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Excavation of Neolithic pits, later prehistoric structures and a Roman temporary camp along the line of the A96 Kintore and Blackburn Bypass, Aberdeenshire

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ABSTRACT

Archaeological investigations were undertaken along the route of the A96 Kintore and Blackburn Bypass, Aberdeenshire, in 1996–7. During the initial evaluation work, pits containing prehistoric pottery were found at Boghead Croft and Cairnhall, while the northern and western perimeters of a Roman temporary camp were examined respectively at Rosebank and Deer's Den. A concentration of pits was located at Tavelty and further excavation revealed these to be the foundations of an Iron Age timber structure c 10 m in diameter. More extensive excavation around the western entrance into the Roman temporary camp at Deer's Den located a concentration of features including a spread of pits containing early Neolithic pottery and chipped stone, four later prehistoric structures and Roman/Early Historic field ovens.

INTRODUCTION

The construction in 1997 of the A96 Kintore and Blackburn Bypass was preceded from 1995 by a programme of archaeological studies carried out by the Centre for Field Archaeology (Alexander 1996a & b; Hamilton & McGill 1997). This work was commissioned by Historic Scotland on behalf of The National Roads Directorate of The Scottish Office Development Department. The principal aim of the project was to excavate portions of Kintore Roman temporary camp, both the ditch and the interior, and to locate and excavate any other concentrations of archaeological features along the proposed route.

Kintore lies c 15 km north-west of Aberdeen on the south-western side of the River Don (illus 1). The local topography consists of undulating lowlands with gentle slopes broken by four small burns draining generally eastwards and north-eastwards into the Don: the Blackburn, the Sherriff Burn, the Rollomire Burn and the Bridgealehouse Burn. The underlying solid geology comprises, in the majority, intrusive igneous rocks of granite, syenite, granophyre and allied types (BGS 1979) while the drift cover consists mainly of boulder clay and morainic drift associated with glacial sand and gravels (IGS 1977). The soils derived from this parent material consist mainly of humus-iron podzols with some brown forest soils and gleys (MISR 1982). These soils

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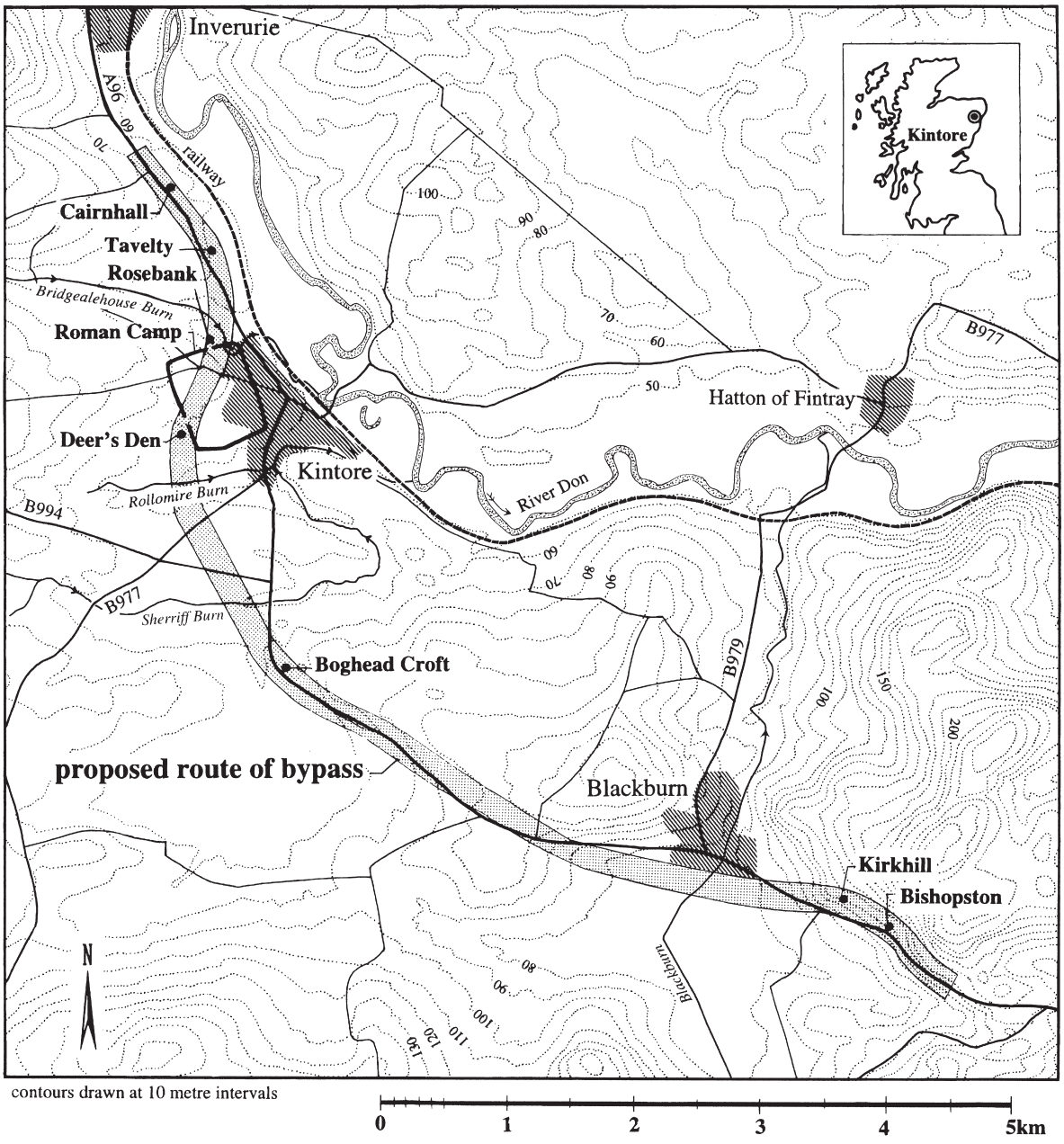


ILLUS 1 General location map showing line of bypass and sites (*Based on the Ordnance Survey map © Crown copyright*)

have been classified, along with much of lowland Aberdeenshire, as capable of producing a moderate range of crops including cereals such as barley and oats, and grass (MISR 1983).

The line of the bypass is c 9.5 km long and runs from Bishopton on the south-west slope of Kirkhill, around the south side of Blackburn, west of Kintore, to Cairnhall (illus 1). The construction work was subdivided into two parts at Boghead. The archaeological investigation along the Kintore section from Boghead to Cairnhall was preceded by a desk-based assessment (Gallagher 1992) and field evaluation. Fieldwork here, undertaken in March and April 1996, sampled the development area by trial trenching. Fifty-five trenches were excavated comprising a

combination of 2 m wide strip trenches (up to 100 m long), and small area trenches (7 m by 7 m and 10 m by 10 m squares). These trenches examined around 2400 sq m within the Roman temporary camp and c 4300 sq m outside. This evaluation located isolated features at Cairnhall and Boghead Croft which contained sherds of prehistoric pottery. At Rosebank the northern perimeter of the Roman temporary camp was investigated. In addition to these features, the evaluation located concentrations of archaeological features at Deer's Den and Tavelty (Alexander 1996a). Both these sites were selected for further work and were excavated in August/September 1996 (Alexander 1996b).

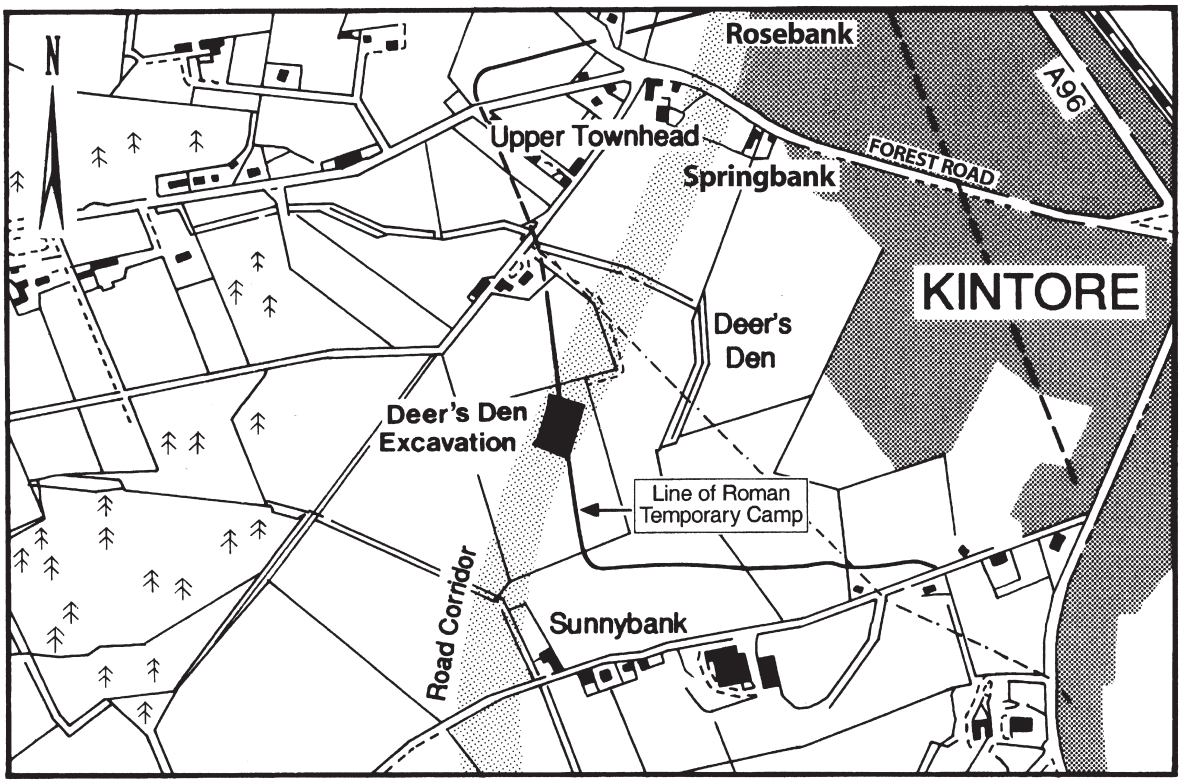
An archaeological watching brief was conducted during the stripping of topsoil along both the Kintore and Blackburn sections of the road line during spring and early summer of 1997 (Hamilton & McGill 1997). The watching brief was the only work conducted for the Blackburn section and no pre-modern features were located. Around Kintore some 30 pits were located, in three concentrations. These included a cluster around Deer's Den, a cluster to the north around Springbank, and another group to the south-east of the cemetery at Tavelty.

ARCHAEOLOGICAL BACKGROUND

The area to the west of Kintore that was to be affected by the bypass is rich in recorded archaeological remains, representing a number of episodes of intense occupation of the area from at least the Neolithic. The prehistoric sites in the area are mostly cropmark features, such as ring-ditches and enclosures, or the find-spots of artefacts found in the 19th century, primarily as a result of agricultural improvement. These include flint arrowheads, a hoard of Bronze Age spearheads and a stone battleaxe. One notable upstanding monument in the locality is the Neolithic long cairn at Midmill just to the east of Kintore. In addition, it has been suggested that a standing stone at Cairnhall (outside the road corridor to the north) may represent the remains of a stone circle (Burl 1976). This northern part of the route appears to fall within a Neolithic/Early Bronze Age ritual centre, focused on the henge monument at Broomend of Crichie (Harding & Lee 1987), and considered by I A G Shepherd (1986) as an important focus, reflected in the distribution of Beaker-related material in north-east Scotland.

Prior to the current project, the one recently excavated prehistoric feature in the vicinity of the road corridor (illus 21 upper) was a Beaker cist burial with a rich assemblage of grave-goods at Tavelty (I A G Shepherd 1986; Ralston 1996). While the number of sites identified within a relatively small area indicates intense activity in the vicinity, the nature of these remains is also informative. It is clear from the pattern revealed by cropmarks and artefact finds that post-medieval agricultural practices are likely to have reduced the majority of early sites to features that are only preserved as negative features below the ploughsoil.

The intense occupation of the area does not end with the evidence for prehistoric sites (indeed, it is possible that some of the cropmark sites are more recent). It was clear from the desk-based assessment that the Roman temporary camp at Kintore occupied a substantial part of the area which would be disturbed by the new road. In addition, although there is no clear evidence for Early Historic settlement in the immediately affected area, both Kintore and Inverurie were medieval burghs and it was thought possible that associated archaeological remains may have extended into the road corridor. There is also a suspected medieval hospital in the area, identified from documentary sources, which may be located in a sector described as the 'Lands of the Holy Cross', which lies within the Roman temporary camp on the west side of Kintore (Cowan & Easson 1976). At the northern end of the study area it is known that during the 17th century James Graham, Marquis of Montrose, camped his army in the field beside Tavelty farm. The



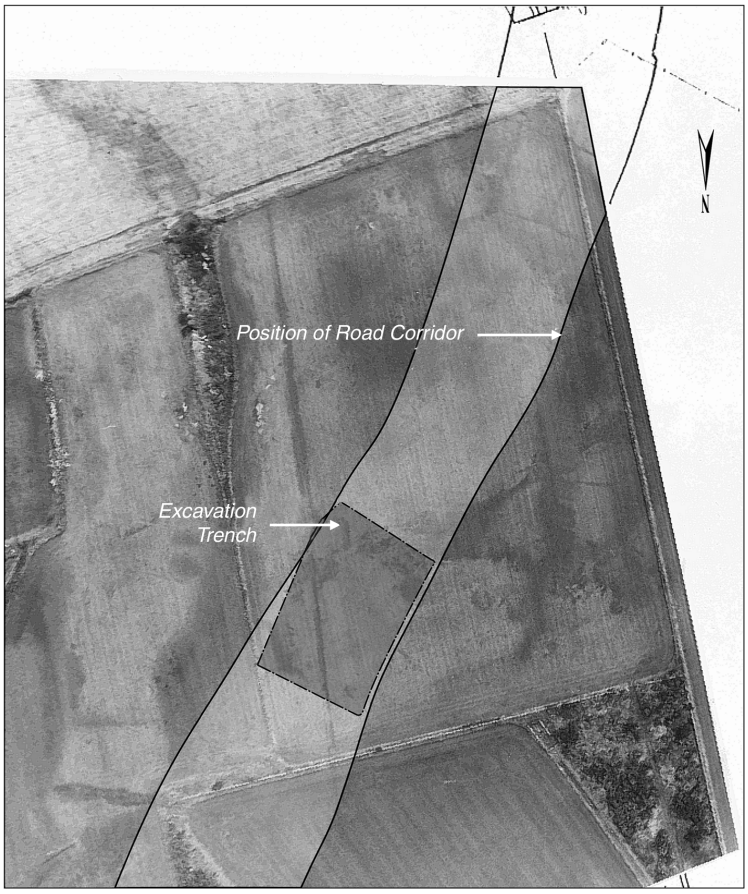
ILLUS 2 Deer's Den: location and approximate line of Roman camp (*Based on the Ordnance Survey map © Crown copyright*)

former route of the Aberdeenshire Canal crossed the proposed road corridor to the north-west of Kintore, just downslope from the northern side of the Roman temporary camp. Finally, from the 20th century there is an aircraft hangar near Cairnhall steading, a survival from the original airfield serving Aberdeen.

It was apparent from the outset, therefore, that the road corridor would destroy several known sites and it was likely that others would be located in the vicinity.

DEER'S DEN

The western side of the Roman temporary camp at Deer's Den (NGR NJ 784 160), including a *titulus* entranceway, lay directly on the route of the bypass (illus 2). A *titulus* is a short length of traverse-rampart and ditch placed 10 m in front of the entrance to a camp and parallel to it. The line of the Roman temporary camp ditch can clearly be seen on the aerial photograph (AAS/95/08/G24/10) which was supplied by Moira Greig of Aberdeenshire Council. A rectified image (illus 3) of this photograph was produced (using 'Airphoto'). This shows not only the line of the Roman temporary camp ditch and *titulus* but many additional features, pits and structures spreading from east to west along the hillside. During the evaluation the line of the camp ditch and an entrance were located along with several additional features: this work was followed by more extensive excavation. Topsoil at Deer's Den was removed by an earth-moving machine equipped with a smooth-bladed ditching bucket, to reveal the sub-soil surface over an area 70 m long by 45 m wide. A suite of negative features including Neolithic pits, later prehistoric structures and the line of the camp ditch were recorded (illus 4).



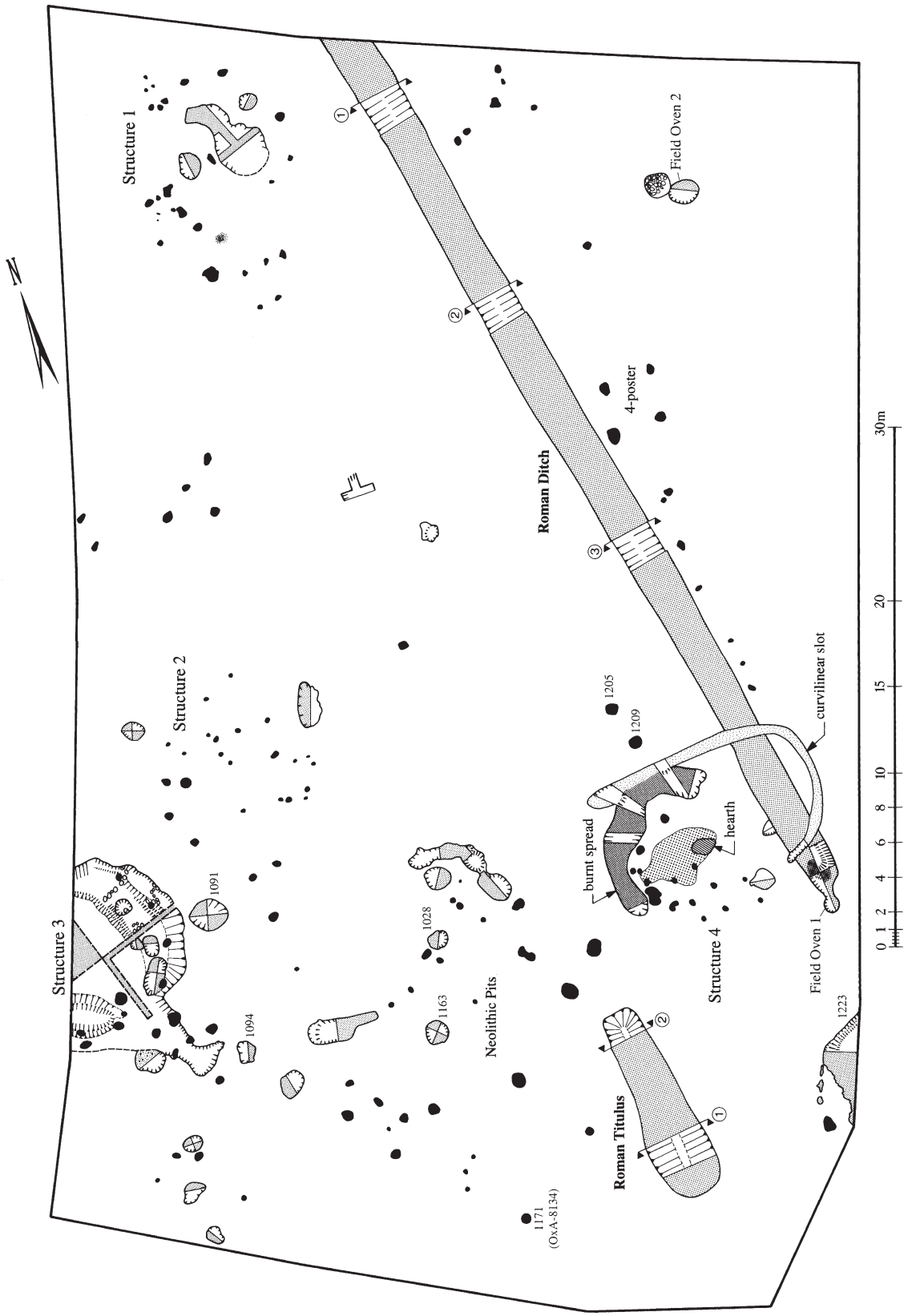
ILLUS 3 Deer's Den: rectified aerial photograph showing position of road corridor (*AAS/95/08/G24/10 © Aberdeenshire Council*)

NEOLITHIC PITS

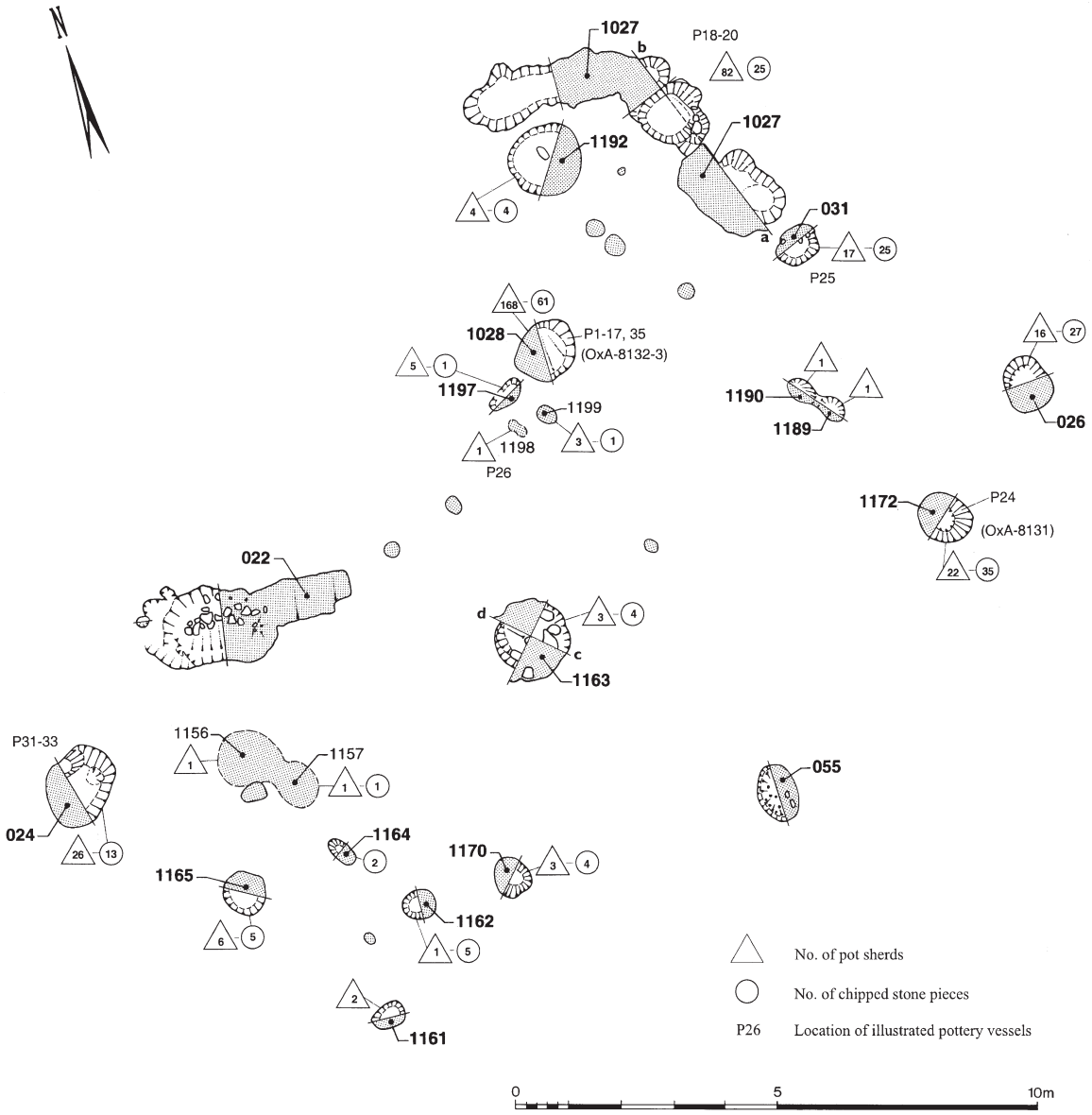
Early/middle Neolithic pits (illus 4, 5 & 7)

At least 20 pits containing quantities of artefacts of Neolithic character were located in the centre of the southern half of the excavation area (illus 5 & 7). The fills of these pits contained large numbers of sherds of plain pottery (illus 23–5), flakes of flint and quartz, charcoal and burnt hazelnut shells. Rather than produce lists of descriptions of the features and their artefactual contents, a summary of the number of pot sherds and chipped stone pieces in each pit has been marked on illus 5, along with an indication of the find-spots of illustrated vessels. Of particular note were the remains of a small carinated bowl P18 from pit 1027 (illus 24). By far the richest pit in terms of numbers of artefacts was pit 1028. This produced 168 sherds including those from vessels P1–17 (illus 23 & 24) and P35. In addition, there was also a large quantity of chipped stone, 61 pieces. Around 74% of this assemblage was flint and, apart from one flake of Arran pitchstone, the rest was quartz. A small leaf-shaped arrowhead (ID416; illus 30) was included among the flint assemblage from this pit. Pits 014, 026, 031 and 1172 also produced high numbers of both pot sherds and chipped stone pieces. The remainder of these pits may simply contain residual Neolithic material but those with large amounts mentioned above surely represent *in situ* deposits.

Charcoal recovered from pit 1028 included a mix of oak, birch, hazel (including hazelnut shell), along with a small amount of pine and willow. A single piece of hazel charcoal from this



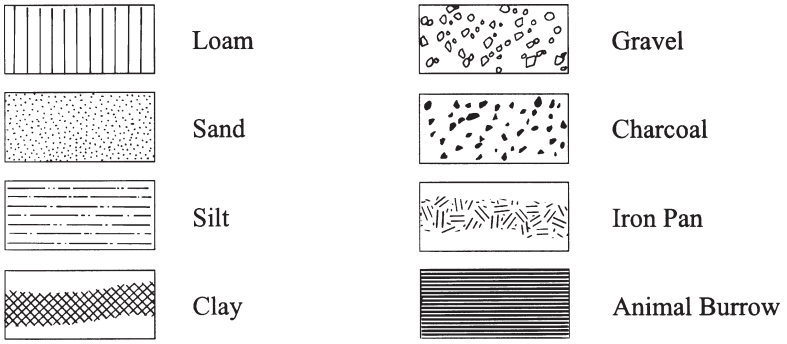
ILLUS 4 Deer's Den: plan of main features



ILLUS 5 Deer's Den: plan of Neolithic pits, showing numbers of pot sherds, chipped stone and vessel numbers

pit produced a radiocarbon date of 4895 ± 40 BP (OxA-8133) while a charred hazel nutshell from this context gave a result of 4945 ± 40 BP (OxA-8132). Oak roundwood charcoal from Pit 1173 produced a radiocarbon date of 4940 ± 40 BP (OxA-8131). Pit 024 contained oak and hazel. Charred plant remains were recovered from samples taken from Pit 026 and 1172: these included limited evidence for cereals (see below).

