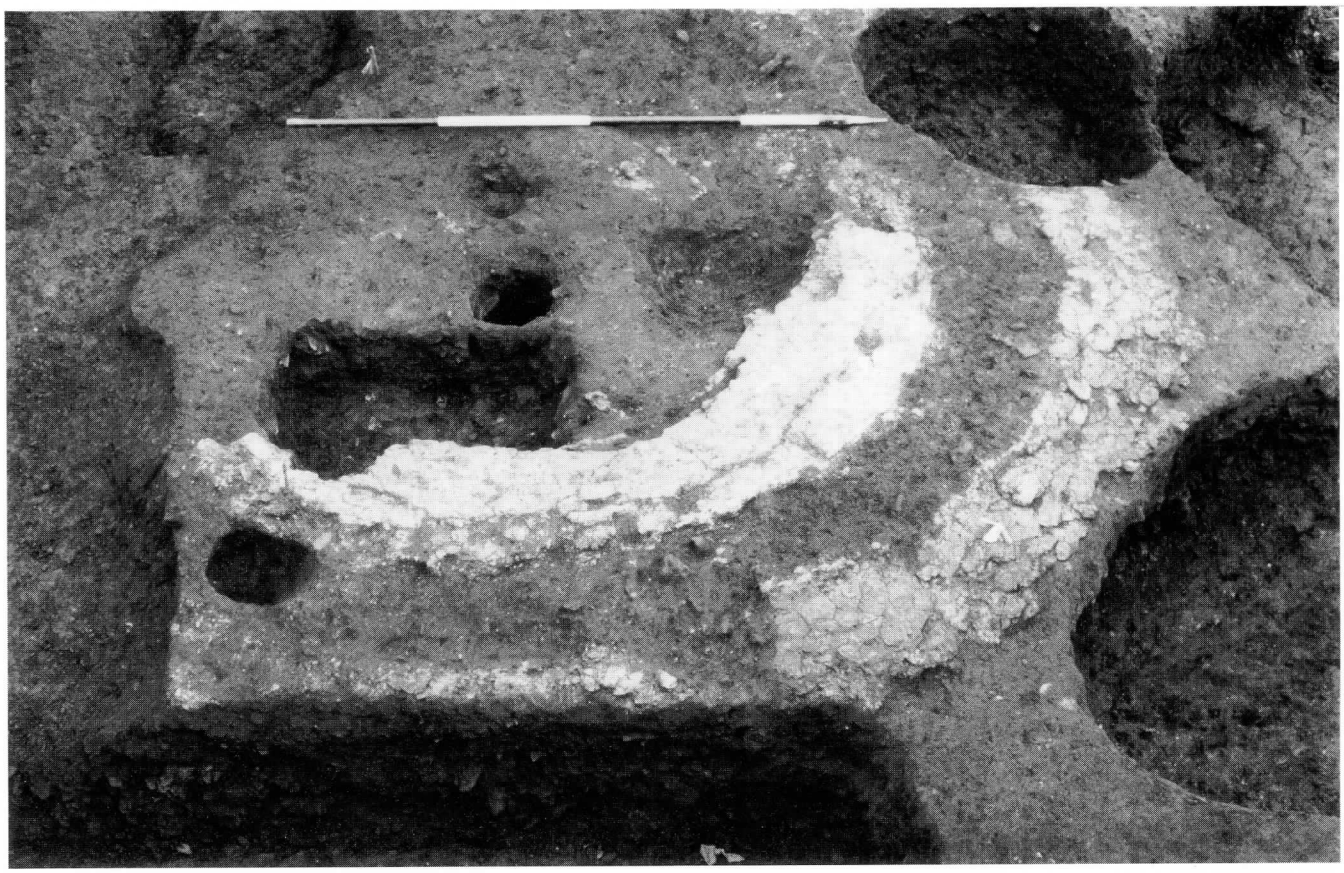
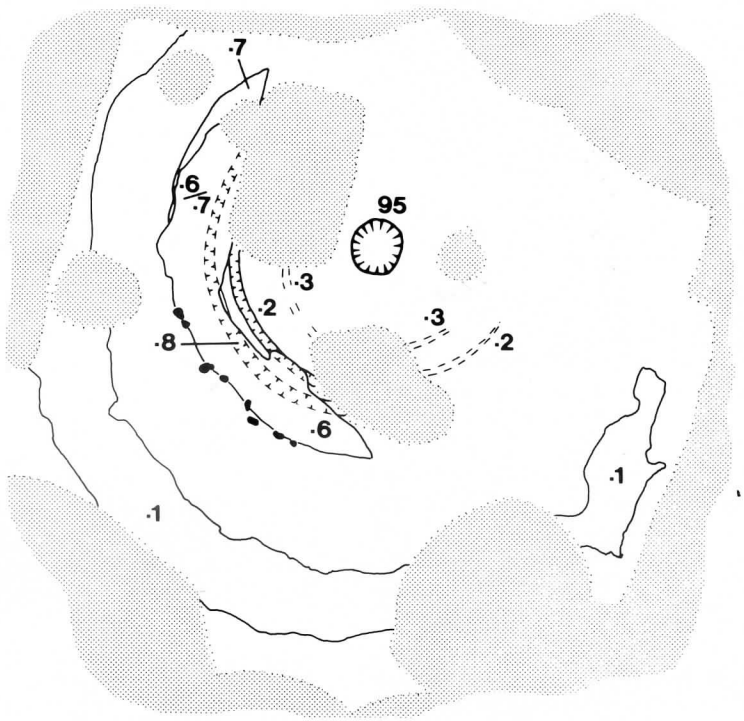
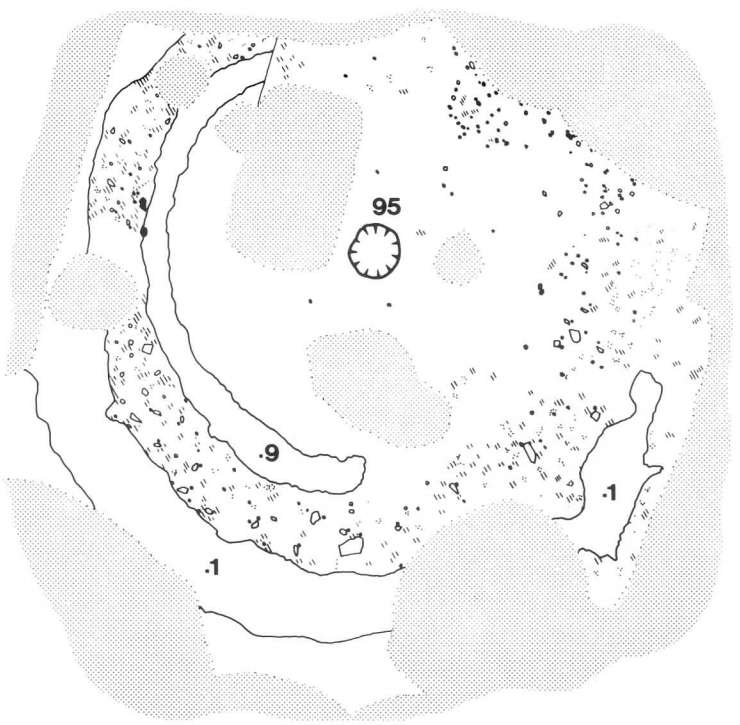


PLATE 17: *Trench W. Mortar mixer 5 (W50) from the west.*

Mortar Mixer W50



Period 1



Period 2

NB: nos. preceded by '·' are parts of W50

Scale 1:40

metres 0 1 2

Fig 13

PLATE 18: *Trench W. Mortar mixer 5 (W50). Close-up showing paddle marks W50.4 and .5 from the north.*

into the underlying weathered ironstone. The sides of the bowl appear to have been formed here with a low earth bank lined with wattlework on its inner face. W50.1 is the spillage from mixing on the Saxon ground surface beyond the earth bank. The comparatively mortar-free area between W50.1 and the lines of stakeholes on the edge of W50.9 and W50.6 in mixer Periods 1 and 2 respectively mark the positions of the associated earth banks. In the earlier period the inner edge of the bowl which was about 2.5m in diameter was defined by a few stakeholes marking the line of the wattlework within which was a not very extensive spread of a whitish mortar (W50.9). In the later period the wattlework was replaced so as to produce a bowl with a diameter of 2.2m. The residues of possibly two mixes (W50.6 and .7) overlay paddle marks W50.8 and .2 and a further paddle mark W50.3 was also noted. These paddle marks, with radii respectively of 0.85, 0.70 and 0.50m, cut up to 0.3m into the sandy levels below. They were filled with a mortar similar to W50.6 and .7 and are likely therefore to have belonged to the later phase. Residues from all the mixers and mortars from contexts associated with the stone buildings were analysed (see below p. 72) thereby extending the work initiated during the St Peter's Street excavations (Williams J H 1979, 118-33). No definite links were confirmed but the mixer residues and mortars were found to be broadly similar in terms of grain size, rounding and mineralogy of the aggregate they contained.

The Dating of Phases 1 and 2

Six radiocarbon measurements were taken from bone found in the construction trench or the postholes within the construction trench of the Phase 1 hall (HAR-5551-5, 5558) and one from charcoal from what is presumed to be the floor level of the hall (HAR-5556). It seems best to regard most if not all the bone dates above as relating to the destruction or abandonment of the hall (see p. 65). Accordingly, the measurements for samples from St Peter's Street associated with the mortar mixers and the mixed mortar level to the east of the probable minster (HAR-1245-6, 1452, 1720) should perhaps also be added to produce a weighted mean which relates in general terms to the end of the timber hall and the construction of the stone complex (it is assumed that the stone hall and the minster church were roughly contemporary, although the foundations of the minster match the foundations of the extension rather than those of the main hall of the stone hall). The bone associated with the mixers and that in the postholes may indeed be derived from a single deposit. The ten samples give a weighted mean of AD840 ± 60 but it has to be admitted that statistically the measurements do not form a group. There can be little doubt that both the timber and stone palaces dated to the period before the Danish occupation which perhaps commenced *c.* 875. The lifespan of the timber hall is difficult to determine but it should be borne in mind that there was a whole series of smaller buildings to the north which were probably contemporary with it. It seems reasonable, therefore, taking into account the stratigraphical and artefactual evidence and making allowance for a reasonable lifespan for each building, to suggest a mid-8th century date for the construction of the timber hall and one early in the 9th century (perhaps some time *c.* 820) for the stone hall. The sceatta from AA227 (Nu2), which is more in keeping with a Phase 1 than a Phase 2 date, may be residual in its context. Two sherds of pottery (fabrics W1 and T11) from the foundations of the larger extension suggest that it was not constructed earlier than 850.

The chronology now suggested for the palace complex is later than that provisionally put forward in previous publications (*eg* Williams 1984; RCHM 1984). This is firstly as a result of the increased number of radiocarbon measurements and secondly because of the adoption of the Stuiver calibration curve which for the period under consideration adds approximately 50 years to 'corrected' dates (*cf* Table 15).

Phase 3 (*c.* 875-1100)

Figs 43-44

Phase 3 has been defined essentially by the presence of late Saxon pottery. As witnessed by the structural remains and general distribution of the archaeological features the site has lost the high status of the preceding phases. Apart from the robber trench of the stone hall the features comprise possibly two sunken-featured buildings, a slot, postholes, stakeholes, pits, layers and inhumations.

The stone hall, including its extension, seems to have fallen down or been demolished and the greater part of its foundations systematically robbed during this period. The robber trench of the north and east sides of the building (AA123.1-.3) was filled with consistently inclined (dipping west to east) layers and lenses of light and dark sandy loam, indicating that the wall robbers had started towards the south-east corner of the building and worked their way northwards along the east wall then westwards along the north wall.

Pottery from the robber trench of the hall extension (W14, AA206) suggests a date perhaps in the earlier part of the 10th century for its robbing. The robbing of the north and east wall foundations of the main hall (AA123.1-.4) belongs rather to the mid-10th century or later but the limited quantity of pottery from the south wall area (AA123.5-.9) is more in keeping with an early 10th century date. Robbing of the foundations of the stone hall was thus almost certainly taking place by the end of the first half of the 10th century but there is no clear evidence as to when the building fell into disrepair or when the upstanding walls were pulled down.

The greater part of a sunken-featured building (AA136) lay within the area of the Phase 2 stone hall just to the south of its north wall the line of which it seemed to respect. It was *c.* 2.6m long with a single posthole at each end and survived to a depth of 0.35m. The small amount of pottery from its fill suggests a date in the earlier part of the 10th century, before the robbing of the foundations to the north It may thus have been built within the ruins of the hall immediately adjacent to a surviving length of the wall. Y158 is probably also best interpreted as a sunken-featured building perhaps dating to the late 10th or

early 11th century; traces of a posthole were found at its north end.

Slots W64 and Y44 may represent the east and north walls of a building; both were cut to a similar depth. Their narrowness and shallow depth suggest that they may have been dug to take a timber sill beam, although irregularities in their plan do not support this.

Few of the postholes could be assigned a definite Phase 3 date although many could be given a broader Phase 3-4 date. Analogy with the St Peter's Street excavation (Williams J H 1979, *passim*, esp. 14-6, 26-8, 73-6, 140-2) would, however, suggest a late Saxon date for many of them. On St Peter's Street posthole buildings were generally of late Saxon to early medieval date and the early medieval structures seemed to be restricted to the St Peter's Street frontage.

Analysis of the depths of postholes suggests that two lines of posts — W91, 94, 123, 152, 153, X24 and W33, 34, 51, 97, 65, 71 — may be the east and west walls respectively of a building. Further posthole structures may be present but the considerable disturbance to the site makes their positive identification impossible.

A large number of pits of late Saxon date were uncovered. AA162, with its large size, a depth of over 2.00m and its clean lower fills, causes problems of interpretation but the rest apparently had no particular purpose other than the disposal of rubbish and cess. A group of stakeholes clustered around three sides of pit W36 presumably represent some sort of structure round the pit.

Horizontal deposits were few and no definite floor levels were uncovered. Metalled areas, possibly yard surfaces (Y116, 174), overlaid by a dirty occupation layer Y55 were discovered on the east side of trench Y.

Twenty two graves and inhumations, discovered at the extreme west end of the site in trench Y may also belong to Phase 3. The present St Peter's churchyard lies immediately to the west. None of the graves extended further into the site than 0.6m and thus little of the skeletons was revealed, in most cases only the leg bones. The overburden in this area was taken down by machine to a loamy layer, Y118. No distinction was visible between the soil which overlay the graves and that which was cut by them and it was all recorded as Y118. Four sherds of pottery, all of late Saxon or earlier date, came from the graves themselves (Y103: 1 sherd; Y144: 2 sherds; Y150: 1 sherd). The limited dating evidence is thus entirely consistent in suggesting that the graves were late Saxon, yet they do not appear to have been cut down much below the late Saxon ground surface. The nearest levels to the graves identifiable as late Saxon ground surfaces are the occupation layer Y55 which lies at 67.17m above OD and the possible yard surface Y116 which lies at 66.85-67m above OD. The bottoms of a large proportion of the graves lie at *c.* 67.10m above OD and that of Y153 is at 67.26m above OD. Thus a late Saxon date for the graves is only really acceptable if it is possible to argue for an accumulation of late Saxon deposits, subsequently eroded, to the east of the graves and for this there is no firm evidence. The graves are thus considered as either Phase 3 or 4Ai and perhaps later rather than earlier. Wall Y17, probably a churchyard boundary wall, can only be assigned to somewhere in Phase 3 or 4.

Phase 4 (*c.* 1100 onwards)

Since the overburden in trench AA was removed by machine virtually to the late Saxon ground surface the features of this phase which were recorded were almost entirely those which penetrated below that level and a stratigraphical sequence could not be determined except where such features cut other features. Dating is thus virtually entirely reliant on artefacts found within features. In trenches V-Z the medieval and later stratigraphy was recorded in greater detail. The two parts of the site are described separately.

Trench AA

Fig 45

No features later than Phase 4Bi were recorded and only pit AA5 belonged to Phase 4Bi itself. All other features shown on Fig 45 belong to either Phase 4Ai or 4Aii. A large number of pits was found, mostly dating to Phase 4Ai. These should be associated with properties fronting on to either St Peter's Street or Marefair. The boundary between the properties of the two streets was not located, presumably because of the policy adopted for excavating the upper levels; nor was it possible to add significantly to the information recovered in 1973-4 about property boundaries of the houses on the north side of St Peter's Street. That between Houses 4 and 5 (Williams J H 1979, 46-62) could be seen extending north as AA506, and AA332 may be the remnants of the footings between Houses 3 and 4 (*idem* 37-60). No foundations were found further west. AA510 and robber trench 504 continue wall lines identified in House 7 (*idem* 66-7). Sufficient pottery came from AA504 to indicate a 15th century date for its robbing. Parts of its continuation in House 7 had been considered to be post-medieval (*cf idem* 66, Fig 38) but should now also be regarded as 15th century (*cf* Fig 28).

An interesting group of circular ovens (AA519) was located immediately to the west of and partly set into wall AA506 and a further circular oven (AA309) was also excavated. Another structure of oven type was represented by the flue arch between AA327 and 335. To the west was a drying oven (AA308) with sloping sides similar to ones found in trench N (*idem* 114) and also in House 10 (two examples: *idem* 96-7) and Marefair (Wiliams F 1979, 51-4). Many of the above features lay within the area defined as House 4 in 1973/4 (*cf* Fig 28; also Williams J H 1979, 46-60). Another oven (AA89) was set within a pit. A possible lime kiln (AA321) was located centrally in the north part of the site. It comprised a circular pit neatly lined with stone showing considerable signs of burning and containing lime residues. The limited quantities of pottery from its fill suggests a Phase 4Ai date.

The evidence for the medieval period fills out the picture of the 1973-4 work, namely of St Peter's Street lined with properties with the yards and gardens to the rear containing large quantities of pits and some industrial and semi-industrial features. The greatest density of pits belonged to the period before 1400 and little activity is apparently evidenced from the 16th century onwards, after the properties along the street had been burnt down and the area largely converted to gardens.

Trenches V-Z: Phase 4Ai (*c.* 1100-1400)

Fig 46

Features can be divided into four categories: pits, walls, general layers and postholes/stakeholes. The pits in trenches X and Y might be expected to belong to the properties fronting St Peter's Street while those in trenches Y and Z belonged to those fronting Marefair. The boundary between these groups of properties was not located but it may occur in trench W, approximately along the line of northing 200 or 206 where pits are absent. There is little evidence to suggest that the pits had any specialised function.

The earliest evidence for stone-walled buildings is at the north of trench Y where a complex series of walls and floor levels perhaps represents the back-end of a tenement fronting on to Marefair. Pottery from pits underlying the walls suggests a date after 1200 for the earliest construction work. The character of the walls was similar to that of the St Peter's Street

medieval structures. They consisted chiefly of ironstone blocks with little sign of mortar and were rarely set in foundation trenches unless they crossed an earlier pit in which case the pit fill was often dug out to be replaced by ironstone rubble foundations. Floor and occupation levels were apparently composed generally of layers of sandy loam or clay loam, interspersed with lenses of charcoal and ash. A cellar in trench Z may also belong to this phase.

Other layers were mainly loams which appeared to represent back-yard or 'garden soil' deposits. None of the postholes and stakeholes definitely belonged to this phase — in fact it would seem best to regard the majority as belonging to Phase 3.

Trenches V-Z: Phases 4Aii-Bi (*c.* 1400-1700)
Fig 47
The paucity of evidence for activity at this time is striking. Although the overburden was machined down to a level at or below the 15th-17th century ground surface the scarcity of cut features is probably significant. The digging of pits for the disposal of rubbish seems virtually to have stopped in the 15th century (*cf* Shaw 1984a). The few pits belonging to these phases are usually stone-lined and the majority were probably cess pits. W48 may have been a well; its Phase 4Bi date refers only to its final infill and not to its original cutting. Two more specialised types of pit are the rectangular troughs Y11 and Y10. The latter's sloping sides, formed of thin coursed limestone slabs, are reminiscent of a drying oven (*cf eg* Williams F 1979, 52) but no evidence of a stokehole and little evidence of burning was discovered. The function of the massive trench Y31 is uncertain. It was excavated to a depth of 1.80m before investigation of it was halted; it was cut well down into the ironstone and filled with unconsolidated soil.

The stone building in trench Y seems to have gone out of use possibly as early as 1400 although the west wall Y17 continued in use as a boundary wall; cellar Z5 may belong to these phases.

Trenches V-Z: Phase 4Bii (*c.* 1700 onwards)
Fig 48
Little of significance was recorded. The possible well W10 was filled in during this phase but may have been constructed as early as the 13th century. The documentary evidence for the post-medieval development of the area has been considered elsewhere (Hunter 1979a).

DISCUSSION

by John H Williams and Michael Shaw together with Hugh Richmond for the section on the timber hall

Introduction

Taken with the excavations in 1973-6 the site is unique in England for its sequence of development in the middle Saxon period. The structures themselves clearly point to the site's high status at the time, the nearest parallels for the timber and stone halls occurring on either Anglo-Saxon or contemporary continental palace complexes. The limited later documentary evidence also points to Northampton having been the *caput* of an extensive royal estate. It is the combination of the individual arguments that leads to the conclusion that the large timber and stone halls should be regarded as royal halls or palaces situated at an important centre within the royal administrative hierarchy. This discussion considers specific structural and other aspects relating to the large timber hall, the stone hall and the mortar mixers and attempts to place them within an overall historical framework for the development of Northampton. Evidence for the late Saxon and medieval periods on the site is then considered.

The Timber Hall

Figs 6, 14-15, 38-39; Frontispiece; Pls 1-3

The archaeological remains relating to the timber hall, while badly disturbed by later pitting, are sufficient to allow some attempt at reconstructing the building. The structure of the lower parts of the walls can be deduced. They consisted of regularly spaced earth-fast posts of more or less uniform section set within wall trenches to a depth of about 1m. This system was broken by four small doorways approximately 1.2m wide which were formed by the omission of a single post. It is likely that the posts — except possibly across the short sides of the main hall where the spacing and alignment of the posts were rather more irregular and perhaps across the end walls of the annexes — carried a horizontal member or rail and were joined to it in some way. The need for the wall-plate continuing unbroken across the doorways (see below), the proportion of the doorways, the distance between the hall and the later shoring and the general modular system of measurement (6'ft' units) suggest that the height of the side wall posts above ground was about 2m (Figs 14-15). Thus one third of each wall post along the long sides was probably below ground level. A wall constructed in this way would be rigid and resistant to the lateral thrust of a roof. Indeed the excavation of the postholes in the foundation trench showed no discernible sign of movement.

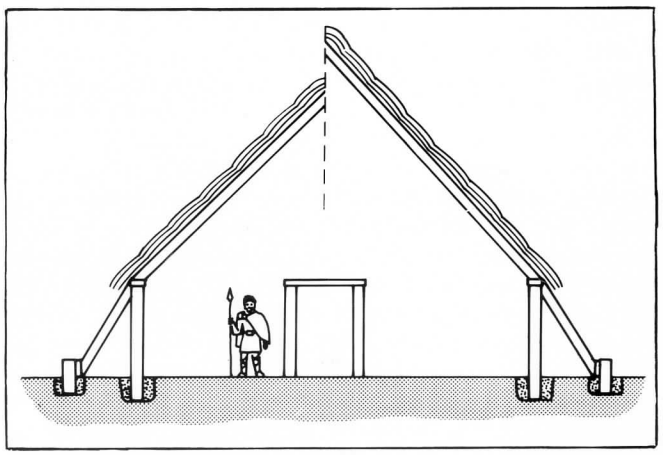


Fig 14: Cross Section through Timber Hall.

The roof of the main hall had a span of 8.35m and was presumably clad in some organic material as no trace of any roof covering survived in the excavation. This suggests either thatch or shingles and a pitch of between 45° and 55° can therefore be postulated. The only possible evidence for the form of the roof is the spacing of the wall posts which may have coincided with the rafter spacing but which, because of the plate, need not necessarily have done so. If the spacing of the rafters is accepted as that of the wall posts two roof structures are most likely, the first of which would have involved an undivided roof with paired rafters. Alternatively a bayed roof structure is possible. The modular construction of the walls with significant posts at 6'ft' centres and with two intermediate posts regularly spaced within each module has been proposed (see above p. 14). Although the significant posts are in no way distinguishable in size from other wal posts the mathematical arguments for each third post being significant are substantial. Indeed it is only possible, given the number of space units

Reconstruction of Phase 1 Timber Hall

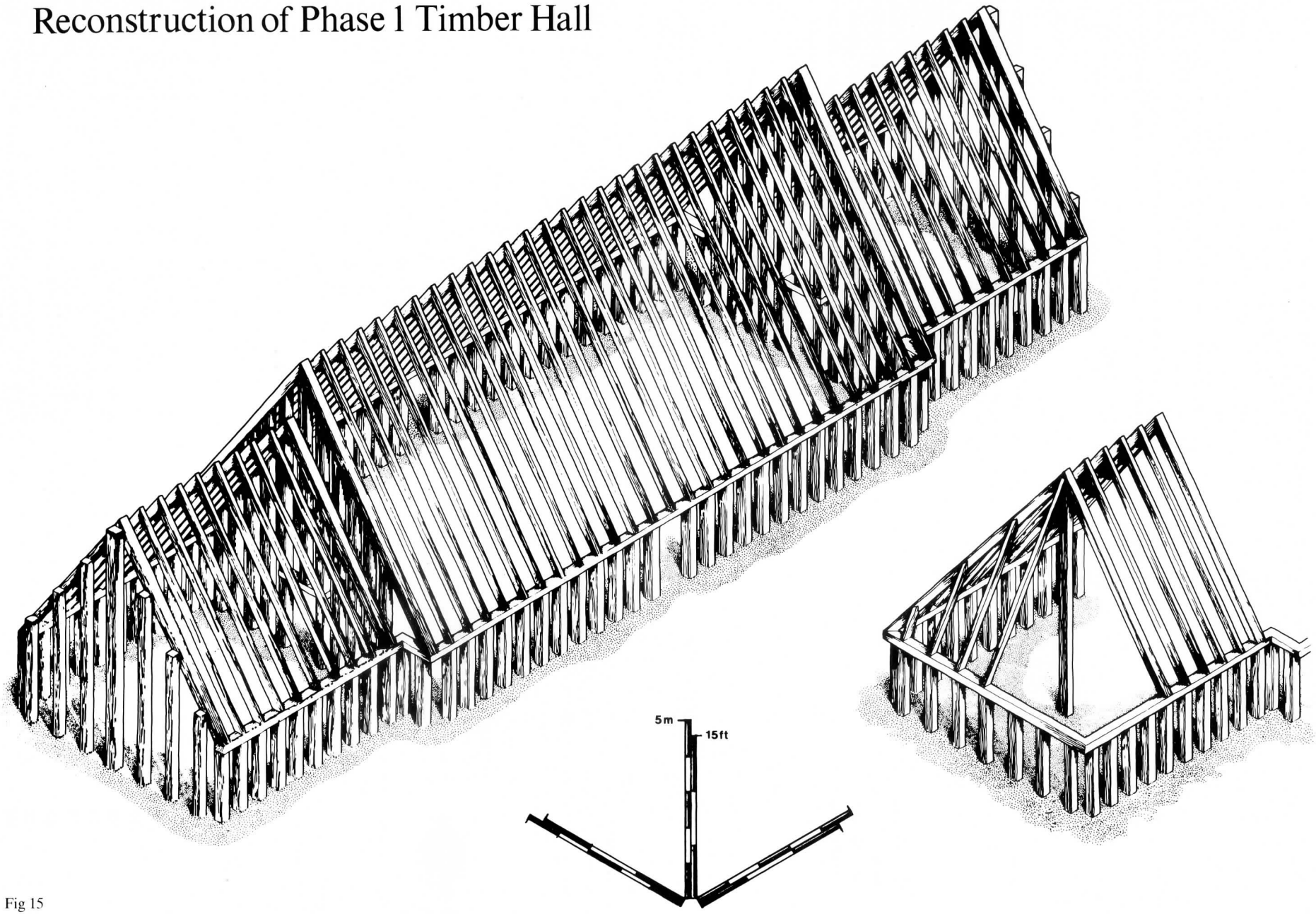


Fig 15

along the long walls of the main hall, to reconstruct a system of complete modules based on three or nine space units and the latter arrangement is clearly not satisfactory. The system also works for the eastern annexe if it is assumed that its eastern wall is not structural but rather as it were a screen wrapped around the end of the building — it is noticeable that in spite of careful work the regular post spacings are absent from the eastern wall trench of the annexe. The position of the doorways in the long sides of the halls within the central module but offset one space unit to the west also seems to support the idea of a systematic laying out. The possibility therefore exists that each significant post supported a principal rafter, producing a nine-bayed structure for the main hall and annexes of three bays at either end although it has to be admitted that this is based almost entirely on the mathematical properties of the building plan (an important factor in a building so precisely surveyed) allied to the positions of the shoring posts around the eastern annexe. The roof structure as drawn in Fig 15 should be regarded as a basic framework; as an option principal rafters could be substituted for every third rafter as discussed above. Components such as ridge pieces, for which there is no archaeological evidence, have been omitted.

The continuity of the total structure would also depend on the rails. The posts forming the long sides of the main hall were located virtually in a straight line and it must be assumed that some system of jointing was employed to connect sections of the rail together. All the surviving corners of the building were without corner posts. Assuming, therefore, that the rail was brought round the corner of the main hall into the short sides, if only for a short distance (*ie* perhaps just beyond the wall line of the annexe), the joint between the two rails would have been relatively simple, not being compromised by the location of a vertical timber underneath the actual corner. The end rafter, however, would have joined the rail at the corner. No evidence for wall cladding was found but it would be reasonable to assume that some sort of external cladding, perhaps wattle and daub, was used to protect the building.

The plan of the building which consists of a main hall with four structural walls and two lean-to compartments suggests that the end walls of the main hall were gabled although nothing survives to give any idea of their construction above plate level. The eastern end compartment was square in plan and the western one was probably similar. Only the eastern one was well enough preserved to provide any information as to how they were roofed and the evidence is contradictory. One posthole (AA926.6) and one possible posthole (AA1017), both roughly along the east-west axis of the structure, are relevant. AA926.6 lay just outside the line of the east wall while AA1017 lay in the centre of the compartment. This central post may have supported the apex of a hip but on the other hand AA926.6 may have formed part of the structure of a gable (see Fig 15). Postholes AA958, 963, 987 and 979, which probably supported shoring for the building, make more sense in the context of a hipped roof and the thrust generated by it along the axis of the building although the non-structural nature of the end wall is perhaps more appropriate to a gabled structure.

The building was flanked by a number of postholes (Fig 38) and these probably represent a phase when the building was shored up, presumably because of failure at roof level. The post-pipes, where surviving (AA972, 973) were vertical and it is therefore suggested that the posts were used to secure a ground beam against which the props, acting as shoring at plate level of the building, rested. The posts for the shoring at the north and south of the east compartment (particularly postholes AA972, 973, 925 and 927) seem to respect the modular system proposed — in fact their spacing provided the stimulus for its recognition.

In analysing the plan and structure of the hall it becomes apparent that several different building 'traditions' are embodied in it. The plan, comprising a main hall with subsidiary annexes at either end (with overall dimensions of *c.* 29.7 × 8.6m), most nearly resembles halls at Yeavering (A1(b) — 25 × 7m; A3(a) — 30 × 9.9m: Hope-Taylor 1977, 46-51, 55-8, 141-6), Atcham (23 × 8m and 26 × 9m: St Joseph 1975, 293-5), Malmesbury (23 × 7m: Hampton 1981, 316-21), Sprouston (*c.* 23.5 × 8.8m: St Joseph 1982), Milfield (Hope-Taylor 1977, Plate 7) and one near Leamington Spa discovered from the air in 1984 by Mr J Pickering (pers comm); it falls within a more general Anglo-Saxon type of hall comprising a main compartment with one or more subsidiary rooms. Variants can be seen at Chalton (Addyman *et al* 1972; Addyman and Leigh 1973) and Cowdery's Down (Millett with James 1983, *passim*). The Yeavering halls are the only other examples excavated of the Northampton type; yet while the Yeavering and Northampton halls share a common outline plan, Northampton lacks essential elements of the Yeavering style as defined by Hope-Taylor (1977, 213) namely i) a three-aisled construction, ii) heavy continuous load-bearing walls of squared vertical timbers in some way jointed together and iii) inclined external buttress posts. Whether the unexcavated examples relate more closely to Yeavering or Northampton in constructional matters is uncertain.

An essential element of the Northampton hall is the setting of posts deeply in a trench, probably with two thirds of the post above ground and one third below, thereby keeping the posts upright and rigid and obviating the need for buttresses. The postholes outside the building are interpreted as supporting secondary shoring to counteract twisting or the wall plate and spreading of the roof rather than as primary buttresses. With rigid upright posts it was possible apparently to provide a single-span roof for the main hall across a distance of 8.35m. Yeavering had both substantial load-bearing walls and buttresses as well as side posts. At Cowdery's Down with roofs to span up to 8.5m across (C8, C9, C12) the walls were set in shallower trenches commonly less than 0.5m deep but up to 0.75m and external supports were provided as an integral part of the building, perhaps attached to the building at plate level, again to counteract the twist of the plate and the lateral thrust of the roof (Millett with James 1983, 210-17). The west hall at Cheddar (Rahtz 1979, 142-58) which was rather later in date, belonging to the 10th to 12th centuries, needs to be considered alongside Northampton. West hall I had an external length of 17.2m and a width of 9.3m. In west halls II and III the length was reduced marginally to 17m and the width to 7.8m. The dimensions are very similar to those of the main compartment of the Northampton hall. Although individual post-pits rather than a continuous trench were employed the wall posts were set earth-fast to a depth of about 1m, buttresses were absent and the internal area was covered in a single span. The absence of shoring of any sort suggests that the problems encountered at Northampton with the roof had been solved, at least when the span was reduced to 7.8m (for the reduction in the width of the hall needs explanation).

The form of the walling also needs discussion. The regular spacing of the posts has been noted but there was no evidence as to the method of infill between posts. Perhaps most likely is a wattle and daub curtain wrapped around the outside of the posts although no archaeological evidence was found for this. Such an elementary wall technique contrasts with the sophisticated system postulated for Yeavering with walls of vertical timbers jointed together and that at Cowdery's Down where in the large hall C12 close-set staggered vertical timbers

contained a wattle infill. The south wall of the main hall was perhaps erected before the north wall for the posts in the construction trench of the south wall lie centrally within the trench whereas those of the north wall do not.

The arguments for a bayed structure at Northampton have been analysed above. While the precision of the laying out and the mathematical analysis of the ground plan favours such a form of construction it has to be admitted that there is little other supporting evidence. Perhaps clearer evidence for bayed structures is to be found at Cowdery's Down where the regular positioning of external raking timbers suggests such an arrangement for halls C8, C9 and C12 (Millett with James 1983, 210-17). Without the postholes for these timbers there is nothing else inherent in the plan to suggest a bayed arrangement and the same arguments against a bayed roof system as at Northampton would also apply. The use of a bayed system has been suggested at Yeavering at least for building A2 (Hope-Taylor 1979, 128-9).

The Northampton hall, while utilising a plan form and methods of construction found elsewhere, employs a combination of these elements so far unique. Problems were encountered which required the provision of secondary shoring but the concept of the building, its scale and the precision employed in laying it out clearly indicate a sophisticated structure surely associated with the highest levels of contemporary society.

