The excavation of Neolithic pits and Iron Age souterrains at Dubton Farm, Brechin, Angus

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Introduction

The site at Dubton Farm in Angus lies approximately 1km west of Brechin (NGR: NO 583 604, Illus 1) above the 60m contour and on a gently sloping terrace. It occupied what was the crest, south-facing and west-facing slopes of a small gravel ridge at the edge of the valley of the River South Esk, some 0.5km to the north of the watercourse and 9km west of its mouth. The area has long been intensely farmed and no traces of upstanding features were visible prior to excavation. The subsoil consisted of mixed areas of sands, gravels and cobbles with occasional degrading sandstone inclusions that made excavation and definition of feature edges difficult. The local soils are acidic humus-iron podsols attributed to the Forfar series (Walker et al 1982).

This ridge and its enclosing field were the focus of oblique aerial photographs taken by RCAHMS in 1982 (Illus 2, NMRS NO56SE 47; Oblique aerial photographs 1/5733–5735, 1982) that revealed what appeared to be a group of souterrains and ring ditches. These cropmarks include a series of L-shaped traces, at least one ring ditch-type feature and other circular traces, as well as a line of solid circular marks on the north slope. Many other ambiguous traces of potential archaeological origin were present. These remains were thought to indicate an extensive unenclosed later prehistoric settlement.

In advance of development, a field evaluation (Illus 1) was conducted by Headland Archaeology during 1998 (Baker and Moloney 1998). This exercise identified many negative features, principally of early Neolithic and later prehistoric date. However, the cropmarks believed to correspond to the remains of ring-ditch houses were found to be modern quarry pits. This paper presents the results of subsequent larger scale excavation undertaken by the Centre for Field Archaeology, University of Edinburgh (CFA), during March and April 1999. The excavation aimed further to investigate archaeologically sensitive areas identified by the Archaeological Advisor to Angus Council (Illus 1, Areas A–D). Unfortunately, a watching brief on adjacent areas was not carried out as originally planned. As the gravel ridge has now been removed, further features may have been destroyed.

Four areas (Areas A–D on Illus 1) were stripped by machine and cleaned manually. All features were initially half-sectioned and recorded, and then later (with the exception of the large pits) fully excavated for artefact retrieval. Due to time restrictions, five of the large pits were partially sectioned by mechanical excavator, following manual excavation of their upper deposits. The subsoil across the site showed signs of plough disturbance.

The excavation

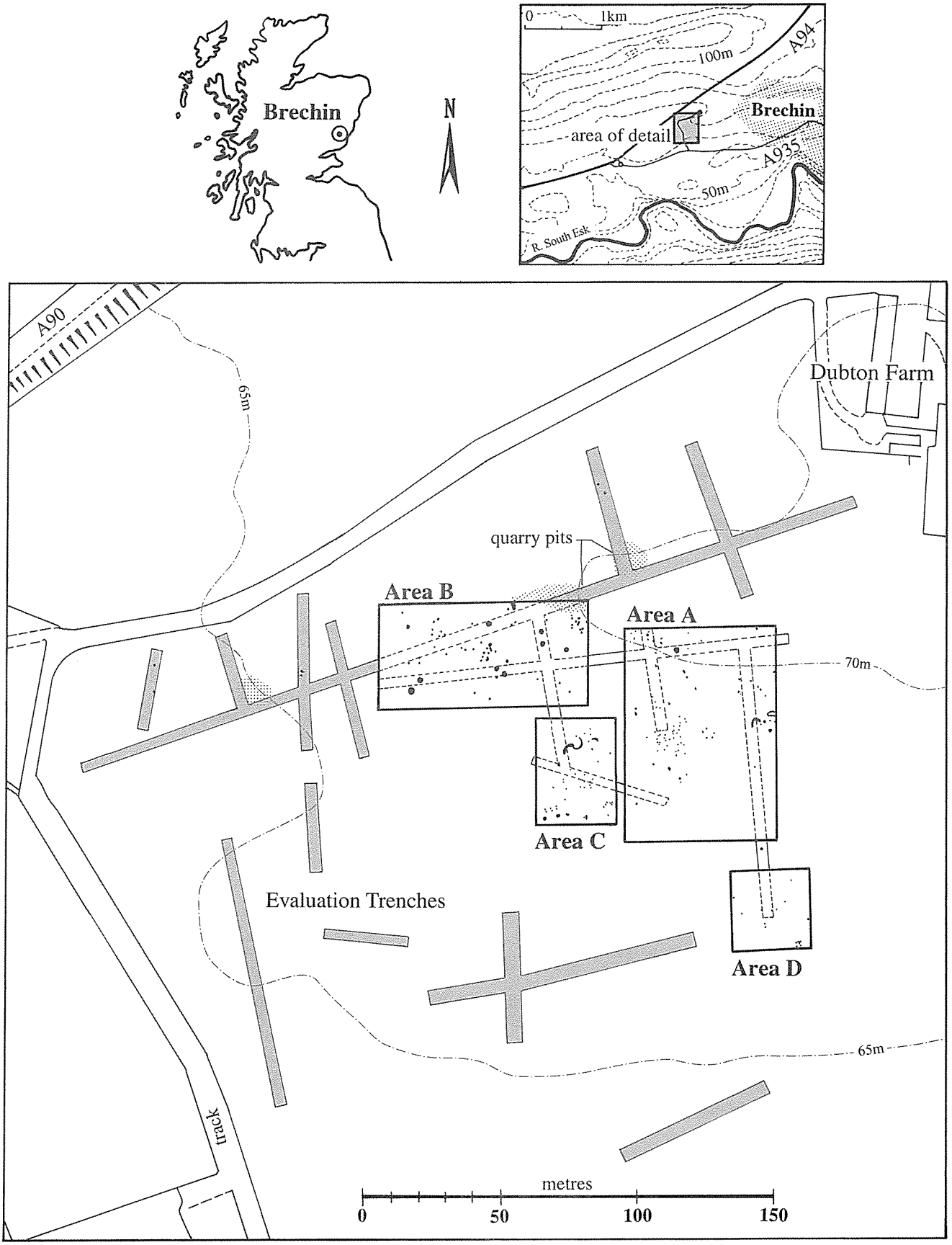
The archaeological features are considered by type and by period. Where features yielded no dating evidence, they have been grouped on the basis of similarity and proximity to dated features. A more detailed description of every feature is contained in the site archive.

Neolithic features

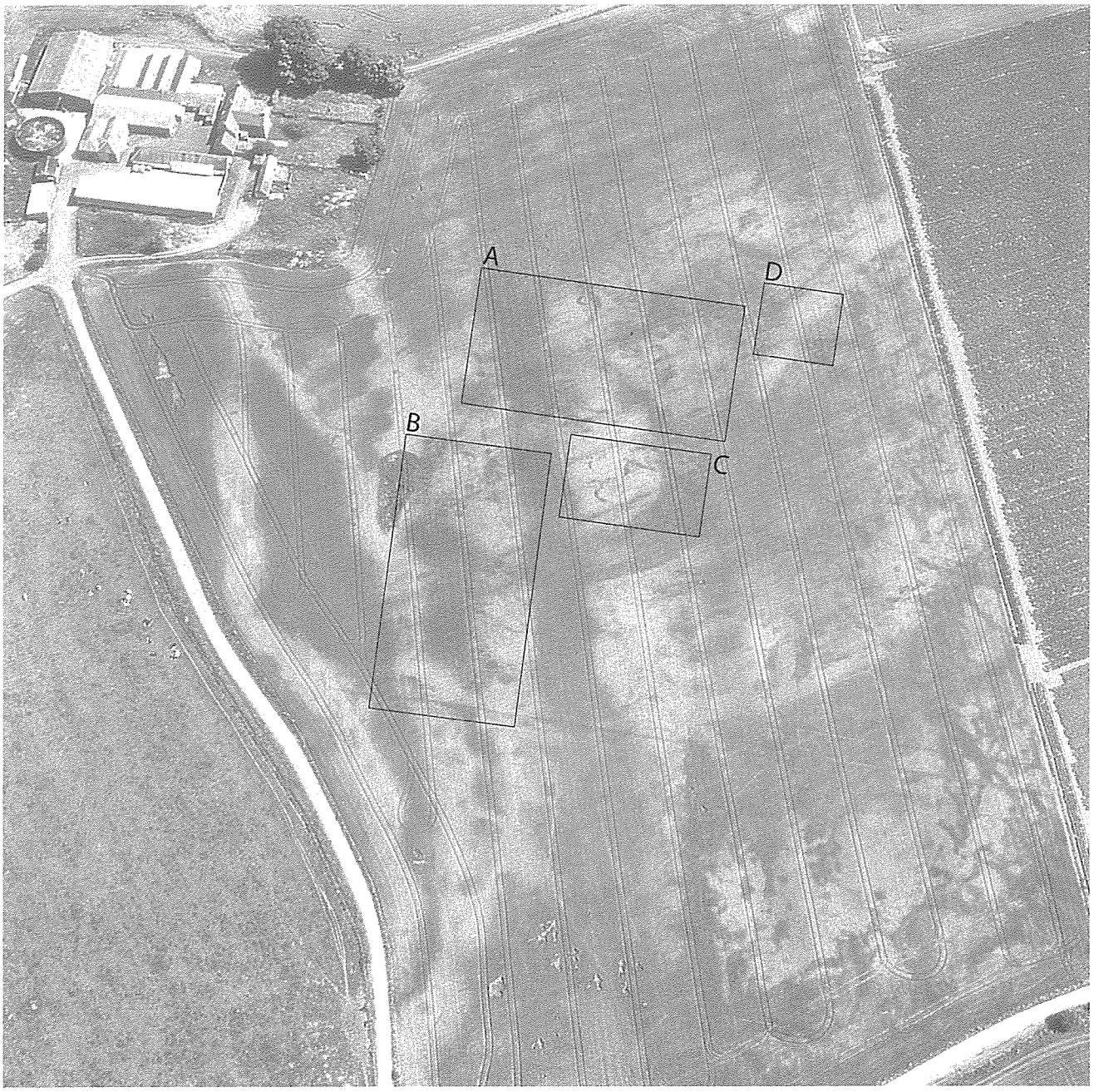
Several clusters of pits with charcoal-rich fills were identified, mainly in the north of the area, across the top of the ridge. A series of massive pits also occurred dispersed throughout this area (Areas A and B). Further shallow pits and spreads of charcoal stained deposits were scattered across mainly the western half of the development area: many of these features contained quantities of earlier Neolithic pottery, occasionally recovered with lithic artefacts.

Pits

A group of shallow pits with charcoal-rich fills was identified in the north-west corner of area A (Illus 3), with some further dispersed pits surrounding the cluster. Most had single fills, but some of the larger ones contained two fills. These features were cut into gravel and cobbles towards the top of the ridge. Three were large shallow bowls and another, which produced a fragmented mammal tooth, seemed to be the truncated remains of a similar example. Other pits in this area were much smaller in diameter. To the east of this group two shallow, charcoal-rich spreads containing



Illus 1 *Location maps.*

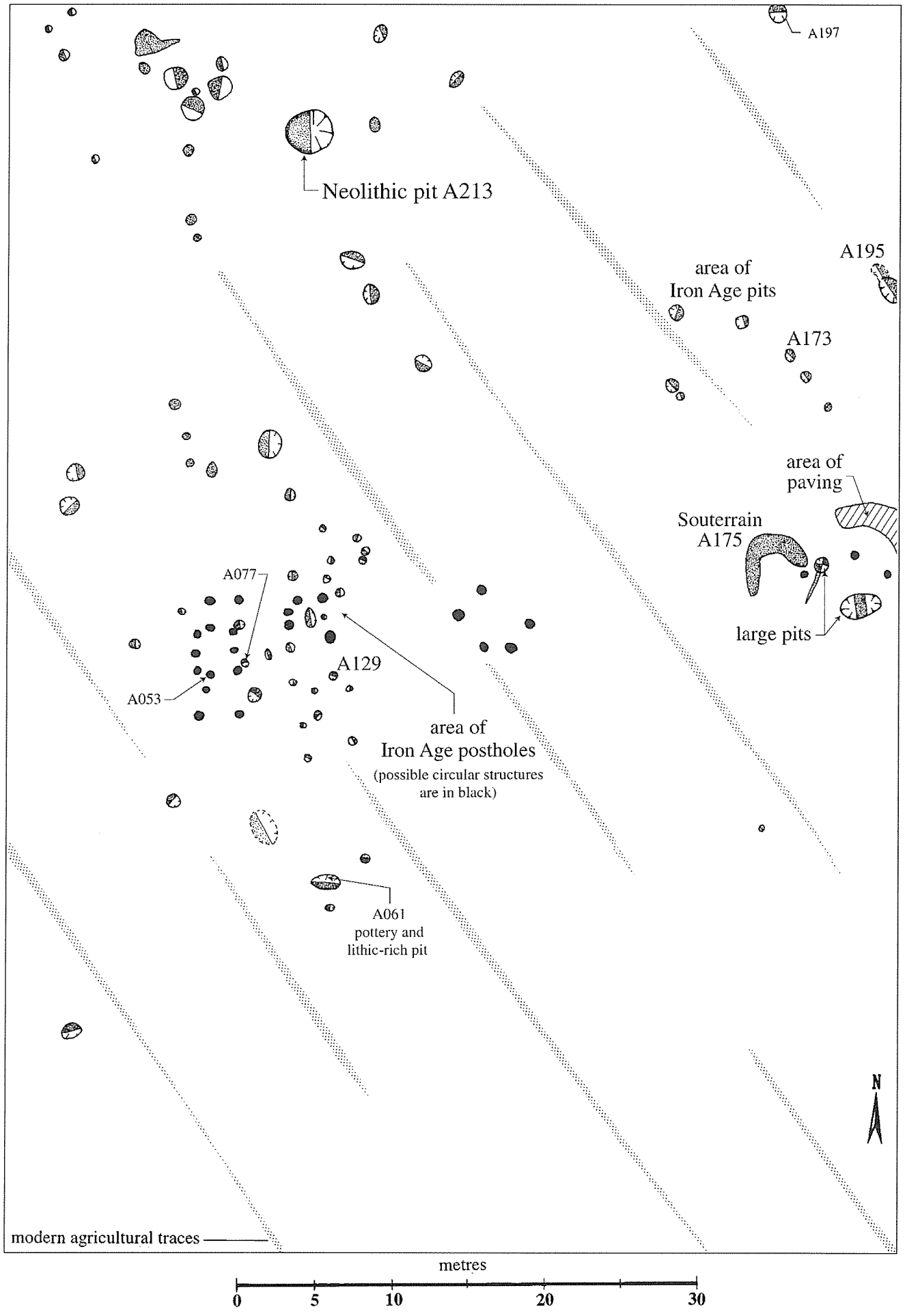


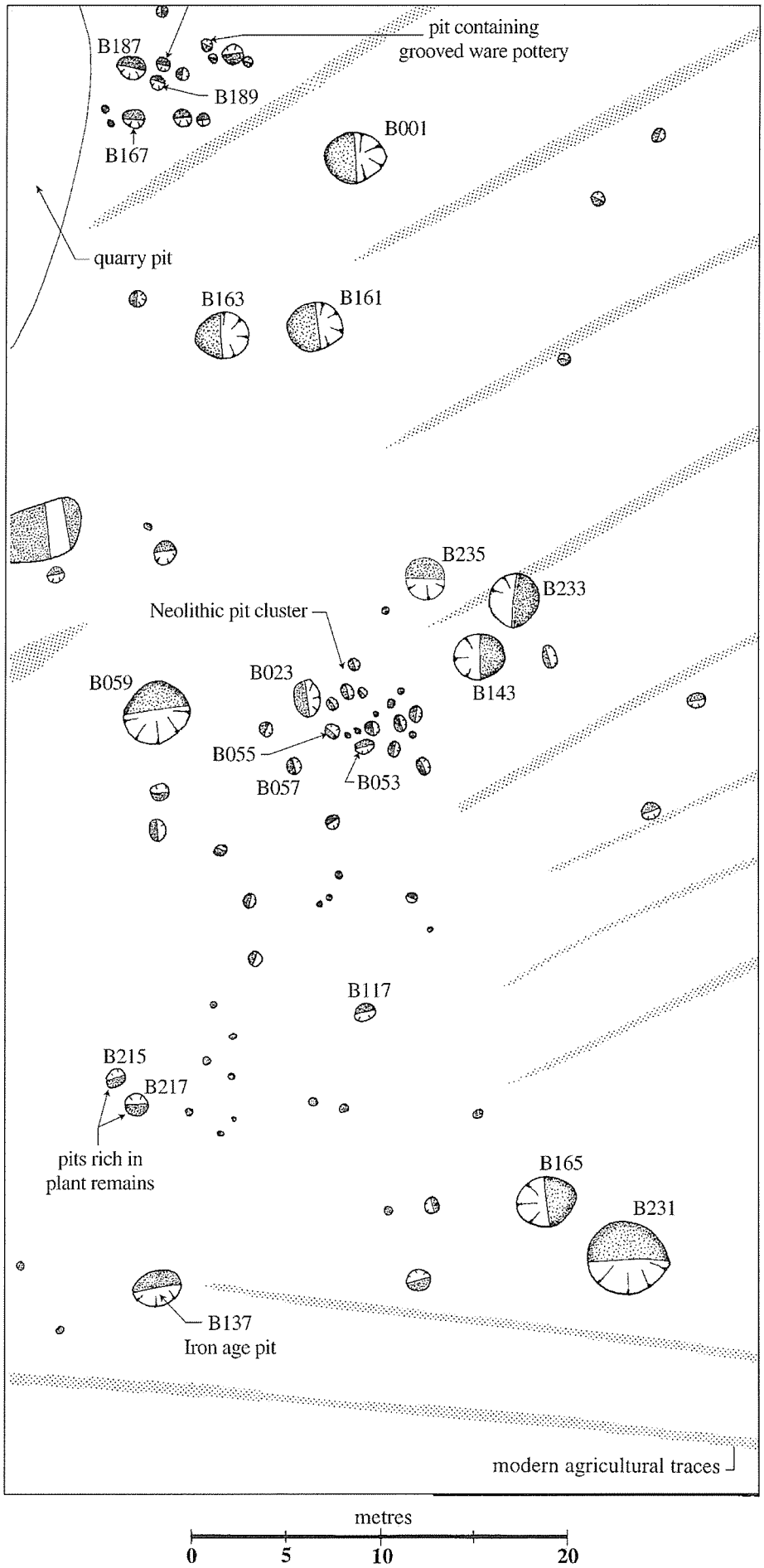
Illus 2 *Aerial photograph of Dubton.*

fire-cracked stones seemed to be the remains of fire-pits. With the exception of the tooth, no artefacts were retrieved from these pits which could clarify their date. Despite the fact that one of the more isolated pits in the vicinity produced a single sherd of later prehistoric pottery, these pits have been tentatively grouped here as Neolithic due to their similar form and content to others in Area B.

There were two main concentrations of pits in Area B (Illus 4 and 7), one central and one in its north-east corner. Twelve pits and two probable stakeholes, with no discernible pattern in plan, were situated in the latter corner, close to the top of the ridge and c.10m from the cluster of pits in area A. A large modern quarry may have removed further examples to the north. Most of these pits had a charcoal-rich fill and contained over 30% fire-cracked stones. The larger examples had a bowl-shaped profile with an inverted 'lip' around the top where the subsoil showed evidence of heat alteration. Seven of these pits produced artefacts, including later Neolithic pottery (from Impressed Ware and possible Grooved Ware vessels), lithics and shells.

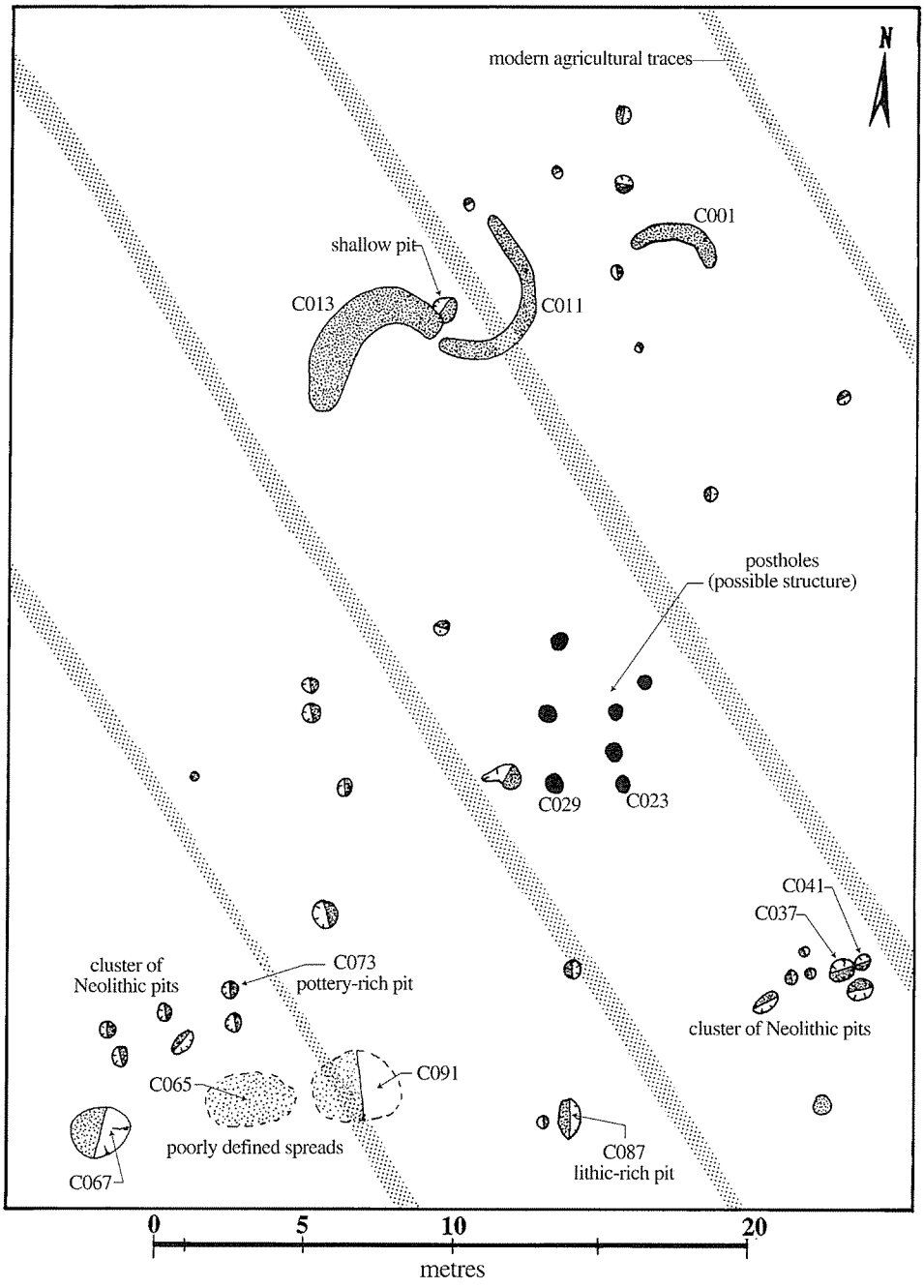
In the centre of Area B, a large group of subcircular pits (Illus 4 and 7) comprised of truncated shallow scoops with charcoal-stained fills. Some however, were deeper with a bowl-shaped profile containing large quantities of charred plant material. Several produced quantities of Early Neolithic Carinated Bowl pottery and at least one (B023) contained sherds of Impressed Ware. None of these small pits could convincingly be described as a posthole and they formed no clear pattern indicative of the presence of a structure. These pit


A197
Neolithic pit A213
A195
area of
Iron Age pits
A173
area of
paving
Souterrain
A175
large pits
A077
A053
A129
area of
Iron Age postholes
(possible circular structures
are in black)
A061
pottery and
lithic-rich pit
N
modern agricultural traces
metres
0
5
10
20
30



Illus 3 *(left) Plan of features in Area A.*

Illus 4 *Plan of features in Area B.*



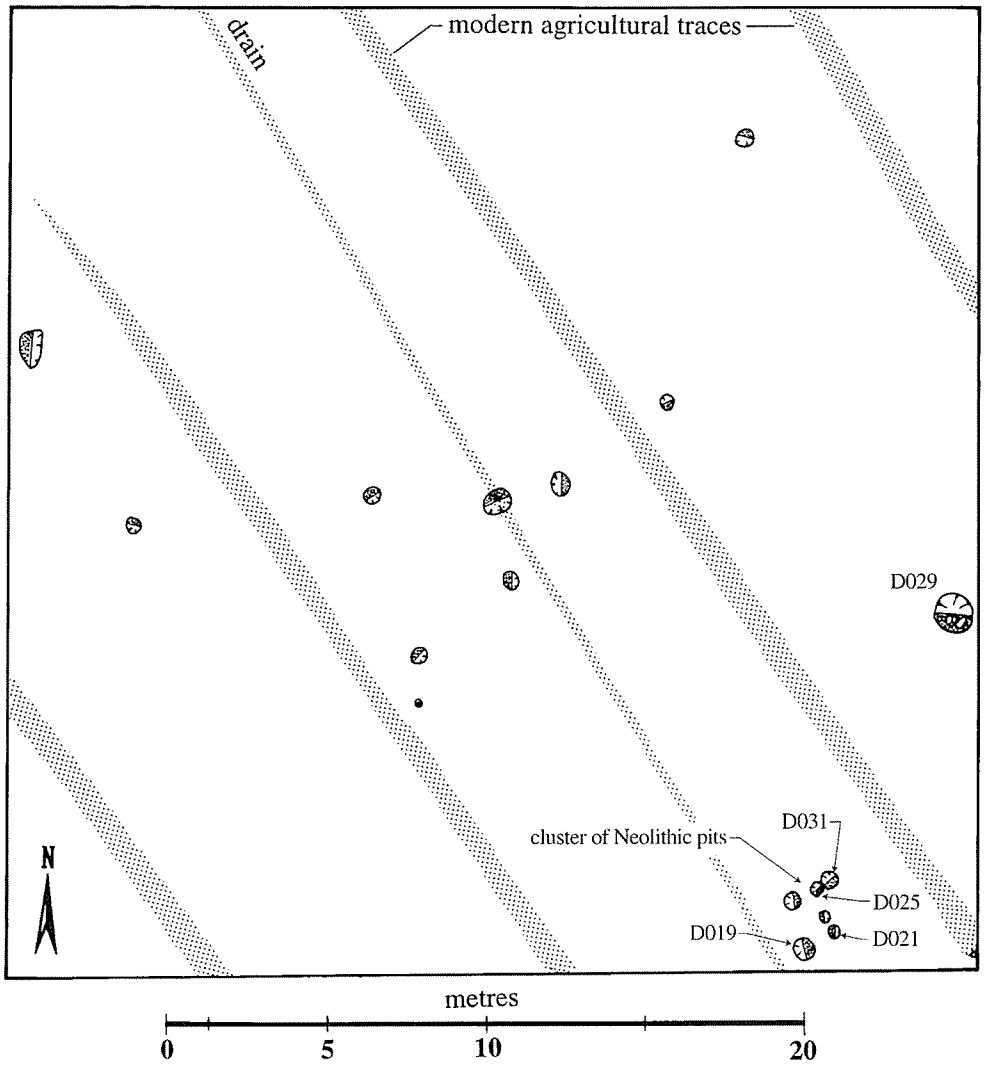
Illus 5 *Plan of features in Area C.*

clusters may nonetheless indicate the position of a former structure, which has left little by way of coherent archaeological remains; but it is considered more likely that they simply mark an area of activity.