Although no clear structural pattern was apparent, indeed few if any of these pits appear to have been post-holes, they did appear to form an elongated cluster. This cluster may either mark the area of a former structure, which has left little in the way of archaeologically retrievable remains, or it may simply mark an area of activity.



ILLUS 6 Key to sections

Late Neolithic pits (illus 4)

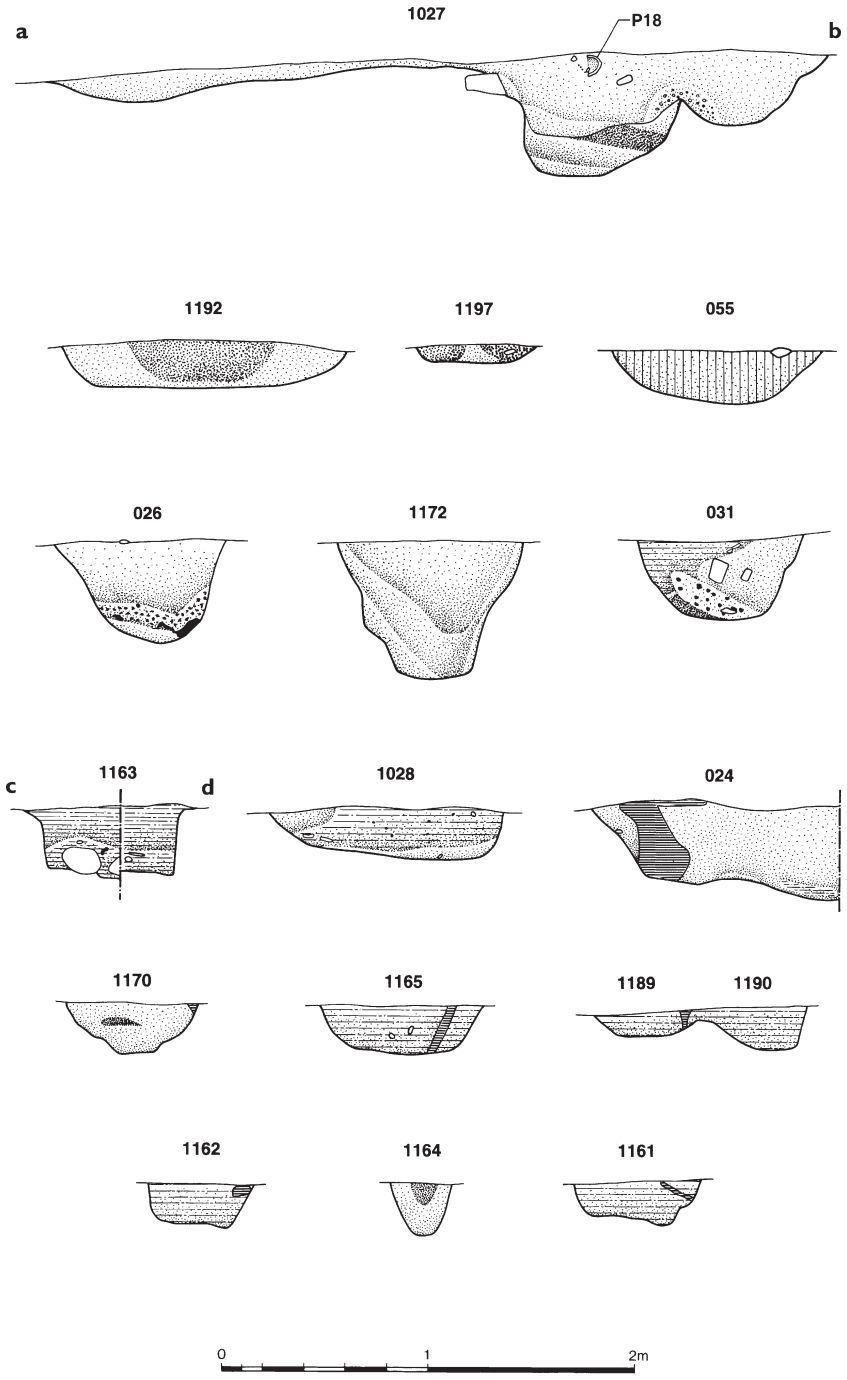
Two pits (1204 & 1205) to the north of the burnt spread (illus 4 & 26) contained substantial quantities of pottery from four vessels. The sherds from both vessels P49 and P50 were recovered from the fills of both pits, represent sizeable portions of these pots and indicate the contemporaneity of these features. The number of sherds and their generally unabraded condition suggest that these vessels had been deliberately deposited. Samples were taken from organic residues on the interior surface of two sherds belong to vessel P50, one from pit 1205 and one from 1204: these produced dates of 4500 ± 45 BP (OxA-8177) and 4395 ± 45 BP (OxA-8176), respectively. These dates indicate that the vessels were used in the middle Neolithic. Another shallow pit (012), close to the *titulus* of the Roman temporary camp, contained four sherds from a similar biconical vessel P62.

Pit containing urn sherd (illus 4)

About 8 m south of the general spread of pits containing Neolithic artefacts there was an isolated pit (1171; illus 4) which was c 0.46–0.48 m in diameter and 0.26 m deep. It contained a charcoal-rich sandy fill including two sherds of pottery, one of which was the rim of a Food Vessel Urn (P37; illus 27). These vessels are thought to be current from around 2300 cal BC to 1500 cal BC, mainly within the Early Bronze Age (Parker-Pearson 1999, 77). Charcoal from this pit was identified as birch while two barley seeds and fragments of hazelnut shell were also recovered (see below). A single radiocarbon date was obtained from a piece of charred hazelnut shell and gave a result of 3545 ± 35 BP (OxA-8134) which provides a two sigma calibrated range of 2030–1760 cal BC and matches well with the suggested date range of the pottery.

LATER PREHISTORIC STRUCTURES

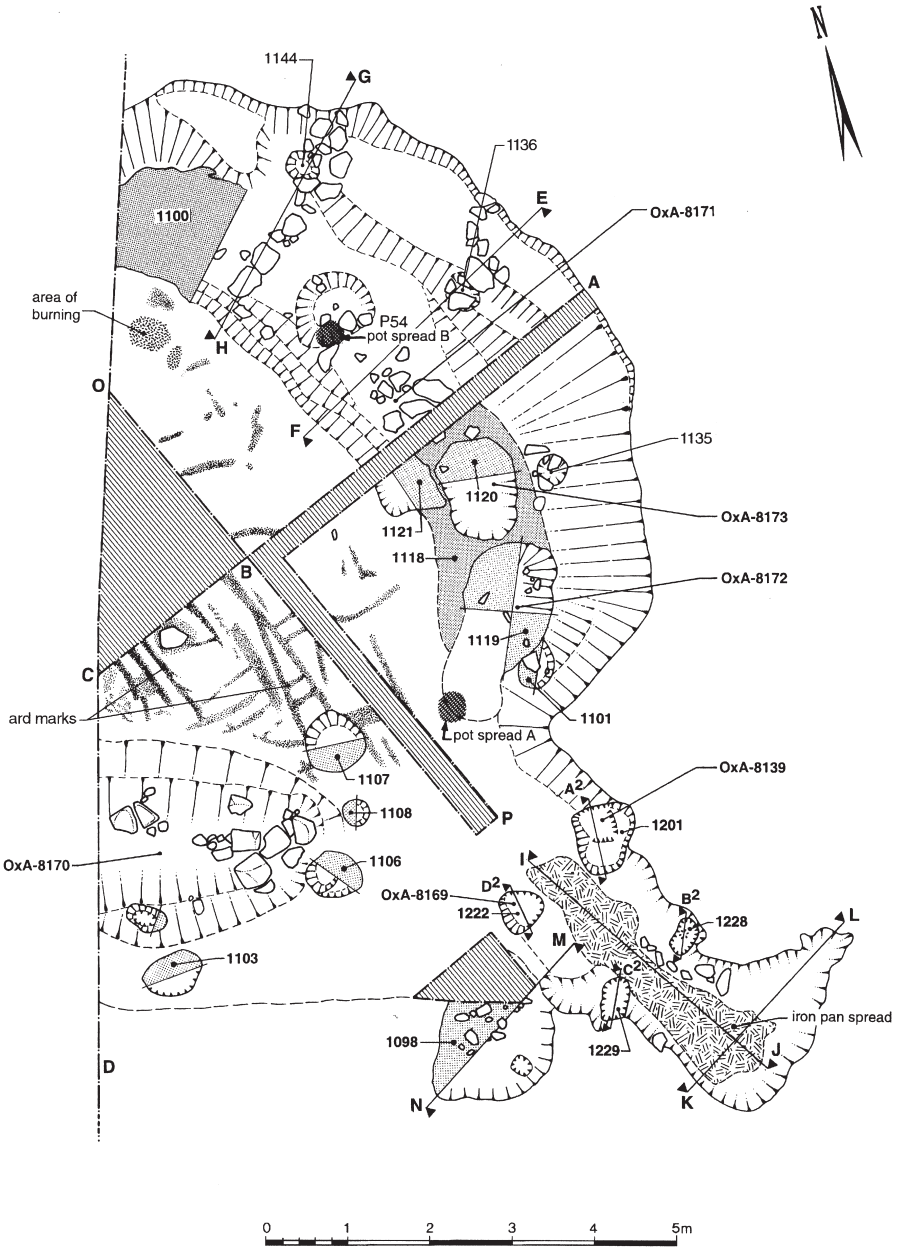
Four possible later prehistoric structures were discovered at Deer's Den (illus 4) and are described below in the chronological order of their construction. Structure 3, the largest and most complex, has been dated to the Middle Bronze Age (1600–1200 BC: Parker-Pearson 1999, 7) while Structure 1 belongs to the Late Bronze Age (1200–700 BC: ibid, 77) and a four-post structure to the Late Bronze Age/Early Iron Age. The definition of Structure 2 as a coherent structure is more problematic and its date remains unknown, although the cluster of small pits looks similar to Structure 1.



ILLUS 7 Deer's Den: Neolithic pit sections

Structure 3 (illus 4, 8 & 9)

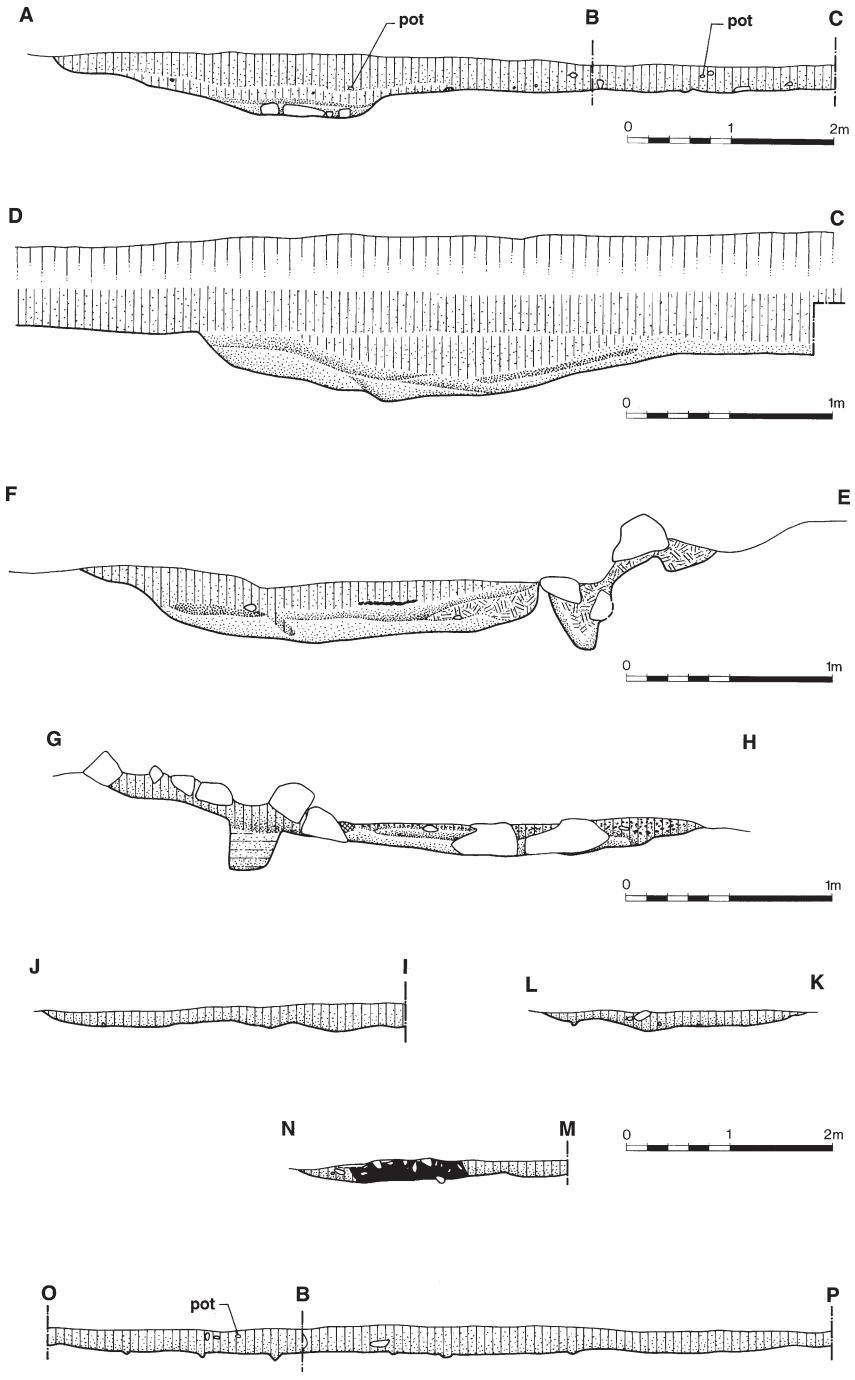
Structure 3 appears on the aerial photograph as a large dark blob (illus 3) and following topsoiling it was found to consist of a circular area of dark brown loam, c 10 m in diameter, with a projection extending to the SSE. The main circular area was excavated in quadrants; the north-west quadrant lay outwith the limit of the project area and unfortunately could not be excavated (illus 8). The main upper fill was a homogeneous brown loam c 0.25 m deep, filling a shallow



ILLUS 8 Deer's Den: plan of Structure 3

depression (illus 9), which had gentle sloping sides in the south-west and south-east quadrants but had a steeper edge in the north-east. Below this general fill there appeared the remains of a penannular, shallow ring-ditch enclosing a central oval area c 4–5 m across. There was very little difference between the fill of this ring-ditch and the overlying deposit although the former was slightly darker. Six post-holes were spaced relatively evenly around the external margin of the ring-ditch and are assumed to have supported a roof structure (1103, 1106, 1101, 1135, 1136, 1144). A cluster of stones close to the two post-holes in the north-eastern quadrant may be the remains of packing from around upright timbers.

The ring-ditch was an irregular feature varying in depth and profile around its circuit (illus 9). In general it was between 0.3–0.5 m deep, below the level of the surrounding natural subsoil.



ILLUS 9 Deer's Den: Structure 3 sections

The fills of the ditch in the south-western quadrant consisted of several interleaved layers of sandy soil that had arrived from both the interior and the exterior. These layers contained flecks of charcoal and were intermittently separated by layers of cleaner sand. The stratification indicates that the ditch silted up over time. A piece of charcoal from the lowest fill of the ditch provided a radiocarbon date of 3235 ± 45 BP (OxA-8170), giving a two sigma calibrated range of 1630–1420 cal BC. The western terminal of the ring-ditch beside the entranceway contained around 10 large

stones. Along the eastern side of the ring-ditch four shallow pits had been cut into the base of the ditch. Samples of charcoal were taken from the fills of two of these pits (1119 & 1120) and produced radiocarbon dates of 3295 ± 45 BP (OxA-8172) and 2945 ± 40 BP (OxA-8173), respectively. These provide two sigma calibrated ranges of 1690–1500 cal BC and 1310–1030 cal BC.

A spread of crushed pottery (illus 8, pot spread A) was recovered from just above the natural subsoil at the eastern terminal of the ring-ditch but the vessel was too fragmentary to be identified to type or form. Another spread of crushed pottery (illus 4, pot spread B) was recovered from the upper fill of pit (1234) cut into the base of the ring-ditch in the north-east quadrant. This included sherds from an almost complete vessel P54 (illus 28) and fragmentary remains of another P55 (illus 28). Charcoal recovered from the lowest fill of the ring-ditch just to the south-east of this pot spread produced a radiocarbon date of 3215 ± 45 BP (OxA-8171), giving a two sigma calibrated range of 1610–1410 cal BC. Both these spreads of pottery and the other scattered sherds recovered from this structure were from plain, flat-rimmed, coarse ware vessels. Metal-working on the site is attested by the presence of a sherd of crucible (P59; illus 28), which was recovered from the upper fill of the structure. This has a very coarse fabric with large rock inclusions to prevent thermal shock and has what appears to be copper-alloy slag covering its internal surface. Apart from this item there were no obvious signs of metal-working within the structure.

A large quantity of lithics was also found in the fills of Structure 3. About 75 pieces were recovered from the upper fills and this included almost equal numbers of flint and quartz pieces. It is possible that some of this material is redeposited: a few sherds of Neolithic pottery were also retrieved from these fills (P66 & P67; illus 25).

The base of the central area of Structure 3 lay some 0.1–0.2 m lower than the surrounding subsoil. It was covered in patches of charcoal-rich soil and also displayed what appeared to be cross-ploughed ardmarks, especially in the south-western quadrant (illus 8). There was no evidence for a formal hearth although a patch of fire-reddened sand was identified at the north end of the north-eastern quadrant.

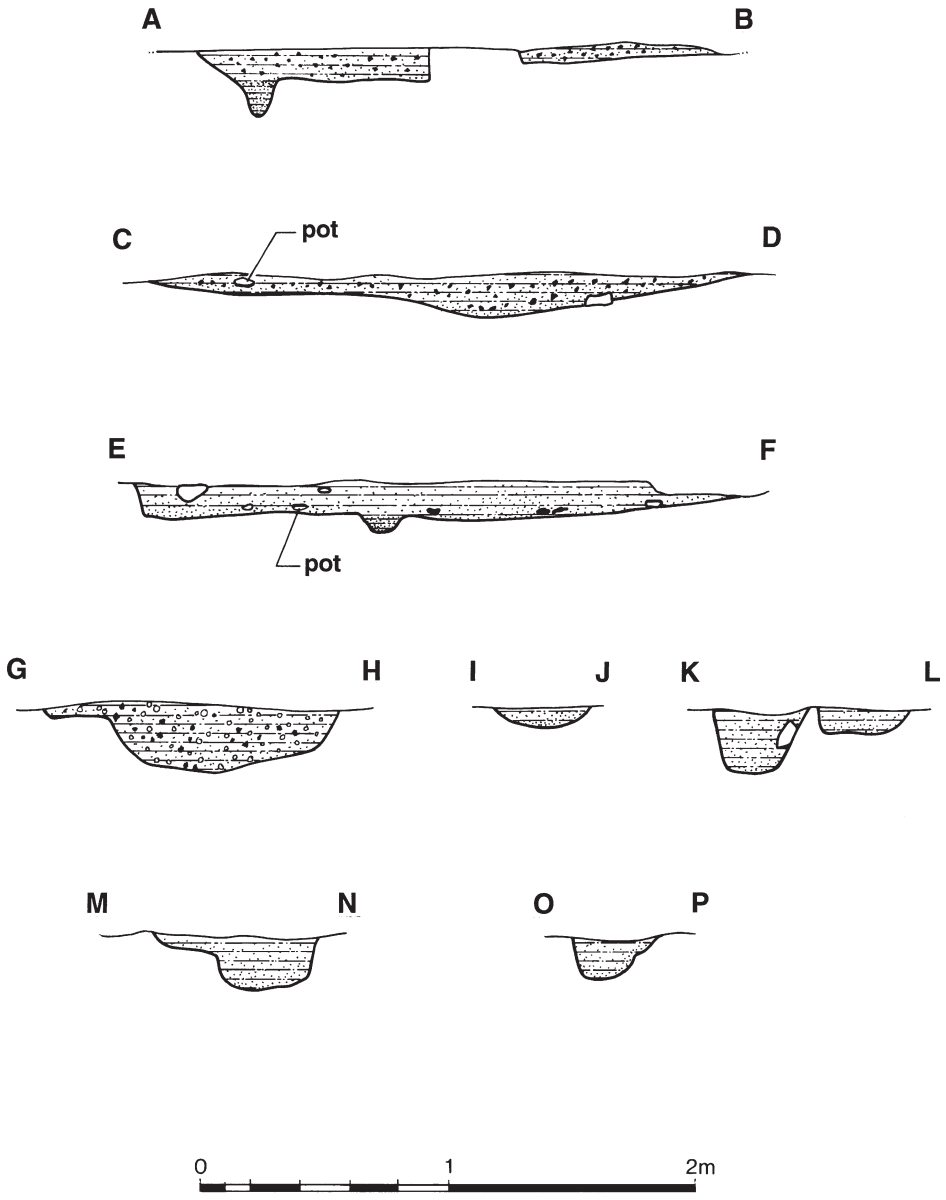
A projecting feature which extended to the south-east of the main structure appears to have formed an entrance passage. It was a shallow scooped channel, the base of which was heavily iron panned. Four deep post-holes (A, B, C, D) probably formed a porch. Charcoal recovered from the inner north-eastern post-hole A (1201) produced a radiocarbon date of 3460 ± 40 BP (OxA-8139), giving a two sigma calibrated range of 1890–1680 cal BC. Charcoal from the opposite post-hole D (1222) produced a radiocarbon date of 3170 ± 45 BP (OxA-8169), giving a two sigma calibrated range of 1530–1380 cal BC.

Structure 1 (illus 4, 10 & 11)

The truncated remains of what appears to have been a timber building, Structure 1, were located in the north-west corner of the excavation area (illus 4). It consists of about a dozen pits, perhaps post-holes, with a clear arc of features visible on the north side (illus 10). The overall shape of the structure is unclear. It may be circular, c 9–10 m in diameter, but could also be oval, 9–10 m wide by 11 m long: a porched entrance 1 m wide and 2 m long faced southwards. The interior was occupied by two large pits on either side of an irregular central hollow. The western pit contained a couple of pieces of unworked quartz, a rim sherd (P40; illus 29), of later prehistoric pottery and a sherd of medieval pottery; the latter was recovered from its upper fill and is considered to be a later intrusion. The fill of the central hollow included a large quantity of coarse later prehistoric pottery and fragments of oak charcoal, two samples of which were submitted for radiocarbon

ILLUS 10 Deer's Den: plan of Structure 1

dating and produced results of 2760 ± 40 BP (OxA-8138) and 2750 ± 45 BP (OxA-8137). These dates are statistically indistinguishable and the latter provides a two sigma calibrated range of 1000–820 cal BC indicating that the structure was probably of Late Bronze Age date, an interpretation supported by the pottery assemblage.



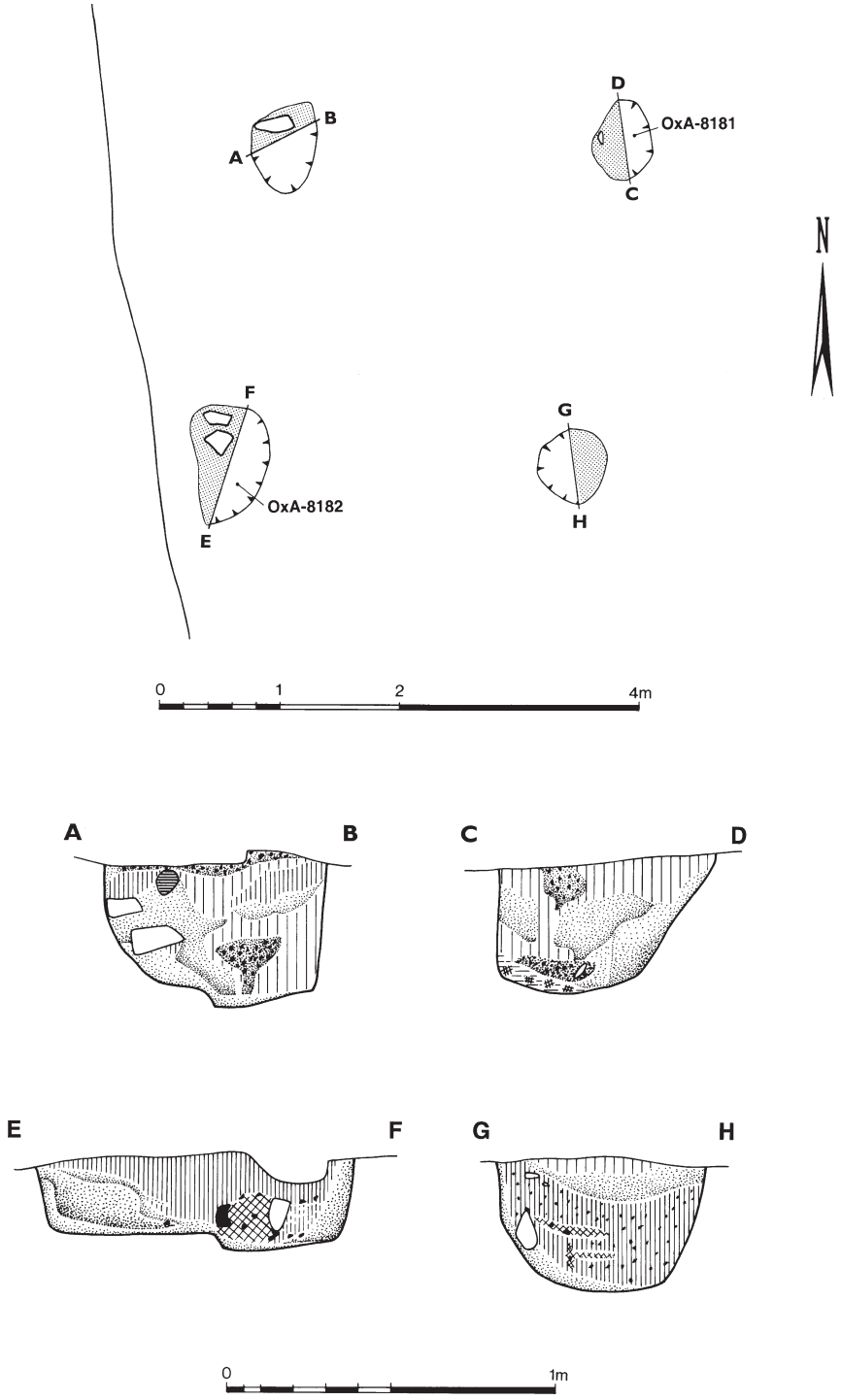
ILLUS 11 Deer's Den: sections of Structure 1

Structure 2 (illus 4)

Structure 2, like Structure 1, is represented by a concentration of small pits, covering an area c 9–10 m in diameter, perhaps representing the severely truncated remains of former post-holes (illus 4). Alternatively this cluster of features may simply relate to an area of activity perhaps associated with Structure 3. Apart from a small number of pottery sherds, few artefacts were recovered from these pits. It is not possible to securely determine their function and date.