The Stone Hall

Figs 9, 16-20, 41-42; Pls 5-13

Although nothing survived of the stone hall above ground level it is reasonable to suppose that the walls were carried up in stone to eaves' level. The foundations of the original rectangular hall, between 1.2 and 1.3m wide and 0.6m deep, were well coursed and tightly packed in an earth matrix but traces of mortar along the edge of the wall line and lumps of mortar within the robber trench of the wall suggest that the walls themselves were mortared. Quantities of wall plaster with a white lime wash on its surface were also found in the robber trench of the wall indicating that the wall had almost certainly been rendered on its inner face but the treatment of the outer face is uncertain. The stone-walling material was almost entirely locally derived and mainly came from the Blisworth Limestone, the Upper Estuarine Limestone and the Northampton Sand (p. 70). Sources for all this stone lay within two miles of Northampton at Duston, Dallington and Kingsthorpe to the north and also to the south of the river Nene. The heterogeneity of the collection, however, suggests that the stofne was not freshly quarried but obtained through robbing existing building remains; this hypothesis is supported by the presence on the site of 88 fragments of Roman tile, some within the Saxon wall foundation (p. 70; *cf* also the 111 fragments found in the 1973/6 excavations: Williams *et al* 1979, 322), and also a few pieces of tufa, a favoured Roman building material. The most likely source for the stone and tile was the Romano-British settlement at Duston, just over one mile to the west. The thickness of the wall itself is uncertain. The walls of the adjacent minster church seem to have been slightly wider than their foundations (Williams J H 1979, 112) but along the southern edge of the robber of the north wall of the hall (AA123.1) mortar level AA161 slightly projected over the robber fill suggesting that the walls were perhaps stepped in from the foundations. It is unlikely, however, that the walls were much less than 1m thick. Taylor (1978, 959) in analyzing the average wall thicknesses of the naves of 186 Anglo-Saxon churches records only two churches with a wall thickness greater than 1.2m and 11 greater than 1m; the hall was clearly a substantial and important structure. The total absence of any roofing material from the excavation again suggests that organic materials such as thatch or shingles were used. The span of the hall, at *c.* 11m, is greater than that of the timber hall and again would have presented problems in devising a roof structure but it should be noted that the possibly contemporary church at Brixworth had a similar span across the nave. The reduced thickness of the walls of the extension to the west of the hall together with its plan suggests a simple lean-to structure set round the north-west corner of the hall.

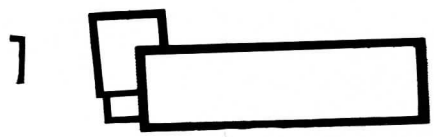
The stone hall is to date totally without parallel in England. Few stone secular buildings are known and nothing compares in size with the Northampton hall which was originally 37.6m long and subsequently extended to 43.4m. Similar structures, however, certainly existed, at least by the time of Alfred when Asser could declare 'What shall I say . . . Of the royal halls and chambers constructed admirably in stone and timber at his [Alfred's] command? Of the royal residences in stone, moved at the royal command from their ancient sites and beautifully erected in more suitable places' (Whitelock 1955, 272). Stone buildings, however, are likely to have been present at important royal centres before the time of Alfred.

Parallels for the Northampton hall can be found on continental palace sites. Plans of a number of these palaces, together with that of Northampton, all reduced to a common scale, are illustrated in Figs 16-20. The Northampton hall clearly fails to match the architectural splendour of the great Frankish and Carolingian palaces at Aachen (Mann 1965, 385-90; Hugot 1965), Ingelheim (Rauch 1976), Samoussy (Vogt 1948, 100-1; Weise 1923, 60-82) and Quierczy (Vogt 1948, 100-1; Weise 1923, 5-59 and plan 1) but is similar in scale to structures at Zürich (Vogt 1948, 66-104), Frankfurt (Stamm 1955; Hundt and Fischer 1958, 402-8), Paderborn (Winkelmann 1972), the possible Great Moravian palace at Mikulčice (Poulik 1975, 21) and the Visigothic palace at Naranco (Haupt 1916; Bevan 1938, 19-20: Mann 1965, 390). At Zürich, Lindenhof, a probably ground floor hall measured 16 by at least 30m externally. Just to the north of the hall were two smaller rooms and other buildings lay to the west. The palace at Frankfurt, frequented by Charlemagne and Louis the Pious, had a raised main hall, 12.2 by 26.5m internally, with a suite of small rooms to the west. At Paderborn, again associated with Charlemagne, the main hall was 30.9 by 10.3m. The close association of the *Pfalzkapelle* at Frankfurt and the cathedral at Paderborn draws comparison with the juxtaposition of the hall and minster at Northampton. The foundations of a rectangular stone building 25 by 8.5m at the Moravian stronghold of Mikulčice were interpreted as belonging to a palace. The building was divided into two by a partition. The Naranco hall, perhaps constructed in the 8th century, still stands. The barrel-vaulted hall, *c.* 21 by 6.5m, is raised up over a ground floor. The whole is richly embellished with architectural decoration.

Many of the continental halls were at first floor level. The apparent absence of any internal piers or walls within the Northampton building argues against a raised hall there, although raised floor levels have been suggested in the 6th/7th century hall C12 at Cowdery's Down (Millett with James 1983, 240-2) and the 9th century hall at Cheddar (Rahtz 1979, 99-107).

On virtually all the continental sites the hall was an integral and important component of the palace complex. The timber halls of Anglo-Saxon England have generally been seen as serving an essentially domestic function, perhaps in some cases on a grand scale. This contrasts with the postulated more ritual function of the continental halls where homage was performed (*cf* Thordeman 1964, 186). It has, however, been suggested

Northampton



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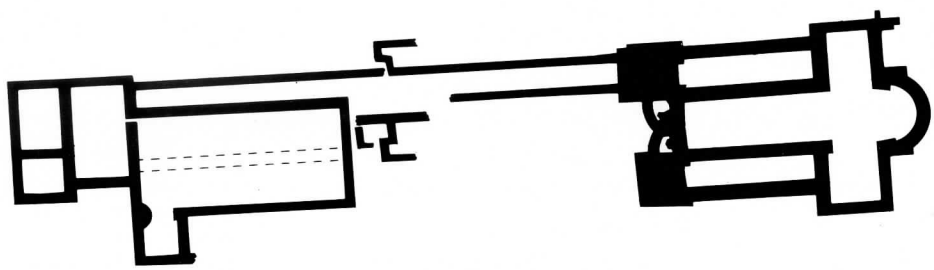
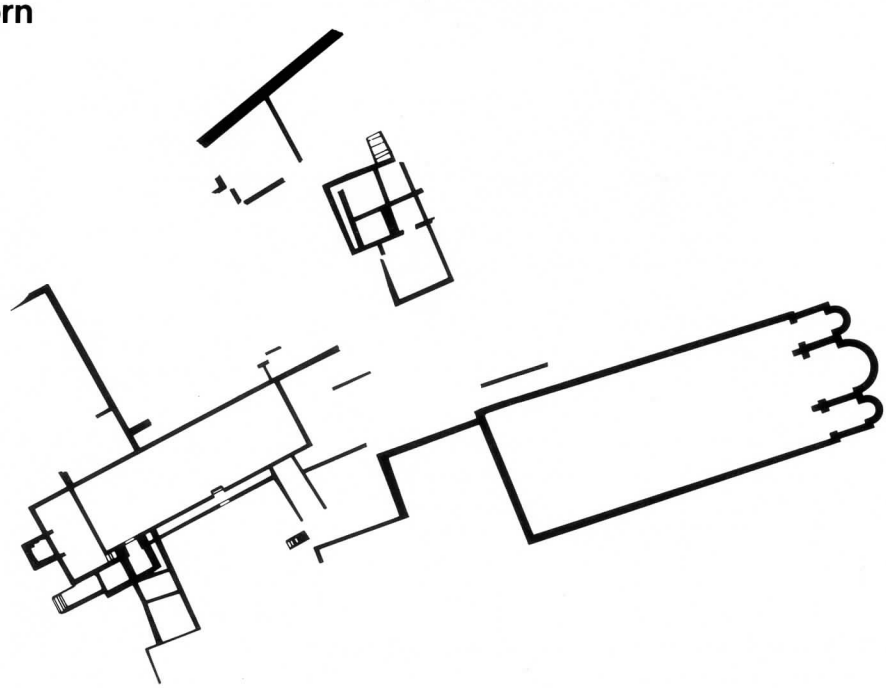
Frankfurt



after Stamm 1955; Hundt and Fischer 1958

Paderborn



after Winkelmann 1972

metres 0 50

Fig 16: Comparative Palace Plans 1.

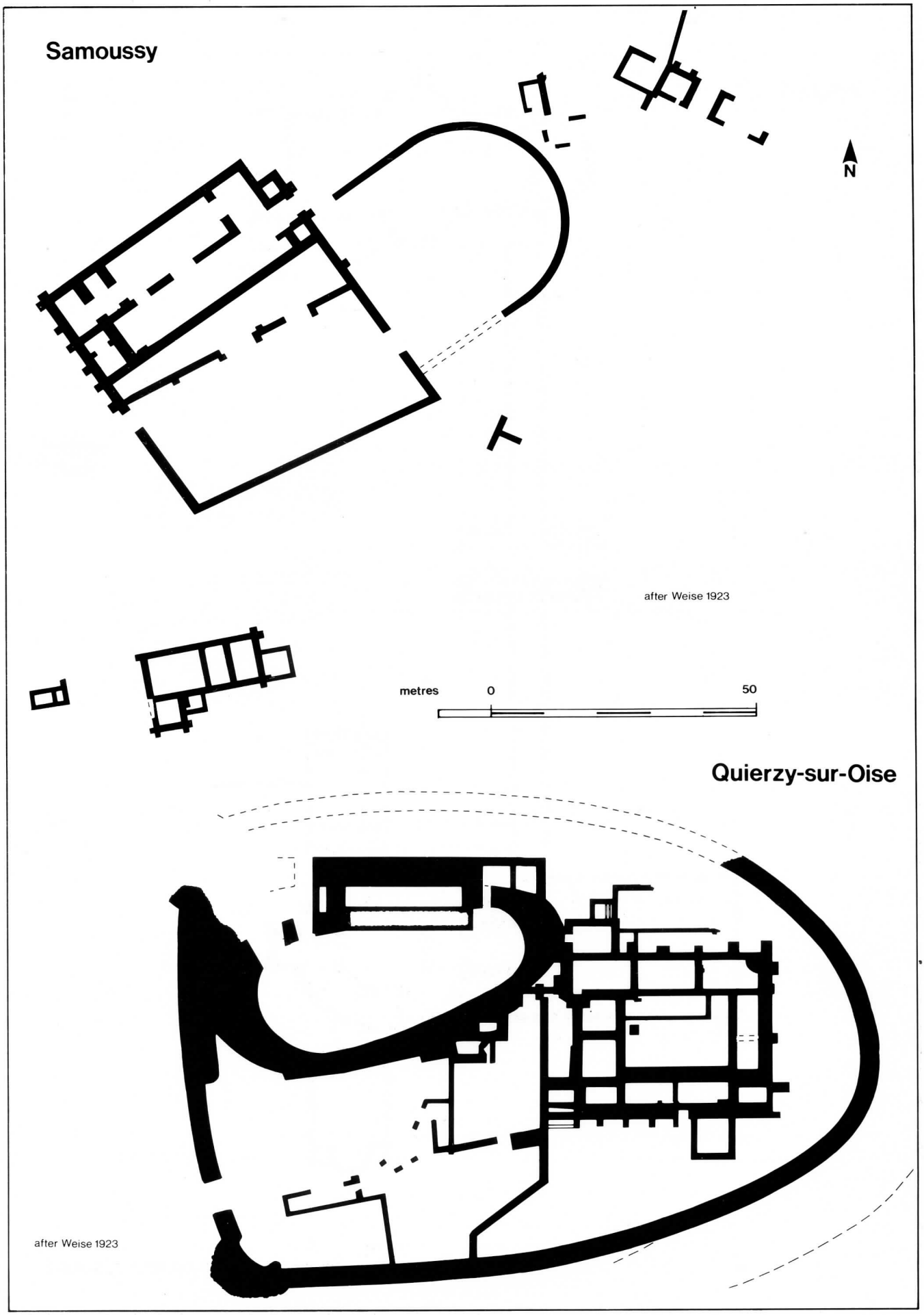


Fig 17: Comparative Palace Plans 2.

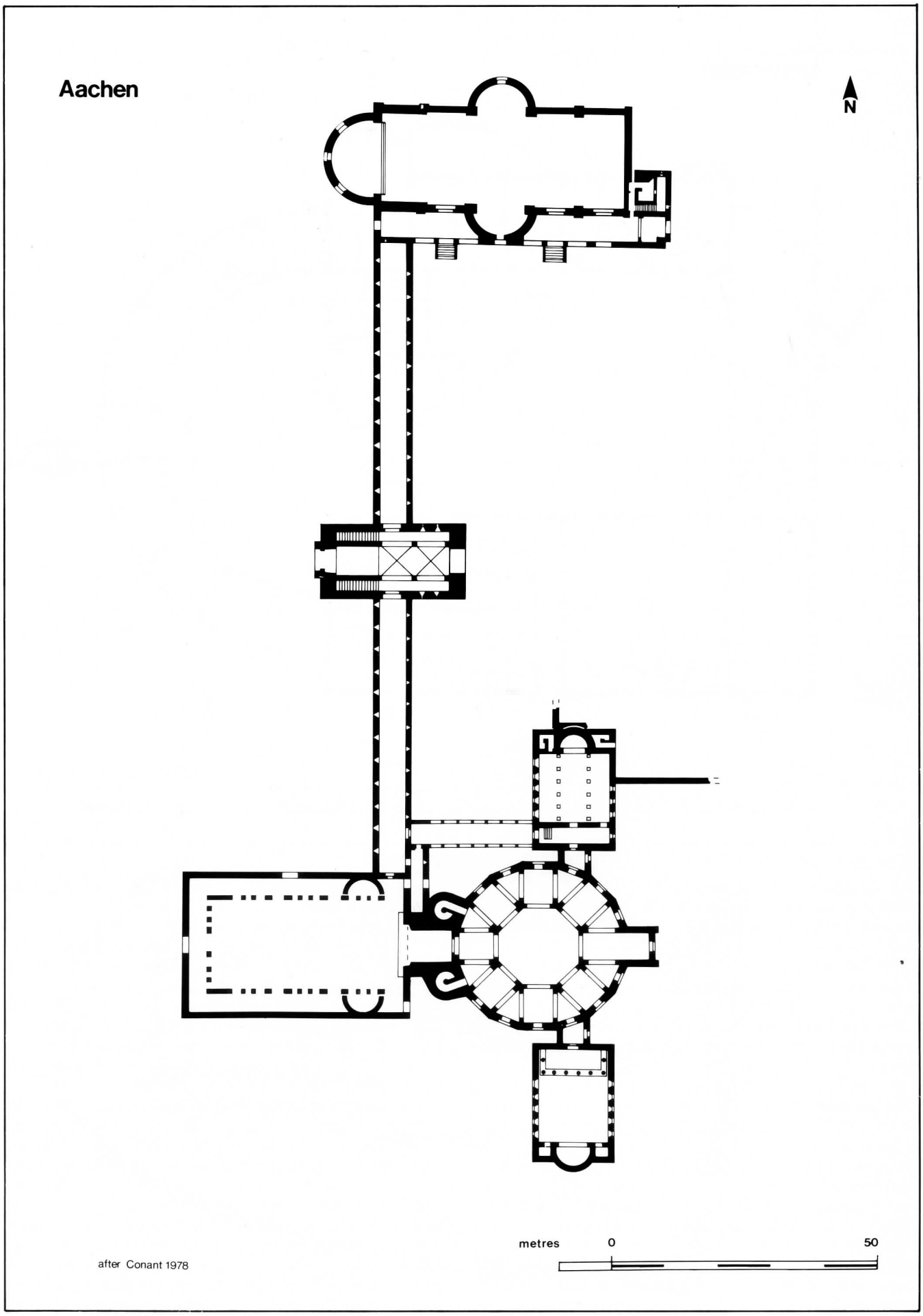


Fig 18: Comparative Palace Plans 3.

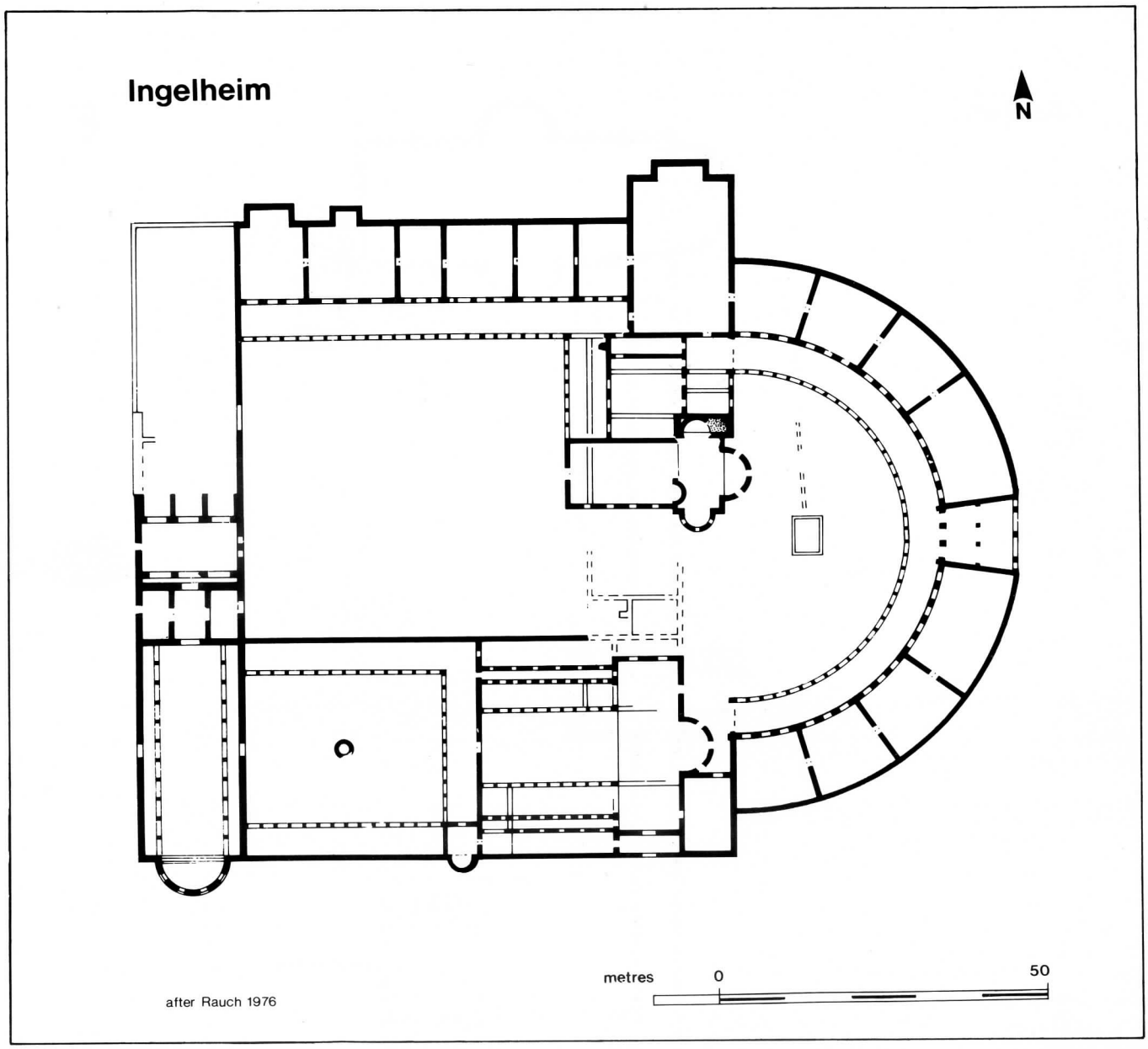


Fig 19: Comparative Palace Plans 4.

that the 10th century west hall at Cheddar may have had a ceremonial function (Rahtz 1979, 374-5, 384-6) and certainly the scale of the Northampton hall would be in keeping with such a purpose.

The Northampton hall was the central element of what is suggested was a palace complex which additionally included a probable minster church (p. 20), and a graveyard and possibly a chapel to the east of the hall (*cf* p. 41). Similar arrangements can be seen, some on a more grandiose scale, in the palace complexes illustrated in Figs 16-20.

It is relevant to consider the survey contained in the *Brevium Exempla* of five royal estates in the north of France (Loyn and Percival 1975, 98-105). The survey, belonging to the early 9th century is a model survey of estates contributing to the maintenance of the king and his servants. The first estate is described as following:

'. . . Asnapius a royal house, well built of stone, with three chambers; the whole house surrounded by galleries, with 11 rooms for women; underneath one cellar; two porches; 17 other houses inside the courtyard, built of wood, with as many rooms and with the other amenities all in good order; one stable, one kitchen, one bakehouse, two barns, three haylofts. A courtyard with a strong palisade and a stone gateway with a gallery above from which to make distributions. A smaller courtyard similarly enclosed with a palisade . . .'

The survey of the second estate begins.

'. . . a royal house, well-built of stone outside and wood inside, with two chambers and two galleries; eight other houses inside the courtyard, built of wood; a well-built women's workshop with a store room; one stable; a kitchen and bakehouse combined; five barns, three granaries. A courtyard enclosed with a palisade and added spikes, with a wooden gateway. The gateway has a gallery above it. A smaller courtyard likewise enclosed with a palisade.'

The descriptions for the other three estates are similar. One includes a 'chapel built of stone'. While these estate centres are on a different level to the great royal palaces of Aachen and Ingelheim their descriptions should be considered in relation to Northampton. Extensive series of buildings are described and stone buildings are present. These are, however, not necessarily as large as the Northampton hall nor is there any indication of an important religious presence such as a stone minster church. The centres were essentially engaged in agriculture and the details given of agricultural production seem to place them with some administrative functions within a complex royal settlement hierarchy.

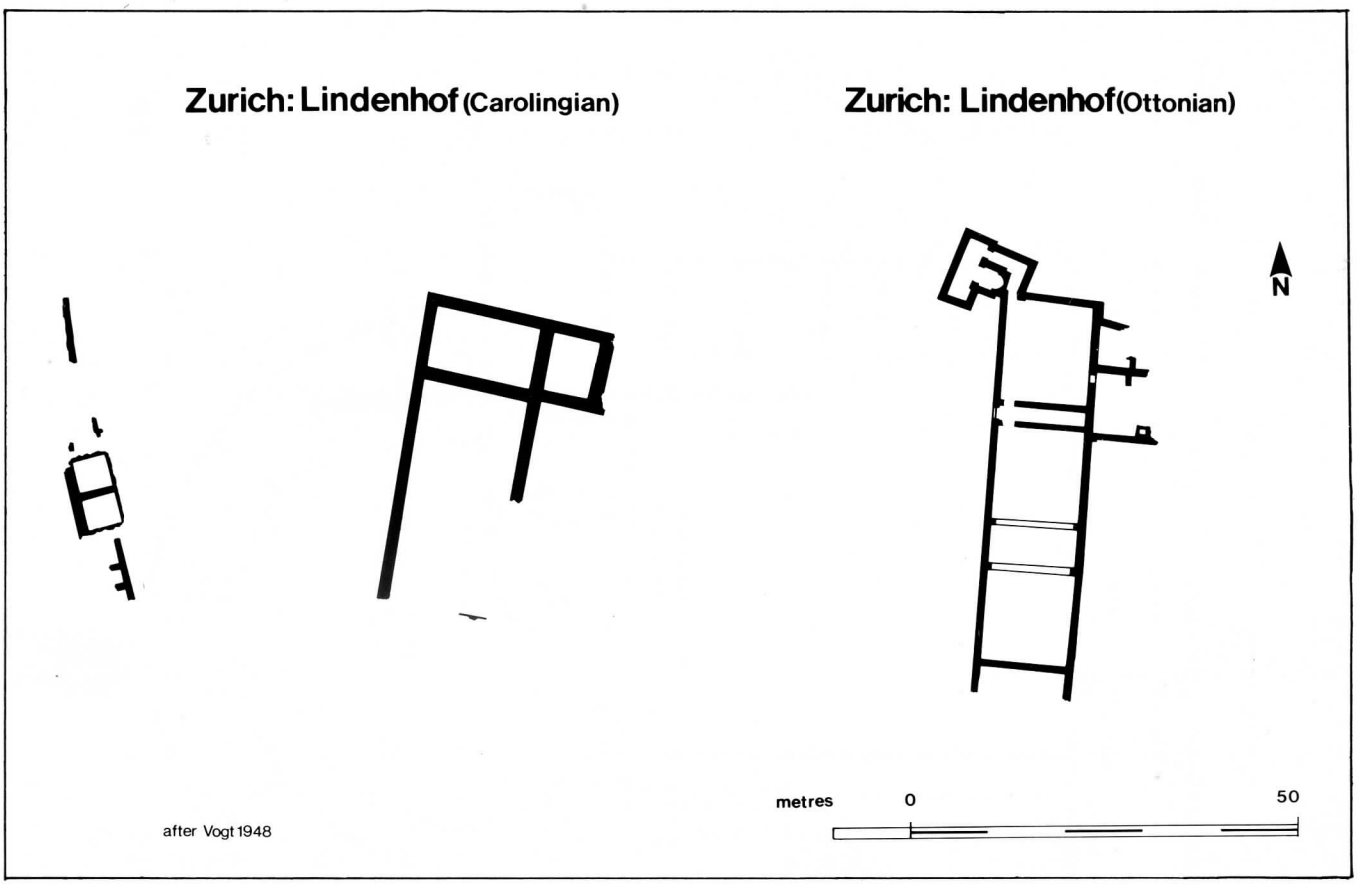


Fig 20: Comparative Palace Plans 5.

The Mortar Mixers

Figs 10-13, 41-42; Pls 15-18

The two mortar mixers described in this report (W50 and 129) bring the total number discovered at Northampton to five (*cf* Williams J H 1979, 118-33 for the other three). All can be seen to have been essentially the same comprising a bowl 2-3m across lined with wattlework (in four cases the bowl was cut down into the ground and for the other (W50) a circular bank was constructed at ground level to form the bowl); a central post supported a beam from which was suspended a number of paddles. The constituents for making mortar (lime, sand and water) were placed in the bowl and mortar was mixed by rotating the beam and the paddles. It was calculated that probably four men or two animals would have been required to rotate the mixing mechanism.

One further mixer is known in England at Monkwearmouth in Northumbria where it was associated with the Anglo-Saxon monastery (Cramp 1969, 32-6). It had been much disturbed by graves and in the interim report was interpreted as a mausoleum or oratory. Gutscher (1981) has drawn together thirteen continental examples of 'mortar discs' (Mörtelscheibe) which he argues were mortar mixers. These mixers were found at Zürich in Switzerland, Mönchengladbach, Schüttern and Wittelsbach Burg in West Germany, Posen and Wiśliza in Poland and Wellin in Belgium. A further example has been found at Reichenau in West Germany. Basic information about all the mixers is contained in Table 1. Apart from Posen B at 1.1m the mixers all have a diameter of between 2 and 4m with most grouped between 2.2 and 3m. All seem to comprise a mortar-filled circular bowl lined with wattlework and with a central posthole. Indications of rotary motion are apparent in most examples. Apart from at Northampton perhaps the best evidence comes from Zürich and Mönchengladbach. At Zürich, Lindenhof 1, very clear trail marks could be seen in the surface of the mortar residue concentrically disposed around the central posthole (Gutscher 1981, 181 *Abb* 6-7). At Mönchengladbach indications of rotary motion could be detected on the surface of the mixer residue and 'stakeholes' were disposed in a cross arrangement centred on the central posthole (Borger 1958, 51-2, 211-2; Gutscher 1981, 180-2). These stakeholes, representing the final resting positions of the paddles as at Northampton 3 (Williams J H 1979, 123-8), indicate a four-armed structure supporting paddles in contrast to the two-armed version suggested for Northampton (*idem* 118, 125, 128; *cf* Gutscher 1981, 185-6). Gutscher (*ibidem*) proposed as alternatives:

i) a fixed central post with paddles suspended from a beam rotating round it on a bearing (*cf* the Northampton reconstruction) and

ii) the paddle mechanism fixed rigidly to a rotating axial post.

This latter reconstruction seems less likely. He also proposed, on the basis of the discovery of two postholes at Zürich, Münsterhof, a superstructure to the mixer to stabilise the axial post, formed of two crossed yokes. Such a framework has much to commend it but no evidence for one was found at Northampton.

In discussing the continental examples (except Reichenau) Gutscher (1981, 187) argues that all the examples of which he was aware could be dated to the Carolingian and Ottonian eras and definitely before 1000; he also noted a number of sites which stood in a direct relationship with the Carolingian and Ottonian Courts — Zürich, Schüttern and Posen. There can be little doubt, and this is also borne out at Northampton, Monkwearmouth and Reichenau, that mortar mixers, implying as they do the presence of substantial stone buildings, indicate high-status sites of the period but the date range proposed by Gutscher seems unduly weighted towards his hypothesis of the influence of the Carolingian and Ottonian Courts. While the Northampton examples perhaps date to the

Table 1 Anglo-Saxon and Continental Mortar Mixers

Site	Status	Diameter	Probable Date	References
Northampton (1)	Anglo-Saxon palace and minster	*c.* 2.20m	Early 9th C	Williams J H 1979, 119-20
(2)		*c.* 3.00m	Early 9th C	Williams J H 1979, 121-22
(3)		*c.* 2.20m	Early 9th C	Williams J H 1979, 123-25
(4) (W129)		*c.* 2.40m	Early 9th C	above p. 00
(5) (W50)		*c.* 2.40m	Early 9th C	above p. 00
Monkwearmouth	Anglo-Saxon monastery	*c.* 3.65m	Late 7th or 8th C	Cramp 1969, 32-36
Zürich (Switzerland) Münsterhof	The Fraumünster	2.9m	3rd quarter 9th C	Gutscher 1981, 178-80, 186
Zürich Lindenhof (1)	Levels predating Carolingian palace status at this time not documented	2.6m	Pre-Carolingian	Vogt 1948, 64-6; Gutscher 1981, 180-82, 186
(2)		2.6m	Pre-Carolingian	
(3)		2.9m	Pre-Carolingian	
Mönchengladbach (W Germany)	St Vitus minster	3.4m	10th C	Borger 1958, 51-2, 211-2; Gutscher 1981, 182-4, 186
Schüttern (W Germany)	Imperial abbey church	2.6m	8th or 9th C	Gutscher 1981, 182, 186
Wittelsbach Burg (W Germany)		2.2m+	'Pre 1210'	Gutscher 1981, 186, 188
Reichenau (W Germany)	Monastery		Late 9th/early 10th C	pers comm Dr A Zettler
Posen (Poland) (A)	Cathedral	4.0m		Gutscher 1981, 184, 186
(B)		1.1m	Gutscher gives 3rd quarter 10th C	Gutscher 1981, 184, 186
(C)		?		Gutscher 1981, 184, 186
(D)		?		Gutscher 1981, 184, 186
Wiśliza (Poland)	East of parish church	4.0m	Gutscher gives end 9th C	Gutscher 1981, 184-6
Wellin (Belgium)	Near Wellin church	2.0m	?	Archéologia 114 (1978), 69; 129 (1979), 82; Gutscher 1981, 182, 186

beginning of the 9th century that at Monkwearmouth is clearly earlier and a case can be made for other sites. The Zürich Münsterhof example seems precisely dated (Gutscher 1981, 178-80) and the Mönchengladbach example, on the evidence of Pingsdorf sherds is unlikely to date before the 10th century (Borger 1958, 51-2 and 211); a date for Posen at the end of the 9th century is also provided by pottery evidence (Gutscher 1981, 184-5). It is difficult, however, to accept Gutscher's revision (1981, 180) of Vogt's pre-Carolingian date of the Zürich, Lindenhof examples (Vogt 1958, 64-6 and *Taf* 16.4). The mixer in trench 18 was possibly cut by the construction trench of a pre-Carolingian wall, but in any case because of the nearness of the mixer to the wall and the surviving height of the wall it would have been virtually impossible for the mixer to have functioned after the wall was constructed. At Schüttern, since Gutscher notes that it was not possible to place the mixer with certainty in any particular period, it is necessary to extend his possible date range for it from the beginning of the 9th century back into the 8th century (*cf* Gutscher 1981, 182, 186). At Posen again the dating should perhaps be less precisely defined than the third quarter of the 10th century since the excavator could not connect the mixers with any church building and came to the conclusion that they were used for baptisms during the Ottonian eastern mission (*idem* 184). 13th or 14th century pottery was found in association with the Wellin mixer (Archéologia 129 (1979), 82); while Gutscher (1981, 182, 186) is probably right in postulating an earlier date this need not necessarily be confined to the 9th or 10th century.

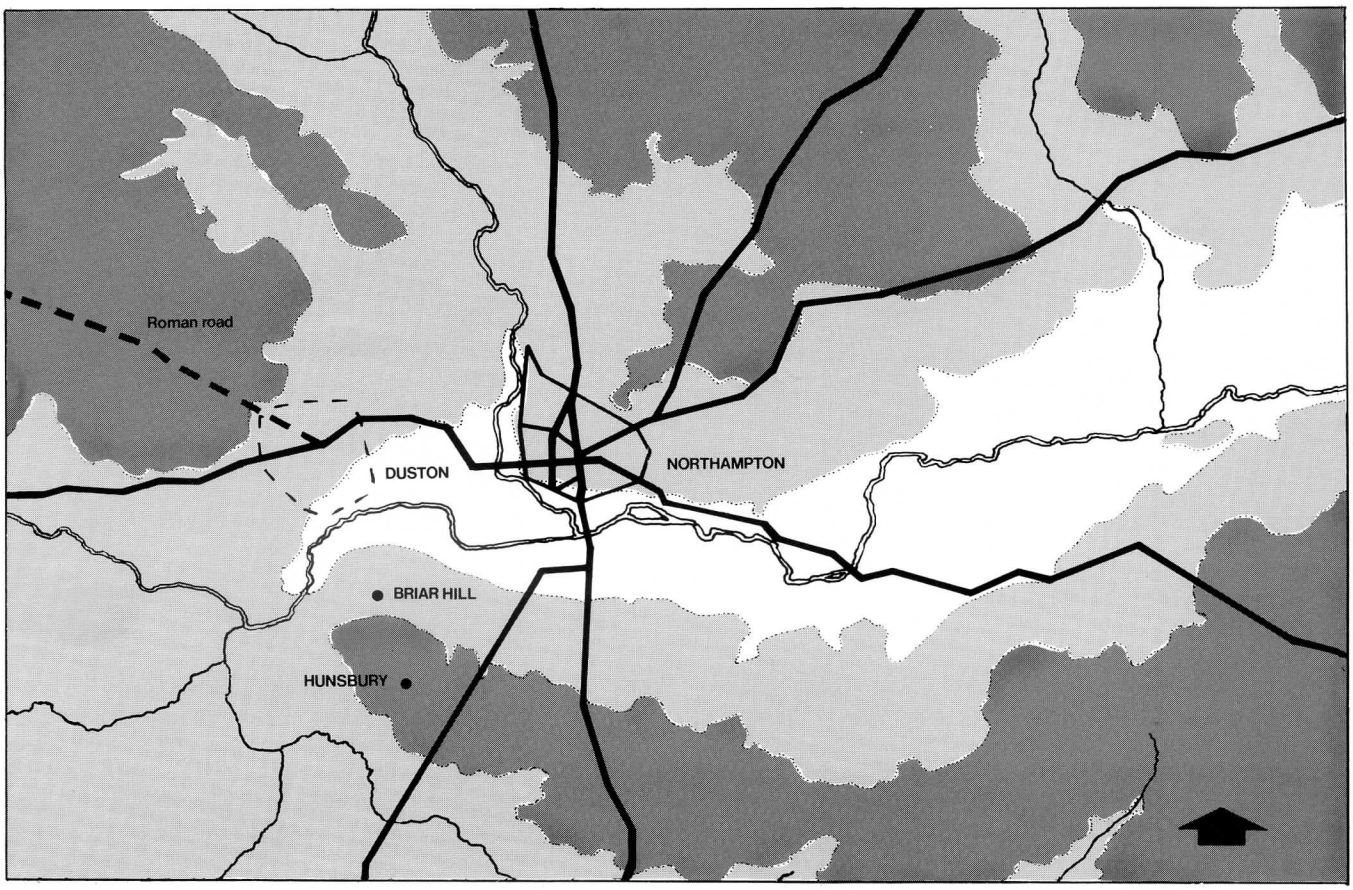
Whatever the precise dating is for individual mixers it is clear that they are to be found throughout Europe from the late 7th or early 8th century perhaps to the 10th century, and almost invariably in association with sites of high status.

