

? *Cledemutha*: A Late Saxon Burh in North Wales

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with contributions by

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In A.D. 921 Edward the Elder is recorded as having built the borough or burh at Cledemutha. On the basis of excavations in 1979–82 it is argued that a three-sided earthwork enclosing a large area to the south of modern Rhuddlan, Clwyd (Flintshire), forms the defences of this late Saxon burh. Evidence is presented for the dating, method of construction, original appearance and subsequent slighting of the defences. Comparisons are made with other large, late Saxon burhs and reasons are given both for the foundation and the failure of this planted borough in N. Wales.

INTRODUCTION

The earthwork forming the subject of this excavation report was described by Pennant in 1784 as:

... a very deep foss which crosses from the margin of the bank, near the ascent of the present road to St Asaph, to another parallel road, near which it is continued, then turns and falls nearly into the southern part of the walled ditch of the castle: the whole forming a square area, of very great extent.¹

On the ground, this earthwork (Fig. 1) survives best on the S. side, being defined by a slight inner bank, a large ditch, along the bottom of which lies the present sunken hedgerow, and a more pronounced outer, or counter-scarp bank. On the E. side the monument has been slightly altered through the creation of Pennant's 'parallel road', running on top of the presumed line of the inner bank but now reduced to no more than a footpath. It is difficult to observe any traces of the inner bank, although the counterscarp bank survives; the ditch, however, especially in the S. half of the E. side, is wider and more pronounced than anywhere else. The N. side of the earthwork has disappeared without record beneath modern housing on the S. outskirts of Rhuddlan. The steep drop to the river seems to have precluded any bank and ditch defences on the W. side, although a timber palisade may have existed (Pl. 1). The interior of the site is reasonably level apart from a more elevated area in the NW. quarter, between the Edwardian castle and the Norman motte.

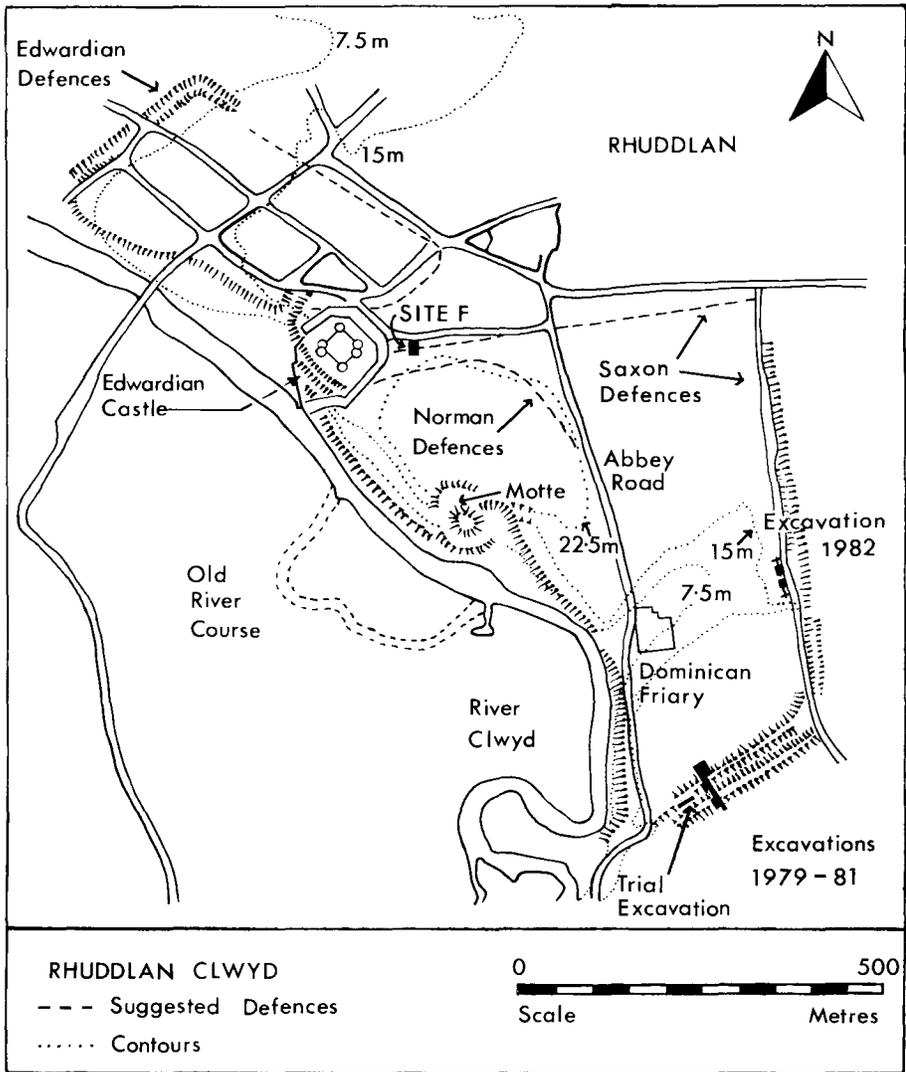
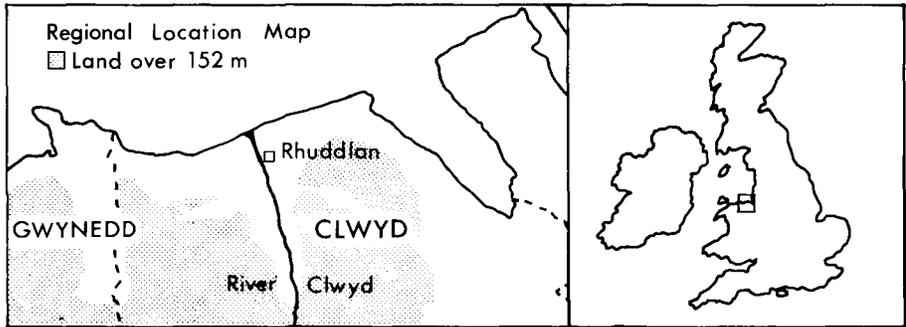


FIG. 1
 Location map showing the principal medieval settlements at Rhuddlan, and the position of the recent excavations

The formerly accepted interpretation of the monument was that it represented the defences of the Norman borough at Rhuddlan, founded by Robert of Rhuddlan in 1073. In 1950, however, it was suggested that the borough or burh, built by Edward the Elder at *Cledemutha* in 921 (*Anglo-Saxon Chronicle C*, s.a. 921), could probably be located at the mouth of the R. Clwyd and quite possibly at Rhuddlan.² The first major series of excavations, undertaken by Mrs Henrietta Miles between 1969 and 1973, underlined the plausibility of this hypothesis. The defences of the Norman borough were discovered *within* the NW. corner of the area enclosed by the larger earthwork (Fig. 1). In addition, a trial excavation near Edward I's castle (Fig. 1, site F) revealed the presence of a massive ditch, part of the N. side of the putative Saxon perimeter. It was suggested that this earthwork might be connected with the burh of *Cledemutha*.³ Prior to the present series of excavations the circumstantial evidence for identifying the earthwork as the remains of the defences of *Cledemutha* comprised three points:

1. The translation of *Cledemutha* as 'Clwydmouth' (the earthwork being on the E. bank of the Clwyd, some 4 km from the present coastline).⁴
2. The shape and size of the area enclosed — roughly rectangular and approximately 30 ha in extent — which find convincing parallels in other late Saxon towns such as Wallingford, Wareham, and Cricklade.⁵
3. The knowledge that Edward the Elder was much involved with Welsh affairs, in particular the defence of the Mersey and Dee estuaries, during the last six years of his life.⁶

The site of the putative *Cledemutha* is situated on a bluff of red boulder clay and sand at c. fifteen metres O.D. on the E. bank of the R. Clwyd. These drift deposits were laid down by a tongue of Irish Sea ice which penetrated the vale of Clwyd as far south as Trefnant (SJ 050710); Rhuddlan lies on the ablation products of this ice. The calcareous red clay is derived largely from Keuper Marl, containing a few igneous stones and many small fragments of shell. Overlying the red clay are variable drifts which are normally loamy and stonier than the clay. They can be from 0.3–2.0 m deep and are interpreted as either melt-out or flow tills.⁷ Much of the N. half of the enclosure is underlain by glaciofluvial sands while the S. half overlies boulder clay. The two types of drift support correspondingly different soils: a slowly permeable and seasonally waterlogged clayey loam (Salop series)⁸ lies over the clay while a deep and well-drained sandy loam (Newport 1 series) has developed over the glaciofluvial deposits. This bluff of red clay and sand looks out over much low-lying (formerly marshy) land to the west, across the river, which is largely composed of various deposits of post-glacial marine and river alluvium. Much of the strategic importance of Rhuddlan during the historical period derived from its position alongside the R. Clwyd at the highest point up river reached by tidal waters, thus enabling waterborne traffic to dock next to the settlements. The site was also the nearest ford to the sea. In the post-medieval period Rhuddlan was a flourishing port exporting agricultural produce (especially grain), metals, timber, and coal.

Excavations were undertaken by the writer to seek confirmation of the suggested identification of the earthwork and also to ascertain the potentially damaging

consequences of periodic ploughing on the site. Three seasons of excavation were carried out on the S. side (Fig. 1) where the defences are best preserved and easiest of access, between 1979 and 1981, and some evidence was obtained for the dating, method of construction and process of destruction of the defences, with slight additional information on some features to the rear of the inner bank. The fourth season, in 1982, comprised an unsuccessful attempt to locate the principal gateway on the E. perimeter. All excavations were carried out by hand. As they are a considerable distance apart the 1979–81 and 1982 excavations will be treated separately in the following report.

1979–81: FEATURES

The features located during the 1979–81 seasons are indicated on Figs. 2 and 3. With varying degrees of certainty they have been divided into five chronological phases: phases 1 and 2 representing pre-defence activity, phases 3 and 4 the construction of the defences and phase 5 their demolition and the subsequent use of the site. Supporting evidence for many of the statements in these summaries can be found in the specialist reports that follow them. The most recent activity on the site (phase 6, not illustrated) comprised the topsoil layers, field drains, etc., of the post-medieval period, which are not discussed in this report although reference to phase 6 residual finds is made in the specialist reports.

Phase 1. A series of shallow silt-filled ditches (66, 187, 227, 246, 260, 262) cut into the underlying boulder clay (see Fig. 6 for representative dimensions). In some cases the lower fills consisted of alternate bands of coarse silt and fine silt-clay, possibly indicating periodic deposits from standing water, slowly sedimenting ever finer particles onto the ditch bottom. The upper fills were of a more homogeneous, coarser textured material, implying a period of more rapid accumulation of sediment.⁹ The only datable artefacts from these features were four very abraded sherds of samian (South Gaulish Dr. 18R) of c. A.D. 70–110.

The second major element that can be tentatively ascribed to phase 1 are four oval post-holes (55, 223, 225, 226; detailed plans and profiles on Fig. 6). Although no 'post-pipes' were observed during excavation a post-hole interpretation is preferred on the slight evidence of possible packing stones in 55 and 255 and a probable seating for a post in 226. No dating evidence was found in any of these features and their stratigraphic position cannot be verified. But they appear to form a homogeneous group on morphological grounds (quite distinct in shape from the possible post-holes of phase 4) and their juxtaposition with ditches 227 and 262 may imply contemporaneity.

Interpretation of the phase 1 features cannot be definitive. The various ditches may have performed a drainage function in a more extensive field-system of Romano-British or later date; similar archaeological features with the same kind of dating evidence have been located elsewhere at Rhuddlan.¹⁰

Phase 2. Ten small hearths or fireplaces, marked by dense scatters of charcoal and charred macro-plant remains, were discovered on top of the soil profile buried by the inner and outer banks of the earthen defences (Pl. II, A). The stratigraphic relationship of two (123, 177) is shown in Fig. 5: 184 is the buried soil profile of grey silty clay which overlies the undisturbed boulder clay; all of the hearths lay directly on top of this buried soil; an isolated lens of grey loam (180) is sandwiched between the fires and the base of the inner bank proper (81). The general similarity between deposits 180 and 184 is suggestive of an equivalent origin. It may be, therefore, that 180 represents topsoil excavated from the line of the defensive ditch, and subsequently spread as the initial layer of the inner bank.

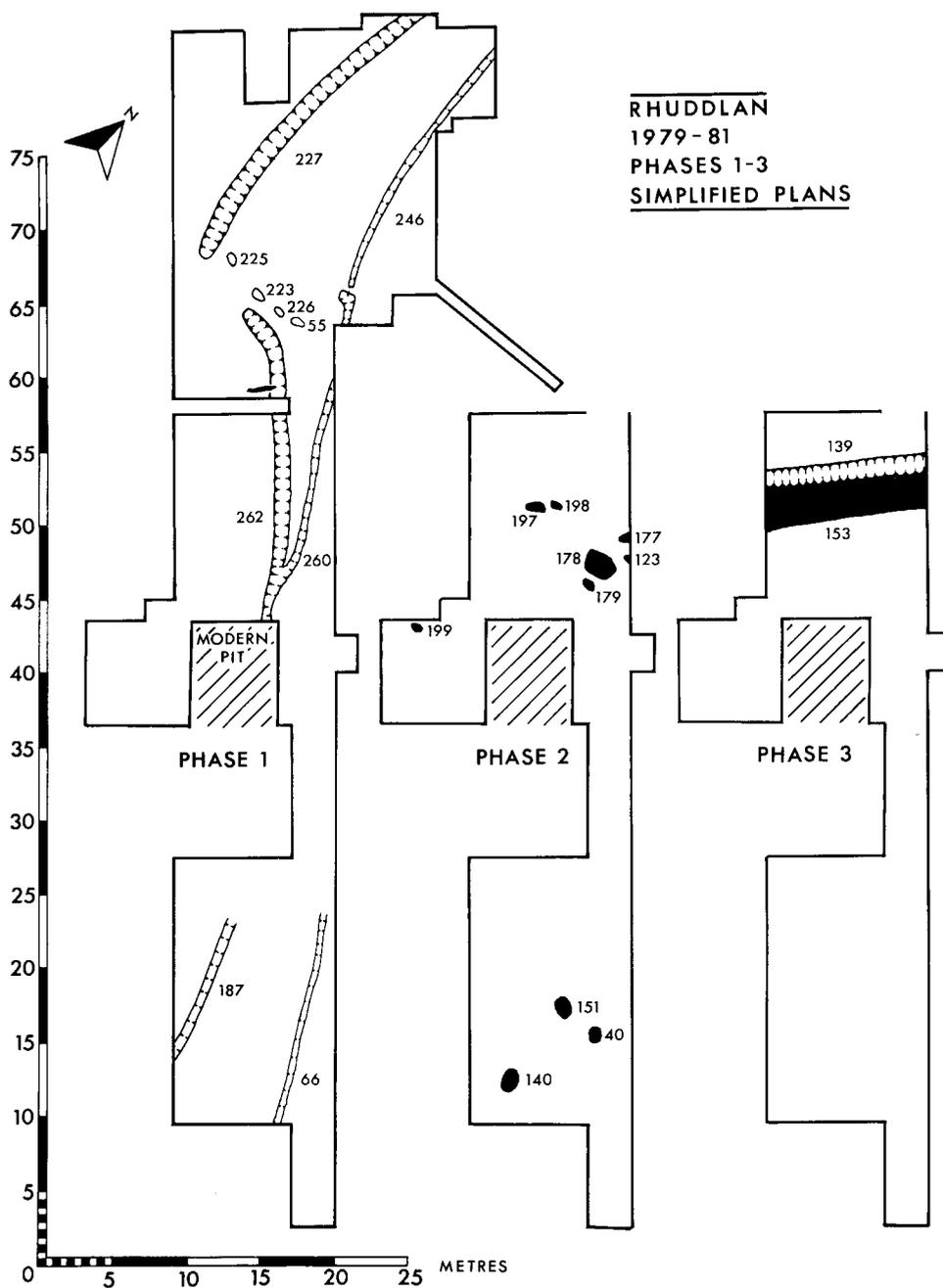


FIG. 2

Simplified plans of phases 1-3, 1979-81 excavations

A comprehensive account of the different kinds of evidence from the fires and their subsequent interpretation has been published elsewhere.¹¹ Nine radiocarbon dates were obtained from samples of charcoal taken from seven of the fires. Though not without problems of correlation, a calibrated date of A.D. 955 ± 35 years was the result for the approximate date of nine of the ten fires. Statistically, this is not inconsistent with an historical date of A.D. 921 for the sealing of the fires by the construction of the defences of *Cledemutha*. Oats, field beans and peas were the main macro-plants and provide an insight into the crops cultivated in the vicinity of Rhuddlan in the tenth century. The charred remains represent the destruction of crop gleanings and waste. Rather than the widespread destruction of such waste as part of the end of harvest activities, the evidence suggests small-scale discarding of crop gleanings prior to food preparation.