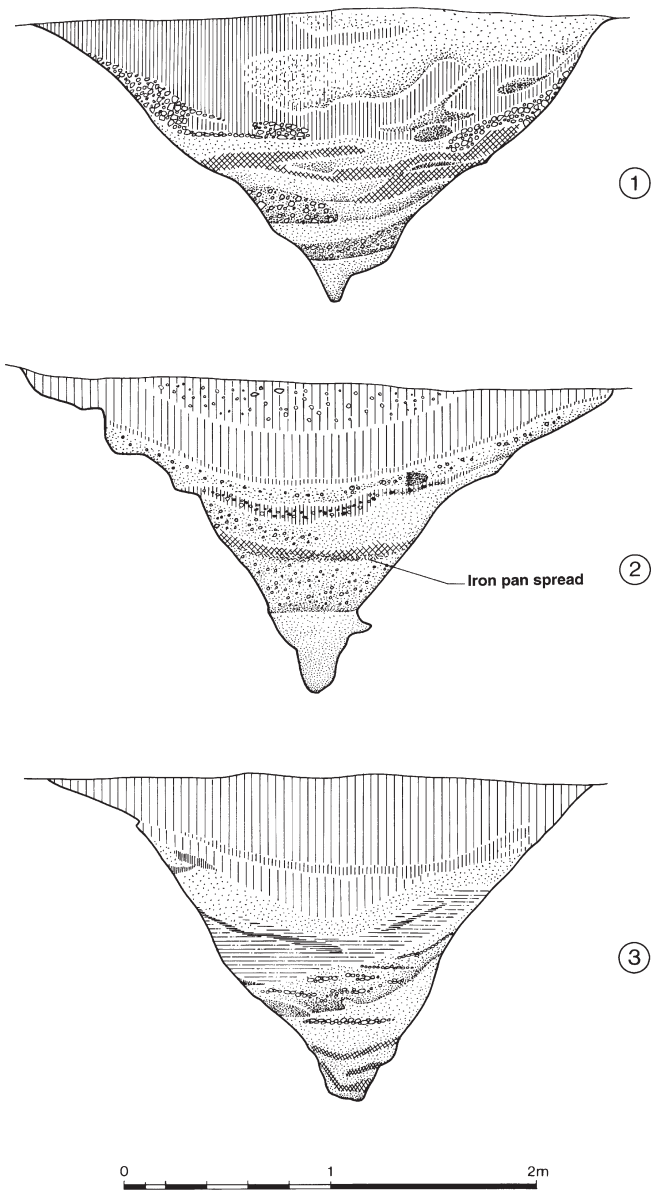
Four-poster (illus 4 & 12)

A four-post structure was located on the east side of the Roman temporary camp ditch (illus 4). These post-holes formed a rhomboidal plan rather than a perfect square and represent a structure



ILLUS 12 Deer's Den: four-poster

approximately 3 m by 3 m from post-hole centre to centre (illus 12). No artefacts were recovered from the fill of the post-holes but samples of wood charcoal were collected for radiocarbon dating. Hazel charcoal recovered from the north-eastern post-hole (1010) produced a radiocarbon



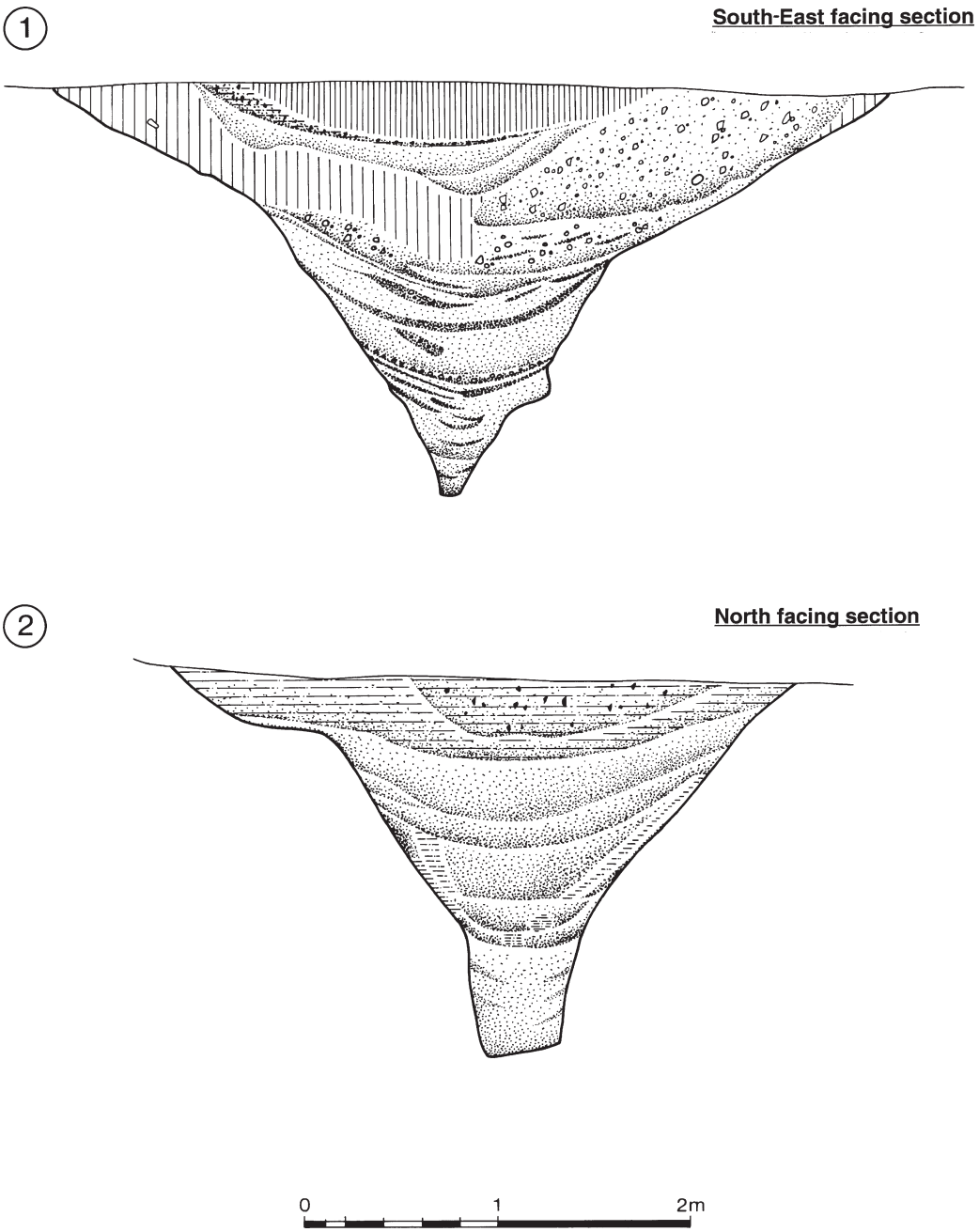
ILLUS 13 Deer's Den: Roman temporary camp ditch sections

date of 2610 ± 45 BP (OxA-8181), giving a two sigma calibrated range of 900–760 cal BC. Birch charcoal from the south-west post-hole, 1012, produced a radiocarbon date of 2520 ± 40 BP (OxA-8182), giving a two sigma calibrated range of 810–520 cal BC. These dates indicate that this structure belonged to the end of the Late Bronze Age and start of the Early Iron Age and its use may have overlapped with Structure 1.

ROMAN IRON AGE AND EARLY HISTORIC

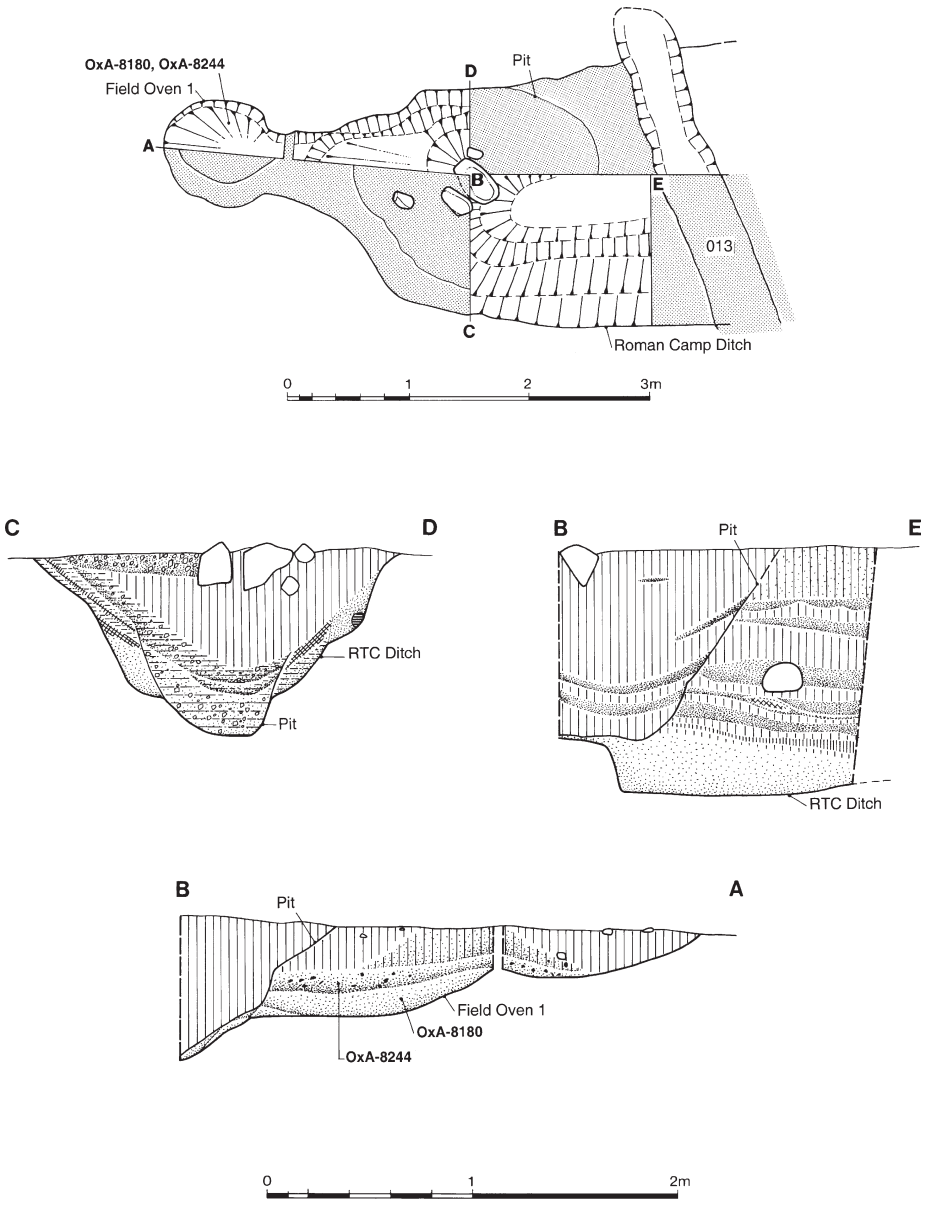
Roman temporary camp (illus 3, 4, 13–16)

A total length of 58 m of the Roman temporary camp perimeter ditch was exposed (illus 4). This was excavated at the ditch terminal and at three positions along its length. As had been found



ILLUS 14 Deer's Den: Roman temporary camp *titulus* ditch sections

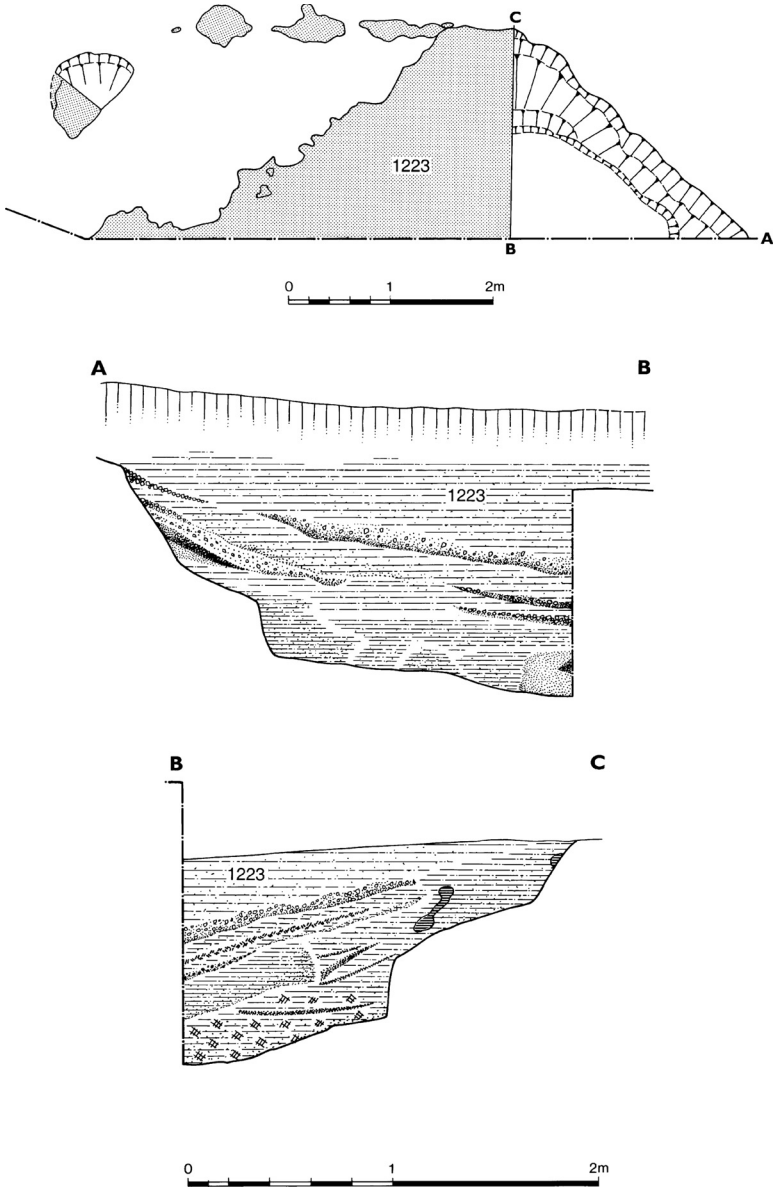
during previous excavations elsewhere on this camp (Alexander 1996b; Rees 1996; A N Shepherd 1986) the fills of the ditch indicate that it had silted up gradually (illus 13 & 14). On the surface of the infilled ditch a band of gravel was noticeable along the eastern edge and represents where the defensive bank had slumped in. No evidence for recutting was visible in the main length of the ditch. The terminal clearly revealed a more complex sequence where the ditch had been possibly cut by a later field oven and definitely by a later pit (illus 15).



ILLUS 15 Deer's Den: Roman temporary camp ditch terminal, field oven 1 and pit

The *titulus* ditch, c 12 m long, was located c 12 m west of the axis of the perimeter ditch. Two sections were excavated through its fill; one at the northern terminal and the other towards its southern end. Unfortunately diagnostic datable artefacts were absent from the fills of both the *titulus* and perimeter.

A large straight-edged depression (1223) was located at the limit of the excavation area to the south of the Roman temporary camp ditch terminal (illus 4). This feature was visible on the aerial photograph (illus 3) where it appears as a dark circular blob which appears to overly the southern terminal of the Roman temporary camp entrance. It was superficially similar to Structure 3 but upon excavation its depth, in excess of 1 m, and steep sides suggested that this comparison is inappropriate (illus 16). It did not appear to form the southern ditch terminal of

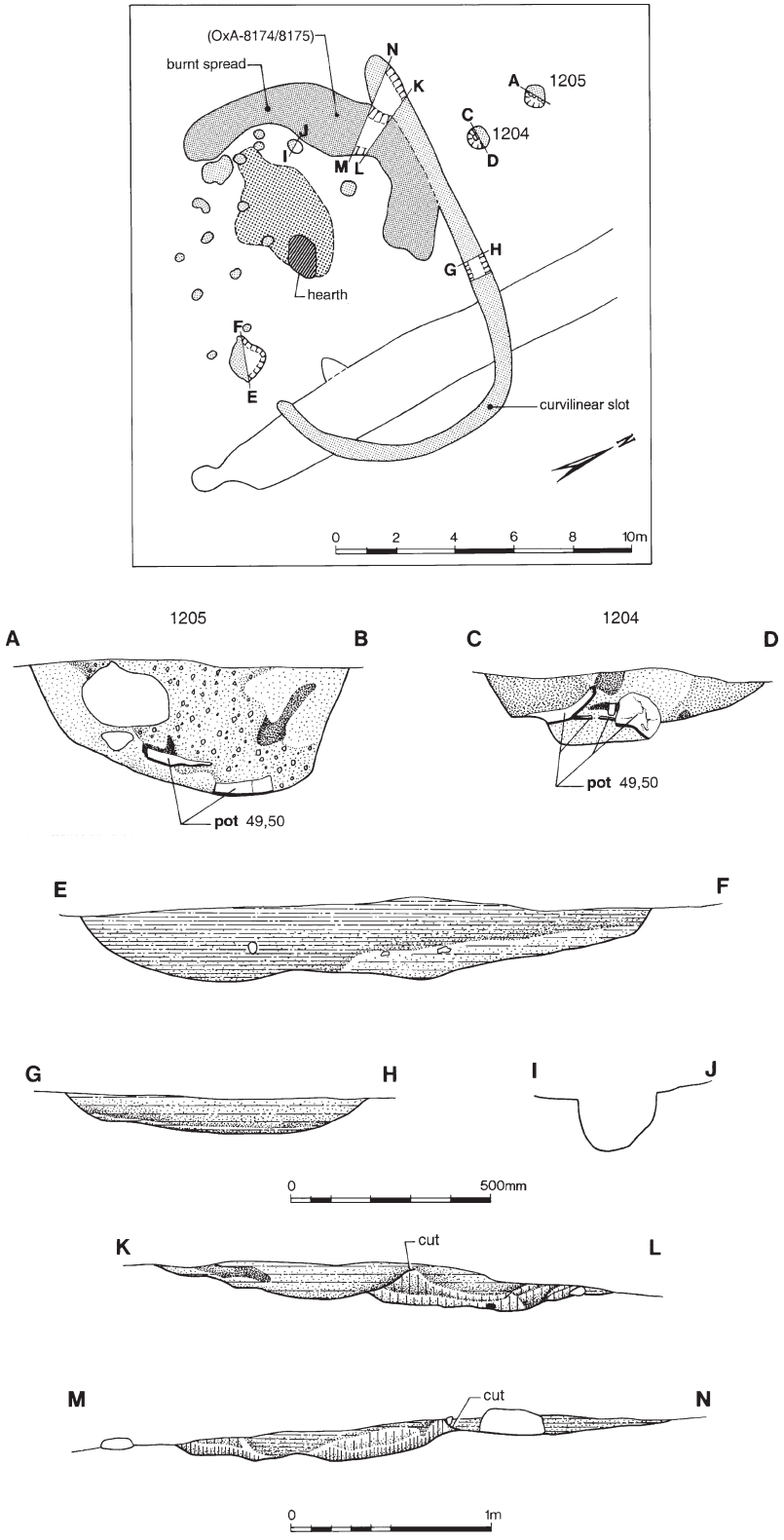


ILLUS 16 Deer's Den: Pit 1223

the Roman temporary camp entrance. Without excavation of the intersection between this feature and the Roman temporary camp ditch, which lay outside the area to be affected by road construction, the relationship between them will remain unknown.

Structure 4 (illus 4 & 17)

The complex of features hereafter grouped as Structure 4 is enigmatic and its chronological position within the sequence of activity on the site remains uncertain. Located east of the spread of Neolithic pits (illus 4), this complex comprised an arc of burnt sand (005) and about 16 small pits, some potentially post-holes (illus 17). The external edge of this arc was c 12 m long and was a maximum of 0.2 m deep. South-east of it lay a small sub-rectangular area of bright orange



ILLUS 17 Deer's Den: Structure 4 plan and sections

burnt sand indicating the location of a fire. To the west of this fire-spot there was halo of less burnt sand. Finds from this area were few but one of the small pits (039) contained a small quantity of unidentifiable burnt bone fragments. Two samples of charcoal were taken from the lower lens of the arc of burnt sand and produced radiocarbon dates of 2560 ± 40 BP (OxA-8174) and 1830 ± 40 BP (OxA-8175). These provide two sigma calibrated ranges of 820–750 cal BC and cal AD 80–260, respectively. The difference between these dates indicates that residual charcoal pieces were incorporated in the burnt spread.

The relationship between the arc of burnt sand and a shallow curvilinear slot (013), which clearly cut across the top of the infilled Roman camp ditch, proved difficult to determine, but careful excavation appeared to suggest that the curvilinear feature also truncated the burnt arc of sand and is therefore later than both this feature and the Roman temporary camp.

Pit scatters (illus 4)

A line of seven pits (illus 4) running approximately parallel with the edge of the Roman temporary camp perimeter ditch to the north of the entrance may represent the remains of post-holes which could have supported a light fence respecting the line of the ditch. It is known that the Roman army on campaign carried stakes which the men inserted through/into the upcast bank to form a defensive barrier although this practice has not been confirmed by excavation. Indeed, it is difficult to demonstrate that the pits at Kintore are contemporary with the initial use of the camp. It is considered more likely that they were constructed beside the partially silted up line of the ditch at some later period.

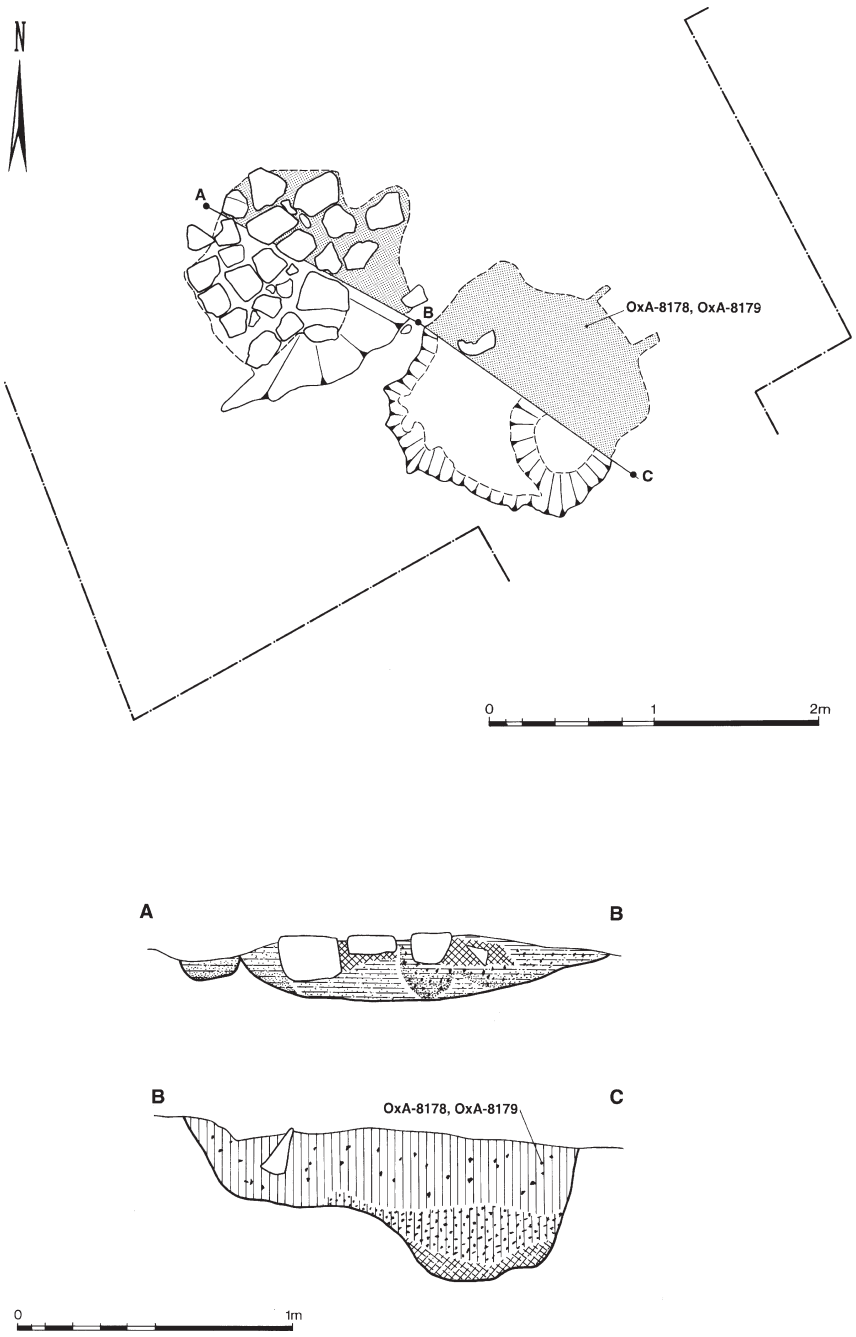
A further group of six pits to the north-west of field oven 2 (illus 4) were poorly preserved, contained no artefacts and are of unknown function. Another group was located to the south and east of Structure 3 and may be related to it. Among these pits, a shallow area of burning (1094) represented the remains of a fire, while a large pit (1091), which measured c 2.2 m in diameter and between 0.7–0.9 m deep, contained no artefacts and was of unknown function. A small group of six pits was located in the area between Structures 1 and 2.