Two neighbouring pits (B215, B217) towards the western end of Area B (Illus 4 and 7) were cut into very soft sand: they produced quantities of burnt hazelnuts and shells, and assorted seeds (Church, infra). Pit B215 also produced a flint flake and provided a radiocarbon date
of 3640–3375 cal BC (2 sigma, AA-39949) from a carbonised crab apple found within it.

Two distinct groups of pits were identified in the southern half of Area C (Illus 5 and 7). In the south-east corner there were seven closely set but randomly arranged subcircular pits of varying sizes, filled with charcoal-rich soil and angular stones. Three produced pottery in the Neolithic Carinated Bowl tradition. To the south-west, six pits were arranged in pairs, but they varied in shape, depth and to a lesser extent, fill. Five contained pottery and one (C073) produced fragments of six decorated vessels in the Impressed Wares tradition, although of a very different fabric from the material in Area B. A single vessel from C073 has been identified as belonging to the Carinated Bowl tradition. It is possible that these pits indicate the former stance of a building.

There were six blackened charcoal-rich pits in the south-east corner of Area D (Illus 6 and 7). Two pits (D025 and D031) held Neolithic Impressed Wares, similar to those found in Area C: a large deposit of fragmented pottery comparable to the Carinated Bowl Wares found in Area B was also found (D021). The fills of these pits varied slightly in the proportions of charcoal and stones they contained. Although no clear structural pattern was apparent, the pits did appear to



Illus 6 *Plan of features in Area D.*

form a cluster that may mark either a former structure or, more likely, indicate an area of activity.

Large pits

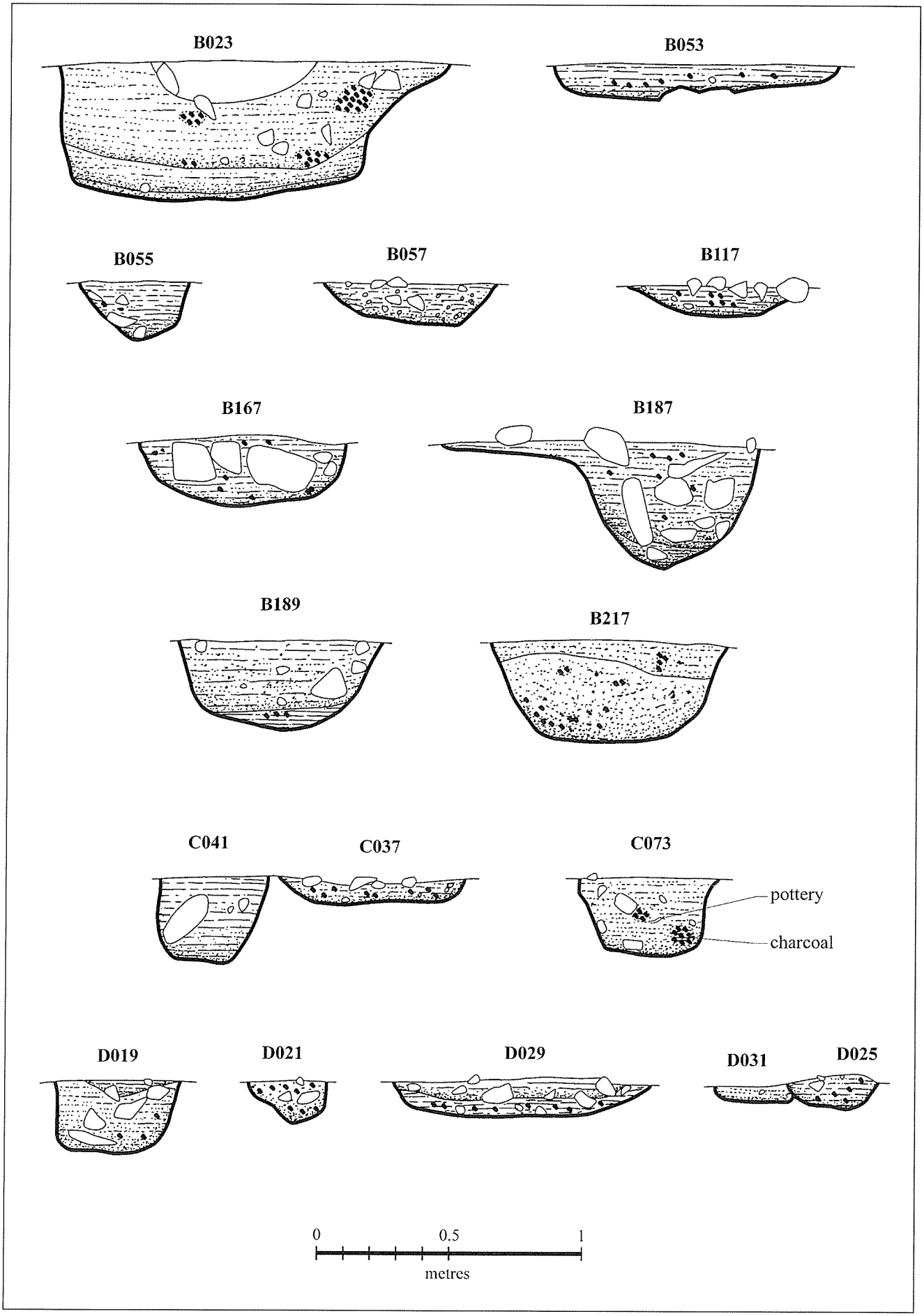
These pits were difficult to detect against the unconsolidated subsoil surface but appeared as a halo of siltier material defining their extent (Illus 8). Upon excavation, feature edges were easier to determine due to natural laminations in the subsoil (Illus 9). Eight such pits were identified in Area B, and one in the north-west corner of Area A.

Similarities of scale, complexity of stratigraphy and artefacts recovered suggest that they can be considered as a related group (Illus 4, 10 and 11). These pits were vastly larger than others on site, up to 2.7m in diameter and 1.85m deep. They were cut into loose sands and gravels and were prone to slumping upon excavation; it seems likely that they were backfilled quickly after they were dug, as little slumping from the sides of the pits had occurred and their lower fills were of loose stones. The pits were generally filled with a series of loose and stony deposits, many of which were sterile.

They all had at least one upper fill, not always apparent on the surface, comprising dark silt, stones and occasionally pottery. Many of these charcoal-stained fills were deposited in recuts, though some were simply deposited as components of the main fill. One example with a deliberate recut (B231) contained a significant number of heat-affected stones which were so solidly packed (in contrast to the other loose and voided fills) as to suggest a stone lining around the base of the recut. This could indicate that a particular activity took place within the cut before the final deposits (containing pottery and charcoal) were placed. The recut possibly formed a hearth.

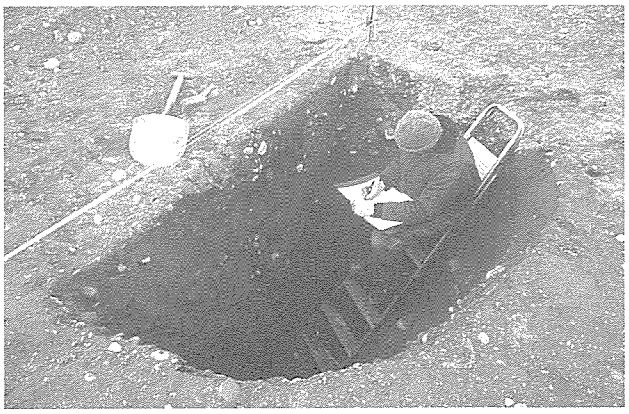
These pits displayed no obvious spatial patterning but six can be grouped into pairs—B161 and B163, B143 and B233 and B165 and B231. Pottery was recovered from all these pits with two exceptions (B163 and A213). Eighty vessels dating to the early Neolithic are represented in the pottery from these pits, including 53 vessels from a single pit (B233).

Owing to the size of these pits it was impossible fully to excavate them all by hand in the available time. Two (B059 and B161) were half-sectioned, and two (B001 and A213) were fully excavated by hand. All had their central upper fills excavated by hand for artefact retrieval. The five pits not hand-excavated to their base (B163, B233, B143, B165, B231) were then half-sectioned

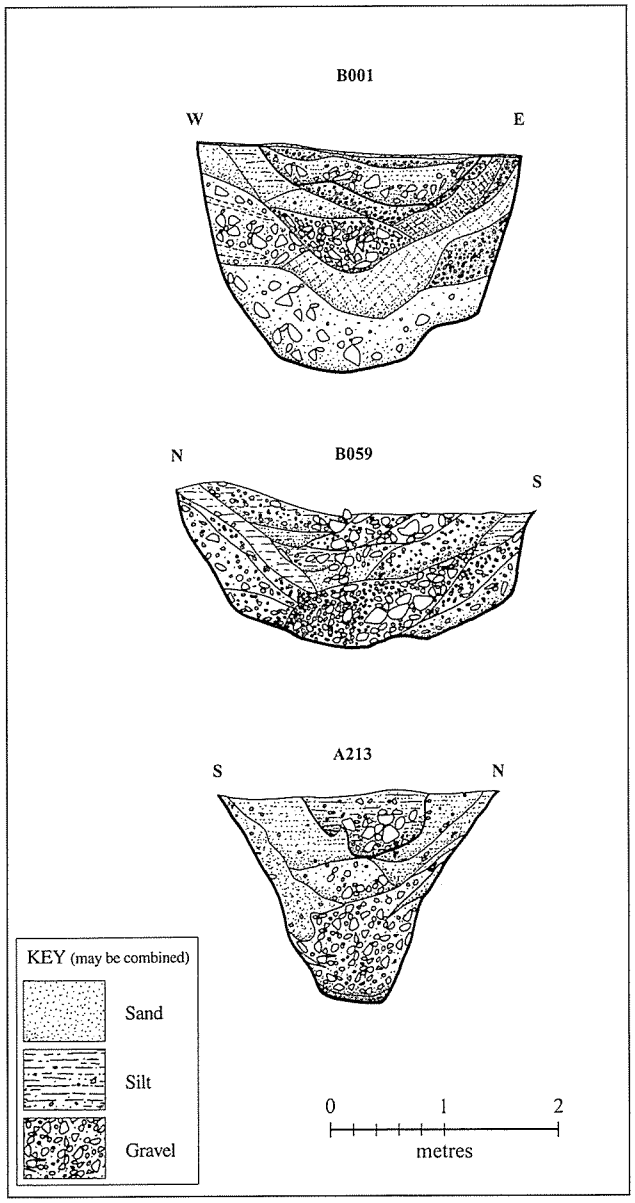


Illus 7 *Selected sections of Neolithic pits.*

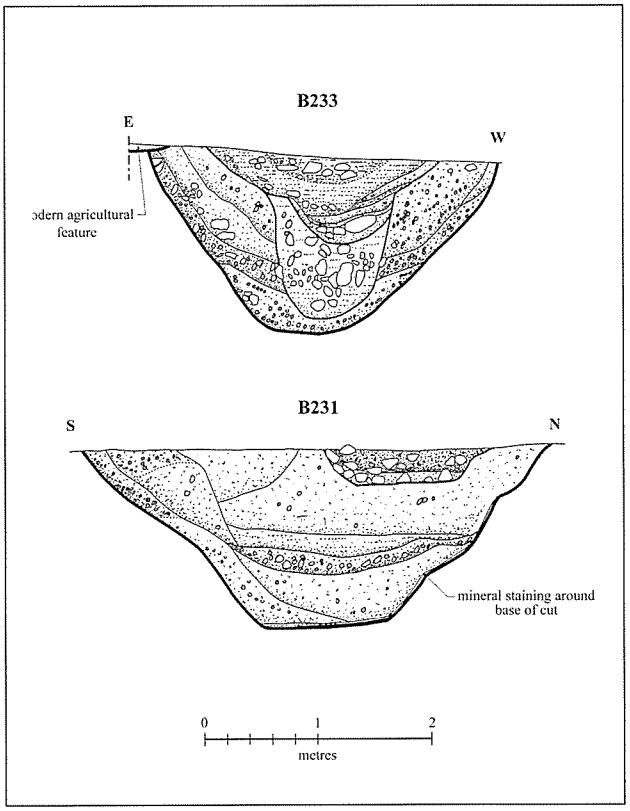
Illus 8 *Pit B231 seen in outline, with off-centre recut partially excavated.*



Illus 9 *Pit A213, half excavated.*



Illus 10 *Sections of large Neolithic pits (A213, B001, B059).*



Illus 11 *Sections of large Neolithic pits (B233, B231).*

by mechanical excavator and their sections recorded.

A tenth large pit (B235) was identified towards the centre of the area close to pits B233 and B143. Although similar in plan to the others, this pit had a single fill and a depth of only 0.5m to a subsoil of very compacted cobbles and gravel. It may be that the original excavation of this pit was abandoned and it was immediately refilled when the subsoil became impenetrable.

Miscellaneous pits and spreads

Throughout Area B (Illus 4), but particularly in two places, a number of diffuse charcoal-flecked spreads could not be reconciled with features. Several other pit features were identified scattered here. On the whole

these appeared in isolation or in haphazard arrangements: it is difficult to assign to them a specific function or, in the absence of artefacts, to date them.

Around the Neolithic pit clusters in Area C (Illus 5), several small pits, shallow features or vestigial charcoal-flecked spreads were identified. A large shallow spread with three slightly deeper areas (C067, C065, C091) was situated in the extreme south-west of the area. It consisted of a mid-brown sandy silt containing pottery fragments with affinities to Unstan Ware. This deposit could result from plough truncation and disturbance of pit and posthole features, although the different pottery tradition indicates that it may not be associated with the nearby Early Neolithic small pits. A large oval feature (C087) of charcoal-rich soil and fire-cracked stones was situated in relative isolation towards the south. It seemed to be the remains of a fire-pit, which contained over 50 pieces of lithic debitage.

An isolated large pit (D029) was located at the eastern edge of Area D (Illus 6). It contained a high percentage of stones, many fire-cracked, overlying charcoal and burnt timber.

Iron Age features

Postholes

A series of small pits, the nature of their profiles indicating former postholes, lay in a large cluster centrally in the western half of Area A (Illus 3 and 12). Although no obvious structural pattern was apparent, at least two irregular circles, of diameter 4m–5m, can be distinguished: these may represent the remains of circular timber structures. Only one of these pits (A041) produced any datable artefacts: these were sherds of undecorated later prehistoric pottery.

Roughly 30m from these features, towards the centre of Area C (Illus 5 and 12), there were seven pits interpreted as postholes (C017/C019/C021/C023/C025/C027/C029) forming two arcs. These postholes were fairly uniform, with diameters of c 0.50m–0.55m and depths of up to 0.38m. They were evenly spaced and may represent the partial remains of a circular timber structure reduced by plough truncation; alternatively the postholes may represent a smaller structure. These features have been tentatively dated only because they resemble Iron Age structures.

Pits

A group of large subcircular pits was located to the north of souterrain A175 (Illus 3 and 12). These measured up to 0.8m in diameter and 0.4m deep. Four shared similar profiles and were comparable with pit A187 at the eastern terminus of a souterrain. They showed marked bowl-profiles and traces of burnt subsoil around their edges.

Souterrains

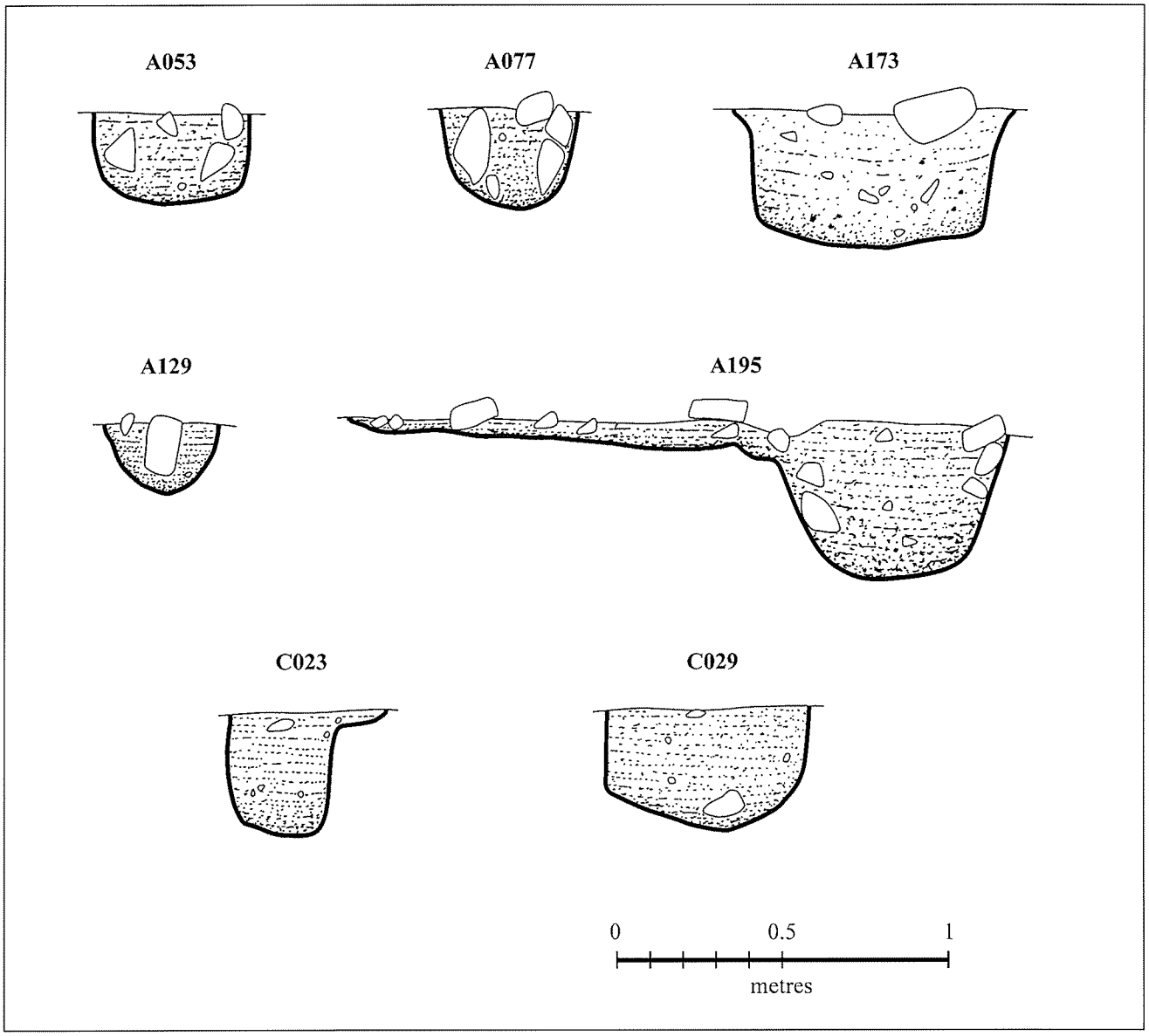
There were four souterrains, three of which formed a single group (Illus 4 and 16–19), including two lying adjacent. The fourth (Illus 4 and 13–15) lay 70m to the east, close to a substantial area of paving.
All four souterrains were fully excavated; two that showed complex stratified fills were excavated in gridded blocks to retain tight control of sampling.

Feature A175 in Area A (Illus 13 and 14) appeared in plan as a small curving hook, almost U-shaped, with terminals pointing south and south-east. It is difficult to determine which end served as the entrance; both were steep and narrow. It is suggested that the southern end is the entrance because of its slightly straighter line and the fact that it was cut into much firmer subsoil. However, the presence of a deliberately-placed quern fragment and the proximity of other features may suggest that the other end was the entrance. A large area of degraded red sandstone bedrock lay to the south of this souterrain, which had been partly cut into this firm material and partly into very fine windblown sands. It had been deliberately backfilled (Illus 15).

From the rounded, narrow south end, the floor of the souterrain sloped down sharply over c.1.5 m to a depth of about 1m where the subsoil was of fine sands. The floor then continued on at a gentler downward slope until the feature turned at almost 90 degrees to the east and attained a maximum depth of 1.4m. The ground immediately began to slope upwards more steeply for the last metre before the south-eastern terminus.

The sides of this souterrain, originally vertical throughout (Illus 15), eroded considerably during the few weeks they were exposed to the elements –- especially the sector cut into laminated sands. On particularly windy days, significant collapses and blown sand build-up prohibited excavation. It was also noted during excavation how easily disturbed the sandy base of the feature was. These factors indicate that there must originally have been a framework revetting the walls and possibly some form of floor. This would have prevented too much damage during repeated use as has been shown at Redcastle (Alexander 1998). The slightly rounded bottom of the cut (Illus 15) may indicate that some erosion did occur. Small animal burrows were identified running along and into the soft sand in the north and east edges of the souterrain and were initially thought to have been features for securing a timber framework. No such structural traces were identified; however, a significant amount of small roundwood charcoal recovered throughout the lower fills may represent the burnt remains of former internal wattlework. Within this collapse lay half a rotary quern, the only artefact recovered from this souterrain.

This souterrain was filled with deposits that varied over the length of the feature. These fills, mainly silty sands and layers of gravel, seemed to have been deliberately backfilled. The primary deposit (A175/14) was continuous throughout the feature and consisted of a

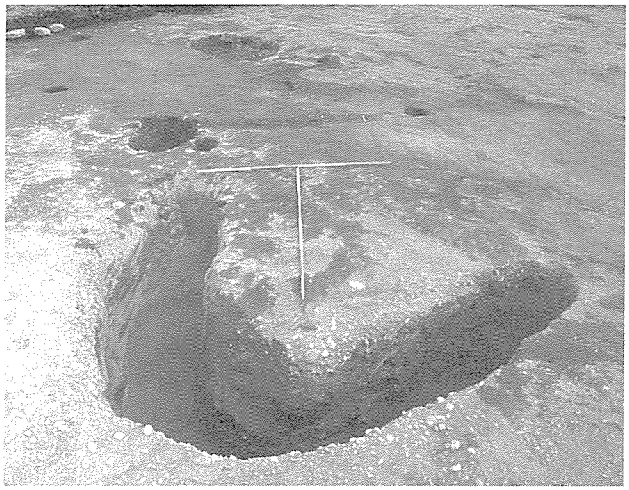


Illus 12 *Selected sections of Iron Age postholes and pits.*

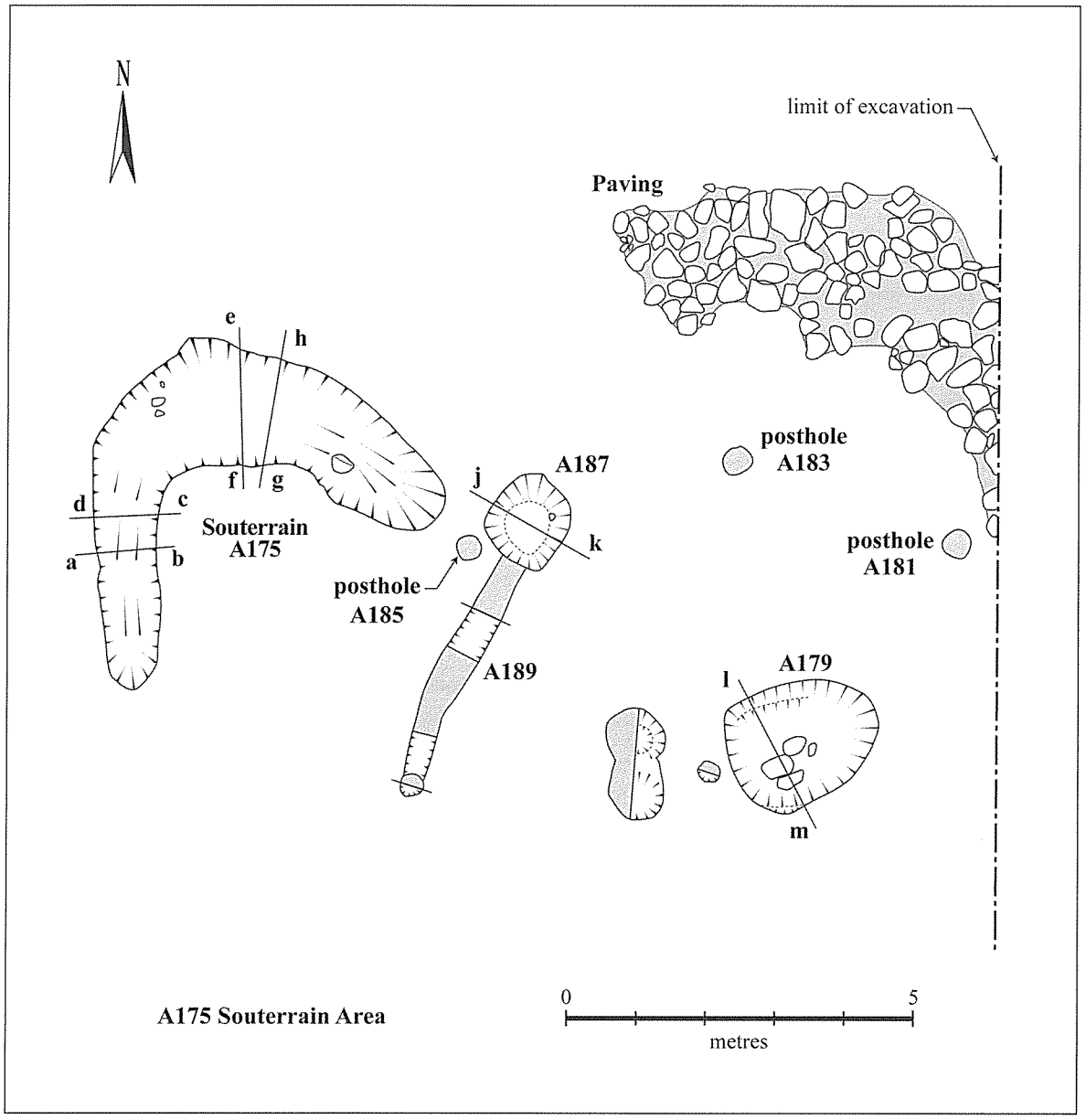
sterile, fine, compacted brown sand. Phosphate testing failed to determine whether this layer was a floor (Cressey, infra). The lower fills at the eastern end (A175/11, A175/16) contained substantial burnt timbers with burnt sand; further sand slumps occurred both above and below this layer.