Several of the fires produced fragments of burnt bone, unidentifiable except for fragments of a left scapula and left humerus of pig from 178. Some splinters of burnt bone were also found between the fires, perhaps implying a degree of disturbance of these fireplaces before they were sealed by the construction of the defences. Some unburnt fragments of cow and horse bones were also found on the old ground surface.

Three iron artefacts merit attention. The first is an arrowhead (Fig. 12,2) with a leaf-shaped blade and cleft socket from fire 178. Although it can be paralleled by other examples from Saxon contexts, early medieval arrowheads are insufficiently diagnostic for a close cultural attribution. The Rhuddlan example has been the focus of a separate study.¹² The second is a link or cheek-piece for connecting a horse-bit to the bridle straps (Fig. 12,5), with a worn ring at one end and a hook at the other; decorative strips of metal with looped terminals have been applied to three of its four sides. It was found on the old ground surface. No exact parallels have been traced for the artefact but the presence of applied strips argues for a late Saxon or early Norman date.¹³ The third consists of a fragmentary sickle or knife blade (Fig. 12,4), again from the old ground surface.

The data from phase 2 are capable of supporting the excavator's original suggestion that the fires are the remains of 'camp fires' of Edward the Elder's workforce prior to the construction of the defences,¹⁴ although the archaeological evidence cannot be definitive.

Phase 3. A small bank (153) composed of silty clay and an associated ditch (139) comprise this phase. The stratigraphical position of the bank is quite clear, since it sealed two of the fires (197, 198) and, in turn, was partly buried by the rear of the inner bank (81) (Fig. 5). The contiguity of this small bank with the rear of the main inner bank suggests that the former may have functioned primarily as a 'marker' for rapidly delimiting the line to be taken by the latter. With the marker ditch on the internal side of the site and the marker bank indicating the position for the rear of the inner of the two subsequent banks, these features would not have obstructed the passage of those carrying spoil from the main ditch to the defensive bank. Additionally, the marker ditch might have fulfilled two further roles: first as a 'linear test-pit' to ascertain the underlying soil conditions (relevant to the constructional methods to be used in the defences)¹⁵ and later as a drain for rainwater run-off from the inner bank. Partial corroboration of this suggestion was obtained from the 1982 excavations on the E. defences (see below).

Phase 4. The principal elements in this phase constitute the defences proper and three features in the interior. The remains of the defences (Fig. 5) comprise an outer (86) and an inner bank (81) of redeposited reddish boulder clay, presumably excavated from the intervening ditch (52). No indication of timber, turf or stone revetment was located, suggesting clay banks of simple dump construction. Whether the inner bank was ever surmounted by some sort of breastwork cannot now be ascertained. Reconstruction of the original defensive dimensions involves a number of assumptions: first, that clay from the ditch formed the sole material for the bank construction; second, that two-thirds of the ditch material went onto the inner bank while the remaining third formed the counterscarp; third, that the angle of rest of wet boulder clay is *c.* 35° .¹⁶ These parameters indicate an inner bank

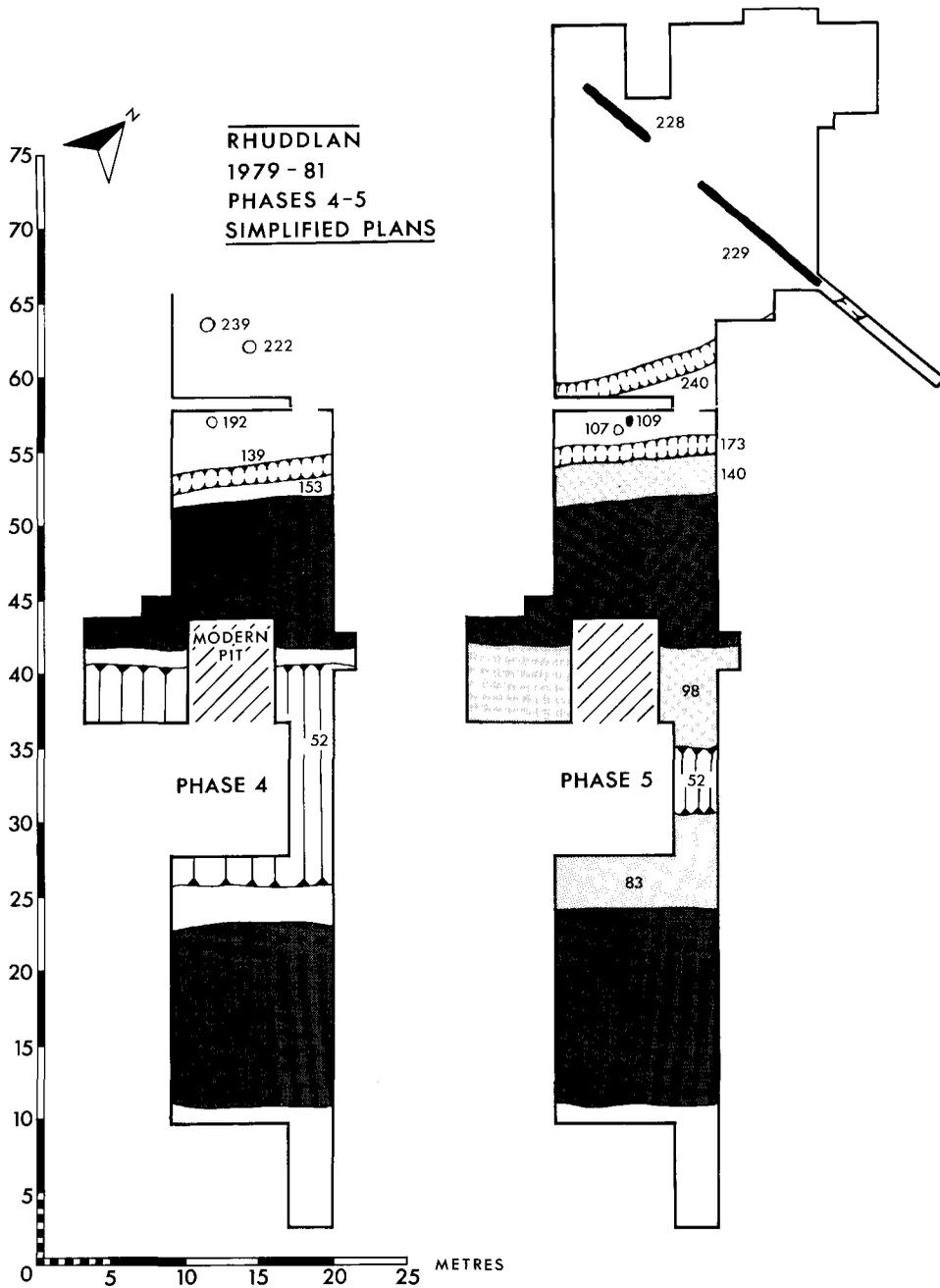


FIG. 3
Simplified plans of phases 4-5, 1979-81 excavations

of some 3.5 m maximum height by a width at base of *c.* 1.1 m, a ditch (Pl. II, c) *c.* 1.5 m wide by a maximum depth of *c.* 3 m and an outer bank *c.* 1.5 m high by *c.* 12.5 m wide. Speculative as such calculations must be, they do provide an insight into the scale of earthwork especially when it is remembered that the total length of the defences, excluding the side facing the river where bank and ditch defences are not known to have existed (Fig. 1), is some 1,675 m (1 mile). Although only the bases of both inner and counterscarp banks survive to be excavated to a maximum height of *c.* 0.7 m, there was no evidence to suggest that the defences had been built in more than one phase of construction.

Immediately to the rear of the inner bank (Fig. 5) the marker ditch (139) remained open, slowly collecting a deposit of grey silt (132), presumably from soil apparently washed down the rear of the defensive bank; the marker bank (153), however, was buried by the defences. During the course of the 1982 excavations on the E. defences a putative marker ditch (Fig. 7, 292) was located.

In the interior of the site three possible post-holes (192, 222 and 239) are tentatively ascribed to this phase (plans and profiles on Fig. 6). Their putative contemporaneity is based solely on their approximate similarity of size and shape. Although there was little indication of any 'post-pipe' from these features, the presence of charcoal, conceivably from the base of a post, in 239, gave an uncalibrated radiocarbon date of a.d. 1020 \pm 90 (HAR-5169). Whether these three post-holes belong to one end of a timber building that extends to the W., outside the present excavation, cannot be determined.

Phase 5. The main activity in this final phase consists of the demolition of the defences of *Cledemutha*. The filling of the large ditch (Fig. 5) provides the most obvious evidence. While the ditch remained open a layer of grey silt (51) accumulated in its bottom, and provided a small sample of bones and teeth of cattle and sheep with an uncalibrated radiocarbon date of a.d. 1440 \pm 60 (CAR-239).¹⁷ Some time after this date the clay defensive banks were pushed

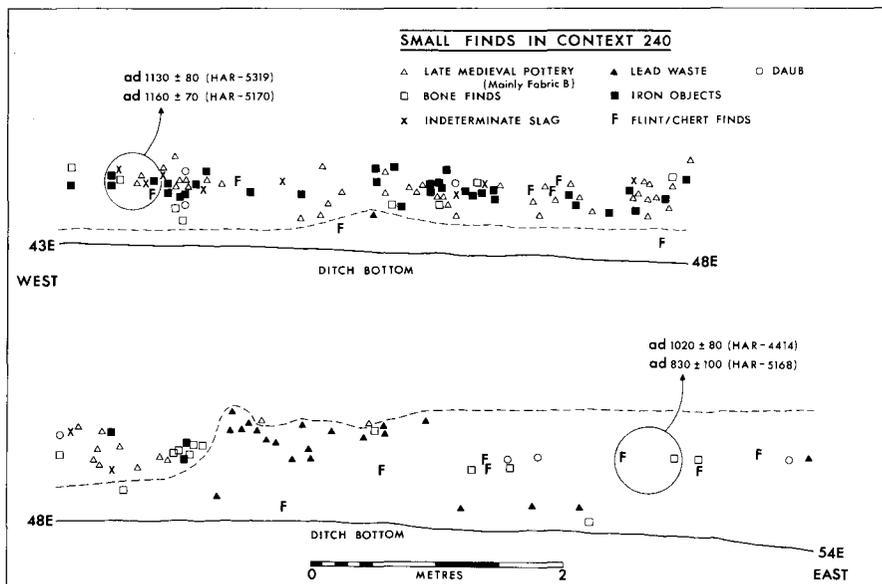


FIG. 4

Distribution of artefacts in context (240) from the 1979-81 excavation projected onto an arbitrary West to East section line along the ditch

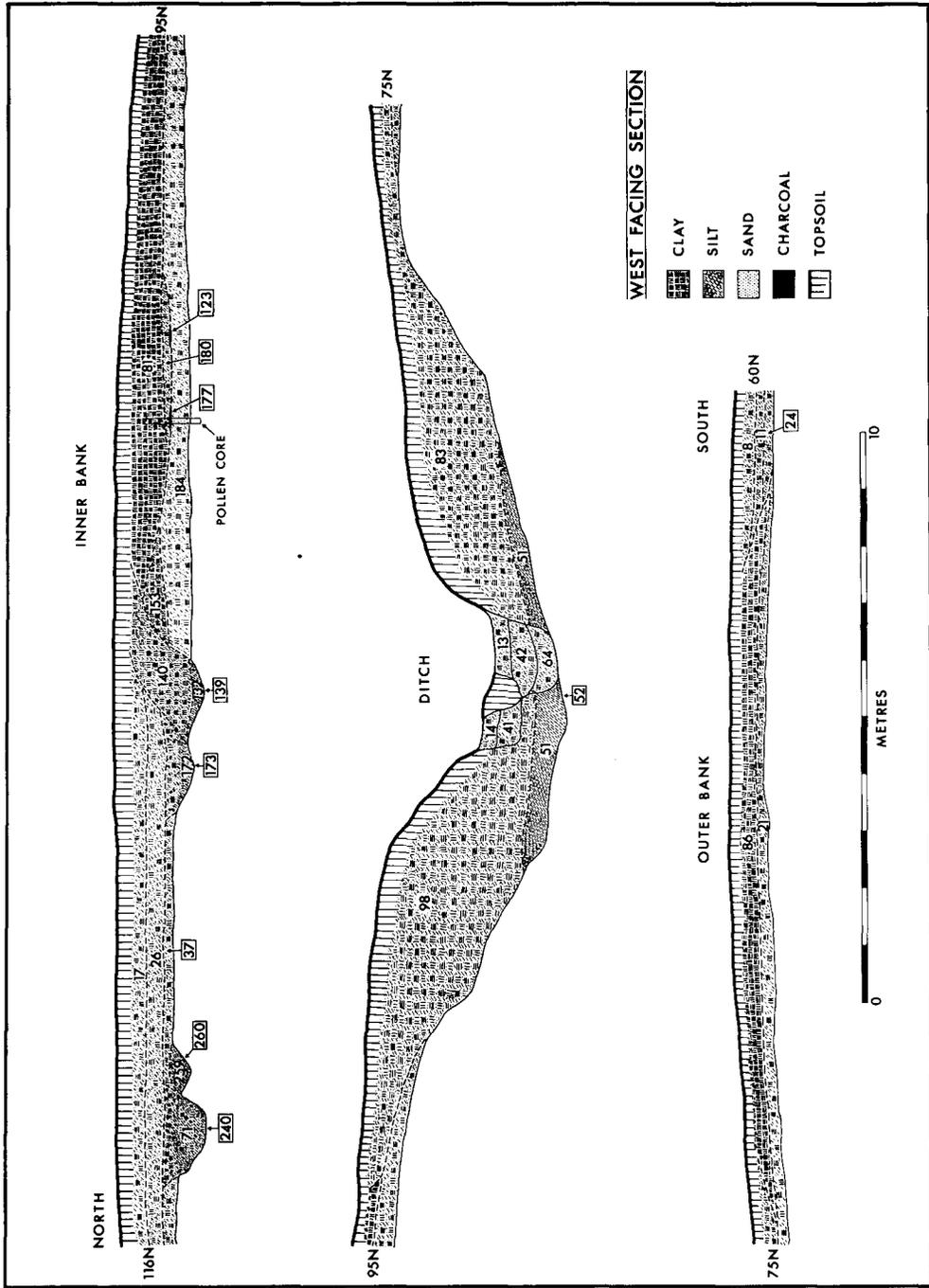


FIG. 5
Section through the defences of CledeMutha 1979-81 excavations

back into the ditch on both sides (98 and 83), leaving a much-reduced ditch in the centre to function probably as a hedgerow ditch. The absence of any stratification and turf or vegetation-recurrence surfaces in the redeposited material suggests that the slighting of the defences was relatively rapid.