The Historical Context for the Northampton Halls

Figs 21-27

Northampton lies in the fertile upper Nene basin. The river Nene would have provided a ready means of access to the Midlands for settlers arriving from the continent of Europe and north-south land routes through Northampton were probably established fairly early in prehistoric times. Certainly a succession of foci are to be found in the immediate vicinity of Northampton dating from neolithic times onwards (Williams J H 1979, 3-4; Williams and Bamford 1979; Williams 1982a, 5-6; RCHM forthcoming). A causewayed camp was constructed in the middle of the 5th millenium BC on the gently sloping ground to the south of the river at Briar Hill. A sequence of ditch recuts shows that the earthworks were maintained or periodically reinstated over a period of about 1000 years. Pits and structures dating to between 2400 and 1600 bc witness the continuing use of the site and a flat cremation cemetery on the west side of the enclosure dates to *c.* 1230 bc. Whatever the social, economic or political function of the site it certainly seems to have retained a continuing if not continuous significance and importance as a focus for the area, perhaps over some 3000 years. A fairly extensive spread of mesolithic – Bronze Age material, mainly flints, has been found at the west end of Northampton (p. 71; *cf* RCHM forthcoming). A small hill fort was constructed, perhaps *c.* 500 BC on the higher ground immediately to the south of Briar Hill at Hunsbury. possibly as the home of the local chieftain. Evidence for other Iron Age settlement in the surrounding countryside is fairly common. The presence of about 20 British coins at Duston suggests that the focus for the upper Nene basin had perhaps shifted there before the Roman Conquest. A 'small town' certainly seems to have developed during the 1st century AD with or without the impetus of a Conquest period military presence. Evidence for the settlement comes mainly from finds recovered and imprecise records made during ironstone quarrying on the site in the late 19th and early 20th centuries but the presence of coins of Arcadius and Honorius and two late Roman buckles suggests occupation continuing into the 5th century (RCHM forthcoming, Duston (5); Hawkes and Dunning 1961, 50, 52). Roman pottery and coins have been found at the west end of Northampton but no structural remains have been identified (p. 9; see also RCHM forthcoming). Gold Street and Marefair, just to the north of St Peter's Gardens, formed the east-west axis of the late Saxon town and it has been suggested that the road may have originated as the Roman road between Duston and Irchester (Williams J H 1979, 4).

Northampton: A Preferred Location



Evidence for the early Saxon period, while not prolific, suggests a greater concentration of settlement around Northampton than over the county as a whole. The largest cemetery, just to the west of the Romano-British small town at Duston and lying perhaps even on the edge of the settlement itself, on the evidence of the grave goods belongs mainly to the period between the mid-5th and the mid-6th century, although there is also some later material (George 1903-4; 1919; RCHM forthcoming, Duston (7)). The intriguing discovery during ironstone quarrying of a Roman lead coffin within the cemetery poses the question of continuity between the Roman and early Saxon periods. Other cemeteries have been found to the east of Northampton at St Andrew's Hospital (RCHM forthcoming, Northampton (4)) and to the south of the river between Hunsbury and Hardingstone (RCHM forthcoming, Hardingstone (23, 24)). It is more difficult to distinguish early Saxon settlement sites in the immediate vicinity for the local black gritty pottery of the early/middle Saxon period maintains a basically unchanged tradition between 400 and 850. Only where decorated sherds characteristic of early Saxon funerary wares (though not all such vessels were necessarily used for funerary purposes and there are problems with the chronology of stamped pottery) are present is it possible to refine the chronology with certainty. Early Saxon settlement activity around Northampton can be identified at Upton and Briar Hill and early/middle Saxon pottery has been found at Hardingstone, Wootton and Weston Favell (RCHM forthcoming, Upton (5), Hardingston (21, 22), Wootton (8), Weston Favell (8)), but the clearest evidence comes from the site of Northampton itself. Possibly five sunken-featured buildings have been excavated in Chalk Lane and on the present site (Williams and Shaw 1981, 95-6; above pp. 9 and 15). Where sufficient remained they could be seen as simple rectangular hollows cut down into the ground with a single post at each end. The two on Chalk Lane furnished radiocarbon dates of AD 570 ± 60 (HAR-3688-9) and AD 720 ± 70 (HAR-3935) while the date from AA441, St Peter's Gardens, was AD 470 ± 70 (HAR-5557). Two disc brooches from St Peter's Street (Oakley and Webster 1979, 248) and the Green just to the south (Shaw forthcoming b) belong to the late 5th or early 6th century. Twenty five decorated pottery sherds have been found at the west end of Northampton; while four of these perhaps belong to the late 5th century the others are probably later perhaps belonging to the early 7th century. Over 2000 sherds of plain black gritty early/middle Saxon pottery have been recovered, associated with postholes and other features and it is reasonable to believe that some at least of these occupation remains are early as opposed to middle Saxon in date. There is nothing, however, in the archaeological record as a whole to distinguish Northampton from a typical rural site of the period or to mark it out as a centre of importance.

From the late 8th century onwards, however, Northampton takes on a decidedly aristocratic aspect. Initially at the centre of the complex was a large timber hall distinguished both by its scale and the precision with which it was laid out (p. 28 above). The radiocarbon measurements are difficult to interpret

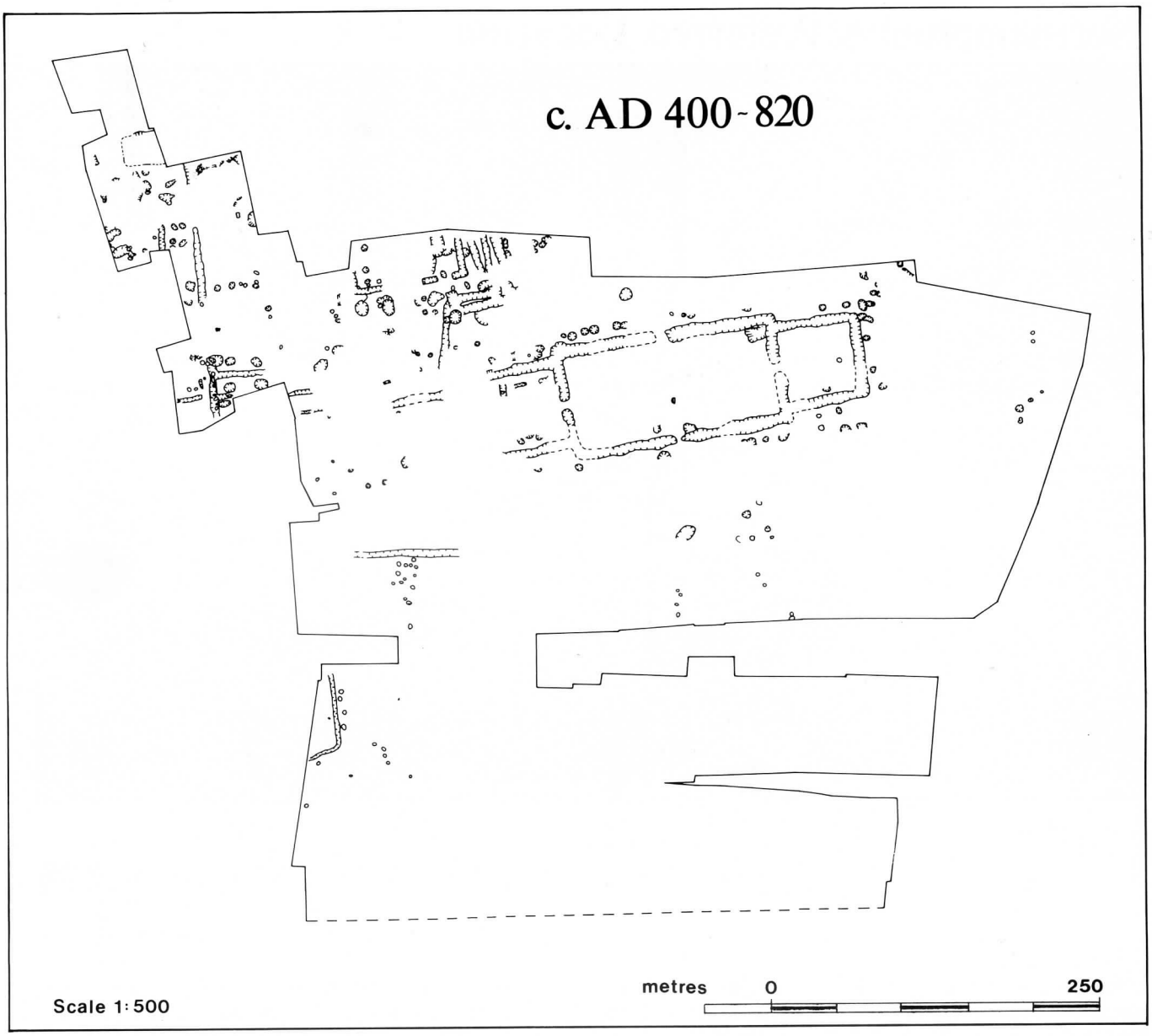


Fig 22

(above p. 26, below p. 64) but taken with the other evidence perhaps suggest that the hall was constructed in the middle of the 8th century. In size and plan it most nearly resembles probable royal halls at Yeavering, Milfield, Sprouston and Atcham and also one at Malmesbury. Smaller timber structures were found to the north-west, west and south-west of the main hall and were probably contemporary with it. The timber building on Black Lion Hill dated by radiocarbon to AD 700 ± 70 (HAR-5560) perhaps also belonged to the 8th century (Shaw forthcoming a) as well as some of the structures evidenced in Chalk Lane (Williams and Shaw 1981, 95-6).

Possibly early in the 9th century the timber hall was replaced by a large rectangular stone hall which was subsequently extended to the west (p. 31). This building, so far unparalleled archaeologically in Anglo-Saxon England, has contemporary parallels in the royal halls of continental Europe. To the west of the stone hall were the remains of the east end of a building, presumably a church, which extended westwards under the present St Peter's church. A number of oriented graves has been excavated some 50m to the east of the stone hall (Yates forthcoming). These produced three radiocarbon dates giving a weighted mean of AD 800 ± 70 (HAR-4390, 4809-10). A timber structure on the north side of Marefair (Williams F 1979, 43-7) with mortar in its construction trench was perhaps of a similar date and it is reasonable to suppose that there was continuing occupation in Chalk Lane. The combined spread of early and middle Saxon settlement covered an area of over 20 acres although it is not possible to define precisely the extent of settlement at any given time.

Although Northampton does not occur in the historical record until the year 913 when it is first mentioned in the Anglo-Saxon Chronicle (Whitelock 1965, 62) and although further references before the Norman Conquest are extremely rare it is possible, using place-name evidence and later documentary sources, to place the archaeological discoveries in a broader historical context.

Hamtun was Northampton's earliest recorded designation, the 'north' element not occurring until the 12th century. Gover, Mawer and Stenton (1933, xvii-xviii) argued that 'It is on the whole probable that the Old English *hamtun* generally carried something of the sense of the modern 'home farm' or in more general terms of a central residence as contrasted with out-lying and dependent holdings. It suggests a time when something anticipatory of later manorial development had begun to appear — the 8th rather than the 6th century . . . it may be surmised that the original Northampton was a royal residence and estate at which were rendered the dues payable

West Northampton c. AD400 to 820

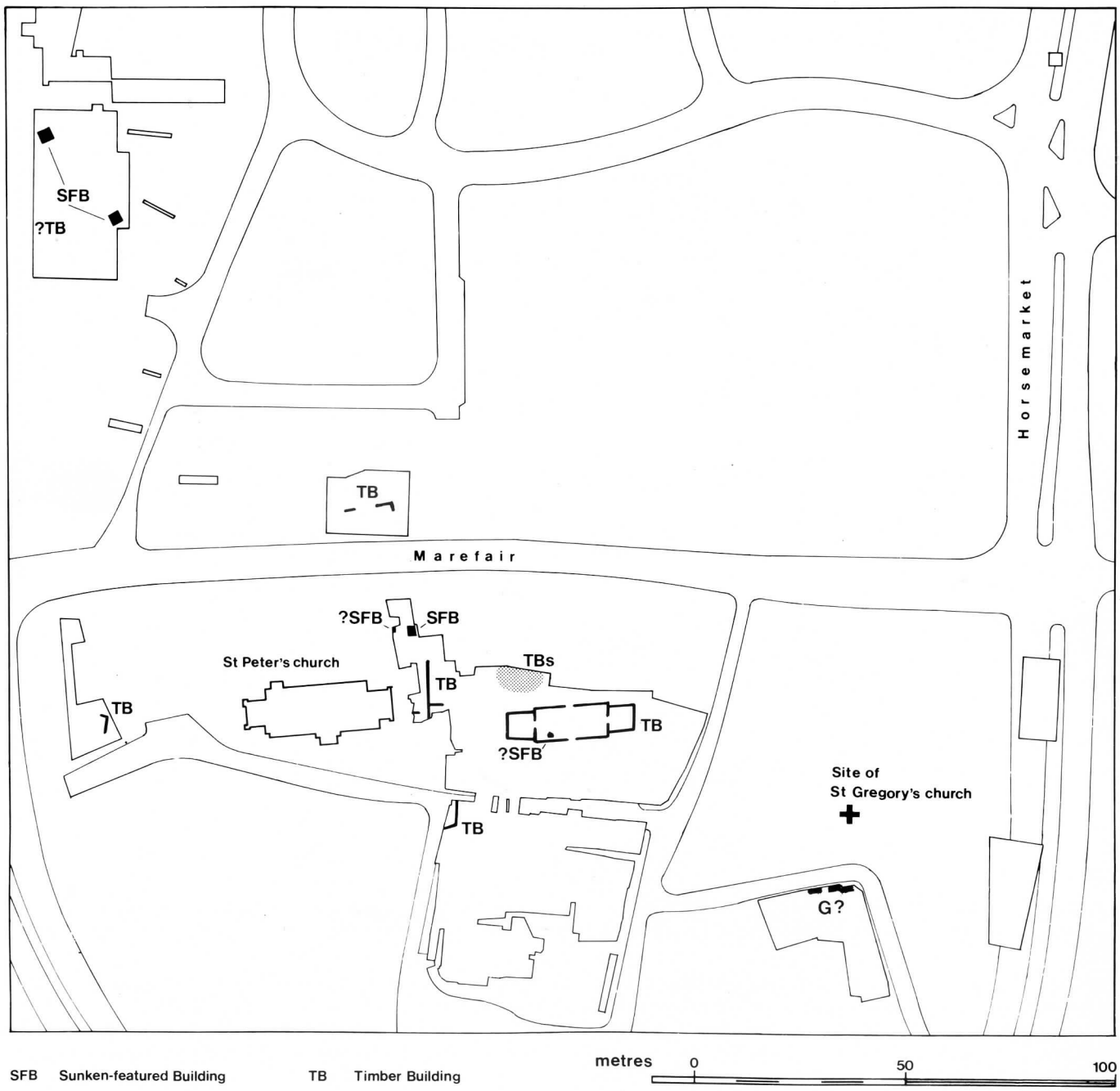


Fig 23

by the men of the folk — the provincia or regio — settled around it.

The case for Northampton's early high status is considerably strengthened on consideration of the evidence for the local ecclesiastical organisation. The present St Peter's church, immediately to the west of the palace complex, almost certainly had its origins as an old minster. In the reign of Edward the Confessor Bruning the priest in charge of St Peter's presided over many churches in the region (*Qui inter multas quas intra provinciam regebat ecclesias, etiam ecclesie beati Petri apostoli que in eadem urbe sita est prefuit*) (Horstmann 1901, 727).

This is indicative of a minster system (here surviving the Danish invasions) with a mother church and subsidiary and dependent chapels. The organisation seems to have been partly fossilised through to the present day. The church of Kingsthorpe was a dependent chapelry of St Peter's up to 1850 and that of Upton until much more recently (Serjeantson 1904, *passim*; Williams 1982b). yet both were royal manors at Domesday (*DB* fol. 219d) and subsequently hundredal manors for the hundreds of Spelhoe and Nobottle Grove respectively (Cam 1963, 67-9).

Kingsthorpe and Upton were thus prominent in the royal secular administration as important components of a once very extensive royal estate. The Danish wars may well have been instrumental in the break-up of the estate but fragmentation may have occurred both before and afterwards. The ecclesiastical organisation originally probably mirrored the secular administration for immediately after the Conversion Church and State were extremely closely integrated and it would be reasonable to expect minster churches to be situated close to important seats of royal authority. The cumulative

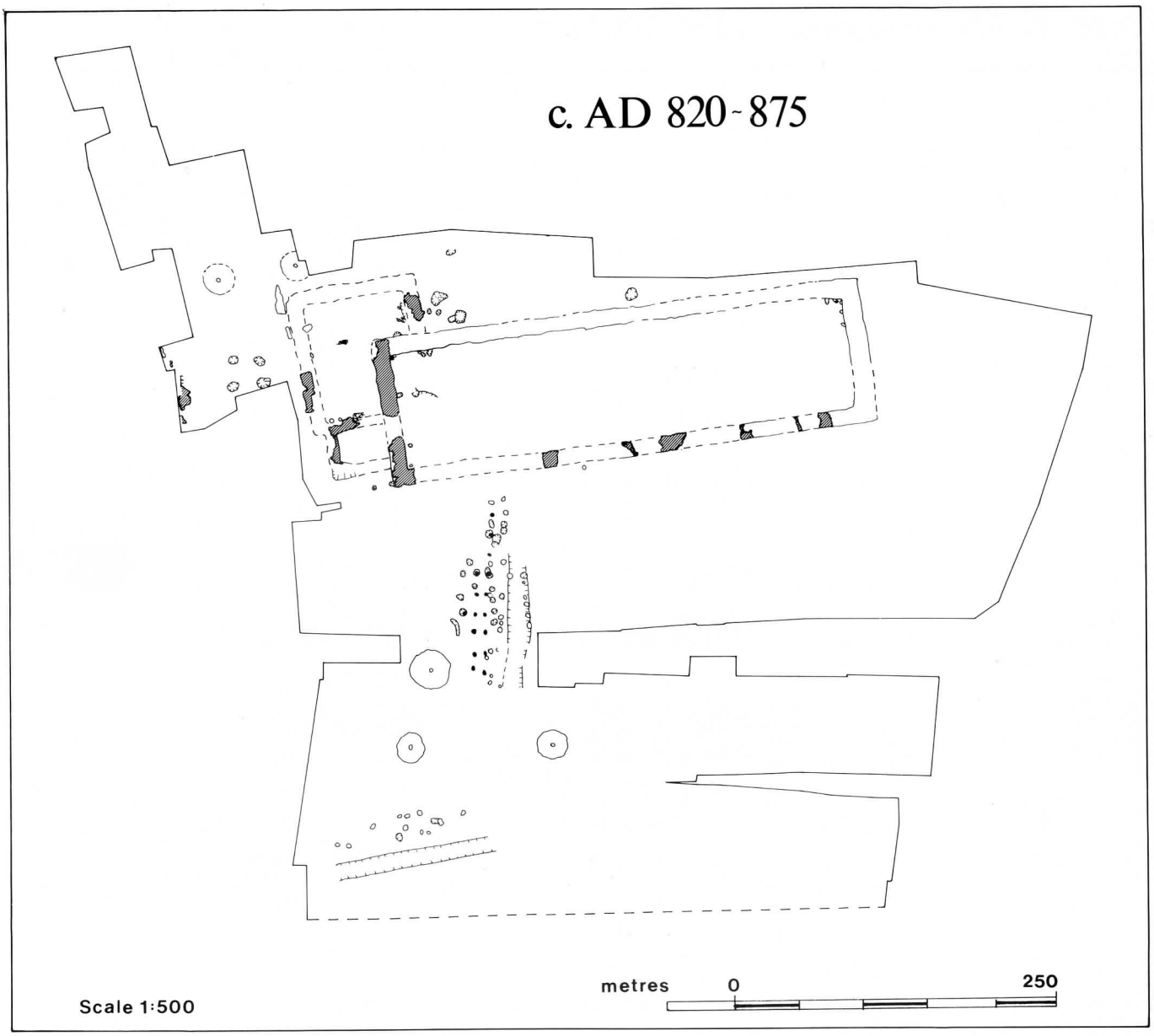


Fig 24

evidence of archaeology and the documentary sources thus clearly indicates that Northampton was an important centre and it is reasonable to suppose that the early 8th century stone building found extending under the present St Peter's church was the original old minster.

The middle Saxon graves to the east of the palace complex are also of interest. They lay immediately to the south of the site of St Gregory's church which is first recorded in the 12th century (Williams 1982b, *passim*; RCHM forthcoming, Northampton (27)). The dedication to St Gregory suggests an early foundation but without further evidence it is uncertain whether there was a chapel or church contemporary with the middle Saxon cemetery nor is it possible to determine the role of the cemetery, with or without an associated chapel, in relation to the palace complex as a whole.

In 1973/4 a 'boundary work', comprising lines of postholes and a gully, was identified running north-south (Williams J H 1979, 25-8, 138-40) and possibly associated with the church. Radiocarbon dates from the silting of the gully (AD 960 ± 70: HAR-1244, 1454) seemed rather late in comparison with the postulated date of the church and mortar mixers. In the 1982 excavations neither the gully nor the line of postholes was picked up within the wall lines of the stone hall and it must be assumed that both were associated with the stone hall and stopped against its southern edge. In 1983 an east-west return to the gully was found during excavations on the Green (see Fig 25; Shaw forthcoming b). The radiocarbon date for the silting of the gully would tie in reasonably well with the date suggested by pottery from the robber trenches for the abandonment of the stone building (see below).

Finds from the area around the palace tend to confirm the high status of the complex. In the 1973/4 excavations a bronze shrine fitting, a bronze stylus and a fragment of a glass vessel were recovered (Williams J H 1979, 140). Finds from the 1980-2 excavations included part of a pommel from a sword with Borre style decoration (Cu45).

The major problem remains, in the absence of adequate documentary sources, of defining Northampton's role in a wider political context. Northampton seems originally to have lain within an area identified as Outer Mercia or Middle Anglia, territory subsumed within Mercia by Penda in the middle of the 7th century. The association of the cult of St Ragener, nephew of Edmund of East Anglia, king and martyr, with St Peter's suggests a possible East Anglian connection but this is not supported by any other evidence and it would seem most probable that the establishment of such royal cults in Mercia (*cf* also St Oswald at Gloucester) was part of a deliberate policy coinciding with the reconquest of Mercia in

West Northampton c. AD 820 to 875

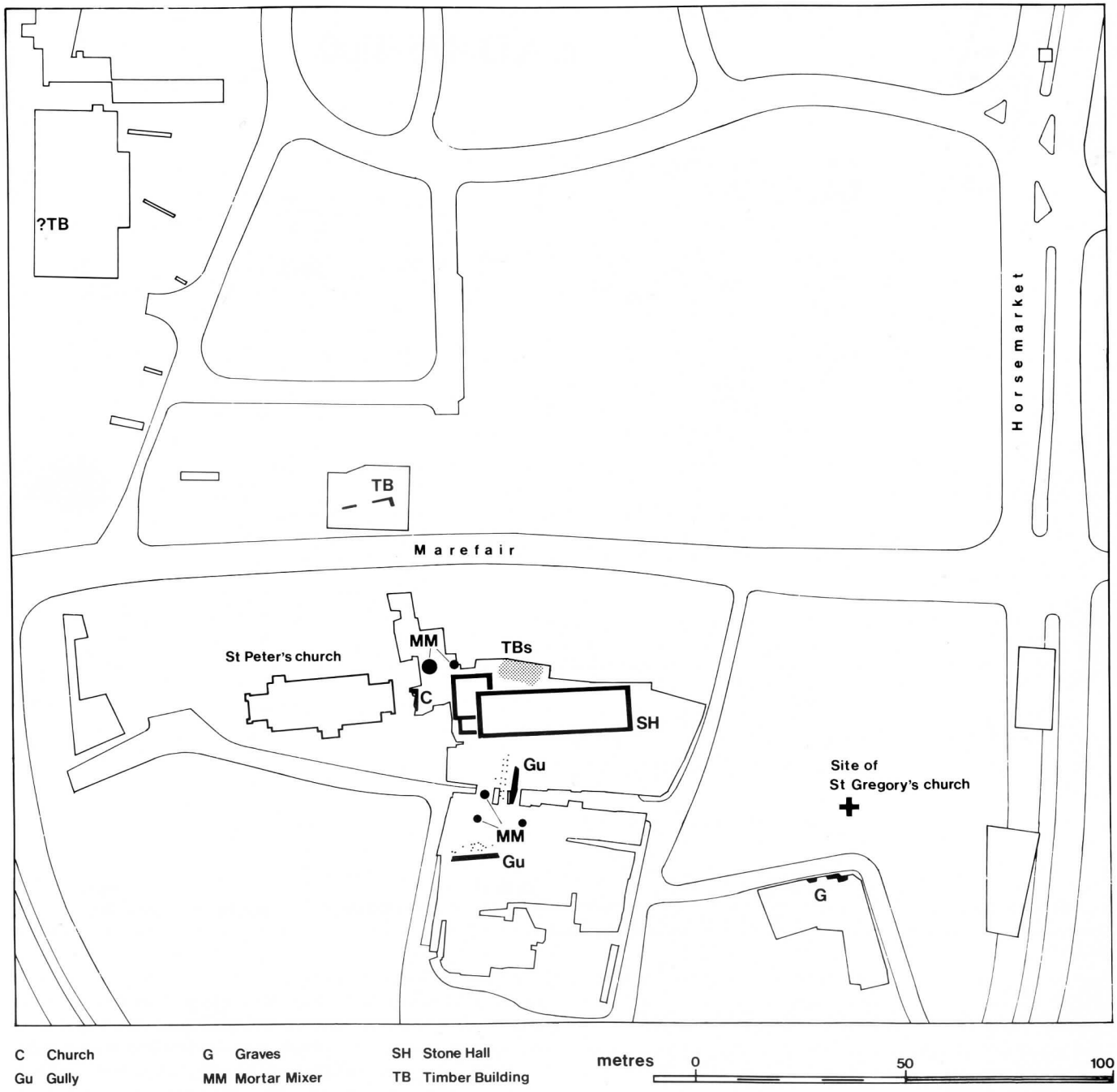


Fig 25

the early 10th century (Williams 1984, 126-7; Thacker 1982, 207-11).

It is suggested above that seats of secular and ecclesiastical power, namely palaces and minsters, were in many cases likely to be in immediate proximity to each other. Through the recognition of such places it is possible to begin to understand the hierarchial settlement organisation of the Anglo-Saxon kingdoms (*cf* also Williams 1984, 127-31). Such an hypothesis is obviously most readily demonstrated at the major centres of England such as Winchester, Canterbury, Lincoln and important places such as Leicester and Derby. The evidence of Domesday Book suggests at a somewhat lower level a number of extensive royal estates in Northamptonshire and the presence at the royal estate centres at Fawsley and Kings Sutton of minster churches with ecclesiastical dependencies provides evidence of the close relationship between royal and ecclesiastical authority. Both these sites lie to the south-west of the boundary of the Danelaw agreed between Guthrum and Alfred; similar centres certainly existed to the north-east of this boundary but are less readily identified because of the break-up of both the secular and ecclesiastical organisation through the Danish invasions.

At some stage before the shiring of the east Midlands probably in the 10th century Northampton had obviously attained a pre-eminence over the other seats of authority in the region. The presence of the large stone hall at Northampton as early as the early 9th century suggests that even by that date it had a special position in the settlement hierarchy, unless we are to believe that up to a dozen similar complexes existed within the area which was later to become Northamptonshire.

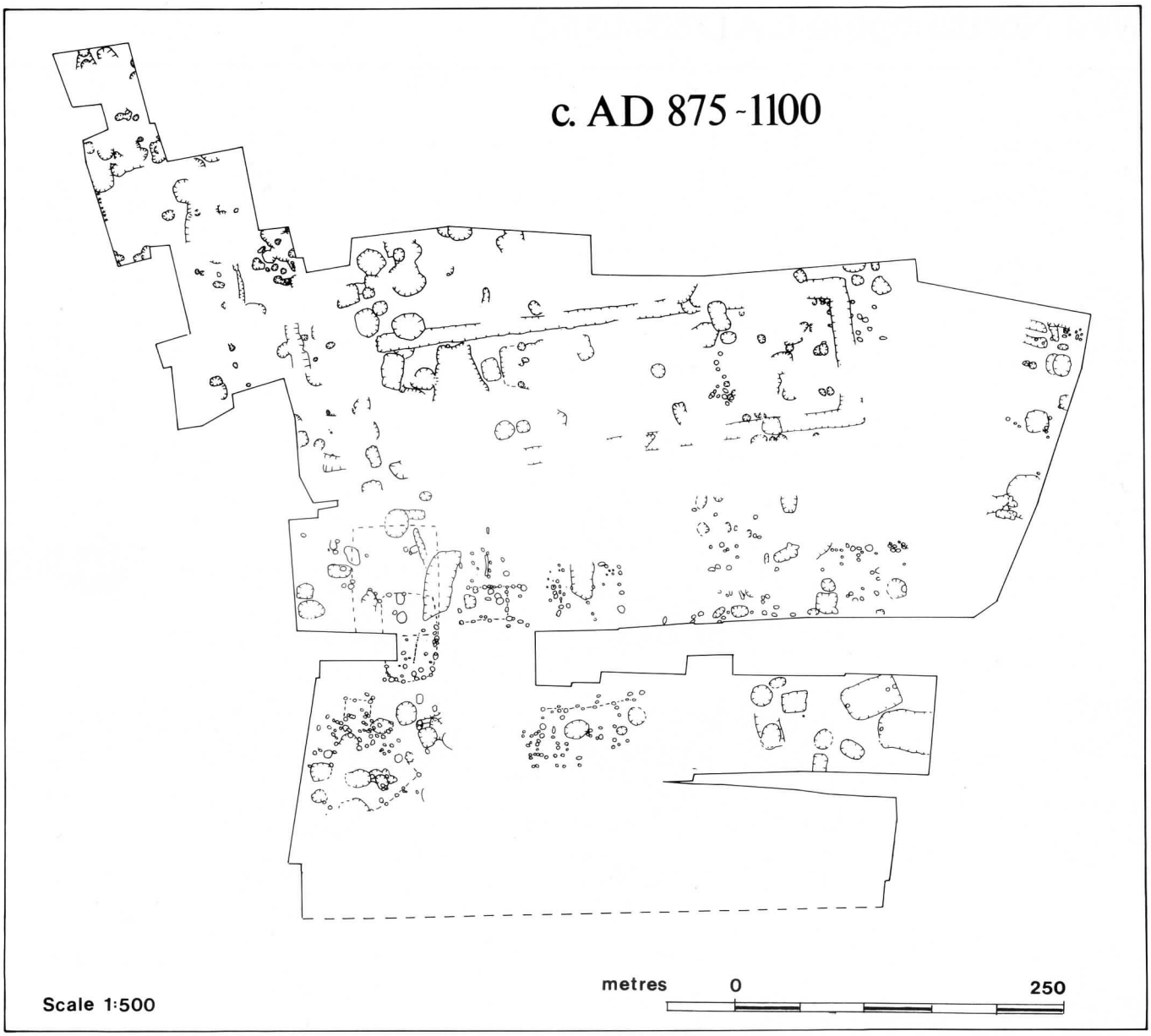


Fig 26

The Late Saxon Period and Northampton's Emergence as a Town

The stone hall seems to have been abandoned perhaps at the beginning of the 10th century. The evidence for this is fourfold. Firstly, the robber trenches of the walls of the extension contained a good assemblage of pottery belonging to the W1 horizon with a date in the first half of the 10th century and the smaller assemblages from the south wall of the main hall were similar in character; the pottery from the robbers of the north and east walls of the main hall perhaps dates to the mid 10th century or later. Secondly, the sunken-featured building (AA136) located just to the south of the north wall of the hall again contained pottery associated with the W1 horizon. Thirdly, the radiocarbon dates from the silting up of the 'boundary work' gully are consistent with this chronology. Lastly, in the 1973/4 excavations in the House 1 area (Williams 1979, 14-16, 166), immediately to the south-west of the stone hall, two St Edmund memorial pennies were found in association with a metalworking complex. The nature of this activity belonging to the beginning of the 10th century is so totally different from that of the palace complex that it is difficult to believe that the palace was still functioning as such at the same time. It has been suggested that some of the earliest 'late Saxon' occupation at Northampton belongs to the period of the Danish occupation because of the comparatively large numbers of St Edmund Memorial pennies found at Northampton (*cf* the 1973/4 House 1 complex for part of the argument). It would be consistent with the evidence, though admittedly speculative, to suggest that the stone hall was abandoned and fell into disrepair as a direct result of the Danish occupation of Northampton, the newcomers having no further use for such a structure. Whether such a chronology is paralleled in the minster church of St Peter is unknown. Certainly the most obvious use for the robbed stone in the 10th century would have been the rebuilding of the Saxon minster or the construction of defences.

Apart from the sunken-featured building AA136 structural evidence for the late Saxon period is confined to fragmentary traces of possible posthole buildings and one perhaps founded on sill beams. These structures seem similar to other ones excavated at the west of Northampton and the overall settlement pattern is confirmed as a mixture of posthole

West Northampton c. AD 875 to 1100

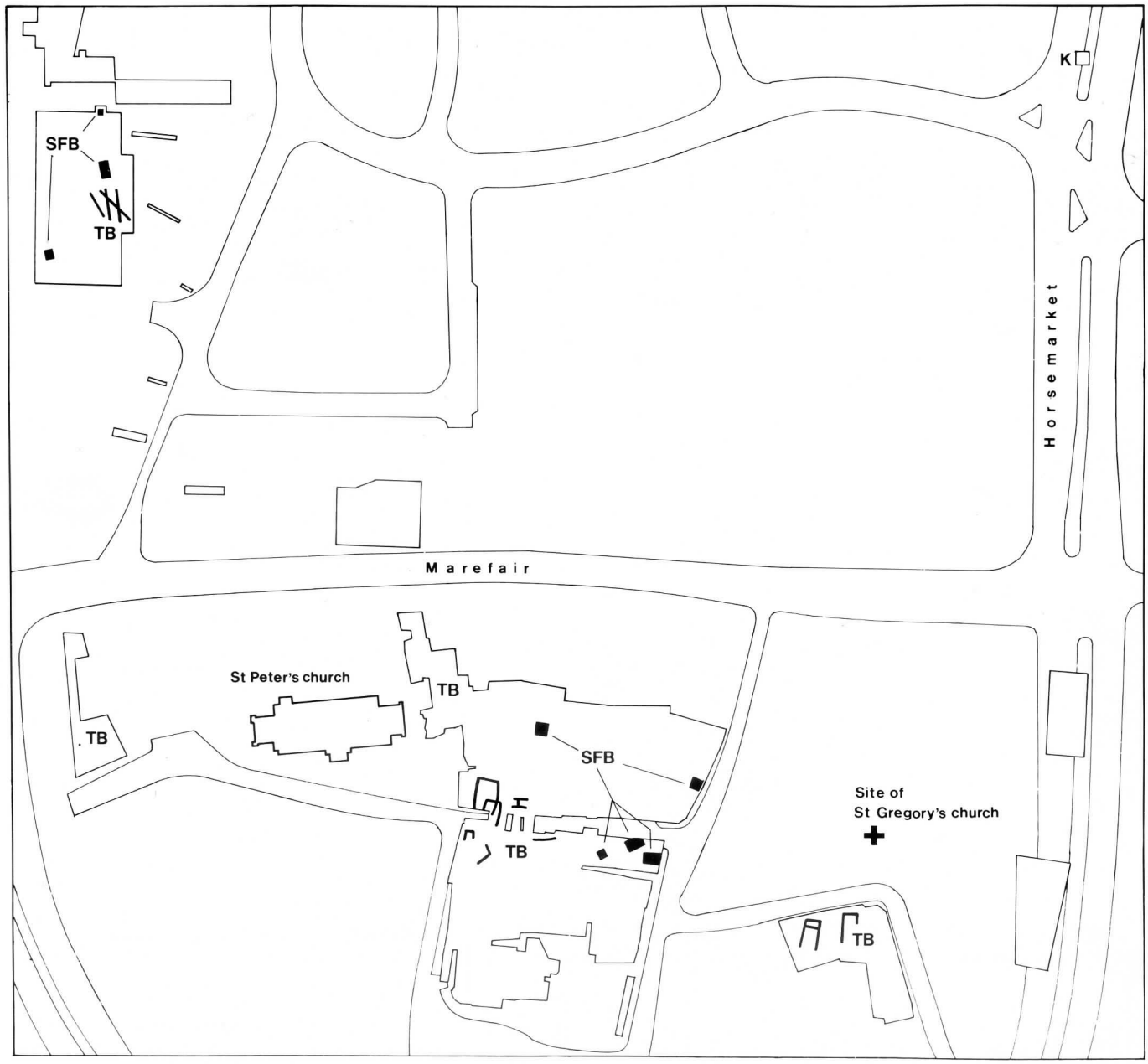


Fig 27

buildings and sunken-featured buildings somewhat irregularly disposed with no signs of formal planning. A large number of pits containing pottery and other artefacts bear witness to the apparent increased settlement activity. Of particular interest is the further evidence for antler-working. Crucibles witness silver- and copper alloy-working and forging and tap slag and furnace lining provide evidence for iron-working. Iron-, copper alloy- and silver-working is attested on a number of other sites and Northampton is known to have had a mint from the mid-10th century if not earlier. The Northampton ware pottery industry previously identified from a kiln site in Horsemarket can now be seen to have been producing at least limited quantities of red-painted and perhaps glazed pottery. A small number of seawater-fish bones confirms the inland trade of fish from the east coast.