To the east of the souterrain lay a range of features (Illus 14 and 15) that may be related to it. A large circular pit (A187) was located less than a metre to the east of the south-eastern terminus of the souterrain. A very shallow linear feature (A189) extended south-west from this feature and may be the result of a stone dragged by ploughing rather than the residual traces of a cut slot, although a number of small lithics were recovered from it. The circular pit lay within the arc of a series of three possible postholes (A181, A183, A185) which may represent the vestigial remains of a circular structure associated with the souterrain. Outwith the arc lay a curving raft of rounded stones forming a paved area. It is noteworthy that this paving had survived the rigours of modern agriculture as it sat considerably above the subsoil surface (from 0.15 to 0.25m). This paving is of unknown date: no artefacts were retrieved from within the stones to clarify the possible relationship between it and the souterrain. A large oval shaped pit (A179) containing four similar stones overlying large chunks of burnt bone lay four metres to the south of the paving. A saddle quern was also recovered from this context.

Three further curvilinear features were identified within Area C (Illus 5 and 16): they have been interpreted as souterrains. All were visible as cropmarks on the 1982 aerial photographs (as Illus 2). One of these (C001, Illus 17) was much smaller than would be expected for a souterrain, having dimensions of only 4m in length, 0.4m in width but with a maximum depth of almost 1m. In plan this feature was gently curving with a slight hook at the eastern end where the cut sloped up to the subsoil surface. The flat-based cut had vertical sides and a steeply sloping western end (Illus 11). Very little charcoal and no artefacts were found within this feature.

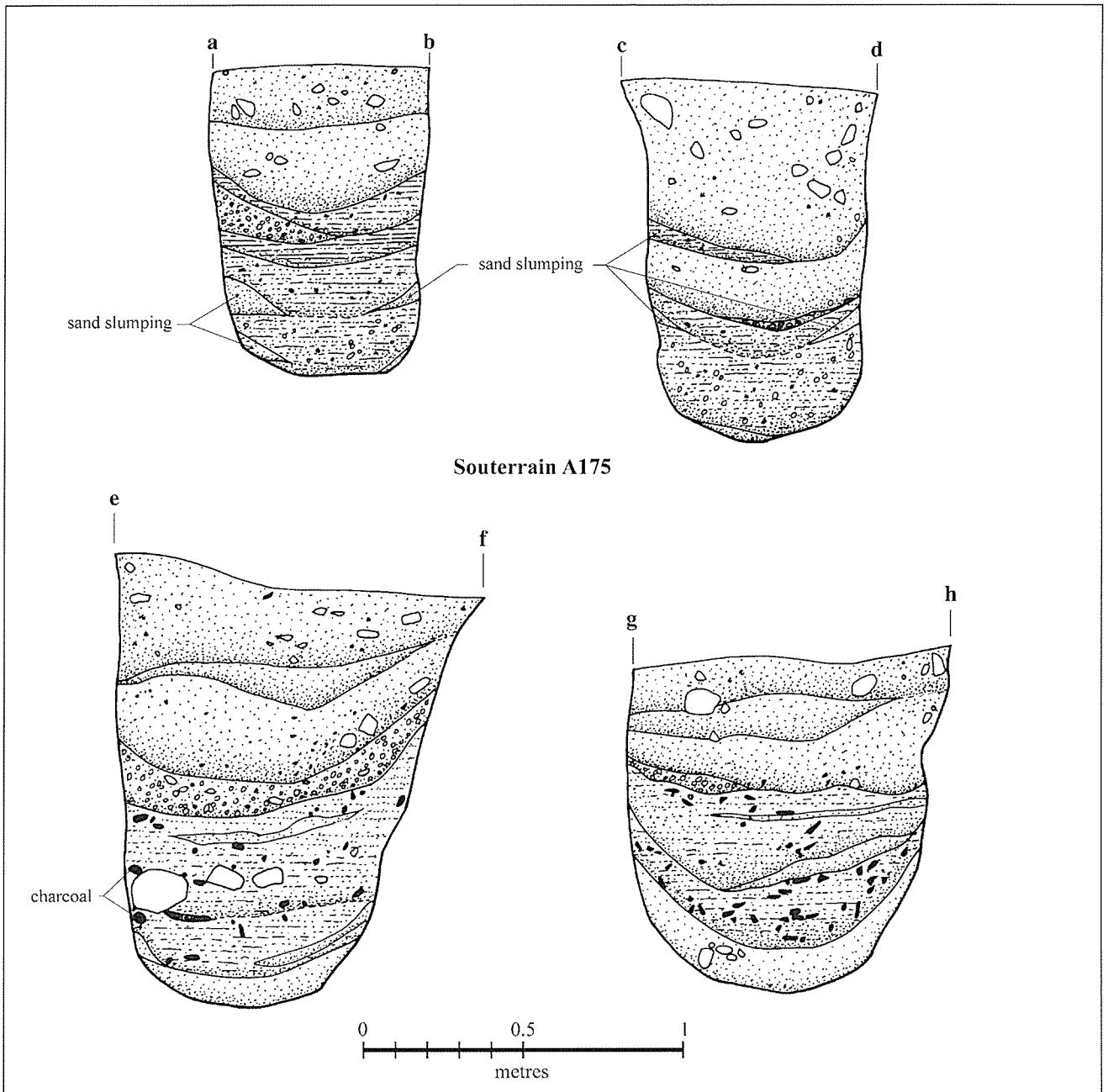


Illus 13 *Souterrain A175 and surrounding area, fully excavated.*



Illus 14 *Plan of A175 souterrain and associated features.*

Illus 15 *(right) Sections of A175 souterrain and associated features.*


a
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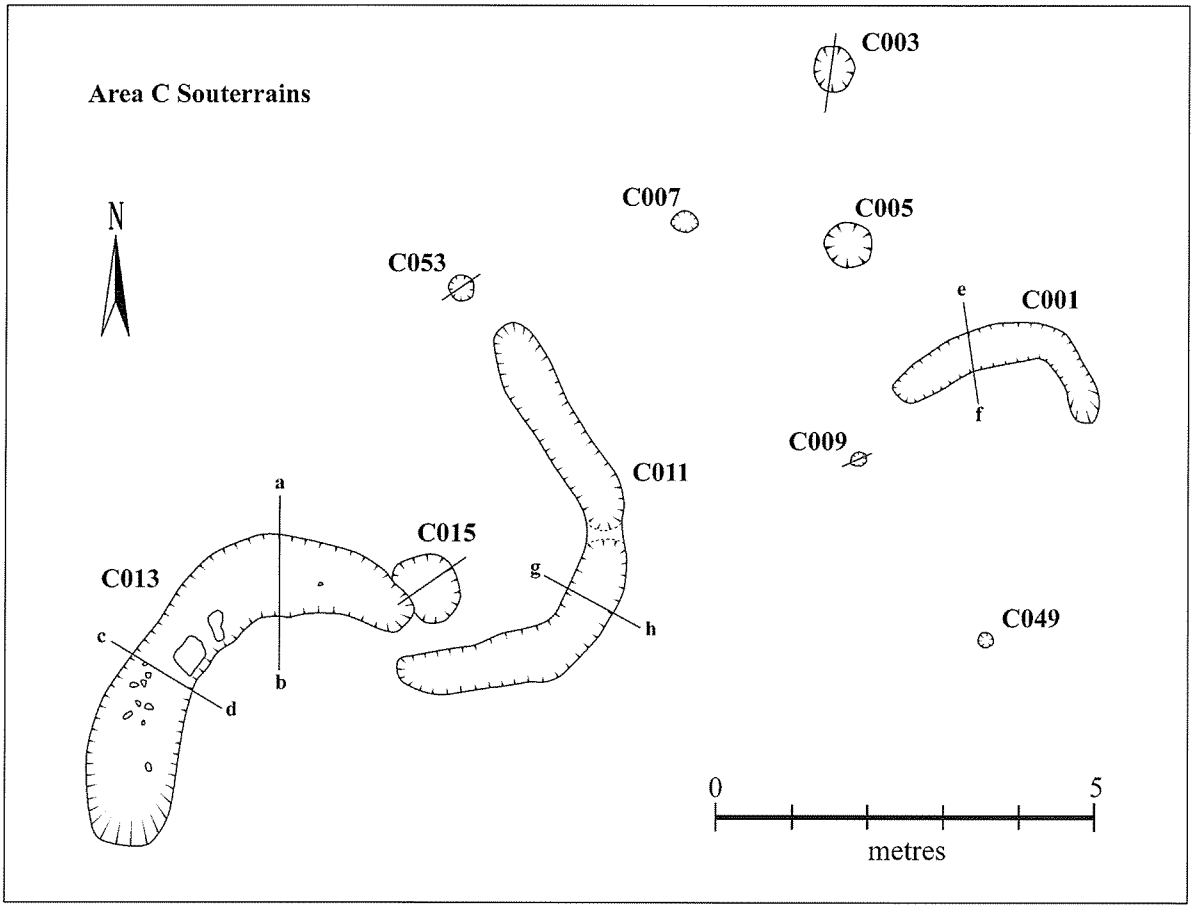
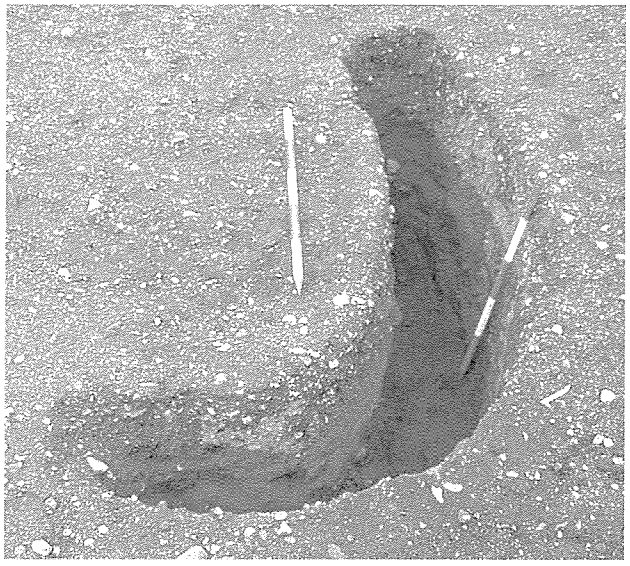
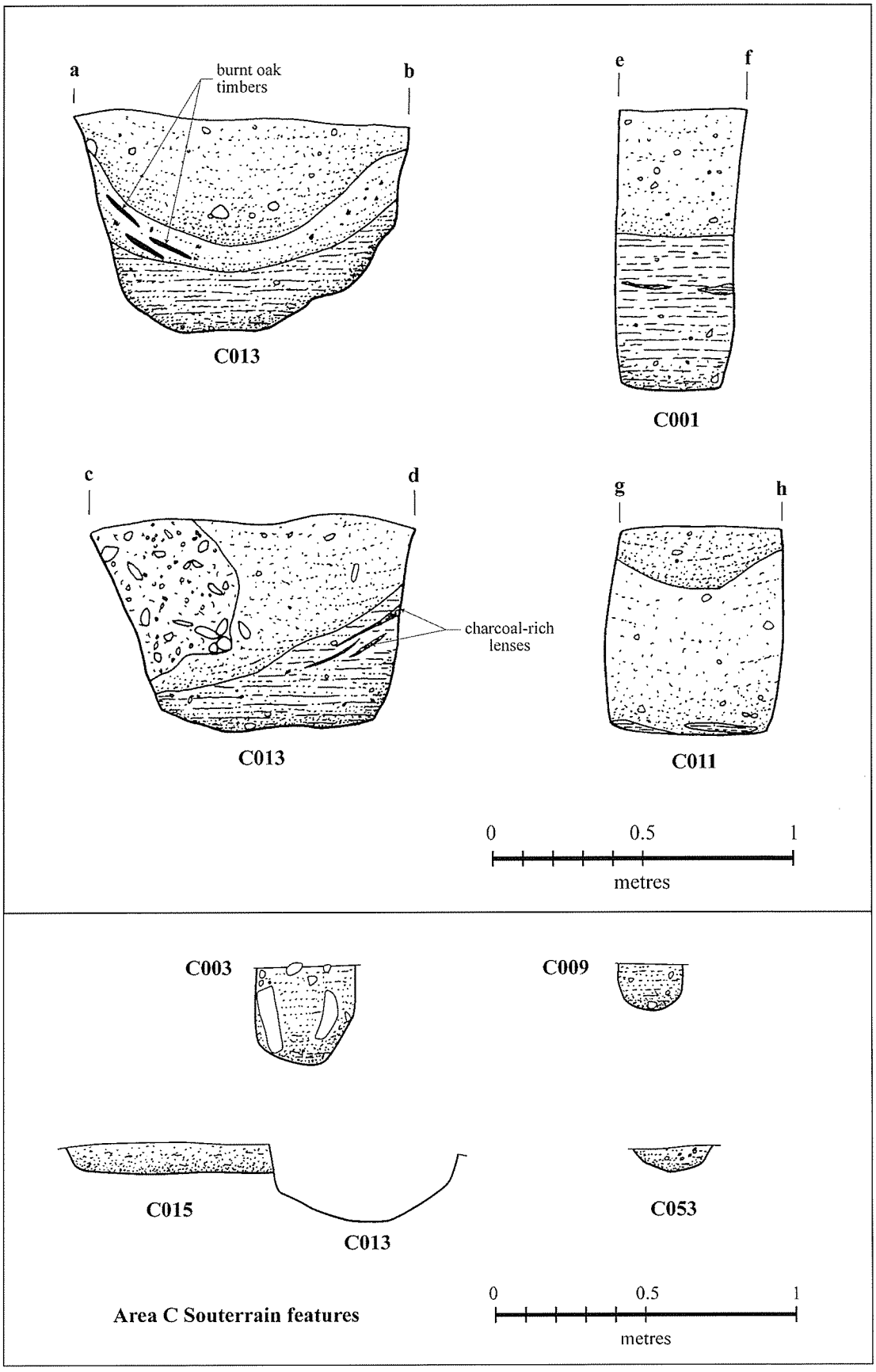


Illus 16 *Plan of Area C souterrains and associated features.*



Illus 17 *Souterrain C001.*

Illus 18 *Souterrains C011 and C013.*



Illus 19 *Sections of Area C souterrains and associated features.*

Two larger souterrains (C011/C013, Illus 18) were identified as curvilinear ditches a few metres to the west of C001. C011 had an entrance in the north and curved round to the west where it terminated less than half a metre from C013. C013 had an entrance in the south and curved round to the south-east. Although not vertically faced, neither of the two opposing ends (of C011 and C013) appeared to be entrances. The pair of them formed a reverse S-shape in plan that was visible on the aerial photograph (Illus 2).

Souterrain C011 was almost 8m in length and 0.5m wide with a depth of 0.7m. A modern agricultural furrow cut its surface. This souterrain was cut into soft natural sands and would have required revetting in order to keep its sides vertical, although no traces of postholes were visible either in the sides or base of the cut. The feature had a very sandy homogenous fill, marginally more organic than the surrounding sand. At the bottom of this fill a patchy darker sand was noted (Illus 19). The cut sloped down fairly steeply from the entrance to a flat base over a distance of almost one metre. Midway along the souterrain a small step had been cut into the sand; this appeared as a low ridge separating a slightly deeper secondary chamber in the northern half. Within this , a layer of darker compacted sand, identified at the base, could be the remains of a floor. To the south of the step the base of the cut sloped quite steeply down to the same level as the north of the cut before continuing as a level surface and finally terminating in the steep slope of the west end of the feature. No artefacts were recovered from this souterrain.

Souterrain C013, although similar in plan to C011, had a markedly different fill. It measured 7m in curving length with a width of 1.3m and a depth of 0.7m (Illus 16 *&* *19*). This feature was cut into a more gravelly subsoil and the vertical sides of the cut tapered at the base to a width of 0.5m. The base was generally only slightly rounded in profile. At least three substantial tooled and burnt oak timbers lay horizontally within a fill, which contained many other chunks of charcoal, midway along the feature. The five fills (not all visible in section, Illus 19) were mainly silty sands laid horizontally, with the exception of C013/5, which was a block of very compact orange sandy gravel in the upper fill at the south. Mirroring the find within souterrain A175, a fragment of rotary quernstone from a lower fill (C013/4) was the only contemporary artefact recovered. A presumably intrusive post-medieval button was also found in an upper fill at the eastern end of the souterrain, although there was no clear evidence of disturbance.

Around these adjacent souterrains were a number of small pits whose function is unclear. The largest of these was cut by the eastern end of C013. It was a circular, shallow pit with a diameter of 0.66m and a depth of 0.08m. The other features may be the vestigial remains of a structure or structures associated with the souterrains. At least one (C003, Illus 19) shows evidence for post packing.

Unphased features

A number of pits in Area D (Illus 6) contained no artefacts, were poorly preserved and are of unknown function. Several shallow spreads of soil were also located with a particular concentration over areas of gravelly subsoil. These were usually lying in shallow depressions in the subsoil surface and contained small flecks of charcoal. Some of these deposits probably formed naturally with residual charcoal incorporated from the ploughsoil. One of the pits, D013, contained a sherd of modern china.

Pottery report

Ann MacSween

Approximately 750 sherds from 213 vessels (Illus 20–3) were recovered from the excavations. A full and a summary catalogue are located in the site archive. In recording the pottery, fabric, surface finish, decoration, technology, morphology, sooting and dimensions were noted. While thin section analysis was not carried out, three distinctive rock types used as temper were identified by eye—a black and white granular rock; a white fine-grained rock; and large mica, occurring as separate plates or occasionally as fragments.

In the following description, the assemblages are summarised and interpreted by Area (within each Area they are discussed by feature group) and then the assemblage is discussed by pottery type.

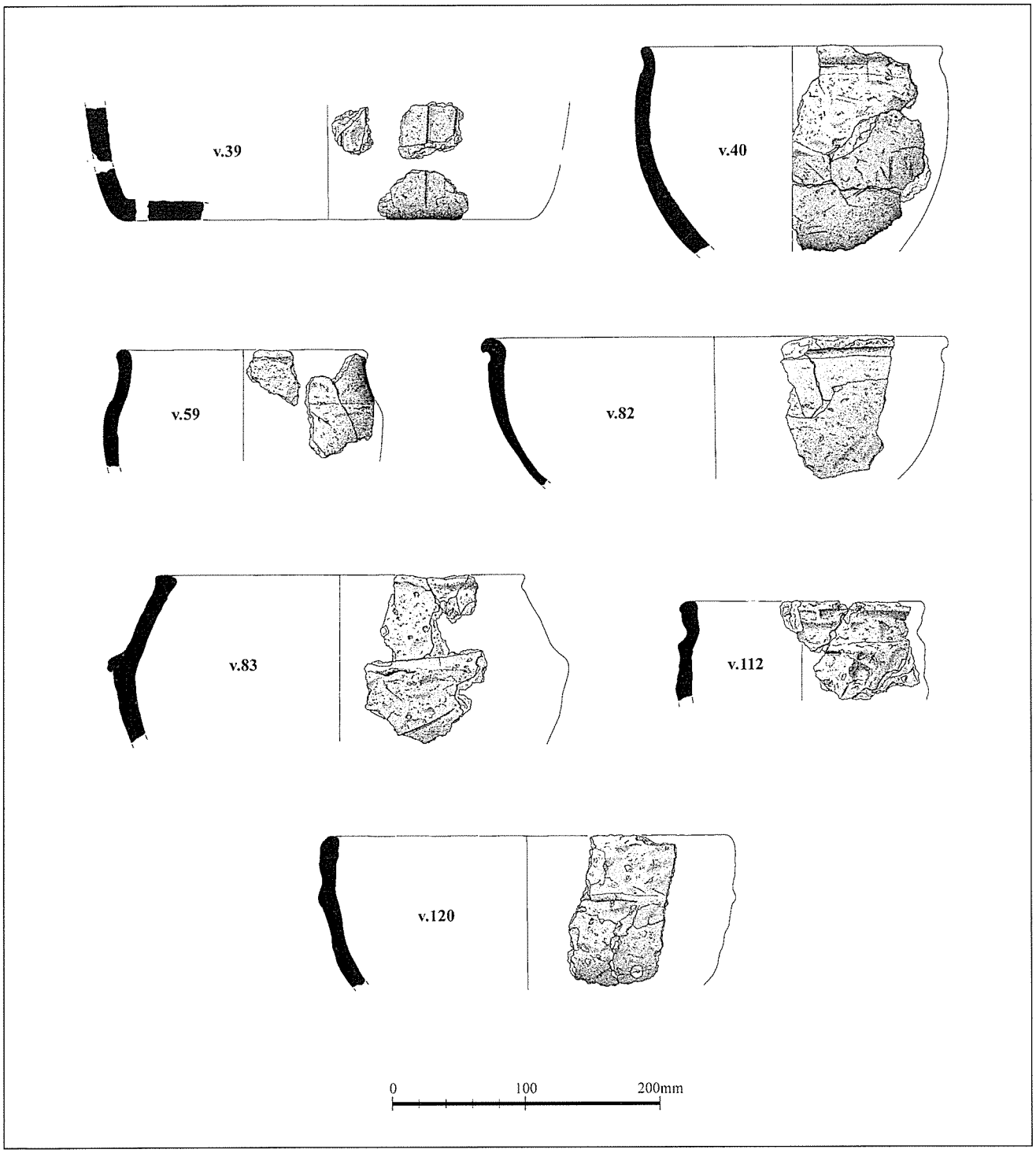
Description of pottery from areas

Area A

Ten excavated features in Area A produced pottery. Most were shallow pits and spreads of charcoal-stained deposits in the western half of the area. The majority of features produced only a few sherds, although 17 of the total 37 vessels were represented by the sherds recovered from pit A061, to the south of the main concentration of pits.

Most of the sherds from Area A are of sandy or fine sandy clay, either without inclusions, or with up to 30% of inclusions. Six vessels have 30–60% of rock inclusions. In most cases the rock inclusions are visually indistinct—only two vessels from pit A031 have the white and black inclusions common in sherds from Area B. In general the sherds are of medium thickness, 73% having thicknesses of 10mm or less. Burnishing was noted on eight vessels and surface smoothing on a further five. None of the sherds is decorated.

Seven vessels were represented by rim sherds but most of these were small fragments and little about the shape of a vessel could be determined. However, in three cases—V10 (A061), V21* (A063) and V33* (A199), enough of the profile remained to indicate that the vessels were necked. In another case, V22 (A067),



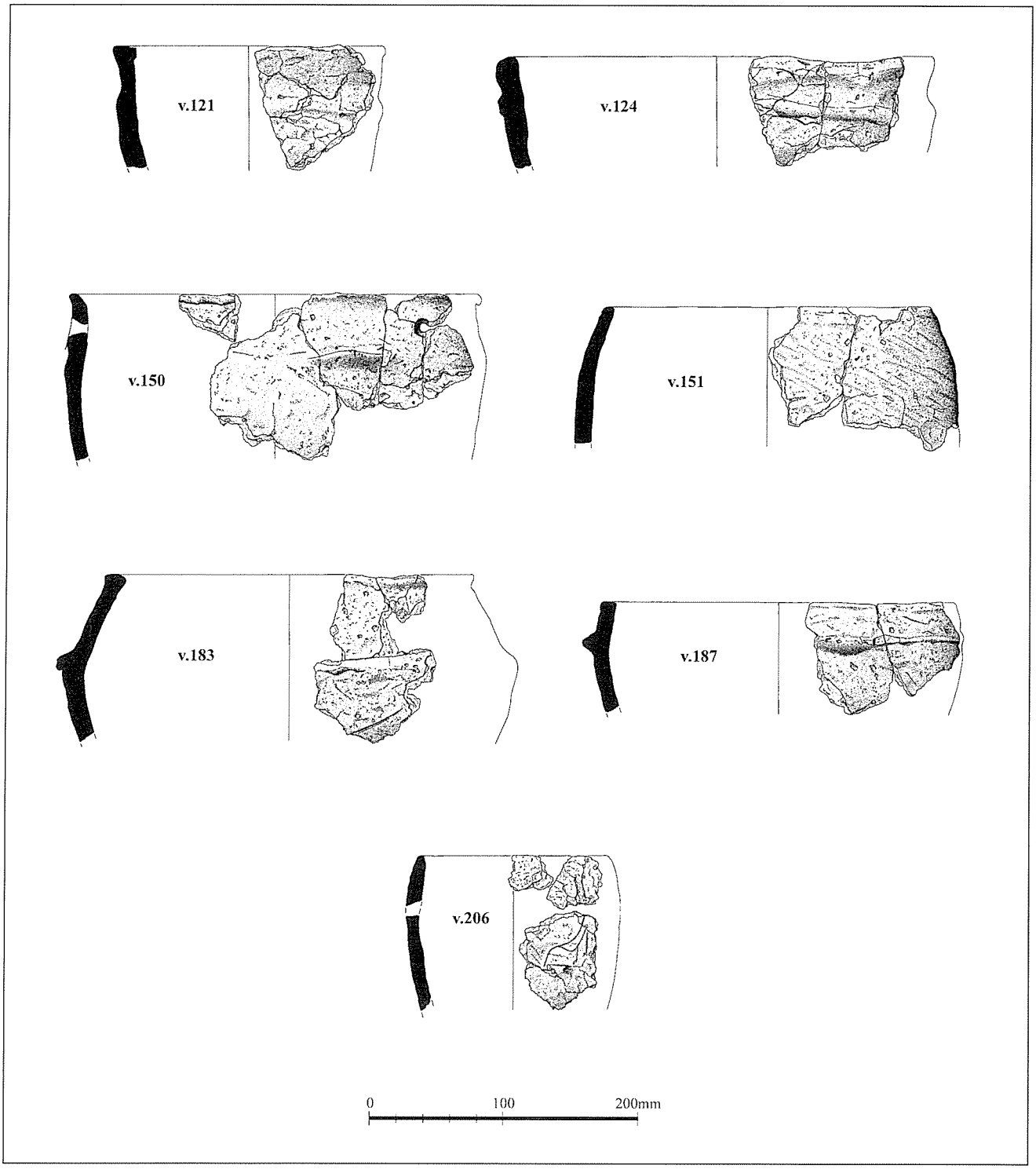
Illus 20 *Selected pottery vessels.*

the rim seems to be from a vessel with an inverted upper profile. A flat base was identified for one vessel (V10, A061).

One of the body sherds from pit A031 (V24) has a lug. This is the pit which had the only instances of the white, and black and white, inclusions characteristic of sherds from Area B. The burnished pottery is generally finer and may be of a different date, or function. There are no morphologically distinct sherds to indicate date.