To the rear of the inner bank there is considerable evidence of activity. Some of the demolished bank (Fig. 5, 140) was pushed into the interior, burying the marker ditch. A second small drainage ditch (173) was excavated, presumably to remove excess water accumulating behind the slighted bank which still stood proud of the surrounding ground level. Immediately north of this feature a small pit (Fig. 6, 107) and an area of charcoal (109) were located: from the latter were recovered some bones of pig, cow and fish; the quantity of charcoal and burnt clay from the former suggests a function as a cooking-pit or hearth. In the interior of the site were three features apparently related to one another: a slightly curving ditch (240) and two shallow, linear depressions (Fig. 6, 228 and 229). Approximate contemporaneity is hinted at by their spatial juxtaposition in that 229 stops short of 240 and, whatever its function, does not proceed beyond it. Sherds of 13th-/14th-century jugs were found in the fills of both linear features. The ditch (240) contained a relatively substantial quantity of finds (Fig. 4), which included many 13th-/14th-century jug sherds (Fig. 9, 2), a *sestertius* of Julia Mamaea struck in A.D. 230/31, iron artefacts and a scattering of lead waste. During excavation it was apparent that most of the pottery occurred at the W. end of the ditch while the lead waste came from the E. end (Fig. 4), perhaps indicating that this length of the ditch filled up in at least two distinct phases. Radiocarbon dates (see Fig. 4) from either end of the ditch provide some support for this hypothesis. While it could be argued that 240 might have been dug in phase 4, accumulating earlier fills at the E. end and late (phase 5) fills at the W. end, it would appear more prudent to assign it completely to the latter phase.

Interpretation of the phase 5 features is difficult. Perhaps the most reasonable assumption is to link most with either drainage (173, 240) or division (228, 229) of agricultural land; the small cooking-pit (107) and charcoal spread (109) could conceivably be associated with the sustenance requirements of those engaged on the slighting of the defences. All the finds, including pottery, metalwork and tile, either from the features proper or areas between them, fall within the 13th to 16th centuries. Most of these artefacts were probably redeposited in night-soil during the manuring of fields. The tile fragments, and especially the ecclesiastical pin (Fig. 13, 7), suggest that such material may have originated in the nearby Dominican friary which flourished from the mid 13th century until its dissolution in the mid 16th century (Fig. 1).

The present, even appearance of the S. defences of *Cledemutha* and the obliteration of the inner bank on the E. side of the site argues for a comprehensive and planned slighting and against a piecemeal and protracted demolition. Such a project is unlikely to have been initiated by the Dominican friars since they only owned about 10 acres of land,¹⁸ compared with the 75 acres of *Cledemutha*. It is possible that Edward I's workforce might have been responsible, since his castle is situated astride the NW. termination of the defences (Fig. 1).

1982: FEATURES

Excavation on the E. side of *Cledemutha* (Fig. 1) was undertaken in an attempt to locate a putative E. gate to the site. (Further consideration of the likely whereabouts of entrances is given below.) In the event the attempt proved largely unsuccessful. It soon became apparent that the slighting of the inner bank, partial on the S. side, had been total on the east, restricting any chance of pinpointing the gateway to the detecting of negative features cut into the boulder clay. The position of the 1982 excavation was determined by a change in the profile of the filled-in defensive ditch. Immediately to the east of the excavation surface indications of the ditch were

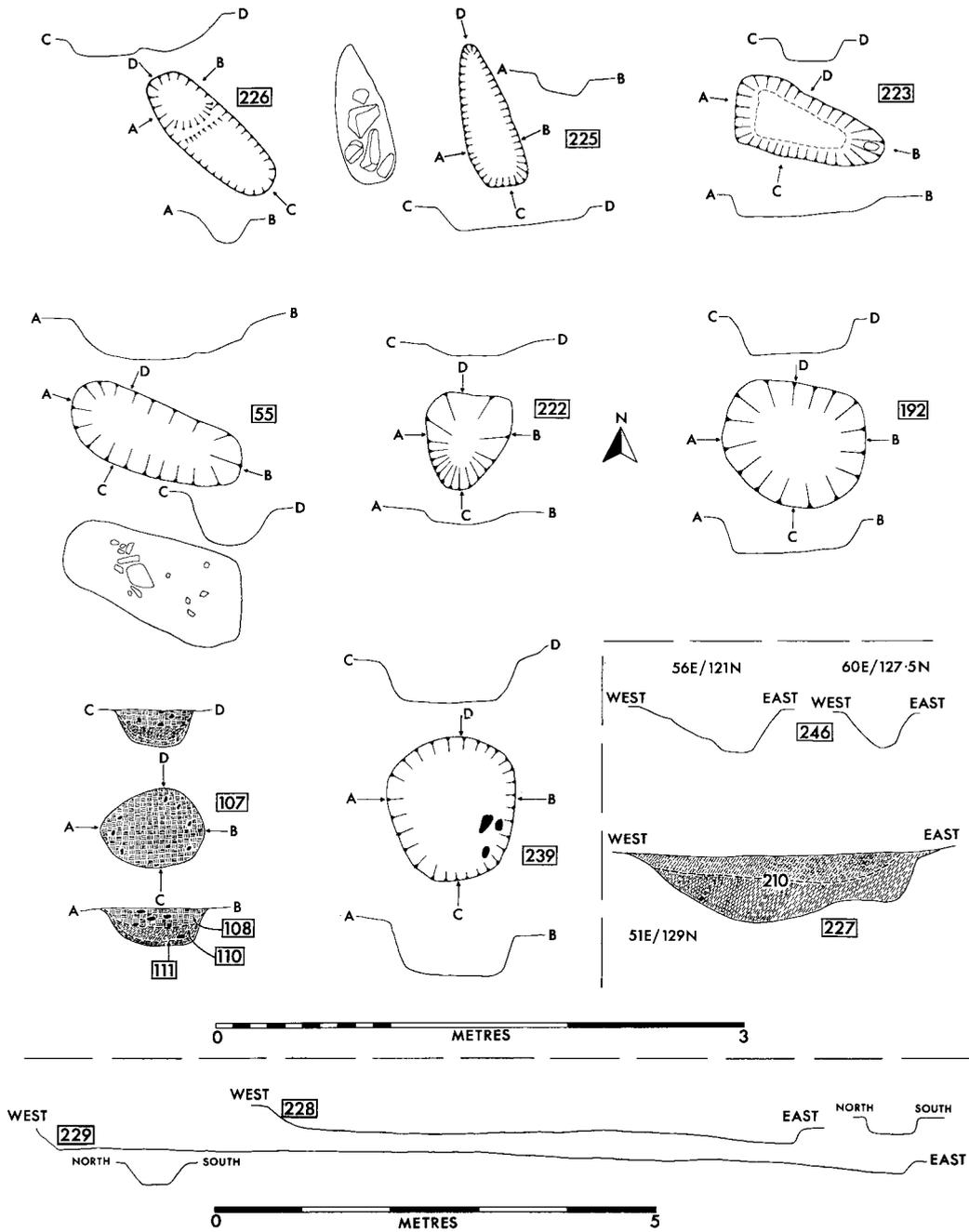


FIG. 6

Plans, profiles and sections of features from the 1979-81 excavations

absent, suggesting a possible causeway, and the outer bank seemed slighter. A series of hand-augered bore-holes was undertaken down the centre-line of the defensive ditch opposite the 1982 excavations on the assumption that a gateway would be marked by a clearly defined undug causeway across the ditch. Although the ditch itself was easily located only inconclusive evidence was forthcoming for a causeway. It was known, however, that a 19th-century croft was situated close to this section of the ditch and any surface anomalies in ditch or counterscarp appearance might be linked with this much later activity.

Excavation produced singularly few features, and none which could be related to one another stratigraphically. They comprised (Fig. 7): a small length of ditch (384); a longer and larger ditch section (292); a square post-hole (338); a rectangular industrial feature (309) and a human inhumation (385).

Feature 384 (Fig. 8) It was filled with a grey, silty deposit that produced fragments of iron slag. In dimensions and filling it resembled some of the narrower lengths of ditch from phase 1 of the 1979–81 excavations.

Feature 292 (Fig. 8) The fill of this feature comprised two distinct deposits: 328 was composed of grey silty sand and was only really in evidence from the S. end of the ditch; 290

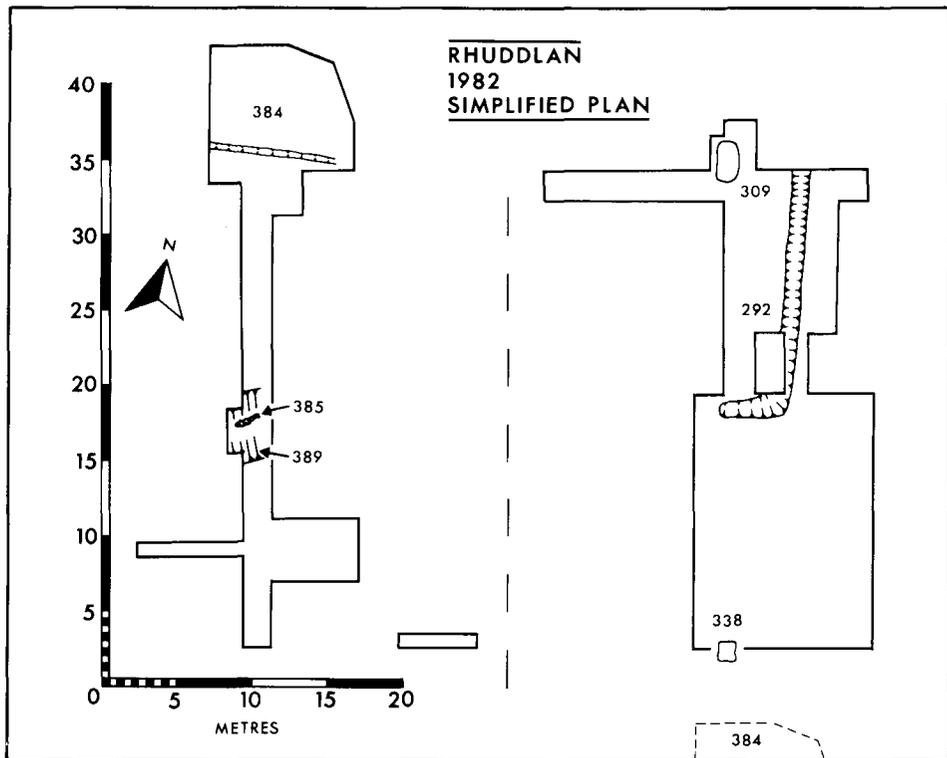


FIG. 7

Location plan of the main features in the 1982 excavations

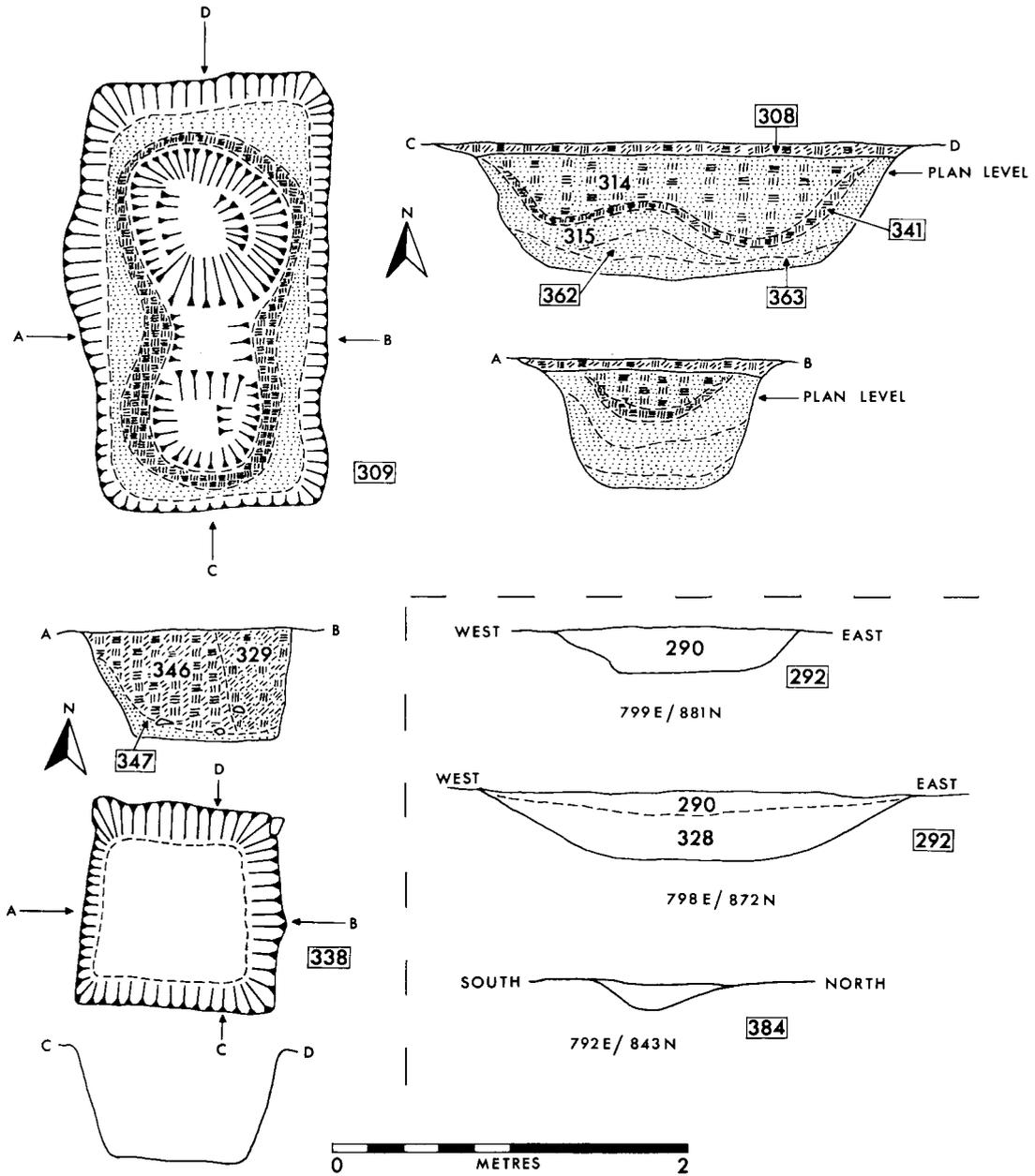


FIG. 8

Plans, profiles and sections of features from the 1982 excavations

was redeposited reddish boulder clay, which either completely filled the feature or lay over 328. From the upper fill came a variety of finds. These included a dozen sherds of 13th-/15th-century jugs, a Roman coin of Constantine I (A.D. 307-37), several iron nails, cow and pig bones, and a large quantity of whelk shells, almost certainly food refuse.