It has been argued that the Danish occupation may have provided a stimulus for urban growth in Northampton (Williams and Shaw 1981, 102-6; Williams 1984, 133) and that consolidation of this process occurred in the 10th and 11th centuries; certainly by Domesday Northampton can be seen as an important urban centre. Although there appears to be little structural continuity between the middle and late Saxon periods the foundations on which a town could develop were laid in the middle Saxon times. As an important estate centre Northampton would have acquired administrative functions, attracted traders to the site and may have been a strong point in time of war. With a changing political and economic climate it would have been ideally placed to make the transition into a town.

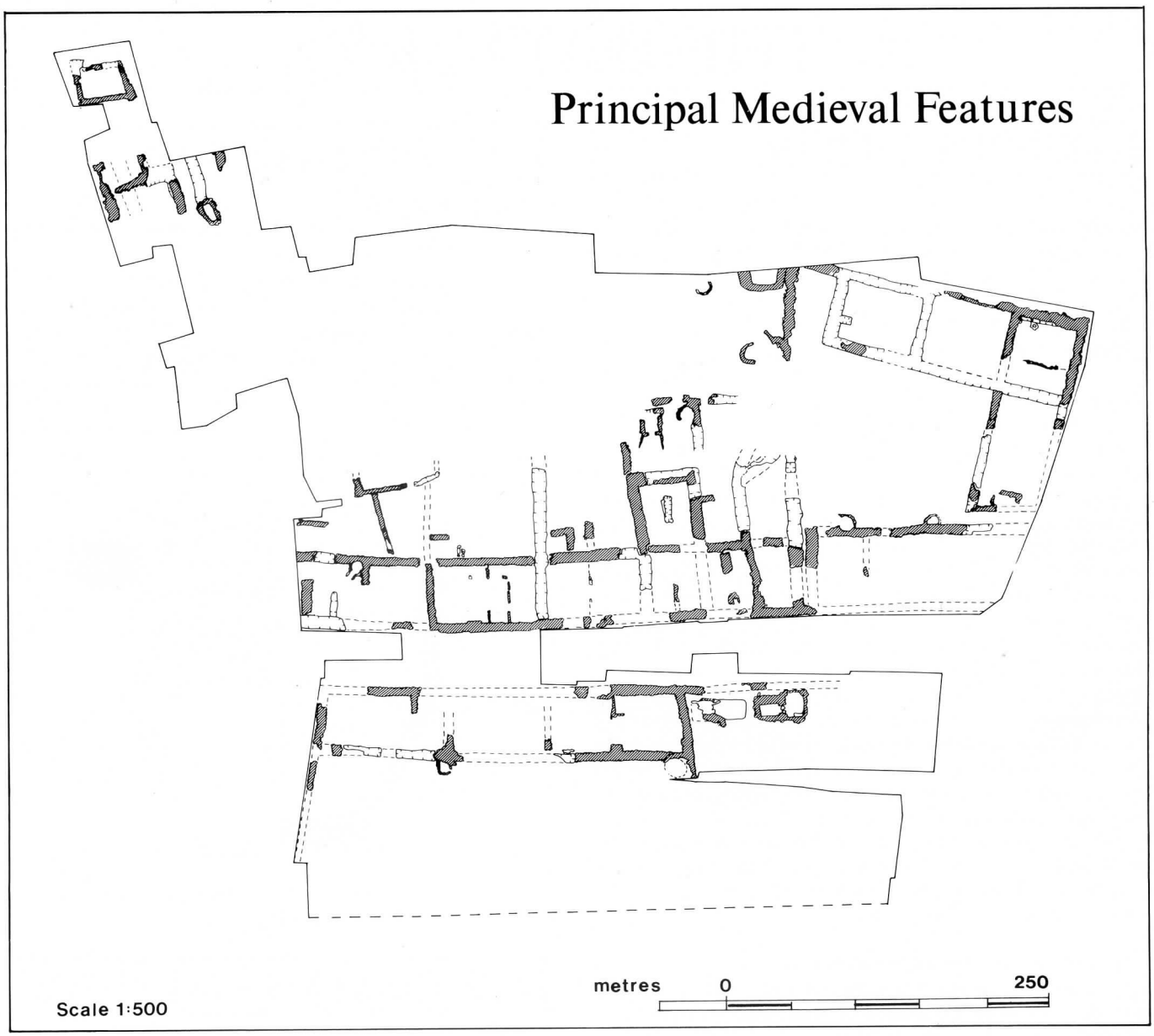


Fig 28

The Post-Conquest Remains

Fig 28

It was indicated in the introduction that medieval and later levels were largely removed by machine in trench AA and that trenches V-Z were speedily excavated, partly out of the need to utilise properly all available resources for a thorough examination of Saxon levels and partly because most of the area to be excavated lay in garden or yard areas where only limited structural remains could be expected. Because of the nature of the evidence and the method of excavation only broad phasing could be attempted. The boundaries between Houses 3 and 4 and Houses 4 and 5 of the 1973-4 excavations (Williams J H 1979) could be seen extending northwards in trench AA and further structural remains belonging to House 7 were identified. The distribution of pits and industrial or semi-industrial features also filled out the picture gained from the earlier excavations. In particular various ovens were located at the back of House 4 (AA308, 309, 519, that filled with 344) and a small lime-kiln (A321) was also excavated. The evidence for lime burning is interesting in view of the known use of lime in the 16th-17th century tanneries to the south of St Peter's Street (*cf idem*, 98-107; Shaw 1984b; forthcoming b). it is assumed that these tanneries represent expansion of the medieval industry presumably located further down the hillside nearer the river in Tanner Street. The association of House 4 with the tanning industry is perhaps supported by the discovery there, and immediately to the east, of three pits containing large assemblages of horn cores (pit AA526 in the recent excavations; for the two other pits see Williams J H 1979, 328).

Some interesting artefact assemblages were recovered and the pottery from the medieval pits made a valuable contribution to the study of medieval pottery in Northampton. The pottery was studied, defined and described fully and should be regarded as supplementing and extending the ceramic series defined for St Peter's Street (McCarthy 1979) for it is essentially part of the same assemblage.

THE POTTERY

INTRODUCTION

by Varian Denham

A total of 13,670 sherds was recovered from excavations at St Peter's Gardens, ranging in date from prehistoric to post-medieval. The report has been divided as follows:

The Prehistoric Pottery
Summary in main text: report in microfiche.

The Roman Pottery
Summary in main text: report in microfiche.

The Saxon Pottery
Since the aim of excavation was to investigate Saxon occupation particular attention has been paid to pottery in the 400-1100 date range. The assemblage is of importance as it is associated with structures which illustrate the considerable divergence in the status and function of the site throughout the period. Pottery was recovered from the occupation of comparatively humble sunken-featured buildings of early Saxon date, from the middle Saxon halls, and from areas of industrial and domestic activity associated with the development of the town in the late Saxon period. This has allowed a re-evaluation of evidence from other excavations in Northampton and a gazetteer defining all known fabric types, together with descriptions of vessel forms and manufacturing techniques, and discussion of origin, date and economic significance, has been produced. A full report is contained in main text; the ceramic gazetteer and supporting data are included in microfiche. (For the full division between main text and microfiche see below p. 47).

The Medieval and Post-Medieval Pottery
A large body of material in the 1100-1850 date range was recovered from the excavation of principally back-yard and waste-ground areas. This provides a useful addition to the pottery from St Peter's Street, although little structural or stratigraphic evidence was available. A full report is to be found in microfiche, with a summary in main text. (For the full contents of the microfiche see below p. 63).

I wish to thank all those people who contributed to this report with their specialist knowledge: L Adams, H Bamford, P Blinkhorn, H Borrill, D Brown, R Carter, J Cherry, P Demolon, R Hodges, J Humble, S Jennings, M Mellor, A Mainman, T Pearson and K Wade have made specific pottery identifications and useful comments. A Woods prepared some of the thin sections and S Hardy proffered advice on the mineralogy. Special acknowledgement must be made of past research into Saxon and medieval ceramics in Northampton by M McCarthy and M Gryspeerdt, without which this report would not have been possible.

I am grateful to K Connor and H Lovett for preparing the illustrations and to J H Williams for his unfailing guidance.

THE PREHISTORIC POTTERY

by J L Humble

An almost complete Bronze Age collared urn found lying on its side in a shallow depression (AA1014) was the only prehistoric pottery recovered from the site (Fig 29). The vessel can be defined as a tripartite Form II collared urn of the primary series (Longworth 1984, 21, 27). The urn probably served as an accessory vessel to a nearby cremation and may have been associated with a prehistoric ditch some 35m to the west which potentially represents the quarry to a barrow or other ditched monument of the 2nd millennium BC.

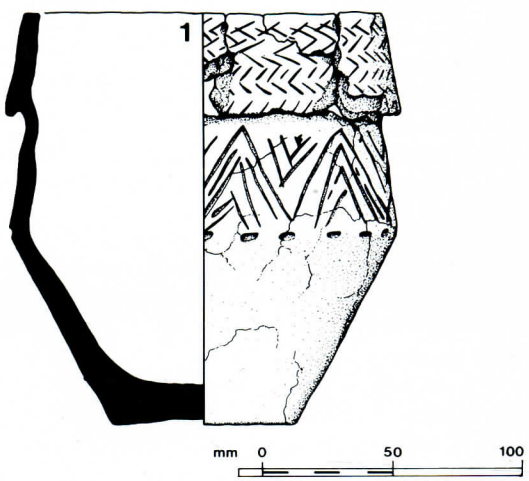


Fig 29: The Bronze Age Collared Urn.

THE ROMAN POTTERY

by Varian Denham

A small quantity of residual Roman pottery was present (total 34 sherds), the majority of which was found in Phases 1-3. This is in keeping with the evidence from St Peter's Street (McCarthy 1979, 151-229) where only 12 sherds were recovered, mainly in contexts of Saxon date.

Greywares account for the greater part of the material, although sherds of shelly ware, Samian ware, Nene Valley colour-coated ware and mortaria were also present. All the material was heavily abraded, and no pieces diagnostic of form were recovered.

THE SAXON POTTERY

by Varian Denham

Introduction

The excavations at St Peter's Gardens produced 1,548 sherds in contexts of Saxon date. The pottery was first examined with the aid of a X20 binocular microscope. It was quantified initially by sherd count and recorded by context on codified summary sheets. Petrological analysis of thin sections of selected sherds was carried out to extend and refine the

existing fabric classification. Detailed examination and quantification of other attributes including surface finish, vessel wall thickness, abrasion and fragmentation was subsequently undertaken to define more accurately the fabric, form and manufacture of early and middle Saxon wares. Of the material occurring in the late Saxon contexts particular attention was paid to a group of red-painted finewares of unknown origin found in association with metalworking debris, and to a refinement of the classification of St Neots-type ware based upon differences in manufacturing and finishing techniques.

The report is divided into the following sections:

Main Report

(i) Key to Fabrics
A brief description of all fabrics found at St Peter's Gardens in the 400-1100 date range.

(ii) Fabric Quantities by Phase (Table 2).

(iii) The Early/Middle Saxon Wares
Analysis and discussion of the fabric, form, manufacture and archaeological significance of material in the 400-850 date range.

(iv) The Late Saxon Wares
A discussion of the pottery found in Phase 3 contexts in the 850-1100 date range.

(v) Illustrated Pottery (Figs 30-32)
The pottery has been ordered according to fabric type (indicated by caption).

(vi) Catalogue of Illustrated Pottery
A record of each vessel includes fabric, form, diameter, Munsell colour, layer, phase, and relevant comments.

(vii) Synthesis.

Microfiche

(i) Codified summary of pottery ((M)2/5-18).
A codified layer by layer account is given, following the format used in the St Peter's Street report (McCarthy 1979, 169-224).

(ii) Gazetteer of Saxon Pottery 400-11/1200 ((M)2/19-47).
Detailed definition of all fabric types found in Northampton in the 400-11/1200 date range, including macroscopic characteristics (form, surface finish, decoration, colour, texture, etc) petrological description (analysis by thin section), source, kilns (where applicable), relative abundance, date range, general comments and references to previously published discussion and illustrations.

(iii) Residue Analysis:
Interim Report by J Evans and M D Card ((M)2/47-48).

Key to Fabrics

Main fabric groups: code prefixes (McCarthy 1979, 153)

S Early/middle Saxon
T Late Saxon/medieval: calcareous
V Late Saxon/medieval: calcareous-sandy
W Late Saxon/medieval: sandy
X Late Saxon/medieval: very fine sandy
Y Imported
U Unknown

Brief description of Saxon fabric types. (For full definition see Gazetteer ((M)2/19-47).

S1A ?Leicestershire 400-900 Black 'gritty' ware containing quartz, quartzite and a granitic mineral suite probably derived from the Charnwood Forest area in Leicestershire. Hand-made, sometimes burnished or smoothed, small cooking pots, bowls, and ?urns, with rare stamped and incised decoration.

S1B(1) ?Local 400-900 Coarse black 'gritty' ware containing poorly-sorted metaquartzite and quartz. Probably produced locally. Hand-made, infrequently burnished, cooking pots, bowls and ?urns with rare stamped and incised decoration.

S1B(2) ?Local 400-900 Black 'gritty' fabric containing well-sorted quartz and sandstone. Probably produced locally. Hand-made, infrequently burnished, cooking pots and bowls with very rare stamped and incised decoration.

S1B(3) ?Local 400-900 Fine black 'gritty' ware containing very well-sorted quartz and quartz-cemented sandstone. Probably of local production. Hand-made, commonly burnished or well smoothed, cooking pots, bowls and ?urns, with very rare stamped and incised decoration.

S1B(4) ?Local 400-900 Black 'gritty' fabric containing quartz and crushed fossiliferous limestone. Probably of local production. Hand-made, rarely burnished, undecorated cooking pots and bowls.

S1C(1) Local 400-900 Coarse reddish brown ware containing poorly-sorted mineral suite derived from the local ironstone geology. Hand-made, rarely smoothed or burnished, undecorated cooking pots and ?bowls.

S1C(2) Local 400-900 Fine reddish brown ware containing well-sorted mineral suite derived from the local ironstone geology. Hand-made, frequently smoothed or burnished, undecorated cooking pots and ?bowls.

S2 ?Local/Regional 400-900 (?600-900) Chaff - tempered ware. Fine black ware containing chaff (barley, grass, oat) temper. Origin uncertain. Hand-made cooking pots and bowls, notably well-smoothed, occasionally with a wet-hand finish, more rarely burnished, but undecorated.

S3 ?Local/Regional 650-850 Coarse pink or light brown ware containing crushed fossiliferous limestone. Possibly related to the Maxey Group III wares, but probably of local production. Hand-made, thick-walled bowls, cooking pots with lugs and bar lips, and storage jars with notable soapy-textured self-slip and rare thumb-impressed decoration.

S5 East Anglia 650-850 ?Ipswich - type ware. Fine grey reduced ware with quartz inclusions. Probably of East Anglian origin (?Ipswich). Wheel-thrown and hand-made cooking pots which may have been finished on a turntable.

S3/T1 ?Local/Regional 650-1100 Light brown to black ware containing crushed fossiliferous limestone. Probably locally produced and representing a transitional stage between S3 and T1. ?Hand-made/wheel-thrown bowls, cooking pots and storage jars with a wet-hand finish.

T1 Local and Regional 850-1100 St Neots-type ware. Light brown, purplish black, or pink ware containing fine, well-sorted crushed fossiliferous limestone including bryozoa. Probably of both local and regional production. Wheel-made bowls, cooking pots, lamps and large coil-built lugged storage jars with rare rouletted and thumbed applied strip decoration, and frequent smoothing or wet-hand finish. Subdivisions are according to manufacture, form and surface finish: T1(1)-T1(4), see Gazetteer, (M)2/28-30.

T1/2 ?Local/Regional ?1000-1200 Light brown, pink or grey ware containing crushed fossiliferous limestone. Probably produced locally and representing a transitional stage between T1 and T2. Hand-made/wheel-made cooking pots, large

bowls, lamps, storage jars and ?jugs with infrequent rouletted decoration.

T2 Local and Regional 1100-1400 Variable pink, red, and light brown oxidised ware containing crushed fossiliferous shell. Probably of local and regional production from the end of the late Saxon period, but chiefly in medieval context. Coil-built and wheel-thrown cooking pots, large bowls, lamps, jugs and pitchers, often with rouletted decoration and stabbed, thumbed or slashed handles.

T11 ?Cotswolds 900-1300 Coarse black ware containing crushed fossiliferous limestone (including ooliths). Probably from a Cotswold source. Hand-made and wheel-thrown cooking pots with rare rouletted decoration.

V5 ?Cotswolds 900-1300 Coarse black to reddish brown ware containing crushed fossiliferous limestone (including ooliths) and quartz. Probably from a Cotswold source. Hand-made cooking pots which may have been finished on a turntable.

V8 ?Cotswolds/N.E. Northants 900-1300 Coarse pinkish grey to black ware, containing crushed fossiliferous limestone (including ooliths). Origin uncertain, but could derive from either a Cotswold or N.E. Northamptonshire source. Hand-made and wheel-thrown cooking pots with square notched rouletting.

W1 Northampton 850-1100 (?10th century) Northampton ware. Extremely variable, fine to coarse, white, grey, light brown or black ware, with fine quartz and infrequent hematite inclusions. Kiln site excavated in Horsemarket, Northampton. Commonly wheel-thrown but also hand-made, (or hand-made base with wheel-turned rim). Cooking pots, bowls, lamps and (?) crucibles with frequent wipe marks and rare rouletted decoration. W1(2): as W1, but with crushed fossiliferous limestone inclusions. W1(3): as W1, but with a lead glaze over clay chippings.

W2 East Anglia 850-1200 ?Thetford-type ware. Fine black ware with quartz inclusions. Probably from an East Anglian source, in the Thetford ware tradition. Wheel-thrown ?cooking pots and pitchers with self-slip and rare thumbed applied strip decoration.

W3 East Anglia 850-1200 Thetford-type ware. Fine to coarse grey ware with variable quartz content. Probably from an East Anglian source (?Thetford). Wheel-thrown cooking pots and storage jars with thumbed applied strips, or very rarely painted, incised or stamped decoration. The fabric variation is in three stages from W3(1) coarse to W3(3) fine.

W4 ?Leics/South Lincs 1050-1250 Coarse 'pimply' grey to black ware with rounded quartz inclusions. Possibly from a Leicestershire or South Lincolnshire source, although the precise origin is uncertain. ?Wheel-thrown cooking pots, lamps and (?) crucibles with rare rouletted decoration.

W5 Origin unknown ?Late Saxon/Medieval Very rare coarse reddish brown ware with quartz inclusions. Source unknown. ?Hand-made/wheel-thrown ?cooking pots with thick external lead glaze, and internal smoothing.

W32 ?Northamptonshire 850-1100 (?10th century) Coarse reddish brown ware with iron ore and hematite inclusions. Probably of local production, having affinities in fabric and form with W1. Wheel-thrown cooking pots with curved rims.

W34 ?Northamptonshire 850-1100 (?10th century) Fine reddish brown ware with well-sorted quartz and hematite inclusions. Probably of local production, having affinities in fabric and form with W1. Wheel-thrown and hand-made ?cooking pots and a spouted bowl, with well-smoothed exterior surfaces and rare rouletting on rim.

W47 ?Leicestershire 900-1300 Coarse grey to black 'pimply' ware with rounded quartz inclusions. Origin unknown, but possibly the Leicestershire area. Wheel-made cooking pots and ?bowls, with finely turned rims and wet-hand finish or smoothing.

W54 ?East Anglia 800-1200 Coarse black 'pimply' ware with quartz inclusions. Possibly of East Anglian origin. Wheel-made cooking pots with curved or hollowed rims.

X1(1) Stamford 850-1200 White, light brown or reddish yellow ware with fine quartz inclusions. Produced in Stamford. Wheel-thrown cooking pots, bowls and also pitchers with green and yellow external glazes, some rouletted or applied strip decoration, small strap handles and tubular spouts.

W1/X1(1)/Y Origin uncertain Late Saxon (?10th century) Fine to coarse, white to light brown ware with quartz and iron ore inclusions. Origin unknown, but is most likely to be a Northampton product. Affinities in form and decoration with Stamford and Beauvais red-painted wares. Wheel-thrown cooking pots with well-turned square and hooked rims, some with red-painted decoration, and pedestal crucibles of a form unique to Northampton.

Phases 1 and 2 The Early/Middle Saxon Wares

Previous work on pottery assemblages from Northampton has failed to identify a local tradition of manufacture comparable with the middle Saxon industries of wheel-turned wares on the East Coast. Similarly very few sherds of middle Saxon shell-tempered Maxey-type wares have been conclusively identified before the 9th century and the emergence of the wheel-turned St Neots-type ware tradition. It was suggested that the principal area of middle Saxon occupation had not been identified in Northampton, that the period may have been aceramic, or that the same pottery tradition may have in fact persisted through the 5th to 9th centuries (Gryspeerdt 1981, 110). The excavation of major timber and stone halls at St Peter's Gardens has revealed an important area of demonstrably middle Saxon activity. The recovery of 294 sherds in securely stratified contexts within Phases 1 and 2 and a further 92 recognisably early/middle Saxon sherds occurring as residual pottery in Phases 3 and 4 provides a small, but adequate sample for rigorous analysis to define more conclusively any changes in pottery production from early Saxon wares associated with four sunken-featured buildings to middle Saxon pottery associated with the timber and stone halls.

Fabric

Table 2 shows the occurrence of the different fabrics by context groups from the early to late Saxon periods, Phases 1 to 3, and this is further refined in Table 3 which gives the numerical incidence of all sub-groups of the major wares which could be securely assigned to fabric type, in Phases 1 and 2.

The largest fabric group, S1B, is predominantly quartz-tempered and characteristically 'gritty' in appearance, but shows considerable variation in both texture and minor inclusions, and has been accordingly subdivided. It is likely that this is a local product although there are rare inclusions of

Fabric Quantities by Phase

Table 2

Phase	Context	S1A	S1B	S1C	S2	S3	?S5	SU	S3/T1	W54	T1	W1	W32	W34	W2	W3	W5	W1/X1(1)/Y	X1(1)	T11	V5	V8	W47	T1/2	W4	T2	U	Total
1	Sunken-featured buildings	4	46	12				2																				64
	Main timber hall	4	21	5				6																			1	37
	General soil layer	2	55	10	4	2	2	3	4																			82
	Other deposits	1	37	4				6	2																		1	51
1/2	Contexts of uncertain phase		9	2			1	1																			3	16
2	Make-up layers		11	3			1	2			1																	18
	Stone hall		1																									1
	Stone hall extension											1								1								2
	Other deposits	1	13								2																	16
2/3	Contexts of uncertain phase		5	1				1			32	9				1			2			1		9			2	63
3	Robber of stone hall	2	4			6		4	29		119	94	6	7		5	3	9	9					5			8	309
	Other deposits		15		1	2		7	23	3	523	150	10	4	1	29		38	19		8		2	39	1	1	12	877
Total		14	217	37	5	10	4	32	58	3	677	254	16	11	1	35	3	47	30	1	8	1	2	50	1	1	27	1548

Table 3 Early/Middle Saxon Pottery: Incidence Table of Fabric Sub-Groups with Phases 1 and 2 (Atypical examples have been excluded)

Phase	Context	S1A	S1B (1)	S1B (2)	S1B (3)	S1B (4)	S1C (1)	S1C (2)	*S2+	S3	?S5
1	Sunken-featured buildings	4	8	13	20	3	6	5			
	Main timber hall	4	9	4	6		4	1			
	General soil layer	2	16	9	22	7	7	2	6	2	2
	Other deposits	1	9	10	12		4		1		
1 + 2	Contexts of uncertain phase		1	1	5	1	1	1	1		1
2	Stone hall and make-up layers		4	1	3		2	1			
	Other deposits	1	1	3	8						

* Chaff-tempered fabric S2 together with sherds in fabric S1B with notably high chaff content.

non-local origin. Fabric S1C strongly reflects the Northampton Ironstone background and is therefore considered to be a local product. Fabric S1A is at present regarded as a 'non-local' ware, containing granitic inclusions derived from the Mountsorrel formation in Leicestershire (Gryspeerdt 1981, 110). Although of limited occurrence at St Peter's Gardens there is some suggestion that it may favour the earlier part of the broad 400-900 date range assigned to early/middle Saxon fabrics. A small quantity of chaff-tempered pottery (S2) was found. It has been argued that chaff-tempered pottery has a more southerly distribution (Brown 1976, 192) and that sherds identified at Chalk Lane, Northampton, may not be of local manufacture (Gryspeerdt 1981, 110). Since, however, the identification of chaff-tempering in pottery from Raunds in N.E. Northamptonshire (pers. comm. T Pearson) and the recovery of several sherds of probably local manufacture in fabric S1B with a very high proportion of chaff temper at St Peter's Gardens the origin and definition of the ware has become problematic and cannot be resolved by study of such a limited sample. Chaff-tempered pottery was not recovered from the early Saxon sunken-featured buildings and this reinforces the suggestion that it is a later addition to the early/middle Saxon assemblage (Gryspeerdt 1981, 110). The only remaining Saxon pottery fabrics within Phases 1 and 2 are represented by three sherds of probable Ipswich-type ware, and two sherds of possible shell-tempered Maxey Group III-type ware (S3/T1).

Table 4 Comparison by Fabric Type of Pottery from Contexts of Early and Middle Saxon Date from Chalk Lane and St Peter's Gardens, Northampton

Fabric Code	Chalk Lane (421 sherds)	St Peter's Gardens (235 sherds)
S1A	14%	5%
S1B	67%	75%
S1C	16%	15%
S2	<1%	3%
S3	–	1%
?S5	1%	<1%

It is notable that the range and relative proportions of the pottery fabrics identified at St Peter's Gardens follow very closely the results of analyses of the Chalk Lane Saxon wares and Table 4 draws attention to the similarity, comparing the percentage occurrence of fabric types from contexts of secure early and middle Saxon date on the two sites.

Form and Decoration

All early/middle Saxon rim sherds have been illustrated, but there are too few, and the range of forms is too limited, to allow the identification of any chronological trend, if such existed. The majority of vessels are cooking pots with simple rims, varying from slightly inturned to everted. No flat bases were recovered and it is assumed that bases were sagging although the fragmentary nature of the material has rendered conclusive identification impossible. Most sherds would appear to derive from comparatively small vessels. Few decorated sherds were found but it is notable that all occurred in Phase 1, with the exception of one grooved sherd which was recovered in a late Saxon context and is clearly redeposited, and two fingernail impressed sherds found in Phases 3 and 4, which almost certainly derive from the same vessel as a Phase 1 sherd (ill. 14). Only two stamped sherds were found. One is a circular cross similar to examples found at Chalk Lane (Gryspeerdt 1981, 111, ills. 1, 9, 10, 11-15). The second is a rectangular stamp of unusual type and similar to examples from Lincoln, Rillington (Yorks), York, Newark (Notts) (two examples), and Lackford (Suffolk) (Myres 1977, inventory nos. 479, 120, 108, 3288, 3887 and 871, respectively).

Use

In view of the limited variety of forms recovered in early/middle Saxon pottery fabrics it must be assumed that the simple cooking pot fulfilled a wide range of functions. Much of the pottery was burnt and visible residues on sherds in fabric S1B were analysed (Evans and Card ((M)2/47-48). Three sherds found in the sunken-featured building Z60 contained extracts originating from animal fats, probably from domestic meat cookery, but a fourth sherd was abnormally rich in stearites, which suggests that the fat had been rendered to an extremely high purity. No lamps were identified and it is possible that the fat may have been used in the production of candles. Alternatively the cooking pot may itself have served as a lamp. Two further sherds from Phase 1 were analysed. A sherd from AA410 was found to have high levels of sodium ions, which suggests the presence of salt, possibly from a salt preserved product, and a vessel from AA233 was rich both in stearic acid and sodium ions and is likely to have served two functions.

Manufacture

All pottery in fabric groups S1A, S1B, S1C, S2 and S3 was hand-made. Sherds in fabric ?S5 are fragmentary and little can be said of the method of manufacture, although it is possible that they were either thrown or finished on the wheel. The rest of the pottery shows evidence for coil construction and it is likely that smaller vessels were modelled as heavily fingered fragments are not rare. There is no indication that any of the pottery was finished on a slow wheel, nor is any pottery demonstrably knife trimmed. A lack of sanding on vessel surfaces would suggest that no form of mould was used in vessel construction. It is unlikely that this has been obscured, or deliberately removed, by a secondary surface finish as approximately half the sherds from all periods were neither

burnished nor smoothed but bear frequent chaff and finger impressions. Sherds which have been well wiped or smoothed, presumably with a wet cloth or leather show considerable surface enhancement of the grits.

A further programme of examination was undertaken to elucidate changes with time in methods of manufacture by looking closely at the size of the vessels and the surface treatment of the finished wares. Owing to a dearth of rim and base sherds insufficient estimates of vessel height, diameter and capacity could be made, but the mean vessel wall thickness for sherds from each period has been calculated. To maintain objectivity the wall thickness was recorded at the centre of each sherd, regardless of variation which was slight due to the extremely fragmentary nature of all the material. Heavily abraded sherds were excluded from the analysis. The results are detailed in Table 5 and demonstrate both that there is no significant variation in vessel wall thickness of hand-made Saxon wares occurring within any contexts or phases, and that the range of measurements recorded in any one contextual group is not dissimilar to that in others.

Key to Tables 5-10

*S2+ = Chaff-tempered fabric S2 together with sherds in fabric S1B with notably high chaff content
n = no in sample
$\bar{x}$ = mean
σ = standard deviation
$\frac{\sigma}{\sqrt{n-1}}$ = standard error
a = poorly finished
b = smoothed
c = burnished
d = better finished: the sum of b and c
d% = d/n × 100
1 = fresh
2 = moderately worn
3 = heavily abraded
t = t value for Student's t distribution with (n1 + n2) − 1 degrees of freedom where n1 = sample n; n2 = population n.

Table 5 Early/Middle Saxon Vessel Wall Thickness by Context

Phase	Context	n	$\bar{x}$	σ	$\frac{\sigma}{\sqrt{n-1}}$
1	Sunken-featured buildings	60	6.27	1.48	0.19
	Main timber hall	28	6.11	1.59	0.31
	General soil layer	75	6.16	1.53	0.12
	Other deposits	45	6.18	1.34	0.20
1 + 2	Contexts of uncertain phase	12	5.29	1.44	0.44
2	Stone hall and make-up layers	16	6.19	1.33	0.35
	Other deposits	14	5.79	0.97	0.27
3 + 4 +U/S	All contexts in later phases (residual pottery)	71	6.69	1.72	0.20
1 − 4 +U/S	All contexts (*ie* population)	325	6.32	1.58	0.09

Table 6 Early/Middle Saxon Vessel Wall Thickness by Fabric Type

1. By Fabric Code

Fabric	n	$\bar{x}$	σ	$\frac{\sigma}{\sqrt{n-1}}$
S1A	20	5.95	1.39	0.32
S1B(1)	66	6.44	1.81	0.22
S1B(2)	53	6.21	1.39	0.19
S1B(3)	101	6.04	1.50	0.15
S1B(4)	19	6.11	1.37	0.31
S1C(1)	40	5.78	1.78	0.28
S1C(2)	13	6.85	2.15	0.62
*S2+	18	7.11	1.68	0.41

2. By Fabric Temper

Major inclusions	Code	n	$\bar{x}$	σ	$\frac{\sigma}{\sqrt{n-1}}$
Granite + quartz	S1A	20	5.95	1.39	0.32
Quartz	S1B	239	6.19	1.56	0.10
Ironstone + quartz	S1C	52	5.92	1.72	0.24
Chaff + quartz	S2+	18	7.11	1.68	0.41

In Table 6 the same results have been ordered by fabric type, where a sound classification could be made. They suggest that vessels in fabrics containing chaff (S2+) are slightly thicker walled than those made in 'gritty fabrics'. This is probably a direct reflection of the use of coarser, more variable temper, and is not likely to be of chronological significance.

An examination was made of the surface finish of all early/middle Saxon sherds which were not heavily abraded. Sherds were divided into three categories: a: poorly finished, with no signs of smoothing, or at best crudely grass wiped, b: well smoothed or wiped, including examples with a 'wet-hand' finish, or self-slip and c: burnished. Table 7 summarises the results, the final column, d, providing a percentage occurrence for better finished wares, the sum of categories b and c.