Area B

Area B provided the largest assemblage of pottery, 130 vessels being represented. While many features produced sherds from several vessels, pottery representing 52 vessels was recovered from B233, one of the large pits. This did not reflect retrieval techniques—the upper fill of B233 was excavated by hand and then half-sectioned by mechanical excavator, whereas B001, another large pit, which produced seven sherds and fragments



Illus 21 *Selected pottery vessels.*

representing only three vessels, was fully excavated by hand. In general, sherds from the same vessel were not identified in more than one feature.

The fabrics of the vessels from Area B are fairly consistent, sandy or fine sandy clays either untempered or tempered with a fairly low percentage (usually 10–20%) of crushed rock fragments. White inclusions, black and white inclusions and mica plates were noted, sometimes all in the same sherd.

Pottery from the pit cluster in the north-east corner of Area B

Five of the pits—B181, B185, B187, B189 and B197—from the pit cluster in the north-east corner of the site produced pottery. The fragments from B181 are undiagnostic. Pit B185 produced sherds from the body and base of a vessel (V39*) decorated with vertical grooves, possibly from a Neolithic Grooved Ware vessel. (It has a higher percentage of temper (60%) than

most vessels in Area B). Pit 187 produced sherds from two vessels, V40* and V41*, both of which have flat rims and short necks. The exterior of V41* is decorated with fingernail impressions. Seven vessels are represented in the sherds from B189 and include a flat-rimmed vessel with a slight carination (V44*) and a vessel decorated with spatula impressions (V45). Only one fragment (V49) was recovered from B197, a small rim fragment similar in profile to V40 (B187). From the shape and fabric of the vessels represented in this group of pits, B187, B189 and B197 have the most similar pottery, which from its morphology and decoration can be attributed to Neolithic Impressed Wares.

Pottery from the sub-circular pits in the centre of Area B

Pottery was recovered from ten of the pits in the centre of Area B—B021, B023, B025, B027, B033, B037, B051, B053, B055 and B057. The pottery from B021, B025, B033, B051, B055 and B057 is undiagnostic, although within the fabric range of the pottery from the other pits in the group. Three of the vessels from the central pits are decorated, all from pit B023—V51*, V52 and V54. Two of the vessels are, like the decorated sherds from the pit cluster in the north-east corner of Area B, decorated with impressions—spatula impressions in the case of V52 and fingernail impressions in the case of V54. The rim of V51 is similar to those from B187, B189 and B197 in the north-east corner. Its lip is pinched and it may have been decorated with oblique lines running down its exterior. The three vessels from B027 include a carinated vessel with a plain rim (V59*, B027). A similar vessel is probably represented in pit B037 by V63 (B037). B037 also produced sherds from a shouldered vessel with an out-turned rim (V64*). Two other rim sherds from these pits, from B053 (V67) and B057 (V69), are flat. A lug was found among the sherds from the former vessel. The pottery from B027, B037 and B053 is more similar morphologically to the Carinated Bowl pottery from the large pits, while that from B023 is more similar to the Impressed Wares from the concentration of pits in the north-east corner.

Large pits

Eighty vessels are represented in the eight large pits from Area B—B001, B059, B143, B161, B163, B165, B231 and B233. The amount of pottery from each vessel and each pit varies considerably. Much of the pottery is in a very friable condition.

Only four vessels are decorated. A body sherd from B161/163 (V91) is decorated with random nail impressions. Three vessels from B233 are also decorated—V128* is a plain rim decorated on the exterior with a row of horizontal nail impressions between which incised lines run down the vessel. The rim is also notched across its width. V129 is decorated with geometric impressions, while V117* has a finger impression below the rim on the exterior. These vessels probably belong to the Impressed Ware tradition.

The rest of the diagnostic pottery from the large pits can be classified as Neolithic Carinated Bowl pottery. Various rim types are represented in the assemblage from the large pits, including out-turned/flanged, eg V82* (B059/2); V150* (B233/5); flat, eg V78* (B059/1); V120* (B233); plain, eg V132* (B233/1); rounded, eg V72* (B1/3) and internally bevelled, eg V151* (B233/5). Lugs were noted on several vessels, eg V83* (B143); V145* (B233/3); V150* (B233/5) and some vessels have a carination, either angular in profile, eg V90* (B161); V121* (B233/1) or rounded in profile, eg V124* (B233/1). No flat bases are included although some grass-marked sherds are probably basal sherds. The vessels have fairly thick walls, 75% of the vessels having thicknesses of 10mm or over. 25% of the vessels have smoothed or burnished exterior surfaces.

Pottery from miscellaneous spreads

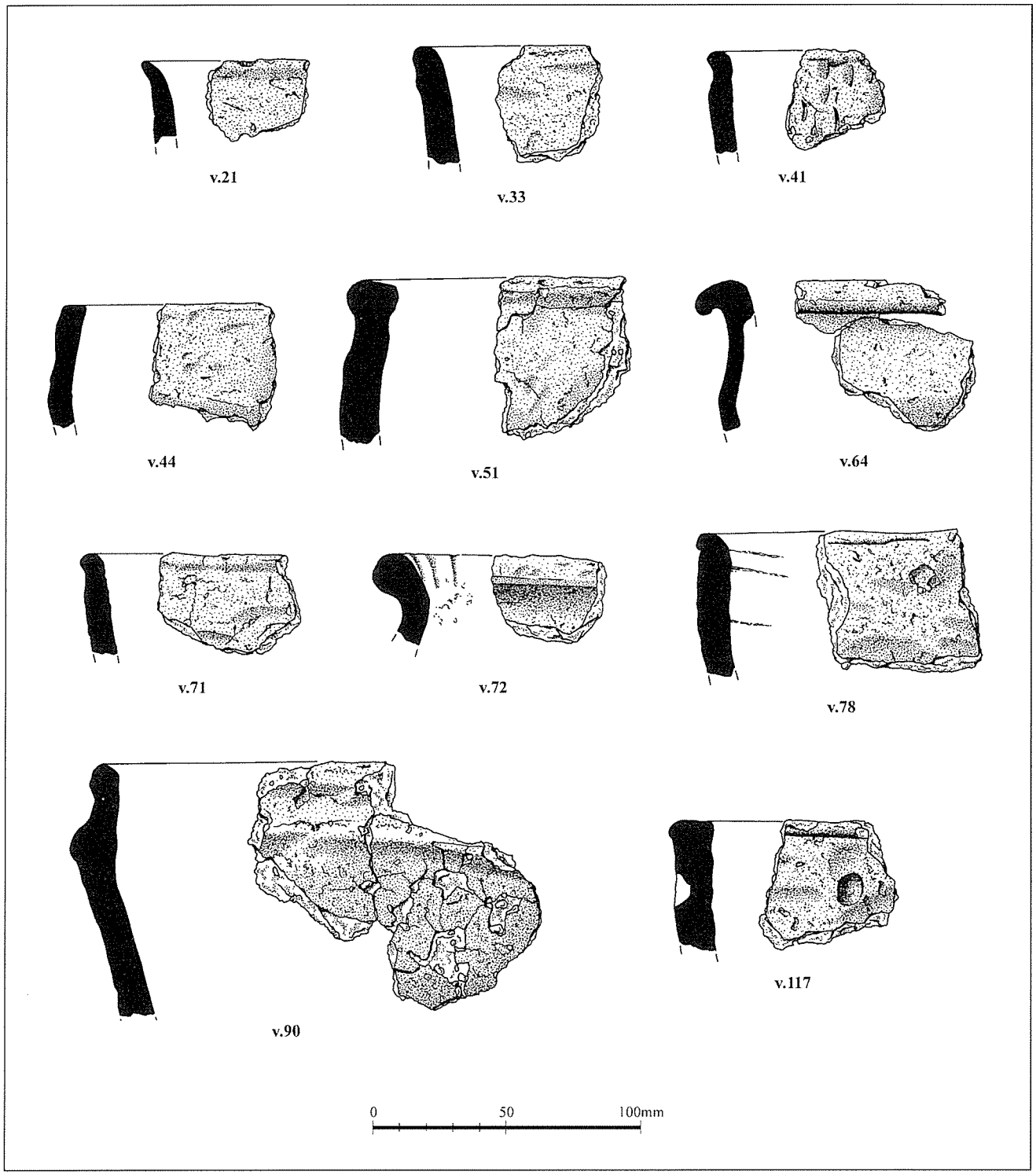
The pottery from the remaining features excavated in Area B is in general similar to the Carinated Bowl pottery from the large pits—flat, rounded and bevelled rims with fabrics and wall thicknesses within the range of the pottery from these pits. The only pottery standing out in this assemblage as possibly later is V162* (B174), a thin-walled vessel with a slightly inverted rim decorated on the internal bevel with deep incisions, which is possibly Iron Age in date.

Area C

Thirty-five vessels are represented in the assemblage from Area C. Most are from two groups of pits in the south of the area.

Three pits (C039, C041 and C045) from a group of seven in the south-east of the area produced pottery (nine vessels). Flat and internally-bevelled rims are represented and there are two examples of carinations. None of the sherds has decoration but six of the vessels have had their exterior surface smoothed. Wall thickness ranges from 8 to 11mm. Most of the vessels have a high percentage of rock inclusions—seven have 50% or more. This pottery falls within the range of styles included in the Neolithic Carinated Bowl pottery of Area B.

The second pit group, in the south-west of the area, has six pits, five of which produced pottery—C069, C071, C073, C075 and C077. Twenty-one vessels are represented. While the fabrics are similar to those vessels in the south-east group, the average sherd thickness is—in all measurable cases—10mm or greater, and twelve vessels have a sherd thickness of 12mm or greater. Most of the rim sherds are flat. One vessel (V187*, C73) has a lug and is best grouped with the Carinated Bowl pottery. The remaining diagnostic pottery can be grouped with the Impressed Wares. Six of the vessels, all from C073, are decorated. One (V185*) has possible incised panel decoration. Four have stabbed decoration along their flat rims. V186* has two rows of incised stabs around the rim, and the exterior lip has been pinched to form a 'pie crust' effect. Two sherds from that vessel have a pinched cordon. Two of the other vessels (V189* and V191*)



Illus 22 *Selected pottery vessels.*

have rows of stabs on the flat part of their rim while a further rim from this context (V190*) has more complex decoration on the rim, comprising fingernail impressions set along the exterior and interior edges of the rim with oblique fingernail impressions between. Below the rim on the exterior are two further rows of fingernail impressions arranged obliquely and another row is set in the interior below the lip. Also from C073 are body sherds decorated on the exterior with random ovoid stabs (V192).

Sherds representing four vessels were recovered from a large shallow spread in the extreme south-west of the area. One of these (V203* (C091)) has a slight internal bevel and its neck, which is decorated with stabbed panelled decoration, is bordered by a carination, and has affinities with 'Unstan' bowls (see discussion).

Area D

Sherds representing twelve vessels were recovered from Area D. The pottery from this area is more mixed than that from the other areas. Three of the blackened charcoal-rich pits in the south-east corner of the site—D021, D025 and D031—produced pottery. The vessel from D021 (V206*) has a plain tapering lip and its fabric is most similar to the pottery from Area B. The pottery from D025 and D031 is more like the pottery from Area C. One of the vessels V208 (D031) has an internal bevel, while the body sherds from another vessel (V209 (D031)) have shallow markings on the exterior, more akin to the vessel having been pressed into something while it was being made than deliberate decoration. The pottery from D003, an oval pit, may be later (it is most like Area A in fabric). One of the sherds (V210* (D003)) may be from a pottery lid—it seems to have a curvature, and is perforated.

Summary

Much of the pottery recovered was from the pits. Sherds from the same vessel usually derive from one pit. Even when a pit had been excavated by hand, there are rarely enough sherds to make up a substantial part of a vessel and often only a few sherds from the same vessel are represented.

The fine, well-fired fabrics, often burnished, recovered from Area A indicate a later prehistoric, probably Iron Age, date for the majority of sherds. Pit A031 produced a lugged sherd similar in fabric to the Carinated Bowl pottery in Area B which is Neolithic in date.

Area B produced a large assemblage of pottery most of which can be attributed to the Neolithic Carinated Bowl and Impressed Ware traditions and there is also one sherd (V39) which is probably Grooved Ware. Most of this pottery is similar in fabric, with 10–20% of rock fragments. Some of the pottery from the pits in the north-east corner of the area (B187, B189 and B197) is probably Impressed Ware, as is some of the pottery from pit B023 in the centre of Area B. Pottery from two other pits in the centre of Area B—B027 and B037—is more similar to the Carinated Bowl pottery from the large pits.

The pottery from Area C is generally thicker and much more heavily tempered than that from Area B. It comprises mainly Impressed Wares but includes some Carinated Bowl pottery.

The pottery from Area D is more mixed and seems to include both Neolithic and later pottery.

With a site used over a long period interpretation of the pottery is problematic. Some of the pits (B189, B233 and C073) include both Impressed Ware and Carinated Bowl pottery. This could indicate contemporaneity of the two types, perhaps being made by the same group, or it could be the result of pottery from previous use of the site being incorporated into the pit when it was dug. In Area B, the fact that the fabrics of both types of pottery are so similar perhaps supports the former theory for the pottery from that area and may indicate a date in the mid to late fourth millennium BC when both styles seem to have been in use (see discussion). The Impressed Ware from Area C is much thicker and different in fabric from that from Area B which could indicate either a temporal difference or the use of that area by a group from a different locale. The Grooved Ware vessel indicates that a further cultural group is represented.

Discussion: wider context of the Neolithic assemblage

Carinated Bowl pottery

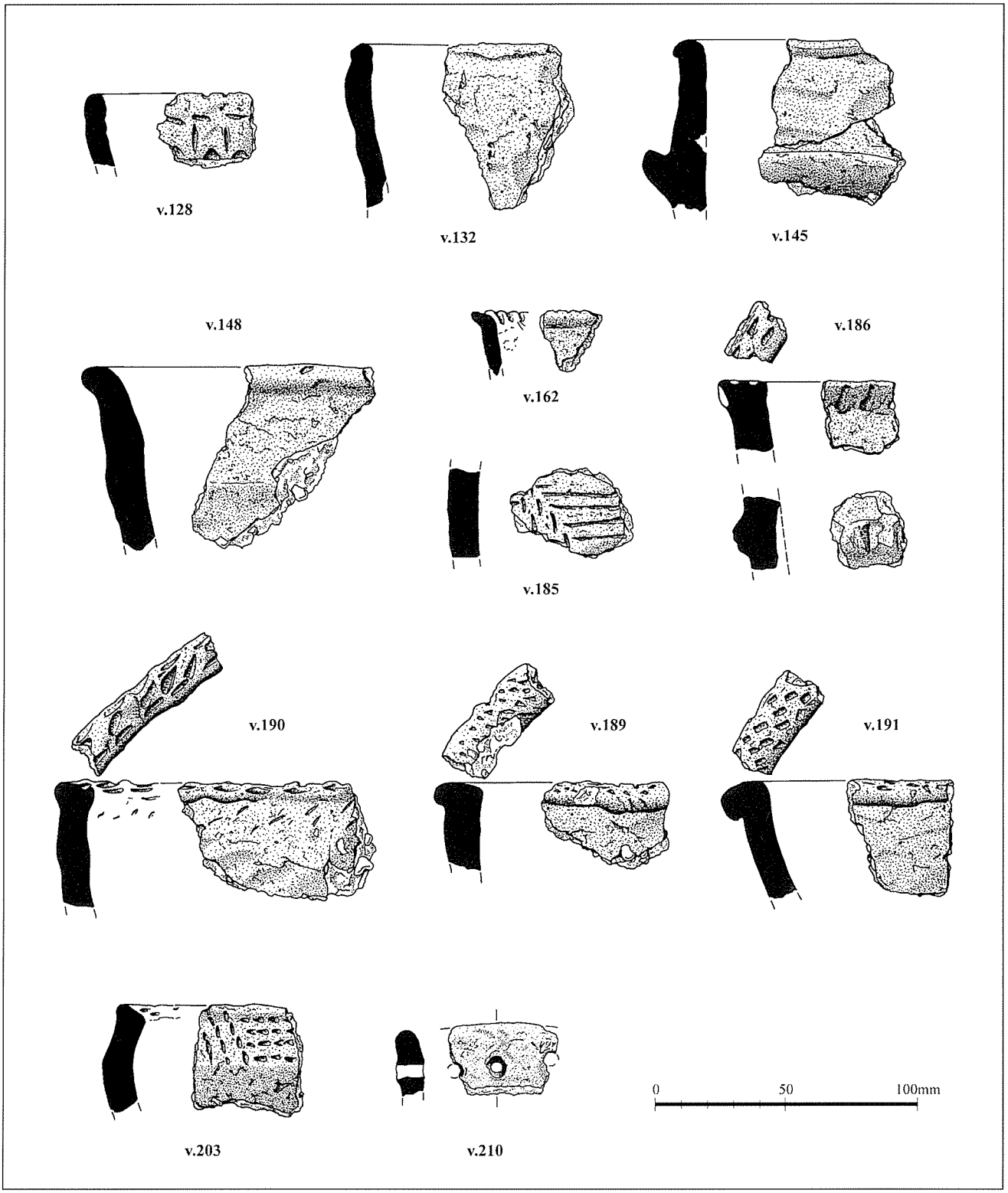
An assemblage of pottery belonging to the Carinated Bowl tradition was recovered from Area B (from B027, B037 and B053, three of the pits in the centre of Area B, from the large pits B021, B059, B143, B161, B163, B165, B231 and B233 and from the miscellaneous spreads); with several sherds from Area A (pit A031); and from Area C (from three pits in the south-east of Area C—C039, C041 and C045 and part of the assemblage from pit C073 in the south-west pit group).

Most of the bowls have a straight or slightly curved upper portion with the rim diameter usually similar to that of the carination. Rim diameters range from 200mm (V121*) to 300mm (eg V120*). A variety of rim forms is represented including plain, rounded, outturned and flat. The carinations range from slight to very pronounced. The surfaces of the vessels are sometimes smoothed or burnished, but not decorated. The sooting noted on many of the vessels, combined with their oxidised exterior margins, indicates their use as cooking pots. A number of uncarinated bowls are also included (eg V132* (B233/1) & V151* (B233/5)).

Assemblages of this type of pottery are found over much of northern and eastern Britain and Ireland (Kinnes 1985). A number of terms including Grimston-Lyles Hill and Western Neolithic have been used for this pottery (see Sheridan 1997, 218). In 1984 Henshall (1984, 62) wrote of the use of the term:

> 'It seems too early to abandon what is intended as a flexible generic term to comprehend pottery styles which appear to share a common tradition, found widespread in Britain and Ireland and in quantity in eastern England and northern Ireland, and which have a long chronological range from at least the mid fourth millennium bc in both countries into the later third millennium...In attempting to define styles and derivative groups the differences are emphasised; in Scotland the limitations imposed by the sparcity of material and above all the dearth of closed groups and dated groups should be recognised.'

However, since then new finds of pottery, especially a well-dated assemblage from Biggar Common, Clydesdale, has allowed Sheridan (1997, 218–20) to propose a general model for the material currently available. She suggests using the term 'traditional Carinated Bowl pottery' to refer to the initial phase of early Neolithic plainware which was has been found in much of northern



Illus 23 *Selected pottery vessels.*

and eastern Britain and Ireland. The characteristics of this pottery she lists as:

- A range of forms, sizes and textures.
- Vessel form—mostly variations on the open or neutral carinated bowl, but with some S-profile vessels, uncarinated bowls and cups and the occasional differently-shaped vessel.
- Rim forms—simple, usually rounded, upright or (more commonly) everted, often beaded.
- Carination form—very gentle to sharp.
- Lugs are a rare feature.

Shortly after the appearance of this pottery, local and regional variants seem to evolve, and Sheridan suggests using the term 'modified Carinated Bowl pottery' for these assemblages. An example of a regional style would be Henshall's 'north-eastern style' pottery. Henshall (1984, 61) defined this style mainly on the

basis of material from Boghead (Henshall 1984), Easterton of Roseisle (Henshall 1983), Tulloch of Assery B (Henshall 1972, 310, 556–7) and Camster Long (Henshall 1997), the characteristics of the group being frequent and extensive use of fluting, simplicity of rims and carinations and a preference for relatively shallow forms. Lugs are noted occasionally on the carinations, and simple uncarinated forms are also present.

Using this classificatory system, is the Brechin assemblage a traditional or a modified assemblage? The wide range of rim forms and the use of lugs, would, if this scheme is used, tend to indicate that it is a 'modified' assemblage. It does not, however, have the fluting so characteristic of the north-eastern regional style, so perhaps is indicative of a south-eastern style, although this hypothesis must await the retrieval and study of further assemblages from Angus and Fife.

Sheridan summarises the radiocarbon dates then available for this type of pottery (1997, 219–20). The Biggar Common assemblage, with dates of 5250 ± 50BP (4234–3980 cal BC: GU-2985); 5150 ± 70 BP (4219–3790 cal BC: GU-2986); and 4880 ± 50 BP (3780–3531 cal BC: GU-4276), is among the earliest dated assemblages of traditional Carinated Bowl pottery in Britain and Ireland. The Boghead material ranges from 5031 ± 100 BP (4010–3630 cal BC: SRR 685) to 4823 ± 60 BP (3715–3500 cal BC: SRR 684). If Sheridan's model is correct, regionalisation could have taken place within a few hundred years of the appearance of the 'traditional' assemblages. At Dubton Farm, a radiocarbon date of 4990 ± 45 BP (3891–3707 cal BC: GU-9155), was obtained from a fill containing sherds of Carinated Bowl Ware.

Impressed Ware

Pottery which can be classified as Neolithic Impressed Ware was recovered from some features in Area B (from pits B187, B189 and B197 in the north-east corner, pit B023 in the centre, and some of the pottery from the large pits B233 and B161/163) as well as from most of the pits in the south-west of Area C. Flat rims are the predominant form. Some vessels are decorated on their upper portion and/or on the lip of the rim. Decoration includes stabbing, either with a spatula or with a blunt point, and fingernail impressions.

This type of pottery, names for which include 'Scottish Impressed Wares' (McInnes 1969) and "later Neolithic decorated wares' (Kinnes 1985), is generally considered to be a development from the carinated bowls of the early Neolithic. McInnes (1969, 22–5) pointed out the difficulties in identifying regional styles, illustrating that the range of forms and decorative techniques were common to the tradition as a whole, with the dominant form and decoration varying from site to site. Strong regional groups have yet to be identified (MacSween 1999). The flat and broadened rims are often a focus for impressed decoration (Cowie 1993, 122).

While in the past Impressed Wares were regarded as 'late Neolithic', Sheridan (1997) pointed out that the possibility of dates in the mid to late fourth millennium BC should not be discounted, and dates for the Impressed Ware from Blairhall Burn, Dumfriesshire (Strachan *et al* 1998, 73) which indicates a date in the second half of the fourth millennium BC, have strengthened this theory.

Many Impressed Ware assemblages have been found on coastal and dune sites, not associated with features, such as at Brackmont Mill and Tentsmuir, Fife (Longworth 1967). When found in context, Impressed Wares are most often found in pits, for example at Meldon Bridge, Peeblesshire (Burgess and Speak 1999) and Grandtully, Perthshire (Simpson and Coles 1990). At Meldon Bridge (Burgess and Speak 1999) and at Wellbrae (Cowie in prep) some of the pits were thought to have been lined with broken pottery, perhaps suggesting a storage function. This was not noted at Brechin.

One sherd (V203, (C091)) decorated above the carination with stabbed decoration in panels, has affinities with the Neolithic 'Unstan' bowls common in the Northern and Western Isles. (Unstan bowls are shallow, round-based bowls, with a decorated collar.) In the north-east there have been finds from Urquhart, Moray (Henshall 1983, 30), Easterton, Aberdeenshire (*ibid*) and Spurryhillock, Aberdeenshire (Cowie 1997). Current dating indicates a date range from the mid fourth millennium to the earlier third millennium BC (Kinnes 1985).

Grooved Ware

A basal sherd (V39) from Area B is probably from a Grooved Ware vessel. The exterior surface is slipped and decorated with vertical grooves, and it has heavier tempering than the majority of vessels from Area B. Until recently there was no known Grooved Ware from Angus, but recently finds of Grooved Ware have been made during excavations of pits at Mains of Kelly near Carnoustie (three vessels) and at Redcastle, Inverkeilor (one vessel) (Derek Alexander, pers comm), extending the south-eastern distribution of Grooved Ware north along the coast (Cowie and MacSween 1999, 50). Current available dating for Grooved Ware from the south-east indicates a date of 3000 cal BC or later (Ashmore 1998).

Two dates for the pottery from Area B were obtained—3639–3374 cal BC (GU-9094, at 2 sigma) for pit B187 which contained Impressed Ware, and 3940–3659 cal BC (GU-9155, at 2 sigma) for pit B233 which contained both Impressed Ware and Carinated Bowl pottery.

The date for pit B187 would fit in with the earlier part of the expected date range for Impressed Wares. That obtained for pit B233 which contained both types of pottery is somewhat earlier than would be expected for Impressed Wares but would fit with the expected dates for Carinated Bowl pottery (a similar date range was obtained for the assemblage from Boghead, one of Sheridan's 'modified assemblages' [see above]). The fabrics of the Impressed Wares and the Carinated

Bowl pottery from Area B are, however, very similar, as is the amount of abrasion, and there was nothing in the field observations to indicate that the pottery had been deposited at different times. This must leave open the possibility of an overlap in use of the two types of pottery at this site, perhaps towards the end of the date range for pit B233.

Coarse stone

Adam Jackson

Twenty-six coarse stone artefacts have been identified from eight separate contexts of broadly Neolithic or Iron Age date. The majority of pieces from this small assemblage have not been modified prior to use. Only three pieces, a rubber and two rotary quern fragments, have been clearly manufactured prior to use. Igneous, sedimentary and metamorphic rocks are all present; however the assemblage contains a preponderance of granite, gneiss and quartz cobbles.

Food processing tools

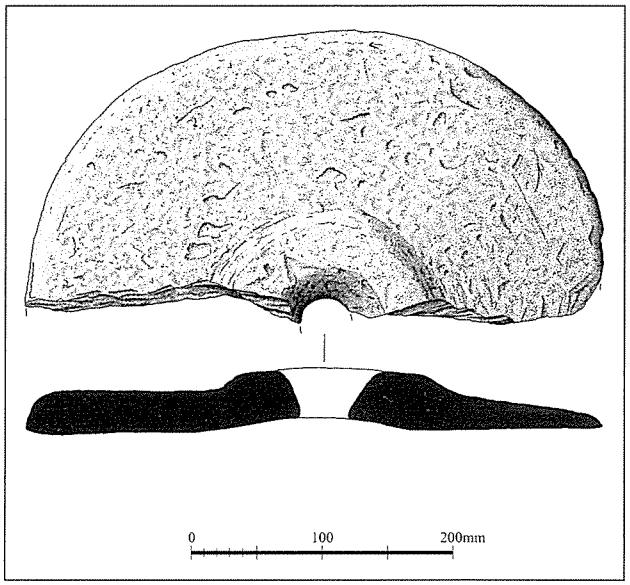
Four objects can be assigned with some confidence to food processing activities. These include a largely intact rubber of mica-schist, and a large irregular saddle quern of granite. It is likely that both were used in the grinding of foodstuffs. The former was recovered from a Neolithic large pit context (B161/1) and shows some modification prior to use. The latter is unmodified except through use and was recovered from an Iron Age pit (A179) located near one of the souterrains.