The size and shape of 292, and the nature of the deposits filling it, suggest a comparison with the 'marker ditch' (139) of the earlier excavations. It is possible to speculate, therefore, that 292 might have fulfilled a similar function, marking and draining the rear of the inner bank in phases 3 and 4, and being levelled with red clay in phase 5. Indeed, approximate measurements from the putative centre line of the defensive ditch suggest that 292 is correctly placed for this use. The inturn and termination of 292 at its S. end begs the question of the behaviour of the anticipated inner bank at this point. Did the latter also inturn and terminate, as one half of a possible entrance? There are three obvious obstacles in the way of such a conclusion, however. Firstly, the thoroughness of the slighting has ensured that no vestiges of inner bank remain as supporting evidence. Secondly, no satisfactory negative features (apart from 338) appeared in proximity as candidates for timbers of a gate structure; thirdly, and most significantly, no indication of a reciprocal inturned 'marker ditch' on the S. side of the 1982 excavation was found. (The extent of excavation on the S. side during the 1982 season is shown in Fig. 7. Any surviving 'marker ditch' ought to have been detected.) This last factor weakens the interpretation of 139 and 292 as marker ditches that were dug around the entire perimeter of the built defences.

Feature 338 (Fig. 8) This square post-hole contained three distinct deposits. Washed down from the surface and accumulating at the bottom was a thin layer of grey silt (347), containing fragments of unidentified bone and a few mussel shells. The post-pipe was marked by a sandy clay deposit (329) which included three jug sherds of 13th-/14th-century date and sheep and cow bones. The post-packing comprised a mixed deposit of redeposited boulder clay and grey silt (346). Phase 5 seems the most likely chronological context for the feature.

Feature 309. This was a well-constructed feature (Pl. II, B). A rectangular pit (Fig. 8) was excavated, into the bottom of which were placed layers of clayey sand (315, 362, 363). Two clay-lined depressions (341) were carefully laid out on top of the sand, the N. one being slightly larger and lower. Whatever their function, these depressions were presumably the main *raison d'être* for the feature. The overlying deposits of red clay and sand (314, 308) probably represent deliberate dumping in the rectangular hollow to level off the feature once it was no longer needed.

A small quantity of finds was recovered from 309. 315 produced several sherds of a 13th-/14th-century cooking-pot, several iron nails and two identical iron fittings of uncertain function (one drawn in Fig. 12, 3). In layers 314 and 308 the principal metalwork finds were again several iron nails, associated with pottery of the mid 14th to early 16th centuries. Animal and fish bones were recovered both from under and above the clay-lined depressions (341). A quantity of fuel ash slag (170 g) was found in the uppermost deposit (308). The dating evidence from 309 indicates fairly conclusively that the feature should be assigned to phase 5; its function, however, is problematic. Some sort of industrial use, centring on the two clay-lined depressions and involving the application of heat, seems most likely.

Features 385 and 389. 389 consisted of a shallow hollow or ditch, attaining a maximum depth of 0.35 m, with a sandy clay fill which included five jug sherds of the 13th-/14th centuries. The ditch or hollow may have been excavated to accommodate a single inhumation (385), although it seems excessively wide for this purpose. The skeleton is probably of a female aged between 25 and 35 years and about 1.5 m tall. It is more or less complete but extremely fragmented and there is no indication of any pathological condition which might have caused death. The pottery suggests a 13th-/14th-century burial and it is tempting to link the inhumation with the nearby Dominican friary (Fig. 1). There can be little doubt, however,

that this burial must lie outside and to the east of the friary cemetery. The fact that this is a single inhumation in what appears to be a very shallow grave may suggest that it was a rapid, unauthorized, possibly even clandestine burial placed close to, but deliberately outside, consecrated ground. There is a hint that the wrists of the body were tied at burial, a practice usually associated with the interment of criminals. Such a status for the Rhuddlan skeleton would explain its location.

SPECIALIST REPORTS¹⁹

POTTERY

Roman. Three residual sherds were located in topsoil layers. Four extremely abraded samian sherds were found and reported on by Margaret Ward; three of these came from the fills of phase I ditches: S.G. rim of form Dr. 18 or 18R, — *c.* A.D. 70/80–110; S.G. rim of indeterminate form (Dr. 18 or 27?) — *c.* A.D. 70/80–110 from 246 and a rim of S.G. form Dr. 18R — *c.* A.D. 70–100 from 260. The fourth was from an amorphous deposit of sandy loam (232) lying over the boulder clay: C.G. base of indeterminate form (Dr. 31 or 31R?) — *c.* A.D. 120–200 and probably *c.* A.D. 150/160–200 if the form is indeed Dr. 31 or 31R.

Medieval. By P. COURTNEY

The 1979–81 excavations produced 264 sherds of pottery (discounting new breaks), weighing approximately 1.48 kg and comprising between 137 and 156 vessels. In 1982 a further 211 sherds were obtained, weighing approximately 1.48 kg and comprising between 151 and 185 vessels. The pottery was nearly all composed of small eroded sherds and only one vessel (Fig. 9, 2) had the appearance of being broken on the site or in its vicinity. It seems likely therefore that most of the pottery came onto the site through manuring of the fields but it is uncertain if it derives from the adjacent friary and/or secular settlement. The pottery can be divided into three chronological groups: Roman/Saxo-Norman, 13th/14th century, and late medieval. This is mirrored to some extent in the stratigraphy but as most of the pottery is so clearly residual it is mainly treated below as a single group.

Roman/Saxo-Norman Pottery

Fabric A. Hard, sandy fabric (quartz up to 0.5 mm). Buff colour, black in core and on exterior, unglazed and wheel-thrown.

13th/14th Centuries

Fabric B. Soft to hard, oxidized orange to red, sandy fabrics with rounded quartz inclusions up to 0.5 mm. Rough to feel with finely irregular fracture. Mostly lead-glazed with pitting of surface common.

Fabric C. Soft to hard, rounded quartz inclusions up to 0.5 mm, partly reduced or re-oxidized on cooling to produce 'sandwich' colour effects.²⁰ Also includes one wholly reduced rim fragment (Fig. 9, 6). Rough to feel with finely irregular fracture. Mostly lead-glazed with pitting common.

Fabric D. Soft to hard, 'sandwich'-coloured wares. Little or no sand in fabric giving a smooth feel and smooth fracture. Mostly lead-glazed with pitting common.

Late Medieval

Fabric E. Hard, white or pink wares with rounded quartz inclusions up to 0.5 mm. Rough to feel with finely irregular fracture. Sherds often possess a dark coloured or red skin on one or both surfaces, probably the result of an oxidizing chemical reaction rather than from the application of a slip. Patchy lead glazes, generally dark green or brown, on some sherds.

Fabric F. As Fabric E but reduced, giving a grey fabric and very dark glazes. Sometimes unglazed but most sherds possess an even glaze on both surfaces.

Fabric G. Very hard, highly fired with granular texture, and with rounded quartz inclusions up to 0.5 mm. Irregular fracture. Represented by a single vessel (Fig. 10, 29).

TABLE 1
SUMMARY OF MINIMUM VESSELS (SHERD NUMBERS IN BRACKETS)

<i>Fabric</i>	1979-81		1982		<i>All Years</i>
	<i>Phase 1-5</i>	<i>Phase 6</i>	<i>Phase 1-5</i>	<i>Phase 6</i>	
A	1(2)	—	—	—	1(2)
B	8(102)	5(6)	7(9)	13(20)	33(137)
C	16(17)	22(22)	29(36)	34(56)	101(131)
D	9(12)	9(10)	10(11)	18(23)	46(56)
E	19(24)	38(56)	15(15)	19(28)	91(123)
F	3(3)	7(10)	1(1)	4(4)	15(18)
G	—	—	1(8)	—	1(8)
<i>Totals</i>	56(160)	81(104)	63(80)	88(131)	288(475)
<i>Weight</i>	0.64 kg	0.84 kg	0.58 kg	0.90 kg	2.96 kg

Discussion

A rim of a jar in Fabric A was found in a residual context (Fig. 9, 1)²¹ and bears some resemblance to Chester Ware in fabric, although the form is unparalleled there.²² It must remain uncertain whether this sherd is Romano-British or Saxo-Norman.

Fabrics B, C and D belong to the Cheshire tradition of the 13th and 14th centuries. They are most likely to be of local manufacture although the import of some Chester-produced vessels by sea is a possibility. A kiln excavated inside the Norman defences of Rhuddlan was tentatively dated to the Henrician occupation of the town (1241-63).²³ None of the material from the current excavation, however, seems to parallel the kiln products.

The Rhuddlan pottery was very fragmented and eroded but must be almost entirely composed of jugs — a common Cheshire feature.²⁴ Only one cooking-pot (Fig. 9, 5) was positively identified while Fig. 9, 9 is probably a glazed jar. Five strap handles were recognized, with stabbed and/or applied thumb strips. Eight jugs had applied vertical strips, either rouletted or thumbbed, and sometimes coloured brown with an iron compound. Three jugs had thumbbed bases and a further four examples were plain.

The later medieval wares present a much wider variety of forms, although their fragmentary nature makes reconstruction of these forms difficult. Fabrics E and F have close parallels among the Ewloe wasters, 18 miles to the east.²⁵ Excavations in Chester suggest that the white wares probably have a date range from the mid 14th to the early 16th centuries, although exact dating evidence is lacking.²⁶

Jugs, including a number of narrow 'bottle' forms, and bowls or storage vessels are probably made in Fabric E. Fabric F is probably composed of storage vessels or similar forms. One vessel clearly shows that it is a reduced version of Fabric E. Only one vessel is represented by Fabric G which has the unusual feature of thumbing under the base (Fig. 10, 29).

Catalogue (See Figs. 9 and 10)

Drawing conventions. Unglazed and slipped surfaces represented by dots, broken edges by heavier dots.

Fig. 9

Fabric A

1. Rim of cooking-pot (two sherds). Hard, sandy fabric (quartz up to 0.5 mm). Buff colour, black in core and on exterior, unglazed and wheel thrown. (From 27 — 1979–81 Phase 5. Equivalent to 17 on Fig. 5.)²⁷

Fabric B

2. Jug, soft orange fabric, thin glossy yellow and green glaze. Unusual base form for region. (From 233 — 1979–81 Phase 5. Fill of ditch 240.)
3. Rim of jug, yellow-brown pitted glaze. (From 369 — 1982 Phase 5.)

Fabric C

4. Rim of jug, pitted brown and green glaze. (From 202 — 1979–81 Phase 6.)
5. Rim of cooking-pot, unglazed, fine glistening quartz in fabric. (From 315 — 1982 Phase 5. Fill of pit 309. Also sherds from 304, 314(2),²⁸ 308 and 294(2): total of seven sherds.)
6. Rim of jug, reduced grey fabric with glossy, pitted green glaze. (From 314 — 1982 Phase 5. Fill of pit 309.)
7. Unglazed rim, buff fabric with black core, uncertain form. (From 201 — 1979–81 Phase 6.)
8. Body sherd (? jug). Incised decoration and pitted yellow-green glaze. (From 279 — 1979–81 Phase 6.)
9. Rim (? jar), 3 sherds, pitted brown and green glaze. (From 351 — 1982 Phase 5.)
10. Jug handle, pitted green glaze. (From 279 — 1982 Phase 6.)
11. Jug handle, pitted green glaze. (From 279 — 1982 Phase 6.)
12. Jug handle, no glaze, but worn. (From 233 — 1971–81 Phase 5.)
13. Jug handle, no glaze. (From 279 — 1982 Phase 6.)

Fabric D

14. Jug rim and handle stub, pitted yellow brown glaze. (From 201 — 1979–81 Phase 6.)
15. Jug handle, pitted green glaze. (From 201 — 1979–81 Phase 6.)

Fabric E

16. Base (? form), brown exterior surface and patchy green glaze on interior and exterior. (From 201 — 1979–81 Phase 6.)
17. Base of 'bottle' jug, brown surface and patchy green glaze on exterior. (From 200 — 1979–81 Phase 6.)
18. Rim of bowl, red surface on interior. (From 305 — 1982 Phase 4.)
19. Base (? form), brown surface and patchy dark green glaze on interior and exterior. (From 202 — 1979–81 Phase 6.)
20. Jug rim, worn brown surface on exterior. (From 294 — 1982 Phase 5.)

Fig. 10

21. Jug or jar rim, brown surface on interior and exterior. (From 294 — 1982 Phase 5.)
22. Jug base, green glaze and brown surface on interior and exterior. (From 206 — 1979–81 Phase 6.)
23. Body sherd with rouletted decoration, buff/red surface on interior and exterior. (From 308 — 1982 Phase 5. Fill of pit 309.)
24. Rim of jug, brown/orange surface on interior and exterior. (From 201 — 1979–81 Phase 6.)
25. Base (? form), minute traces of green glaze on exterior. (From 203 — 1979–81 Phase 5.)