In several groups the small size of the sample prohibits firm conclusions. In terms of general trends however, little difference was observed between the surface finish of wares from the sunken-featured buildings and wares from the halls and associated contexts. In most instances approximately 50% of the material is better finished. A degree of variation was

Table 7 The Surface Finish of Early/Middle Saxon Wares by Context

Phase	Context	n	a	b	c	d	d%
1	Sunken-featured buildings	51	23	13	15	28	55
	Main timber hall	31	16	4	11	15	48
	General soil layer	73	40	14	19	33	45
	Other deposits	39	20	11	8	19	49
1 + 2	Contexts of uncertain phase	15	8	2	5	7	47
2	Stone hall and make-up layers	16	6	4	6	10	62
	Other deposits	15	11	1	3	4	27
3 + 4 + U/S	All later contexts (residual pottery)	69	36	17	16	33	48
1 − 4 + U/S	All contexts (*ie* population)	309	160 (52%)	66 (21%)	83 (27%)	149	48

Table 8 The Surface Finish of Early/Middle Saxon Wares by Fabric Type

1. By Fabric Code

	n	a	b	c	d	d%
S1A	20	8	4	8	12	60
S1B(1)	62	35	12	15	27	44
S1B(2)	52	31	10	11	21	40
S1B(3)	91	46	12	33	45	49
S1B(4)	17	10	5	2	7	41
S1C(1)	25	14	7	4	11	44
S1C(2)	12	7	3	2	5	42
*S2+	16	3	9	4	13	81

2. By Fabric Temper

Major Inclusions	Code	n	a	b	c	d	d%
Granite + quartz	S1A	20	8	4	8	12	60
Quartz	S1B	222	122	39	61	100	45
Ironstone + quartz	S1C	37	21	10	6	16	43
Chaff + quartz	S2+	16	3	9	4	13	81
All hand-made sherds including those of indeterminate fabric (*ie* population)		309	160 (52%)	66 (21%)	83 (27%)	149	48

Table 9 Early/Middle Saxon Pottery Abrasion by Context

Phase	Context	n	1	2	3	$\bar{x}$	σ	$\frac{\sigma}{\sqrt{n-1}}$	t
1	Sunken-featured buildings	57	25	31	1	1.6	0.5	0.1	5.37*
	Main timber hall	29	4	19	6	2.1	0.6	0.1	0.86
	General soil layer	72	13	40	19	2.1	0.7	0.1	1.12
	Other deposits	39	6	22	11	2.1	0.7	0.1	0.85
1+2	Contexts of phase	16	4	8	4	2.0	0.7	0.2	0.00
2	Stone hall and make-up layers	14	2	12	0	1.9	0.3	0.1	1.15
	Other deposits	17	2	14	1	1.9	0.4	0.1	1.97
3+4+U/S	All later contexts (residual pottery)	66	12	43	11	2.0	0.6	0.1	0.00
1−4+U/S	All contexts (*ie* population)	310	68	189	53	2.0	0.6	0.03	–

* This category is of 'highly significant difference' from the population (*ie* above the .99 percentile value)

Table 10 Early/Middle Saxon Sherd Fragmentation by Context
Sherd area in mm^2

Phase	Context	n	$\bar{x}$	σ	$\frac{\sigma}{\sqrt{n-1}}$	t*
1	Sunken-featured buildings	61	810	476	62	4.14(*)
	Main timber hall	29	498	433	82	2.28
	General soil layer	72	509	351	60	3.35(*)
	Other deposits	38	342	202	33	0.53
1+2	Contexts of uncertain phase	15	372	276	71	0.71
2	Stone hall and make-up layers	16	373	182	45	5.08(*)
	Other deposits	15	519	174	45	0.46
3+4+U/S	All contexts (residual pottery)	63	550	345	44	0.16
1−4+U/S	All contexts (*ie* population)	309	542	384	22	

* <2.5 is not significantly different.

(*) Three categories are of 'highly significant difference' (*ie* above the 0.99 percentile value) from the population. Of these only the sunken-featured buildings produced less fragmented pottery. The small size of the sherds from Phase 1 (general soil layer) and Phase 2 (stone hall and make-up layers) is probably a result of trampling before burial.

noted between the two contextual groups within Phase 2 but this is almost certainly a reflection of the inadequate number of sherds available for analysis. An amalgamation of Phase 2 groups provided a more viable sample, with results entirely in keeping with those from other phases.

Of the 309 sherds examined for surface finish 295 were securely assigned to fabric types (Table 8). The range of techniques employed was the same throughout all wares, but there are indications that the granitic-tempered imported ware S1A was better finished, and more frequently burnished, whilst the pottery containing chaff (S2+) was more commonly well-smoothed, frequently with a wet-hand finish or self-slip reminiscent of the late Saxon St Neots-type ware tradition. The locally produced quartz- and ironstone-tempered fabrics (S1B, S1C) were, on the whole, less well finished, although fabric S1B(3), the finest of the quartz-tempered fabrics, was commonly burnished. It is probable that the minor variations in surface treatment are not chronologically significant, except in the case of the potentially later fabric S2.

Sherd Preservation and Recovery

In view of the small amount and uniformity of pottery recovered in excavation it is possible that the greater part could have been derived from early Saxon features, and that no middle Saxon assemblage of any significance was recovered. In order to determine whether this could in fact be the case, the degree of abrasion and sherd fragmentation was recorded for sherds in fabrics S1A, S1B, S1C and S2 occurring in Phases 1 and 2.

Estimation of abrasion is unavoidably difficult to standardise, so a simple 3 point scale was used whereby 1 = fresh, 2 = moderately worn and 3 = heavily abraded. Sherds which had been broken down the body wall and for which one surface was missing were not included. An abrasion 'coefficient' was calculated for each group, providing a mean for comparison between contexts. Student's t test was employed to define better the degree of difference between each group and the population mean.

Owing to the presence of chaff-tempered pottery which is noticeably lighter than the 'gritty' wares it was not considered worthwhile to quantify fragmentation using methods based upon sherd weight, but rather upon estimated surface area. Nine categories of sherd size were defined, based upon circles from 5mm to 25mm in radius in 2.5mm stages, and areas were calculated for each. Rectangular, square, triangular and circular templates of like area were used to obtain the closest fit for each sherd. Sherds obviously broken in the course of excavation were reconstructed. Total sherd area and mean sherd size were calculated for major contexts in all phases, and Student's t test was used to estimate the degree of difference between each group and the population mean.

The results of the abrasion and fragmentation study are presented in Tables 9 and 10. It is apparent that pottery from the early sunken-featured buildings is markedly less abraded and less fragmented than pottery occurring in all other contexts. There are, however, two other groups of sherds which exhibit abnormally high fragmentation which suggests that the preservation of the material was dependent upon burial conditions. It would seem likely that the pottery from the sunken-featured buildings was better preserved because it was more rapidly and securely buried whilst material from other contexts was subject both to trampling and weathering before being sealed by later deposits, and to subsequent disturbance. Alternatively it is possible that the majority of early/middle Saxon pottery has been redeposited and only pottery from the sunken-featured buildings should be regarded as securely within its original context although this would seem the less likely hypothesis.

Any interpretation of the significance of the pottery must, however, take account of the changing function of the site during the early and middle Saxon periods. In this respect the relative abundance of pottery from different contexts is of note. A total of 64 sherds was recovered from the sunken-featured buildings whilst the larger timber and stone halls produced only 37 and 1 sherd(s), respectively. The evidence provided by the mammalian bones is similar (pp. 75-78), an unexpectedly small quantity of material having been recovered from contexts of middle Saxon date. To some extent this could be a result of the lack of surviving floor levels, but it is also probably a reflection of the higher status of the halls with perhaps a higher standard of cleanliness.

Comparative Material

The evidence from comparable assemblages emphasises the problems associated with the identification of changes in the form and technology of plain domestic wares of early and middle Saxon date in an area too far west to be much influenced by the development of the Ipswich-type ware tradition. Pottery found at Odell, Bedfordshire, in wells dated by dendrochronology to after the middle of the 6th and early 7th centuries, is extremely similar in fabric, form and manufacture to material from both the sunken-featured buildings and from the halls and associated contexts at St Peter's Gardens (personal observation; report in preparation by B Dix). One exception, however, is present. A large storage-type vessel represented by sherds from a wide-angled base with sloping sides has a quartz-sanded exterior surface. The vessel is coil-built but the angle of the sides together with the sanded surface suggests that some form of exterior mould may have been used.

A straight-sided storage vessel from a sunken-featured building at Briar Hill, Northampton, also exhibits exterior sanding, although smoothing has obscured this over the greater part of the vessel (Denham 1984d). The rest of the assemblage is extremely similar to material from St Peter's Gardens although the fabrics are of local manufacture. Large globular storage vesels would appear to be present in an assemblage from Grendon, Northamptonshire, and again traces of exterior sanding are visible (personal observation).

At Pennylands, Buckinghamshire, pottery from sunken-featured buildings and a small timber hall shows an increase in the relative abundance of chaff-tempering in later contexts and granitic tempered wares of different mineralogy from S1A have been noted, but the assemblage is otherwise similar to the material from St Peter's Gardens and no change in form and technology has yet been identified (personal observation, report in preparation by R Williams). The principal difference between the assemblages from St Peter's Gardens and Chalk Lane and other local pottery would thus appear to be in the lack of large storage-type vessels and developments in manufacturing techniques associated with their production.

Phase 3
The Late Saxon Wares

The late Saxon pottery (1,188 sherds in Phase 3) provides a useful addition to the evidence from St Peter's Street (McCarthy 1979, 226-7), Marefair (Gryspeerdt 1979, 56-67), Chalk Lane (Gryspeerdt 1981, 110-118) and St James' Square (Denham 1983, 146-150) although a lack of vertically stratified contexts has not allowed any refinement of the dating of material within the period. The range and complexity of pottery fabrics from St Peter's Gardens (17 discrete 'types' and 13 subdivisions of 'type') is in keeping with assemblages from the other sites within the town but the proportions of the different wares represented vary. The two dominant fabric types were locally and regionally produced St Neots-type ware (T1) and Northampton ware (W1), but pottery was imported from East Anglia, the Gloucestershire and Cotswold region, Leicestershire or south Lincolnshire, and Stamford. A group of high quality wares of probably Continental influence may bear witness to Northampton's widening communications in the late Saxon period.

St Neots-type Ware

Fabric: T1 and sub-types.
(ills. 35-46 and residual pottery in Phase 4 (M) ills. 78-98)

Forms The usual range of forms found in St Neots-type ware is present. Small, well made cooking pots with curved rims, globular profiles, and slightly sagging bases are common. Larger straight-sided cooking pots with everted rims occur less frequently, and may be confined to the 11th or 12th centuries (Gryspeerdt 1981, 115). Sherds from a storage vessel with ?2-4 lug handles on the rim were recovered and one example of a suspension perforation on a jar rim was identified. The most common bowl form has a sharply inturned rim and is usually small (less than 160mm) but can be as wide as 250mm in diameter, with a flat base. Hammer-headed bowls, deep forms with rims of varying angles and thickness, rare shallow dishes, and a few lamps complete the range of forms represented. Decoration is infrequent and is confined on the whole to thumbing around the rim or, more rarely on strips applied vertically to the body wall. Few examples of rouletted decoration occur; it is likely that this is a late development.

Fabric St Neots-type ware displays great regional variation in fabric, strongly suggesting the existence of many production centres. The ware is usually characterised by the white calcareous material within the fabric but the iron-bearing clays which form the ceramic matrix can vary in colour after firing from light brown, pinkish red, strong red and grey to purplish black. Any form of subdivision based upon the variation in fabric inclusions is hampered by a lack of kiln evidence in the locality and the widespread uniformity of the available Jurassic raw materials. Neither petrological analysis by thin section (Gryspeerdt 1981, ((M)59) nor neutron activation analysis (Hunter 1979, 233-240) has proved useful in defining specific production centres and it is unlikely that any form of classification based upon characteristics which are not visible by eye or X20 binocular microscope would be practicable given the large quantity of material recovered in excavation.

Manufacture and Use A greater diversity in methods of production is now recognised, and it is no longer reasonable to suggest that St Neots-type ware was uniformly wheel-thrown. Many of the small fine-walled globular cooking pots and inturned rim and hammer-headed bowls were clearly thrown on a fast wheel, probably directly on to the wheel head, and exhibit wire marks on the underside of the bases. Other vessels, particularly the larger straight-sided bowls, cooking pots and storage vessels show evidence of coil construction. The base of one cooking pot (ill. 42), a crudely finished example of coil construction, is reminiscent of vessels in Northampton ware on which the upper part of the body and rim were either neatly finished on the wheel, presumably whilst still fairly plastic, or thrown on the wheel separately and then joined to the base at a central seam. The presence of horizontal and step fractures around the girth of a few vessels would suggest that similarly complex methods of construction could occasionally have been employed on St Neots-type ware.

Table 11 Refined Classification of St Neots-type Ware
The analysis of 284 sherds, (45% of T1 as a whole in Phase 3) which could be confidently assigned to sub-type. The remaining 55% are classified under the umbrella code T1.

Sub-type	T1(1)	T1(2)	T1(3)	T1(4)
Number and (%) of sherds in Phase 3 T1 assemblage	164 (26%)	23 (4%)	54 (9%)	43 (7%)
Method of manufacture	Chiefly wheel-thrown. Thin-walled.	Wheel-thrown and hand-made.	Wheel-thrown.	Hand-made. Thick walled.
Principal forms	Small cooking pots with sagging bases. Lamps.	Bowls and cooking pots.	Inturned rim and hammer-headed bowls.	Storage jars with pulled handles, flat-based cooking pots and straight-sided square-rimmed bowls.
Surface finish	Smooth to soapy.	Harsh, only rarely finished.	Smooth. Heavy wet-hand finish.	Soapy. Thick external and internal self-slip.
Surface colour	Purplish black, black, and grey.	Weak to strong red and reddish brown.	Weak red and pinkish grey.	Light brown to light grey.
Proposed date range	900-1100	1000-1200	900-1150	800-950
Affinities	Widest ranging category, found throughout the region.	Similar to B6 at Bedford, which is common in the 11th and 12th centuries (Baker and Hassall 1979, 167).	Similar to Bedford B4 (Baker and Hassall 1979, 167) but likely to be locally produced.	A possible development of Maxey Group III wares (Addyman 1965, 47-58) although similar forms can be found as far south as Hertford (pers. comm. H Borrill).

Variation in quality of surface treatment has been recorded and found to range from the unfinished to the heavily slipped, with gradations of wiping and wet-hand smoothing between. The slipping of vessels may have been intentional in order either to mask the speckled exterior and copy contemporary fine wares, or to render the porous shelly fabric more impervious, rather than merely a result of a wet throwing technique. The frequent build-up of limescale on the inside of vessels may also have been deliberately contrived by repeated water boiling to increase imperviousness, as it would seem unlikely that normal use during a pot's short lifetime would generate the thickness of deposit sometimes found on St Neots-type ware vessels in Northampton.

The majority of cooking pots in St Neots-type ware are heavily sooted and suggest culinary use over an open fire and this is supported by the analysis of burnt residues on sherds from two vessels which demonstrated the presence of animal fats (Evans and Card, ((M)2/47-48). Large lugged jars were presumably used for the storage of dry goods since the fabric is extremely porous. Bowls probably served a variety of functions and are less frequently sooted than cooking pots. Holes in the base of small bowls with inturned rims suggest use as strainers, possibly in the early stages of soft cheese production. Pitchers are only rarely found and it would seem likely that liquids were stored in barrels prior to the widespread occurrence of jugs in the 12th to 13th century.

T1 Subdivisions It was noted that a correlation existed between vessel form, surface finish and colour, and method of manufacture and it was felt likely that such variations in the pottery might better reflect the preferences and practices of individual kilns or areas of production than minor fabric differences. A subdivision of T1 has been proposed to take account of these macroscopic characteristics and detailed definitions are included in the Gazetteer of Saxon Pottery, microfiche section (ii). The outlined classification (Table 11) is not one of discrete groups but attempts rather to define the range and boundaries of identifiable trends within an extremely broad pottery tradition. As such many clearly recognisable examples of St Neots-type ware are not easily assignable to a specific category either because they are too fragmentary, abraded, or sooted to allow identification of the relevant macroscopic characteristics, or because they lie on a boundary between types. Only sherds clearly falling within defined groups were sub-classified; the remaining material (*c.* 55%) is catalogued under the umbrella heading T1. By association with other fabrics in the late Saxon period (W1, V5, W32, W34) and by comparison with related wares predating (S3, S3/T1) and post-dating (T1/2, T2) St Neots-type ware tentative date ranges have been assigned to the four categories and it is hoped that these can be tested by stratified groups from Gregory Street (Denham forthcoming, b). Parallels with similar wares from the region have been cited and it is possible that these will be extended and further clarification of dating provided by work currently in process on late Saxon material from Raunds, Northamptonshire (pers. comm. T Pearson).

Northampton Ware and Related Types
Fabrics: W1 and (sub-types), W32, W34.
(ills. 49-57, and residual pottery in Phase 4 (M) ills. 191-202)
Northampton ware (W1) comprises 20% of the pottery (243 sherds) recovered from secure late Saxon contexts at St Peter's Gardens. Related fabrics made up a further 3% (27 sherds). In fabric, form and method of manufacture the material is extremely similar to the W1 recovered from St Peter's Street (McCarthy 1979, 226) and Chalk Lane (Gryspeerdt 1981, 115) and there seems no reason to doubt that it was made at the probable kiln site investigated in Horsemarket (Williams 1974) or at a contemporary closely related source within the town. The character of the ware in both fabric and form is close to other sandy wheel-thrown types from Thetford, Torksey and Stamford which were being produced in the urban centres of the Danelaw.

Form The most common form is the globular cooking pot which maintains the same general shape irrespective of size (rim diam. 90-160mm). Two spouted bowls, a lug handle from a ?storage jar and fragments from small lamps complete the range of forms identified. Decoration was confined to rare examples of rouletting.

Fabric Northampton ware exhibits a wide range in both texture and colour which may reflect a diversity in choice of clay (Lower Estuarine and Upper Lias), the presence of more than one kiln within the town, a lack of standardisation of clay preparation, or a failure to control firing temperature and

atmosphere. In addition to the usual quartz and ironstone mineral suite examples have been identified with shell temper (fabric W1(2)); these are probably a result of influence from the contemporary St Neots-type ware tradition. Fabrics W32 and W34 are likely to be of local origin. They share certain characteristics of form and fabric with W1, and appear to have the same restricted period of manufacture.

Manufacture and Use All examples of Northampton ware exhibit characteristics resulting from manufacture on the wheel, but the uneveness of the walls and bases of larger cooking pots suggests that they were at least in part initially coil built (*cf* 53), and only finished on a wheel. Clumsily knife-trimmed and poorly finished bases are frequently retained. Considerable variation in quality is evident, however, and smaller pots are generally well thrown and carefully finished.

Vessels in Northampton ware are commonly sooted and suggest use over an open fire, presumably in domestic cookery. In this respect they would have had considerable advantages over the porous St Neots-type ware. Bowls, spouted bowls and storage jars, together with unsooted cooking pots, were presumably used for storage.

Rare glazed sherds in Northampton ware (W1(3)) have also been recovered and these are characterised by a thick uneven glaze, frequently over clay chippings. In view of the similarity between W1 and Stamford ware the possibility exists that better quality glazed vessels which have been classified as X1(1), may actually have been produced in Nothampton. Neither neutron activation analysis nor petrological analysis by thin section examination (Kilmurry 1980, 208-218) has successfully separated the two wares owing to the wide range of variation in Northampton products and it is unlikely that the problem can be resolved without the discovery of further kilns or larger groups of material.

The W1 Horizon It was noted that sections W14 and AA206 of the stone hall robber trench produced a large quantity of Northampton ware. Approximately 30% of all the sherds in fabrics W1, W32 and W34 were recovered here, although less than 10% of the late Saxon pottery as a whole was found in these contexts. In comparison sections 123.1 to 123.4 had a lower incidence not only of Northampton ware and associated fabrics, but also of fabric ?W1/X1(1)/Y. Stamford ware was notably absent from sections W14 and AA206 but sherds from a rilled cup and ?pitchers with glazes 1, 4 and 6 (Kilmurry 1980, 11-12) were recovered in sections 123.1 to 123.4.

It would consequently appear that sections W14 and AA206 were robbed during the first half of the 10th century, by analogy with the high incidence of W1 on Chalk Lane and St Peter's Street during this period. The robbing of sections 123.1 to 123.4 is more likely to have taken place during the later 10th or in the 11th century. Little pottery was recovered from sections 123.5-123.9 but pit AA545 which cut the robber trench in this area produced further sherds. The material would appear to favour an early 10th century date although the small size of the sample, and the possibility of subsequent disturbance in this area, and hence residual pottery, are factors which must be considered.

Other contexts which produced notable quantities of Northampton ware are pits W13 and AA103, situated on the line of the W14/AA206 robber trench, and features associated with a sunken-featured building inside the walls of the stone hall in section 123.1 (AA58, 136, 140, 145).

The identification at St Peter's Gardens of a period during which Northampton ware rose to prominence reinforces the suggestion that the W1 horizon is of chronological, rather than social or economic, significance as it would now appear to be a feature of all late Saxon assemblages. The precise dating of the W1 horizon has proved problematic. On St Peter's Street it is stratigraphically later than the T1 horizon in Houses 1, 2, and 8 and could be expected to belong to the mid 10th century or possibly later, as St Edmund Memorial pennies in House 1 were associated with the preceding T1 horizon. If pit K160, House 10, containing a penny of Athelstan, is regarded as being contemporary with the sunken-featured buildings which contain W1 material, these too may be seen as mid-10th century in date (McCarthy 1979, 122). On Chalk Lane, however, the evidence points to an earlier rise to prominence for W1 since it was most frequent in Phase 3A, in which it was associated with a further St Edmund Memorial penny (Gryspeerdt 1981, 110). A *c.* 900-975 date range for the W1 horizon within the broader 850-1100 range for T1 is suggested on present evidence.

Table 12 The evidence for the W1 horizon on St Peter's Street, Chalk Lane and St Peter's Gardens

	% of St Neots-type and associated wares (T1, S3/T1).	% of Northampton and associated wares (W1, W32, W34, W48, W55).	Coin evidence
St Peter's Street			
House 1, Phase 4B House 8, Phase 4B (344 sherds)	95	3	Phase 4B: St Edmund (2) *c.* 900-930
House 1, Phase 4C and House 8, Phase 4D (92 sherds)	32	63	House 10, K160 (W1 horizon) Athelstan *c.* 924-939
Chalk Lane			
Phase 3A (635 sherds)	47	40	St Edmund *c.* 900-930
Phase 3C (4044 sherds)	84	7	St Edmund *c.* 900-930 Aethelred II *c.* 979-1000
St Peter's Gardens			
Phase 3, robber trench, sections W14, AA206 (112 sherds)	21	71	
Phase 3, robber trench, sections 123.1-123.9 (179 sherds)	69	16	

Stamford Ware
Fabric X1(1)
(ill. 73 and residual pottery in Phase 4 (M) ills. 257-263)
Stamford ware has been a small element of every late Saxon assemblage from Northampton, and the pottery from St Peter's Gardens is no exception, X1(1) comprising *c.* 3% of the Phase 3 material. Few sherds assignable to a precise form category were identified but a spout from a bowl (Kilmurry 1980, 307, form 13) was present, the remaining examples probably deriving from small cups, pitchers or jugs. All sherds bore a pale yellow/green glaze (5Y 6/6 to 5Y 8/6) and were in fabrics A and G (after Kilmurry 1980, 8-9). Further material in Phase 4, which was probably redeposited, comprised glazed ?jugs, a small rilled cup, cooking pot or jug rims, some with internal lid seatings, and handles (Kilmurry forms 11 and 12). No sherds in fabric B (after Kilmurry) were present in Phase 3 contexts. It is possible that the red-painted sherds in fabric ?W1/X1(1)/Y may have been made at Stamford but these have been catalogued separately (*cf* 56-57). Stamford ware is notably absent from sections W14 and AA206 of the robber trench and may post-date the W1 horizon.

Sandy Wares of probable East Anglian origin
Fabrics W2, W3 and sub-types, W54
(ills. 68-70, 72 and residual pottery in Phase 4 (M) ills. 209, 210)
A high percentage of East Anglian fabrics from Chalk Lane in Phase 3A bore witness to Northampton's main cultural connections with the eastern Danelaw in the late Saxon period. Whilst fewer examples of these fabrics (47 sherds in late Saxon contexts) were found at St Peter's Gardens the percentage occurrence is higher than on Chalk Lane and the group makes up an important category of imported material. The wares are of Thetford 'type', but the range of fabrics recognised suggests that the material may derive from a number of sources. Simple wheel-thrown cooking pots, some from residual contexts bearing incised wavy line decoration, are the only forms identified at St Peter's Gardens.

Sandy Wares of possible Leicestershire/S. Lincolnshire origin
Fabrics W4, W47
(ill. 74)
Only 2 sherds were conclusively identified in this category in Phase 3. The example in fabric W4 is extremely quartz rich and probably derives from a lamp. The sherd in fabric W47 is of uncertain form.

Calcareous Wares probably of Cotswold origin
Fabrics T11, V5, V8
(Unillustrated)
Excavations at Chalk Lane, St James' Square and St Peter's Gardens produced pottery of affinity with the fabrics and forms of wares from the Oxfordshire/Gloucestershire region but this makes up only a minor element (never more than 2%) of the late Saxon assemblage. Hand-made, wheel-thrown, and wheel-finished material has been recovered but no sherds from St Peter's Gardens were diagnostic of form. Although no examples of any type had previously been identified in contexts predating the 10th century the recovery of one sherd of T11 from the extension of the stone hall may suggest an earlier start to production.

Calcareous Late Saxon/Early Medieval Transitional Ware
Fabric T1/2
(ills. 47, 48 and from Phase 4 (M) ills. 99-111)
The local late Saxon (T1) and early medieval (T2) calcareous wares appear to share a number of characteristics, and a case for continuity in domestic coarsewares is strongly argued, despite the upheavals of the Norman Conquest (Hurst 1976, 342-3). A period of transition is now identifiable in which the fabric retains the finely crushed shelly limestone inclusions and light to reddish brown/black surface colours, but lacks the soft texture of T1, and has little indication of smoothing or wiping. Small cooking pots and bowls were still wheel-thrown, but other vessels, in particular large straight-sided bowls, indicate a reversion to coil construction. Handles occur and evidence the emergence of jug forms.

High Quality Wares (Origin uncertain)
Fabrics ?W1/X1(1)/Y, W5
(ills. 58-67 and residual pottery in Phase 4 (M) ills. 204-208)
A total of 78 sherds in fabric ?W1/X1(1)/Y was recovered of which 47 were in late Saxon contexts in Phase 3, 26 were residual sherds found in Phase 4, and 5 were unstratified. The pottery was made from a white-firing clay with inclusions of quartz and rare ironstone which were probably present in the raw clay, rather than having been added as temper. The fabric lies at the finest extreme of Northampton ware, and is also within the Stamford range. A minimum of ten vessels is represented and all were wheel-thrown with smooth even walls. No traces of sooting are present and the fabric has been oxidised to a pinkish white.

All the sherds recovered probably derive from small 'cooking pots' although no signs of use are visible and storage is the most likely function. The rims are square, hooked, or concave, to take a lid, and range from 120 to 140mm in diameter. Rilling is occasionally present on the rim underface, and may extend down the neck. Only one base was recovered and this was flat with a diameter of 85mm. Many of the sherds bear red-painted decoration which has been applied in simple finger stripes or ?brush-painted in cross-hatch design. There are also traces of paint around the rims, and on one thumbed applied cordon which may have derived from a larger storage-type vessel.

Thin section analysis of two unvitrified crucible sherds found in the same context as several ?W1/X1(1)/Y cooking pot sherds (Phase 3, Y135) has shown that the two vessel types were produced in an identical fabric, and it would appear that the remaining 18 vitrified sherds, making a total minimum number of eight crucibles, were also produced in fabric ?W1/X1(1)/Y. Despite the comparatively low quartz content of the fabric the crucibles would appear to have functioned adequately and examples similar in both fabric and form have been recovered from Chalk Lane (Fig. 24), St Peter's Street (Fig. 113), Marefair (p. 69), Black Lion Hill (Denham forthcoming a) and Northampton Castle (Denham, pers. observation).

Close parallels for the red-painted pottery can be found in a group of vessels from the Castle site, Stamford (Kilmurry 1980, 34-42). Although the rim forms and finger-painted decoration are comparable, differences between the two groups are apparent. Storage vessels predominate at Stamford and these have not been conclusively identified at St Peter's Gardens. No parallels exist for the sherd with cross-hatched design found in Northampton. Fabric ?W1/X1(1)/Y is a softer, lower-fired fabric with thicker walls, attributes which are more in keeping with a Northampton, rather than Stamford, origin. The crucibles with the characteristic pedestal foot are unlike Stamford forms which tend to be more globular in profile with rounded bases. There is little reason to doubt the local production of the Northampton crucibles as a minimum of about 20 vessels (an estimate based on the total number of complete vessels, together with the total number of different rims) has now been recovered from excavations in the town. Given the fragmented and distorted condition of much of the material and the large number of featureless body sherds

recovered (*c.* 150) a more realistic estimate might be in the order of 30 vessels.

Other parallels for the Northampton vessel forms and decoration can be found in Beauvais ware excavated at Southampton (Addyman and Hill, 1979) and York (pers. comm. Ailsa Mainman) and in pottery from Beauvais itself (Leman 1972, De Bouard 1973). Similar forms also occur at Doué la Fontaine, Maine-et-Loire, during the 10th century (De Bouard, 1973-4) and at Douai (pers. comm. Pierre Demolon). Despite the similarity of form the French wares are invariably in harder fired fabrics, with larger more prominent quartz inclusions. The vessels tend to be thinner walled and the decoration is better executed with finer brush-applied designs in an ochrous paint of darker hue. It is likely, however, that Northern French pottery was the principal influence upon both Stamford and Northampton red-painted wares, and in view of the great similarity in ceramics from two such geographically distant areas it is suggested that Continental potters may have been working in the Midlands. Pottery in fabric ?W1/X1(1)/Y is frequently associated with metalworking at St Peter's Street, Chalk Lane and St Peter's Gardens, as attested by the presence of the crucibles, together with copper and lead off-cuts, driblets and slag in the same or related contexts. It is possible that foreign metallurgists, maybe including moneyers, were also working in the town given the recovery of St Edmund Memorial pennies in sufficient volume to suggest that Northampton may be considered a candidate for the striking of some of the series (Archibald 1981, 118). Of particular note is context A576, House 1, Phase 4B, on St Peter's Street (Williams 1979, 15), in which were found a crucible of typical Northampton form (Cu292), a St Edmund Memorial penny (Nu9), a partly-worked strip of copper (Cu296) and lumps and driblets of lead (Pb44). The recovery of crucibles and pottery in fabric ?W1/X1(1)/Y and metalworking debris from Pit Y135 on St Peter's Gardens provides further evidence of the association of the two crafts; a cooking pot base had been re-used as a metalworking 'heating tray', and hematite (?for paint) was found in a crucible type vessel (p. 69). The presence of North French influence in the ceramics associated with metalworking is of interest in the context of the known Continental connections of East Anglian moneyers of the period as witnessed by their names.

The relationship between fabrics ?W1/X1(1)/Y and W1 is uncertain. The two wares may have been contemporary and manufactured by the same potters, W1 representing the utilitarian coarseware, ?W1/X1(1)/Y the high quality fineware. Alternatively Northampton ware could have been produced by local potters in imitation of the superior Beauvais-type pottery, and this is recommended by the characteristics shared with locally produced St Neots-type ware: less angular, rounded rim forms, and reduction firing in clamp kilns. The crudity of manufacture of many of the vessels may have resulted from a lack of competence in the handling of an untempered finer clay, rather than the deliberate production of an inferior coarseware for domestic use. As some Northampton ware vessels were, however, well-made neither model is particularly suited to the evidence. At present it is tentatively suggested that the impetus for the development of W1 came from the foreign craftsmen working in Northampton between *c.* 890 and 930 and the use of the finer white-firing untempered clay and the development of new forms were the direct result of this influence. It is likely that the production of the fineware ?W1/X1(1)/Y was limited to a comparatively short period of time, possibly a few decades. Northampton ware, however, would appear to have been longer-lived, and was probably manufactured until the middle of the 10th century, during which time a deterioration in quality may have occurred, resulting in the crudely made vessels so frequently found. Certainly by the last quarter of the century St Neots-type ware had regained supremacy, and Stamford pottery became the only fineware of any significance during the 11th and 12th centuries.

Three sherds in fabric W5 were recovered in late Saxon contexts. it is not possible to determine either the form represented, the method of manufacture, or the origin on present evidence.