Shallow spreads

About 10 shallow spreads of dark brown silty sand were located, with a particular concentration in the centre of the excavation area. These were usually iron panned and very compact, lying in shallow depressions in the subsoil surface. Some contained small numbers of artefacts. These deposits were probably formed naturally with residual artefacts incorporated from the ploughsoil.

Field ovens (illus 4, 15 & 18)

To the south of the ditch terminal there were the remains of what appeared to be a figure-of-eight field oven (FO1) containing a charcoal rich fill (illus 15). A sample of charcoal and a sample of burnt barley were submitted for radiocarbon dating and produced dates of 1620 ± 40 BP (OxA-8180) and 1540 ± 50 BP (OxA-8244), respectively. These give two sigma calibrated ranges of cal AD 330–550 and cal AD 410–610. The stratigraphic relationship between this field oven and the end of the camp ditch remains unclear since both were subsequently truncated by a large pit of unknown function and date. The radiocarbon dates, however, suggest that the oven is substantially later in date and not associated with the bread-eating Roman army.



ILLUS 18 Deer's Den: field oven 2

In addition to this field oven (FO1), the remains of another (FO2) were located in the north-eastern corner of the excavation area (illus 4). This consisted of a circular setting of granite stones forming a flat surface in a shallow hollow (illus 18). The sand between these boulders was clearly burnt and the adjacent pit, which appears to have formed an integral part of this oven, contained a charcoal-rich fill. Two samples of charcoal were taken from its fill and produced radiocarbon dates of 1995 $\pm$ 40 BP (OxA-8178) and 1885 $\pm$ 40 BP (OxA-8179). These provide two sigma calibrated ranges of 90 cal BC to cal AD 130 and cal AD 20–230, respectively, which suggests that this oven could be Roman.

ROSEBANK

Trial trenching during the evaluation phase of the project exposed lengths of the northern perimeter of the Roman temporary camp at Rosebank. Four 10 m by 10 m trenches were also stripped upslope from the camp ditch (illus 19).

Roman temporary camp (illus 1, 19 & 20)

The northern perimeter of the Roman temporary camp at Rosebank cuts diagonally across the field and downhill to the north-east. The *titulus* entrance shows very clearly on a colour aerial photograph (Shepherd & Greig 1996) and lay outside the road corridor to the west. Where the ditch was crossed by the roadline its full length was exposed and three sections were excavated through its fills. All three sections revealed a characteristic steep-sided V-shaped profile. The ditch appears to have silted up gradually, with evidence for the upcast bank having slumped back into it along the southern side. No remains of the defensive bank or any associated deposits were discovered. Despite excavating a 10 m wide strip along the line of the ditch only one feature, a small pit 0.3 m deep, was located to the north of the ditch. No artefacts were recovered from the ditch fills and the palaeoenvironmental potential of the lower ditch fill, which seemed to be free-draining, was considered to be negligible.

Field oven and pits (illus 19 & 20)

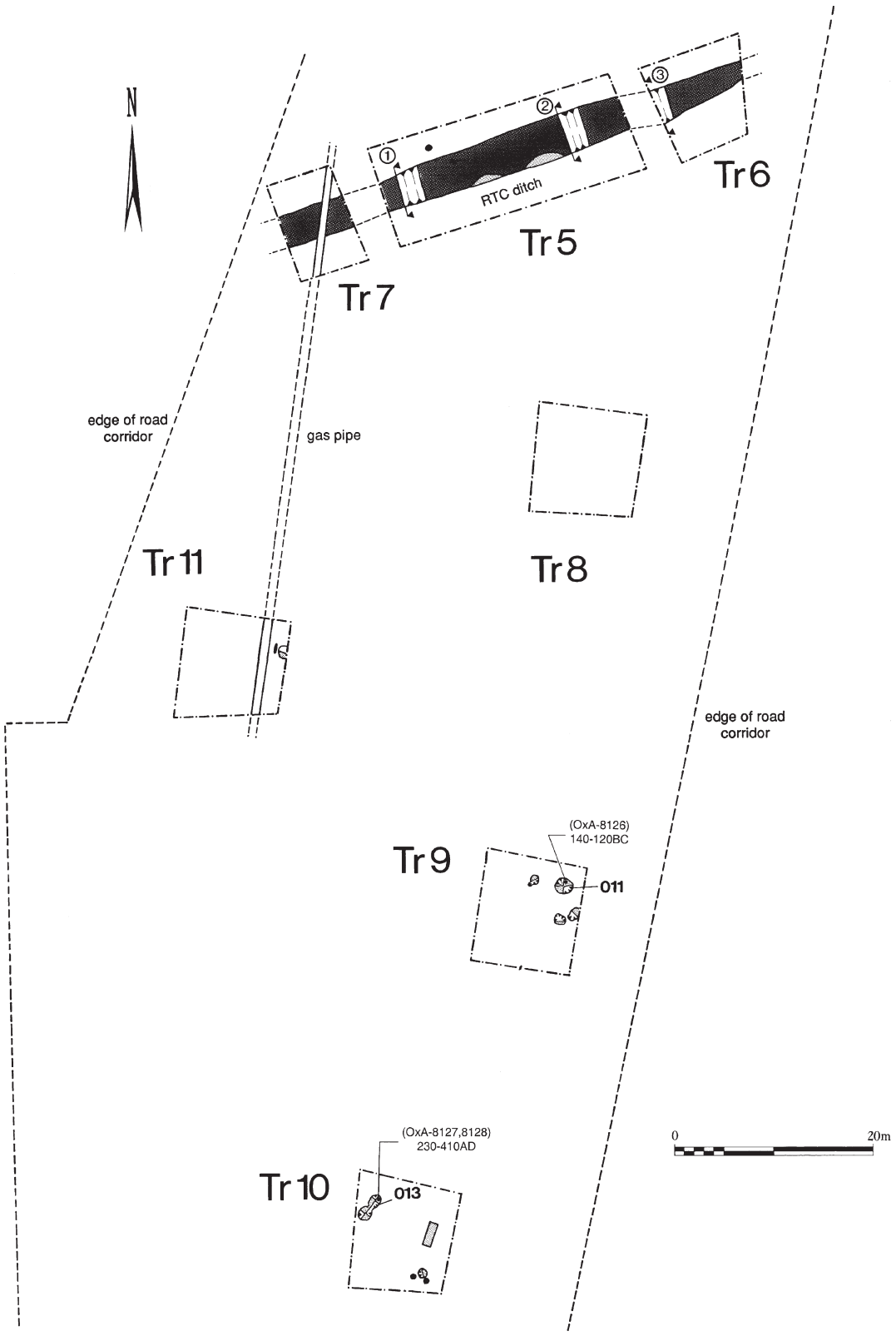
Upslope, within the area of the Roman temporary camp, nine pits were located in Trenches 9, 10 and 11 (illus 19). Of particular note was a large circular pit (Pit 011) in the north-east corner of Trench 9 which contained quantities of charcoal and carbonized seeds (illus 20). Samples from this pit were sieved and the seeds identified mainly as hulled barley (see below). One of these seeds produced a radiocarbon date of 2175 $\pm$ 35 BP (OxA-8126), giving a two sigma calibrated range of 370–160 BC. In Trench 10 another field oven (FO3) in the form of a dumb-bell-shaped pit, deeper at its southern end, and containing charcoal was located (illus 19). The shallower end of this oven displayed clear signs of burning. Two samples of wood charcoal taken from its deeper end produced radiocarbon dates of 1825 $\pm$ 35 BP (OxA-8127) and 1720 $\pm$ 35 BP (OxA-8128). These provide two sigma calibrated ranges of cal AD 80–260 and cal AD 230–410, respectively. The second date would place the use of this field oven outside the period of the main known Roman campaigns in northern Scotland.

SPRINGBANK

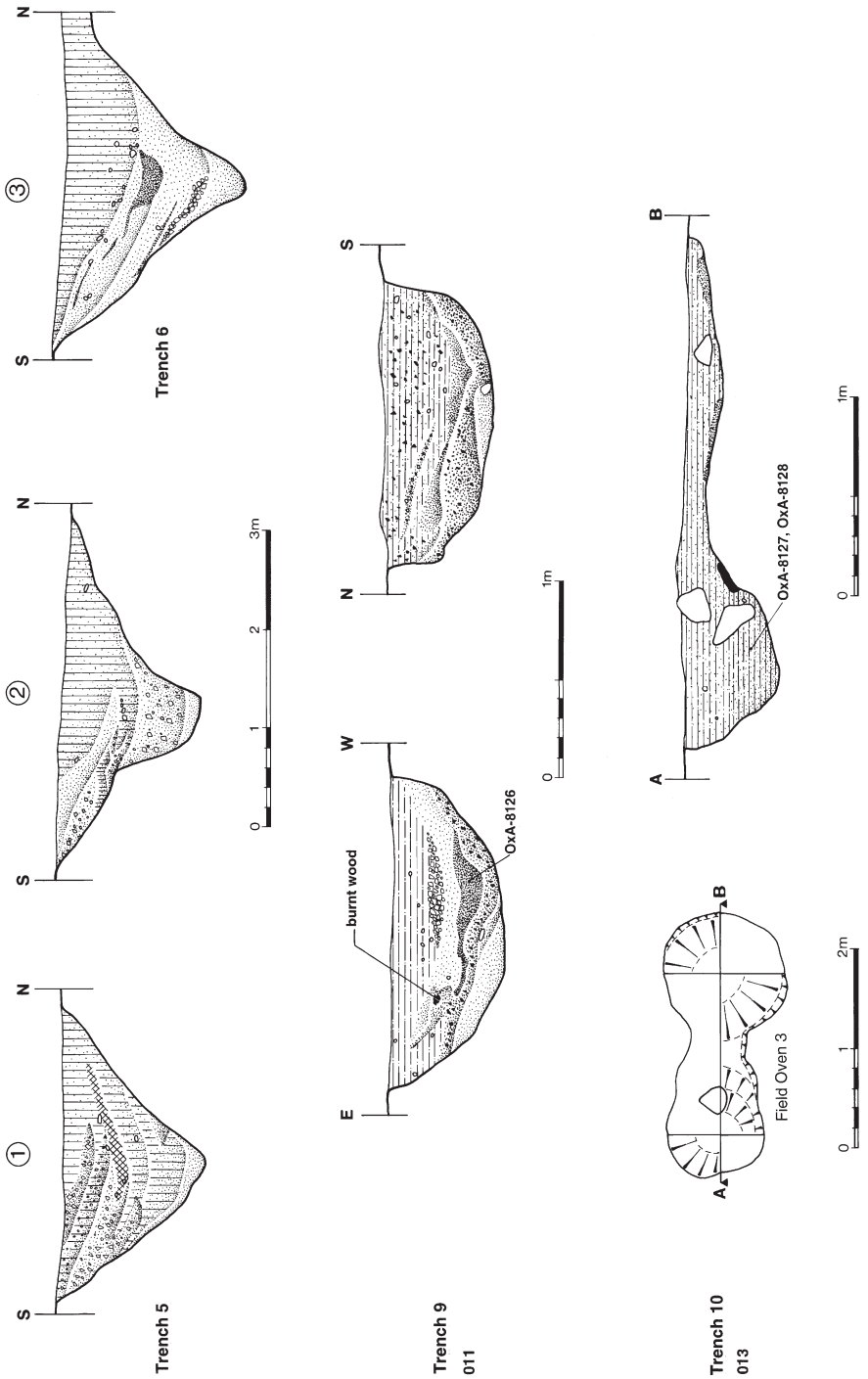
To the south of Forest Road in the flat ground between Rosebank and Deer's Den several excavation trenches each produced a few finds (illus 1). Those pits in Trench 15 produced some sherds of coarse pottery (P72; illus 27) and a flake of flint, while a quantity of slag was recovered from a shallow depression in Trench 17. No evidence was recovered to support the proposal for a medieval hospital in the area, here suggested by the field name 'Lands of the Holy Cross'. There was a noticeable absence of artefacts within the topsoil in this sector.

TAVELTY

During the evaluation 11 post-holes were located in a trial trench (Trench 31) close to Tavelty Farm on the east side of the existing A96 (illus 21). A larger excavation area was subsequently

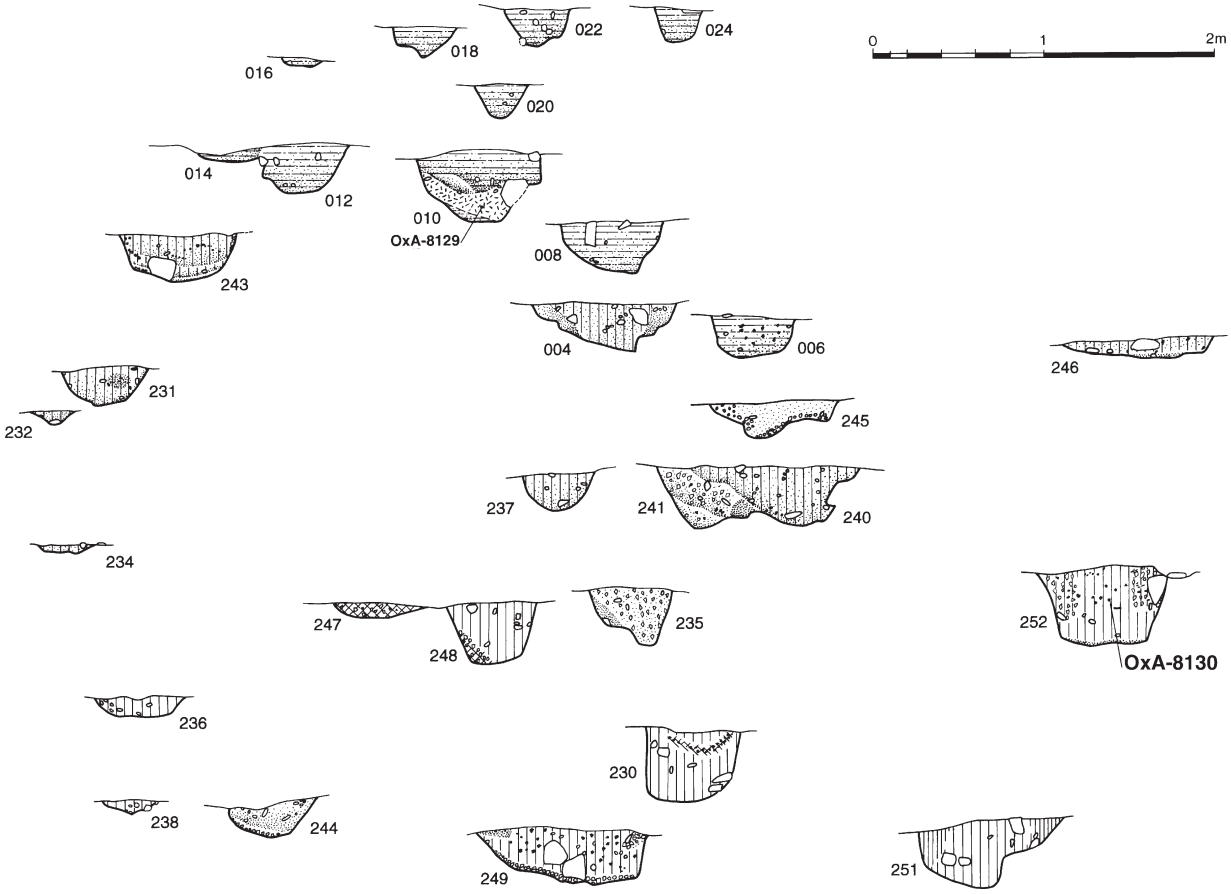


ILLUS 19 Rosebank: plan



ILLUS 20 Rosebank: sections

ILLUS 21 Tavelty: location and plan



ILLUS 22 Tavelty: sections

opened and confirmed that these post-holes appeared to form part of a sub-circular post-built structure c 10m in diameter (illus 22). It is possible that four pits (247, 235, 249 & 230) represent the remains of a south-eastern entrance into the structure, although the difference in depth between these features may argue against this. No artefacts were recovered from the features which would provide an indication of the date of this structure. Pit 010 contained pieces of burnt daub and a slag-like material which enveloped carbonized seeds. One of these carbonized barley seeds produced a radiocarbon date of 2055 $\pm$ 40 BP (OxA-8129), giving a two sigma range of 190 cal BC–cal AD 20.

One large pit (241) within the circle may represent the remains of an internal storage pit or structural feature. The three larger pits (246, 252 & 251) located to the east of the structure, may have formed part of a related structure, perhaps a short length of fence acting as a windbreak. Only one of these pits (252) contained charcoal, which produced a radiocarbon date of 1975 $\pm$ 40 BP (OxA-8130), giving a two sigma range of 100 cal BC–110 cal AD. The series of small pits (016, 018, 020, 022 & 024) to the north-west of the structure are of unknown function but may be related to its use.

Three parallel shallow ditches represent the remains of relatively recent agricultural cultivation. These features, c 7 m apart, are the remains of furrows between rigs and probably date to the post-medieval period.

CAIRNHALL

A group of four pits, located to the east of Cairnhall farm (illus 21), contained body sherds of undecorated pottery which, on comparison with the material from Deer's Den, is likely to be of Neolithic date. One of the other pits, however, contained a sherd of medieval pottery.

BOGHEAD CROFT

At the southern end of the Kintore section of the bypass Trench 51, situated on the north-west side of a natural rock outcrop between Coolgardie and Boghead Croft (illus 1), revealed five small pits, none of which contained any artefacts. However in Trench 52 on the south-east side of the outcrop there was a large shallow irregular pit which contained angular stones, a sherd of decorated pottery (P71) and three flint flakes (one a scraper of grey flint). The date of this sherd is unclear but the concave internal bevel on the rim invites comparison with the material from Structure 1 at Deer's Den and suggests it too may be of Late Bronze Age date.

POTTERY

Derek Alexander

EARLY PREHISTORIC POTTERY

The Neolithic pottery assemblage from Deer's Den comprises some 274 sherds, fragments and crumbs with a total weight of approximately 4.2 kg. The assemblage consists mostly of small sherds. It represents no fewer than 41 vessels belonging mostly to the Western Neolithic tradition of round-based bowls, many of which are carinated. Owing to the irregularity of vessel form, the lack of decoration, and the variety of surface colour and texture, resulting from scorching and abrasion, it is difficult to assign many of the featureless body sherds to individual vessels. Substantial portions of only two vessels survive, along with small fractions of at least another 39 vessels. The sherds were examined macroscopically and where possible grouped into vessels on the basis of their fabric, form, finishing and condition. It is considered that the body sherds are most likely to be from the range of vessels represented by the rims. These body sherds have not been listed in the published catalogue.

Fabric

The fabric of the Neolithic pottery is relatively consistent: a hard fine sandy matrix containing sparse (7%) to moderate (15%) small angular to sub-angular quartz, quartzite and rock inclusions (rarely larger than 3 mm). The firing of the material is very variable much of it being oxidized while other sherds are unoxidized and irregularly fired. The better preserved examples such as P1 and P18 are dark greyish brown in colour whereas many of the smaller sherds are brown. The latter may indicate that much of the material was burnt after breakage and before deposition in the pits.

Form

Owing to the very fragmentary nature of the assemblage the form of many of the vessels present is difficult to identify. However, there is clear evidence for at least nine carinated vessels, such as

P6, P9, P11, P13–18 and P67. Evidence for uncarinated vessels is always less easy to find but P33 is definitely uncarinated while the basal angle on P1 does not appear sharp enough to be classed as a carination. The majority of rim sherds are simple, rounded and slightly flared but a number suggest a more open profile such as P2. Only one fragment of lug (P4) was recovered and it is unclear what form of vessel it came from. One sherd and a fragment (P68) of pottery, decorated with incised diagonal lines, may be from the collar of a vessel similar to the biconical decorated vessels recovered from Balbridie (Ralston 1982, 240–2, illus 1). In addition to the sherds of early Neolithic bowls there was a single unstratified sherd (P69) which displayed traces of grooved decoration and may be from a late Neolithic Grooved Ware vessel.

Construction

Evidence for construction technique is relatively limited but several sherds indicate that the vessels (P1, P6 & P17) were built by squeezing down rings of flattened clay on to the rounded top of the rings below. P2 shows traces of an externally bevelled junction lower down the side of the body.

Surface treatment

Many, but not all, of the vessels were covered in a slip of finer clay which was often burnished. Burnishing is present on both the interior and exterior of P1 and P8. Fluting, probably by the hand of the potter, is evident on the exterior of at least nine vessels. This varies in depth, regularity and position, although it is only found very lightly on the inside of one vessel (P8).

Use of vessels

Only a few of the vessels display traces of thin organic residues and sooting on their external surfaces (P1 & P10). P12, however, probably from the base of a bowl has a wide ring of burnt material on the interior.

Breakage and deposition

With one or two exceptions, most notably P1 and P18, the assemblage is very fragmentary, the average sherd length being c 27 mm. In general, however, the sherds are unabraded and some are very fresh which might imply that they were not exposed on the surface too long before incorporation into the pit fills. The quantity of oxidized sherds may suggest that much of the material was burnt before deposition. The large numbers of sherds and vessels in some of the pits, such as 1028, is surprising, and may reflect deliberate deposition directly into the pits.

Discussion

The material from Kintore compares with the growing number of sites in the north-east of Scotland which produce pottery of the Western Neolithic tradition, most notably the assemblages from Boghead (Henshall 1984) and Easterton of Roseisle (Henshall 1983). Henshall has provided a comprehensive review of the material from north-east Scotland including both of these sites and several smaller isolated scatters (ibid 1983). To this body of evidence can be added the recently published assemblage from Midtown of Pitglassie (Shepherd 1996, 31–3) and some of the

material from the Neolithic timber hall at Balbridie (I B M Ralston, pers comm). More recently a small assemblage of Neolithic pottery has been recovered from excavation work at Greenbogs, Monymusk (Greig 1996, 9–10).

The close similarities between the published assemblages is remarkable although there are slight differences. In general, they all contain a mix of fine open fluted carinated bowls and a few coarser uncarinated plain bowls. The Kintore assemblage is similar in size to the Easterton assemblage which contained between 33–36 identifiable vessels. The Boghead assemblage contained about 43 Neolithic vessels but at 8.6 kg was almost double the weight of the Kintore assemblage.

Material in what has been generally termed the Grimston/Lyles Hill style has been dated elsewhere in Scotland to the first half of the fourth millennium cal BC: 4810 ± 90 uncal BC (GaK-601) from below the cairn at Pitnacree, Perthshire (Coles & Simpson 1965, 40), and 5070 ± 105 uncal BC (I-6409) at Lochhill cairn, Stewartry of Kirkcudbright (Masters 1973). In the north-east of Scotland, two dates from the black layer, which contained the sherds of pottery, under the mound at Boghead produced dates of 4900 ± 60 (110) uncal BC (SRR-684) and 4960 ± 110 (155) uncal BC (SRR-684) (Burl 1984, 54). A similar pre-mound black layer at Midtown of Pitglassie contained sherds of Neolithic pottery and was dated to 4660 ± 50 BP (GU-2049), giving a two sigma range of 3620–3342 cal BC (Shepherd 1996, 23). The three radiocarbon dates obtained from charred material in two of the pits at Kintore supports the typological evidence that the Deer's Den material fits well into the chronological horizon for this type of pottery defined on other sites in the north-east of Scotland.

Catalogue of early prehistoric pottery (illus 23–7)

P 1 One large rim sherd and two body sherds from a plain bowl c 280–300 mm in diameter. About 17% of the rim survives. It has a simple rounded rim slightly flattened in places. The rounded top of a ring junction is visible in one of the breaks. The exterior of the pot has slight traces of vertical fluting on the belly and also has thin patches of organic deposits below the rim. The form of the vessel appears to have been a simple rounded bases bowl with uprights sides and slightly flaring rim. Although very little of the basal angle survives this does not appear to be sharp enough to be classed as a carination. Pit 1028.

P 2 Three rim sherds and one body sherd of a flared bowl. The rim is rounded with a slight external bevel. There are very slight indications that the exterior may originally have been burnished but there is nothing to indicate that this was the case on the interior. The fabric is coarse and sandy with quartzite inclusions. There are traces of horizontal wipe marks on the exterior. The lowest fracture suggests an externally bevelled join. Pit 1028.

P 3 Abraded rim sherd of slightly flaring vessel of coarse sandy fabric. It is unburnished and has a rounded flat rim with a visible wipe mark along the inner lip. Pit 1028.

P 4 Abraded and broken lug from a coarse unburnished vessel of a sandy fabric. The lug has a pinched, concave lower surface. The broken joins around the lug are relatively thin and may have been weakened by pinched out rather than being applied. Pit 1028.

P 5 One rounded rim sherd very slightly out-turned. Burnished on the interior and exterior with fluting visible on the exterior. Pit 1028.

P 6 One rim and one body sherd from a well-made carinated bowl. The rim is simple with a flattened external bevel and there is light vertical fluting on the exterior below the rim. There is less fluting visible above the carination. The interior and exterior surfaces are burnished. Both sherds have broken along the horizontal construction joins revealing the rounded tongue and groove joins of the ring built technique which has been smoothed over on the interior and exterior. The wall is slightly thinner immediately above the carination. Pit 1028.

P 7 Two joining rim sherds of a slightly flared vessel with burnished interior and exterior. The rim is rounded but has been slightly flattened. Pit 1028.

P 8 Five rim sherds from a deeply fluted bowl with flared rim. The rim is rounded, very slightly out-turned, and has fluting along the top. Both the interior and exterior are highly burnished. The fluting on the exterior is irregular and sinuous; it varies between vertical and diagonal. There are only very faint traces of limited fluting on the interior. The interior of the rim shows evidence of scorching in places. Pit 1028.

P 9 Sherd from the neck and carination of a bowl. The neck is slightly concave implying that it belonged to a vessel with a flared rim. The exterior surface is burnished but the interior retains a smooth sandy unburnished surface. Pit 1028.