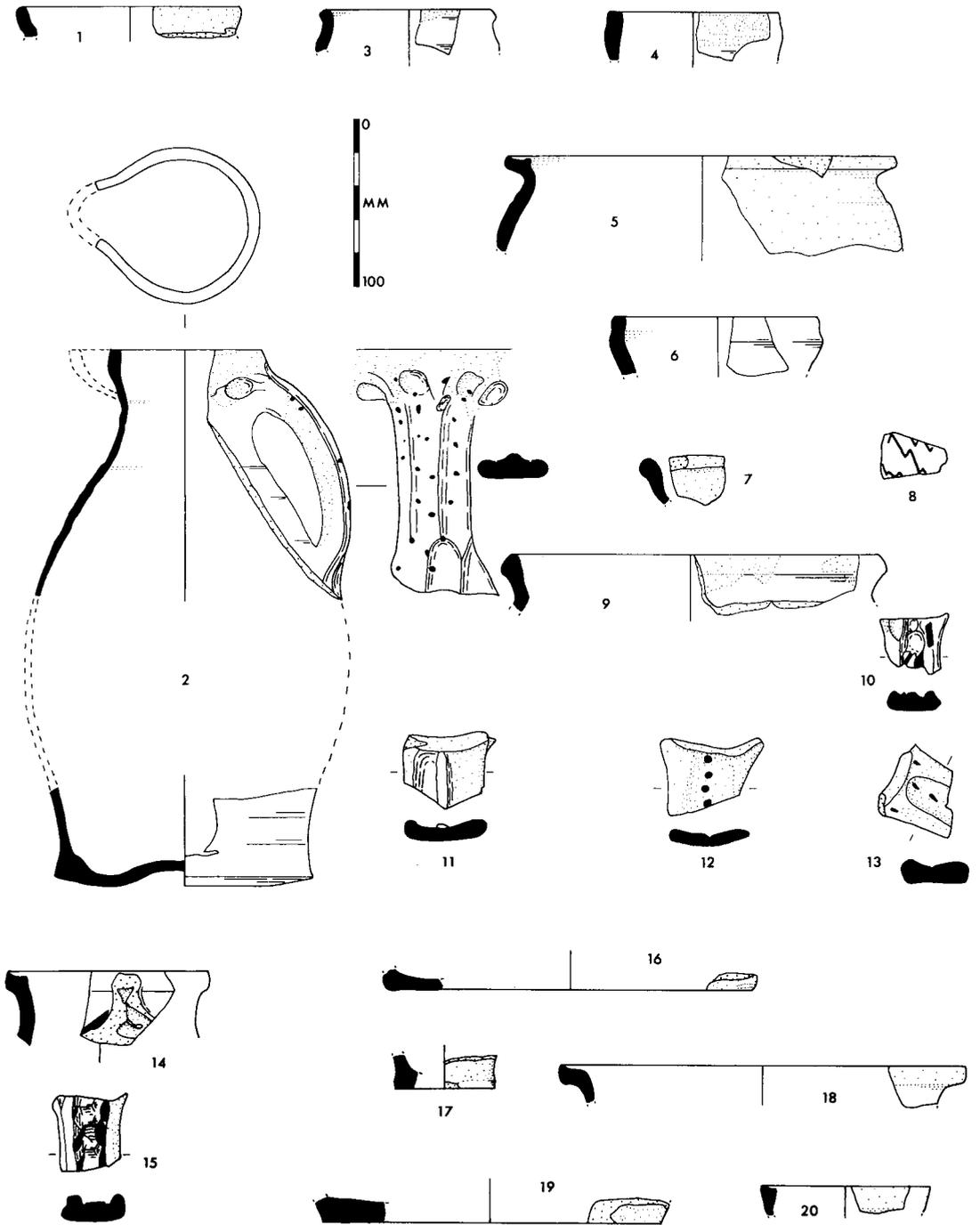


FIG. 9
Pottery. Scale 1:4

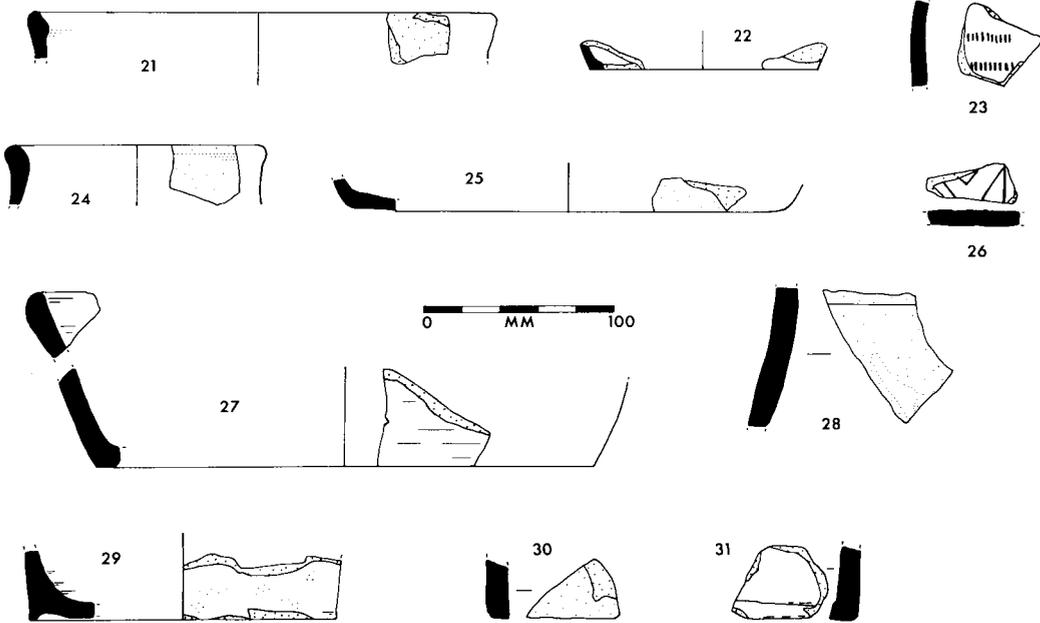


FIG. 10

Pottery and roofing tile. Scale 1:4

26. Flattish sherd with incised decoration and green glaze on upper surface. (From 201 — 1979–81 Phase 6.)
27. Base and rim (four sherds) of bowl. Hard buff/pink fabric, purple surface and patchy dark green glaze on interior and exterior. (From 201 — 1979–81 Phase 6.)

Fabric F

28. Body sherd of large storage vessel. Patch of dark green glaze and incised line on exterior. (From 202 — 1979–81 Phase 6.)

Fabric G

29. Base of jug (11 sherds, 4 from 290 and 7 from 358). Patchy green glaze on exterior. (From 290 — 1982 Phase 5; fill of 'marker ditch' 292.)

TILE

Roofing tile. By P. COURTNEY

Nine sherds, all apparently from separate roof-tiles, were found in Fabric E. They included one example from a ridge-tile (not illustrated). The tiles can be distinguished from other vessels in Fabric E by their roughened but unsanded lower surfaces. Late medieval parallels are known from Hen Blas, near Flint.²⁹ One further example of a flanged tile, in Fabric F, possibly from a flat roof-tile, was also found (Fig. 10, 31). All the roof-tiles came from the 1979–81 excavation and were from residual contexts.

Catalogue (See Fig. 10)

30. Edge of tile in fabric E. Brown slip on both sides. (From 203 — 1979–81 Phase 5.)
31. Edge of flanged tiled in fabric F. Dark green glaze on upper surface. (From 202 — 1979–81 Phase 6.)

Floor-Tile. By P. COURTNEY

A large number of worn and residual floor tile fragments was recovered from the excavations, mainly from the 1979–81 excavation. They probably derive from the demolition of the friary and the subsequent dispersal of its smashed flooring tiles, possibly through manuring. Four designs, all executed in the line-impressed technique, are represented (Fig. 11, 1–4); all are widely paralleled by products of the Chester school found on monastic and ecclesiastical sites in Cheshire and N. Wales. Their 14th-century dating has been confirmed by recent excavations at Norton Priory in Cheshire.³⁰ It was not practical to estimate minimum numbers of tiles because of their fragmentary state, but recognizable fragments of designs 1 to 4 occur in the following ratio: 21 : 11 : 22 : 21.

Fabric A

Sandy fabric, highly fired, brick red to buff in colour, very hard. Glazes are mostly dark green to brown but occasionally yellow.

1979–81 53 fragments (1.946 kg); 1982 3 fragments (60 g); All years 56 fragments (2.006 kg)

Fabric B

Sandy fabric, less highly fired than A, orange in colour, soft to hard. Glazes are mostly yellow but occasionally green to brown.

1979–81 73 fragments (1.402 kg); 1982 1 fragment (94 g); All years 74 fragments (1.496 kg)

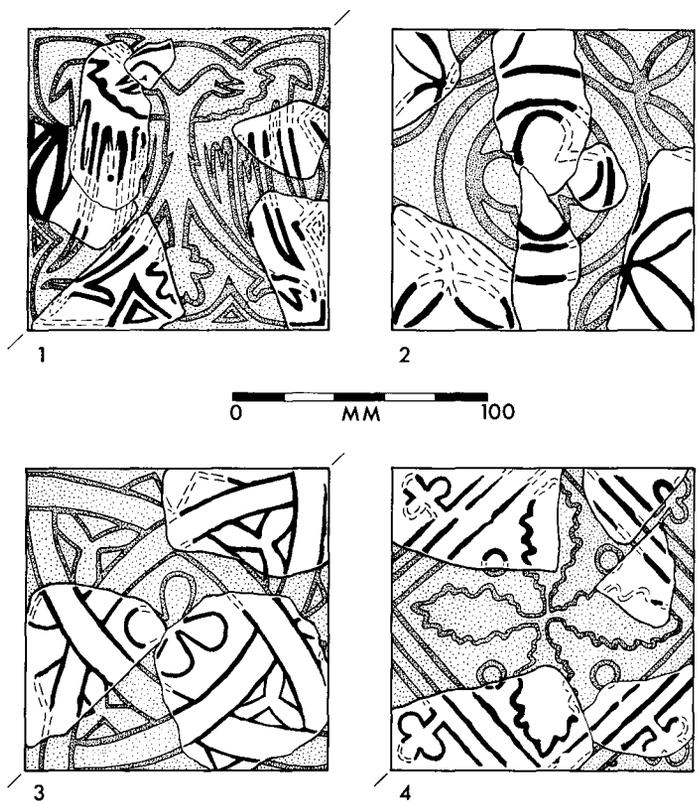


FIG. 11

Floor-tiles. Dashed lines indicate absence of glaze on remaining piece. Scale 1 : 3

The two 'fabric' types probably only reflect differences in firing temperature and may, therefore, not be different fabrics at all. Most examples possess an all-over white slip beneath a lead glaze, on their upper surface, although a few examples, in either fabric, had no slip. All the tiles are straight-edged and a few are cut in half along the diagonal to form triangular tiles. In total 130 fragments weighing 3.50 kg were recovered. Based on examples in the National Museum of Wales from sites in N. Wales, a complete tile probably weighed about 800 g.

METALWORK. *By* P. COURTNEY

Most of the ironwork was composed of unidentifiable fragments or nails. A minimum of 77 nails was recognized, with concentrations from three phase 5 features: 1979-81, upper fill of internal ditch (240), fifteen nails; 1982 upper fill of marker ditch (292), eleven nails and the industrial feature (309), 24 nails.

Illustrated Finds (Fig. 12)

1. Complete horseshoe in three fragments, with countersunk nail holes. This type of horseshoe could date from the Roman period to the 13th century. It was found in a deposit which also produced two sherds of mid 14th- to early 16th-century pottery (fabrics B and E). Drawn from X-ray. SF315, 213.
2. Arrowhead with leaf-shaped blade and cleft socket.³¹ Context produced an uncalibrated radio-carbon date of a.d. 950 ± 80 (HAR-4415). SF143 (National Museum of Wales Lab. No. 81-1101), 178 — small fire underneath inner bank (81).
3. Two identical iron fittings of uncertain function, both in fragments. One example drawn from X-ray. SF882, 315. Fill of industrial feature (309).
4. A much corroded part of a knife or small sickle blade. SF195 (National Museum of Wales Lab. No. 81-1101), 154 — deposit sealed by inner bank (81).
5. P. OTTAWAY writes: Probably a link from the mouthpiece of a snaffle bit. At one end it has a rounded closed loop and at the other an open loop, formed by curving over the end of the shank, in a plane at 90 degrees to that of the closed loop. Three thin strips with looped tips at each end lie along the shank of the link and two others have been wrapped around it at the base of the end-loops. These strips are affixed by means of copper-alloy brazing metal which also covers the rest of the object. This would have served both to inhibit corrosion and create a decorative effect.

The applied strips would seem, at first sight, to be an unnecessary refinement for a mouthpiece and so another possibility is that it was a link between the cheekpiece, usually a ring, and the bridge straps, in which case it would have been worn alongside the horse's head and displayed to view. Such links as are known are almost exclusively from 10th-/12th-century contexts, although there are none which closely resemble this one.

Since there are no direct parallels among mouthpiece links either, dating is difficult. The basic form is relatively undiagnostic although the presence of an end-loop which has been welded into a completely closed form is most unusual. Non-ferrous plating of bits is again unusual and is more common before c. 1200 than after it, but the metal employed is usually tin. Punched, incised, relief or applied decoration of bits appears to be almost unknown on iron snaffle-bits of the 12th century and later and so the presence of the applied strips is perhaps the most important factor arguing for either a late Saxon or immediate post-Norman Conquest date. Decorative strips applied with brazing metal can, however, be seen on locks throughout the medieval period. Strips very reminiscent of those with rolled terminals occur, for example, on a padlock of late 9th-century date from 16-22 Coppergate, York, but also on another from London which may be as late as the 13th century.

One reason for a lack of comparanda may be that decorative horse equipment, at least until the 12th century, was manufactured in distinct regional styles. This may be argued for bits of late 9th- to 11th-century date from Thetford, Norfolk and for spurs of similar date from York. Unfortunately there is virtually no horse or riding equipment known of either pre- or immediate post-Norman Conquest date from North Wales.³² SF194 (National Museum of Wales Lab. No. 81-1101), 154 — deposit sealed by inner bank (81).