Catalogue of Illustrated Pottery

Key to Table 13

Code of vessel forms:

A	cooking pots
A4	decorated urns
B	bowls
B2	spouted bowls
C	jugs
C4	pitchers
D	lamps
E8	storage jars
U	unknown

Combinations indicate uncertainty as to vessel type:
eg AB = cooking pot or bowl

Code of contextual groups

1(a)	sunken-featured buildings
1(b)	main timber hall
1(c)	general soil layer
1(d)	other deposits
2(a)	make-up layers
2(b)	stone hall
2(c)	stone hall extension
2(d)	other deposits
3(a)	robber of stone hall
3(b)	other deposits

Combinations indicate uncertainty as to phase

Table 13

Ill.	Fabric	Form	Sherd	Manufacture	Diameter		Colour Code (Munsell)			Context	Phase + (group)	Comments
					Rim	Base	Exterior	Core	Interior			
2	S1A	A	rim	hand-made	–	–	5YR 2.5/1	5YR 2.5/1	5YR 2.5/1	AA233	1(c)	burnished
3	S1A	AB	rim	hand-made	–	–	2.5YR 2.5/0	2.5YR 3/0	2.5YR 3/0	AA423	1(b)	burnished
4	S1B(1)	?A4B	body	hand-made	–	–	2.5YR 4/0	2.5YR 3/0	2.5YR 3/0	V87	1(c)	stamped
5	S1B(1)	A	rim	hand-made	120	–	5YR 4/1	5YR 2.5/1	5YR 3/1	AA479	1(b)	
6	S1B(1)	A	rim	hand-made	180	–	5YR 2.5/1	2.5YR 3/0	5YR 2.5/1	Y233	1(d)	grass-wiped
7	S1B(1)	A	rim	hand-made	260	–	2.5YR 6/4	2.5YR 3/0	10R 4/1	AA465.1	1(b)	
8	S1B(1)	?A	rim	hand-made	90	–	5YR 6/4	5YR 4/1	5YR 3/1	AA431	1(b)	
9	S1B(1)	A	rim	hand-made	160	–	5YR 6/4	2.5YR 4/0	5YR 5/2	AA664	1(d)	grass-wiped
10	S1B(1)	A	rim	hand-made	120	–	5YR 4/1	5YR 3/1	5YR 4/1	AA139	?3	
11	S1B(1)	A	rim	hand-made	140	–	2.5YR 3/0	2.5YR 3/0	2.5YR 3/0	AA423	1(b)	
12	S1B(1)	A	rim	hand-made	–	–	2.5YR 2.5/0	2.5YR 2.5/0	2.5YR 2.5/0	AA664	1(d)	burnished
13	S1B(1)	ABE8	body	hand-made	–	–	5YR 3/1	2.5YR 2.5/0	5YR 3/1	V87	1(c)	lug

continued

Table 13 continued

14	S1B(2)	?A4B	body	hand-made	–	–	5YR 5/2	2.5YR 2.5/0	2.5YR 2.5/0	AA637	1(d)	fingernail-impressed
15	S1B(2)	A	rim	hand-made	150	–	2.5YR 2.5/0	2.5YR 2.5/0	2.5YR 2.5/0	AA410	1(b)	burnished
16	S1B(2)	AB	rim	hand-made	–	–	2.5YR 3/0	2.5YR 3/0	2.5YR 2.5/0	Z60	1(a)	
17	S1B(3)	?A4B	body	hand-made	–	–	2.5YR 2.5/0	2.5YR 3/0	2.5YR 3/0	Y55	3(b)	grooved
18	S1B(3)	A	rim	hand-made	260	–	2.5YR 3/0	2.5YR 3/0	2.5YR 3/0	AA410	1(b)	well-smoothed
19	S1B(3)	A	rim	hand-made	–	–	2.5YR 2.5/0	2.5YR 2.5/0	5YR 2.5/1	AA665	1(d)	burnished
20	S1B(3)	A	rim	hand-made	–	–	5YR 3/1	2.5YR 2.5/0	2.5YR 2.5/0	Y184	1/2	
21	S1B(3)	B	rim	hand-made	140	–	2.5YR 3/0	2.5YR 3/0	5YR 3/1	W50	2(d)	?pinch pot
22	S1B(3)	A	rim	hand-made	180	–	2.5YR 2.5/0	2.5YR 3/0	2.5YR 3/0	Z63	1(a)	well-smoothed
23	S1B(3)	A	rim	hand-made	–	–	5YR 3/1	2.5YR 3/0	5YR 2.5/1	AA403	3(b)	
24	S1B(3)	AB	body	hand-made	–	–	2.5YR 3/0	2.5YR 3/0	2.5YR 3/0	AA663	1(d)	perforated
25	?S1B(3)	?A4B	body	hand-made	–	–	5YR 3/1	5YR 3/1	5YR 3/1	AA233	1(c)	grooved and stamped
26	S1C(1)	?B	rim	hand-made	320	–	2.5YR 2.5/0	2.5YR 3/0	2.5YR 2.5/0	AA441	1(a)	crudely wiped
27	S1C(1)	AB	rim	hand-made	–	–	2.5YR 2.5/0	2.5YR 2.5/0	2.5YR 2.5/0	AA438	1(a)	burnished
28	S2	A	rim	hand-made	120	–	5YR 5/3	5YR 4/1	5YR 5/1	AA233	1(c)	self-slip
29	S3/T1	A	rim	hand-made	240	–	7.5YR 4/0	7.5YR 4/0	5YR 5/2	W36	3(b)	wet-hand finish
30	S3/T1	A	rim	hand-made	120	–	5YR 7/1	2.5YR 4/0	5YR 5/1	Y55	3(b)	wet-hand finish
31	S3/T1	A	rim	?	120	–	5YR 5/1	2.5YR 4/0	5YR 5/1	Y55	3(b)	wet-hand finish
32	?S5	AB	rim	?	–	–	5YR 4/1	5YR 3/1	5YR 3/1	AA233	1(c)	?wheel-finished
33	?S5	AB	rim	?	–	–	2.5YR 3/0	5YR 3/1	2.5YR 3/0	AA187	2(a)	?wheel-finished
34	?S5	A	rim	?	200	–	5YR 3/1	2.5YR 3/0	5YR 5/1	AA633	1/2	?wheel-finished
35	T1(1)	A	rim	wheel-made	160	–	2.5YR 4/2	2.5YR 4/0	2.5YR 5/4	Y83	3(b)	
36	T1(1)	AB	base	?	–	95	10R 4/1	2.5YR 3/0	2.5YR 2.5/0	Z30	3(b)	
37	T1(1/3)	A	rim	?	145	–	10R 6/1	2.5YR 5/0	10R 6/1	Y39	3(b)	
38	T1(1/3)	B	rim	wheel-made	300	–	2.5YR 2.5/0	2.5YR 3/0	10R 4/1	Y39	3(b)	
39	T1(3)	A	rim	?	180	–	5YR 4/1	2.5YR 4/0	5YR 6/3	Y158	3(b)	
40	T1(3)	B	rim	wheel-made	360	–	5YR 4/1	7.5YR 4/0	5YR 4/3	Y83	3(b)	thumbed
41	T1(4)	B	rim	wheel-made	400	–	5YR 6/3	7.5YR 4/0	5YR 6/2	AA9	3(b)	
42	T1(4)	A	base	?wheel-made	–	115	5YR 6/1	2.5YR 4/0	5YR 4/3	AA523	3(b)	internal self-slip
43	T1	AEB	rim	?	190	–	5YR 4/3	2.5YR 5/0	5YR 5/4	AA217	?3	vertical lug
44	T1	A	rim	?	180	–	2.5YR 5/0	2.5YR 4/0	2.5YR 5/0	W28	3(b)	
45	T1	A	rim	?	160	–	10R 4/1	2.5YR 4/0	10R 4/1	W41	3(b)	
46	T1	B	rim	wheel-made	240	–	5YR 3/2	2.5YR 4/0	7.5YR 6/4	AA7	3(b)	stamped
47	T1/2	AB	rim	?	260	–	2.5YR 5/8	2.5YR 4/0	2.5YR 5/6	W28	3(b)	
48	T1/2	ABC	base	?wheel-made	–	220	2.5YR 6/6	2.5YR 4/0	2.5YR 6/6	Y158	3(b)	
6												
49	W1(2)	A	rim	wheel-made	140	–	2.5YR 4/0	2.5YR 6/0	2.5YR 4/0	AA206	3(a)	
50	W1(3)	A	rim	wheel-made	100	–	5Y 5/6*	5YR 7/6	7.5YR 6/4 5Y 5/4(*)	AA136	3(b)	* full glaze (*) glaze on rim only
51	W1	AB	body	?	–	–	2.5YR 4/0	5YR 4/1	2/5YR 5/0	AA25	?3	rouletted
52	W1	A	rim	wheel-made	170	–	5YR 8/2	5YR 8/2	5YR 8/2	Y39	3(b)	rouletted
53	W1	A	rim	wheel-made	140	–	2.5YR 5/2	2.5YR 5/0	2.5YR 6/4	W28	3(b)	
54	W1	A	rim	wheel-made	100	–	10R 3/1	2.5YR 4/0	2.5YR 3/0	W28	3(b)	
55	W1	A	base	?hand-made	–	95	5YR 5/1	2.5YR 2.5/0	5YR 6/2	AA523	3(b)	?wheel-finished
56	W1	AB	base	wheel-made	–	80	5YR 7/1	7.5YR 6/0	5YR 6/1	W14	3(a)	
57	W1	E8	handle	?	–	–	2.5YR 6/0	2.5YR 6/0	–	Y130	3(b)	
58	?W1/X1(1)/Y	AB	body	wheel-made	–	–	5YR 8/1 5YR 6/6*	5YR 8/1	5YR 8/1	Y135	3(b)	* paint
59	?W1/X1(1)/Y	AB	body	wheel-made	–	–	5YR 8/1 5YR 7/6*	5YR 8/1	5YR 8/1 5YR 6/6*	Y55	3(b)	* paint traces, thumbed
60	?W1/X1(1)/Y	ABE8	body	wheel-made	–	–	10YR 8/1 2.5Y 6/4*	7.5YR 6/0	10YR 8/2	W14	3(a)	* paint traces, thumbed applied strip
61	?W1/X1(1)/Y	A	rim	wheel-made	130	–	7.5YR 8/2	7.5YR 8/2	7.5YR 7/2	Y39	3(b)	
62	?W1/X1(1)/Y	A	rim	wheel-made	130	–	7.5YR 8/4	5YR 8/4	5YR 8/1	Y135	3(b)	
63	?W1/X1(1)/Y	A	rim	wheel-made	130	–	5YR 8/1	2.5YR 4/0	5YR 8/1	Y135	3(b)	
64	?W1/X1(1)/Y	A	rim	wheel-made	130	–	5YR 8/1	2.5YR 4/0	5YR 8/1	Y135	3(b)	
65	?W1/X1(1)/Y	A	rim	wheel-made	140	–	5YR 7/3	2.5YR 4/0	5YR 7/3	Y135	3(b)	
66	?W1/X1(1)/Y	A	rim	wheel-made	–	–	5YR 7/4	2.5YR 5/0	5YR 7/4	Y135	3(b)	
67	?W1/X1(1)/Y	A	base	wheel-made	–	85	7.5YR 7/2	7.5YR 6/0	7.5YR 6/2	AA136	3(b)	wire marks
68	W2	A	rim	wheel-made	140	–	2.5YR 5/0	5YR 6/4	2.5YR 6/0	AA523	3(b)	
69	W3(3)	A	rim	?	110	–	5YR 4/1	5YR 5/1	5YR 7/1	AA58	3(b)	
70	W3(3)	B	rim	wheel-made	240	–	10YR 4/1	2.5YR 5/0	10YR 4/2	AA523	3(b)	
71	W1	D	rim	?hand-made	110	–	7.5YR 6/4	7/5YR 7/0	7.5YR 6/0	W42	3(b)	
72	W54	A	rim	wheel-made	120	–	7.5YR 6/0	7.5YR 7/0	7.5YR 6/0	Y135	3(b)	
73	X1(1)	B2	spout	?	–	–	5Y 7/6	2.5YR 4/0	5YR 7/4	AA78	3(b)	

Synthesis

From analysis of the early/middle Saxon pottery from St Peter's Gardens it would appear that there is little variation in the relative frequencies of the major fabric categories S1B and S1C in the different contextual groups in Phases 1 and 2. Fabric S1A, a slightly better produced, probably non-local ware, would appear, albeit on slight evidence, to be more common in the earlier part of the 400-900 date range, and chaff-tempering (Fabric S2+) was probably a later addition to the Saxon pottery tradition. It is notable that the range and relative proportions of the Saxon fabrics from St Peter's Gardens are extremely similar to those from Chalk Lane.

Evidence for changes in the form and manufacture of locally

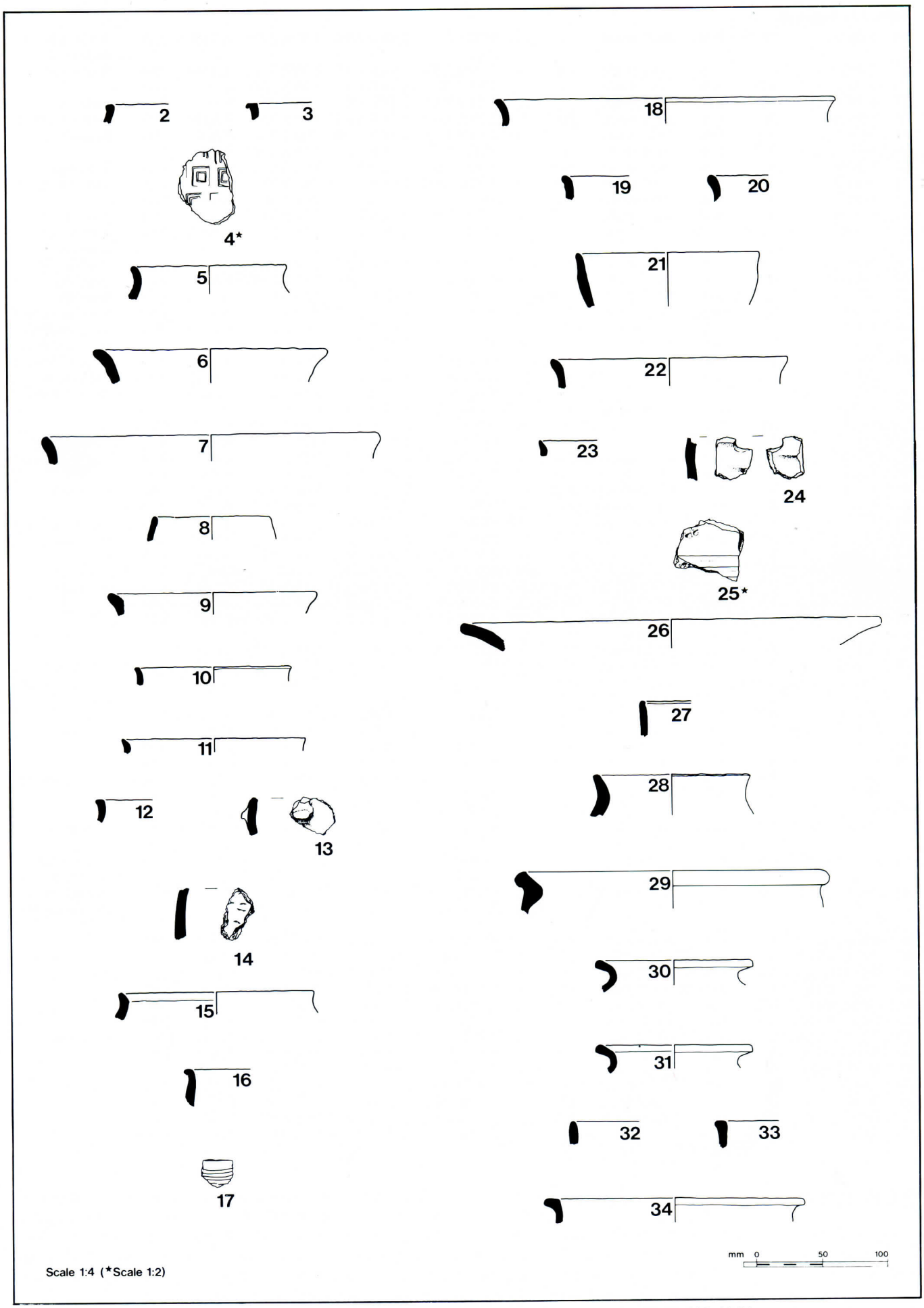


Fig 30: The Early/Middle Saxon Pottery. Fabric S1A: 2-3; S1B: 4-25; S1C: 26-27; S2: 28; S3/T1: 29-31; ?S5: 31-34.

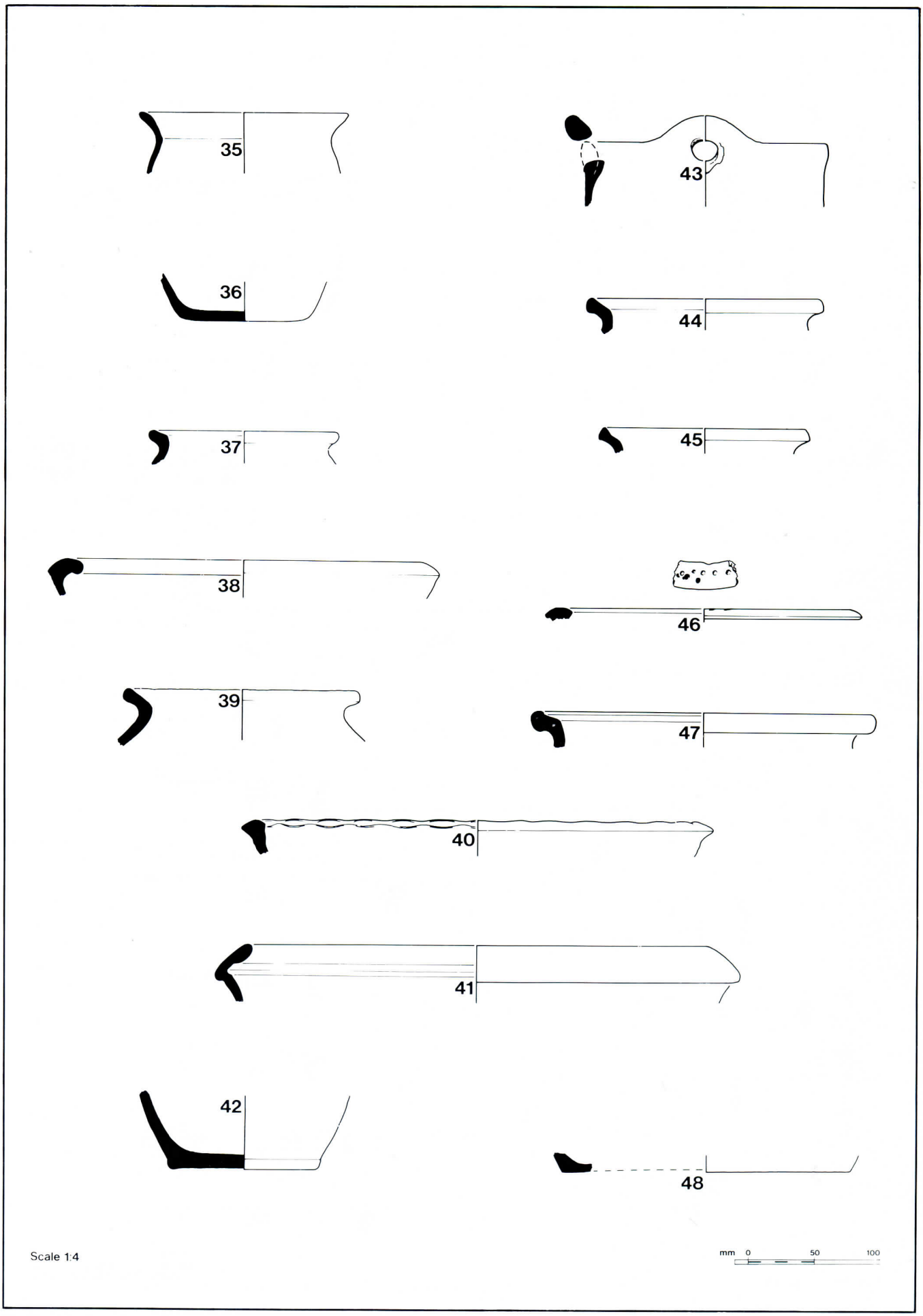


Fig 31: The Late Saxon Pottery I. Calcareous Wares. Fabric T1: 35-46; T1/2: 47-48.

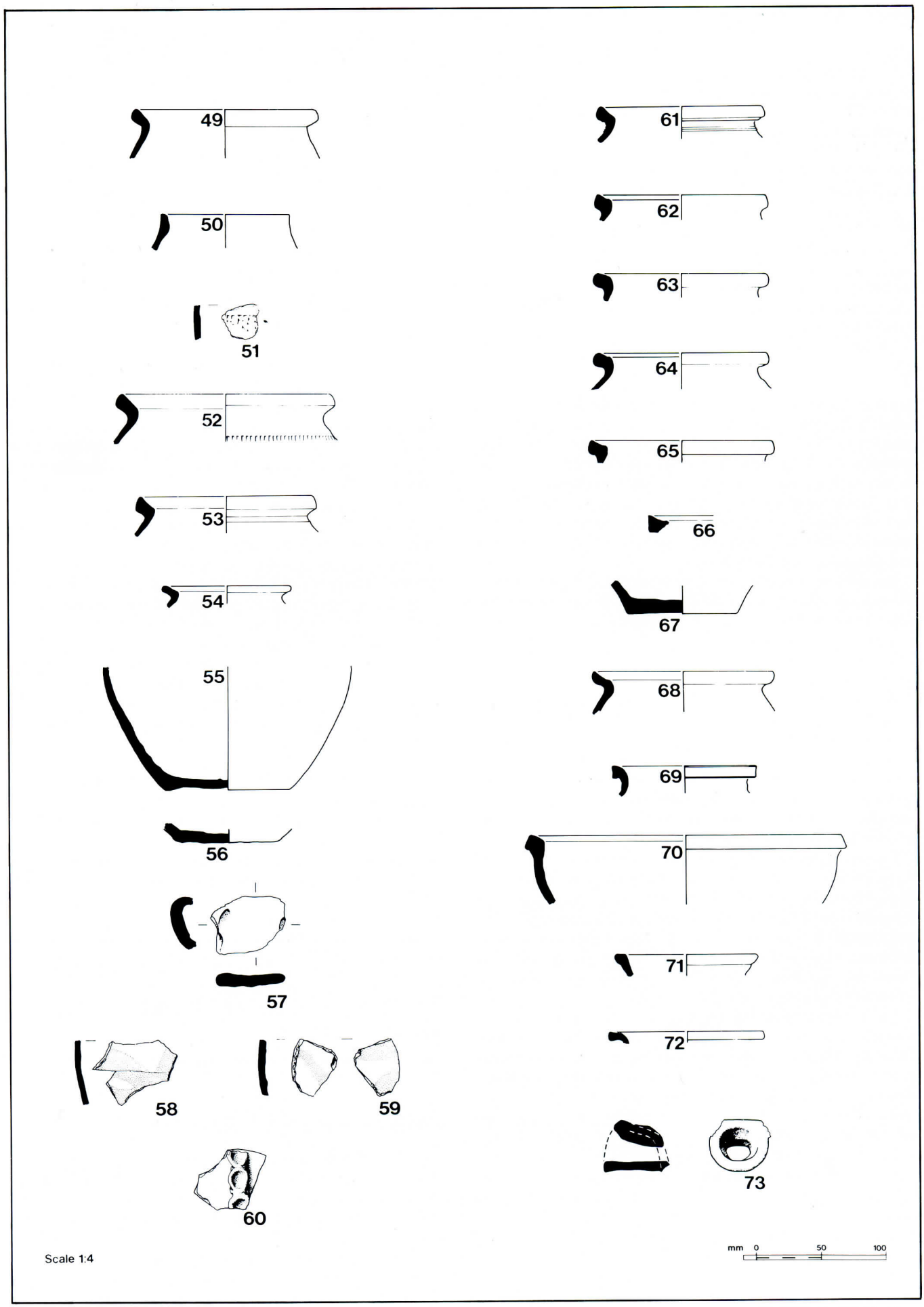


Fig 32: The Late Saxon Pottery II. Sandy Wares. Fabric W1: 49-57; ?W1/X1(1)/Y: 58-67; W2: 68; W3: 69-70; W4: 71; W54: 72; X1(1): 73.

Table 14 Percentages of Pottery Types in Securely Dated Late Saxon Contexts from Five Excavations in Central Northampton

	St Peter's Street	Marefair	Chalk Lane	St James' Square	St Peter's Gardens
Number of sherds	1394	371	8268	326	960
St Neots-type and associated wares. (S3/T1, T1)	55	40	73	83	60
Northampton and associated wares. (W1, W32, W34, W48, W55)	37	53	15	<1	24
Stamford ware. (X1(1))	2	4	3	5	3
East Anglian wares. (W2, W3, W54)	1	2	1	<1	3
Leics and S Lincs wares. (W4, W36, W37, W47)	<1	0	<1	<1	<1
Cotswold wares. (V5, V8, TII)	0	<1	2	<1	1
High quality wares. (W1/X1(1)/Y, W5)	2	1	<1	0	4
Late Saxon/early medieval transitional wares. (T1/2, early T2, V1)	3	<1	<1	10	5

produced wares between the early and middle Saxon periods is entirely lacking. Despite the limited sample it has been possible to look closely at vessel size, production and finishing techniques and it is unlikely that any substantial developments would not have been recognised. Analysis of residues suggests that simple 'cooking pots' were used for storage of tallow as well as in food production. Finally it has been noted that all material except that within the sunken-featured buildings was in a poor state of preservation.

An examination of assemblages from Odell (Bedfordshire), Pennylands (Buckinghamshire), Briar Hill and Chalk Lane (Northamptonshire) suggests a conservatism in pottery technology between 400 and 850 throughout the area. Only large vessels demonstrate any change with time and these are absent from St Peter's Gardens.

It is suggested, however, that the pottery from the timber and stone halls is likely to be of middle Saxon date, although it in no way differs from early Saxon material. The abraded and fragmentary nature of the sherds in comparison with earlier pottery from the sunken-featured buildings is likely to be a result of depositional and burial differences. The small size of the assemblage reflects both the lack of surviving floor levels and the high status of the halls.

During the late Saxon period a far greater diversity in vessel form, fabric, manufacture and use is apparent. Before 800 it is likely that more than 90% of the pottery was produced in the immediate locality, but 10th century pottery occurs in a variety of forms and fabrics suggesting either manufacture at, or direct influence from, production centres throughout the Midlands (Bedford, Stamford, Oxford), and there are indications that Continental pottery styles were copied.

Shell tempered wares predominate, but these are of a variable standard, some exhibiting competence in wheel-throwing. They are present in a wide range of forms including lamps, bowls, storage jars, and cooking pots, although decoration (rouletting or thumbed applied strips) is rare. Within the range of St Neots-type ware differences in methods of production and finish are apparent (T1(1)-T1(4)), suggesting manufacture at numerous small kilns in the area.

Sandy fabrics are on the whole restricted to Stamford ware and Northampton ware, the former a wheel-thrown, thin-walled, frequently glazed or decorated fineware, the latter a locally produced ware which varies in fabric from extremely coarse to very fine and can be either wheel-thrown, or coil-built and wheel-turned. Pitchers are the most common imported sandy wares but cooking pots, bowls and lamps occur in Northampton ware. A period of great ceramic innovation during the early 10th century is evidenced by the occurrence of both glazed W1 and well-made, red-painted cooking pots with angular plain everted rims, frequently found in association with metalworking debris and pedestal-footed crucibles of a form unique to Northampton. The origin of the wares is uncertain but Continental influence from the Beauvais region is likely. It is probable that they were locally produced, and represent the highest quality products of Northampton potters, although none were found at the Northampton ware kiln site. The dates of the sandy wares cannot yet be defined precisely. The evidence from St Peter's Gardens points to a short period of production at the beginning of the 10th century for red-painted wares. Northampton ware is probably contemporary but may have continued to be produced until the later part of the century. The import of Stamford ware would appear to post-date the W1 horizon. By the close of the century the quantity of Northampton ware declines and shell-tempered wares are again predominant.

Post-10th-century St Neots-type ware is more frequently oxidised and can be harsher textured (T1(2)) although well-smoothed small bowls with flat bases and inturned rims (commonly in fabric T1(3)) continue in production until the 12th century, after which coil-building is adopted as the principal local method of manufacture and changes occur in vessel forms, heralding the early medieval shelly ware tradition.

THE MEDIEVAL AND POST-MEDIEVAL POTTERY

by Varian Denham

Phase 4Ai (1100-1400)

The majority of the pottery is in shell-tempered fabrics T1/2 (late Saxon/early medieval transitional ware) and T2 (early medieval shelly ware). Local calcareous-sandy wares were less abundant and higher quality fine wares were comparatively rare.

Globular cooking pots and jugs were the most common vessel forms, but bowls, lamps, pitchers and storage jars were also found, and a few late medieval types including bunghole pitchers and shallow dishes were present in the 14th century.

Decoration on coarsewares is on the whole confined to rouletting but jugs of 13th and 14th century date are frequently glazed and have stamped, painted and applied strip decorations. Stamford ware was imported at the beginning of the period but during the 13th century jugs from N.E. Northamptonshire and the Oxfordshire area were more common. By the end of the period plainer vessels from a more local kiln at Potterspury were more abundant.

A great variability in methods of manufacture is apparent although the majority of vessels are fairly competently fired under oxidising conditions. During the 12th century pottery was either wheel-thrown in the St Neots-type ware tradition, or demonstrated a reversion to coil construction; by the 13th century many coarseware vessels were coil-built, although imported sandy wares still evidenced manufacture on a fast wheel. The majority of domestic and utilitarian wares were not wheel-thrown until the later part of the 14th century.

Phase 4Aii (1400-1500)

Few calcareous fabrics were found in post-1400 contexts, sandy fabrics dominating the market, in particular the products of the kilns at Potterspury and Yardley Gobion in Buckinghamshire, although finewares were imported from Surrey and north Midland kilns. Whilst cooking pots, bowls and jugs were still the most common forms a wider range of vessels was produced, including pancheons, skillets, bunghole pitchers, cups and small dishes. Decoration became less flamboyant but pots were more frequently glazed and both constructed and fired more competently, resulting in greater uniformity between products.

Phase 4Bi (1500-1700)

Little pottery was attributable to this period. Potterspury ware was still evident although Late Medieval Oxidised ware would appear to have been the more common domestic pottery. Cistercian ware, and Midland Purple wares demonstrate improvements in manufacturing techniques and the increased production of ceramic tablewares. Pottery continued to be produced both locally and regionally.

Phase 4Bii (1700-1900)

A large amount of the pottery was residual which suggests considerable disturbance of the area during the late post-medieval period. Staffordshire tablewares were pre-eminent in the contemporary pottery. Salt glazed stoneware, creamware, and transfer-printed pearlware were recovered although modern wares (post-1850) were more common. A few locally produced 18th-century coarseware sherds and fragments of an 18th-century polychrome cup in Chinese porcelain complete the assemblage.

Contents of Report in Microfiche

(i) Key to fabrics (Table (M)1(M)2/49-53)
The fabric code, title or brief description, probable source, appropriate date range and references to previously published discussion are provided.

(ii) Fabric quantities by phase (Table (M)2 (M)2/54-55)

(iii) Phase summaries ((M)2/56-66) A full discussion of the fabric, form, manufacture, use and trade of medieval and post-medieval pottery is included.

(iv) Illustrated pottery (Figs (M)6-15 (M)2/67-76)

(v) Catalogue of illustrated pottery ((M)2/77-83)
A record of each vessel includes fabric, form, diameter, Munsell colour, layer, phase and relevant comments. In addition column 2 provides a reference number for unillustrated vessels which duplicate previously published examples.

(vi) Codified summary of pottery ((M)2/84-3/22)
A codified layer by layer account is given following the format used in the St Peter's Street Report (McCarthy 1979, 169-224).

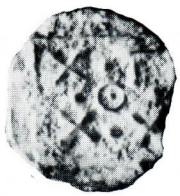
THE OTHER FINDS

THE COINS

by M M Archibald (Nul, 3-13) and D M Metcalf (Nu2)

Nu1 Antoninianus, Tetricus I, 270-273. Phase 1.

Nu2 Sceatta, *c.* 750. Phase 2.



Nu3 Cut farthing, Henry I, *c.* 1134-5. Phase 4Aii.

Nu4 Penny, Edward I, *c.* 1300. Phase 4Ai.

Nu5 English jetton, period Edward II, 1307-27. +.

Nu6 French jetton, mid-14th century. +.

Nu7 Copy of official French jetton, mid-15th century. +.

Nu8 ?French type jetton, mid-15th century. +.

Nu9 Farthing, Charles I, 1625-34. Phase 4Aii.

Nu10 'Medley' halfpenny, late 18th century. +.

Nu11 Farthing, Victoria, 1884. +.

Nu12 Halfpenny, Victoria, 1888. Phase 4.

Nu13 ?Halfpenny of Victoria, 1860-1901. +.

THE CARBON-14 MEASUREMENTS

by A J Walker and R L Otlet with comments on the archaeological aspects by John H Williams

Introduction

Twenty-five samples, from five sites in Northampton, all submitted through the Ancient Monuments Laboratory, London, have been measured for Carbon-14 by the Isotope Measurements Laboratory at Harwell over the last nine years. The samples were bone except four which were charcoal. The measurement systems used included both the standard liquid scintillation (optimum size 5g Carbon) and the Harwell miniature gas counters (30cc and 5cc volume).

The standard methods of the laboratory were used for the pretreatment and sample processing, *ie*,

(i) pretreatment of the sample to remove any physical and chemical contamination employing total demineralisation of the sample in 1M HCl in the case of bone and the AAA method (Acid, Alkali, Acid) using 3M HCl and 1M NaOH for the charcoal samples

(ii) for liquid scintillation counting conversion of the samples to benzene through the stages of CO_2 and C_2H_2

or (iii) for gas counting conversion of the sample to CO_2 followed by rigorous purification of the gas.

Measurements procedures as described in Otlet and Warchal, 1978 (liquid scintillation) and Otlet *et al*, 1983 (gas counting) were employed. In keeping with the usual practice of the laboratory the measurement errors quoted with each result are the best estimates, one sigma standard error, of the full replicate sample reproducibility which includes counting statistics plus the estimated variability in other stages of the measurement process (Otlet, 1979).

Results

Results of all the Carbon-14 measurements, arranged according to sites, are given in Table 15 column 5. All are quoted in terms of the radiocarbon age bp (Libby half-life, 5568 years) in accordance with the usual conventions. Date results throughout are rounded to the nearest ten years. Error terms are treated likewise except on weighted mean results where the nearest five years is taken.

Calibration of these results is given in columns 9 and 10 using tables of Damon *et al* (1972) and Stuiver (1982) separately. Results using Damon *et al* are given first (column 9) since these have been used in earlier publications although use of the new high precision curve (Stuiver – column 10) is undoubtedly more correct at present. In application the new high precision curve poses certain problems of interpretation when attempting to read from it a mean result for a measurement of significantly lower precision. The method adopted here overlays on to the calibration curve the Gaussian distribution appropriate to the measurement precision and produces a modified distribution from which the resultant mean and standard deviation are derived. It is a practical rather than a strictly mathematical solution with the effect, essentially, of smoothing the curve appropriately to accommodate the lower precision of the result being calibrated. It produces the result in a form which facilitates later amalgamation with other results but for final interpretation it is the implied range (*ie* −2 sigma to +2 sigma) rather than the quoted mean which should be considered.

The effect of adopting the new Stuiver calibration instead of Damon *et al* on the chronological framework for Saxon Northampton is to produce an offset shifting the chronology later by roughly 50 years. It is unfortunate, however, from the point of view of the accuracy of the ultimate interpretation that the Stuiver curve is essentially flat over the critical period of the late 8th to late 9th century AD.

Interpretation of the Results

The samples are examined separately according to their site. On most sites certain groupings were expected on archaeological grounds and tests were therefore applied to see if it was correct, statistically, to view the proposed groups as single events. Where necessary adjustments to the groupings were tried and finally a mean result for each context was calculated. For the statistical tests and calculation of the mean the procedures of Ward and Wilson (1978) were applied. For the calculation of the standard errors the procedures of Topping (1955, 91) were used and the larger external rather than the internal values are taken. Two exceptions to this occur where, with only two results, the internal error is larger and is therefore taken. This procedure was followed as it was considered important not to underestimate errors on the combined means.

Table 15 Radiocarbon Measurements from Northampton

Context	Description	Harwell Reference (HAR-)	Material	Age bp (years)	Weighted Mean + Standard Error	T	Acceptable T (χ^2 at 5%)	Calibrated Date (AD) Damon *et al*	Stuiver
St Peter's Gardens									
AA441	SFB?	5557	charcoal in soil	1590 ± 60				380 ± 70	470 ± 70
AA479.8	PH in CT	5554	bone	1680 ± 120					
AA479.17	PH in CT	5558	bone	1310 ± 70					
AA926.11	PH in CT	5552	bone	1070 ± 80					
AA479.11	PH in CT	5553	bone	1220 ± 70	1200 ± 70	31.68	12.59	810 ± 60	850 ± 70
AA926/479	CT	5551	bone	1100 ± 80	1170 ± 50	14.70	11.07		
AA465	CT	5555	bone	1010 ± 70	1100 ± 45	4.73	5.99		
AA766.1	Charcoal layer	5556	charcoal in soil	1300 ± 80					
St Peter's Street									
F56	Mixer spread	1245	bone	1310 ± 90					
F56	Mixer spread	1246	bone	1300 ± 60	1220 ± 55	8.33	7.81	760 ± 60	810 ± 70
F293	Mixer 2	1452	bone	1080 ± 60	1210 ± 80	8.18	5.99		
N133	Layer assoc with minster	1720	bone	1240 ± 80					
A759	Gully	1244	bone	1110 ± 80	1070 ± 60			900 ± 70	960 ± 70
A759	Gully	1454	bone	1030 ± 80					
K172	SFB 2B	1225	charcoal in soil	1190 ± 70				780 ± 80	830 ± 80
K171	SFB 3	1431	bone	880 ± 70				1090 ± 80	1140 ± 70
K177	SFB 2A	1437	bone	700 ± 70				1250 ± 80	1310 ± 50
St Peter's Gardens and St Peter's Street (HAR-1245-6, 1452, 1720, 5551-3, 5555-6, 5558)					1190 ± 35	24.03	16.92	780 ± 50	840 ± 60
Chalk Lane									
D86	SFB	3688	bone	1510 ± 70	1475 ± 55			500 ± 70	570 ± 60
D86	SFB	3689	bone	1450 ± 70					
A141	SFB	3935	charcoal	1320 ± 70				660 ± 70	720 ± 70
Gregory Street									
C408	Grave	4809	bone	1140 ± 70					
C410	Grave	4810	bone	1260 ± 70	1230 ± 60	3.54	5.99	750 ± 70	800 ± 70
C315	Grave	4390	bone	1360 ± 100					
Black Lion Hill									
A110/167	Building	5560	bone	1340 ± 80				640 ± 80	700 ± 70
C15	Ditch	5561	bone	1180 ± 70				800 ± 80	840 ± 80

Abbreviations: CT: construction trench; SFB: sunken-featured building; PH: posthole

(a) St Peter's Gardens

The first sample listed, HAR-5557, came from a probably sunken-featured building expected archaeologically to be of early Saxon date. A second sample from a similar feature (Z60) produced too small a carbon yield for satisfactory interpretation (only approximately 10mg carbon from 570g bone) and was, therefore, not included.

The first groupings tried, relating to the seven remaining samples, were associated with the Saxon timber palace. Six were of bone from within the construction trench while one was of charcoal from a level interpreted as a possible floor deposit within the main hall. The bone samples comprised assemblies of individual bones or groups of bone the locations of which had all been three dimensionally recorded during the excavation. The mean for this group is 1200 ± 70 bp, but the 'T' (Ward and Wilson 1978) is very large, being more than twice the theoretically acceptable value for χ^2 at the 5% level. On purely statistical grounds HAR-5554 seems an obvious outlier its result being more than three times its standard deviation distant from the combined mean. Removing it from the set produces a new mean (1170 ± 50 bp) and a greatly reduced 'T', but one which is still greater than the theoretically acceptable value. Statistically no further rejections are valid, but it is noted that an acceptable 'T' value is only obtained when HAR-5554, 5558 and 5556 are all removed. The mean result is then 1100 ± 45 bp and the 'T' obtained is 4.73, acceptable at both the 5 and 10% levels. This result, however, has no meaning without further regard to the archaeological context. In this respect there is no reason for suspecting even HAR-5554 (1680 ± 120 bp) but a search through the measurement records showed that this sample produced only a small amount of benzene (1g) for the measurement process and, although this is to some extent allowed for by the larger than normal error term it is possible that at this size the error

assessment alone may not adequately express the attendant measurement difficulties. On the other hand, to fit within 2 × sigma of the combined mean, an error term of twice the stated value would be required and this would seem unlikely.