In addition, two fragments of rotary querns were recovered from the fills of two separate souterrains. Both examples are of mica-schist and were heavily worn. Neither example has evidence of a stick hole for a turning handle and only one example survives with a central perforation or hopper. Around the hopper it has a raised collar.

Rotary querns are known at other Iron Age sites in the region. The best parallels in terms of form, materials and contexts are from Dalladies in Kincardineshire (Watkins, 1981a, 159; Illus 21) and Newmill in Perthshire (Watkins 1981b, Illus 11a). However, rotary querns have a wide distribution across Scotland.

Discussion of dating the appearance of rotary querns has been based on their occurrence in Atlantic Scotland. Caulfield (1977) has argued that the transition from saddle querns to rotary querns occurred c 200BC, a conclusion that has been accepted and utilised by Armit (1991). For Eastern and Lowland Scotland no such conclusions have been reached. Nevertheless, following Caulfield, and given their occurrence at a range of Iron Age sites in the region, including souterrains (Watkins 1981a, 1981b) and promontory forts (Wilson 1981) those from Dubton might be dated to a period between 200BC and 600AD.

The association of rotary querns with souterrains at Dubton Farm is of interest suggesting the link between



Illus 24 *Rotary quern from A175 souterrain.*

souterrains and grain processing. As has been observed elsewhere (eg Watkins 1981b), these features may have functioned as grain stores.

Cobble tools

All the cobble tools recovered from Neolithic and Iron Age contexts at the site are unmodified prior to use and are identified by the damage to the object formed through the working of the tool. Only two are from an Iron Age context, the others being recovered from Neolithic pits. Regardless of significant chronological differences between contexts no differences can be discerned in form or function, a situation that highlights the crude and expedient nature of these finds. In addition, it is possible that the two cobble tools occurring in Iron Age pit A037 are redeposited Neolithic artefacts. However, such artefacts occur throughout prehistory.

There is a clear preference for granite cobbles but these are of varying sizes. The majority of pieces have pecking and/or grinding wear to either end and on occasion to faces and/or edges. In some cases the pounding wear is heavy and indented. A few are facetted from heavy grinding use.

It is not possible to determine accurately the function of these tools and it is likely that a number were multifunctional. However, where facetting and heavy indentation occurs it is clear that they have been used to grind against a hard surface, often using considerable force.

Chipped stone

Graeme Warren

The assemblage (152 pieces) is broadly homogenous in type and appears to be early Neolithic in association. There are difficulties with the analysis of a small assemblage of material from a large complex site that has

been occupied and reoccupied over some considerable time, as there is clearly some danger of palimpsest. At Dubton, lithics were found in a range of deposits in Areas A, B and C, mainly in pit fills or silty-sand spreads. In some cases these features have been dated by pottery associations or radiocarbon dates but in other instances there are no dates available. These problems are compounded by the rarity of lithics at Dubton, especially in comparison to the abundant deposits of pottery (see below). As is clearly demonstrated in Table 1 the associations between lithics and dated features are weak. In many instances only one or two pieces of chipped stone are found in a given context, and there is a clear danger of residuality. The assemblage is difficult to date definitively by association, and may have arisen from activity over time. It is impossible to assess the times at which some individual pieces were deposited, or re-deposited. Nevertheless the assemblage as a whole is broadly coherent in terms of raw materials and technology and is treated as a whole in the discussion that follows, although especial attention is paid to the two larger deposits, A061 and C087. The three pieces in B181/2 are likely to be a deliberate deposit, as they include two retouched artefacts (see below) but the associated pottery is not diagnostic.

Despite the ceramic associations the 13 lithics from the fills of A061 are probably not later prehistoric in date, as their characteristic blade and flake technology is much more likely to be Neolithic, and probably early Neolithic. This may imply that either they, the pottery, or both have been redeposited (see below). Nevertheless, these pieces are treated as a unit in this discussion. The 97 pieces, including small debitage, from C087 do appear to be *in situ*, and it is unfortunate that this deposit has no date. Most of the other lithics are undiagnostic; only one piece, a serrated blade, is typologically datable beyond the broadest of ranges. It is frustrating that of five retouched pieces only one—a fragmentary edge retouched piece, possibly a broken scraper but undiagnostic (Cat No 52, all subsequent catalogue references in italics)—has any dated ceramic association, to Carinated Bowl ware.

The 152 items were individually analysed macroscopically, classified according to standard descriptive procedures (Finlayson *et al* 1996; Wickham-Jones 1990: 58). A full catalogue forms part of the project archive. Of these, 55 were 'chips' smaller than 10mm in maximum dimension: all recovered from C087. These are excluded from percentage analyses in this report unless otherwise indicated, leaving an assemblage of 97 pieces. Most of the assemblage is in good, fresh condition (n=87, 89.7%) with two pieces lightly abraded and eight (8.2%) burnt.

Raw materials

The assemblage is comprised of five different raw materials: flint (66 of 97 artefacts: 68%), quartz (n=28, 28.9%), quartzite (n=1), hornfels/phylite (n=1) and a rhyolitic pitchstone (n=2). Most of these materials have been carefully procured from beyond the site itself. The proportions of flint (63.6%) and quartz (34.5%) amongst the chips in C087 are very similar to the proportion over the site as a whole.

Most of the flint appears to have derived from pebble sources as cortex, where present (45.4% of all flint), is often very battered. The flint is mainly honey coloured (26 of 56 fresh artefacts, 46.4%) with grey (n=9, 16.1%) and honey and black mottled pieces (n=8, 14.3%) also important. Grey-honey, and honey grey flint is also used, and demonstrates the continuum between the different colours used. A number of large flakes and blades have been made from a distinctive light grey-honey material. The largest complete piece is 48mm in length, and the interquartile range for the length of unbroken flint artefacts is only 12–23.75mm, reinforcing the impression that the flint pebbles utilised are small.

Pebble flint sources are known from a variety of deposits in northeast Scotland (Wickham-Jones and Collins 1978). However, despite the presence of extensive fluvio-glacial deposits near Dubton it seems unlikely that the pebbles came from the immediate locality. Grey and yellow flints are the types most commonly found on the beaches of eastern Scotland (Gemmell and Kesel 1979) and in a general sense the artefacts from Dubton are congruent with this. There is little evidence of non-local high quality flint in the assemblage, despite some local parallels for the use of imported flint in the Neolithic and the presence of pitchstone in the assemblage. High quality grey flint, of a type unknown in Scotland, was utilised for large blades at Lunanhead, arguably in the early Neolithic (Wickham-Jones and MacKenzie 1996). Similar artefacts on mottled grey flint are also known from the Henry collections from Balgavies (Warren 2001, App. 4). The use of imported flint is also noted in late Neolithic contexts at Littleour, Blairgowrie (Saville 2000).

If a beach source was used it is interesting to note that no agates were found in the assemblage. This area is famed for agate (Anon 1989), which was used east of Brechin at Fordhouse Barrow (Brown 1997). The quartz used varies slightly in type but is mainly white in colour and crystalline in texture, sometimes appearing rather powdery, although clearer, more vitreous pieces are also present. Some of the quartz is of very good quality and three pieces have battered rounded exteriors congruent with a pebble source. Quartz occurs widely in the area both as glacial pebbles and fresh outcrops and it is not possible to identify the source of this material any more closely.

All of the other materials were found in C087. These include a small chunk of pink quartzite, a regular flake of a green-grey hornfels or phylite and two small pieces of rhyolitic pitchstone; one qualifying as a chip. The latter two materials are of especial interest.

Pitchstone is a dark-olive/green-grey volcanic glass with a fine-grained crystalline structure which geochemical analyses have demonstrated ultimately derives from Arran (Thorpe and Thorpe 1984). Small amounts are quite frequently found in (sometimes very)

Table 1 *The location, general character and external dating information for the assemblage.*

context	no.	flint	quartz	other materials	ceramic association	C-14 date (cal)
A.013	1		1 bipolar core		Iron Age?	
A.061	11	3 blades 4 regular flakes 4 irregular flakes			Iron Age?	
A.061/2	2	1 blade 1 regular flake			Iron Age?	
A.067	2	1 irregular flake			Iron Age?	
A.081	1	1 irregular flake			Iron Age?	
A.175/16	1	1 chunk			Iron Age?	cal AD 23–2 14
A.175/2	1		1 core		Iron Age?	
A.189/1	1	1 regular flake			Iron Age?	
B.001/2	2	1 blade	1 irregular flake			
B.021	1		1 irregular flake		undiagnostic	
B.023	1	1 chunk			Impressed Ware	
B.025	1		1 regular flake		undiagnostic	
B.033	2	1 blade 1 irregular flake			undiagnostic	
B.037	1		1 irregular flake		Carinated Bowl Ware	
B.037/1	1		1 chunk		Carinated Bowl Ware	
B.089	1	1 blade 1 bifacially-retouched flake				
B.181/2	3	2 edge-retouched flakes (one bifacial) 1 regular flake			undiagnostic	
B.185/2	2	1 blade 1 regular flake			Grooved Ware	
B.189/1	1		1 irregular flake		Carinated / Impressed Ware	
B.197	1	1 blade				
B.215	1	1 irregular flake				cal BC 3640–3375
B.221	1	1 regular flake				
B.225	1	1 irregular flake				
B.225/1	2	2 regular flakes				
C.013/2	1	1 irregular flake				
C.039	1	1 irregular flake			Carinated Bowl Ware	
C.041	1	1 edge-retouched flake			Carinated Bowl Ware	
C.043	1	1 blade				
C.045	1		1 irregular flake		Carinated Bowl Ware	
C.065	1	1 blade				
C.067	1	1 core				
C.067/1	1	1 regular flake				
C.067/2	1	1 irregular flake				
C.071/2	1	1 regular flake			Impressed Ware	
C.073	1	1 regular flake			Carinated / Impressed Ware	
C.087	97	6 blades 35 chips 4 chunks 9 irregular flakes 4 regular flakes	1 blade 19 chips 5 chunks 6 irregular flakes 4 regular flakes	1 pitchstone blade 1 pitchstone chip 1 hornfels flake 1 quartzite chunk		
C.095	1	1 serrated blade				
C.098	1	1 regular flake				
total	**152**					

early Neolithic assemblages (see below), presumably deriving from some kind of exchange. Despite some variation in the character of pitchstone on Arran most pitchstone found in eastern Scotland tends to be high quality black or dark-grey material, sometimes with distinctive phenocrysts. In this regard it is interesting that both pieces of pitchstone from Dubton are grey-green, indeed the material may be better described as a rhyolite-pitchstone (Suzanne Miller pers comm). Notwithstanding this it still seems likely that the origin of the pieces lies on Arran itself and this indicates some variability in the type of pitchstone being exchanged.

The hornfels-phylite is a small regular flake of a dark grey-green low-grade metamorphic sedimentary rock (or 'greenstone'). The material itself is not especially diagnostic, as rocks of this type are found widely throughout Scotland. The geological origin of the piece is most likely to be north of the Highland Fault and it is not clear whether the material is quarried or from a pebble.

Discussion

The raw materials range from quartz that may have been available locally, through to flint, presumably procured by visits to the coast, or through exchange with other groups, and pitchstone, which seems most likely to have arrived by exchange rather than a direct visit to Arran. It is difficult to assess details of the character of procurement, not least because of the possibility of change over time. It is, however, clear that stone procurement was not a simple, transparent response to needs, but a carefully structured practice involving a series of relationships with people and places beyond Dubton itself.

Stone craft

The characteristics of stone craft at Dubton are interesting. The assemblage is discussed in three groups: A061, C087, and the rest of the assemblage as a whole. The assemblage overall is characterised as shown in Table 2.

A061

The 13 pieces from A061, a charcoal rich spread containing pottery, are all of flint. The four blades, five regular flakes and four irregular flakes demonstrate a range of percussive techniques. Platforms include wide artificial and punctiform types, there is a possible bipolar flake, and in another instance heavy direct percussion has collapsed a platform. Five of the removals are secondary, the rest tertiary and cortex is more frequent on blades than on flakes, presumably reflecting the size of these removals. Although the samples are small it is notable that, as in the assemblage as a whole, irregular flakes are much smaller than either regular flakes or blades (ave. length complete irregular flakes 13±1.4mm. N=2, ave. length complete regular flakes 19.3±5.1mm, N=3). This reinforces the subjective impression that these pieces are waste material from the production of regular flakes and blades. No retouched pieces were found.

C087

Ninety-seven pieces, including 55 chips were found in C087, a sub-circular charcoal rich spread.

The flint assemblage, especially when the chips are considered, indicates the manufacture of regular flakes and blades. The assemblage includes one primary, nine secondary and 13 tertiary removals and is dominated by the remains of mottled honey and black flint, apparently worked *in situ*. The absence of cores and rarity of primary material is of some interest. As in A061 a wide range of percussive techniques is evidenced for flint, including well-defined platforms, as well as bipolar flakes; irregular flakes are also very small (average length 10.5±1.3mm., N=4) but the assemblage is too fragmentary to allow comparisons between types. There are no retouched pieces. The quartz is worked in a variety of ways; although bipolar techniques are significant, platform flakes are also present. There are no retouched pieces of any material. The two pieces of pitchstone are both blade fragments: one medial and one distal (although one is technically classified as a chip as it is so

Table 2 *Overall composition of assemblage from Dubton Farm, excluding chips.*

Percentages indicate blank types as a proportion of the raw material type, or assemblage as a whole

	total		flint		quartz		other	note
bipolar core	1	1.0%			1	3.6%		
blade	20	20.6%	18	27.3%	1	3.6%	1	pitchstone
chunk	13	13.4%	6	9.1%	6	21.4%	1	quartzite
core	2	2.1%	1	1.5%	1	3.6%		
irregular flake	32	33.0%	19	28.8%	13	46.4%		
regular flake	29	29.9%	22	33.3%	6	21.4%	1	hornfels-phylite
total of material	**97**		**66**		**28**		**1**	

Table 3 *Assemblage from C087, excluding 55 chips.*

Percentages indicate blank types as a proportion of the raw material type, or assemblage as a whole

	total		flint		quartz		other	note
blade	8	19.0%	6	26.1%	1	6.3%	1	pitchstone
chunk	10	23.8%	4	17.4%	1	31.3%	1	quartzite
irregular flake	15	35.7%	9	39.1%	5	37.5%		
regular flake	9	21.4%	4	17.4%	6	25.0%	1	hornfels-phylite
total of material	**42**		**23**		**16**		**3**	

Table 4 *Assemblage from all other contexts.*

Percentages indicate blank types as a proportion of the raw material type, or assemblage as a whole

	total		flint		quartz	
bipolar core	1	2.4%			1	8.3%
blade	8	19.0%	8	26.7%		
chunk	3	7.1%	2	6.7%	1	8.3%
core	2	4.8%	1	3.3%	1	8.3%
irregular flake	13	31.0%	6	20.0%	13	58.3%
regular flake	15	35.7%	13	43.3%	6	16.7%
total of material	**42**		**30**		**28**	

small). A blade technology is often utilised for pitchstone in eastern Scotland (Warren 2001, 228 ff.). The single flake of hornfels-phylite has a simple wide platform.

The rest of the assemblage

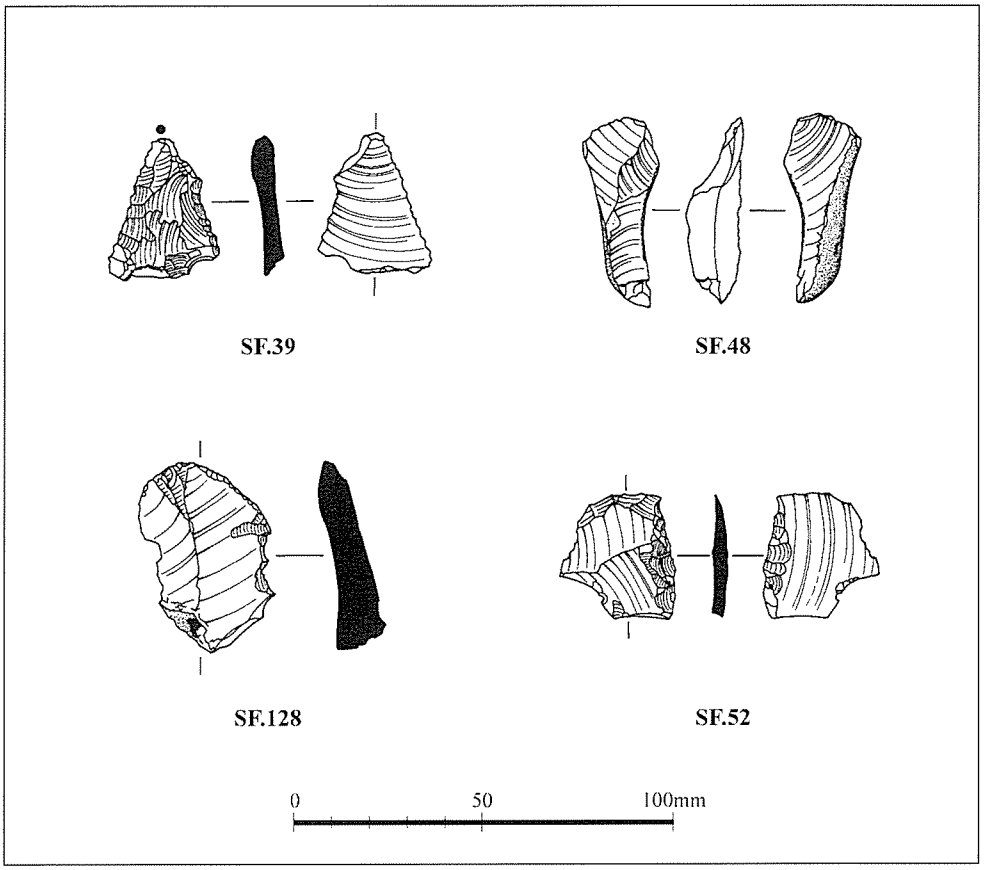
As noted above, the rest of the assemblage from Dubton is broadly similar in character to those from A061 and C087. The proportions of cortical pieces are also comparable—one primary, fourteen secondary, and fifteen tertiary—and blades are more likely to be cortical than the other pieces. The rarity of primary material across the site indicates that that full reduction sequences were not being undertaken at Dubton, and that we are witnessing parts of a *châine opératoire* that extended across the landscape (see below). The low number of cores is in keeping with this assessment. The flint is dominated by blade and regular flake working: irregular flakes, where present, are often much smaller than regular flakes or blades (*Table 5*). There is a wide range of platform techniques represented, from neat small examples through to larger collapsed types although bipolar techniques were not identified. Overshot blades and mishit pieces are also present. Whilst in part this range of percussive techniques may reflect the likely palimpsest of features on the site it is noteworthy that this same variety is present in both of the more controlled samples. The quartz from these varied contexts is characterised by irregular flakes and platform and bipolar techniques are present.

Table 5 *Average length of removals.*

	average length	no.
blade	39.6±11.9	3
irregular flake	15.7±6.1	3
regular flake	24.7±7.4	6

Five retouched pieces of flint were found in the assemblage. These include two edge retouched artefacts (both broken) from a single pit fill B181/2. The first of these is a large flake of mottled pink flint with bifacial edge modification along one edge. The second is a large platform flake with very fine short retouch to a convex curving flake edge (*128*, Illus 25). There is extensive notching edge damage at the apex of the curve. Neither are distinct morphological types although it is interesting to note that they are both manufactured on a distinctive grey-honey flint, which is also possibly slightly larger than other sources.

The most distinctive single artefact is a serrated secondary blade (*48*, Illus 25). This ergonomic blade has very fine serrations initiated from the ventral surface running along one side. There are hints of edge damage to this surface and a small area of possible 'sickle-gloss'. Long understood to be distinctive of the early Neolithic in the south (Edmonds 1995, 37, 40–1) it is now becoming apparent that serrated blades are often of this date in Scotland also (Wickham-Jones forthcoming). These artefacts seem to have a close association with harvesting (Edmonds 1995, 41). Another very interesting artefact is an extensively retouched triangle of honey-orange flint (*39*, Illus 25). This is a large, fine flake with extensive invasive retouch on the dorsal surface and no retouch on the ventral. The retouch forms two straight edges, and the artefact is probably unfinished, perhaps because of difficulties with the



Illus 25 *Lithics.*

presence of some impurities in the flint; it may have been intended to be an arrowhead. The final retouched piece (52) is an unclassifiable fragment, possibly a broken scraper.

Discussion

This small assemblage is quite consistent across the Dubton site and seems to have derived from a flexible approach to stone craft with a focus on the production of blades and regular flakes. Assuming that the majority of the assemblage dates to the earlier part or middle of the fourth millennium the technological characteristics of the collection are of interest in the wider understanding of early Neolithic stone craft in eastern Scotland.

National reviews have argued that because of a high degree of routine mobility early Neolithic stonecraft retains a focus on the efficient production of blades and narrow flakes (Edmonds 1987, 1995). Refinements to this model suggest that due to raw material constraints there is a greater reliance on bipolar traditions in the north and west (Edmonds 1995, 35). Although influential, the applicability of the general model of mobile Neolithic settlement to all areas of the British Isles is open to question (Barclay 1997; Cooney 2000) and this has an implication for our understanding of early Neolithic stone craft. As noted above, the procurement of material and character of the assemblage at Dubton indicates concerns extending across the landscape, and mobility of some kind is clearly significant. However it is not possible to characterise this mobility and we must derive our understanding of the industry more closely from Scottish parallels.

In terms of technological traditions a wide range of variation is evident on early Neolithic sites in the eastern lowlands. At Cowie Road, Bannockburn lithics deposited with Carinated Bowl pottery in Phase 2 are described as having Mesolithic affinities (Rideout 1997, 49). (Dates from Phase 2 activity vary but the complex series of deposits falls into the earliest part of the Neolithic.) Only 131 artefacts were recovered from Balbridie, mainly in association with destruction deposits (Ralston 1982; Fairweather and Ralston 1993). There is an important regular flake tradition to this industry although some blades are present. There are many retouched objects, especially scrapers and irregular edge retouched items, and very few cores. A timber structure at Kinbeachie produced another small assemblage (51 pieces from a wide area) with an important regular flake tradition and two serrated blades (Wickham-Jones forthcoming). The Kinbeachie assemblage also includes a miniature stone axe and small amounts of Arran pitchstone. At Midtown of Pitglassie a small assemblage, dominated by quartz but including flint, was incorporated into and deposited beneath a Neolithic ring-mound (Shepherd 1996). The main phase of activity on that site relates to the fourth millennium, with radiocarbon dates from under the mound and a cremation pit providing a range of 3964–3342 cal BC,

broadly contemporary with dates from Dubton. The assemblage demonstrates platform and bipolar knapping and the use of hard and soft hammers (although it is not clear which techniques are used for which materials) and pressure flaking for retouching flint pieces (Wickham-Jones 1996). At Lunanhead, twenty-seven potentially early Neolithic artefacts were discovered in a low scoop (Wickham-Jones and MacKenzie 1996). These artefacts were dominated by the production of large blades, without a precedent in types known from Mesolithic Scotland. More generally, Jane Kenney argued that in the Dee Valley Neolithic industries saw an increased reliance on flakes rather than blades, increase in scraper size and decrease in their standardisation and shift in colour of pebble flint used (Kenney 1993). Although slightly later in date than the bulk of activity at Dubton, a Neolithic assemblage from the henge at Balfarg also demonstrates a range of platform types and percussion evidence, although no bipolar or punch knapping is observed. The variety of techniques is considered testimony to the skill of the knappers (Wickham-Jones 1981).

It would be inappropriate to systematise these observations. Despite problems with chronological resolution and sampling they suggest that variability was an important part of early Neolithic traditions. This is the pattern that appears to be indicated at Dubton: the problem of palimpsest aside, the assemblage indicates some variability in production techniques. Despite the claims of the general models, the observation of bipolar traditions in the early Neolithic in eastern Scotland is a little more unusual, especially in flint. It is unfortunate that the pieces involved are somewhat ambiguous. It is also interesting that variability in working techniques extends to quartz, where both a platform and bipolar technique are present.

Use and deposition

Microscopic use-wear analysis has not been undertaken and macroscopic identification of edge damage cannot safely distinguish causation; this places limits on any discussion of the use of stone tools. Nevertheless the presence of edge damage is only definitely noted on regular flakes (n=7) and blades (n=4) and of these eleven pieces four are retouched. This does not represent a random sample of the assemblage as a whole, possibly indicating that damage has arisen from use. There are no meaningful patterns to the distribution of edge damaged material across the site. As noted above deliberate products of stone craft (regular flakes and blades) rather than evidence for knapping itself (cores, chunks and irregular flakes) dominate the assemblage (excepting C.087). This might be understood in terms of an assemblage derived from the 'use' of stone tools, and this may be confirmed by the rather selective presence of edge damage. The presence of a small area of 'sickle gloss' on the serrated blade was noted above.

The characteristics of the deposition of chipped stone at Dubton are also broadly compatible with what we can observe of early Neolithic traditions elsewhere in eastern Scotland. The conditions under which early Neolithic artefacts were deposited appear to have changed rather dramatically from the Mesolithic. Whereas Mesolithic sites frequently have enormous concentrations of lithic material, sometimes in conjunction with 'domestic' structures, this is not the case for the early Neolithic (Warren forthcoming) when lithics are generally rare: possibly because they were often deposited in pits (Healey 1987), and frequently in 'structured' deposits, such as pit 1028 at Deers Den (Alexander forthcoming). It is notable that so few lithics were recovered from Dubton both overall and in pit deposits, especially in comparison to the amounts of pottery from some pits. This seems to indicate that deliberate deposition of lithics in pits was not a key activity. The assemblage from B181/2, a small pit, is the only exception; it includes two retouched, edge damaged and broken pieces and an unbroken, unmodified blade. This assemblage seems unlikely to have arisen by chance, but unfortunately the pottery associated with it is not diagnostic. The majority of the other single finds from pits, or spreads may indicate little more than loss and residuality.

Of more interest are the two larger assemblages A061 and C087. Although the thirteen artefacts from A061 include small irregular flakes it should be noted that chips were not identified despite extensive sampling: this may imply that knapping did not take place *in situ* or that the material has been redeposited, especially given the presence of later prehistoric pottery. It is interesting that this collection includes four of the eight burnt pieces on site, only a single edge damaged piece, and nine artefacts are broken (69.2%, compared to 35.7% on the rest of the site). This concentration of burning and breakage is not representative of the site as a whole, and seems unlikely to have arisen by chance, although it may be post-depositional. This may imply that the scatter is *in situ*—if so the small assemblage has arisen through stone tool use, rather than manufacture, in this small area of the site.