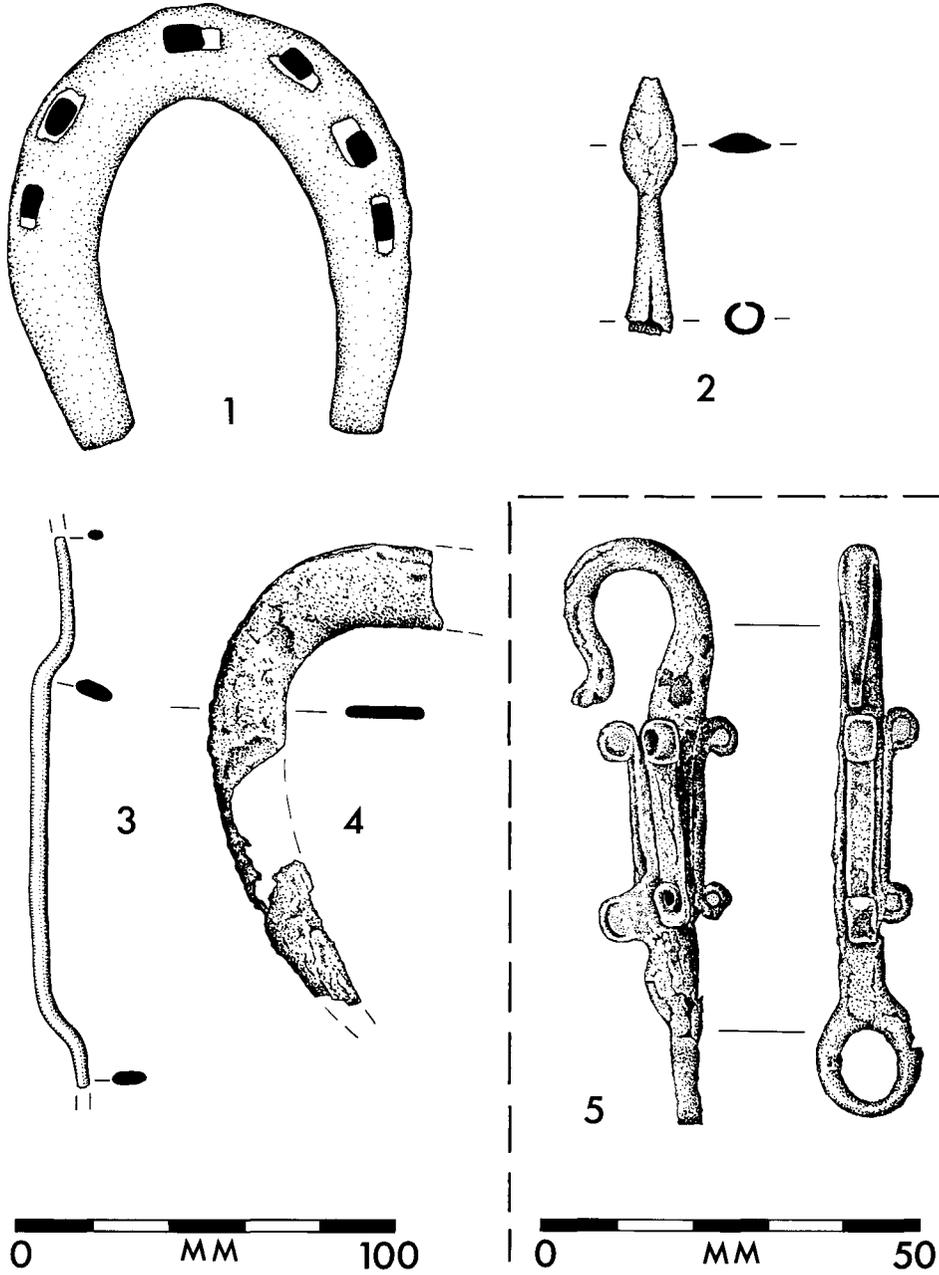


FIG. 12
Iron objects. Scales as shown

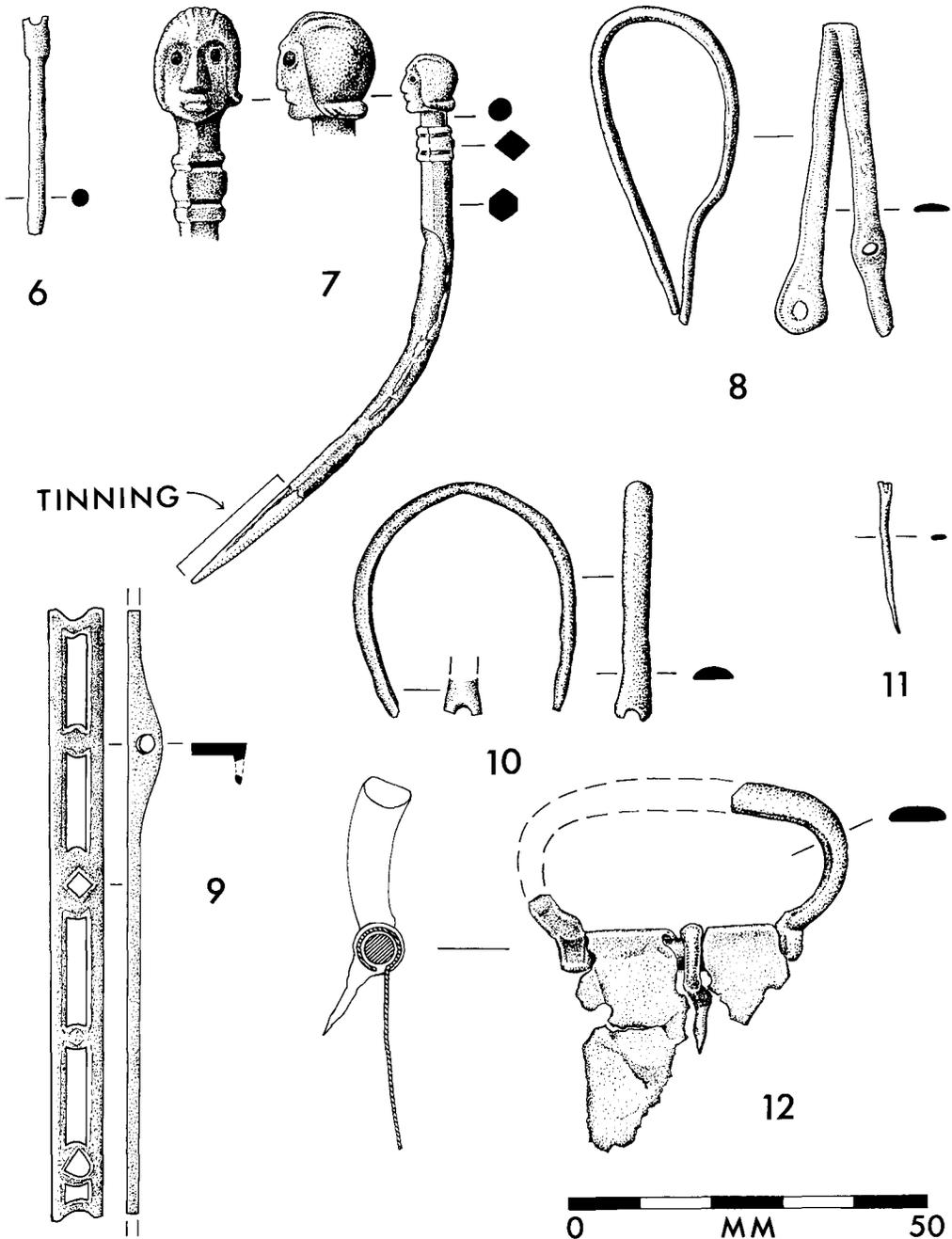


FIG. 13
Copper-alloy objects. Scale 1 : 1

Copper-Alloy Finds (Fig. 13)

All from extensive, unstratified deposits except No. 8.

6. Heavy needle, broken, 30 mm long. Probably Roman.³³ SF351, 203.
7. J. M. LEWIS writes: Copper-alloy pin 90 mm long by 7 mm in max. diameter. The shaft is hexagonal in section for most of its length, tapering to a sharp point, 19 mm of the tip being tinned. The head takes the form of a coiffed head above a square, triple moulding. The pattern of corrosion is interesting, being confined to the middle of the shaft, the transition from uncorroded to corroded metal being abrupt. The fashion of dress depicted points to a date in the second half of the 13th century.
The only parallels noted are two pins in the Museum of London, whose heads are in the form of crowned heads and whose sizes are comparable. Comparison is there made to pins 'often depicted on medieval ecclesiastical vestments'.³⁴ The degree of corrosion on this pin suggests contact over a long period with some corrosive element, and it is possible that it might have come from a burial. SF351 (National Museum of Wales Lab. No. 81-1185), 203.
8. Length of binding with two holes for attachment pins, c. 105 mm in length. SF817, 308 — fill of industrial feature (309).
9. Openwork binding, probably from the angle of a chest with hole for an attachment pin on the flange; c. 80 mm long. Medieval. SF1000, 279.
10. Length of binding, very similar to SF817, c. 83 mm long. Medieval. SF721, 294.
11. Needle, broken, c. 23 mm long. SF621, 279.
12. Buckle from belt end, with part of pin and belt-plate. 14th-century type.³⁵ SF611, 279.
13. J. WEBSTER writes: A heavy-hinged T-shaped brooch (Fig. 14.13). The bow is wide at the head and tapers towards the foot. The upper bow and the leg are out of alignment but this is original. In profile the bow describes a reverse curve. The brooch was probably manufactured in a one-piece mould.

The brooch cannot be dated from its findspot but its closest affinities are with brooches of the first century A.D. It has the weight and almost the size of some Colchester A brooches;³⁶ one from Richborough is closely similar in all save its spring arrangement.³⁷ Hull notes that the Richborough brooch is a continental form of the Colchester A type, which was chiefly native despite its occasional

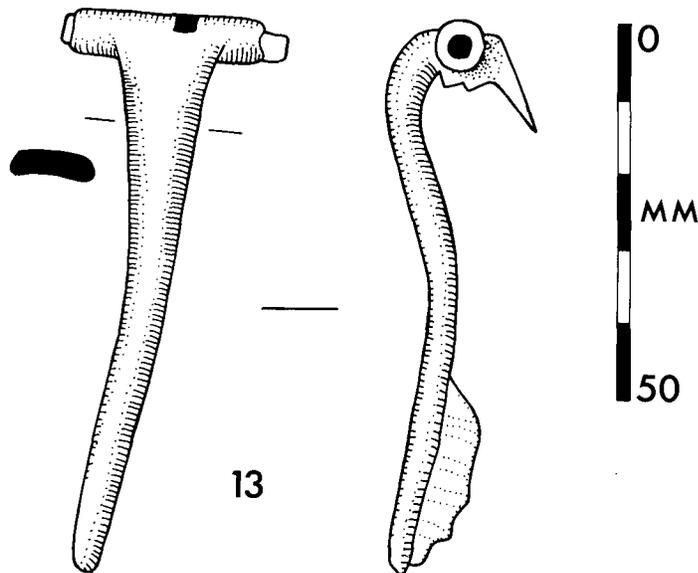


FIG. 14
Copper-alloy brooch. Scale 1 : 1

occurrence on military sites.³⁸ Certainly its distribution was mainly confined to the South-East. SF695, 294.

Coins

1. A much worn *sestertius* of Julia Mamaea.³⁹ This coin was doubtless in circulation in the later 3rd century although struck in *c.* A.D. 230/1. From a residual context in the top of ditch (240). (This note by the National Museum of Wales).

2. A Roman coin of AE Constantine I, A.D. 307–37. OB. IMP CONSTANTIVS AVG. Radiate head right type 1C. REV. GENIO POP ROM. Genius with modius stg L. loins draped with himation, patera in r. hand, cornucopiae in exergue PLN. LONDON MINT.⁴⁰ From a residual context in the upper fill of 'marker ditch' (292). (This note by S. LLOYD FERN.)

3. A silver longcross cut halfpenny, Lawrence Type 3b.⁴¹ Minted in London by Nicholas of St Albans, 1248–50. Weight 0.57 g. (9 grains). Slight wear. Die Axis 12°. OB (HEN) RICVS RE (XIII). Lower part of broad head without sceptre.

REV. (NIC)OLE ON (LVND). Voided longcross with three pellets in each angle.

The slight wear and low denomination of this coin suggest that it was most likely to have been lost before the Welsh capture of Rhuddlan in 1263; but, as usual, no certainty can be expressed on loss dates. From an unstratified context in the 1982 excavations.

Slag and lead waste

A total of 24 pieces of lead waste, weighing 174 g, was recovered from the 1979–81 excavations; the majority came from the filling of ditch 240 (Fig. 4), and comprise small amorphous lumps from the melting of lead. In addition two small pieces of rolled lead sheet were located in unstratified contexts, respectively 1.0 and 1.5 mm in thickness. These finds probably represent the waste from roofing or plumbing on the nearby friary (Fig. 1) and probably arrived on the site through manuring.

Slags were only noted from the 1982 excavation. Iron tap slag: three worn fragments of bloomery tap slag, weighing 7 g, were found in 369, a deposit immediately adjacent to and probably contemporary with 290, the upper fill (during phase 5), of the putative 'marker ditch'. These could represent iron working of any date from the Iron Age onwards, and not necessarily in the vicinity of the site. Fuel ash slag: phase 5 deposits (294) and the industrial feature (308) produced 101 g and 170 g respectively of fuel ash slag. This type of slag results from the reaction between the fuel, usually charcoal, and the silicates in the clay lining of a hearth.

ANIMAL BONES. *By* P. ROWLEY-CONWY

One hundred and sixty-one identifiable animal bones were recovered during the 1971–81 excavations. Preservation was moderately good, so that Rhuddlan has the potential for producing a much larger, statistically useful sample at a future date. Bones were recovered from all six phases distinguished during excavation, but most unfortunately came from phases 5 and 6. The first four phases produced only nineteen identified bones. The list of species contains no particular surprises. The small numbers of bones involved make it impossible to draw any conclusions regarding changes in the proportions of the animal species. Any observed variations are likely to be due to chance.

Phase 1 (perhaps of Romano-British date) produced only two fragments of cattle teeth, recovered from one of the ditches (260). Several of the phase 2 fireplaces produced fragments of burnt bone, unidentifiable except for fragments of a left scapula and left humerus of pig, from fireplace 178. If the fireplaces were cooking areas, then at least one of the meals included pork. Some fragments of burnt bone were also found between the fires, as were some unburnt fragments of cow and horse bones.

From the marker bank of phase 3 came a fragment of cow, as well as a part of a dog radius, the only definite medieval evidence of dog from Rhuddlan.

Phase 4, the period of construction of the defences, yielded only five identified fragments. These were isolated finds in the defensive banks and ditch.

Most of the bones from phase 5 (the demolition of the defences in the late medieval period) come from the fill of the ditches (240 and 52). The cooking-pit (107) inside the inner bank contained a few fragments of pig and cattle bones and an unidentified fish vertebra. Fourteen horse teeth, all maxillary, came from the inner ditch (240); they apparently derived from a single skull, aged between three and four years by Levine's technique.⁴²

A total of 68 identified bones was found during the 1982 excavations; 52 of these came from phase 5 (late medieval).

The five pre-Saxon bones from phase 1 were all of cow and sheep/goat. A right jaw of cow came from an adult animal, while a lower left M₃ of sheep or goat was unworn, suggesting an age for the animal of around 18–24 months.⁴²

The bones from phase 4 all come from species found in the excavations of earlier years, with the exception of two which derive from rook or crow.

The greatest number of bones came from phase 5 especially from the upper filling (290) of the marker ditch and the industrial feature (309). Species representation is similar to that from the earlier excavations, with two interesting exceptions. One is the presence of a calcaneum of a fallow deer (length 82.5 mm). This is the first find of any deer from the Rhuddlan excavations. The other is the presence of a few bones of cod, ling, herring and wrasse. It would have been surprising if Rhuddlan had not made considerable use of the sea throughout the period of settlement, and this is reflected in the bones. The deer and fish bones in this phase serve to emphasize that the food eaten by the inhabitants of Rhuddlan did not just derive from animal husbandry.

A more detailed report, including identifications, tabulations, etc., is held in the excavation archive.

HUMAN SKELETON. *By* S. BROWNE

The skeleton forms context 385 and its position is indicated on Fig. 7. It was presumably a 13th-/14th-century burial in some way connected with the nearby Dominican friary, as has been argued above.

The burial is probably of a female aged between 25 and 35 years and about 1.5 m tall. The skeleton is more or less complete but extremely fragmented and there is no indication of any pathological condition which might have caused death.

Sexual determination of such a fragmentary skeleton is not easy since most of the diagnostic features are incomplete or absent. All the long bones are very small and gracile, although the (damaged) distal femoral condyles appear expanded and the linear aspera is moderately pronounced. The pelvis is too fragmentary to assess for sexual determination and the skull has not been reconstructed since it is evident that some of the fragmentation is not recent and the edges of the cranial fragments are abraded and cannot be reassembled satisfactorily. In their unreconstructed state the fragments indicate that the supra-orbital region is modest and the margin of the orbits is sharp, the occipital is rounded and shows no nuchal crest, and the mastoid processes are medium-sized. The palate is narrow and the mandible has a narrow ramus and inward-flaring gonial region, although the coronoid process is moderately well-developed. These characters suggest that the skeleton is more likely to be a female than a male.

The age assigned to the skeleton is based on the degree of dental attrition⁴⁴ and is confirmed by the completed epiphyseal union in all long bones and the iliac rim of the pelvis. The cranial sutures are open apart from one small section, but the timing of cranial suture closure is very variable and an unreliable indicator of age.

The few measurements which could be obtained are held in the excavation archive and stature is calculated according to the regression equations of Trotter and Gleser.⁴⁵

Very slight cribra orbitalia and moderate enamel hypoplasia on the maxillary and mandibular incisors indicate phases of infection or malnutrition during childhood.⁴⁶ Both upper first molars were lost some time before death and there are signs of periodontal disease in the region of the upper premolars, especially on the left side, and a small interproximal caries cavity in both upper second premolars. Slight alveolar recession has occurred and there are small supra-gingival calculus deposits, particularly on the lower teeth. Both upper third molars and the right lower third molar are either congenitally absent or were lost some time before death — this could be investigated radiographically.

No age-related skeletal changes were noted, nor were any discontinuous, non-metrical characters observed. Metrical data are held in the excavation archive.

RADIOCARBON DATES

(supplied by Q. DRESSER, University College, Cardiff;
R. L. OTLET and A. J. WALKER, A.E.R.E. Harwell)

The fifteen radiocarbon dates obtained from the 1979–81 excavations are listed in Table 2.