P 10 Two rim sherds from a slightly flared vessel. The rim is simple and rounded. The surfaces are generally smooth and partially burnished. The exterior may have originally been more burnished but is masked by sooting and thin organic deposits. Pit 1028.

P 11 One rim sherd of what may be a relatively upright sided bowl. Only a small potion of the basal angle survives and it is difficult to determine whether this is sharply enough defined to be classed as a carination. The thickness of the body narrows sharply immediately below the rim. The rim is rounded but shows clear signs of having been smoothed back down the sides. The exterior is burnished but shows no signs of fluting and the interior remains a rough sandy unburnished surface. In general, this vessel appears cruder than many of the others. Pit 1028.

P 12 Three base sherds, two of which join, of the rounded base of a bowl. It is possible that the upper edge of the sherds have fractured along the line of a carination. Both the interior and exterior of the vessel is burnished but there is no trace of fluting. There are slight traces of horizontal wipe marks around the exterior. The upper part of the sherds on the interior is covered by sooting and thin organic deposits but the lower part, towards the actual base of the bowl, is free of soot. This may reflect soot being deposited higher up the side of the vessel or could be simply that these parts of the sherds have been more abraded, since they also lack burnishing. Pit 1028.

P 13 Sherd from the base and carination of a bowl. The wall of the vessel is slightly thinner immediately above the carination. Although the base and neck of the vessel appear to have been only lightly fluted on the exterior edge of the carination is more deeply fluted. The exterior surface is highly burnished while the interior is burnished to a lesser extent. Pit 1028.

P 14 Small partly burnished body sherd with hole drilled through it after it had been fired. Pit 1028.

P 15 Body sherd from the carination of a bowl displaying fluting both above and below the carination. The exterior surface is burnished while the interior is unburnished. Pit 1028.

P 16 Body sherd from the carination of a bowl with a burnished exterior. There lines of vertical fluting above the carination and the suggestion of some below. Pit 1028.

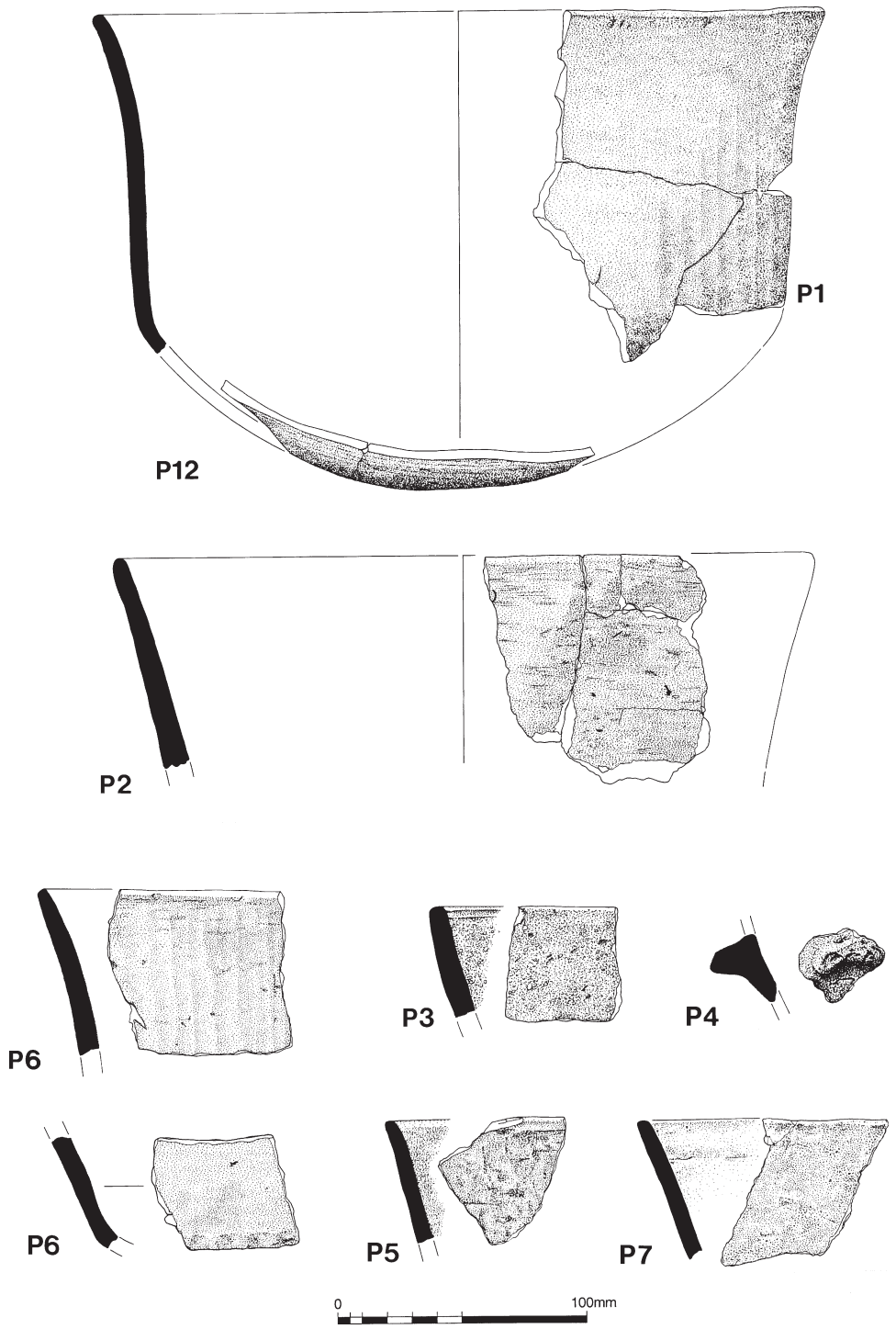
P 17 Body sherd from above carination of a bowl showing evidence of ring construction join. The exterior is lightly burnished but there is no sign of fluting while the interior is unburnished. Pit 1028.

P 18 Five rim sherds and two base sherds which join, plus another rim sherd, forming 25% of a small carinated bowl c 130–140 mm in diameter (at the rim). The bowl has rounded upright rim with a concave neck expanding to a carination 140–150 mm in diameter. Below the pronounced carination the body curves down to a rounded base and, although incomplete, the vessel must have stood around 110 mm high. The exterior is burnished while the interior shows less burnishing but is more abraded. Although well made both the rim and the carination display the irregularity of a hand-made vessel. In particular, the carination is not level around the surviving portion of this pot. Pit 1027.

P 19 Two rim sherds from an upright sided vessel. The rim is rounded with a sharper edge on the exterior. The surfaces are smooth and the exterior is sooted. Pit 1027.

P 20 Two rim sherds from a vessel with a flared rim. The rim flattened along its outer edge. The surfaces are smooth but unburnished and the exterior is sooted. Pit 1027.

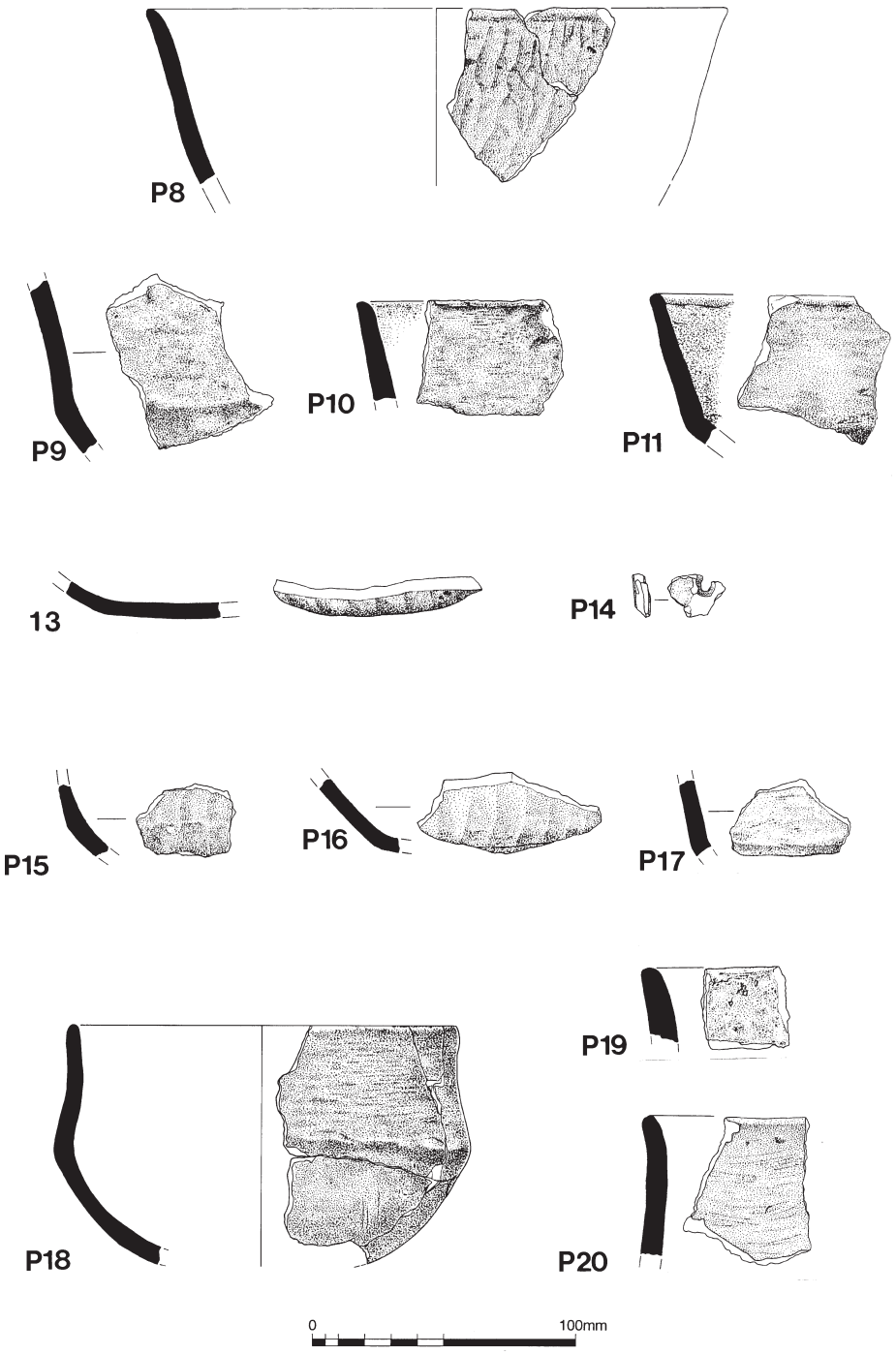
P 24 One rim sherd from a slightly flared vessel. The rim is rounded and lightly dimpled along the top. The exterior and interior surfaces are highly burnished. There are very faint traces of irregular vertical fluting on the exterior. Pit 1172.



ILLUS 23 Early/Middle Neolithic pottery (P1–7, 12)

P 25 One rim sherd from a slightly flared rimmed, unburnished vessel. The rim is rounded. Pit 031.

P 26 A rim sherd and joining body sherd from a vessel with a flared rim. The rim itself is rounded and is burnished on the exterior with no trace of fluting. Pit 1198.

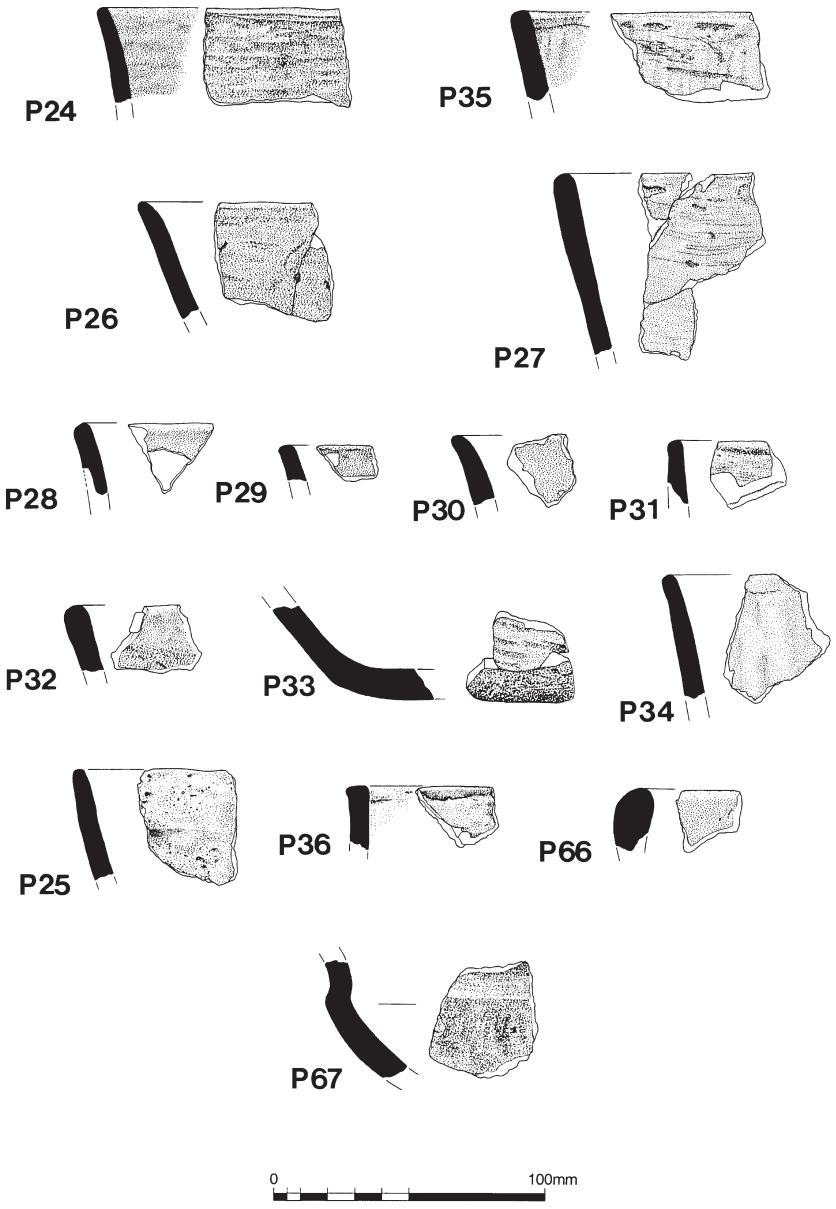


ILLUS 24 Early/Middle Neolithic pottery (P8–11, 13–20)

P 27 Two rim sherds and one body sherd from an upright sided vessel of a relatively coarse fabric. The rim varies in thickness and shape; sometimes flattened and sometimes rounded. Pit 1152.

P 28 Flattened rim sherd with rounded edges. It has smoothed interior and exterior surfaces but not burnished. Topsoil.

P 29 A small plain rounded rim sherd slightly out-turned. The surface is smooth but unburnished. Topsoil.



ILLUS 25 Early/Middle Neolithic pottery (P24–36, 66–7)

P 30 Small abraded and broken rim sherd from a vessel with a slightly out-turned rounded rim. The exterior may have been burnished. Topsoil.

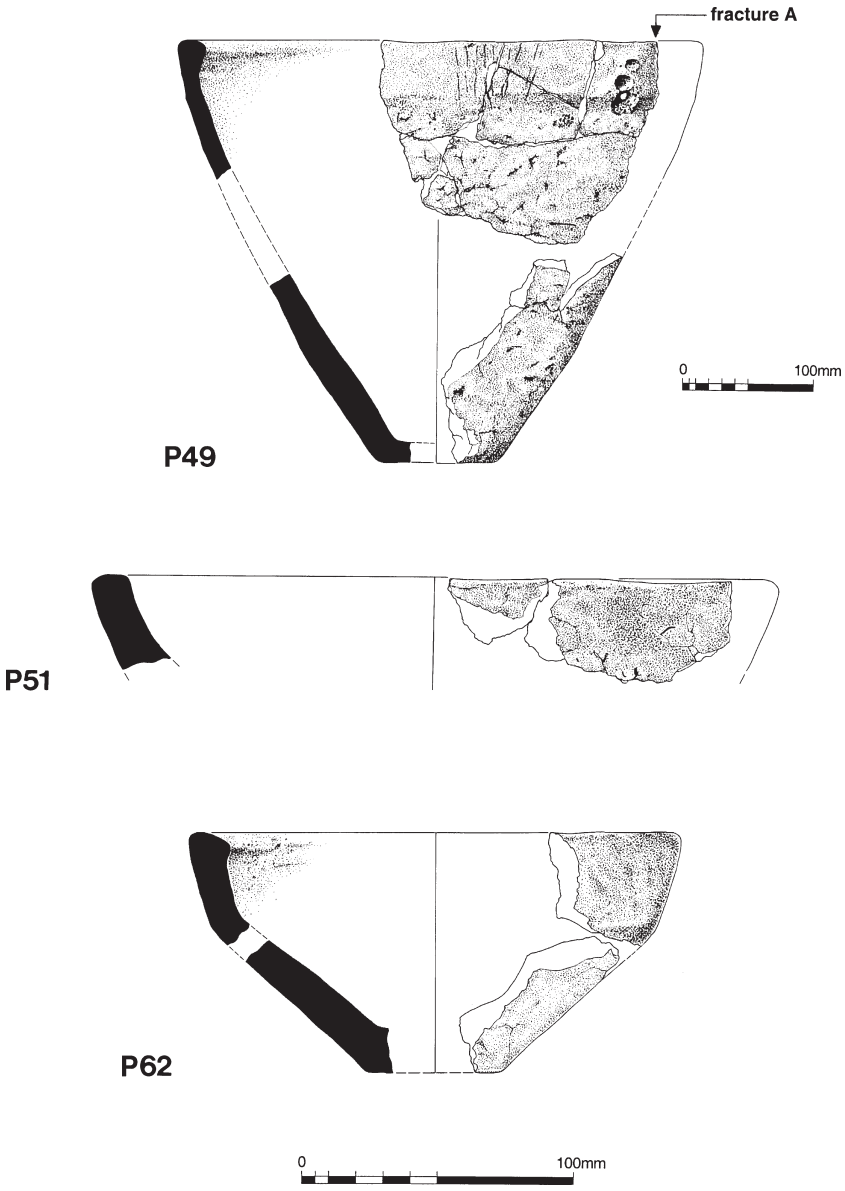
P 31 Two abraded rim sherds of a vessel with burnished exterior and interior surfaces. The rim is plain, rounded and slightly pinched on the exterior. Pit 024.

P 32 Plain rounded rim with smooth possibly burnished interior and exterior surfaces. Pit 024.

P 33 Two joining body sherds forming the basal angle of an uncarinated bowl with upright sides. The interior surface is smooth but the exterior has been worn and has lost any traces of a finish. Pit 024.

P 34 One rim sherd from a flared bowl. The rim is rounded with a slightly flattened top. Both interior and exterior surfaces are burnished but only the latter bears light traces of vertical fluting. Pit 1181.

P 35 One rim sherd from an upright-sided vessel. The rim is flattened along the top with rounded edges and there are clear traces where it has been folded down and smoothed in on the interior. The surface



ILLUS 26 Late Neolithic pottery (P49, 51, 62)

is highly burnished and there are traces of very diagonal fluting on the exterior and along the top of the rim. Pit 1028.

P 36 One rim sherd of a slightly flared rimmed vessel. The rim is flattened with rounded edges and is pinched below the rim on the exterior. The surface is smooth but unburnished. Shallow spread 1026.

P 68 One sherd and a fragment decorated with incised grooves. The body sherd has traces of four diagonal incised lines on the exterior while the fragment, which is angled and may be part of a rim, has traces of three. These grooves are cut into a slip on the exterior of the vessel. Topsoil.

P 69 A single body sherd with traces of three diverging grooves on the exterior surface. This sherd may be from a Late Neolithic Grooved Ware vessel. Topsoil.

P 70 A single rim sherd from an unburnished vessel. The rim is flattened with a sharp edge on the exterior and a more rounded edge on the interior. Thinning of the body below the rim indicates that it was pinched up slightly. A few horizontal and diagonal score marks on the exterior are likely to be accidental. Top fill of Roman temporary camp ditch — 003.

Late Neolithic pottery

P 49 A large portion of a plain biconical vessel. Similar to P62 it splays out from a flat base to a plain shoulder 35–45 mm below the rim. The rim is flat with rounded edges and is slightly expanded on the interior. In two places above the shoulder a hole has been drilled through the wall after the vessel was fired. The shape of the perforation indicates that it was drilled from both sides. In the other example there have been three attempts to drill a hole through; two were not completed having been drilled from the exterior. It is clear that these holes were used for repairing the vessel after it had cracked and must have allowed the larger body sherds to be lashed together. The large fracture (A) to one side of the single hole was clearly an old fracture since its surface is heavily sooted. Pits 1204 and 1205.

P 50 Four rim sherds and numerous large body sherds from a vessel that may be described as a barrel-shaped cordoned urn, although its precise date and relationship to the general series of cordoned urns remains unclear. The shape is biconical with an applied cordon running around the widest part of the vessel. This cordon is decorated with four fingernail impressions along the top and is slightly pinched along the bottom. The rim is flat and decorated with three or four fingernail impressions. Both the interior and exterior surfaces are covered with a slip. The interior shows limited signs of sooting while the exterior is completely sooted. At its widest point this vessel may have been around 300 mm in diameter. Pits 1204 and 1205.

P 51 Three rim sherds from a vessel with a similar profile to the biconical vessel P62. There appears to have been a plain shoulder. The fabric of this vessel is very friable. The surfaces have been covered in fine slip. Pit 1204.

P 52 One rim sherd of a thick plain rimmed vessel. The rim is flattened on the top with a very rounded edge and slightly inturned on the interior. Pit 1205.

P 62 Two rim sherds, a body sherd and a base sherd from what appears to be a biconical vessel. The body of the vessel splays out from a flat base, 70–80 mm in diameter, to a plain shoulder 35–40 mm below the rim. From the shoulder to the rim the sides are near vertical. It is flattened with rounded edges and is slightly expanded on the interior. There are faint traces of what may either be fingernail impressions or cord impressions on the rim. The exterior surface has been finished with a slip of finer clay. The rim of the vessel may have been between 180–200 mm in diameter. Shallow pit 012.

Food Vessel urn

P 37 A single sherd from the rim of a Food Vessel urn or what was previously termed an encrusted urn (illus 27). This has internally bevelled rim which has three rows of impressed twisted cord decoration. The exterior has applied decoration in the form of two ribs forming a V-shape which would have been part of a chevron pattern around the whole vessel. There is a line of twisted cord decoration along each side of the ribs and along the top. The area between the cordons was decorated by horizontal lines of twisted cord decoration, of which there are seven rows. This type of pottery generally dates to the end of the third and first half of the second millennium cal BC.

LATER PREHISTORIC POTTERY

Pottery from Structure 1 (illus 29)

The pottery assemblage from around Structure 1 consists of 109 sherds, fragments and crumbs with a total weight of approximately 1.9 kg. The majority of the sherds, 70%, came from the fill of the central hollow while 26% came from the topsoil.

Fabric

The fabrics of the pottery are relatively uniform being of a hard, medium, sandy matrix with moderate (10–15%) quartz, quartzite and unidentified rock inclusions usually up to 5 mm long

but with occasional larger ones up to 16 mm. The vessels are irregularly fired. Most sherds are oxidized and brown throughout but a number have unoxidized dark brown to dark grey brown cores and interiors consistent with having been open fired.

Form

In general the vessels appear to have been barrel-shaped, closed forms with flat bases. Only a small number of rims survive but these all appear to be developed in some form, only P42 being a plain flat rim. P38 has a slightly everted rim with a concave internal bevel. Both P40 and P41 also have slightly everted rims with a slight lip on the interior. While the inner edge of the bevelled rim of P39 has been folded over. The bases, especially P43, shows signs of having been pinched in above the base on the exterior.

Construction

There is little evidence for the type of construction technique used but it is likely to have involved ring construction and extruding the body by hand. Certainly the use of pinching and finger marks are evident both on the rims (P38), the body sherds and the base sherds (43).

Surface treatment

The surface treatment of the pottery varies and many of the sherds are abraded and may have lost their finished surfaces. However, thin slips are present on several vessels; on P38 only the exterior has a slip, while both surfaces are slipped on P40.

Use of vessels

Vessel P41 has organic residues just under the rim on the interior while the interior of the body of P43 has clear sooting and thin residues. It seems probable that these vessels were used for cooking.

Discussion

There is very little published later prehistoric material from Aberdeenshire with which the assemblage from around Structure 1 can be compared. The rim forms can be broadly compared to individual rim sherds from a number of excavated sites. For example, P38 with its slightly everted rim with concave internal bevel looks similar to some of the material recovered from the Sculptor's Cave, Covesea (Benton 1931). Longworth identified some similar material at Tentsmuir, Fife, to which he attached the name Covesea Ware (Longworth 1967, 89–90) which was felt to be a north-eastern variant of what elsewhere has been called flat-rimmed ware (Gibson & Woods 1997, 138). The curving profile and different rims of the so-called Covesea Ware, however, do not sit easily within the flat-rimmed ware category. Brief examination of the material recovered from Greencastle, Portnockie, has revealed a similar form of pottery but the published sherd (Ralston 1980, 34 fig 2 no 8) is not from a secure datable context (I B M Ralston, pers comm).

Catalogue of later prehistoric pottery (illus 28 & 29)

Structure 1

P 38 Three rim sherds from a closed vessel with a pinched-up rounded rim and internal concave bevel. There are pinch marks on the neck of the exterior surface. The exterior surface has a slip of finer clay but the interior is an unfinished sandy surface. The rim of the vessel was between 200–240 mm in diameter. Southern and northern end of central hollow.

P 39 Three rim sherds of a closed vessel with a straight exterior rim, rounded at the top with concave internal bevel. Southern end of central hollow.

P 40 Two rim sherds with slightly pinched-up rims and with internal bevels, one of which is convex. Both the interior and exterior surfaces are covered in a slip. The top of the rim is a rounded point. Southern end of central hollow and Pit 006.

P 41 One rim sherd from a vessel with a slightly inturned T-shaped rim. The internal bevel is flat. Topsoil.

P 42 Two abraded sherds of from the flat base of a vessel. Around 23% of the circumference of a base c 100 mm in diameter survives. The base is slightly pinched in at the foot of the exterior wall. Topsoil.