The validity of rejecting HAR-5556 and 5558, mentioned above, is next considered. Although the removal of HAR-5556 might be justified on the grounds that it was charcoal already having an intrinsic age likely to be older than the bones, HAR-5558 was not expected, archaeologically, to be different from the other bone samples. Leaving both these samples in the group gives an age spread of 300 years on the individual results obtained. This is not inconceivable for a set of results measured to precisions of ± 70 to ± 80 years, but should not be interpreted as meaning that the actual time-span is of this magnitude.

Archaeologically the life of the timber building, from which all these samples came, would have been short in radiocarbon terms, perhaps only of the order of 50 years and almost certainly less than 100. Four samples (HAR-5558, 5554 and 5552-3) came from the fills of postholes thought to relate to the end of the life of the building or a little later. The other two (HAR-5551, 5555) were regarded as being from the construction trench itself. HAR-5551 was composed of three samples, all recorded as being within construction trenches AA926 and 479; the co-ordinates of one of the samples suggest that it came from the fill of a posthole, but it was added to the others in order to make the sample of satisfactory size for dating purposes. HAR-5555 is recorded as comprising three adjacent samples within the construction trench but *c.* 0.3m away from the nearest posthole recognised. It is probable that the bone within the postholes either accumulated immediately after the destruction or abandonment of the timber building or was derived from the deposits forming the make-up levels of the stone palace which were locally rich in bones.

Unfortunately, as explained, with measurement precisions of ± 70 and ± 80 years it cannot be expected that the difference between the beginning of the life of the building (construction trench) and the end of its life (posthole fills) would be visible from the results unless a much larger group of samples representing each group or higher precision for each group had been obtained. It has also, perhaps, to be admitted now that the combining of samples in order to provide one unit (HAR-5551) suitable for the dating may have contributed to the difficulty of identifying the separate phases from the measurements.

It is not possible to do more than take the mean result of 1170 ± 50 bp as the best average and use archaeological judgment to estimate the timespan spread about this value. Calibration for this result yields AD 850 ± 70 according to Stuiver. The possibility of amalgamating the timber palace dates with those of the stone palace is considered in the next section.

b) St Peter's Street

For this site tests for three groupings were tried. The first comprises four samples, three associated with the mortar mixers and one with the minster church. Together a mean of 1220 ± 55 bp is obtained with a 'T' value of 8.33 which is not quite acceptable at the 5% level. Taking the mortar mixers alone gives an insignificantly different mean (1210 ± 80 bp) but a less acceptable 'T' value in view of the fewer numbers of samples. Since the archaeological evidence suggests that all these results should relate closely to each other chronologically there is little point in attempting further interpretation. The calibration of this mean (1220 ± 40 bp) gives AD 810 ± 70. This result is statistically no different from the mean obtained for the timber building (AD 850 ± 70) and the apparent inversion of the two means should not be taken as contradiction of the stratigraphical evidence. Furthermore, since the bulk of the bone relating to the timber palace is associated with the end of the building and that from the stone palace is associated with its construction, it seemed valid to make a group of the ten results (*ie* not including HAR-5554). This amalgamation produces a mean of AD 840 ± 60.

The second group comprises two results from gully A759. The results are seen to be close, yielding an unweighted mean of 1070 ± 60 bp which calibrates to AD 960 ± 70.

The three results for the late Saxon sunken-featured buildings (HAR-1225, 1431, 1437) do not form a statistically close group together, although if HAR-1225 is removed an acceptable mean can be calculated. The samples came from three separate buildings, which on ceramic evidence fall most probably in the 10th century AD but certainly within the period AD 850 to AD 1100.

c) Chalk Lane

The two bone samples from the sunken-featured building D86 give dates which agree closely giving a weighted mean of 1475 ± 55 bp calibrating to AD 570 ± 60. HAR-3935 came from a completely separate building.

d) Gregory Street

Measurements were taken from three separate burials (see Yates forthcoming). Although these graves need not be contemporary, the results combine satisfactorily and the weighted mean is 1230 ± 60 bp which calibrates to AD 800 ± 70.

e) Black Lion Hill

Two samples were measured but no groupings were suggested. Calibrated results are shown in Table 15.

THE NON-FERROUS METAL OBJECTS

by Alison R Goodall
Figs 33, (M)16-17

Few of the copper alloy objects can be associated with levels contemporary with the Saxon palaces, the majority being of later medieval date. Part of the pommel from a sword with Borre style decoration (Cu45) is, however, of the Anglo-Scandinavian period and the strap-end (Cu11) is probably of 9th to early 10th century date. The pommel is of Petersen's type O and would originally have had five lobes. A penannular ?ear-ring (Cu2) and a pin with a pear-shaped head (Cu60) may also have come from deposits associated with the Saxon palaces although they were not found in Saxon levels.

Of the later medieval objects the gilded debased silver filigree brooch (Cu1) is of particular interest and probably dates from the 13th or 14th century. There are a number of decorated buckles and strap ends of medieval date (Cu5, 6, 12, 13) as well as a hooked fastener (Cu17) and a complete purse frame (Cu43).

The lead objects include a perforated bun-shaped weight (Pb2).

THE IRON OBJECTS

by Ian H Goodall
Fig 34

No iron objects other than three nail shanks came from Phase 1 and 2 contexts, but those of Phase 3 produced the head of a chisel or punch (Fe1), three whittle tang knives and a knife blade (Fe3-5, 13), a staple (Fe16), a padlock bolt and the bolt from a fixed lock (Fe34, 36), three nails (Fe38, 70, 74), a

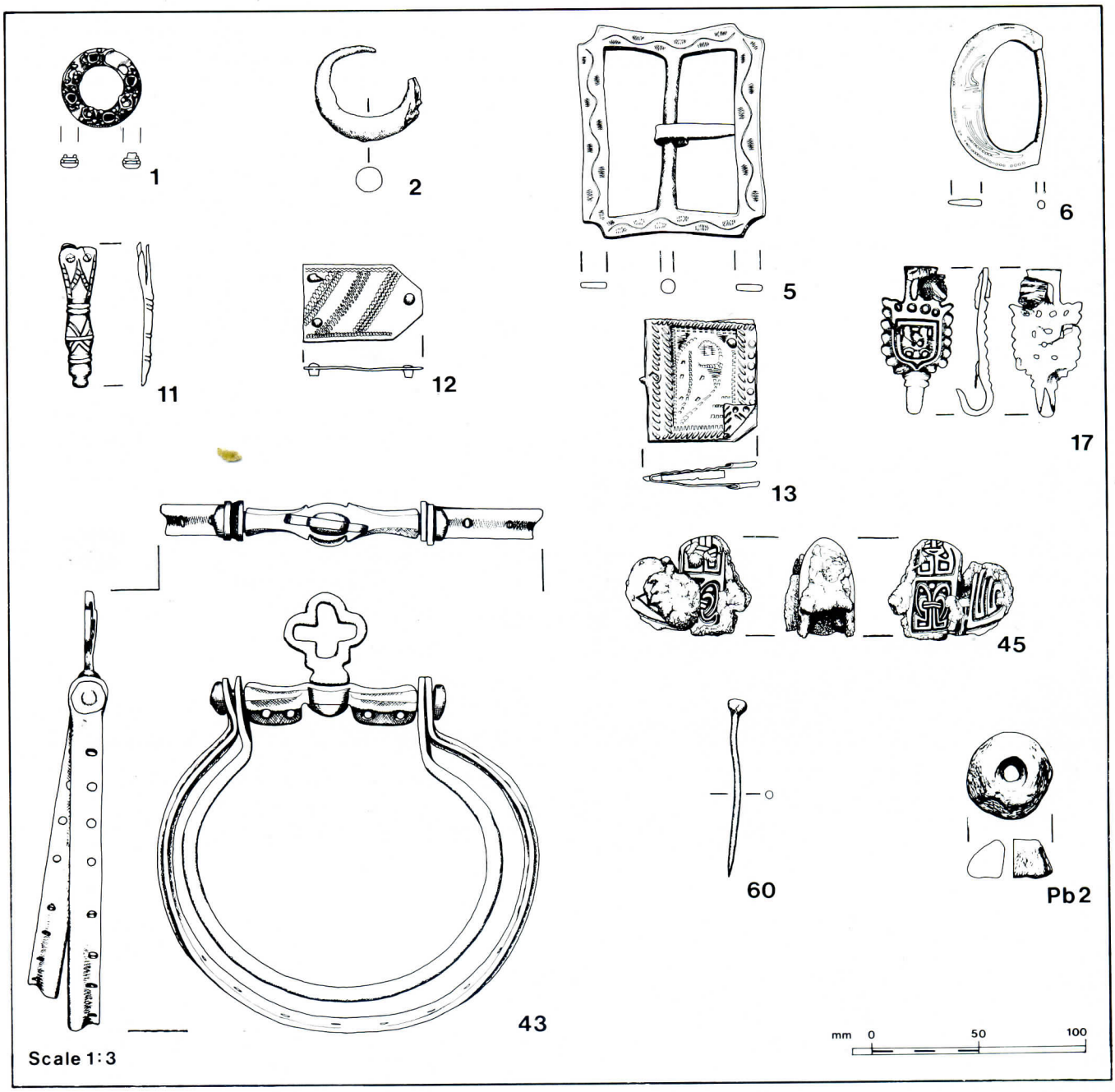


Fig 33: The Non-Ferrous Metal Objects.

horseshoe with countersunk nailholes (Fe120), and an object (Fe129). The remaining iron objects almost all come from or were derived from Phase 4A contexts and include various knives, items of building ironwork (hinge pivots, strap hinges, pinned hinges, a mount, a barrel padlock, a key), a steel, rings and horseshoes.

THE SAXON CRUCIBLES AND RELATED INDUSTRIAL SAMPLES

Fig 35

The Vessels

by Varian Denham

A minimum of eight vessels was recovered. The crucibles are in a form unique to Northampton, which is characterised by a single pedestal foot (Fig 35). The majority of the material was recovered from Pit Y135 in Phase 3, in association with red-painted pottery of continental influence (Fabric ?W1/X1(1)/Y). Thin section analysis of unvitrified sherds has demonstrated that they are made in the same fabric as the pottery, which lies at the finest extreme of the range of Northampton ware and is probably a local product ((M) 2/33, 44). The association of crucibles of this form and fabric and metallurgical debris with red-painted pottery of North French influence on St Peter's Street, Chalk Lane and Marefair has been noted ((M) 2/44) and is of interest in the context of the known continental connections of East Anglian moneyers of the period as witnessed by their names.

Metallographic Analysis

by Justine Bayley

The sherds were analysed by energy dispersive x-ray fluorescence (XRF) and the results are given in Table 16 (= (M)4).

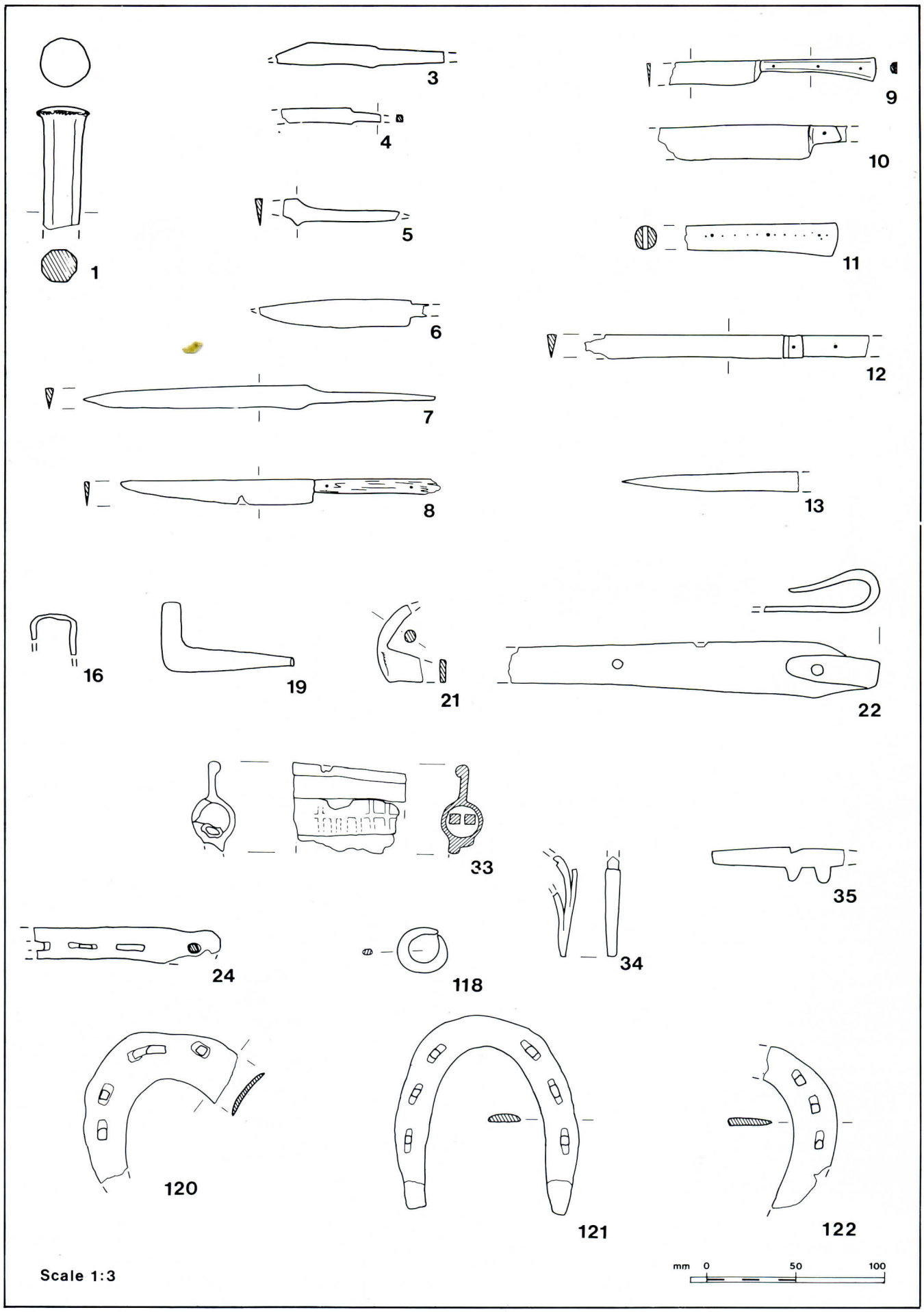


Fig 34: The Iron Objects.

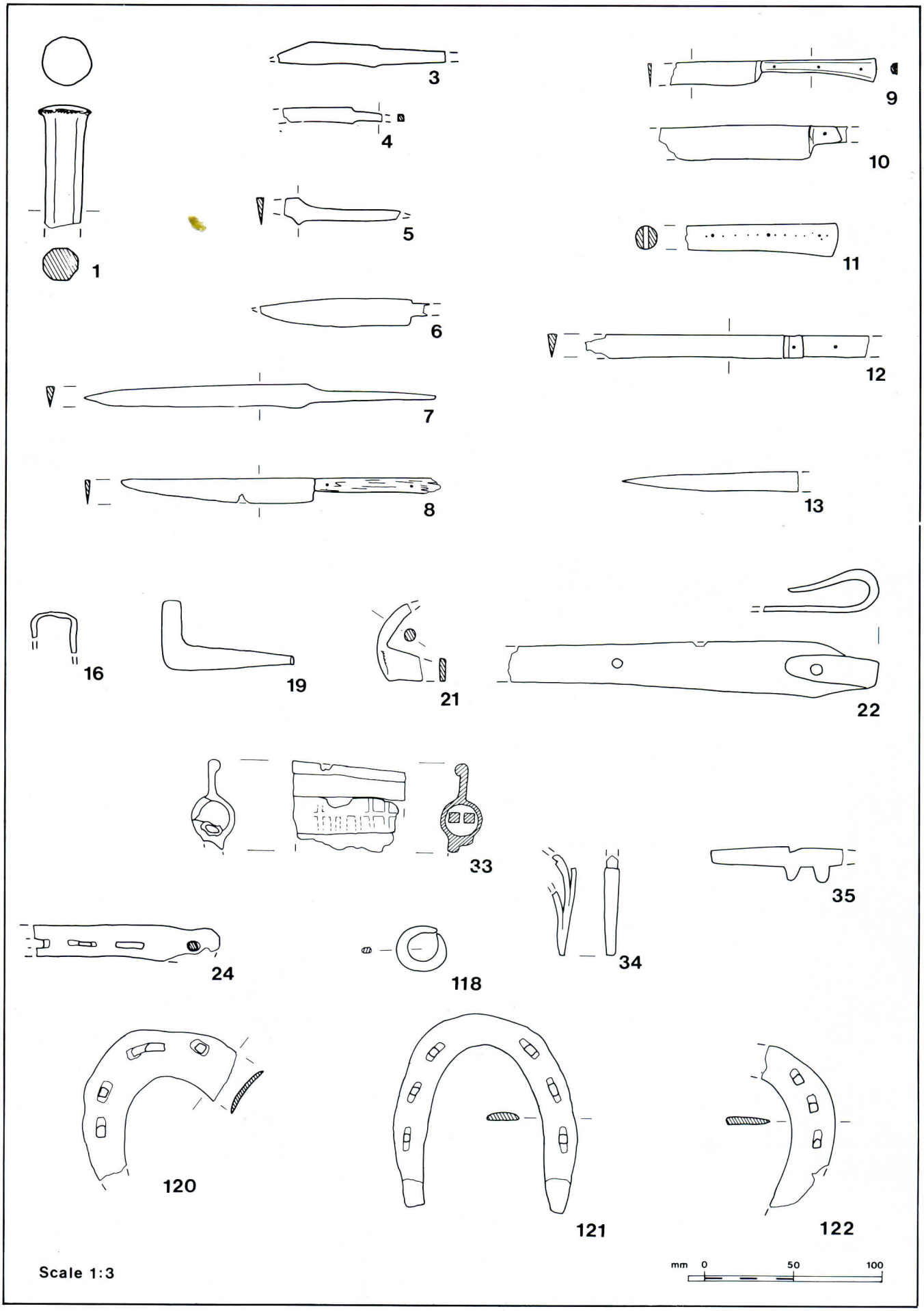


Fig 34: The Iron Objects.

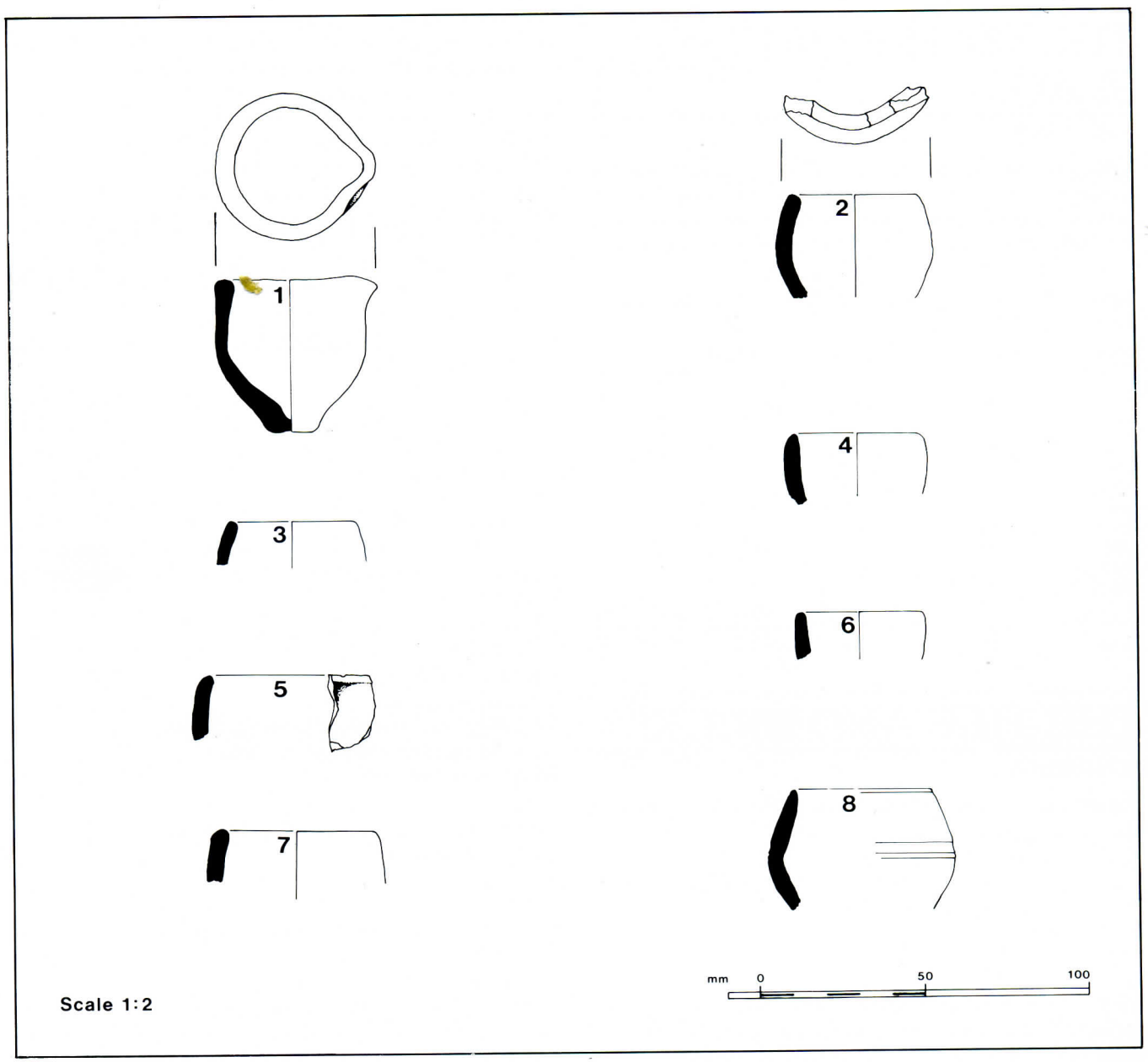


Fig 35: The Crucibles.

Table 16 Analyses of the Crucibles

AML no.	SF no.	Context	Phase	Ill. no.	Sherd Type	Thickness (mm)	Elements Detected	Comments
840273	Pt586	AA206	3	7	Rim	5	–	Unused
840274	Pt593	Y135	3	1	Base & rim	5	Cu Pb ?Zn	Copper or copper alloy
840275	Pt34	Y55	3		Body	4	Cu Ag	Impure silver
840276	Pt36	Y135	3	6	Rim	4	–	Unused
840277	Pt598	AA25	Prob 3	8	Rim	5	Pb	Lead
840278	Pt599	AA204	4Ai		Body	6	Zn Ag Cn	Impure silver
840279	Pt341 + 388	AA206	3	2	Rim	4	Cu Zn	Copper or copper alloy
840280	Pt596	Y135	3		Body	5	–	Hematite recorded; burnt pottery
840282	Pt37	Y135	3		Body	5-6	Zn Cu Pb Ag	Impure silver
840284	Pt595	AA+	U/S	3	Rim	3-4	Pb Zn Cu	Copper or copper alloy
840285	Pt600	Y135	3	5	Rim	4-5	Cu Ag Pb Zn	Impure silver
840286	Pt601	Y135	3	4	Rim	4-5	Cu Pb Ag Zn	Impure silver
840287	Pt594	Y135	3		Body	6	Pb Cu Zn Ag	Pot, reused as a heating tray
840288	Sl139	Y135	3		Ind	–	–	Vitrified hearth lining

Rim and base sherds from one vessel and two rims from different vessels derived from crucibles used to melt copper or one of its alloys. Rims from two vessels and two additional body sherds came from crucibles used to melt impure silver. A vessel used to melt lead was represented by a rim sherd and rim sherds from two further vessels bore no traces of use.

A burnt pottery body sherd containing traces of hematite (iron oxide) was found in association, and the base of a red-painted cooking pot in Fabric ?W1/X1(1)/Y had been re-used as a heating tray. One fragment of vitrified hearth lining was also identified.

THE IRON-WORKING SLAG

by H F Cleere

3.288kg of iron-working slag and 1.014kg of furnace lining or furnace bottom were recovered, material coming from all periods but being most abundant in Phase 3 (see below Table 17). No furnaces or other metalworking structures were found.

Table 17 Quantities of Slag and Furnace Lining/Bottom (in grammes) by Phase

Phase	Forging Slag	Tap Slag	Furnace Lining/Bottom
1	35	48	
2	39	16	456 (all forging)
2/3	87		294 (all forging)
3	907	359	595 (363 = forging)
3/4Ai	260		
3//4Aii			131
4Ai	374	31	18
4A	99	57	44
4Aii	21	172	98
4Bi	7		
4Bii	244	20	8
+	437	75	120
Total	2510	778	1014

THE TILE AND BRICK

by J L Humble

The report is a synopsis of that in microfiche which contains:

(i) Introduction
(ii) The Roman Tile and Brick
(iii) The Medieval and Post-Medieval Tile and Brick
(iv) Newly Identified Fabrics
(v) Illustrations
(vi) Illustration Catalogue

Ceramic brick and tile was recovered from all phases of the site and a total of 561 pieces was found. In comparison to only 34 sherds of pottery, 88 fragments of tile and brick of Romano-British manufacture were recovered, occurring mainly in association with the Saxon stone hall: 26 pieces within the foundations and walls and 18 pieces within the Phase 3 robber trenches. Roman finds at St Peter's Street included 111 fragments of tile and brick (Williams and Williams 1979, 322), but only 16 sherds of pottery. No Roman levels were excavated on either site and it is likely that tile and brick were deliberately sought and introduced as a suitable building material. It is not known whether there were any Romano-British buildings and structures close to the site, but Duston, *c.* 2km to the west, would have been one possible source. Reused Roman tile is a notable element in the Saxon walling of Brixworth church (Everson and Parsons 1979) and the same phenomenon has been recorded at many other sites of Saxon or later date (*eg* Rahtz 1979, 166, 246-7; Rodwell 1977, 90-97; RCHM 1952, 8).

Roofing tile comprises over 90% (438 pieces) of the medieval and post-medieval ceramic building materials (Phases 4Ai-4Bii). The medieval phases are characterised by a preponderance of double peg and ridge tiles. The sample may reflect a shift in preference or requirement for more substantial and long-lasting roofing, with a replacement of earlier thinner tiles (average: 11mm) by thicker varieties (average: 14mm). The tiles are typically partially coated with lead and copper glazes.

Unglazed nib tile (1 piece) and pantiles (7 pieces) appear to supersede peg tiles and the evidence from St Peter's Gardens suggests a post-1700 date for their introduction.

Floor tiles are poorly represented and only 10 pieces were identified including a 14th century slip and relief decorated example similar in design to products of the Penn tilery in Buckinghamshire (pers comm D Mynard).

THE BUILDING STONES OF THE MIDDLE SAXON STONE HALL

by D S Sutherland

The site was visited on several occasions and the stones then visible in the foundations of the west wall of the stone hall (127.1, .2) and in the fragments of the south wall foundations (127.12) were identified. A total of 1585 stones (including one tile) was recorded representing over half the material occurring *in situ* in the remnants of these foundations. Some of the stones were squared. The sample can be regarded as representative of the stone surviving in the foundations. It comprised

Blisworth Limestone (including some sparsely oolitic, some micritic and some with oysters)	945
Northampton Sand (including 39+ Pendle and 38 'leopardstone', the rest being sandstone and ironstone)	416
Upper Estuarine Limestone	124
Tufa	1
Quartzite, Cambrian or New Red Sandstone	1
New Red Sandstone	1
Bunter pebble	1
Flint	1
Quern fragment (reddish quartzite conglomerate — New Red Sandstone or Cambrian)	1
Roman tile	1

The assemblage in the foundations of the extension was not examined in the same detail but it had a similar geological composition to that of the main wall although the stones were generally smaller and more irregular in shape.

The stones form a heterogeneous collection although all three main types could have been obtained from any of a number of hills around Northampton capped by Blisworth Limestone, with outcrops of Upper Estuarine Limestone and Northampton Sand at lower levels. Very few exposures are still visible and discussion must inevitably depend on the Geological Survey maps and to a large extent on an examination of the stone types used in local buildings.

Geologically Blisworth Limestone is variable from one layer to another within the same section. It includes fine-grained types with or without oysters and in places it is oolitic, sometimes cemented with calcite to form a robust rock. Outliers of this limestone occur from Kingsthorpe to Spinney Hill and at Dallington Heath and Duston to the north of the river Nene; large outcrops are to be found to the south of the river.

Upper Estuarine Limestone forms a rib of hard stone within the Upper Estuarine clays. It is extremely variable from place to place but is characteristically shelly with small oysters and a bivalve called *Placunopsis*. It occurs north of the river in the same areas as and below the Blisworth Limestone. It is also available south of the river along the northward facing slopes of the valley.

The Northampton Sand occurs as a wide outcrop in and around Northampton. The lower part is formed of ironstone which has been worked for iron-ore. This is overlain by Variable Beds which are thickest at Duston. To the north of Northampton there are three divisions within the Variable Beds, two of ferruginous sandstone separated by a calcareous division known as Pendle. Pendle, however, has not been found in central Northampton. Crinoidal Pendle is characteristic of Kingsthorpe and a few villages to the north, while oolitic Pendle is known at Duston and at Boughton where it is sandy. The stone variety described here as 'leopardstone' is characteristically spotty, dark brown and yellow to white, the light coloured areas being calcareous nodules. This conspicuous stone can be seen in Kingswell Road, Kingsthorpe where an outcrop occurs and in several walls in that area; it is also found in limited quantity in the Duston quarry.

Most of the stone is not local to the immediate vicinity of St Peter's but little need have come from further than 2 miles away. All the main types of rock outcrop at Kingsthorpe, Dallington and Duston; the distinctive 'leopardstone' may well have come from this general area and if a single source is sought providing all the main varieties of stone these outliers are more promising than the outcrops south of the Nene where 'leopardstone' is not known to occur. Such is the variety of the stone, however, containing even a fragment of quern, that it seems unlikely that any of it was freshly quarried. Bearing in mind the presence of Roman tile (see also p. 70) a former Romano-British site seems the probable source and Duston, only a mile to the west, is the most obvious candidate.

THE ARCHITECTURAL FRAGMENTS

by Hugh Richmond (architectural description) and D S Sutherland (petrological identification)
Fig (M)19

Eighteen architectural fragments were recovered. The only piece of note was a fragment of an attached octagonal shaft with carved capital (AF16) of mid-12th century date. A *tessera* was presumably brought to the site with consignments of Roman building material in the Saxon period.

THE STONE ROOF TILES

by Michael Shaw (description) and D S Sutherland (petrological identification)
Fig (M)19

One complete stone roof tile (RT1) and 14 fragmentary pieces were recovered. Eleven pieces were from medieval deposits while the remainder were from later or unstratified contexts. All could have come from local sources, either from the Northampton Sand or the upper Estuarine Limestone, possibly in the Duston-Kingsthorpe area.

THE HONES

by Michael Shaw (description) and D T Moore (petrological identification)
Fig (M)19

Fifteen hones were recovered from the excavation. Nine of the hones were of Norwegian Ragstone; six of these came from medieval contexts while the other three were unstratified. A total of 117 hones have now been discovered during NDC excavations in the centre of Northampton. Seventy-six of these are of Norwegian Ragstone.

The number of Norwegian Ragstone hones recovered by period is listed below. All the hones for which phasing was available at the time of writing are included. More detailed data are given in microfiche.

Period(s)	Number of Hones
Late Saxon	6
Late Saxon/Medieval	5
Medieval	25
Medieval/Post-Medieval	2
Post-Medieval	9
Unstratified	19

THE QUERN AND MILLSTONE FRAGMENTS

by Michael Shaw (description) and D S Sutherland (petrological identification)

Seven quern or millstone fragments were recovered. Four were from Saxon deposits and two from medieval contexts.

THE WORKED FLINTS

by J L Humble

Supplementing the group of 176 worked flints recorded at St Peter's Street (Bamford 1979a), a further 158 examples were recovered during excavations at St Peter's Gardens. Most if not all the flint appears to be residual but the majority was concentrated at the western end of the site in accordance with the spatial distribution noted at St Peter's Street.

The evidence for flint working at the site is limited as only three cores, a core fragment, two rejuvenation flakes and eight primary flakes were found, and little could be described as workshop debris. The assemblage is largely composed of small flakes, blades (26) and blade segments (13). 39 of the flakes and 22 of the blades and blade segments appear to have been utilised and edge wear examination indicates a broad range of domestic activities. Metrical analysis serves to illustrate the heterogeneous nature of the group. Several examples are of microlithic proportions and these in conjunction with an obliquely blunted point appear to constitute a mesolithic element. It is possible that two of the cores and at least one of the six scrapers may be of similar date. The remainder, forming the bulk of the material, is likely to have been of neolithic or later manufacture. Two of the four other classifiable implements, a waisted tool and a straight-edged flake knife, are types which have only been found in later neolithic and early Bronze Age contexts.

This type of admixture is wholly characteristic of other flint assemblages which have been recovered from nearby sites in Northampton (Bamford 1979a; Bamford 1979b; Bamford 1981).

THE OTHER WORKED STONE

by Michael Shaw (description) and D S Sutherland (petrological identification)

Six pieces of worked stone were recovered. They included a fragment of polished stone with ?mason's graffiti inscribed upon it (WS6).

THE MORTAR

by Simon Hardy

Introduction

The mortar recovered during the excavations in St Peter's Street and St Peter's Gardens is of particular interest and importance because of the discovery of mortar mixers containing mix residues and unmixed constituents which may be associated with the construction of middle Saxon stone buildings. Three mixers were uncovered during the St Peter's Street excavations (Williams J H 1979, *passim*, esp. 118-33) and a further two during work on St Peter's Gardens. In addition mortar samples have been recovered from structural contexts and as residual material in later levels.

The St Peter's Street type series, in hand sample and thin section, and the thin sections of the mixer residues have been re-examined. The material from St Peter's Gardens comprises 453 samples: 19 from mixer residues; 29 from the foundations of Middle Saxon stone buildings; 202 from their robber trenches and 203 from residual and later contexts. It was the intention here to take a representative sample from all contexts. The samples vary between one and thirty fragments, and the fragments between 5 and 300mm in maximum dimension.

The mortar recovered from the St Peter's Street excavations was examined in hand sample and a type series produced; this was then compared to the mixer residues in thin section. Further samples were analysed by X-ray diffraction, by wet chemical techniques and by the study of their heavy mineral fraction. Firm conclusions were not possible but similarities were noted between the sands present in the mixers and those in the structural mortars of the postulated minster church (Williams J H 1979, 131-3).

The intention of the present study was to test whether an affinity existed between the mixer residues and the mortar associated with the Middle Saxon stone buildings. In view of the earlier work it was thought that the comparison of samples in thin section was the most promising and appropriate technique, since it is possible to examine characteristics such as grain mineralogy and roundness in addition to size, as well as the texture of the mortar.

In the absence of an accepted standard vocabulary the terms mortar and mixer residue in this report are employed to distinguish the lime/sand mixes which appear to have been used in a building from those which are present in the mortar mixers. Plaster is taken to be a form of mortar with clear evidence of having been applied to a wall as a finished surface treatment and no compositional implication is intended.

The report comprises:

Main Text

(i) A synopsis of the thin section analysis of the mixer residues and the mortar.
(ii) Fabric type analysis.
(iii) Summary.

Microfiche

(i) Thin section analysis of the mixer residues and the mortar.
(ii) List of thin sections.
(iii) Descriptions of fabric types.
(iv) Incidence of fabric types.
(v) Conclusions from the fabric type analysis.
(vi) Comparison of fabric types to mix residues in thin section.
(vii) Contents of the Archive.