TABLE 2. RADIOCARBON DATES FROM RHUDDLAN (1979–81)

Laboratory Reference	Date a.d.	Context Number	Context Description
HAR-4415	950 ± 80	178	Fire beneath defences (phase 2)
HAR-4416	860 ± 110	199	Fire beneath defences (phase 2)
HAR-4417	880 ± 80	198	Fire beneath defences (phase 2)
HAR-4418	840 ± 90	177	Fire beneath defences (phase 2)
HAR-4419	1190 ± 80	151	Fire beneath defences (phase 2)
HAR-5029	1100 ± 70	151	Fire beneath defences (phase 2)
HAR-4420	890 ± 70	140	Fire beneath defences (phase 2)
CAR-240	790 ± 60	40	Fire beneath defences (phase 2)
CAR-241	795 ± 60	40	Fire beneath defences (phase 2)
HAR-4414	1020 ± 80	240	Ditch behind defences (phase 5)
HAR-5168	830 ± 100	240	Ditch behind defences (phase 5)
HAR-5319	1130 ± 80	240	Ditch behind defences (phase 5)
HAR-5170	1160 ± 70	240	Ditch behind defences (phase 5)
HAR-5169	1020 ± 90	239	Post-hole (phase 4)
CAR-239	1440 ± 60	51	Basal fill of defensive ditch (phase 5)

All of the dates were obtained from charcoal samples, except CAR-239 (from some bones and teeth of *Bos* and *Ovis* identified by B. Noddle). Charcoal identifications were kindly provided by C. Keepax (except for CAR-240 and -241 by G. Hillman). The most common species were oak and hazel/alder. Details can be obtained from the excavation archive.

The first nine dates from Table 2, those from the phase 2 fires sealed by the defences, provide a *terminus post quem* for the latter's construction, although, as usual, an undetermined period of time must have elapsed between the abandonment of the fires and the building of the defences. In the almost complete absence of pre-Norman Conquest artefacts, therefore, the attribution of the earthworks to *Cledemutha* stands or falls on the discussion of these dates. For that reason the reader is recommended to consult another publication⁴⁷ where Dr Otlet and Ms Walker argue their case in full; only the result is presented here. Their analysis concluded that HAR-4419 and -5029 were erroneous since these two, from a single fire, did not statistically 'fit' with the other seven. The other seven dates were combined into one uncalibrated date a.d. 870 ± 35. Combining the dates from the fires was undertaken on the assumption that the fires were more or less contemporary. The final date of A.D. 955 ± 35 is consistent with the hypothesis of the fires being buried by the earthwork defences of *Cledemutha* in A.D. 921.

The significance of the remaining radiocarbon dates has already been commented upon above. The four dates from the fill of the interior ditch (Fig. 4) and their relationship to the artefacts from that feature have been taken, with qualification, to indicate phase 5 activity.

The single date from post-hole (239) may suggest some phase 4 features in the interior of the site perhaps contemporary with the defences. The single date from the primary silts (51) in the main defensive ditch provides a *terminus post quem* for the destruction of the defensive banks and ditch. This uncalibrated date of a.d. 1440 ± 60 also, of course, serves as a *terminus ante quem* for the proposed Saxon ditch dug in A.D. 921. The animal bones, which provided the material for CAR-239, may be associated with late medieval activity behind the inner bank and have found their way into the silts of the ditch before the demolition of the banks.

PLANT REMAINS. *By* D. WILLIAMS

The majority of the significant plant remains from the 1979-81 excavations was recovered from the ten fires of phase 2 (Fig. 2). The species and numbers represented in each fire are presented in a separate publication⁴⁸ as part of a more detailed consideration; only the broad conclusions are presented here.

Oat grains are the most prominent feature. In the absence of flower bases the grain could not positively be identified to species; it is as likely to be the wild oat (*Avena fatua* L.) as the cultivated oat (*A. sativa* L.). It is more probable, however, given the presence of weeds of cultivation (e.g. stinking mayweed (*Anthemis cotula* L.) and large fruits of wild radish (*Raphanus raphanistrum* L.)), that these grains represent material discarded following processing, possibly sieving, of cultivated grain. Some uncertainty remains, however, as to the identity of the main crop — whether the waste represents 'tail corn' from cultivated oats or the weed fraction of a wheat crop. Legumes, namely the field bean (*Vicia faba* L.), the predecessor of the broad bean, and the pea (*Pisum sativum* L.), also formed a prominent part of these samples. Some difference is discernible in the distribution of crop remains in these fires, the oats predominating under the outer bank (fires 40, 140, 151) and the legumes under the inner bank (fires 178, 177). It is therefore possible that the plant remains indicate the processing of more than one crop.

The other possible food plants found in these samples, notably hazelnut (*Corylus avellana* L.) and blackberry (*Rubus fruticosus*, agg.) were undoubtedly collected locally. The large quantity of broken nut shells strongly suggests that they were used for food. Possibly they were a dietary bonus if hazel scrub was being cleared or utilized; the species was widely represented in the charcoal.

These seeds provide an insight into the crops cultivated in the vicinity of Rhuddlan in the 10th century: cereals and legumes. The charred remains represent the destruction or use of crop gleanings and waste. The fires could represent the widespread destruction of crop waste as part of the end of harvest activities. In this case a greater quantity and variety of macrofossil material, such as rachis fragments or oat floret bases, might have been expected; in the event they were entirely absent. Most probably therefore, the remains suggest frequent, small-scale discarding of crop gleanings preceding food preparation.

Samples taken from the defensive ditch (51) produced plant remains indicating shallow, stagnant water in the ditch-bottom, the surface being carpeted by a layer of duckweed (*Lemna* spp.). The ditch sides appear to have been dominated by a marshy vegetation (e.g. rushes (*Juncus* spp.), sedges (*Carex* spp.)). Whether this description relates more to the abandonment of the defensive earthworks rather than to the period of their use is problematic.

MOLLUSCA. *By* K. BRASSIL

The mollusca comprised the following terrestrial and marsh species: *Lymnaea truncatula*, *Trichia hispida*, *Cepaea/Arianta* spp., *Helix aspera*, *Discus rotundatus*, *Oxychilus cellarius*; also the marine species *Buccinum undatum* (common whelk), *Cerastoderma edule* (common cockle), *Littorina littorea* (periwinkle), *Mytilus edulis* (common mussel) and *Ostrea edulis* (flat oyster). Most of the shells were collected by hand during the course of the excavation; some of the smaller species were retrieved by flotation.

Of note was the presence of *Cepaea-Arianta* spp. and *Helix* spp. in considerable numbers in the slighted rear of the inner bank (Fig. 5, 140). It is probable that a degrading scrub-covered bank would have provided suitable niches for populations of these species.

The marine component was dominated by *Buccinum undatum*, recovered from the fill (290) of the putative 'marker ditch' (Fig. 7, 292). Caches of large shells, exclusively of this species, are suggestive of their use as a food resource.

Pollen. By P. TOMLINSON

A vertical core was taken from the west-facing section through the inner defensive bank (indicated on Fig. 5). Deposits suitable for pollen analysis were the layers underlying the base of the bank (i.e. 184 and 180). The pH of the deposits was found to be approximately 5, which means that preservation is likely to be poor. This is underlined by the higher proportion of some of the more resistant types of pollen. Eight samples at 20 mm intervals were taken from the core (six from 184 and two from 180). It is likely that the material has been well mixed by soil organisms. It is probably best, therefore, to view the results together rather than try to interpret variations between each sample.

The pollen assemblage indicates an open agricultural landscape, with possible arable as well as pastoral land use, and areas of heathy scrub and limited woodland.

The two samples from 180 have a very similar pollen assemblage to 184 suggesting the possibility that 180 is derived from 184, perhaps as topsoil redeposited from the intended ditch area in the first stages of bank construction. Tabulated pollen data are lodged with the excavation archive.

THE LITHIC ARTEFACTS. By E. HEALEY

A small quantity of lithic artefacts was found, mainly in residual contexts, during both the 1979–81 and 1982 excavations. Three types of raw material are present: black chert, pebble flint and non-pebble flint. The site was not specifically excavated for its lithic assemblage, the artefacts being recovered only in passing, and not methodically sieved for.⁴⁹ This may reflect the low numbers and types of artefacts recovered. Dating therefore rests largely on typological grounds. The assemblages from the 1979–81 and the 1982 excavations were classified separately because they are some 300 m apart. However they appear technologically and typologically to contain similar material and may be part of the same complex. A late mesolithic date is indicated by the type or class 7a microlith (though the possible type 2b microlith could be early mesolithic), together with the burin and the denticulate scraper.⁵⁰ The assemblages appear to be homogeneous with the exception of the flake from a possible polished axe and perhaps a knife and would technologically fit such a context. The use of flint and chert is paralleled most notably at Rhuddlan itself⁵¹ and elsewhere at Prestatyn⁵² as well as further afield at Brenig.⁵² Whilst nothing can be said about the type of activity represented by this assemblage, it clearly demonstrates that the mesolithic settlement at Rhuddlan is *not* confined to the sandy soils but is also well established on the boulder clays.⁵⁴ The Rhuddlan area was much exploited in Mesolithic times and it is to be hoped that future excavation will elucidate both the economic and the environmental background to that exploitation, as well as the relative chronology of the various sites and finds.

A full report on the lithic artefacts is contained in the excavation archive.

DISCUSSION

Cledemutha, built at the instigation of Edward the Elder in A.D. 921, clearly fits into the class of late 9th- and early 10th-century burhs that were deliberate, royal foundations. These artificially created sites were expected to supplement a pre-existing organic network of proto-urban places; as such, burhs were the exception rather than the rule in the 10th century.⁵⁵ Among the closest parallels to the site at Rhuddlan, on the basis of an approximately rectangular area and interior size, are Wareham, Wallingford and Cricklade, respectively c. 35, 41 and 32 ha to compare with the 30 ha of *Cledemutha*. It is instructive, therefore, to compare some of the results of the recent excavations with those obtained from comparable sites.

The defences of *Cledemutha* are apparently different in a number of respects. Firstly, the inner bank does not appear to have been modified in later years as was the case at Wareham,⁵⁶ Wallingford⁵⁷ and Cricklade.⁵⁸ Secondly the absence of any indication of a turf and/or timber revetment to the front of the original inner bank is noteworthy. Thirdly there is no visible surface evidence of the multiple ditch system that seems to have been an integral part of late Saxon defences at Lydford, Cricklade, Wareham and Winchester.⁵⁹

A further distinguishing feature of the layout of the defences of *Cledemutha* is the lack of evidence for an intra-mural or 'wall' street. This is usually a path or road running parallel to and immediately behind the defences to allow the rapid deployment and circulation of defenders and their equipment; it is archaeologically well documented as characteristic of Saxon burhs in general.⁶⁰ At Cricklade the form of this access route comprises two parallel lines of stones separated by about five metres.⁶¹ There is no indication of such a feature at Rhuddlan, either from the 1979–81⁶² or 1982 excavation. It is interesting to note that the line of stones closer to the inner bank at Cricklade may have been laid prior to the construction of the defences and thus may have acted as a 'marker' for them. Aside from this hypothesis there is little evidence of 'marking-out' features from other late Saxon fortifications to compare with that suggested for *Cledemutha*.

The positions of the gateways at Rhuddlan are problematic. Comparisons with other late Saxon burhs⁶³ and parallels with Roman forts would suggest that on equal-sided defensive perimeters gateways would be approximately central. The situation at *Cledemutha* (Fig. 1) is complicated by the fact that the defences enclose an irregular trapezium rather than a square or rectangle, such that the S. side is about half the length of its N. counterpart. The only visible candidate for a gate on the E. side was tested by the 1982 excavations, with inconclusive results. On the N. side of the site the best possibility for an entrance is probably where the present Abbey Road runs through the defences, approximately midway along the N. perimeter. The position of the entrance on the S. side is again unresolved. There is a distinct depression in the outer bank about 35 metres west of the 1979–81 excavations and this lines up suggestively with a straight projection of Abbey Road southwards through, not around, the Dominican friary (Fig. 1). A trial excavation along the defensive ditch was conducted at this point (Fig. 1), again to test for the presence of an undug causeway, this time with unequivocally negative results. The remaining candidate on the S. side, therefore, is where Abbey Road cuts the defences, in the SW. corner. It is possible that the present Abbey Road could lie over or close to the original 10th-century N.–S. road through *Cledemutha*. On the W., facing the river, no bank and ditch defences are thought to exist. This does not preclude the possibility of a timber fence above the natural scarp to the river, with a gate giving access down to a bridge or ford.

Turning to the interiors of the sites it is apparent that a fairly low density of 10th-century occupation features should be anticipated. And indeed only three possible post-holes (Fig. 3, 239, 222 and 192) can be tentatively ascribed to Saxon activity. The absence of any 'occupation layer' associated with these features, the almost complete lack of artefactual material datable to the 10th and 11th centuries, and the increasing shallowness (*c.* 0.4 m) of the loamy deposits over boulder clay at the N. end of the 1979–81 excavations, temper any expectations of a large expanse of pre-Conquest remains. Indeed a resistivity survey,⁶⁴ carried out over a square area of the interior (100 m × 100 m: 1 ha) immediately to the north of the 1979–81 excavations succeeded in detecting the post-medieval 'grid-system' of pebble-filled land drains, but little else. This is not, in itself, particularly surprising; much of the evidence from the other large planted burhs suggests a relatively slow build-up of

occupation in the 10th and 11th centuries. In Wallingford the developed area did not extend over the whole of the interior in the late 11th century;⁶⁵ in Cricklade much of the ground inside the defences on both W. and E. sides was open ground throughout the life of the burh;⁶⁶ in Wareham, on a site alongside the principal N.–S. road and near the N. gate, excavations produced evidence of increasing activity, but without buildings along the street frontage, presumably indicating a lack of commercial pressure on space.⁶⁷ Within the defences of *Cledemutha* it is tempting to speculate that the most likely position for limited Saxon occupation would be the higher (and better drained) land, that is, the NW. quarter (Fig. 1) above the 22.5 m contour. It was here, of course, that the small Norman town was planted in the later 11th century.

The second decade of the 10th century must have been a decade of high expectations, growing certainty in its direction and optimism for the emerging English state and its rulers. From the nadir of Athelney to the frontier of a newly-reconquered Saxon kingdom running from the Dee to the Humber, Alfred, Aethelflaed and Edward had renewed and transformed military, political and economic confidence. Material expression of the new spirit can be seen in the rash of new foundations in the decade A.D. 910 to 920, graphically portrayed in David Hill's atlas.⁶⁸ Convincingly, Hill shows that new sites of less than c. 6.5 ha did not become towns while those with greater interior areas usually did. The conclusion is that some forts were being founded specifically to serve also as towns. The defended area of a burh, therefore, can be taken as an indication of the magnitude of the aspirations of its founder. In the case of *Cledemutha* aspirations must have been expansive; it was clearly planned to grow into a prosperous town.

What therefore were the reasons for the foundation of *Cledemutha* and its subsequent failure as a planted burh?⁶⁹ In 910 Edward the Elder defeated the Northumbrian Danes at Tettenhall (Staffordshire). This victory enabled Edward, and his sister Aethelflaed, to continue the reconquest of the Danelaw, which was to bring much of NW. England back under Saxon control. In 918 Aethelflaed died and Edward occupied the borough of Tamworth. There the kings of Wales, Hywel, Clydog and Idwal (son of Anarawd of Gwynedd), and all the Welsh sought Edward's protection. The next year saw the establishment of the Hiberno–Norse kingdom of York linked with Dublin. Such an alliance must have posed a great threat to the stability of the NW. frontier of Edward's reconquered kingdom, and it is tempting to see the building of the fortress at Thelwall and the repairing of that at Manchester as a direct response to Norse attacks from the Irish Sea. These two sites would have strengthened a line of defence running from the Mersey to the Dee, linking Chester (restored 907) with Eddisbury (914) and Runcorn (915). This historical context suggests a number of reasons for the foundation of *Cledemutha*. The site was a logical extension of the chain of forts from Manchester to Chester and would have helped to prevent an outflanking of Edward's NW. frontier. The principal threat to both Welsh and English in the area must have come from Norse raiding and perhaps attempts at settlement; the N. Welsh, following their alliance with Edward in 918, may have encouraged the foundation of an English military presence in N. Wales in order to protect their own interests. The aspirations of some of the Welsh leaders must not be overlooked. Hywel Dda, who became effective ruler

of all Wales from about 925 until his death in 949 or 950, was an anglophile. He repeated Alfred's pilgrimage to Rome, is recorded as witnessing English charters at Winchester and was the only pre-Norman Conquest Welsh ruler to issue coinage. His pro-Saxon tendencies may thus have been economically as well as culturally motivated, but his possible influence in encouraging *Cledemutha* cannot be discounted. Finally the potential of the lead and silver deposits on Halkyn Mountain in NE. Clwyd must be considered. English wealth at this time relied heavily on its ability to keep a flow of silver within the economy, some perhaps from the output of English and Welsh silver mines.⁷⁰ The foundation of a Saxon site at Rhuddlan would have placed the Halkyn Mountain area firmly under Edward's control.