P 43 Two base sherds and one body sherd from a flat-based vessel. These sherds probably belong to the base of vessel P39. The base is flat and is slightly pinched-in around the foot on the exterior. Around 18% of the circumference of a base 180–200 mm in diameter survives. Both the interior and exterior surfaces of the vessel are covered in a slip. The interior wall is covered in soot and thin organic deposits. Southern end of central hollow.

P 44 One basal angle sherd from a flat-based pot, perhaps the same as vessel P45. Southern end of central hollow.

P 45 A large part of the flat base of a vessel. The base rises up towards the centre on the interior and is slightly pinched-in at the foot of the exterior wall. Northern end of central hollow.

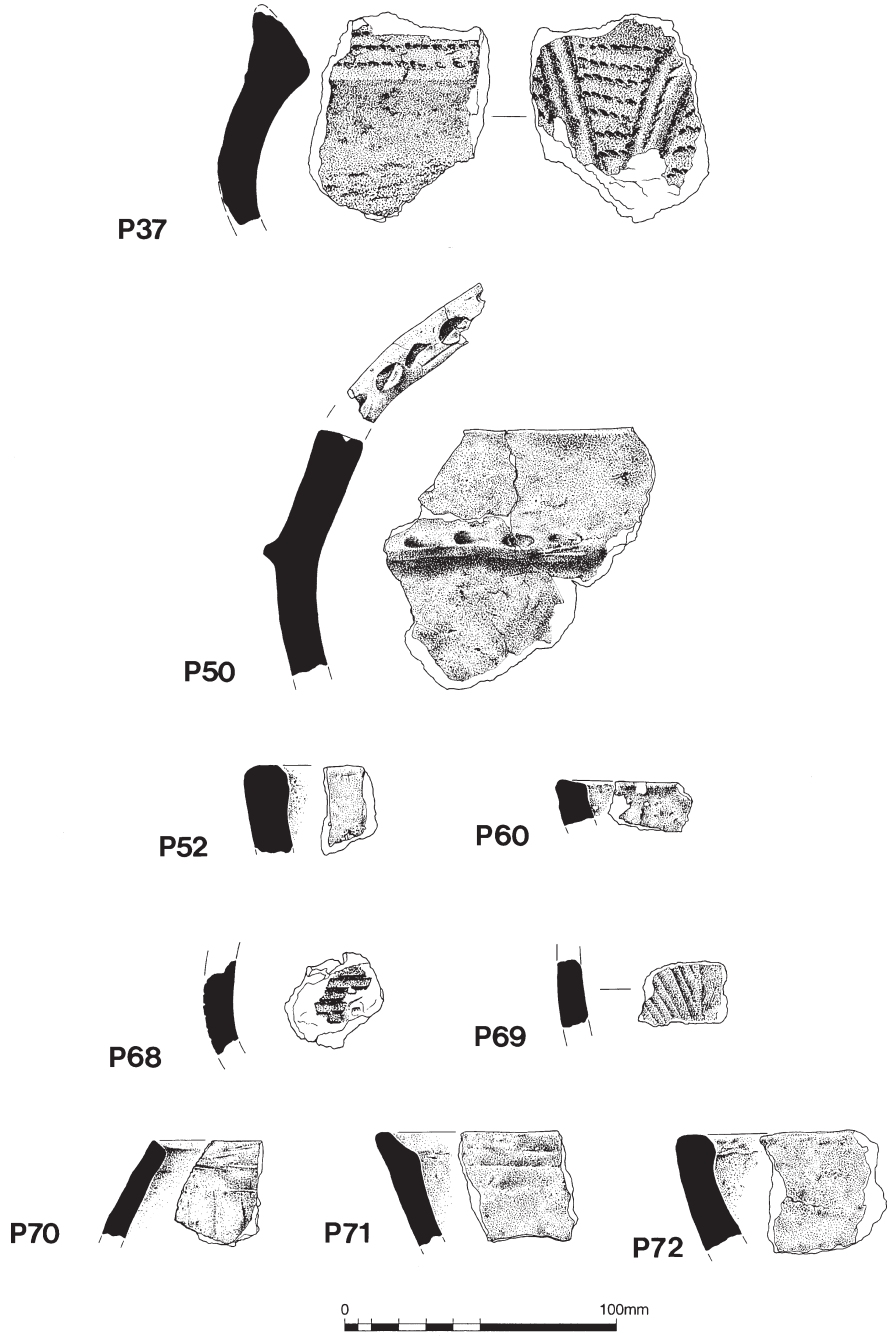
P 46 One rim sherd from a vessel with a flat rim slightly inturned. Southern end of central hollow.

Structure 3

P 54 An almost complete rim of a bucket-shaped vessel with a flat rim. Below the rim there is a short neck 20–25 mm high leading down on to pronounced shoulder. Both the interior and exterior surfaces have been finished with a slip of finer clay although numerous inclusions protrude through. The rim was 280–300 mm in diameter. Pit 1233 in ring-ditch of Structure 3.
In addition to the rim and body sherds there were four joining base sherds and another base sherd from a vessel with a flat base c 120 mm in diameter. This may be the base for vessel P54. The exterior of the base is concave and also rises up in the centre in the interior. The crown of the base in the interior is free from soot and organic deposits which are concentrated around the edge. 1096, fill of entranceway to Structure 3; and 1097, upper fill of south-east quadrant in Structure 3.

P 55 Ten rim sherds from a coarse plain bucket-shaped vessel with slightly inturned rim. Three of the sherds join together and form c 20% of the rim of a vessel which was originally 200–230 mm in diameter. Both the interior and exterior surfaces have been covered in a slip but more inclusions protrude through on the interior. The rim varies in thickness and shape. On several of the sherds the inner side of the rim has been clearly folded down on itself. This type of vessel has been found to date to the second half of the first millennium BC and into the first millennium AD. Pit 1233 in ring-ditch of Structure 3.

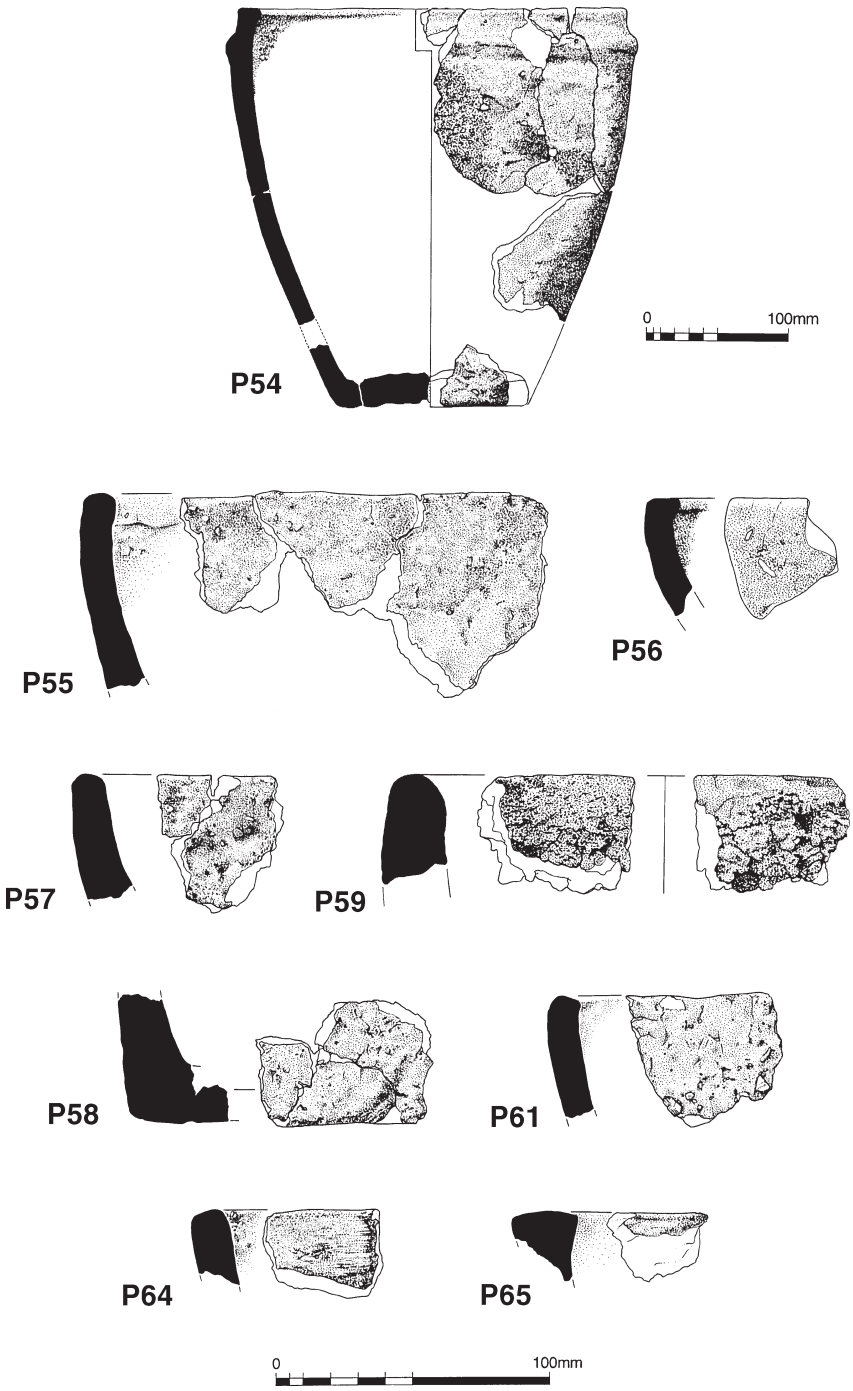
P 56 Two rim sherd of a plain, coarse, bucket-shaped vessel with a slightly inturned rim. Both sherds are abraded and scorched with slight traces of organic residue on the interior. The rim is generally rounded with a slight internal bevel but on one of the sherds it has been pinched out and forms an overhang. 1097, from south-east quadrant in Structure 3.



ILLUS 27 Late Neolithic & Early Bronze Age pottery (P37, 50, 52, 60, 68–72)

P 57 Six rim sherds from a coarse plain bucket-shaped vessel similar to P55 but of a coarser fabric containing large rock inclusions up to 10 mm long. The rim is very irregular in profile but appears to represent a vessel 180–210 mm in diameter. 1101 and 1097, from south-east quadrant in Structure 3.

P 58 One rim sherd of a coarse ware vessel. It has a flat-topped rim with quite angular edges. Although the exterior wall is relatively vertical the interior displays pinching just below the rim. The surface is rough with grits protruding through. 1096, upper fill of entrance into Structure 3.



ILLUS 28 Coarse pottery from Structure 3 (P54–65)

P 59 This extremely coarse rim sherd appears to be from a crucible since there are extensive traces of copper (bronze?) slag adhering to the interior surface. The vessel has a thick, rounded and slightly inturned rim. The surfaces have not been finished and the exterior displays many very large rock inclusions, up to 14 mm long, protruding through the surface. The size of this vessel if it was a crucible is intriguing. 1097, upper fill in south-east quadrant of Structure 3.

P 61 Five very friable joining sherds from a vessel with a flat base. Around 35% of the circumference of the base survives and it would have been between 130–140 mm in diameter. The exterior edge of the base was rounded and the wall rose vertically from it. The exterior and basal surface were finished with a slip. The basal angle on the interior of the pot had been pinched in and the base had risen to a convex mound in the centre of the vessel. 1097, upper fill of Structure 3; and 1111, fill of ring-ditch in south-west quadrant.

P 64 A rim sherd of a vessel with a wide, flat-topped rim with sharp edges, especially on the interior. The surface of the vessel is very smooth and may have been lightly burnished. Unfortunately not enough survives to be able to determine the form of the vessel. Fill of large pit 1091.

P 65 One rim sherd from a plain coarse vessel. The rim is slightly inturned and has a flat top with rounded edges. The exterior and top of the rim have been finished with a slip but on the interior this has been abraded off. Topsoil.

P 66 A small rim sherd possibly from a Neolithic plain bowl. The rim is rounded and may have been from a flared-rimmed vessel. Top fill of Structure 3, 1097.

P 67 A sherd from the body of a Neolithic carinated bowl. The carination is well defined with a concave neck above. Both the interior and exterior surfaces are smooth but unburnished. Top fill of Structure 3, 1097.

Feature 13

P 60 One rim sherd of a coarse vessel (illus 27) . The rim is flattened on the top with rounded edges and has been pinched slightly below the rim. In fill of curvilinear feature 013 which cuts across top of Roman ditch fill.

Boghead Croft

P 71 A single rim sherd of a vessel with a rounded rim and a concave internal bevel. There are two impressed lines of possible twisted cord decoration below the rim on the exterior but the abraded nature of the sherd makes identification difficult and these may simply be shallow grooves rather than cord. The precise orientation of the sherd is difficult to determine but the exterior surface may have been slightly inturned.

Springbank (illus 27)

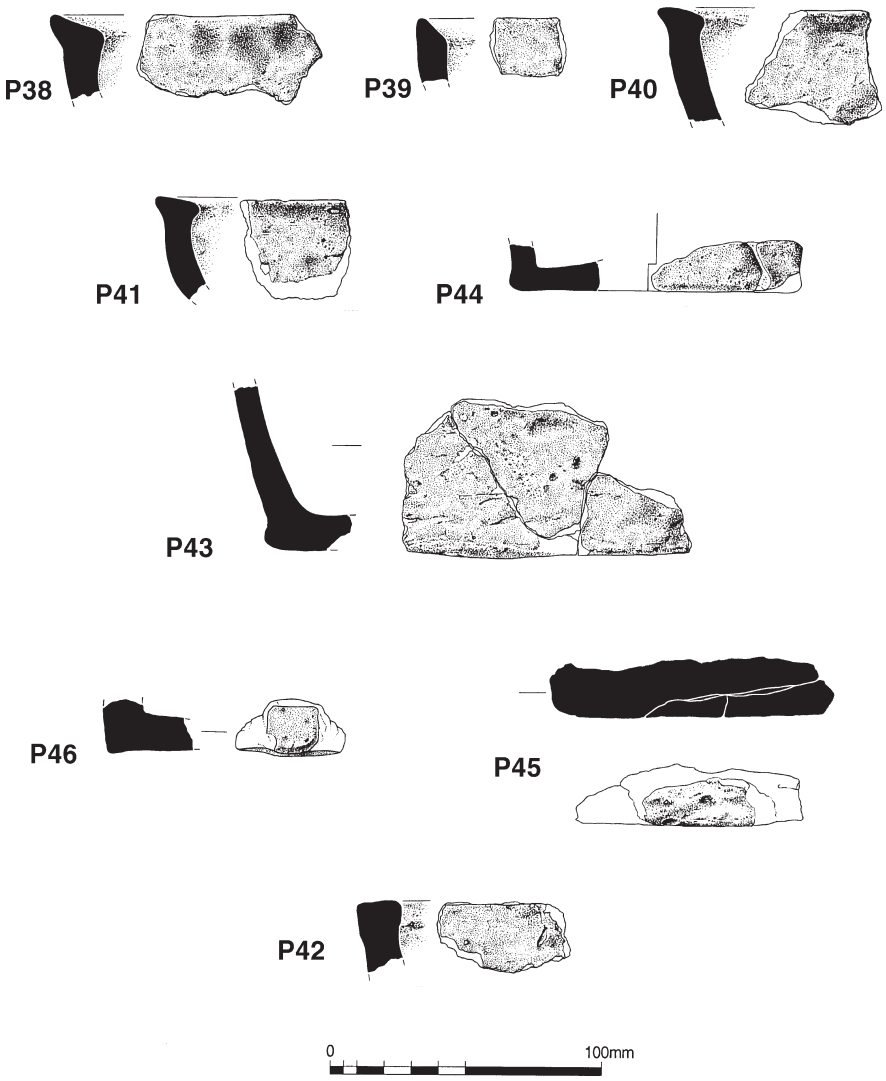
P 72 One rim sherd of a coarse vessel with perhaps slightly flared walls. The rim is plain and rounded with pinched in below the interior of the rim. The exterior surface has been roughly smoothed over with a slip but the interior has been left unfinished.

CRUCIBLE FRAGMENT

Trevor Cowie & Fraser Hunter

A coarse rim sherd (P59, illus 28), recovered from the upper fill (1097) in the south-east quadrant of Structure 3, was suspected to be a fragment of crucible on account of the extensive traces of vitreous residue adhering to the surface. The rim is rounded and slightly inturned and derives from a thick-walled vessel of uncertain overall form. The fabric is extremely coarse, with prominent large rock inclusions up to 14 mm long, breaking the surfaces. Traces of vitreous material adhere to the inner surface.

The fragment was analysed for traces of metallic residues, using qualitative X-ray fluorescence. No pre-treatment of the analysed surface took place. The visible vitreous residue



ILLUS 29 Coarse pottery from Structure 1 (P38–46)

was analysed and produced substantial peaks for copper, lead, and tin with a trace of nickel. This confirms the identification as a crucible fragment. While it is not possible to assess alloy types in detail from crucible residues (cf Barnes nd), these results clearly indicate the melting of leaded bronze in the crucible.

Scottish examples of large, thick-walled crucibles or heating dishes have conveniently been discussed by Spearman (1992, 46–7; see also Tylecote 1986, 97–102). To summarize, they have been found on sites ranging in date from the Late Bronze Age to the Early Historic period. Although the original locus of the metalworking is uncertain, the Kintore crucible fragment is likely to relate to the well-attested prehistoric activity on the site, and discussion will therefore be confined to material from Late Bronze Age/Early Iron Age sites. Moreover, as noted by Spearman (ibid), the later prehistoric/Early Historic examples tend to be manufactured from finer clay and on those sites too, the large dishes usually tend to be complemented by the more familiar small crucibles of triangular or bag-shaped form.

Fragments of thick-bodied coarse fabric crucibles with flattened rims and areas of adherent vitrification have been found at Traprain Law, East Lothian, along with fragments of moulds and metalwork of Late Bronze Age date, and other workshop debris (Burley 1956, 154). At Eildon Hill North, Roxburghshire, a small number of crucible fragments were found incorporated into the make-up of one of the Late Bronze Age ramparts (Owen 1992, 63). As at Kintore, X-ray fluorescence analysis of four of the Eildon Hill North crucible fragments indicated that they had been used to melt leaded bronze. Thick-walled crucibles also form part of the well-known Late Bronze Age metallurgical assemblage found at Jarlshof, Shetland (Hamilton 1956, 29). Finally, Spearman (1992, 46) noted finds from two sites in north-east Scotland, citing fragments from Green Castle, Portknockie, Banffshire (Ralston forthcoming) and a complete but undated example of a crucible or heating dish found at Banchory in 1888 (NMS: EC 28).

The rim fragment from Kintore therefore provides a useful addition to the limited body of primary evidence from north-east Scotland for refractory industry during the later Bronze Age/Early Iron Age. In addition to the sites already mentioned, the material includes examples of stone moulds for casting spearheads (Coles 1964, 118) and some fragments of clay moulds, including part of a sword mould, from Loanhead of Daviot (Kilbride-Jones 1935, 172; 1936, 290) and another from Seafield West, Inverness (M Cressey, pers comm). Finally, there is the important mid first-millennium cal BC industrial assemblage, including a near complete crucible found in close proximity to a bronzeworker's hearth, from the promontory fort at Cullykhan, Banffshire (Greig 1971, 299–30).

Discussion of the comparative material of course begs the question of the date of the Kintore fragment. The analytical results suggest that the crucible had been used to melt leaded bronze. The suite of radiocarbon dates from Structure 3 tends to suggest occupation during the centuries spanning the mid second millennium BC. There is some doubt whether deliberate addition of lead to bronze began as early as this, as has been suggested by Northover (1980) and the use of ternary alloys did not become widespread in Britain until the mid 12th century cal BC (Rohl & Needham 1998, 94–5, 102). In Scotland, the problem is compounded by the general absence of metal analyses for Middle Bronze Age metalwork. On balance, however, it would currently seem most likely that the crucible fragment from Kintore has been incorporated into the fill of Structure 3 following its abandonment. If so, the metalworking activity to which the crucible relates should perhaps therefore be viewed in the context of later episodes of occupation of the Deer's Den site (as evidenced by Structure 1, for example).

CHIPPED STONE

Bill Finlayson

An assemblage of 633 pieces of chipped stone were recovered from the excavations and watching brief on the A96 Project (Table 1). Almost all of the assemblage was recovered from excavation work at Deer's Den, with three flint flakes being found in a pit at Boghead and one from Springbank. Of the entire assemblage 20 were split pebbles of fire-cracked stones of unidentified source material, 379 pieces were of flint, 214 pieces were quartz, 15 pieces were quartzite and four pieces were pitchstone.

Analysis of the material was conducted according to a simple categorization of the entire assemblage (Finlayson *et al* 1996), followed by more detailed description of a small number of pieces of particular significance. The basic description of the quartz assemblage followed the flint categorization as far as possible, with the addition of the term 'splinter flake' required to describe

the poorly flaking quartz and quartzite, where there is evidence for intentional flaking, but where the detached piece does not show the normal characteristics of a conchoidal fracture. As the splinter flakes are assumed to be the result of deliberate flaking they have been subsumed into the flake total count.

The assemblage is clearly a flake-based industry, with only just over 7.5% of the flakes and blades being blade removals, although most of these did show clear evidence for a deliberate prepared blade technique being employed. Even if the flint is considered separately from the quartz, the blade percentage rises to only just below 10%.

The few cores present (all flint) tend to confirm the focus on flake manufacture. Only one of the five cores shows clear evidence for blade manufacture. The majority of core pieces show evidence for bipolar technique. This is almost certainly an over-representation, as the bulk of the flakes appear to have been removed from conventional platform cores, and there are a few platform rejuvenation flakes present.

There are very few pieces of less than 10 mm maximum dimension, and this suggests that either little knapping was conducted in the areas excavated, or that the material has been subject to significant post-depositional movement, separating the fine fraction material from the larger pieces.

The evidence for production points towards a Neolithic or possible Early Bronze Age date for the material.

TABLE 1

Chipped stone assemblage characterization

Flint blades	35
Quartz blades	2
Pitchstone blades	2
Blade Total	39
Flint flakes, inner irregular	113
Flint flakes inner regular	59
Flint flakes primary	9
Flint flakes secondary	141
Quartz Flakes Inner irregular	77
Quartz Flakes inner regular	14
Quartz Flakes primary	1
Quartz flakes secondary	18
Quartz splinter flakes, inner irregular	17
Quartz splinter flakes, inner regular	3
Quartz splinter flakes, secondary	9
Pitchstone flakes	2
Quartzite flakes	5
Quartzite splinter flakes	3
Flake Total	471
Flint cores	5
Flint chunks	16
Flint shattered pieces	1
Quartz chunks	44
Quartz pebbles	11
Quartz split pebbles	19
Quartzite chunks	2
Quartzite split pebbles	5

All of the retouched pieces are flint. This is a typical pattern on mixed quartz/flint assemblages, where it appears that flint may have been treated as a favoured (and generally a more costly) resource specifically selected for secondary modification. In many such cases the flint

is a minority material, individual pieces being worked down to very small artefacts, further reinforcing the impression that it is a relatively expensive material, possibly as a result of restricted access to its sources. Quartz is used as a cheaper material, suitable for expedient tools. Interestingly this pattern appears to be maintained here, despite the fact that flint comprises the majority of the assemblage, and the very good quality of the quartz employed, including both translucent quartz and a fine white quartz. It would appear that much of this material, some of which has even been used for deliberate blade manufacture, would be suitable for retouch. However, it does not appear to have been used in this manner.

Most of the retouched artefacts are short thick convex scrapers (Finlayson *et al* 1996). These are not restricted to the Neolithic, but are perhaps most characteristic of this period. There is one leaf-shaped arrowhead in the assemblage, and a second possible leaf-shaped preform. The former is clearly Neolithic in date. The remaining artefacts are fairly poorly defined and are not period diagnostic.

An interesting feature of the scrapers is that most of them have had their working bit removed by flaking, apparently removed in the same manner as bipolar flaking is conducted. This pattern has been seen elsewhere, but not in quite such a high frequency. It is a puzzling pattern. It is clearly deliberate, does not appear to sharpen the edge (indeed on several occasions appears to lead to the splitting of the artefact), and does not produce particularly large or potentially useful flakes. It has been interpreted as being possible evidence for an extreme shortage of flint in instances where flint is very rare, but that explanation does not hold up here. All that is clear is that it appears to represent a deliberate defacing of the tool, bringing an end to its functional use.

The analysis of the condition of the pieces shows a surprisingly high number of burnt pieces of flint, almost 45% of the collection. Given that traces of burning are often under-represented, this is a significant quantity. Quartz does not show evidence for burning as readily as flint and the virtual absence of identified burning in the quartz component of the assemblage cannot be taken to have any significance. Patination, or other post-depositional surface alteration, is very rare, and apart from the burnt material the flint generally appears very fresh and unrolled. This suggests that post-depositional transport has not been significant.

Catalogue of significant chipped stone pieces (illus 30)

All measurements are in millimetres, with the order of dimensions being length, breadth and thickness, the last two being measured perpendicular to the length, which is based on the axis of flaking. Those marked with an * have been illustrated on illus 30.