C087 on the other hand is dominated by debitage and clearly indicates stone tool manufacture/maintenance and, given the presence of so many small chips, is clearly *in situ*. It is therefore interesting to note the absence of retouched, and rarity of edge damaged, pieces (n= 1), which possibly indicates some spatial separation of production and use of stone tools and therefore structure to the Neolithic use of space at Dubton. The presence of pitchstone and hornfels debitage in the context should also be noted, as it implies that these items were worked in the same areas as other materials. Pitchstone use and deposition in the early Neolithic has often been understood in terms of the possible symbolic properties of the material; at Biggar Common, for example, a very large pitchstone flake was interpreted as fulfilling a ceremonial rather than practical function (Finlayson 1997, 228). Pitchstone is often found with clear evidence of structure to the conditions under which the material was deposited. At Deer's Den and

Bannockburn, for example, pitchstone formed part of unusual pit deposits (Alexander forthcoming; Rideout 1997) and pitchstone also appears in chambered cairns from the Ord North in Sutherland to Cairnholy in Dumfries and Galloway (see Thorpe and Thorpe 1984). It is therefore interesting to observe it being used alongside other materials at Dubton. This does not mean that it was not an important symbolic resource, but demonstrates the ways in which symbolically laden practice may have been integrated with other, seemingly mundane activities.

In a general sense the deposition of the assemblage as a whole demonstrates some structure to the ways in which Neolithic communities treated stone crafting. As noted above, cores and dèbitage are quite rare, especially in flint. This indicates some curation of material, and routines of exploitation that extend beyond the site, incorporating the landscape as a whole. At different places in this landscape certain forms of stonecraft were considered appropriate, and varied acts of craft formed a medium through which people made sense of these places. Today, many of these details seem obscure, but the quiet associations generated by activity over time would have formed an important part of socialisation.

The deposition of material at Dubton then has similarities to and differences from other early Neolithic sites. Lithics are quite rare, and do not appear to have been incorporated into pits as formal deposits with the exception of one deliberate placement of broken, utilised retouched pieces. Most of the assemblage probably derives from use, although manufacture/maintenance clearly took place on site. There are hints of an organisation to the use of space, although with a site of this type, a palimpsest and with some degree of truncation, it would not be appropriate to follow these patterns too closely. The deposition of material at Dubton itself forms part of wider chains of stonecraft, extending away from the site.

Bone

Jennifer Thoms

The contexts that contained osteological remains were A179, A203, B027, B033, B037, B137/3, B185/2, C013/3, C039, C043, C043, C043/2, C067, C071, C071/1, C073, C077 and C095.

Only three bones were identifiable. One was a highly fragmented tooth, probably from cattle (A203, SF-114). Only the enamel had survived. Part of a cattle metacarpal was also present, in A179, SF-103, this was the only bone fragment that had been butchered, with one butchery mark on it. The remaining identifiable bone fragment was part of a radius from a red deer (A179, SF-103). The remaining bone fragments were small, fragile, highly fragmented and unidentifiable. All the bone remains retrieved had been burnt.

Charcoal

Michael Cressey

Introduction

The entire assemblage recovered from flotation has been assessed to determine the relative frequency of all charred material as an aid to targeting specific samples for radiocarbon dating and selection for plant macro identification. Charcoal is a useful indicator in assessing the degree of post-depositional soil movement. Where soil mass-movement is evident, then typically the charcoal will be rounded and the edges worn.

One of the primary objectives has been to identify the species present within contexts from the base of souterrain C013. Two of the lower fills from souterrain A175 were also examined in detail. It was postulated that some of the charcoal in these lower fills might originate from former structural elements associated with either the revetment of souterrain walls or possibly from fallen roof material. Material from Neolithic contexts such as spreads and pit-fills provide a relative indication on the types of woodland environment being exploited for fuel and food (see Church infra).

Methods

The samples were obtained by flotation and hand collection, either by bulk or gridded sampling. Identifications were made using a binocular microscope at magnifications ranging between x10 and x200. Generally identifications were carried out on transverse cross-sections on charcoal pieces not less than 4–6mm. Anatomical keys listed in Schweingruber (1992), in-house reference charcoal, and slide mounted micro-sections were used to aid identifications. Asymmetry and morphological characteristics were recorded. Extraneous non-charcoal material such as cinder and modern plant debris were removed during analyses. In this report 'roundwood' is used as a term of reference for branch wood and 'timber' refers to squared, trimmed or modified material.

Preservation

The level of preservation within the charcoal assemblage is very good with only a minimal amount of abrasion or degradation recorded in one or two samples. A fragment of birch from context A175 was vitrified, forming a glass-like structure possibly as a result of intense localised heat or secondary burning prior to deposition.

Identification results
(Table 6)

A175/11 Lower fill of souterrain

This context comprised the lower fill at the eastern end of souterrain A175 which contained substantial collapsed burnt timbers with burnt sand. Within the area of collapse lay half a rotary quern, the only artefact recovered from this souterrain. Charcoal from subsamples was identified to species.

Five species of wood were identified within this context. *Corylus avellana* (hazel), *Quercus sp.*(oak), *Salix* type (willow), *Betula* type (birch) and *Alnus glutinosa* (alder) were identified in order of decreasing abundance. Hazel is the dominant species followed by oak, the bulk of which is made up of fragments of charcoal derived from timber. The hazel was dominated by roundwood of small quick-grown branches with an annual growth pattern of between 8 and 9 years. Early rapid growth is assumed from the presence of a wide annual ring in its third year (see below).

A175/16 Fill of souterrain

This assemblage is from a charcoal-rich sequence below context A175/11 at the base of the souterrain. Concentrated patches of charcoal were located within the fill and are presumed to represent structural material that had possibly burnt *in situ*. Four species are represented. Oak dominates this assemblage, with tooled wood possibly representing former structural elements. Twelve individual fragments of timber were identified. Birch, hazel and willow were all derived from branch wood of variable diameter.

A175/17 Basal fill of souterrain

Six species are represented within this charcoal assemblage and include alder, birch, hazel, wild cherry, oak and willow. Hazel and oak are the dominant species with cherry, willow, birch and alder present in lower amounts. The hazel is mainly derived from roundwood and the oak from timber. The most interesting piece of charcoal from this assemblage was a stake point with a diameter of 50mm. An oblique cut measures 4 cm on one side representing a single blow from an axe or other implement with a sharp blade. Hazel roundwood with a diameter range of 20mm and annual ring counts providing an age range of up to 10–12 years was identified. The third annual ring was 3mm wide which suggests rapid growth in its third year. This is a trend that has been observed elsewhere in a study on the use of wood in hurdle manufacture (Cressey 1995).

Upper fill of souterrain C013/2

This context is from the upper horizon of Souterrain C013. Carbonised oak timber was recorded *in situ*. Seven species of wood are identified within the charcoal assemblage and include alder, birch, hazel, Pomoideae (apple/pear), Prunus type (wild cherry), oak and willow. Willow dominates this assemblage, and may be indicative of the former presence of wattle. An oak stake with a faceted point was also identified.

Table 6 *List of species, weight and number of identifications.*

context	species	weight (gm)	no.identified
A175/11	Alnus glutinosa	0.43	3
	Betula sp.	4.1	7
	Corylus avellana	100.4	96
	Quercus sp.	137.9	26
	Salix type	44.7	22
A175/16	Betula sp.	32.3	17
	Corylus avellana	28	16
	Quercus sp.	591.8	94
	Salix type	40.6	5
A175/17	Alnus glutinosa	2.3	1
	Betula type	45.4	20
	Corylus avellana	83.8	53
	Prunus type	18.4	3
	Quercus	83.2	19
	Salix type	11.8	7
013/2	Alnus glutinosa	1.1	1
	Betula sp.	3.19	5
	Corylus avellana	8.12	24
	Pomoideae	0.13	1
	Prunus type	0.25	1
	Quercus sp.	2.2	8
013/3	Betula sp.	4.06	9
	Calluna vulgaris	0.05	1
	Corylus avellana	38.4	100
	Pomoideae	0.12	1
	Quercus sp.	0.66	6
	Prunus type	0.17	7

Context C013/3

This context comprises the middle fill of this souterrain. The fill contained concentrated patches of burnt wood that was sampled within a series of blocks, all of which produced identifiable charcoal. Carbonised plant remains where also present. Six species of wood have been identified and include birch, oak, hazel, Pomoideae type (representing either apple, pear, hawthorn or quince) and Prunus type (wild or bird cherry). Hazel charcoal dominates the assemblage and the rest of the species are low in frequency. Further species included *Calluna vulgaris* (heather).

Other archaeological features (Table 7)

Only limited further work was undertaken on other archaeological features such as pits, spreads and post holes. Owing to the large volume of charcoal present, a random sampling strategy to select features was adopted.

Table 7 *Species identified from pit fills and charcoal spreads.*

feature	context/sample	species	weight (gm)	comment
pit fill	C045/198	Quercus sp.	1.4	well preserved
pit fill	A207/112	Corylus avellana	1.1	well preserved
pit fill	A207/110	Corylus avellana	3.6	well preserved
pit fill	A207/111	Corylus avellana	0.5	well preserved
pit fill	D029/128	Rosaceae type	8.1	well preserved
pit fill	D029/128	Pomoideae	0.13	well preserved
charcoal spread	B167/191	Corylus nuts	0.5	10+ fragments
pit	A061/046	Quercus sp.	0.54	well preserved
		Corylus avellana	4.19	well preserved
pit	B023/096	Malus	not recorded	abundant
charcoal spread	B215/235	Malus	not recorded	abundant
		Corylus nuts	not recorded	abundant
		cereals	not recorded	
charcoal spread	A061/042	Quercus sp.	0.46	well preserved
		Rosacea	0.24	well preserved
		Betula sp.	0.27	well preserved

Discussion

Pit fill assemblages

The large assemblage of crab apple and complete hazel nuts from pit fills B167/191 and B023/96 provides evidence for Neolithic exploitation of woodland resources (Church *infra*). The local soils are acidic humus-iron podsols. In well-drained areas adjacent to the site the local soils would have supported oak and hazel woodland. In the absence of local pollen diagrams it can only be speculated as to how widespread this type of woodland would have been at that time. Wild cherry and crab apple are traditionally associated with hedgerows (Wilkinson 1975) but would also have been part of the local wild wood composition. Wild cherry or bird cherry (*P. avium* and *P. padus*) prefer more alkaline soils, but in areas where soils achieve a higher nutrient status, such as alongside streams or in river valleys, this low statured tree would have thrived. Alder and willow could only have been exploited from stream margins or other semi-waterlogged areas in the vicinity of the site.

Souterrain assemblages

The souterrain assemblages from A175 and A013 contain charcoal derived from both roundwood and timber. In souterrain C013, a large oak timber was recorded and its pristine condition and lack of abrasion suggests burning *in situ*. However, the degree of soil reddening at the base of the souterrain does not suggest that substantial burning *in situ* (on the souterrain floor) of structural elements other than smaller diameter material occurred there. The collapsed structural material, by either deliberate back-filling of burning material or (less likely) by *in situ* burning and collapse, effectively sealed the souterrain base and promoted suitable anaerobic conditions which are a prerequisite for the conversion of wood into charcoal.

In both of the examined souterrains hazel and oak are the dominant species: birch, alder and willow are also present but at much lower frequencies. In context A175/16, larger fragments of worked oak dominated the charcoal assemblage. This species would have been preferred for souterrain construction due to its natural properties that include strength and durability in comparison to the other species that are weaker and prone to rot in dry conditions (Taylor 1981).

Carbonised plant macrofossils

Mike Church

Introduction

Over 450 bulk samples were recovered from the negative features and wet-sieved on site. An initial assessment established that all the samples contained carbonised plant material. 57 samples were chosen following this assessment for archaeobotanical analysis. These samples came from four main sets of features: the fills of the large Neolithic pits, smaller pits and scoops of Neolithic date, lower fills of the souterrains and associated negative features, and miscellaneous fills from a pit of probable Iron Age date.

Three main research aims were formulated at the outset of the excavation:

a to produce a statistically representative sample of the plant macrofossil assemblage;
b to provide general insights into the arable economy and plant collection strategies for the archaeological periods represented on site; and
c to extract archaeobotanical remains from the souterrains in order to interpret the structure, content and function of the features.

Methods

Sampling

A *total* sampling strategy was adopted (Jones 1991), meaning a sample was taken from every archaeological context, apart from deposits with clear bioturbation or modern contamination. This meant a statistically representative sample of all the archaeobotanical remains from the site was retrieved (van der Veen and Fieller 1982). Additional *judgement* samples were taken from particularly interesting contexts, such as the burnt layers within some of the Neolithic pits. The souterrains were *interval* sampled on a grid of 0.5m^2, with a new grid established when a context change was detected and a final arbitrary grid taken of the basal layers. The bulk samples were processed using a flotation tank (Kenward *et al* 1980) with the residue held by a 1.0mm net and the flot caught by 1mm and 0.3mm sieves respectively. All flots and residues were air dried.

Assemblage assessment

Over 450 bulk samples were processed and the resources available precluded full identification of all the samples. Therefore an initial assessment was made of the flots from the samples. This involved scanning them using a semi-quantitative scaling system recording the relative frequencies of the main classes of archaeobotanical remains. The full list and methodology of this assessment has been lodged in the project archive. Samples with over 10 quantifiable components were selected for further analysis. All samples from the basal grids of the souterrains A175 and C013 were also chosen, as well as samples from features directly associated with souterrain A175 and from the top, middle and bottom fills from souterrain C011.

Sorting and identification

The samples were sorted using a low-powered stereo/binocular microscope at x15–x80 magnification. Hazel nutshell and crab apple pericarps were included as a quantifiable component only if over half of the nut or fruit was present. All other fragments of these two species were counted and weighed but were not recorded as quantifiable components. Spikelet forks from wheat were recorded as two glume bases. All identifications were checked against botanical literature and modern reference material from collections in the Department of Archaeology, University of Edinburgh. Nomenclature follows Stace (1991) with ecological information taken from Clapham *et al* (1989), Stace (1991) and *Flora Europaea* (Royal Botanic Garden Edinburgh 1998).

Results

General

Tables 8 and 9 present the identifications made for the Neolithic and Iron Age samples respectively. Dating of the samples in Table 8 was possible through the provision of radiocarbon dates and the presence of Neolithic pottery in many of the fills. Further samples of possible Neolithic age were included in this group on the basis of their similarity in archaeobotanical composition. Samples in Table 9 were attributed to the Iron Age as they were taken from souterrain fills or features associated with souterrain A175. The three samples from feature B137 (a pit with burnt lenses) were also attributed to the Iron Age or later because the cereal remains comprised hulled barley and oat, a crop composition unlikely to be of Neolithic Age.

Macrofossil preservation

On the basis of the work of Hubbard (1990) and Boardman and Jones (1990), the entire Dubton assemblage may be characterised as relatively badly preserved with just under 50% of the assemblage within the two worst classes of preservation (P5 and P6). This reflects the similar preservation profiles from the Neolithic and Iron Age pits and the slightly worse preservation within the souterrain fills. The grains from pit B215 are better preserved with just under 50% of the assemblage in the best three preservation classes (P1–P3) indicating good preservation and the concomitant increase in the more fragile classes of material recovered. This impression is reinforced by the presence of crab apple pericarp fragments, which are extremely rare in a Scottish context. However, the more fragile classes of material also seem to be preserved across the rest of the site despite the worse preservation of the cereal grain in the other blocks of analysis. Therefore the impact of carbonisation on the relative frequencies of the different classes of material has not precluded detailed analysis.

Neolithic (Table 8)

Origin and distribution of plant remains

Most of the Neolithic samples came from the smaller pits, with only three samples (Samples 224—B059/1, 374—B233/1 and 375—B233/3) from the larger Neolithic pits containing more than 10 quantifiable components. The nature of pit fill formation processes means it is likely that all the remains stem from discarded material rather than *in situ* burning, which makes taphonomic interpretation difficult. However, all the samples appear to be composed of various stages of crop-processing, mixed with the remains from other plant-processing, especially hazelnuts and crab apple. This could represent the discard of crop or gathered

plant material accidentally charred during processing or the deliberate or accidental incorporation of plant-processing debris into domestic hearths and subsequently thrown away. The samples vary from grain rich samples, such as S068 (B033), to samples rich in wild species, such as S294 (B217). Of particular interest is 235 (B215). This contained 5080 quantifiable components, most of which were weed seeds from the cereal crop mixed with burnt hazelnut and crab apple. It is likely that the stage represented is relatively early in the crop-processing, for example primary winnowing (cf. Hillman, 1981). The archaeobotanical composition of the three samples from the larger Neolithic pits is very similar to the range from the smaller pits, except the remains seem to stem solely from crop-processing with no evidence of hazelnut or crab apple processing. In summary, the taphonomy of the Neolithic material is relatively consistent and so the results will be analysed as a single assemblage with S235 considered in more detail.

Cultivated plants

The cereal crops recovered from the Neolithic pits represent a wide diversity in the arable economy. Viewing the identifiable grain from the pits as a whole, 62% were wheat (*Triticum* sp.), 37% were barley (*Hordeum* sp.) and 2% were oat (*Avena* sp.). Where further identification was possible, 43% of the identifiable assemblage was emmer wheat (T. *dicoccum* L. Schubl.), 19% was naked barley (*Hordeum* sp. naked) with 3% of hulled barley (*Hordeum* sp. hulled) and bread wheat (T. *aestivo-compactum* L.) respectively. The ratio between the symmetric to asymmetric barley grains of both varieties, coupled with the recovery of a single rachis internode in S374, pointed to the six-row species of barley being cultivated (*Hordeum vulgare* L.). This profile was similar to that recovered from the macrofossil rich assemblage in S235. It is likely that local cultivation was practiced, judging by the wide range of crop-processing stages attested by the assemblage. Hence, it can be proposed that the arable economy of the Neolithic period in this area was a mix of emmer wheat (T. *dicoccum* L. Schubl.) and naked six-row barley (*H. vulgare* L. var. *nudum*) with possible small-scale cultivation or weed contamination of hulled six-row barley (*H. vulgare* L. var. *vulgare*) and bread wheat (T. *aestivo-compactum* L.). The oat was presumably a weed contaminant of the wild variety (*Avena fatua* L.), though this is impossible to verify from the cereal grain identifications alone.

Wild edible species

The diversity in cereal species is also matched by the diversity in wild plants that could have been gathered for human consumption. The most likely species to have been deliberately collected were hazelnuts (*Corylus avellana* L.) and crab apple (*Malus sylvestris* L.). Hazel nutshell fragments were recovered from 22 of the 29 Neolithic samples and over half of these contained whole nuts with the kernel still intact. Six samples contained pericarp fragments of crab apple (the fruit component of an apple) and three of these contained whole, carbonised fruits. S235 was particularly rich in both species. This is extremely rare in the Britain outwith waterlogged sites and provides very interesting insights into the contribution that gathered plants made to the Neolithic economy.

Other edible plants include single seeds from the berries of the cowberry (*Vaccinium vitis-idaea* L.) and the bearberry (*Arctostaphylos uva-ursi* L. Sprengel) as well as seeds from over a third of the samples of fat-hen (*Chenopodium album* L.). However, the latter species is as likely to represent a weed of cultivation as an edible foodstuff. Both the cowberry and the bearberry are found in heaths and moorland with the bearberry preferring higher altitudes than the lowlands of Angus. Indeed, it seems reasonable that both species could have been gathered from the Eastern Grampians with access to this upland zone through the glens. Further evidence of moorland and heath plants deliberately gathered include the presence of Ling heather capsules (*Calluna vulgaris* L. Hull.) in three of the Neolithic samples.

Cultivated fields and grassland

It seems likely that the most of the wild species were preserved as weed contaminants with the emmer and naked barley crop. All the samples contained a mix of both wheat and barley so it was not possible to identify different weed ecologies for the crop types. However, the Dubton material still represents a rare insight into general weed associations with Neolithic crops in Scotland. Weeds of cultivated fields and grasslands are represented by seeds of buttercups (*Ranunculus* spp.), goosefoots/oraches (*Chenopodium/Atriplex* spp.), Corn-spurrey (*Spergula arvensis* L.), Redshank (*Persicaria maculosa* L.), knotgrasses (*Polygonum* spp.), Black bindweed (*Fallopia convolvulus* L. A. Love), docks (*Rumex* spp.), cabbages/mustard (*Brassica/Sinapis* spp.), vetches/wild peas (*Vicia/Lathyrus* spp.), Red clover (*Trifolium pratense* L.), Hemp-nettle (*Galeopsis* spp.), Ivy-leaved speedwell (*Veronica hederifolia* L.), Cleaver (*Galium aparine* L.), daises (Asteraceae undiff.), grasses (Poaceae undiff.) and bromes (Bromus spp.). This represents a range of approximately 20 different species as possible weeds of cultivation, with 12 species within the macrofossil rich S235. This diversity is at odds to the relatively unspecialised weed floras generally thought to be associated with Neolithic crops in Northern Britain (Greig 1991; Boardman 1995). The main weed associate seems to be the Broad leaved / Curled dock (*Rumex obtosifolius/crispus* L.), with approximately 4240 seeds of this species recovered from S235 alone, though this may represent the large volume of seeds produced rather than frequency of the plant in the field. Most of the weeds are typical of cultivated and disturbed ground and can grow in a variety of agricultural conditions but

Table 8 *Carbonised plant remains: Neolithic identifications.*

key f fragment

DUBTON FARM, BRECHIN (1)				
sample		62	65	66
context		B053	B037/1	B037/2
phase		Neolithic	Neolithic	Neolithic
context type		pit fill	pit fill	pit fill
volume (litres)		5	5	5
cultivated species	**common name**			
Hordeum				
H. sp.	barley grain	2	6	4
H. naked	naked barley grain		3	
H. cf. naked	cf. naked barley grain	1		
H. naked symmetric	naked barley straight grain		1	1
H. naked asymmetric	naked barley twisted grain		4	
H. hulled	hulled barley grain			
H. cf. hulled	cf. hulled barley grain	1	1	
H. hulled symmetric	hulled barley straight grain			
H. hulled asymmetric	hulled barley twisted grain			
H. vulgare L.	six-row barley rachis			
Triticum				
T. sp.	wheat grain	3	8	1
T. aestivo-compactum	bread wheat grain		1	1
T. cf. aestivo-compactum	cf. bread wheat grain			
T. dicoccum L. Schubl.	emmer wheat grain	21	17	8
T. cf. dicoccum L. Schubl.	cf. emmer wheat grain			
T. sp.	wheat glume base			
T. dicoccum L. Schubl.	emmer wheat glume base		24	3
T. aestivo-compactum L.	bread wheat glume fragment		10	1
T. dicoccum L. Schubl.	emmer wheat rachis			
Avena				
A. sp.	oat grain	1		
other cereals				
cereal indeterminate	indeterminate cereal	5	17	5
cereal/monocotyledon (>2 mm)	culm node			
cereal/monocotyledon (>2 mm)	culm base			
cereal/monocotyledon (<2 mm)	culm base	1		
indeterminate (>2 mm)	rhizome			
wild species				
Ranunculus spp.	buttercup achene			
Corylus avellana L.	hazel nutshell fragment	3f (0.15)		
Corylus avellana L.	hazel nutshell (whole)			
Chenopodium/Atriplex spp.	goosefoot/orache seed		1	
Chenopodium album L.	fat-hen seed	1		
Spergula arvensis L.	corn-spurrey seed			1
Persicaria maculosa Gray	redshank nutlet			
Polygonum arenastrum Boreau	equal-leaved knotgrass nutlet			
Polygonum spp.	knotgrass nutlet			
Polygonum aviculare L.	knotgrass nutlet	1		
Fallopia convolvulus (L.) A L	black-bindweed nutlet	1		
Rumex spp.	dock nutlet	2		
Rumex acetosella L.	sheep's sorrel nutlet	5		1
Rumex acetosa L.	common sorrel nutlet			
Rumex obtosifolius/crispus L.	broad leaved / curled dock nutlet	4	53	14
Brassica rapa L.	wild turnip seed			
Brassica/Sinapis spp.	cabbage/mustard seed	1		
Arctostaphylos uva-ursi (L.) S	bearberry seed			
Erica/Calluna spp.	heather capsule			
Vaccinium vitis-idaea L.	cowberry seed			
Malus sylvestris (L.) Miller	crab apple pip	1		
Malus sylvestris (L.) Miller	crab apple fruit fragment			
Malus sylvestris (L.) Miller	crab apple (whole)			
Vicia/Lathyrus spp.	vetch/pea seed	1		
Trifolium pratense L.	red clover seed			
Galeopsis subg. Galeopsis	hemp-nettle nutlet			
Veronica hederifolia L.	ivy-leaved speedwell seed			
Galium aparine L.	cleaver fruit			
Asteraceae undiff.	daisy seed			
Poaceae undiff. (large)	grass large grain			
Poaceae undiff. (medium)	grass medium grain			1
Poaceae undiff. (small)	grass small grain			
Bromus spp.	brome grain			
indeterminate	seed/fruit	1		
totals				
total quantifiable components		53	146	41
quantifiable components/litre		10.60	29.20	8.20
grain proportion (%)		64.2	39.7	48.8
chaff proportion (%)		0	23.3	9.8
wild species proportion (%)		35.8	37	41.4

68	75	91	97	98	103	192
B033	B027	B023/1	B023/3	B023/4	B025	B189
Neolithic	Neolithic	Neolithic	Neolithic	Neolithic	Neolithic	Neolithic
pit fill	pit fill	pit fill	pit fill	pit fill	pit fill	pit fill
5	5	5	5	5	5	5
4	2	4			2	1
2	1	4				1
1						
		2		1		
1	1					
1						
5					2	1
4					1	
13	6	1		5	2	1
	1					
1			1	4		
2	1					
9	2	1	6	3		2
1						
1f (0.02)	7f (0.28)	13f (0.3)	3f (0.08)	4f (0.19)	5f (0.22)	
		1 (0.27)			1 (0.27)	
	7					
			1			
		1				
	1					
						1
			2			
1			4			
6	3	8	19	6		
1		1				1
		2	6	4		
		12f (0.6)	4f (0.17)	3f (0.07)		
		1f (0.25)				
			1			
			1			
		1				
				2		
			4			1
52	25	27	45	25	8	9
10.40	5.00	5.40	9.00	5.00	1.60	1.80
80.8	56	26.9	13.3	36	87.5	67
1.9	0	0	2.2	16	0	0
17.3	44	73.1	84.5	48	12.5	33