There can be no doubt that *Cledemutha* failed as a planted burh. The peaceful period that witnessed its early growth was broken by the revolt of Idwal in 942, who was subsequently killed by the English. The death of Hywel Dda in 949 or 950 brought about a long, turbulent bout of civil war in Wales. The death of Edgar in 975, the subsequent decline of Saxon power and the increased frequency of Norse attacks on the N. Wales coast in the last quarter of the 10th century make it uncertain who was in control of Rhuddlan from this time onwards. Certainly by the middle of the 11th century it was a royal seat of Gruffydd ap Llywelyn and firmly in Welsh hands. Confirmation of the demise of *Cledemutha* can be read in the absence of references to the site following its foundation, the lack of a known mint associated with it and the archaeological evidence for single-phase defences and limited occupation.⁷¹

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NOTES

¹ T. Pennant, *Tour in Wales; II* (London, 1784), 10.

² F. T. Wainwright, 'Cledemutha', *Engl. Hist. Rev.*, 65 (1950), 203–12.

³ H. Miles, 'Excavations at Rhuddlan, 1969–71: interim report', *Flintshire Hist. Soc. Publ.*, 25 (1971–82), 1–8 and pers. comm. from the excavator. Marion Blockley is currently assisting in the preparation for publication of the earlier excavations. There is some evidence for Saxon occupation in the NW. corner of the larger earthwork. This evidence comprises several sherds of Chester ware, a bone motif-piece of 10th-century or earlier date and some negative features.

⁴ A basic appraisal of the fluctuating relationships of post-glacial sea and shore levels at the mouth of the vale of Clwyd up to the medieval period, is presented in J. Manley, 'Rhuddlan and coastal evolution', *J. Landscape Hist.*, 3 (1981), 1–15.

- ⁵ C. A. R. Radford, 'The later pre-conquest boroughs and their defences', *Medieval Archaeol.*, 14 (1970), 83-103.
- ⁶ An appraisal of Anglo-Saxon incursions into N. Wales (from the 6th to the 11th century) and of the historical context, both before and after the foundation of *Cledemutha*, can be found in J. Manley, 'The Late Saxon Settlement of *Cledemutha* (Rhuddlan), Clwyd', 55-64 in M. L. Faull (ed.), *Studies in Late Anglo-Saxon settlement* (Oxford, 1984).
- ⁷ G. S. Boulton, 'A genetic classification of tills and criteria for distinguishing tills of different origin', *Geografica*, 12 (1976), 65-80.
- ⁸ This soil is described in detail by R. J. A. Jones, 'Soils in Staffordshire II: Sheet SJ82 (Eccleshill)', *Soil Surv. Rec.*, 31 (1975) and by J. W. Lea and T. R. E. Thompson, 'Soils in Clwyd I: Sheet SJ35 (Wrexham N)', *Soil Surv. Rec.*, 48 (1978).
- ⁹ Detailed soil reports by J. S. Conway and T. R. E. Thompson are with the excavation archive — see note 19.
- ¹⁰ Miles, *op. cit.* in note 3, 3.
- ¹¹ J. Manley *et al.*, 'Early medieval radiocarbon dates and plant remains from Rhuddlan, Clwyd', *Archaeol. Cambrensis*, 134 (1985), 106-19.
- ¹² J. Manley, 'The archer and the army in the Late Saxon period', *Anglo-Saxon Studies in Archaeol. Hist.*, 4 (1985), 223-35.
- ¹³ Pers. comm. from Patrick Ottaway.
- ¹⁴ J. Manley, 'Rhuddlan', *Curr. Archaeol.*, 7 (1982), 304-07.
- ¹⁵ The site lies over two different drift geologies, sand and boulder clay, which presumably had implications for bank construction.
- ¹⁶ K. Terzaghi and R. B. Beck, *Soil Mechanics in Engineering Practice* (London, 2nd edn 1967), 454.
- ¹⁷ Q. Dresser, 'University College Cardiff Radiocarbon Dates I', *Radiocarbon*, 27 (2B), 338-85 (see p. 376).
- ¹⁸ Ministers' Account 5566 (Public Record Office).
- ¹⁹ Where indicated, more detailed versions of the following specialist reports can be found in the excavation archive, which is housed, with the finds, in the County Library and Museum Department of Clwyd County Council, Shire Hall, Mold, Clwyd, CH7 6NH. Tel. (0352) 2121.
- ²⁰ O. S. Rye, *Pottery Technology: Principles and Reconstruction* (Washington D.C., 1981), 114-18.
- ²¹ From 27 — 1979-81: a phase 5 context behind the inner bank.
- ²² P. Carrington, 'Some types of Late Saxon Pottery from Chester', *Cheshire Archaeol. Bull.*, 3 (1975), 3-9; P. Carrington, 'Chester Crook Street (1973-74) Pit Group', 14-17 in P. J. Davey (ed.), *Medieval Pottery from excavations in the North West* (Liverpool, 1977).
- ²³ H. Miles, 'Rhuddlan Kiln', 100-03 in Davey, *op. cit.* in note 22.
- ²⁴ See Carrington, in Davey, *op. cit.* in note 22.
- ²⁵ H. M. Harrison and P. J. Davey, 'Ewloe Kiln', 92-99 in Davey, *op. cit.* in note 22.
- ²⁶ Pers. comm. from Janet Rutter.
- ²⁷ Locational explanations of contexts are only given for the more significant deposits.
- ²⁸ Joining sherds from the lower fill (315) and upper fill (314) of (309) suggest that the period of use of the clay-lined depressions (341) may have been a brief one.
- ²⁹ P. J. Davey and D. E. M. Morgan, 'Hen Blas', 42-47 in Davey, *op. cit.* in note 22.
- ³⁰ Pers. comm. J. P. Greene.
- ³¹ See note 12.
- ³² I. H. Goodall, 'Ironwork in Medieval Britain: An Archaeological Study' (Unpublished Ph.D. thesis, University College Cardiff, 1980). See horse link on p. 188, fig. 138 L83-88; P. J. Ottaway, *Anglian and Anglo-Scandinavian Ironwork from 16-22 Coppergate* (Archaeology of York, forthcoming), SF11758 — strips with rolled terminals on a late 9th-century padlock: compare the bits of late 9th- to 11th-century date to be published by I. H. Goodall and P. J. Ottaway in C. Dallas (ed.), *East Anglian Archaeology* (excavations by B. Davison, sites 5756 and 5759); Q. Waddington, 'Padlocks from the City', *Antiq. J.*, 8 (1928), 524-26; D. M. Waterman, 'Late Saxon, Viking and early medieval finds from York', *Archaeologia*, 97 (1959), 59-105; see horse link on fig. 8, 1-2.
- ³³ Compare the example in B. Cunliffe, *Excavations at Fishbourne, 1961-69, vol. 2* (London, 1971), fig. 52, 1975.
- ³⁴ *London Museum Medieval Catalogue* (London, reprint 1967), pl. LXXXIII, 1 and 2, and p. 288.
- ³⁵ Cf. I. Fingerlin, *Gürtel des hohen und späten Mittelalters* (Berlin, 1971), 218.
- ³⁶ C. F. C. Hawkes and M. R. Hull, *Camulodunum* (Report of Research Comm. of Soc. of Ant. of London, No. 14, 1947). Compare pl. LXXXIX, Nos. 7 and 10 for example.
- ³⁷ B. W. Cunliffe (ed.), *Fifth report on the excavations of the Roman fort at Richborough, Kent* (Report of Research Comm. of Soc. of Ant. of London, No. 23, 1968). See p. 78, No. 10, pl. XXVII.
- ³⁸ For example Richborough: *op. cit.* in note 37, pp. 78-79, Nos. 10-16; J. P. Bushe-Fox, *Fourth report on the excavations of the Roman fort at Richborough, Kent* (Report of Research Comm. of Soc. of Ant. of London, No. 16, 1949), p. 113, No. 30, pl. XXVIII; Hod Hill: I. A. Richmond, *Hod Hill Vol. II Excavations carried out between 1951 and 1958* (British Museum, 1968), p. 113, No. 2, fig. 56; and an example from the 1971 excavations at Usk.
- ³⁹ See *British Museum Catalogue*, Vol. vi, p. 185, Nos. 178 ff., Venus Victrix type.
- ⁴⁰ See *R.I.C.*, Vol. vii, p. 97, 2.
- ⁴¹ J. J. North, *English Hammered Coinage*, Vol. 1 (London, 1969), p. 167, No. 987.
- ⁴² M. A. Levine, 'The use of crown height measurements and eruption — wear sequences to age horse teeth', 223-50 in R. Wilson, C. Grigson and S. Payne (eds.), *Ageing and Sexing animals bones from archaeological sites* (Oxford, Brit. Archaeol. Rep. Brit. Ser. 109, 1982).
- ⁴³ I. A. Silver, 'The ageing of domestic animals', 283-302 in D. Brothwell and E. S. Higgs (eds.), *Science in Archaeology* (London, 1969).
- ⁴⁴ D. R. Brothwell, *Digging up Bones*, 3rd edn (London, 1981), 71-72.

⁴⁵ M. Trotter and G. C. Gleser, 'Estimation of stature from long-bones of American Whites and Negroes', *Amer. J. Phys. Anthropol.*, 10 (1952), 463-514. M. Trotter and G. C. Gleser, 'A re-evaluation of estimation of stature based on measurements of stature taken during life and long-bones after death', *Amer. J. Phys. Anthropol.*, 16 (1958), 79-123.

⁴⁶ R. T. Steinbock, *Palaeopathological Diagnosis and Interpretation* (Illinois, 1976); K. Manchester, *The Archaeology of Disease* (Bradford, 1983).

⁴⁷ See note 11. No post-Conquest artefacts were found beneath the defensive banks, while a considerable amount of 13th-/14th-century pottery came from Phase 5 deposits behind the inner bank. This in itself might indicate that the defensive banks sealed an early ground surface.

⁴⁸ See note 11.

⁴⁹ In contrast to the purposive recovery at Hendre. J. Manley and E. Healey, 'Excavations at Hendre, Rhuddlan: The Mesolithic Finds', *Archaeol. Cambrensis*, 131 (1982), 18-48; see p. 21.

⁵⁰ R. M. Jacobi, 'The early holocene settlements of Wales', in *Culture and Environment in Prehistoric Wales*, ed. J. A. Taylor, British Archaeological Report, British series, 76 (1980), 131-206. This particular piece may be atypical for the region.

⁵¹ See op. cit. in note 53 and in note 3.

⁵² J. G. D. Clark, 'Microlithic industries from tufa deposits at Prestatyn, Flintshire and Blashenwell, Dorset', *Proc. Prehist. Soc.*, 4(2) (1938), 33-34; G. J. Wainwright, 'A reinterpretation of the microlithic industries of Wales', *Proc. Prehist. Soc.*, 29 (1963), 99-132; see pp. 115 and 125.

⁵³ Forthcoming contribution by E. Healey on the artefacts from F. Lynch's excavations.

⁵⁴ Op. cit. in note 49, see p. 42.

⁵⁵ Op. cit. in note 49, see p. 42.

⁵⁶ See p. xvi in J. Haslam (ed.), *Anglo-Saxon Towns in Southern England* (Chester, 1984).

⁵⁷ R. C. H. M. (England), 'Wareham West Walls', *Medieval Archaeol.*, 3 (1959), 120-38.

⁵⁸ Op. cit. in note 5.

⁵⁹ J. Haslam, 'The towns of Wiltshire', in op. cit. in note 55, 107 ff.

⁶⁰ G. Astill, 'The towns of Berkshire', in op. cit. in note 55, 76.

⁶¹ M. Biddle and D. Hill, 'Late Saxon Planned Towns', *Antiq. J.*, 51 (1971), 70-85; p. 76.

⁶² See Haslam, op. cit. in note 58, 109.

⁶³ Unless, of course, as hinted above, a pre-Conquest date for the ditch (240) is argued (Fig. 3). This would have the effect of creating a 'road' marked by flanking ditches (240) and (139). However (240) does not seem to run parallel to (139), neither does it appear to have an equivalent on the E. side of the enclosure in the 1982 excavations.

⁶⁴ See fig. 4 in Biddle and Hill, op. cit. in note 60.

⁶⁵ By C. Aubin and O. Elmhirst while students of archaeology at the University of Bradford, using the 'two probe' method, within a metre grid system.

⁶⁶ See p. 62 in Astill, op. cit. in note 59.

⁶⁷ See p. 110 in Haslam, op. cit. in note 58.

⁶⁸ D. A. Hinton and R. Hodges, 'Excavations in Wareham, 1974-5', *Proc. Dorset Natur. Hist. Archaeol. Soc.*, 99 (1977), 42-83; see p. 58. D. A. Hinton, *Alfred's Kingdom, Wessex and the South 800-1500* (London, 1977), 65.

⁶⁹ See fig. 235 (p. 143) in D. Hill, *An Atlas of Anglo-Saxon England* (Oxford, 1981).

⁷⁰ These have been dealt with at greater length elsewhere (see note 6) and only a resumé is presented here.

⁷¹ See p. 141 in R. S. Kelly, 'Metal-working in North Wales during the Roman Period', *Bull. Board Celtic Stud.*, 27(1) (1978) 127-47. Silver extracted by cupellation from Halkyn Mountain ores appears to have been obtained during the Roman period.

⁷² Much of the interior of *Cledemutha* has not been built upon in later centuries, due almost entirely to the re-foundation of medieval Rhuddlan by Edward I to the north of the Saxon defences. It is essentially a 'green-field' site. It can potentially answer many questions concerning the interior arrangements of Saxon burhs in their formative years. That potential may be difficult to realize, however, without large-scale excavation in the interior. Optimism must be tempered by three considerations: firstly the anticipated low density of Saxon features per unit area of excavation and, in the absence of artefacts, the difficulty of dating them; secondly the likely complication of earlier features (prehistoric and Romano-British) confusing the 10th-century evidence; thirdly, the fact that in the NW. quarter of the site (potentially the most likely area of Saxon activity) complications (albeit interesting ones) from other periods will be considerable, i.e. extensive underlying mesolithic activity and the overlying Norman town.

A final point concerns the possible damage caused by the regular ploughing (about once every five years) of parts of the site in order to reseed the pasture. The ploughing is not deep (c. 0.15 m) and contact with archaeological deposits only arises on the tops of the outer and inner banks on the S. side, where shallow furrows were occasionally observed. Damage outside the excavated area, where the depth of loam above the boulder clay may be considerably less, could obviously be more serious.

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