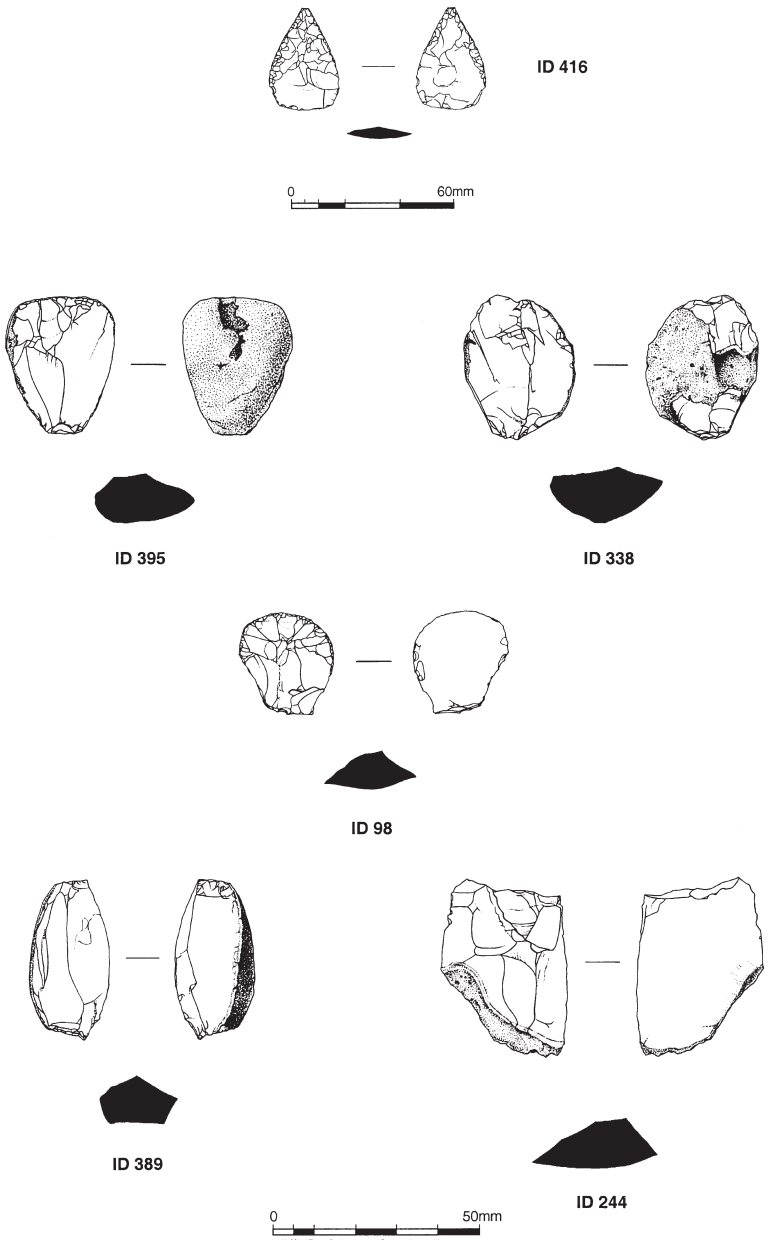
Deer's Den: topsoil

Trench 23, Context 001 (topsoil), SF 53. Thick inner irregular flake on white semi translucent quartz with possible scraper retouch. 20 by 21 by 15 mm.

SF112 (spoil heap). Dark grey translucent flint flake from prepared core. Flake appears to have been struck in the opposite direction from previous removals and may represent platform renewal. There is some inverse retouch at the distal end. 25 by 25 by 10 mm.

SF112 (spoil heap). Inner irregular broken flake on pale brown flint. Edge partially trimmed by abrupt retouch and it is not clear whether the flake broke before, during or after retouch. 18 by 14 by 5 mm.

* Trench 26, Context 001 (topsoil), SF 41. Scraper: Thick secondary irregular flake on brown flint. Little cortex survives, but it has been very abraded and smoothed. Short thick convex scraper with flared working



ILLUS 30 Chipped stone

edge. Flared shape derives largely from blank shape. Working edge has a relatively shallow edge angle. A well-made piece. 26 by 25 by 10 mm (illus 30, ID 98).

Deer's Den: Neolithic pits

Context 026. Inner irregular flake of pale brown flint. Distal end trimmed with abrupt retouch, one side retouched with semi abrupt retouch. Both sides of proximal end trimmed, narrow the bulbar end nearly to a point. Bulb still present, but the overall shape suggests that this may be an initial shaping for the manufacture of a leaf-shaped arrowhead. 19 by 16 by 4 mm.

Context 1141, SF 124. Inner regular blade on pale brown flint. Steep normally retouched shallow notch, with additional abrupt retouch on opposite side of blade. 42 by 16 by 5 mm.

Context 031. Awl: Inner regular flake of black/grey mottled flint with distal end abruptly retouched to produce a thick point. 21 by 15 by 4 mm.

Context 1028, SF 155. Core: Quarter pebble single platform prepared platform blade and flake core on fine black flint. 22 by 31 by 18 mm.

* Context 1028. Leaf arrowhead: Bifacially flaked burnt flint flake. Retouched into a leaf shaped arrowhead with a fairly flat base. Retouch is not entirely invasive. 18 by 12 by 3 mm (illus 30, ID 416).

* Context 31, SF 171. Secondary irregular flake on pale grey flint. Dorsal surface shows considerable evidence for a well developed prepared platform technique, and this may be a deliberate thick removal to repair a core face that has become unworkable due to step and hinge terminations. 44 by 33 by 13 mm (illus 30, ID 244).

Context 31, SF 171. Secondary regular flake or proximal blade segment on black/brown mottled flint. Naturally backed piece. Edge opposed to cortex back is bifacially damaged, with the damage associated with gloss patches. Almost certainly a utilized piece, possible a poorly developed sickle blade, but no microscopic examination has been undertaken. 29 by 17 by 5 mm.

Context 026, SF 170. Core: Single platform core on a small split mottled brown flint beach pebble. Core face is very flat. Probably not the final remains of a long sequence of knapping, as scar pattern is not consistent with this, so must represent the brief use of a suitable piece. 29 by 28 by 12 mm.

Deer's Den: Structure 3

SF 79, surface of 'round house'. Scraper: Inner irregular flake of burnt flint. Short thick convex scraper, badly damaged by burning. Working edge appears to have been deliberately removed by a single removal perpendicular to the axis of retouch, as if in a bipolar removal. 30 by 23 by 9 mm.

Context 1096 (north end), SF 95. Scraper: Thick secondary irregular flake on grey/brown flint. Short thick convex scraper. Bulb has been removed by very irregular shatter type flakes, possibly struck in a bipolar manner. 31 by 32 by 18 mm.

Context 1100, SF 105. Scraper: Thick secondary irregular flake of grey flint with white chalky cortex. Short thick convex scraper. Both ends crushed by bipolar working, with the majority of larger flakes being removed from the ventral surface. Bipolar reworking appears to have removed a large part of the scraper retouch. 30 by 24 by 11 mm.

Context 1100 (upper) SW Quad, SF 104. Scraper: Thick inner irregular flake of pale brown flint. Short thick convex scraper. Dorsal face retains part of an old prepared platform from a series of removals separate and prior to this flake's detachment. 27 by 27 by 14 mm.

Context 1100 (upper) SW Quad, SF 104. Scraper: Secondary irregular flake on honey coloured flint with smooth pebble cortex. Poor semi abrupt retouch at both ends (NB piece is wider than it is long) make this piece a very poor example of a wide convex scraper. 17 by 28 by 7 mm.

* Context 1100 (NE Quad), SF 109. Bipolar core: Typical bipolar core on grey flint with thin smoothed chalky beach pebble cortex. Both ends crushed with successful long removals from both faces. 41 by 21 by 12 mm (illus 30, ID 389).

* Context 1127, SF 129. Unifacial bipolar core on primary removal. Made on red brown flint with smooth beach pebble cortex. 36 by 29 by 13 mm (illus 30, ID 395).

* Context 1108 (SW Quad), SF 129. Bipolar core: Largely unsuccessful bipolar core attempt on a primary piece. Both ends crushed but most removals short and thick. 37 by 28 by 14 mm (illus 30, ID 338).

Deer's Den: Structure 4

Trench 26, Context 010, SF 39. Secondary regular flake of honey-brown flint. Abrupt inverse retouch continuous for 1 cm. Other elements of edge damage or marginal retouch. 43 by 22 by 7 mm.

Context 13, SF 202. Secondary irregular flake on grey flint. Cortex is a smoothed pebble surface. Distal end appears to have been blunted by abrupt retouch, but this may be accidental damage. 20 by 14 by 3 mm.

Boghead Croft

Trench 52, Context 003, SF 057. Scraper: Thick inner irregular flake on grey flint. Short thick convex scraper with working edge removed by large pronounced, probably hard hammer flaking perpendicular to working edge in a bipolar style. 23 by 23 by 12 mm.

CHARRED PLANT REMAINS

Tim Holden

Seventeen fully processed samples were provided for analysis. The samples were recovered from the following contexts:

1 Three of the pits at Deer's Den containing Neolithic pottery (026, 1171 & 1172).
2 Post-holes (1201, 1222 & 1101) and one of the fills of the ring-ditch (1111) of Structure 3 at Deer's Den. Pits at Cairnhall (007 & 010), Rosebank (Trench 9: 4, 7, 10) and Tavelty (009 & 247). These features are all of later prehistoric date.
3 Burnt layers (1211 & 1219) in an Early Historic field oven cut into the terminal of a Roman ditch at Deer's Den.

Samples of between 5 and 10 litres were recovered using a judgemental sampling system. These were subjected to a system of flotation and wet-sieving using a Cambridge-style flotation tank. Flots were recovered down to 300 μm and retents down to 1 mm. Identifications were made with reference to the modern comparative collection of Headland Archaeology Ltd and the nomenclature adopted generally follows that of the *Flora Europaea* (Tutin *et al* 1964–78).

RESULTS

The results are presented in Tables 2 and 3. With the exception of the samples from Pit 11 at Rosebank (T9 4, 7, & 10) the number of samples and the concentration of charred plant remains are not sufficient to provide any detailed interpretation of context related variation or the function of individual features. The data do, however, provide identifications of economic species from potentially datable features and will therefore add to the existing knowledge relating to the agricultural economy in this part of eastern Scotland.

Neolithic

Deer's Den Over 20 Neolithic pits were identified on the basis of characteristic pottery, chipped stone and radiocarbon dates. All three samples taken from this period contain rare fragments of cereal grain or chaff. Emmer wheat and barley were both identified. These cereals have precedents in the Scottish Neolithic, most notably at Balbridie, Aberdeenshire, where emmer and naked barley formed a large part of the charred plant assemblage (Fairweather & Ralston 1993).

TABLE 2

Carbonized plant remains from Deer's Den

		Neolithic Pits			Structure 3			Field Oven 1	
		Deer's Den Pit	Deer's Den Pit	Deer's Den Pit	Deer's Den PH	Deer's Den PH	Deer's Den Pit	Deer's Den Layer	Deer's Den Layer
	Block				ST-3	ST-3	ST-3		
	Context no	026	1171	1172	1101	1201	1222	1211	1219
	Orig volume	5	5	5	3	5	5	4	5
Latin name (Common name)	Plant part								
Corylus avellana L (hazel)	nut shell		+	+					
Polygonum persicaria L (persicaria)	nutlet						1		
Polygonum cf Persicaria (persicaria)	nutlet					2			
Polygonum sp (knotgrass)	nutlet					5			
Rumex acetosella L (sheep's sorrel)	nutlet						1		
Rumex sp (dock)	nutlet								1
cf *Rumex* sp (dock)	nutlet			1					
Chenopodium album L (fat hen)	nutlet							34	2
Chenopodium sp (goosefoot etc.)	nutlet								5
Atriplex hastata/patula (orache)	nutlet							3	
Spergula arvensis L (corn spurrey)	seed							1	
Vicia/Lathyrus sp (vetch/tare/vetchling)	seed		1						
cf *Calluna vulgaris* (ling, heather)	capsule							1	
Plantago lanceolata L (ribwort)	nutlet					1			
Luzula sylvatica/multiflora/campestris (woodrush)	seed						39		
cf *Luzula* sp (woodrush)	seed						6		
Triticum monococcum/dicoccum (einkorn/emmer)	spikelet fork			1			3		
Triticum dicoccum (emmer wheat)	caryopsis	2					3		
Triticum cf *dicoccum* (emmer wheat)	caryopsis						2		
Triticum cf *dicoccum* (emmer wheat)	spikelet fork								
Triticum cf *aestivo-compactum* (bread/club wheat)	caryopsis						3		
Triticum sp (wheat indet.)	caryopsis						3		
Triticum sp (wheat indet.)	tail grain						10		
cf *Triticum* sp (wheat indet.)	caryopsis								1
Secale/Triticum sp (rye/wheat)	caryopsis								1
Hordeum vulgare indet (barley indet.)	caryopsis	1	2				11		12
Hordeum vulgare indet (barley indet.)	rachis node							4	
Hordeum vulgare (hulled) (hulled barley)	caryopsis							2	17
Hordeum vulgare (hulled — straight) (hulled barley)	caryopsis								6
Hordeum vulgare (hulled — twisted) (hulled barley)	caryopsis								9
Hordeum vulgare (cf naked) (naked barley)	caryopsis						4		
Avena sp (Oat)	caryopsis								7
Cereal indet (cereal indet)	caryopsis						+		++
Indeterminate	cf. catkin								1
Indeterminate	seed					10			
Cenococcum geophilum Fr (fungal sclerotia)	sclerotia			+					
Charcoal	twigs		++		++	++			

Key:
+ = rare, ++ = occasional, +++ = common, ++++ = abundant

Later Prehistoric

Deer's Den With the exception of Sample 139 (Context 1222), the samples from Structure 3, which dates to the Middle Bronze Age, were largely devoid of plant remains other than rare seeds of weeds of cultivated or waste ground. These are of little interpretative value. By comparison, Context 1222 contains over 45 grains from just 5 litres of sediment. A number of the grains are morphologically typical of emmer wheat (*Triticum dicoccum*), an identification that is supported by the presence of spikelet forks of either emmer or, less probably einkorn (*Triticum monococcum*). Three grains which were more typical of bread/club wheat

TABLE 3

Carbonized plant remains from Rosebank, Cairnhall and Tavelty

		Rose bank	Rose bank	Rose bank	Cairn hall	Cairn hall	Tavelty	Tavelty
		Pit 011	Pit 011	Pit 011	Pit 009	Pit 012	Pit 010	Pit 247
	Block	Tr 9	Tr 9	Tr 9	Tr 1	Tr 1	Tr 31	Tr 31
	Context no	4	7	10	007	010	009	247
	Orig.volume	5	9	3	5	5.5	5	8
Latin name (Common name)	Plant part							
Pteridium aquilinum (L) Kuhn (bracken)	frond fragments			++				
Corylus avellana L (hazel)	nut shell				+++	++		
Polygonum persicaria L (persicaria)	nutlet		8	8				
Polygonum lapathifolium L (pale persicaria)	nutlet			7			1	
Polygonum sp (knotgrass)	nutlet	2	1					
Bilderdykia convolvulus (L) Dumort. (black bindweed)	nutlet	1	1	4				
Rumex acetosella L (sheep's sorrel)	nutlet			1				
Chenopodium album L (fat hen)	nutlet	1		52			4	
Atriplex sp (orache)	nutlet			12				
Chenopodium/*Atriplex* sp (goosefoots/oraches)	nutlet				2			2
Montia fontana L (blinks)	seed			1				
Spergula arvensis L (corn spurrey)	seed	2						
Ranunculus acris/*repens* (meadow/creeping buttercup)	achene			1				
Trifolieae, Lotus/Trifolium type (trefoil/clover)	seed			3				
Galeopsis tetrahit agg (common hemp nettle)	nutlet	1	4	20			2	
Lapsana communis L (nipplewort)	achene						1	
Luzula sylvatica/*multiflora*/*campestris* (woodrush)	seed			2				
Poa annua L (annual meadow-grass)	caryopsis			3				
Poa sp (poa/meadow-grass)	caryopsis			1			1	
Triticum monococcum/*dicoccum* (einkorn/emmer)	single grain			4				
Triticum monococcum/*dicoccum* (einkorn/emmer)	spikelet fork				5			
Triticum dicoccum (emmer wheat)	caryopsis	1	8				1	
Triticum cf *dicoccum* (emmer wheat)	caryopsis			4				
Triticum cf *dicoccum* (emmer wheat)	spikelet fork			1				
Triticum cf *aestivo-compactum* (bread/club wheat)	caryopsis		1					
Triticum sp (wheat indet)	spikelet fork				1			
cf *Triticum* sp (wheat indet)	caryopsis		8					1
Hordeum vulgare indet (barley indet)	caryopsis	132	716	136				
Hordeum vulgare indet (barley indet)	rachis internode			2	1		1	
Hordeum vulgare indet (barley indet)	rachis node			1			1	
Hordeum vulgare (hulled) (hulled barley)	caryopsis	22	4	64			13	1
Hordeum vulgare (hulled — straight) (hulled barley)	caryopsis	8	16	132			2	
Hordeum vulgare (hulled — twisted) (hulled barley)	caryopsis	12	16	100			2	
cf *Hordeum vulgare* indet (barley indet.)	caryopsis				2			
Avena sp (Oat)	caryopsis	4	23	13			1	
cf *Avena* sp (Oat)	caryopsis	1	12		1			
Danthonia decumbens (L) DC. (heath grass)	caryopsis	9	4	11				
cf *Danthonia decumbens* (heath grass)	caryopsis						1	
Cereal indet (cereal indet)	caryopsis	++	+++	+++	+		++	
Eleocharis multicaulis/*palustris* (many-stemmed/ common spike-rush)	nutlet			2				
Carex sp (sedge)	nutlet			1			1	
Cenococcum geophilum Fr (fungal sclerotia)	sclerotia					+++		
Coprolites	dung			1				
Monocotyledon indet	rhizome	+		++				
Charcoal	twigs		1				1	

Key:
+ = rare, ++ = occasional, +++ = common, ++++ = abundant

(*T aestivo-compactum*) were also recovered. The majority of the barley grains were in poor condition, however, at least four of them had a rounded profile enabling a tentative identification as naked barley (*Hordeum vulgare var nudum*).

The weed seed assemblage from these contexts is small with the exception of a number of seeds of woodrush (*Luzula* sp) from Context 1222. This genus occupies both open and wooded environments, is common on acidic soils but does not include typical weeds of cultivation. The significance of woodrush in the samples is presently unresolved.

Rosebank The samples from a large circular pit (Pit 11, Trench 9) in the interior of the Roman temporary camp show a predominance of hulled barley, some of which is evidently of the six-rowed variety, and rare occurrences of emmer wheat. Radiocarbon dating has shown this material to date from the fourth to the second century BC. The assemblage also contains small numbers of weed seeds, all of which are common components of waste ground or cultivation floras. The concentration of these is highest in the basal fill of Pit 10, Trench 9, a sample which also includes delicate fragments of bracken (*Pteridium aquilinum*) frond. It would seem likely that this is the source of the charred material in the overlying layers (Contexts 4 & 76).

Cairnhall Pit 12 (Context 10) contained occasional hazelnut (*Corylus*) fragments but little else. Pit 9 (Context 7) also contained hazel shell fragments but these were intermixed with a low concentration of cereal remains. These included five spikelet forks which are, in all probability from emmer wheat, a fragment of barley rachis and two poorly preserved barley grains.

Tavelty Context 247 yielded one hulled barley grain, one possible wheat grain and little else of significance. Pit 10 (Context 9) contained a single wheat grain, this time identified as emmer, together with 17 hulled barley grains. The presence of twisted grain indicates that the barley was of a six-rowed variety. The small weed assemblage was indicative of waste places or cultivated ground. A single barley grain from this pit provided a date in the last two centuries BC.

The cereals identified from these samples — emmer wheat, bread wheat, cf naked barley and hulled barley — have all been recovered previously from Bronze Age and Iron Age contexts in Scotland and northern England (Boyd 1988; Huntley & Stallibrass 1995). However, the trend throughout northern Europe during these periods is away from emmer and naked barley and towards hulled barley and later, oats. The difference between Contexts 1222 at Deer's Den, dominated by emmer wheat with possible naked barley, and the pit at Tavelty — Context 9 (Trench 31) — which is dominated by hulled barley could therefore indicate that the former is somewhat older than the latter; a conclusion confirmed by the radiocarbon dates.

Early Historic

Deer's Den The samples from the Early Historic period include two layers of burnt sand (Contexts 1211 and 1219) from within a field oven cut into the terminal of the Roman temporary camp ditches. Radiocarbon dates for this feature have suggested use in the fourth to the seventh century AD.

The general character of all the samples is the same with a predominance of hulled barley, some of which is evidently of the six-rowed variety, and rare occurrences of emmer wheat. Grains of oat (*Avena* sp) are also present although these only exceed 5% of the total number of grains in one sample (Context 129). All of these cereals are already known from the Roman period in northern Britain (Boyd 1988; Dickson 1989; Huntley & Stallibrass 1995; van der Veen 1992) although Boyd suggests that on sites of this date wheat is generally more predominant than barley. This is not the case at Kintore and it is possible that the cereals represented here could be local in origin rather than grain brought in from further south by the Roman army.

The assemblage as a whole is dominated by clean grain but, in the absence of supporting contextual data, is difficult to interpret. However, assemblages such as these could represent grain being dried prior to milling or whole grain burnt during food production. The weed seeds could represent contaminants of the cereals although, together with the bracken fragments, many other explanations for their presence could be proposed.

CHARCOAL IDENTIFICATION

Michael Cressey

An assemblage of charcoal has been examined for its species composition and sub-sampled prior to submission for radiocarbon dating (Table 4) relative frequency of the species identified allows an indirect insight into the selection of wood growing close to the site.

Identifications were made using a binocular microscope at magnifications ranging between x10–200. Generally identifications were carried out on transverse cross-sections on charcoal measuring between 4–6 mm. Anatomical keys listed in Schwiengruber (1992) and charcoal and slide mounted micro-sections from CFA's own reference collection were used to aid identification. Asymmetry and morphological characteristics were recorded. Large samples of charcoal (over 100 g) were split in a rifle-box to produce sub-samples. Extraneous non-charcoal material such as cinder and modern plant debris were removed during analyses. Heavily mineralized and vitrified charcoal was discarded.

The >4mm charcoal fraction is a cut off point at which charcoal identification becomes more difficult and time-consuming. As a result of only examining charcoal at or greater than 4 mm a bias in favour of the thicker woody species may be inherent. Other woody species such as heather, honeysuckle, ivy and small-diameter branch wood from twigs could be represented in the total charcoal assemblage (<4 mm).

RESULTS

Deer's Den: Neolithic pits The Neolithic pits contained charcoal from *Betula*, *Corylus*, *Pinus*, *Salix*, *Quercus*, and Rosaceae type. Most of the material was derived from carbonized branch wood and probably represents residues from fuel.

Deer's Den: Structure 3 *Corylus* dominates this assemblage with 12.42 g. Pomoideae charcoal of the wild apple and pear group only appears in this assemblage although in trace amounts (0.15 g). Rosaceae (cherry/blackthorn) and Pinus are also present in trace amounts. Pinus wood is very resinous and burns vigorously, which might explain why this species appears to be under represented in archaeological charcoal assemblages.

Deer's Den four-poster *Quercus* dominates this assemblage with 22.6 g in comparison to *Betula* and *Corylus* which are present in only trace amounts.

Deer's Den field oven 2 Not surprisingly the charcoal volume associated with this feature is very high (73.6 g) and dominated by large fragments of *Corylus* roundwood. *Betula* is present with 18.6 g and *Alnus* is present with 10.3 g. *Quercus* is low with 1.69 g. *Corylus* appears to have been abundant, possibly exploited from mature trees or shrubs adjacent to the site and as such provided a useful source of fuel.

CONCLUSION

The post-holes and pits associated with the Deers' Den structures have typically formed repositories for charcoal and other carbonized plant remains. As McCullagh (1992) rightly noted from a previous study on charcoal, 'the conversion of wood to charcoal is a selective process and seldom preserves more than a fraction of the original wood used on the site'. The taxa identifed from the charcoal suggest the exploitation of local material for fuel. Alder and willow would have been taken from alongside waterlogged areas. Birch, oak and hazel are tolerant to base-poor soils and would have been a major component of woodland in the upland areas around the Deer's Den site.

RADIOCARBON DATING

Twenty-five single-entity radiocarbon accelerator dates were obtained from samples of wood charcoal and carbonized cereal grain, from 21 excavated contexts and a further two accelerator dates were also obtained from organic residue on pot sherds (Table 4). Given the nature of the excavation, a series of isolated negative features, it was necessary to get a large number of dates in order that the chronological range of the features could be understood. The majority of the dates (22) were obtained for the site at Deer's Den, three from Rosebank and two from Tavelty. The dating strategy was discussed in detail with Patrick Ashmore of Historic Scotland and focused on the need to date the different structures, artefact and ecofact assemblages.

In general, where multiple samples were dated from single features the results were consistent. The three early Neolithic dates (OxA-8131–33) — two from Pit 1028 and one from Pit 1173 — are statistically indistinguishable, as are the two from Structure 1 (OxA-8137 & 8138). It is noticeable that the two individual samples from the diagonally opposite post-holes of the four-post structure (OxA-8181–82) are also indistinguishable. For Structure 3, rather than acquire multiple dates from the same context, it was decided that single dates should be obtained from a variety of relatively secure contexts (post-holes, lower ditch fills and pits) from across the structure. As the results indicate this has provided a degree of consistency (OxA-8139, OxA-8169–73). However, one needs to consider whether the consistency results from charcoal from one event finding its way into all the contexts, or whether several events of similar date are represented. The species of charcoal are mixed which could perhaps be argued to suggest that the charcoal does not belong to a single event but several, an interpretation generally supported by the range of the dates. The only incongruous results are those from the Structure 4 burnt spread (OxA-8174 & 8175) where as much as 1000 years may separate the two results. The incorporation of pieces of charcoal of different dates within the same deposit perhaps reflects a difference in how this deposit was formed and filled. It was possibly exposed for a long period of time allowing pieces of older charcoal to become incorporated in its fill or the deposit was formed including an older soil.

DISCUSSION

The archaeological investigations in advance of construction of the Kintore and Blackburn Bypass recovered evidence of archaeological features varying between single pits through to concentrations of structures dating from the Neolithic to the Early Historic period. By far the most concentrated suite of features was located at Deer's Den to the west of Kintore. There may be an element of deliberate re-use of the site in the Early Historic period, perhaps to legitimate

TABLE 4

Kintore Bypass radiocarbon dates; all dates calibrated using OxCal v2.18 and Stuiver & Kra (eds) 1986.