Table 8 *Carbonised plant remains: Neolithic identifications (continued).*

key f fragment hr hand retrieved n/a not applicable vaf very abundant fragments

DUBTON FARM, BRECHIN (2)				
sample		200	214	220
context		C039	B187	B189/1
phase		Neolithic	Neolithic	Neolithic
context type		pit fill	pit fill	pit fill
volume (litres)		5	10	5
cultivated species	**common name**			
Hordeum				
H. sp.	barley grain		6	2
H. naked	naked barley grain			
H. cf. naked	cf. naked barley grain			
H. naked symmetric	naked barley straight grain			
H. naked asymmetric	naked barley twisted grain			
H. hulled	hulled barley grain		1	
H. cf. hulled	cf. hulled barley grain			
H. hulled symmetric	hulled barley straight grain		1	
H. hulled asymmetric	hulled barley twisted grain		3	
H. vulgare L.	six-row barley rachis			
Triticum				
T. sp.	wheat grain	1	4	
T. aestivo-compactum	bread wheat grain			
T. cf. aestivo-compactum	cf. bread wheat grain			
T. dicoccum L. Schubl.	emmer wheat grain		1	1
T. cf. dicoccum L. Schubl.	cf. emmer wheat grain			
T. sp.	wheat glume base			
T. dicoccum L. Schubl.	emmer wheat glume base		11	2
T. aestivo-compactum L.	bread wheat glume fragment			
T. dicoccum L. Schubl.	emmer wheat rachis			
Avena				
A. sp.	oat grain			
other cereals				
cereal indeterminate	indeterminate cereal		10	3
cereal/monocotyledon (>2 mm)	culm node			
cereal/monocotyledon (>2 mm)	culm base			
cereal/monocotyledon (<2 mm)	culm base		2	
indeterminate (>2 mm)	rhizome		1	
wild species				
Ranunculus spp.	buttercup achene		1	
Corylus avellana L.	hazel nutshell fragment	1f (0.12)	32f (1.59)	36f (1.53)
Corylus avellana L.	hazel nutshell (whole)	1 (0.32)	4 (0.6)	3 (0.53)
Chenopodium/Atriplex spp.	goosefoot/orache seed		1	
Chenopodium album L.	fat-hen seed			1
Spergula arvensis L.	corn-spurrey seed			
Persicaria maculosa Gray	redshank nutlet			
Polygonum arenastrum Boreau	equal-leaved knotgrass nutlet			
Polygonum spp.	knotgrass nutlet		1	
Polygonum aviculare L.	knotgrass nutlet			
Fallopia convolvulus (L.) A L	black-bindweed nutlet			
Rumex spp.	dock nutlet		2	1
Rumex acetosella L.	sheep's sorrel nutlet			
Rumex acetosa L.	common sorrel nutlet			
Rumex obtosifolius/crispus L.	broad leaved / curled dock nutlet		2	2
Brassica rapa L.	wild turnip seed			
Brassica/Sinapis spp.	cabbage/mustard seed			2
Arctostaphylos uva-ursi (L.) S	bearberry seed		1	
Erica/Calluna spp.	heather capsule		1	
Vaccinium vitis-idaea L.	cowberry seed			
Malus sylvestris (L.) Miller	crab apple pip		2	
Malus sylvestris (L.) Miller	crab apple fruit fragment			
Malus sylvestris (L.) Miller	crab apple (whole)			
Vicia/Lathyrus spp.	vetch/pea seed			
Trifolium pratense L.	red clover seed			
Galeopsis subg. Galeopsis	hemp-nettle nutlet			
Veronica hederifolia L.	ivy-leaved speedwell seed			
Galium aparine L.	cleaver fruit			
Asteraceae undiff.	daisy seed			
Poaceae undiff. (large)	grass large grain			
Poaceae undiff. (medium)	grass medium grain			
Poaceae undiff. (small)	grass small grain			
Bromus spp.	brome grain		1	
indeterminate	seed/fruit		2	
totals				
total quantifiable components		2	58	17
quantifiable components/litre		0.40	5.80	3.40
grain proportion (%)		50	44.8	35.3
chaff proportion (%)		0	19	11.8
wild species proportion (%)		50	36.2	52.9

235	276	294	296	304	224	374
B215	B189	B217	B217	B215	B059/1	B233/1
Neolithic	Neolithic	Neolithic	Neolithic	Neolithic	Neolithic	Neolithic
pit fill	pit fill	pit fill	pit fill	pit fill	pit fill	pit fill
5	5	5	hr	hr	15	5
5					6	13
12						3
2					1	1
8					1	3
17						1
2						1
						1
1						
						1
11					6	15
3						
1						
53	2	1			8	15
4						
22						
406	2					17
2						
5						
3						
36					8	11
		2				
	1					
1						
19f (0.92)	24f (0.96)	5f (0.11)	36f (3.87)	6f (0.67)		
2 (0.26)	1 (0.1)	4 (0.5)	45 (21.5)	4 (0.7)		
					1	
3						
						2
4						
5						
2						
30	1	2			1	1
24						1
2						
4240		13			2	4
4	2	20			45	1
	1					
1						
109						
vaf (29.7)				58f (4.46)		
15 (10.9)				33 (33.5)		
	1					
1						
1						
2						
14					1	
4						
23	1					
5080	12	42	45	37	80	91
1016.00	2.40	8.40	n/a	n/a	5.33	18.20
3.1	16.7	2.4	0	0	37.5	70.3
8.6	16.7	4.8	0	0	0	19.8
88.3	66.6	92.8	100	100	62.5	9.9

Table 8 *Carbonised plant remains: Neolithic identifications (continued).*

key f fragment

DUBTON FARM, BRECHIN (3)				
sample		375	63	85
context		B233/3	B043	B047
phase		Neolithic	Neolithic?	Neolithic?
context type		large pit fill	large pit fill	large pit fill
volume (litres)		5	5	5
cultivated species	**common name**			
Hordeum				
H. sp.	barley grain	1		
H. naked	naked barley grain		2	2
H. cf. naked	cf. naked barley grain			1
H. naked symmetric	naked barley straight grain		1	
H. naked asymmetric	naked barley twisted grain			
H. hulled	hulled barley grain		2	
H. cf. hulled	cf. hulled barley grain			
H. hulled symmetric	hulled barley straight grain		1	
H. hulled asymmetric	hulled barley twisted grain			1
H. vulgare L.	six-row barley rachis			
Triticum				
T. sp.	wheat grain	1	1	6
T. aestivo-compactum	bread wheat grain			
T. cf. aestivo-compactum	cf. bread wheat grain			2
T. dicoccum L. Schubl.	emmer wheat grain	2	5	10
T. cf. dicoccum L. Schubl.	cf. Emmer wheat grain			1
T. sp.	wheat glume base			
T. dicoccum L. Schubl.	emmer wheat glume base		9	
T. aestivo-compactum L.	bread wheat glume fragment		3	
T. dicoccum L. Schubl.	emmer wheat rachis			
Avena				
A. sp.	oat grain			
other cereals				
cereal indeterminate	indeterminate cereal	3	5	7
cereal/monocotyledon (>2 mm.)	culm node			
cereal/monocotyledon (>2 mm.)	culm base			
cereal/monocotyledon (<2 mm.)	culm base			
indeterminate (>2 mm.)	rhizome			
wild species				
Ranunculus spp.	buttercup achene			
Corylus avellana L.	hazel nutshell fragment		2f (0.04)	
Corylus avellana L.	hazel nutshell (whole)			
Chenopodium/Atriplex spp.	goosefoot/orache seed			
Chenopodium album L.	fat-hen seed		1	
Spergula arvensis L.	corn-spurrey seed	1		
Persicaria maculosa Gray	redshank nutlet			
Polygonum arenastrum Boreau	equal-leaved knotgrass nutlet			
Polygonum spp.	knotgrass nutlet			
Polygonum aviculare L.	knotgrass nutlet		1	1
Fallopia convolvulus (L.) A L	black-bindweed nutlet			
Rumex spp.	dock nutlet		1	
Rumex acetosella L.	sheep's sorrel nutlet			1
Rumex acetosa L.	common sorrel nutlet			
Rumex obtosifolius/crispus L.	broad leaved / curled dock nutlet	1	28	2
Brassica rapa L.	wild turnip seed			
Brassica/Sinapis spp.	cabbage/mustard seed			1
Arctostaphylos uva-ursi (L.) S	bearberry seed			
Erica/Calluna spp.	heather capsule			
Vaccinium vitis-idaea L.	cowberry seed			
Malus sylvestris (L.) Miller	crab apple pip			
Malus sylvestris (L.) Miller	crab apple fruit fragment			
Malus sylvestris (L.) Miller	crab apple (whole)			
Vicia/Lathyrus spp.	vetch/pea seed		1	
Trifolium pratense L.	red clover seed			
Galeopsis subg. Galeopsis	hemp-nettle nutlet			
Veronica hederifolia L.	ivy-leaved speedwell seed			
Galium aparine L.	cleaver fruit			
Asteraceae undiff.	daisy seed		1	1
Poaceae undiff. (large)	grass large grain			
Poaceae undiff. (medium)	grass medium grain			
Poaceae undiff. (small)	grass small grain			
Bromus spp.	brome grain			
indeterminate	seed/fruit			
totals				
total quantifiable components		9	62	36
quantifiable components/litre		1.80	12.40	7.20
grain proportion (%)		77.8	27.4	83.3
chaff proportion (%)		0	19.4	0
wild species proportion (%)		22.2	53.2	16.7

90	190	191	366	370	426
B039	B167/1	B167/2	B167	B191	D001
Neolithic?	Neolithic?	Neolithic?	Neolithic?	Neolithic?	Neolithic?
pit fill	pit fill	pit fill	pit fill	pit fill	posthole fill
5	5	5	5	10	5
1				2	
3	1				
	1				
1					
					4
3	1		1		6
					2
				1	
6	1			2	
		1			
				1	
1f (0.04)	2f (0.03)	12f (0.3)	98f (4.9)	1f (0.02)	2f (0.03)
			2 (0.3)		
	3		1	1	
1					
			4		
1					
35	2		2		
				1	
1	3	2	2		1
	1				
			1f (0.04)		
	1		1	2	
52	14	3	13	10	13
10.40	2.80	0.60	2.60	1.00	2.60
26.9	28.6	0	7.7	50	92.3
0	0	33.3	0	0	0
73.1	71.4	66.7	92.3	50	7.7

some, like Corn-spurrey, Sheep's sorrel, Wild turnip and Curled dock, have a preference for well-drained, sandy soils that would represent the better land for arable agriculture in lowland Angus. There are also a few genera, such as the buttercups and Hemp-nettle, that hint at slightly wetter areas, though only a single seed of each type was recovered from the Neolithic pits.

Iron Age (Table 9)

Origin and distribution of plant remains

The Iron Age material was recovered from three sets of deposits: the fills of three souterrains; a set of pits and postholes associated with the largest souterrain (A175); and the charcoal rich fills of a large pit, B137. The taphonomy of the plant macrofossils from each set of deposits will be examined in turn.

The basal fill of souterrain A175 was sampled on a grid basis with 13 samples taken and analysed. Two contexts, A175/14 and A175/17, were identified during excavation. A175/17 had the greatest concentration of carbonised plant macrofossils and charcoal with quantifiable components per litre ranging from 0 to 42.4, compared to the lower range of 2 to 10 for A175/14. Cressey (supra) analysed the charcoal and concluded that the material from the basal fills of A175 consisted of the dumped remains of burnt hazel roundwood and oak timber that may have come from the dismantled remains of the souterrain or associated structures. Small patches of burnt sand immediately below the basal layers indicate the ash and charcoal was still hot when dumped, rather than being the product of *in situ* burning. The social mechanism of such an action is discussed below but implies that any plant macrofossils associated with this dumped material may be structural components of the souterrain or remnants of material within the structure.

The overall archaeobotanical composition of the samples is similar, comprising significant proportions of cereal grain, wild species of varied habitat and large proportions of cereal/monocotyledon culm nodes/bases and indeterminate rhizomes of less than 2mm diameter. The proportion of these culm parts and rhizomes was particularly marked in samples 323, 324, 327 and 328 (all A175/17), with most of the components having a diameter less than 2mm. This suggests they stem from the burning of wild grasses and other monocotyledons rather than cereal straw that produces culm parts generally greater than 2mm in diameter (Church and Peters, forth.). This can be interpreted in a number of ways: 1) grass becoming incorporated into the burning of the wooden infrastructure, 2) grass being a remnant of material within the souterrain structure or 3) grass remains representing the preserved remains of burnt turf (Dickson 1998; Church and Peters, forth.). Turf could have been an important component of the souterrain roof and the presence of wild species with wetter tolerances, such as the sedges (*Carex* spp.), Ling heather (*Calluna vulgaris* L. Hull), Common spike-rush (*Eleocharis palustris* L. Roemer and Schultes) and Heath-grass (*Danthonia decumbens* L.), may point to the turf being cut from nearby heath. Turf from heaths has a much greater organic content than turf from other habitats and so is more resilient when dry and can also be used an effective fuel if wood resources become scarce. The presence of cereal grain and weeds of cultivated ground with few chaff components indicates that cereal remains stemming from the later stages of crop-processing were also part of the fire. The implications of the association of cereals and souterrains will be discussed below.

The assemblages from the souterrains C013 and C011, as well as the pits associated with the larger souterrain A175, were similar in composition to the basal fill of A175, though the concentration of macrofossils was generally lower. All the samples from C013 also contained burnt fungal sclerotia of Cenococcum, which supports the idea of the presence of peaty turf (Dickson 1998).

The excavation of pit B137 yielded burnt lenses overlying heat affected sand fills. This means the material was either burnt *in situ* or immediately discarded into the pit after carbonisation whilst still very hot. The remains were dominated by processed grain with some wild seeds, indicating the weed ecology of the crop. The pit could have been adjacent to a crop-processing area or may have been fired deliberately as a grain storage pit, though the shape is different from the structures from the southern British Iron Age.

Cultivated plants

The variable taphonomic processes in the different contexts will not affect the general crop profile, so the Iron Age samples can be viewed as a whole. 73% of the identifiable assemblage was barley (*Hordeum* sp.), with 26% oat (*Avena* sp.) and 1% wheat (*Triticum* sp.). Where further identification was possible, 50% of the barley was of the hulled variety (H. sp. hulled), with 1% naked barley (H. sp. naked) and a split between emmer wheat (T. *dicoccum* L. Schubl) and bread wheat (T. *aestivo-compactum* L.). The ratio between the symmetric to asymmetric barley grains of the hulled barley, coupled with the recovery of rachis internodes from S.324 (A175/17) and S.372 (137/3), pointed to six-row hulled barley being the main crop cultivated (H. *vulgare* L. var. *vulgare*). However, the two-row species (H. *distichum* L.) was also represented by a single rachis internode in S.225 in the basal fill of souterrain A175. Two basal florets of the cultivated oat (*Avena strigosa* L.) were recovered from one of the fills in pit B137, confirming the likely cultivation of oat, rather than the wild species (*Avena fatua* sp.) forming a weed of the barley crop. This predominance of hulled six-row barley is consistent with the pattern across Iron Age Scotland, with a slightly wider range of secondary crop species present in lowland areas compared to the highland zone and Atlantic Scotland (Boyd 1988; Dickson and Dickson 2000).

Wild edible species

A single fruitstone of raspberry (*Rubus ideaus* L.) and a fragment of hazelnut (*Corylus avellana* L.) were found in the fill of souterrain C013 and a pit associated with souterrain A175 respectively. This represents occasional and opportunistic gathering, rather than the organised and extensive collection noted in the Neolithic economy. This demonstrates the relative dominance of arable agriculture compared to gathered plant foodstuffs in the Iron Age.

Cultivated field and grassland

The complex taphonomic history of the souterrain fills and the pits associated with the largest souterrain A175, means the weed ecology associated with the crop is difficult to evaluate. However, the presence of a number of species preferring damper ground would indicate that more marginal areas than those cultivated in the Neolithic were being used in the Iron Age. The cereal rich fills within a possible grain storage pit, B137, support this hypothesis. A coherent weed assemblage associated with a hulled six-row barley crop with some cultivated oat was recovered from this pit, with species such as Pale persicaria (*Persicaria lapathifolia* L. Gray) and Common spike-rush (*Eleocharis palustris* L. Roemer and Schultes) indicating wetter ground for the cultivation.

Summary and discussion

The archaeobotanical assemblage from Dubton Farm is a very important addition to the palaeoenvironental data set in the lowlands of North East Scotland. Two main periods are represented, recovered from a series of Neolithic pits as well as souterrain basal fills and miscellaneous pits of Iron Age date.

The Neolithic assemblage has been viewed as a whole because of the similar taphonomic processes leading to the accumulation of the remains in the pits. Much of the material stems from various stages of crop-processing and other plant-processing. The arable economy is mainly a mix of emmer wheat (*Triticum dicoccum* L. Schubl.) and naked six-row barley (*Hordeum vulgare* L. var. *nudum*), with possible small-scale cultivation of hulled six-row barley (*H. vulgare* L. var. *vulgare*) and bread wheat (*T. aestivo-compactum* L.). The weed assemblage associated with the crop indicates well-drained sandy soil, representing the optimum land for cereal cultivation in the area, and Scotland as a whole. A number of gathered plants were also part of the Neolithic economy, especially hazelnut (*Corylus avellana* L.) and crab apples (*Malus sylvestris* L.). Whole carbonised remains of both these species were recovered, a rare occurrence in Scottish archaeobotany, presumably as a result of an accident during the deliberate drying process for winter storage. Other gathered plants for consumption included the cowberry (*Vaccinium vitis-idaea* L.) and the bearberry (*Arctostaphylos uva-ursi* L. Sprengel), both of which would have grown in heath and moor, perhaps in the Eastern Grampians. Further evidence of moorland exploitation was recovered in the form of Ling heather components (*Calluna vulgaris* L. Hull) that may have been gathered for internal furnishings or artefact manufacture. The exploitation and management of plants in the Neolithic would therefore have relied on gathered plants as well as arable cultivation (cf. Moffett *et al* 1989; Zvelebil 1994). Late summer/early autumn would have been an important time in the annual economic cycle for the gathering and drying of the crops, nuts, berries and apples. The assemblage is therefore an important contribution to the emerging human/plant relationship in Neolithic Britain.

Comparable Neolithic assemblages in the North East of Scotland are few and far between. A single sample from a Neolithic mound at Boghead, Moray (Maclean and Rowley-Conwy 1984) contained a predominance of six-row naked barley (88%) with some emmer wheat (11%), coupled with a few hazelnut fragments and various weeds of cultivation. The most comprehensive comparable assemblage comes from the timber hall at Balbridie, adjacent to the river Dee (Fairweather and Ralston 1993). The site consisted of a large rectilinear structure that had burnt down, carbonising thousands of stored cereal grains. Emmer wheat (80%) was the most abundant grain, with some six-row naked barley (18%) and a little bread wheat (2%). This predominance of emmer wheat with a lesser proportion of naked barley is mirrored by the assemblage at Dubton, though Dubton has more evidence of crop-processing debris than the grain product at Balbridie. Both sites have evidence of hazelnut and crab apple macrofossils, though again Dubton has evidence for the processing of the gathered plants rather than the stored product. It is tempting to view the Dubton assemblage as the remains stemming from a site processing plant foodstuffs (a 'producer' site; Hillman 1981; Jones 1985) whilst the large structure at Balbridie represents a central place where the processed remains are stored (a 'consumer' site). However, more comparable assemblages would be needed to test this assumption in detail (cf. van der Veen 1991).

The predominance of emmer wheat in the Neolithic arable economy seems to only occur in the North East of Scotland, probably due to the favourable climate and soils for its cultivation in the region. Comparable Neolithic assemblages across the rest of Scotland generally have a greater proportion of naked six-row barley that is more suited to the wetter climate and soils (Boyd 1988; Dickson and Dickson 2000). Gathered foodstuffs, especially hazelnuts, are also an important component of the plant economy at these sites. Therefore, the assemblage from Dubton Farm is an important addition to the emerging regional mosaic of crop husbandry and plant gathering in Neolithic Scotland.

The Iron Age material recovered from the basal fills of the souterrain seems to have had a more complex

Table 9 *Carbonised plant remains: Iron Age identifications.*

DUBTON FARM, BRECHIN (1)		**A175 basal grid**		
sample		226	227	225
context		A175/14	A175/14	A175/14
phase		Iron Age	Iron Age	Iron Age
context type		souterrain basal fill	souterrain basal fill	souterrain basal fill
volume (litres)		5	5	5
cultivated species	**common name**			
Hordeum				
H. sp.	barley grain	1	2	2
H. naked	naked barley grain			
H. naked symmetric	naked barley straight grain			
H. naked asymmetric	naked barley twisted grain			
H. hulled	hulled barley grain			2
H. cf. hulled	cf. hulled barley grain			1
H. hulled symmetric	hulled barley straight grain			1
H. hulled asymmetric	hulled barley twisted grain			3
H. sp.	barley rachis			1
H. vulgare L.	six-row barley rachis			
H. distichum L.	two-row barley rachis			1
Triticum				
T. sp.	wheat grain			
T. aestivo-compactum	bread wheat grain			
T. dicoccum L. Schubl.	emmer wheat grain			1
T. dicoccum L. Schubl.	emmer wheat glume base			
Avena				
A. sp.	oat grain	2	3	3
A. sativa L.	cultivated oat floret base			
A. fatua L.	wild oat floret base			
other cereals				
cereal indeterminate	indeterminate cereal	3		2
cereal/monocotyledon (>2 mm)	culm node			
cereal/monocotyledon (<2 mm)	culm node	1		2
cereal/monocotyledon (>2 mm)	culm base	3		1
cereal/monocotyledon (<2 mm)	culm base			9
indeterminate (>2 mm)	rhizome			
wild species				
Ranunculus spp.	buttercup achene			
Ranunculus repens L.	creeping buttercup achene			1
Fumaria officinalis L.	common fumitory nutlet			
Corylus avellana L.	hazel nutshell fragment			
Chenopodiaceae undiff.	goosefoot seed			
Chenopodium/Atriplex spp.	goosefoot/orache seed		1	
Chenopodium album L.	fat-hen seed	3	1	1
Spergula arvensis L.	corn-spurrey seed			
Persicaria lapathifolia (L.) G	pale persicaria nutlet			2
Persicaria maculosa Gray	redshank nutlet			2
Polygonum spp.	knotgrass nutlet	1		
Polygonum aviculare L.	knotgrass nutlet	1		
Fallopia convolvulus (L.) A L	black-bindweed nutlet			
Rumex acetosella L.	sheep's sorrel nutlet			
Rumex acetosa L.	common sorrel nutlet			
Rumex obtosifolius/crispus L.	broad leaved / curled dock nutlet			
Viola palustris L.	marsh violet seed			
Brassica/Sinapis spp.	cabbage/mustard seed		3	2
Raphanus raphanistrum L.	wild radish fruit			
Calluna vulgaris (L.) Hull.	ling heather capsule			1
Rubus idaeus L.	raspberry fruitstone			
Sorbus sp.	whitebeam seed			
Stachys spp.	woundwort fruit			
Galeopsis subg. Galeopsis	hemp-nettle nutlet			
Galeopsis tetrahit L.	common hemp-nettle nutlet			
Ajuga reptans L.	bugle seed			1
Plantago lanceolata L.	ribwort plantain seed			
Asteraceae undiff.	daisy seed			
Lapsana communis L.	nipplewort achene			
Eleocharis palustris (L.) R & S	common spike-rush nutlet			
Carex spp. (biconvex)	sedge nutlet			
Carex spp. (trigonous)	sedge nutlet			
Poaceae undiff. (medium)	grass medium grain			
Poa annua L.	annual meadow-grass grain			
Bromus spp.	brome grain			
Danthonia decumbens L.	heath-grass grain			
indeterminate	seed/fruit	1		2
Cenococcum	fungal sclerotia			
totals				
total quantifiable components		16	10	41
quantifiable components/litre		3.20	2.00	8.20
grain proportion (%)		37.5	50	36.6
chaff proportion (%)		18.75	0	7.3
wild species proportion (%)		43.75	50	56.1

187	188	189	399	327	324
A175/14	A175/14	A175/14	A175/17	A175/17	A175/17
Iron Age	Iron Age	Iron Age	Iron Age	Iron Age	Iron Age
souterrain basal fill	souterrain basal fill	souterrain basal fill	souterrain basal fill	souterrain basal fill	souterrain basal fill
5	5	5	1	5	5
	3	1		2	
1	5	2	1		
	2			1	
	2				1
					1
				1	
	1				
	3		1		
		1			
1	1	2			
					1
	2			3	12
2	5	2		2	7
4	12	1		36	60
1	1	1		3	6
		1			
				1	2
	3	2	1	1	2
				4	1
1	4	1		4	8
1					
				1	1
					2
				1	
	1				1
				1	
1					
					3
	1				
	1	1			
1				1	1
2	1				
				2	5
	2	2		4	4
15	50	17	3	68	118
3.00	10.00	3.40	3.00	13.60	23.60
13.3	32	29.4	66.7	5.9	0.9
13.3	12	17.7	0	2.9	7.6
73.4	56	52.9	33.3	91.2	91.5