Synopsis of the Thin Section Analysis

A total of 109 thin sections was examined (Table (M)16), including 34 which had been prepared for the St Peter's Street report (Williams J H 1979, 131-3). Samples for thin section were taken from the various mixer residues and also from additional contexts relating to the Middle Saxon stone buildings. The aims were:

(i) to define the range of the sand-size aggregate within a given mixer residue in terms of the distribution of the size and roundness of the quartz, consider and describe the rest of the mineralogy, and test whether the distribution for these characteristics for any given mix residue was consistent with those for any other residue within the same mixer or in any other mixer,

(ii) to test individual thin sections of mortar from contexts related to the middle Saxon stone buildings to see if they related to any of the mixers.

The criteria for the analysis of the thin sections were:

(i) the mineralogy, grain-size and grain-rounding of the sand fraction,
(ii) the frequency of occurrence of other inclusions, commonly above sand grade, such as ceramics, limestone and ironstone,
(iii) the ratio of aggregate/cement/voids,
(iv) the evenness of texture and composition,
(v) where uneven the presence of matrix banding or aggregate lineation.
(vi) the opacity and body colour of the section.

Several areas of difficulty were identified:

(i) low repeatability,
(ii) intra-group variability of the mixer residues,
(iii) the application of statistical tests to assess compatibility,
(iv) the low frequency of non-quartz grains.

The methods of the thin section analyses, the problems encountered and the results obtained are dealt with in full in microfiche ((M)4/2-6). The lack of discrete groupings and the high intra-group variability prevent any definite affinity being demonstrated. However, when the analyses are viewed without treating the data statistically, it may be seen that the majority of samples from contexts associated with the middle Saxon stone buildings is comparable in its mineralogy to, and

falls within the same range of sand-size and roundness distributions as those from the mix residues.

Fabric Type Analysis

The 453 mortar samples from the St Peter's Gardens excavations were assigned to one of two classes. The first comprised the samples from sealed contexts of the Saxon phases which could be associated directly with the stone buildings, their construction or destruction. In this class every fragment in each sample was examined in hand specimen and assigned to a fabric type. The presence or absence of each fabric type in any one sample was then recorded. Samples of the second class, from Saxon contexts not directly associated with the stone buildings or from later contexts in which residual Saxon mortar might be present, were examined only for the presence or absence of fabric types A, B, F and K. The criteria for the fabric type analyses are shown by the full descriptions of each type in microfiche ((M)4/10-19). The full results of the fabric type analysis, of which the following is a summary, are to be found in microfiche ((M)4/20-29).

Sixteen fabric types were identified: four are wall plasters and seven bonding mortars associated with the main hall and its extensions; the remaining five were probably brought on to the site with stone robbed from Romano-British structures for re-use in the Phase 2 buildings.

The analysis confirms the unity of construction of the main hall and the separate construction of the extensions, and furthermore suggests that the extensions may also be separate builds. Mortar types C and H appear to have been used in bonding the stone in the walls of the main hall and their nature possibly indicates that the walls were either of poorly dressed stone or had a rubble core. A white lime-washed plaster, Type B, was found adhering to the surface of some fragments of Type C: perhaps Type C was also used to point the walls. It is suggested that Types A, B and F were internal wall plaster. The flat undersurface of fragments of Types A, B and F (up to 180mm across) suggests that the facing of the wall to which they were applied was either of well dressed stone or had been levelled with a mortar.

Type L was poured over the foundations of the larger extension but is not found in those of the smaller. Types Q and R appear to be bonding mortars for the stone in the walls of the small extension, again either of poorly dressed stone or with a rubble core. Type R was perhaps also used to point the faces of the walls to take a white lime-rich plaster, probably lime-washed, since it is found adhering to the undersurface of some fragments of Type K plaster. This is almost certainly an internal wall plaster. There is nothing to indicate that Types Q and R were employed in the construction of the large extension. Type K plaster may have been used on the walls of the large extension but its relative paucity in contexts associated with, or in the area of, the large extension makes this unlikely. The flat undersurface of fragments of Type K suggests that the wall to which it was applied had a facing of well dressed stone or had been levelled with a mortar.

The distinctive pink body colour of Type A prohibits its association with any of the mix residues, none of which have this colouring. This is more completely discussed in microfiche ((M)4/2-6).

Summary

It had been the intention, in applying techniques described in this report, to test whether the aggregate portion of the mixer residues, and that of the mortar recovered from contexts associated with the Phase 2 stone buildings, were comparable in their mineralogy and in terms of the size and roundness of the quartz sand fraction. This of itself would not prove that the mortars mixed in the mixers were employed for the construction of the stone buildings so far uncovered but would simply suggest the likelihood that the same sand source or sources were exploited. Whilst a correlation between the two cannot be clearly demonstrated nothing has arisen which conflicts with the hypothesis that the mortars employed in the construction of the Phase 2 stone buildings were produced in the mortar mixers. It may be said that the mortar and the mixer residues are broadly comparable in terms of the grain size, rounding and mineralogy of the aggregate they contain.

The identification of fabric types has allowed various mortars and plasters to be associated with individual structural units of the main hall and extensions and suggests that the main hall and each of its extensions were of separate builds, though the lack of data available for the large extension, due to its slight remains, should be noted. The mortar analysis suggests that the walls of the main hall, small extension and minster church were all constructed of mortar-bonded masonry with a white lime-washed plaster on the inner face. The similarity of Type C, a bonding mortar associated with the walls of the main hall, and Type 12, from the walls of the minster church, should be noted.

The results of the thin section analyses may be seen as disappointing; those of the fabric type analysis are perhaps more rewarding. The advantage of fabric type analysis as a preliminary to thin sectioning can now be seen and with the benefit of hindsight the methods and techniques of the thin section analysis may be criticised on a number of points. The quality of the material available for study from the St Peter's Street and St Peter's Gardens excavations and the many techniques evaluated during the study have, however, allowed observations to be made regarding future work in mortar analysis ((M)4/5-6 and 28-9).

THE GLASS

by G E Oakley and J R Hunter
Fig 36

A glass bead, some twenty-two sherds from 17 vessels (nine of them post-medieval) and 20 window fragments (all but two post-medieval) were found.

One Saxon and two Roman sherds represent early vessels made from durable soda-lime glass. GL5, from a context assigned to Phase 3, confirms the evidence of previous excavations nearby that vessels made of potash glass, which unfortunately decays in the soil, were in use during the late Saxon period (Oakley and Hunter 1979, GL41).

John Hunter writes: 'it now seems clear that non-durable glass was being used in England (certainly in windows) as early as the late 8th century. Vessel glass was presumably also used and there is an increasing body of evidence from Winchester for example. The trouble is that the forms are unknown and identification requires good sealed stratification'.

The medieval vessels and window glass (GL6-10) are also of non-durable glass, though paradoxically the thinnest parts of the urinal GL8 show less decay than its thicker rim and base. This vessel, an essential aid to medical diagnosis in medieval times, was deliberately made very thin in the body to minimise the effect of colour which could not then be entirely eliminated from the glass. Rarely does enough survive for the profile to be drawn but GL8, from a 15th century context, echoes the form of a previous find from St Peter's Street (Oakley and Hunter

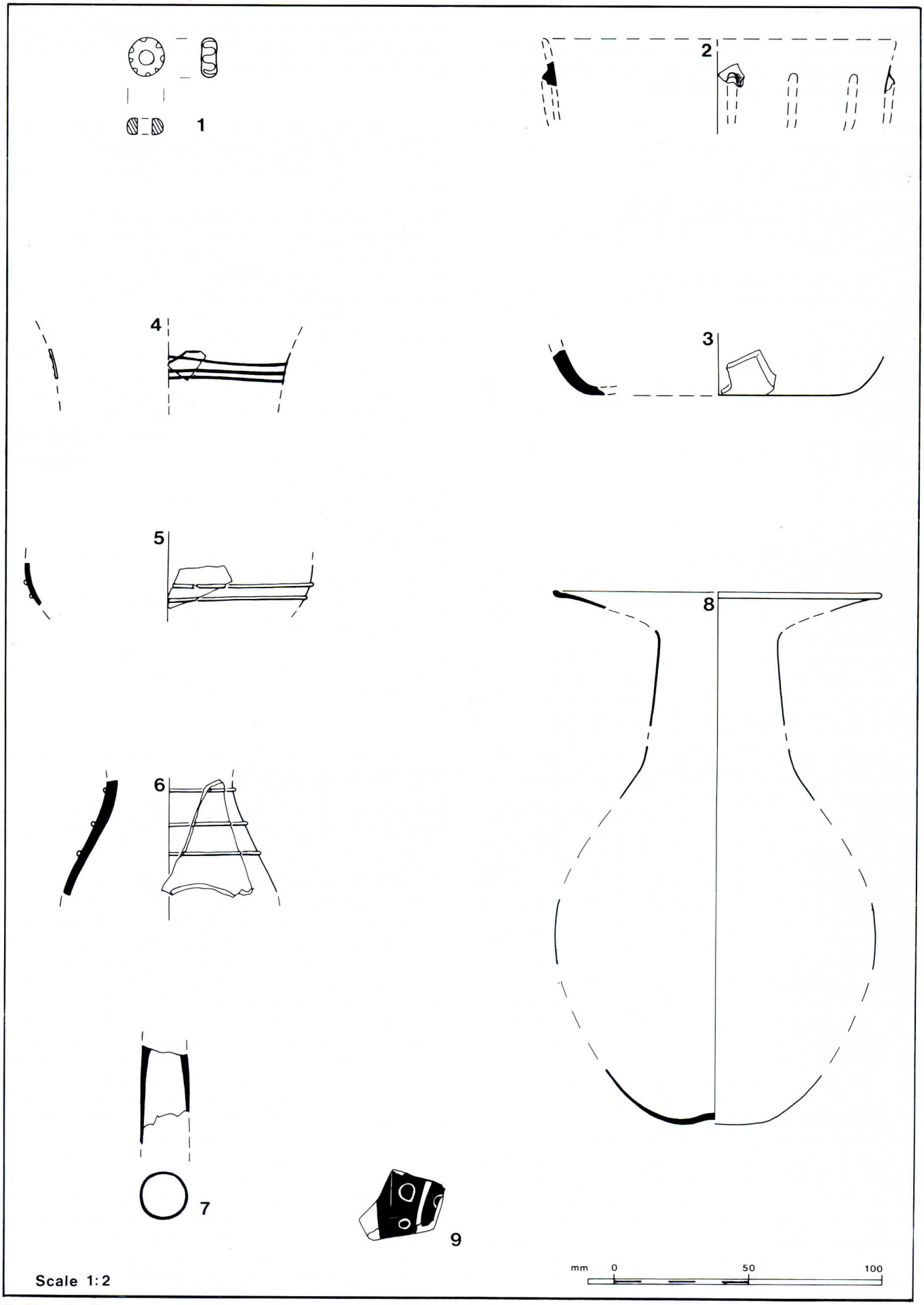


Fig 36: The Glass.

1979, GL56) which was deposited perhaps a hundred years later.

The post-medieval finds are not reported in detail. They include two complete phials of 18th century type but otherwise are only of interest for dating purposes.

THE CLAY SPINDLEWHORL

by Varian Denham

A fragment of a fired clay spindlewhorl, probably of Saxon date, was found in an unstratified context.

THE CLAY PIPES

by W R G Moore

A total of 24 stems and 3 bowls was found in Phase 4Bii and unstratified contexts.

THE TEXTILE

by E Crowfoot

A single fragment of linen, probably of 14th or 15th century date, was found.

THE WORKED BONE AND ANTLER

by Mary Harman and Michael Shaw
Figs 37, (M)20

The site produced 104 pieces of worked bone and antler, chiefly of late Saxon and early medieval date. The artefact assemblage is similar to that recovered from the earlier excavations on St Peter's Street (Oakley 1979). Of particular interest are an incomplete double-sided composite comb (WB75) from an early Saxon sunken-featured building and a bone stylus with tip of copper alloy (WB93) from a late medieval context. The other objects include a fragment of a double-sided simple comb of ivory (WB76), comb connecting plate fragments (WB77-9), pointed tools (WB82-4), a decorated ?handle (WB91) and a gaming piece, probably a draughtsman (WB92).

Seventy-four fragments of antler waste were recovered from the excavation, 71 of which were from stratified contexts. A plot of the distribution of these and of the 31 fragments recovered from the 1973-4 work (Fig (M)20) shows two concentrations, one in trench Y and the other at the SW of trench AA and the NW of the St Peter's Street excavation (House 1). Forty-six of the 105 antler waste fragments from the two sites are from late Saxon contexts; the remainder are from later deposits but are likely to be residual. Hence two antler-working complexes, both probably of late Saxon date, can be isolated. Two billets, one of antler (WB95) and one of bone (WB96), were also recovered from the area of the trench AA/House 1 concentration. It is impossible to say, however, whether the antler-working industry was restricted to comb making or whether other articles were being produced. The only evidence for bone-working other than the billet was a partly finished skate (WB94).

THE HUMAN BONES

by Mary Harman

A small number of human bones was found at St Peter's Gardens. Some of these were from partially excavated graves; others are random collections of bones which must be derived from graves disturbed in antiquity. Many of the burials were those of children. The age was assessed where possible from the state of epiphyseal fusion, and of tooth eruption and the length of the diaphyses, using the figures published by Ferembach, Schwidetzky and Stloukal (1980, 517-549). Brief details of those groups of bones regarded as burials are given below: the remainder (a total of 124 bones), from disturbed deposits, are summarised in Table (M)18. They come, with one exception (from AA123.8), from the west end of the site.

Y103	Lower legs	Adult
Y131	Torso, arms, L. thigh	4-6 years
Y134	Head and shoulders	*c.* 3 years
Y138	Post cranial	6-8 years
Y144	Thighs	4-5 years
Y145	Legs	Adult
Y146	Legs	Adolescent
Y147	Lower legs	9-10 years
Y150	Lower legs	Adult
Y152	Lower legs	Adult
Y153	Thighs	Adult
Y154	Head	Adult
Y155	Lower legs	Adult
Y156	Part feet	16-20 years
Y168	Thighs	Adult

THE OTHER MAMMALIAN BONES

by Mary Harman

All the bones were examined. Most of them were in good condition, though broken. All the identifiable fragments were listed; complete bones or parts of bones were measured. The age of animals was assessed where possible from the state of tooth eruption and degree of epiphyseal fusion, using the recording system worked out by Ewbank *et al* (1964, 423-6) and the 'old' ages published by Silver (1963, 250-68).

All the phases in which bones occurred are included in Table 18 which summarises the total number of bones (excluding loose teeth, vertebrae and rib fragments) and the minimum number of animals found in each phase; more details for phases which included a quantity of bone are included in microfiche (Tables (M)19-31); those phases which contained very small numbers of bones have been omitted. Tables (M)32-34 show the ages of cattle, sheep and pigs at death, based on the evidence of mandibles.

Most of the bones appear to be domestic refuse; the majority is from cattle, sheep and pigs. In the early and middle Saxon periods sheep were more numerous than cattle, though the cattle would have provided more meat. In the late Saxon period the numbers of sheep and cattle were more equal but sheep again took precedence in the early Middle Ages. It is clear from the presence of horn cores and some limb bones

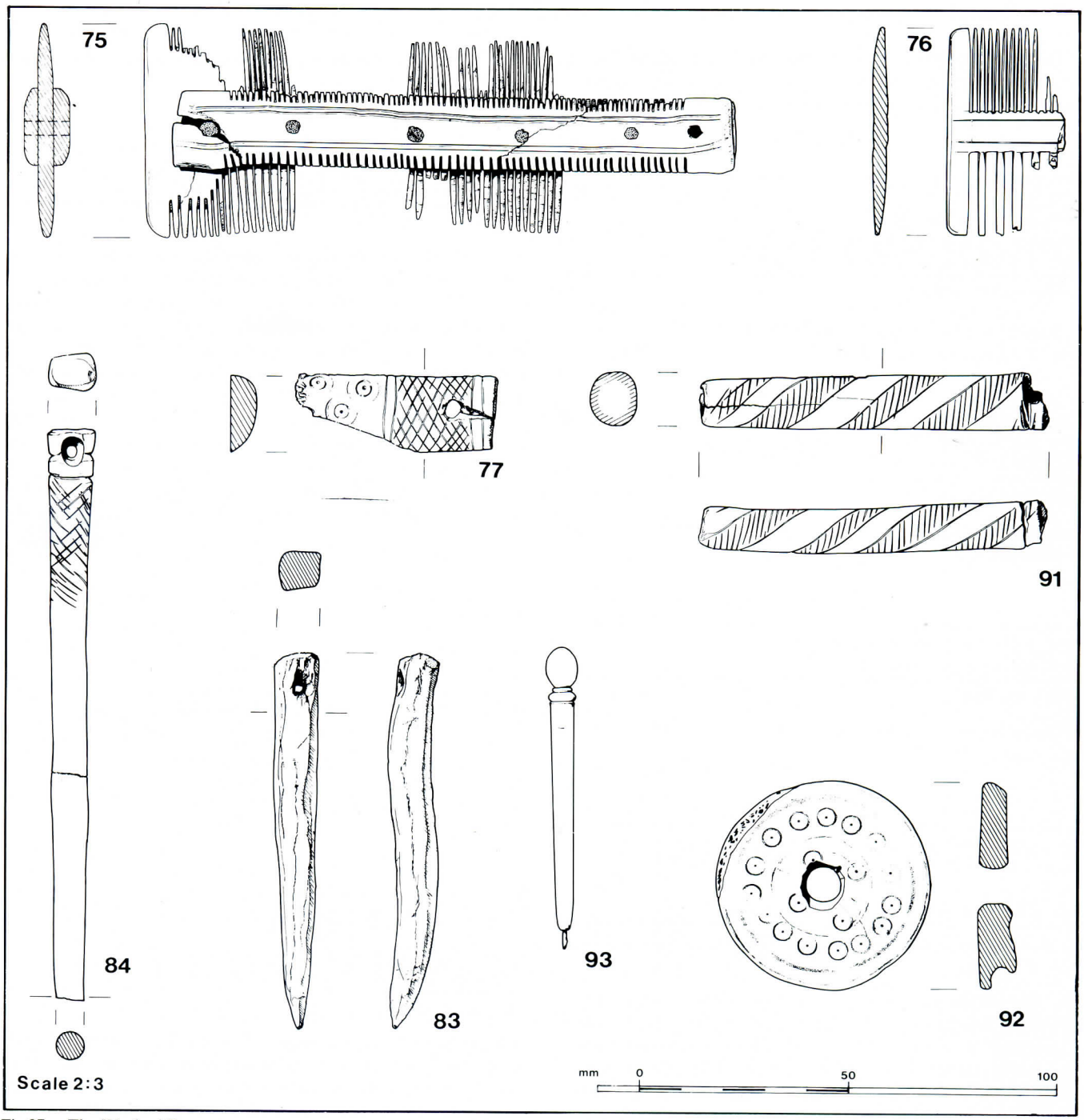


Fig 37: The Worked Bone.

identifiable as goat that an unknown, but probably small, proportion of the bones noted as sheep belonged to goats. Pigs were always less numerous than both sheep and cattle and seem to have declined in relative importance in the medieval period. Few of the cattle bones were from animals of less than a year old though those of several small calves occurred in Phase 4Aii; most of the beasts survived beyond five years. The majority of the sheep also lived longer than four years though a number died towards the end of their second year. Few pigs were older than three years at death though most had attained a reasonable size. Three skull fragments from polled cattle belonged to Phase 4Ai. Polled sheep first occur in the same phase. As usual many sheep skulls had been split near the mid-line and frequently the horn cores were removed, probably to make cooking easier.

Few remains of horses and dogs were recovered apart from one exceptional deposit of horse bones described below. The horse jaws and bones are almost entirely from mature animals of five years or more, sometimes considerably more, though there are a few bones from younger animals. Cats, domestic or feral, appear in the late Saxon period and are represented in small numbers thereafter. The few rabbit bones from the medieval phases are likely to have been from 'farmed' animals.

Game (hare, red roe and fallow deer) is very sparsely represented; the presence of deer bones shows that deer were hunted and venison probably appeared, though rarely, on the menu. The amount of antler found bears no relation to the number of bones found; if antler was included in the tables of quantification the importance of red deer would apparently be increased, but all the surviving bases are from cast antlers which were probably collected for the antler-working industry (p. 75) and the quantity of antler is no indication of the number of carcasses brought into the town.

The hedgehog bones are incidental; the paucity of small mammal bones on sites where bone was generally quite well preserved must in part be due to excavation methods and on

Table 18 Numbers of Bones and Minimum Number of Animals in Different Phases with Percentages of Common Domestic Animals

Phase	Cattle	%	Sheep	%	Pig	%	Horse	Other
1	91 9	25	186 20	52	81 8	23	4	Hare: 2.
1/2	13 2	28	28 4	61	5 1	11	1	Hare: 1.
2	103 10	22	290 32	63	70 6	15	4	Goat: 2, Roe Deer: 1, Hare: 1.
2/3	1 1		6 1		1 1			
2/4Ai			1 1					
3	733 39	39	785 63	42	349 29	19	15	Dog: 11, Red deer: 1, Cat: 3, Roe deer: 2, Hare: 3.
3/4	32 3	34	41 6	44	20 3	22	3	Red deer: 1.
3/4Ai	82 7	34	103 12	42	59 6	24		Dog: 2, Rabbit: 1.
4	48 6	38	60 7	48	18 5	14	2	Cat: 2.
4A	144 12	37	194 22	51	46 7	12	9	Dog: 2, Red deer: 1, Cat: 2, Roe deer: 1, Hare: 1.
4Ai	1381 (1019) 47	31	1774 150	55	438 38	14	50	Dog: 17, Hare: 12, Cat: 51, Fallow deer: 1, Rabbit: 9, Red deer: 3.
4Ai (poss 4Aii)	32 2	48	29 2	43	6 1	9	1	
4Ai/ii	24 2	40	29 2	48	7 2	12	5	Cat: 2, Hedgehog: 1.
4Aii (ex AA543)	293 23	45	269 26	41	92 10	14	9	Rabbit: 2, Hare: 1, Cat: 10 + 2 skeletons, Dog: 2, Polecat/Ferret: 1.
4Aii (AA543)	44 (434) 8	49	38 4	42	8 2	9	143	Dog: 1, Cat: 3.
4Aii (poss 4Bi)	58 6	42	66 10	48	13 3	10	2	
4Bi	9 1	31	15 2	52	5 1	17	1	Rabbit: 1.
4Bii	136 10	41	152 17	46	44 5	13	9	Dog: 1, Cat: 2.

the present site, while the Saxon deposits were treated with great care, medieval and later levels were excavated more summarily; many of the smaller bones, such as phalanges, were absent from what were almost certainly skeletons of whole cats. Parts of two polecats or, and perhaps more likely, ferrets were found in AA62 (Phase 4Aii).

Several deposits are of particular interest.

AA96 (Phase 3/4Ai) contained the remains of a small piglet — possibly a casualty from domestic rearing.

Deposits of horn cores were found in Phase 4A. AA97 (Phase 4Ai) contained over 50 horn cores with skull fragments: many of these were small, from immature animals, suggesting that they were not the waste product from horn-working but rather from slaughtering or possibly tanning. AA35 (Phase 4Aii) consists almost entirely of horn cores although only 16 were recovered. AA543 (Phase 4Aii) contained a very large number of cattle horn-core and skull fragments and a large number of horse bones. The cattle skull fragments are almost exclusively from the top of the skull and have probably been broken off the horn cores, many of which still have part the skull attached. There are 390 horn cores and in addition fragments which probably represent several more. About a quarter of the total are from immature animals. Many of the skull fragments have cuts on them showing how the top of the skull was removed by cutting across the frontal and into the parietals below the horn core. There were few cuts around the base of the horn cores such as have been observed on groups interpreted as horn-working waste. The deposit included a small quantity of cattle, sheep and pig bones and also four goat horn cores, cut off from the skull. Among the horse bones are parts of four skulls and jaws and teeth from animals of varying ages: one under 3 years and the others *c.* 6, *c.* 7, *c.* 10, *c.* 15, *c.* 20 years. There are no ribs but 62 vertebrae and a number of postcranial bones represent at least 13 animals; only one of these bones was from an immature animal. Though some of the bones were broken none had cuts on them. The number of metapodials was smaller than might be expected considering the number of other limb bones, possibly because the former had been extracted for bone working. The deposit is difficult to interpret: it may contain horn-working waste but it is obviously not exclusively such. AA543 lay just outside the curtilage of House 4 of St Peter's Street where similar pits, containing large quantities of horn cores and horse bones were found (Williams J H 1979, 46-60; Harman 1979, 328-32).

AA558 (Phase 4Ai) includes bones which may represent a cow hide: skull fragments with both jaws may belong with a complete set of metapodials and what was probably a complete set of phalanges, though some are missing. The skull is not

complete and if these bones do belong together it suggests that the upper part of the skull was removed and treated separately.

W14 (Phase 3) produced a metacarpal from a very small horse, similar in size to a Shetland pony.

While much of the bone from the site is probably domestic refuse there is evidence for 'industrial' waste, from slaughtering or a related industry, in Phase 4A.

The Abnormal Bones

The abnormal bones have been seen by Dr J R Baker whose detailed reports on each piece appear in microfiche ((M)4/54-61; a brief summary is given below).

One cattle horn core from Phase 4Aii shows evidence of osteomyelitis; another from Phase 4Bii shows evidence of malnutrition or illness at one stage in the growth of the horn. There are in different phases several examples of fractured cattle ribs, some showing evidence of infection at the site of the fracture. One thoracic vertebra from Phase 4Ai may have a partially healed fracture of the dorsal spine, while part of a pelvis from Phase 3 has a fracture of the pubis. Three metacarpals from Phases 3 and 4 have swellings on them resulting from a blow; two metatarsals have growths resulting from sprain injuries. Another metatarsal from Phase 4Ai was from an animal probably used for draught purposes. Three first phalanges, again from Phases 3 and 4, were damaged by sprain injuries, another from Phase 4Ai was affected by osteo-arthritis and one from Phase 3 by inflammation round the coronet of the hoof.

Two sheep mandibles from Phases 3 and 4 were affected by periodontal disease; a third with lesions on the articulation with the skull may have been affected by a disease of the soft tissue. Two ribs (one possibly from pig rather than sheep) have healed fractures. Five bones from Phase 4 showed evidence of 'penning elbow'. The elbow was affected by other disorders: a radius from Phase 3 by a sprain-type injury; in Phase 4Ai an ulna by periostitis/ostitis and a humerus by osteo-arthritis; in Phase 4Bii the joint between a radius and ulna was damaged while the animal was young. Of two femora from Phase 4Ai one was affected by osteoporosis, the other possibly by osteomyelitis. A metatarsal from Phase 4Aii may have been affected by a sprain.

One pig vertebra in Phase 2 shows evidence of osteomyelitis affecting the dorsal spine and the same disease was evident in a radius from a young pig in Phase 3. In the same phase there is evidence of what was probably a fractured fibula, a probable fracture of one of the minor metapodials and a sprain affecting the hind foot. Similar injuries to the last two were observed in two bones from Phase 4. A humerus from Phase 3 or 4 shows evidence of injury to the muscle at the upper end. In Phase 4Ai there is a mandible affected by periodontal disease; a rib affected by arthritis which probably also affected the adjacent vertebra and a radius affected by septic arthritis at the proximal end.

Some of the horse bones occurring in Phase 4 show evidence of injury or disease. Thoracic and lumbar vertebrae from three different animals show evidence of repeated spinal stress suggesting that they are from elderly draught animals. One animal had had a dislocated shoulder for a long time, with a new socket partially formed in the scapula. One hock was affected by something which may have been incipient osteo-arthritis, another by a sprain, two metatarsals by spavin and another by an injury involving tearing of the ligaments.

A cat in Phase 4 may have had a fractured metacarpal.

One red deer antler in Phase 4 had an irregularity which may have been the result of an infection; a metatarsal from Phase 4 had a swelling resulting from a blow.

The use of both cattle and horses for draught purposes is generally assumed; it is useful to have this assumption supported by evidence of trauma associated with traction. The most interesting piece is the horse with dislocated shoulder.

THE BIRD BONES

by Mary Harman

Table 19 shows the numbers of bones identified from different species found in different phases of the site. Some of the identifications of wild bird bones were made by Dr D Bramwell who also confirmed the identification of the others.

Most of the bones are from domestic birds, fowl being commoner than goose. Some of those identified as goose and duck may be from the wild greylag goose and mallard duck, though the small number of bones from other wild birds suggests that most of both goose and duck bones are probably from domestic birds. Some of the fowl bones were spurred showing that male birds are represented as well as hens and possibly capons. The bones from doves may be from either wild or domestic birds and were probably eaten as other wild birds may have been: swan, partridge, plovers, woodcock and crane are all highly regarded. The kestrel would not be unusual in either the comparatively small settlement of Phase 1 or its rural surroundings; the crows may have been scavengers in the settlement.

Table 19 Numbers of Bird Bones from Species Found in Different Phases. (Numbers in brackets indicate immature bones and are included in the total).

Phase	Fowl	Goose	Duck *cf* mallard	Other
1	11	15	1	?Swan: 1, Kestrel: 2, Crow: 2, Rook/Crow: 2.
1/2	1	1		
2	18	13	10	Mute swan: 1, small duck: 1, Dove sp.: 1.
3	93 (1)	42	9	Dove sp.: 3, Jackdaw/Magpie: 1.
3/4	2			
3/4Ai	6 (1)	12		
4	12	3	1	wader *c.* Golden plover size: 1.
4A	38 (3)	22 (2)		
4Ai	313 (56)	193 (2)	7	Swan sp.: 1, Crane: 1, Partridge: 3, Dove sp.: 1, Woodcock: 3, Golden plover: 1, Plover sp. (golden or grey): 1, ?Blackbird: 1, Magpie: 1.
4Aii	96 (17)	43 (1)	6	Dove sp.: 1.
4Aii/Bi	6 (2)	14 (1)	14	
4Bi	4	1		
4Bii	20 (1)	8		

THE FISH BONES

by Alison Locker

Three hundred and fifty one fish bones were recovered. The main objective of the work, however, was the examination of

complete and if these bones do belong together it suggests that the upper part of the skull was removed and treated separately.

W14 (Phase 3) produced a metacarpal from a very small horse, similar in size to a Shetland pony.

While much of the bone from the site is probably domestic refuse there is evidence for 'industrial' waste, from slaughtering or a related industry, in Phase 4A.

The Abnormal Bones

The abnormal bones have been seen by Dr J R Baker whose detailed reports on each piece appear in microfiche ((M)4/54-61; a brief summary is given below).

One cattle horn core from Phase 4Aii shows evidence of osteomyelitis; another from Phase 4Bii shows evidence of malnutrition or illness at one stage in the growth of the horn. There are in different phases several examples of fractured cattle ribs, some showing evidence of infection at the site of the fracture. One thoracic vertebra from Phase 4Ai may have a partially healed fracture of the dorsal spine, while part of a pelvis from Phase 3 has a fracture of the pubis. Three metacarpals from Phases 3 and 4 have swellings on them resulting from a blow; two metatarsals have growths resulting from sprain injuries. Another metatarsal from Phase 4Ai was from an animal probably used for draught purposes. Three first phalanges, again from Phases 3 and 4, were damaged by sprain injuries, another from Phase 4Ai was affected by osteo-arthritis and one from Phase 3 by inflammation round the coronet of the hoof.

Two sheep mandibles from Phases 3 and 4 were affected by periodontal disease; a third with lesions on the articulation with the skull may have been affected by a disease of the soft tissue. Two ribs (one possibly from pig rather than sheep) have healed fractures. Five bones from Phase 4 showed evidence of 'penning elbow'. The elbow was affected by other disorders: a radius from Phase 3 by a sprain-type injury; in Phase 4Ai an ulna by periostitis/ostitis and a humerus by osteo-arthritis; in Phase 4Bii the joint between a radius and ulna was damaged while the animal was young. Of two femora from Phase 4Ai one was affected by osteoporosis, the other possibly by osteomyelitis. A metatarsal from Phase 4Aii may have been affected by a sprain.

One pig vertebra in Phase 2 shows evidence of osteomyelitis affecting the dorsal spine and the same disease was evident in a radius from a young pig in Phase 3. In the same phase there is evidence of what was probably a fractured fibula, a probable fracture of one of the minor metapodials and a sprain affecting the hind foot. Similar injuries to the last two were observed in two bones from Phase 4. A humerus from Phase 3 or 4 shows evidence of injury to the muscle at the upper end. In Phase 4Ai there is a mandible affected by periodontal disease; a rib affected by arthritis which probably also affected the adjacent vertebra and a radius affected by septic arthritis at the proximal end.

Some of the horse bones occurring in Phase 4 show evidence of injury or disease. Thoracic and lumbar vertebrae from three different animals show evidence of repeated spinal stress suggesting that they are from elderly draught animals. One animal had had a dislocated shoulder for a long time, with a new socket partially formed in the scapula. One hock was affected by something which may have been incipient osteo-arthritis, another by a sprain, two metatarsals by spavin and another by an injury involving tearing of the ligaments.

A cat in Phase 4 may have had a fractured metacarpal.

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THE FISH BONES

by Alison Locker

Three hundred and fifty one fish bones were recovered. The main objective of the work, however, was the examination of

Table 20 Fish Bones from Saxon Deposits

Date	EEL	HRG	COD	HLB	FFH	UND	Total
Pre 820	–	–	–	—	–	1	1
820-875	4	–	1	–	–	5	10
875-1100	1	1	–	1	1	3	7
Total	5	1	1	1	1	9	18

KEY

EEL = Eel
SLM = Salmon
COD = Cod
LNG = Ling
MCK = Mackerel
HLB = Halibut
UND = Unidentifiable
HRG = Herring
PKE = Pike
HDD = Haddock
GAD = Gadoid
PLC = Plaice
FFH = Flatfish

Table 21 Fish Bones from Medieval Deposits

Date	HRG	SLM	PKE	COD	HDD	LNG	GAD	MCK	PLC	FFH	UND	Total
1100-1400	–	1	1	81	2	22	99	1	1	–	14	222
1400-1500	2	1	–	8	–	–	3	–	–	1	22	37
1100-1500	–	–	–	–	–	–	1	–	–	–	1	2
Total	2	2	1	89	2	22	103	1	1	1	37	261

Table 22 Fish Bones from Post-Medieval and Unstratified Deposits

Date	PKE	COD	GAD	UND	Total
1500-1700	–	–	–	1	1
1700 on	–	–	1	1	2
1400-1700	2	12	5	49	68
U/S	–	1	–	–	1
Total	2	13	6	51	72

the structural evidence for the middle Saxon period and consequently rubbish deposits, mainly of medieval and later date, were not sieved and all bones were picked by hand during excavation. The assemblage, therefore, is likely to be biased in favour of larger fish remains.

The summary tables (20-22) indicate the total number of fish bones attributed to each phase.

The following species were identified: eel (*Anguilla anguilla*), herring (*Clupea harengus*), Salmonidae, pike (*Esox lucius*), cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), ling (*Molva molva*), Gadoid, mackerel (*Scomber scombrus*), plaice (*Pleuronectes platessa*), and halibut (*Hippoglossus hippoglossus*).

Remains from the Saxon period were few as on the adjoining St Peter's Street site (*cf* Jones 1979, 335) but eel and seawater fish were both represented. Fish bones were more common in medieval deposits with cod, ling and the gadoid group dominant. These fish were probably transported dried or salted from the east coast. The limited remains are consistent with those from the St Peter's Street excavations (Jones 1979, 355) and both assemblages support the documentary evidence of salted and dried seawater fish having been an important food in inland areas in the medieval period.

THE SHELLFISH

by G E Oakley

A minimum of 153 shellfish was recorded, 132 of which were oysters, ten marine mussels, ten whelks and one freshwater mussel. About nine oysters belonged to Phase 1 or 2 and perhaps a further five to Phase 3 which also produced a single marine mussel. The numbers increased dramatically in the 15th century.

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