Deer's Den

Lab. No. OxA-	Sample context	Species	Years BP uncal	1σ cal BC/AD date range	2σ cal BC/AD date range	$d^{13}C$ (‰)
–8132	Pit 1028	*Corylus* av (Nut shell)	4945 ± 40	3785–3700 BC	3820–3640 BC	–25.2
–8131	Pit 1173	*Quercus* sp (Roundwood)	4940 ± 40	3780–3695 BC	3820–3640 BC	–25.5
–8133	Pit 1028	*Corylus* av (Roundwood)	4895 ± 40	3710–3640 BC	3790–3630 BC	-24.7
–8177	Pit 1205, pot 50, sherd DD/1205/3	Organic residue	4500 ± 45	3340–3220 BC	3360–3030 BC	–26.9
–8176	Pit 1204 pot 50, sherd DD/1204/6	Organic residue	4395 ± 45	3100–2920 BC	3130–2910 BC	–26.3
–8134	Pit 1171	*Corylus* av (Nut shell)	3545 ± 35	1950–1870 BC	2030–1760 BC	–25.2
–8139	Structure 3, C1201	*Quercus* sp (Roundwood)	3460 ± 40	1880–1740 BC	1890–1680 BC	–26.9
–8172	Structure 3, C1119	*Betula* sp (Roundwood)	3295 ± 45	1630–1520 BC	1690–1500 BC	–27.3
–8170	Structure 3, C1111	*Corylus* av (Roundwood)	3235 ± 45	1530–1440 BC	1630–1420 BC	–26.7
–8171	Structure 3, C1127	*Corylus* av (Roundwood)	3215 ± 45	1525–1435 BC	1610–1410 BC	–25.0
–8169	Structure 3, C1222	*Quercus* sp (Roundwood)	3170 ± 45	1510–1420 BC	1530–1380 BC	–26.3
–8173	Structure 3, C1120	*Betula* sp (Roundwood)	2945 ± 40	1260–1100 BC	1310–1030 BC	–23.6
–8138	Structure 1, C004	*Corylus* av (Roundwood)	2760 ± 40	940–840 BC	1000–830 BC	–25.4
–8137	Structure 1, C004	*Quercus* sp (Roundwood)	2750 ± 45	930–830 BC	1000–820 BC	–26.7
–8181	4–poster, C1010	*Corylus* av (Roundwood)	2610 ± 45	835–780 BC	900–760 BC	–26.5
–8174	Burnt spread, C005	*Corylus* av (Roundwood)	2560 ± 40	810–760 BC	820–750 BC	–26.2
–8182	4–poster, C1012	*Betula* sp (Roundwood)	2520 ± 40	690–550 BC	810–520 BC	–26.6
–8178	Field oven, C005	*Alnus* (Roundwood)	1955 ± 40	5 BC–AD 85	90 BC– AD 130	-24.5
–8179	Field oven C005	*Corylus* av (Roundwood)	1885 ± 40	AD 60–190	AD 20–230	–26.3
–8175	Burnt spread, C005	*Betula* sp (Roundwood)	1830 ± 40	AD 130–225	AD 80–260	–26.1
–8180	Field oven, C1219	*Quercus* sp (Roundwood)	1620 ± 40	AD 380–460	AD 330–550	–25.9
–8244	Field oven, C 1211	*Hordeum* (Cereal grain)	1540 ± 50	AD 440–560	AD 410–620	–23.4

Rosebank

Lab. No. OxA-	Sample context	Species	Years BP uncal	1σ cal BC/AD date range	2σ cal BC/AD date range	$d^{13}C$ (‰)
–8126	Pit	*Hordeum* (Cereal grain)	2175 ± 35	360–290 BC	370–160 BC	–23.0
–8127	Field oven, 011	*Corylus* av (Roundwood)	1825 ± 35	AD 135–225	AD 80–260	-25.3
–8128	Field oven, 011	*Salix* sp (Roundwood)	1720 ± 35	AD 250–380	AD 230–410	-25.0

Tavelty

Lab. No. OxA-	Sample context	Species	Years BP uncal	1σ cal BC/AD date range	2σ cal BC/AD date range	$d^{13}C$ (‰)
–8129	Pit 009	*Hordeum* (Cereal grain)	2055 ± 40	120–10 BC	190 BC–AD 20	-24.1
–8130	Pit 252	*Corylus* av. (Roundwood)	1975 ± 40	30 BC–AD 70	100 BC–AD 110	-23.9

ancestral rights to land (Driscoll 1998). It seems more likely, however, that the topographical position of Deer's Den, on a free-draining sand-and-gravel, south-facing, gentle slope, must have been one of the prime factors that led to repeated activity there throughout prehistory.

Interpretation of such plough-truncated sites, with limited stratigraphic relationships, can be difficult, often resulting in nothing more than lists of features or attempts to create plans of structures from distributions of pits. Fortunately the sites at Kintore were blessed with a wide range of identifiable features, or groups of features. The identification of these features, coupled with the relatively rich artefactual assemblage and an inclusive radiocarbon dating strategy, has enabled the various chronological phases to be disentangled. The results provide, perhaps unsurprisingly, a degree of chronological depth to a site that on initial exposure may have

suggested more contemporaneity in its use as there appeared to be little intercutting of features. Kintore clearly demonstrates the need for caution when interpreting plough-truncated sites when there can be a tendency to relate features to each other, purely on the basis of their spatial juxtaposition.

NEOLITHIC PITS

The earliest excavated evidence for human activity at Kintore dates to the Neolithic, in the second quarter of the fourth millennium cal BC. Although it remains possible that the immediate vicinity was also used by hunter-gatherers, compared to the Dee valley there is very little Mesolithic evidence along the Don. That the general area was important during the earlier Neolithic is demonstrated by the presence of Midmill long cairn which lies c 1.5 km to the south-east of Deer's Den. The survival of this monument in upstanding form (3.5 m high and 29 m long), is the exception to the rule since the majority of the evidence of Neolithic activity, including settlement sites, in the surrounding fields has been reduced to negative features by millennia of cultivation.

The distribution of pits containing early Neolithic pottery is focused in the southern part of the excavated area. Although several of these artefacts can be considered residual items redeposited in the fills of later pits, the concentration of material in this area suggests *in situ* Neolithic activity. The distribution of the main group of pits does not form an identifiable pattern that could be readily interpreted as the remains of a structure. Only one pit (1163) was found to contain large stones indicating that it may have held an upright timber, although whether this particular feature is Neolithic remains unknown. In addition to the variety of the material remains within these pits, the differences in shape and depth also argue against them being the remains of a single structure. However, the pattern of pits may reflect the presence of a contemporary structure that does not survive as negative features cut down into the subsoil, possibly because it was not dependent on earthfast vertical timbers. It is interesting to note that these features cover a roughly rectangular area 17 m long (NE/SW) by 11–12 m wide. Perhaps these pits define the area within a timber structure similar in size to the excavated rectangular Neolithic building at Balbridie on the south bank of the Dee (Ralston 1982; Fairweather & Ralston 1993), although it seems unlikely that such a sizeable structure would not have required a more noticeable earth-fast component. Similarly limited evidence of Neolithic features at Wardend of Durris prompted Russell-White (1995, 23) to suggest that they may have belonged to a structure similar to Balbridie. Alternatively, pit 1163 could have held an upright post forming the centre of a circular structure 4–5 m in diameter around the exterior of which the pits were dug. The problem remains that, with some notable exceptions, we still know relatively little about timber-built Neolithic domestic structures not only in mainland Scotland but in Britain in general. Whittle (1999, 59) recently pointed out the failure of fieldwork to locate evidence for large-scale permanent Neolithic settlements which has increasingly led to a re-appraisal of the view that the Neolithic was characterized by a sedentary mode of life founded on agriculture. It now seems likely that Neolithic communities, like those in the preceding Mesolithic, were more mobile than previously thought and the Neolithic settlement record consists mainly of artefact scatters, post-holes, pits and stake-holes representing camp sites of varying duration which may have been visited repeatedly. It is probable that domestic structures on such sites were of light construction, possibly even tents, and have left almost no trace.

The distribution of the pits at Kintore may have been restricted to such a defined area either within the walls of a light structure as suggested above or by their proximity to one. On the other

hand, the area may not have been defined by a man-made space, but by a natural space, such as a clearing in a wood. Whatever the answer it is unidentifiable archaeologically. The size of the assemblage of pottery and chipped stone, however, suggests that this activity was not fleeting and may have been long-lived, although the available radiocarbon dates suggest a period of activity restricted to the second quarter of the fourth millennium cal BC. The charred plant remains examined from a few of these pits indicate the cultivation of cereals (barley and wheat) together with the gathering of hazelnuts; a picture of Neolithic economy that is replicated at numerous sites across the country.

More and more pit concentrations containing Neolithic material are coming to light in advance of large-scale construction projects in Scotland. Such sites include the later Neolithic material recovered from Wellbrae, Clydesdale, in advance of pipeline construction (Alexander & Armit 1993) and at Beckton, Lockerbie, prior to the upgrading of the A74 (Pollard 1997). Early Neolithic material and structures were recorded at Cowie, Stirling, during a housing development (Atkinson 1995, 14). In some cases, as at Wellbrae, it has been suggested that these were ritual in nature due to what appears to have been selective deposition of pottery. Certainly the distinction between ritual and domestic sites should not be thought clear cut. With the general lack of obviously domestic structures in Neolithic lowland Scotland perhaps we should interpret these pit concentrations as the most readily identifiable surviving remains of domestic sites of the first farmers.

The exact function of the pits remains a matter of debate. They could simply represent rubbish pits for domestic waste or could reflect a deliberate deposition of material which may have in some way been 'ritually charged', perhaps because these artefacts represent waste from some form of ritual activity. Interestingly there were no pits discovered during the excavation at Balbridie (I B M Ralston, pers comm). Elsewhere concentrations of Neolithic material in pits have been termed 'structured deposits' and are thought to represent deliberate burial of material perhaps following a ritual feast. A large pit at Coneybury, on Salisbury Plain, contained sherds from around 40 pots along with the bones of both wild and domesticated animals, some burnt cereal grains and pieces of flint (Richards 1990). Pollard (1997, 111) suggested that the two pits which contained sherds of Grooved Ware pottery at Beckton had been dug to receive the material as the final part of a range of rites associated with the disposal of the dead. However, as he also points out (ibid, 111) the separation of ritual and domestic activities is an over simplification that does not reflect Neolithic behaviour. It has, for example, been suggested that the scarcity of Neolithic lithics in fieldwalked collections may reflect a specific cultural practice of artefact disposal (F Warren, pers comm). The pits containing the pot sherds may have been dug specifically to receive the mix of sherds, chipped stone, and charcoal. The unabraded condition of many of the sherds suggests that they were not exposed on the surface for a significant length of time prior to deposition. The fragmented and burnt condition of some of the pottery and chipped stone, together with the presence of charcoal and charred plant remains, suggests that whatever activity these deposits represent it involved the use of fire and possibly the deliberate destruction of pots. However, as far as could be ascertained there were no sherds from the same vessel deposited in different pits, which may indicate that there was a degree of time lapse between the digging of each of the pits. Given the high number of vessels involved and the very fragmentary nature of the assemblage it is intriguing to speculate what may have happened to the rest of the vessels. It is possible that at one time this area of the site was covered in a thick deposit of broken pottery and burnt material (a midden deposit) through which the pits were subsequently excavated resulting in some of the material being incorporated accidentally into their fills. If this is the case then what function did the pits perform? The remainder of the surface deposit,

including the rest of the sherds, would have been destroyed and removed by subsequent agricultural activity, as would evidence of light structures.

In contrast to the majority of the early Neolithic ceramic material the late Neolithic sherds, in pit 1204 and 1205, appears to be less fragmented with larger portions of the individual vessels being deposited in two adjacent pits. The obvious signs of attempts to repair the large cracks on vessel P49 indicates that this vessel had a long history of use and was not made simply for deliberate destruction and burial. Finally, the single sherd from a Bronze Age Food Vessel Urn, deposited within a pit in the same locality, may indicate a degree of continuity of use on the site between the Neolithic and the Bronze Age. In the latter period there is a marked increase in the apparent evidence of settlement remains on the site.

BRONZE AGE SETTLEMENT

Evidence for Bronze Age activity in the surrounding area is also not high but there are isolated pockets of land where unenclosed hut circles with associated field systems survive. For example at Greenlands (NJ 812 177) in Skene's Wood, on the opposite side of the Don, there are nine hut circles. The structures at Deer's Den, however, are amongst the first settlements of this period to be excavated in Aberdeenshire.

The Middle Bronze Age date provided by the radiocarbon determinations for Structure 3 perhaps would have been surprising 10 years ago but recent fieldwork and subsequent publication indicate that it is only one of an ever-increasing number of sites which have been shown to date to this period. The most notable of these is the recently published work at Achany Glen, Lairg, in Sutherland (McCullagh & Tipping 1998) where a range of house types were found to date to the mid second millennium BC. At the opposite end of the country in the Southern Uplands excavation of an unenclosed platform settlement at Lintshie Gutter provided five radiocarbon dates which ranged from the mid third millennium BC to the mid second millennium BC, although most fell into the first half of the latter millennium (Terry 1995, 423). In addition, at Blairhall Burn, Dumfries & Galloway, the remains of three post-built round houses spanning the second millennium BC were discovered during pipeline construction work (Strachan *et al* 1999, 89).

Morphologically the remains of Structure 3 at Kintore are at first glance similar to the ring-ditch class of houses of eastern Scotland in some respects. However, there are notable differences. The recently published report on the excavations of ring-ditch houses at Douglasmuir, Angus (Kendrick 1995), showed that the ditch was sometimes very deep, up to 1.8 m, whereas at Deer's Den it was a maximum of c 0.5 m deep. At both sites the central area, enclosed by the ditches, was relatively small. One of the most notable differences, however, is that the central areas at Douglasmuir included post-holes for vertical timbers to support the roof, whereas at Deer's Den these were located around the outer edge of the ring-ditch. Perhaps there were other post-holes in the centre at Deer's Den that have not survived, although this seems unlikely.

Another unusual feature at Deer's Den was the presence of the slightly sunken entrance passage and porched entranceway. The length of this passage suggests that it ran through a wide external bank that may have formed the wall around the central depression. That this entranceway was heavily used was evident from the compacted iron-panned surface which ran along its length and passed between the four posts. There is nothing comparable at Douglasmuir or at Ironshill (Pollock 1997) where the entranceways appear to be set between the terminals of the ring-ditches. If the outer wall of the house was concentric with the ring ditch and level with the inner pair of posts defining the porched entrance then the structure at Deer's Den would have been c 14–15 m

in diameter. The aerial photograph (illus 3) shows another similar structure in the field to the east with what may be the line of an outer wall, visible as a ring-groove.

One further difference between Deer's Den and other excavated ring-ditch houses, which lie to the south of the Mounth, is the presence of a large quantity of later prehistoric pottery: plain, coarse, bucket-shaped vessels with simple flat or rounded rims. The artefact assemblage from Douglasmuir was dominated by coarse stone tools; mainly broken quern stones, incorporated into the areas of paving. No coarse stone artefacts were recovered from Deer's Den.

The major difference between the excavated lowland examples in Angus at Douglasmuir, Ironshill and Culhawk (Kendrick 1995; Pollock 1997; Rees 1998) and that at Deer's Den is that the former have all been dated firmly in the first millennium BC.

Both survey and excavation work have identified upstanding roundhouse sites, in the uplands, which display penannular depressions (or slight ditches) in their interiors. Survey work by RCAHMS (1990, 3–4) in north-east Perthshire, for example, identified at least 40 ring ditches mostly within upstanding hut circles. Excavation of the hut circles at Lairg showed that there were shallow discontinuous ditches within the interior of most of the houses. It was argued that these were a result of patterns of erosion through wear on the floor, rather than a structural element within the house (O'Sullivan 1998). While the main division of space within these structures was annular, consisting of a central area surrounded by a worn ditch with an outer *annulus*, it was also suggested that the discontinuous nature of the ditch may also reflect radial division within the houses. It is possible that a similar division of space was a feature at Deer's Den, with only the inner area and the worn ditch surviving. Perhaps the shallow pits in the base of the ditch (illus 8; 1120, 1119) and the linear spread of stone across the ditch in the north-east (illus 8; along the line of section G–H) may reflect radial partions.

The survival of ardmarks in the central area of the ring-ditch house, which is below the level of the surrounding subsoil outside, requires explanation. Two potential interpretations are explored here, although there may be others. First, it is clear that the ardmarks could only have been made after the hollow for the house had been excavated; the debate arises as to whether they were part of the initial construction of the house or were a result of agricultural activity after it had been abandoned. It is possible that the centre of the house was ploughed during its construction as some form of ritual foundation ceremony. This explanation, however, seems unlikely and the preferred interpretation here is that they were the result of post-abandonment cultivation. After the house had decayed any external banks, created by the upcast from the ditch, would have partially slipped back into the central area leaving a dished depression surrounded by a denuded low bank. Ploughing over this low mound and across the central depression would only have left ardmarks visible in the sand of the central area but not in the fill of the ditch which would have been protected by the remains of the slumped bank. This post-abandonment ploughing would also explain why the fill of the central depression was a homogeneous soil similar to (and indistinguishable from) the ploughsoil and also why there were no *in situ* artefacts or features (such as hearths or floors) in the central area. The burnt patch in the northern part of the central area was simply sand oxidized by fire and did not constitute the *in situ* remains of a formal hearth. The only place where artefacts appear to have survived *in situ* was in the lower fills of the ditch, as demonstrated by the two spreads of crushed and broken pottery. There were no ardmarks located outside the structure on the current level of the subsoil but these could easily have been removed, along with any traces of an upstanding bank around the structure, by more recent ploughing. It could be suggested that since no ardmarks were noted in the subsoil in the base of the central hollow within Structure 1, which was dated to the Late Bronze Age, the traces

of cultivation visible in Structure 3 could date between c 1300–1000 cal BC. Such an interpretation must remain simply speculation.

Pollock (1997, 348) noted ardmarks scored into the centre of the ring-ditch house (House 2) at Ironshill, which he considered to have been made after the house had been abandoned. The ground level in the centre was also 'considerably below the outside surface' but there were no traces of ardmarks either outside or cutting into the lip of the ditch (ibid, 348). Pollock suggested that although unroofed the structure may have retained its outer wall and could have been used as a small, enclosed, garden plot. Such an explanation could also be plausible for the evidence at Deer's Den. However, the recently published excavations of the upland landscape around Lairg, Sutherland, clearly showed that subsequent cultivation often traversed the abandoned remains of earlier hut circles (McCullagh & Tipping 1998).

The remains of Structure 1 are a contrast to Structure 3 since it is post-built with a small central hollow. Although its size compares favourably with other later prehistoric roundhouses not enough survives to be more precise about its form and function. The irregular central hollow, which contained large amounts of later prehistoric pottery, is intriguing. This pottery has been termed Covesea Ware, a north-east variant of flat-rimmed ware (ubiquitous from the end of the second and throughout the first millennium BC), and was confirmed by the radiocarbon dates which indicate it was in use during the Late Bronze Age. The presence of this large amount of pottery, broken and abraded, in a shallow scoop in the centre of the house is unusual; perhaps the hollow was cut during the construction or the use of the house, possibly sealed beneath the floor, or it may have been associated with the abandonment of the structure.

From the radiocarbon dating evidence it is possible that the four-post structure at Deer's Den was in use at the same time as Structure 1 in the Late Bronze Age. Four-post structures are usually thought to be of later prehistoric date and to have functioned as granaries. A similar-sized structure (3 m by 3 m) was located within the palisaded enclosure at Myrehead, near Falkirk, and is thought probably to date to the mid/late first millennium BC (Barclay 1983, 43). Another comparable structure (again 3 m by 3 m) was recorded at Ironshill, Angus, located to the south of the larger of the two buildings, although again there was no direct dating evidence (Pollock 1997, 350). Two four-post structures (3 m by 3 m) were uncovered at Beckton, near Lockerbie, where in the absence of any suitable dating material the excavator discussed the possibility that they could have been Neolithic in date given the nature of the artefactual assemblage on the site (Pollard 1997, 80). Finally, in Aberdeenshire, a recent excavation at Greenbogs, Monymusk, 10 km west of Deer's Den, uncovered two four-post structures surrounded by a circle of post-holes 9 m in diameter (Greig 1996, 10, fig 3). The four-post arrangements there were interpreted as the central load-bearing timbers for a circular roundhouse but as yet they remain undated (M Greig, pers comm). Interestingly, the site at Greenbogs is the one used as the basis for the reconstructed roundhouse at Archaeolink, near Insch,where it is presented as Iron Age in date.

IRON AGE SETTLEMENT

On the basis of the radiocarbon dating evidence, almost none of the features at Deer's Den, apart from the four-post structure, appears to have been of Iron Age date. However, the remains of the circular structure recovered at Tavelty, towards the northern end of the road corridor, does appear to belong somewhere between the last century BC and the first century AD. The remains of the structure at Tavelty can be compared to the series of pit circles at Romancamp Gate, Fochabers, which were dated to late in the first millennium BC (Barclay 1993, 262) and which also produced very little material remains. In that report Barclay (1993, 267) highlighted the gap in

our knowledge of the basic forms and chronology of non-defensive Iron Age sites in the north-east of Scotland. Recently, however, more sites have been excavated and, although many date to the Iron Age, they display a wide variety of size and forms. The site at Wardend of Durris revealed three consecutive circular Iron Age enclosures, c 25 m in diameter, containing several small circular post-built houses, which were repeatedly rebuilt (Russell-White 1995, 25–6). These structures dated from the latter half of the first millennium BC into the early part of the first millennium AD and appeared to consist of a single ring of posts. By contrast, the large Iron Age roundhouse (15.5 m in diameter) beside Candle Stane recumbent stone circle, near Insch, consisted of three concentric rings of posts within a narrow ring-groove defining the outer wall (Cameron 1999). At Ednie Farm, on the line of the St Fergus to Peterhead gas pipeline, recent excavation work has uncovered the remains of a ring-groove house c 14 m in diameter with a central ring of eight posts (Strachan 1998, 9–10, fig 1); the date of this feature is yet to be ascertained. Clearly then, the excavated evidence in Aberdeenshire displays a wide variety of site types. Unfortunately very little survey work has been undertaken on the archaeological sites of Aberdeenshire but recent survey work in Strathdon by the RCAHMS should alter this and will allow some of the excavated evidence to be fitted into a wider pattern of settlement across the landscape.

ROMAN AND EARLY HISTORIC ACTIVITY

In contrast to the later prehistoric settlement, the Roman temporary camps of Aberdeenshire have attracted more attention as a monument class and excavations have been carried out at many of them. Some of the Aberdeenshire camps survive as upstanding monuments, such as Raedykes, north-west of Stonehaven, and sections of the Kintore camp were upstanding in the 19th century (Courtenay 1868). The temporary camp at Kintore belongs to a series of camps believed to have been used during the campaigns undertaken by the Roman governor Agricola in northern Scotland and in particular to the campaign of AD 83 which led up to the battle of Mons Graupius. One of the strongest contenders for the possible location of this encounter between the Roman army and the native Caledonians is on the northern slopes of Bennachie (Maxwell 1990). The camp at Kintore is c 44 ha in extent while the next one to the north at Durno, opposite Bennachie is 57 ha, the largest camp in northern Scotland. Roman temporary camps are notoriously difficult to date and during the excavation work at Kintore no datable artefacts, which would either prove or disprove the suggested Flavian date for the camp, were recovered. The location of the camp was certainly well chosen with the Don defending the east side, the Bridgealehouse Burn to the north and the Rolomire Burn to the south (illus 1). The only side that was less well protected by natural features was the western perimeter at Deer's Den.

Another set of features which may have belonged to the use of the Roman temporary camp were the field ovens located in the interior. Previous work just within the northern perimeter of the camp at Kintore located what was interpreted as a field oven containing an oat grain and flecks of alder and oak charcoal (A Shepherd 1986, 207–8). More recently excavation work just inside the north-eastern corner of the camp in advance of a housing development recovered the remains of a figure of eight feature interpreted as a field oven (Glendinning 1998, 9). The excavation of three field ovens, two at Deer's Den (FO1 & FO2) and one at Rosebank (FO3), was supplemented by another example located during the watching brief at Springbank (FO4), which was destroyed by the earthmoving machinery before it could be excavated. Four field ovens were, therefore, located during the project and one pit containing quantities of burnt grain. This pit at Rosebank, however, turned out to be of Iron Age date with a radiocarbon date in the fourth

to second century BC. Of the three dated field ovens only the one with the stone base inside the area of the camp at Deer's Den, with its radiocarbon dates ranging from the first century BC to the second century AD, could be interpreted as belonging to the Roman occupation of the camp. The other example at Deer's Den (FO1), cut into the terminal of the camp ditch, produced dates ranging from the fourth to the seventh century AD and is, therefore, of Early Historic date and may relate to Pictish settlement in the area. There is a Pictish symbol stone in Kintore churchyard. The field oven at Rosebank (FO3), however, produced radiocarbon dates ranging from first to fifth century AD and could either belong to Roman military use of the camp or subsequent native use. Although such field ovens have often been attributed to the occupation of the Roman army due to their discovery in temporary camp sites, recent radiocarbon dates from examples at Smeaton temporary camp, near Dalkeith have also indicated that they continue slightly later in the first millennium AD (A Dunwell, pers comm). It is possible that these ovens may have been first introduced by the Roman army and were later copied by the native population. Perhaps the concentration of such ovens, within the areas defined by Roman temporary camps, reflects the native use of the abandoned camps as readily enclosed fields. The large scale topsoiling of Roman temporary camps during construction projects may also provide a reason for the modern perception that these features are associated.

UNLOCATED SITES

Although the investigation work undertaken in advance of the bypass located a large number of significant archaeological remains there were a few notable absences. No remains associated with the possible medieval hospital site at Kintore or, unsurprisingly, of Montrose's camp at Tavelty were recovered. Although the latter was not surprising, the general lack of medieval finds around Kintore, even in the topsoil, was remarkable. Finally nothing was located of the line of the former Aberdeenshire canal during the trial trenching exercise. This area was subsequently built up with soil during the watching brief rather than excavated away.

CONCLUSION

The archaeological investigations in advance of the Kintore and Blackburn bypass located a large number of archaeological features towards the northern end of the route around Kintore. The results clearly make a significant contribution to our knowledge and understanding of human activity in the area from the Neolithic through into the Early Historic period. In particular, the dating of the settlement remains, from the Bronze Age into the Iron Age, has only just started to fill the gap in our understanding of past societies in north-eastern Scotland. These results are encouraging as the wealth of upstanding archaeological remains and cropmarks in Aberdeenshire has been shown to be amongst the richest in country (Shepherd & Greig 1996). Further excavation, together with detailed survey work, will in the future help to merge the sets of evidence from the arable zone of destruction and the pockets of upland survival.

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ARCHIVE

The full site archive has been deposited with the National Monuments Record of Scotland while reproducible elements have also been deposited with the Aberdeenshire Archaeology Service's Sites and Monuments Record. This archive includes full specialist reports, the field drawings and photographs. All the finds have been deposited in Marischal Museum, Aberdeen.

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