Table 9 *Carbonised plant remains: Iron Age identifications (continued).*

key f fragment

DUBTON FARM, BRECHIN (2)					
sample		328	323	384	
context		A175/17	A175/17	A175/17	l fil
phase		Iron Age	Iron Age	Iron Age	
context type		souterrain basal fill	souterrain basal fill	souterrain basal fill	
volume (litres)		5	5	1	
cultivated species	**common name**				
Hordeum					
H. sp.	barley grain				
H. naked	naked barley grain				
H. naked symmetric	naked barley straight grain				
H. naked asymmetric	naked barley twisted grain				
H. hulled	hulled barley grain	1			
H. cf. hulled	cf. hulled barley grain				
H. hulled symmetric	hulled barley straight grain				
H. hulled asymmetric	hulled barley twisted grain				
H. sp.	barley rachis				
H. vulgare L.	six-row barley rachis				
H. distichum L.	two-row barley rachis				—
Triticum					
T. sp.	wheat grain				
T. aestivo-compactum	bread wheat grain				
T. dicoccum L. Schubl.	emmer wheat grain				
T. dicoccum L. Schubl.	emmer wheat glume base				—
Avena					
A. sp.	oat grain				
A. sativa L.	cultivated oat floret base				
A. fatua L.	wild oat floret base				—
other cereals					
cereal indeterminate	indeterminate cereal		1		
cereal/monocotyledon (>2 mm)	culm node	2			
cereal/monocotyledon (<2 mm)	culm node	13	16		
cereal/monocotyledon (>2 mm)	culm base	7	15		
cereal/monocotyledon (<2 mm)	culm base	45	140		
indeterminate (>2 mm)	rhizome	15	11		—
wild species					
Ranunculus spp.	buttercup achene	1			
Ranunculus repens L.	creeping buttercup achene				
Fumaria officinalis L.	common fumitory nutlet				
Corylus avellana L.	hazel nutshell fragment				
Chenopodiaceae undiff.	goosefoot seed		1		
Chenopodium/Atriplex spp.	goosefoot/orache seed				
Chenopodium album L.	fat-hen seed				
Spergula arvensis L.	corn-spurrey seed				
Persicaria lapathifolia (L.) G	pale persicaria nutlet		2		
Persicaria maculosa Gray	redshank nutlet		3		
Polygonum spp.	knotgrass nutlet		1		
Polygonum aviculare L.	knotgrass nutlet		1		
Fallopia convolvulus (L.) A L	black-bindweed nutlet				
Rumex acetosella L.	sheep's sorrel nutlet				
Rumex acetosa L.	common sorrel nutlet				
Rumex obtosifolius/crispus L.	broad leaved / curled dock nutlet				
Viola palustris L.	marsh violet seed				
Brassica/Sinapis spp.	cabbage/Mustard seed				
Raphanus raphanistrum L.	wild radish fruit	1			
Calluna vulgaris (L.) Hull.	ling heather capsule				
Rubus idaeus L.	raspberry fruitstone				
Sorbus sp.	whitebeam seed				
Stachys spp.	woundwort fruit				
Galeopsis subg. Galeopsis	hemp-nettle nutlet				
Galeopsis tetrahit L.	common hemp-nettle nutlet				
Ajuga reptans L.	bugle seed				
Plantago lanceolata L.	ribwort plantain seed				
Asteraceae undiff.	daisy seed				
Lapsana communis L.	nipplewort achene				
Eleocharis palustris (L.) R & S	common spike-rush nutlet				
Carex spp. (biconvex)	sedge nutlet		7		
Carex spp. (trigonous)	sedge nutlet		1		
Poaceae undiff. (medium)	grass medium grain		2		
Poa annua L.	annual meadow-grass grain				
Bromus spp.	brome grain				
Danthonia decumbens L.	heath-grass grain	2	7		
indeterminate	seed/fruit		4		
Cenococcum	fungal sclerotia				—
totals					
total quantifiable components		87	212	0	
quantifiable components/litre		17.40	42.40	0.00	
grain proportion (%)		1.2	0.5	0	
chaff proportion (%)		10.3	7.1	0	
wild species proportion (%)		88.5	92.4	0	

	A175 associated		**C013 burnt grid**		
250	59	48	54	74	421
A175/17	A179	A181	A185	A189	C013/3
Iron Age	Iron Age	Iron Age	Iron Age	Iron Age	Iron Age
souterrain basal fill	pit fill	posthole fill	pit fill	slot fill	souterrain lower fill
1	5	5	5	5	5
			1	1	
1	1			1	1
				1	
			2	2	
					1
				2	
	5			1	1
	2				
				1	
				1f (0.01)	
			2	2	
		1			
				2	
			1	1	
				1	1
		1			
					1
					1
			1		1
					1
			1	1	
				1	2
					17
1	8	2	8	18	10
1.00	1.60	0.40	1.60	3.60	2.00
100	12.5	0	37.5	33.3	10
0	0	0	0	11.1	0
0	87.5	100	62.5	55.6	90

Table 9 *Carbonised plant remains: Iron Age identifications (continued).*

Dubton Farm, Brechin (3)				
sample		412	420	415
context		C013/3	C013/3	C013/3
phase		Iron Age	Iron Age	Iron Age
context type		souterrain lower fill	souterrain lower fill	souterrain lower fil
volume (litres)		5	5	5
cultivated species	**common name**			
Hordeum				
H. sp.	barley grain		1	
H. naked	naked barley grain			
H. naked symmetric	naked barley straight grain			1
H. naked asymmetric	naked barley twisted grain			
H. hulled	hulled barley grain			
H. cf. hulled	cf. hulled barley grain			
H. hulled symmetric	hulled barley straight grain	1		
H. hulled asymmetric	hulled barley twisted grain			
H. sp.	barley rachis			
H. vulgare L.	six-row barley rachis			
H. distichum L.	two-row barley rachis			
Triticum				
T. sp.	wheat grain			
T. aestivo-compactum	bread wheat grain			
T. dicoccum L. Schubl.	emmer wheat grain			
T. dicoccum L. Schubl.	emmer wheat glume base			
Avena				
A. sp.	oat grain	1		5
A. sativa L.	cultivated oat floret base			
A. fatua L.	wild oat floret base			
other cereals				
cereal indeterminate	indeterminate cereal			
cereal/monocotyledon (>2 mm)	culm node			1
cereal/monocotyledon (<2 mm)	culm node			
cereal/monocotyledon (>2 mm)	culm base			5
cereal/monocotyledon (<2 mm)	culm base		1	6
indeterminate (>2 mm)	rhizome			1
wild species				
Ranunculus spp.	buttercup achene			
Ranunculus repens L.	creeping buttercup achene			
Fumaria officinalis L.	common fumitory nutlet			1
Corylus avellana L.	hazel nutshell fragment			
Chenopodiaceae undiff.	goosefoot seed			
Chenopodium/Atriplex spp.	goosefoot/orache seed			2
Chenopodium album L.	fat-hen seed		1	2
Spergula arvensis L.	corn-spurrey seed			
Persicaria lapathifolia (L.) G	pale persicaria nutlet			2
Persicaria maculosa Gray	redshank nutlet	1	1	2
Polygonum spp.	knotgrass nutlet			1
Polygonum aviculare L.	knotgrass nutlet		1	1
Fallopia convolvulus (L.) A L	black-bindweed nutlet	1		
Rumex acetosella L.	sheep's sorrel nutlet		2	
Rumex acetosa L.	common sorrel nutlet			
Rumex obtosifolius/crispus L.	broad leaved / curled dock nutlet			
Viola palustris L.	marsh violet seed			
Brassica/Sinapis spp.	cabbage/mustard seed			
Raphanus raphanistrum L.	wild radish fruit			
Calluna vulgaris (L.) Hull.	ling heather capsule			
Rubus idaeus L.	raspberry fruitstone			
Sorbus sp.	whitebeam seed			
Stachys spp.	woundwort fruit			
Galeopsis subg. Galeopsis	hemp-nettle nutlet			
Galeopsis tetrahit L.	common hemp-nettle nutlet			
Ajuga reptans L.	bugle seed			
Plantago lanceolata L.	ribwort plantain seed			
Asteraceae undiff.	daisy seed			
Lapsana communis L.	nipplewort achene			
Eleocharis palustris (L.) R & S	common spike-rush nutlet			
Carex spp. (biconvex)	sedge nutlet			
Carex spp. (trigonous)	sedge nutlet			
Poaceae undiff. (medium)	grass medium grain			1
Poa annua L.	annual meadow-grass grain			
Bromus spp.	brome grain	2		
Danthonia decumbens L.	heath-grass grain		1	4
indeterminate	seed/fruit		1	
Cenococcum	fungal sclerotia	25	13	5
totals				
total quantifiable components		6	9	35
quantifiable components/litre		1.20	1.80	7.00
grain proportion (%)		33.3	11.1	17.1
chaff proportion (%)		0	0	17.1
wild species proportion (%)		66.7	88.9	65.8

	C011					
418	138	120	365	236	330	372
C013/3	C011/1	C011/2	C011/4	B137	B137/2	B137/3
Iron Age	Iron Age	Iron Age	Iron Age	Iron Age?	Iron Age?	Iron Age?
souterrain lower fill	souterrain top fill	souterrain middle fill	souterrain basal fill	pit fill	pit fill	pit fill
5	5	2.5	10	5	5	1
3	3		1	5	6	69
			1			1
	1					
			1			
2	2			11	18	39
				2		23
	2			1	6	32
	1			3	7	59
						5
						2
						1
	2					
2	1					
2	8	1		4	5	82
						2
	1					
	9	1	1		5	18
1						
2	1					
2	2					
12						
1	1					
1						
4						2
2					1	29
5						3
4						20
				1		
1						
1						
	2			2		
						3
1						
1						
1						
			1			2
1	1					
2						
1						1
4		1				
3	1			1		
30						
59	38	3	5	30	48	393
11.80	7.60	1.20	0.50	6.00	9.60	393.00
11.9	73.7	66.7	80	86.7	97.9	82.4
8.4	10.5	0	0	0	0	2.3
79.7	15.8	33.3	20	13.3	2.1	15.3

taphonomic history than the earlier remains. It seems to represent the dumping of the dismantled superstructure, following its deliberate destruction by fire nearby. This firing and subsequent dumping of the material can be seen as a form of closure for the souterrain (Armit 1999). With this taphonomic explanation in mind, it can be argued that the plant remains dumped with the carbonised timbers will represent different structural components of the souterrain as well as remnants of material within it. Hence, the recovery of abundant grass material may represent grasses in the structure or turf as part of the roof. The presence of largely hulled six-row barley (*H. vulgare* L. var. *vulgare*) with some oat grains (*Avena* sp.) in all three examined souterrains, suggests processed grain may have been a remnant of the material stored in the souterrain. This supports the interpretation for the function of souterrains as grain storage features, favoured by Watkins (1980), Barclay (1981) and Armit (1999). Similar assemblages were recovered from the basal fills from the souterrains at Cyderhall (Boardman 1993) and Redcastle (Alexander 1998). However, the function for any one souterrain can only be truly evaluated with *in situ* burnt remains. The complex taphonomic history of the souterrain fills and the pits associated with the largest souterrain A175, means the weed ecology associated with the crop is difficult to evaluate. However, it seems that more marginal areas than those cultivated in the Neolithic were being used in the Iron Age. A coherent weed assemblage associated with a hulled six-row barley crop with some cultivated oat was recovered from this pit, with species such as Pale persicaria (*Persicaria lapathifolia* L. Gray) and Common spike-rush (*Eleocharis palustris* L. Roemer and Schultes) indicating wetter ground for the cultivation. A single fruitstone of raspberry (*Rubus ideaus* L.) and a fragment of hazelnut (*Corylus avellana* L.) were found in the fill of souterrain C013 and a pit associated with souterrain A175 respectively, showing the relative dominance of arable agriculture compared to gathered plant foodstuffs in the Iron Age. Therefore, the use of more marginal land for cultivation, coupled with the lack of gathered foodstuffs from woodland, indicates the opening up of the landscape in the lowlands, presumably as a result of settlement expansion, population pressures and advances in arable technology in the later prehistoric period.

Radiocarbon dates

Radiocarbon dates were obtained from carbonised fruit and nuts in preference to charcoal as these represent a single season of growth. Similarly, willow or birch was selected in preference to the oak from the souterrains in case the oak was re-used or from 'ancient' oaks which would have expanded the age-range. The recovered hazel, according to the tree-rings, is likely to be no more than 10–12 years old. Budgetary restraints limited the dating samples to four.

Plant remains

A single radiocarbon date (AA-39949) was obtained from one of the two small pits that were packed full of carbonised plant remains to the west of Area B. This came from a piece of carbonised apple. A very similar date was obtained from a burnt hazelnut shell recovered from one of the pits in a cluster to the north-east of area B (AA-39948). The latter date is also consistent with the pottery assemblage found within the pit. Statistically then, these two features are contemporary.

Large Neolithic pits

A single date (AA-39951) was obtained from a piece of carbonised hazel wood within one of the upper fills of a large pit in Area B. This date is very broadly contemporary with the other Neolithic dates obtained from plant remains: all fall within the period conventionally termed the Early Neolithic. However, this date is earlier than the other two and they do not overlap. This suggests that the curious large pits associated with food processing may represent the earliest dated activity on the site.

Souterrains

A single radiocarbon date (AA-39950) was recovered from the most stratigraphically complex souterrain on the site. The date came from a piece of hazel within a lower fill of the feature, but this does not seem to represent an *in situ* burnt timber framework.

Discussion

There seems to be three principal phases identifiable at Dubton; two of Neolithic activity and one of Iron Age. The earliest evidence is of Early Neolithic date, followed by indications of slightly later Neolithic use. These phases are defined by the presence of pits of various sizes containing plant processing debris and artefacts. Finally, Iron Age use can be determined: the duration of

Table 10 *Radiocarbon dates from Dubton Farm.*

lab no.	material	context	years BP	1 sigma	2 sigma
AA-39948 (GU-9094)	Corylus avellana shell	B187	4735+/-40	cal BC 3632–3381	cal BC 3639–3374
AA-39949 (GU-9094)	Malus sp. apple	B215	4740+/-40	cal BC 3633–3382	cal BC 3640–3375
AA-39950 (GU-9094)	Corylus avellana	A175/16	1910+/-35	cal AD 35–129	cal AD 23–214
AA-39951 (GU-9155)	Corylus avellana	B233/1	4990+/-45	cal BC 3891–3707	cal BC 3940–3659

this remains unknown, although it continues into the early first millennium AD.

Phase 1: large pits

Perhaps the most interesting phenomenon identified were the large pits dated to the earlier fourth millennium cal BC. The pits did not appear either to mark a boundary or to define a space; nor is there apparent spatial patterning to this evidence. Although no overall plan for the pits could be determined, the appearance of three pairs of these pits seems to indicate that they did not just function in isolation.

It is almost impossible positively to identify a practical function for these pits. They are all of similar size and profile that may have been related to their use. The depositional sequence within them indicates something other than either routine storage or the simple disposal of domestic waste material. There was no evidence of post- or stake-holes to suggest that there had been any structure placed around or over the pits.

It is not clear how these pits would have been used while they were empty. What is more obvious is that the process of infilling them was a major feature of their use. We can be confident that the entire pit fill sequence constituted deliberate acts; there are no characteristics of naturally produced backfill. The pits may thus have been dug specifically for the burial of particular materials—and backfilled soon after excavation. There is no evidence as to where the upcast material (itself not of striking practical value) had been placed. Both the looseness of their fills and the unconsolidated sides of their cuts indicate that these large pits were filled rapidly and probably as a single event; there is no evidence either of stratification in individual fills, or in the overall fill compaction, which would indicate a lengthy or gradual filling process. The source of the filling materials is not obvious either, as the fills do not represent the material removed during excavation but rather a series of different, apparently natural and sterile deposits of silt, gravel and larger stones; as if the natural subsoil had been graded and the individual layers within the backfill of the pits had been taken from several graded piles of spoil. Certainly the pits are not symmetrical in their sections and the infilling process often appeared to have been conducted from one particular side. The pattern of deposition in at least one of the Dubton Farm pits (B059) indicates that the pit was initially backfilled rapidly and from one direction, south, where there is evidence of Neolithic activity in the form of a cluster of pits. A single pit from the site of Douglasmuir (Kendrick 1995) has a similar profile and dimensions and also contains layers of sterile soil sloping down from its sides. However this pit is isolated and occupies a dominant position in the centre of a rectilinear pit-defined enclosure.

The plant remains recovered from these two groups of features at Dubton are similar, with the exception that fewer gathered wild plants were present within the large pits. However, the contemporaneity of the large pits and the small pit clusters was not confirmed by the limited radiocarbon dating that could be undertaken.

After the initial rapid backfilling with mostly sterile deposits, the large pit seem to have had upper deposits placed within them, either in a recut or towards the top of the fill sequence. These uppermost deposits contained carbonised crop-processing debris and pottery. On-site deposition patterns show a difference between those features containing lithics and the large pits in which pottery was recovered. With the exception of two pieces from a single example, none of the lithics came from the large pits. Almost all of the large pits (A213 is the only exception) contained Carinated Bowl Ware. Two of this series (B233 and B161) also contained Neolithic Impressed Ware. Similar large Neolithic pits with recuts filled with stones, charcoal-rich soil and pottery have been found at Cowie Road, Bannockburn (Rideout 1997). The inclusion of a range of pottery debris indicates that a selection process had occurred. Had the pottery already been discarded before its subsequent incorporation in the pits or was it part of the debris associated with the food processing activities also recognized within these fills? The sherds may have come from a pile of discarded vessels placed close to the presumed activity area. One pit in particular (B233) contained 52 fragmentary and incomplete vessels, which seems to suggest selection from a larger pile of debris in the vicinity.

No evidence was found of any activity occurring within the pits themselves. Perhaps the pits were deliberately kept clean, or were cleaned prior to infilling. The large pits at Dubton Farm could have been used, cleaned out, then rapidly backfilled (presumably from local mounds of spoil) incorporating traces of the byproducts of nearby activities, rather than ones actually occurring within the pits themselves. The pit fill formation processes, for example, indicate that the plant remains are derived from discarded material rather than *in situ* burning. The lack of erosion on the pit cuts suggests that it is highly probable that they were deliberately infilled not long after (or immediately after) excavation. If the purpose of pits is indeed for the placement of particular materials (Kinnes 1994), then the specific activity relating to this placement at Dubton Farm seems to be associated with processing. The cultivated plant remains recovered from the upper fills of the pits suggest that the source of the deposits derived from various stages of crop-processing.

There was no unambiguous evidence for Neolithic domestic structures, permanent or otherwise, visible in the subsoil at Dubton. Whether the evidence for permanent or temporary occupation has been removed, or whether the site users moved through the landscape to a base in the vicinity is not clear. The lithic assemblage alone indicates that some degree of mobility was vital, showing a familiarity with places (and people) beyond the immediate vicinity. These people most likely practiced an economy that incorporated both mixed agriculture and the intensive exploitation of seasonal wild resources. Dubton seems to have been a production site,

to judge from the crop-processing debris, probably used seasonally, with an emphasis on late summer-early autumn. It is likely that the processing of harvested and gathered plant remains was one specific element of the routine use of a wider landscape.

Some of the contents of the fills that have been deposited in recuts may be evidence of structured deposition as witnessed at Douglasmuir, Angus (Kendrick 1995). The group who utilised the site at Dubton could have maintained a link between themselves, the place and the activity by burying significant byproducts of plant processing in the activity area. It is clear that the infilling process suggests the deliberate, rather than accidental, inclusion of specific material—selected artefact and ecofact rich deposits—thus betokening organised deposition. Whether this represents the controlled deposition of significant materials, or that the act of deposition alone was important, is not understood. If the deposited material had been selected from a midden containing the debris of communal activities, the deposition could act as a way of either committing an event to memory (Thomas 2000), or of commemorating events like a seasonal period of occupation. The discarded material was not just rubbish; it was ultimately integral to society and represented one element of a Neolithic way of life. It is hoped that similar, if less enigmatic, pits will be identified elsewhere in the future, thereby clarifying the purposes of such early Neolithic deposition (cf. Whittle 1999). Until then, the exact function of such large early Neolithic pits remains open to debate.

Phase 2: pit clusters

Both the pottery and the radiocarbon dating evidence suggest that there is a temporal difference within the Neolithic evidence between the initial, large pits and a second set of Neolithic pits. The plant material, contrastingly, is almost consistent between the two series, although with the notable difference that the large pits contain no evidence for wild plant use. Although the NE pit cluster in Area B contains almost exclusively Neolithic Impressed ware (and one instance of a possible Grooved ware vessel), the rest of the smaller pits considered here contain both Neolithic Impressed and Carinated Bowl wares. The co-existence of two distinct pottery groups is not too problematic. At Wellbrae in Lanarkshire (Alexander, in prep), differing pottery types were found to be mutually exclusive: there deposits of early Neolithic and Impressed wares were retrieved from separate small pits. At Dubton Farm the inclusion of different wares in a single fill is not believed standardly to indicate the later incorporation of residual material, but it can be noted that more of the small pits contain Impressed wares and more of the large pits contain Carinated Bowl ware. It is important to stress that limited radiocarbon dating of each of the two pit types shows the small pits to be later, and, whilst the sample size is very small, the dates do not overlap.

The difficulties of interpretation when isolated negative features are the only surviving evidence for prehistoric activity on a site are obvious. These small pits cannot be regarded as structures, either domestic or otherwise. If contemporary domestic structures existed on site they have been removed by erosion; alternatively, the users may have been part of a more transient society that has been proposed for the earlier stages of the Neolithic in some areas of Britain (Pollard 1997). The Neolithic radiocarbon dates from Dubton spanned over 300 years, and clearly that activity is likely to have extended, even briefly, either side of this span.

The small pits seem to represent a utilitarian form used for a specific processing activity. There is evidence for the exploitation and processing of both wild food resources and cultivated cereals. A serrated flint blade from one of the small pits is of a type traditionally associated with harvesting. The surviving plant material had been carbonised, possibly having been deliberately or accidentally incorporated into domestic hearths and subsequently either thrown away or deliberately placed in the pits. Crop-processing debris was also tentatively identified at Wardend of Durris (Russell-White 1995) but there it was mixed with domestic refuse and found in association with possible traces of a Neolithic timber structure. However, the plant macrofossil evidence at Dubton indicates a non-domestic origin for the debris retrieved from the pits, particularly for the plant-rich cluster of pits in the centre of Area B.

The pit clusters are the only visible Neolithic element pointing to the structuring of activities in particular areas. The shallow nature of the small pits could lead to their interpretation as hearths, but this is problematical as there are so many and none of them overlap by accidental recutting. The individual pit clusters seem to have been open simultaneously, or earlier pits were at least marked on the surface while other pits were created. It is difficult to assign any particular function to them; if they were hearths, they showed minimal burning *in situ*. It seems likely that they had some other function. Perhaps these pits also bear witness to patterns of deliberate infilling, of both artefactual and non-artefactual material. Ritual deposition has also been found at the early Neolithic site of Beckton Farm (Pollard 1997) where pottery was deposited alongside human remains. It is likely that everyday activities were undertaken within specific social and ritual parameters that both simplified and constrained the life of the Neolithic users of the site at Dubton Farm.

The Neolithic use of the site can be seen as a specific-purpose activity. Most likely it was seasonal and part of a wider use of sites within the landscape, which must have included domestic settlement elsewhere.

Phase 3: Iron Age structures and souterrains

Evidence for Iron Age activity is dominated by the souterrains and is enhanced by assorted postholes and pits. The souterrain features identified at Dubton Farm

are interesting examples that vary from the traditional idea of a souterrain in several ways, most notably in scale. In terms of the scale of these features the closest parallels seem to be the ditched features at Dalladies (Watkins 1978–80), less than 10 km to the NE of Dubton, which were also associated with timber structures, paving and pits with heat-affected contents.

At Dalladies a village of circular timber framed houses was associated with a variety of ditched, souterrain-type features, which have similarities with what have been regarded as typical souterrains. Some Roman pottery was recovered from these ditched features. Some of these ditches were felt to have once contained timber uprights, perhaps a framework of timber revetting as is equally possible, but not demonstrable, at Dubton Farm. Watkins interpreted the ditches as a local, precocious form of souterrain. All four features at Dubton Farm have been interpreted as souterrains despite their unusual size. It is likely that if the smallest, C001, had been found in isolation it would not have been called a souterrain, however, given the proximity and remarkable similarity of the two examples situated almost immediately beside it, it seems difficult not to group them together. It seems that souterrains, once their main characteristics (as long, curved, underground passages) had been established, could be constructed in any number of ways according to local circumstances. It may be argued that the incorporation of the 'meaning' of the souterrain elements into varied constructions is what permitted the contemporary perception of them as souterrains, rather than the actual feature or its individual purpose. Armit (1999) suggests that a particular social significance was reflected in the labour-intensive construction of the large stone-lined 'Southern Pictland' group of souterrains, but this cannot be the case for smaller souterrains in the same area. Indeed, Watkins called the souterrain features at Dalladies 'ridiculously small' in comparison with the (15–40m long) Southern Pictland group classified by Wainwright (1963). He rightly points out that these enormous souterrains may have been the exception rather than the norm, not least when what they may have contained is considered.

The small souterrains at Dubton Farm seem to show evidence of storage on an individual, rather than a corporate, level. Alternatively the smaller souterrains here, especially C001 and C011 which could have been initially excavated in less than a few hours, are witness to something completely different. These examples, which did not have complex fill sequences, did not contain any artefacts or show evidence for a revetted framework, were cut into mostly soft sand. This may have been an area that was used by local inhabitants (perhaps associated with the souterrain in Area A), who perhaps excavated some of the souterrain shapes as play or practice? In the soft sand, no great effort would have been required to excavate them. The souterrains, however, do not represent a poorer standard of work, they are simply small; in effect, they are miniature replicas of larger souterrains.

Despite their small size compared to the conventional souterrains of Angus these features still provided a significant volume of storage space. It would be difficult confidently to term C001 a 'passage' or indeed a''chamber' although it is certainly related to the larger structures on-site which clearly are describable in these terms. It is worth remarking that, in the case of C001, even if it had been roofed and functioned as a proper souterrain, it could only have been accessed with any degree of ease by a child. If built as a storage facility, perhaps a different access method was employed. Perhaps these small souterrains were only accessed from above, effectively consisting of hanging storage via a roofing framework, or were only partially covered, being situated within a building of which no trace now remains. Their use for hanging storage would help to explain the lack of localised floor erosion on the soft sandy bottoms of the souterrains. Had the feature been consistently walked in, a floor would have been needed to avoid erosion of the soft sand deposits. No evidence of stakeholes was identified to indicate a planked or raised floor within these small souterrains, and even a simple floor lining of matting or of hide would not have protected the underlying sandy base from erosion, particularly that of souterrain A175 with its steep access slope. Hanging items from an overhead framework, or from the roof, would mean that any stored foodstuff would benefit from the cool temperature whilst avoiding contact with damp surfaces and minimising contact with rodents and creeping insects.

Timber-framed souterrains have also been postulated at Redcastle (Alexander 1998) and at Cyderhall (Pollock 1992) amongst others. At Dubton, however, charcoal identification has provided detail on the abundance of roundwood charcoal in the initial fill layers in A175 and suggested that this is unlikely to represent *in situ* collapse of a timber/wattle framework (Cressey *supra*). This debris suggests rather a deposit of tooled wood which had been burnt elsewhere and subsequently deposited within the lower fills of the souterrain when still hot enough to heat local pockets of sand. It is possible from the Dubton evidence to hypothesise that the souterrains had their superstructure removed or dismantled and that these were subsequently destroyed by burning and then deposited within the structures. A carbonised deposit rich in tooled oak and hazel roundwood was found towards the bottom of two of the souterrains. This material could have derived from either dismantled elements of a timber framework once constituting part of the souterrain, or from a structure, separate from, but associated with the souterrain. The deliberate destruction and conflagration did not take place within the cut for the souterrain itself, but could have occurred nearby, whereafter the resulting debris was partially backfilled into the empty souterrain. A fragment of quernstone was also deposited at this stage. These acts are now accepted as classic final stages in the use of a souterrain and are what Armit defines as a form of social closure for the structure (Armit 1999).

The lack of artefacts recovered from the souterrains is of note. The only artefacts found were two fragments of rotary quern from two of the features that had been deposited during the early stages of backfilling. The association of querns and souterrains is important and emphasises a link with grain.

A saddle quern was also recovered from a large pit close to souterrain A175, possibly contained within a structure associated with the souterrain.

The probable function of these features at Dubton was as storage, representing small, family-sized facilities. The site of Newmill (Watkins 1981b) showed a large stone-lined souterrain associated with a timber roundhouse and is perhaps the site most often proposed as the classic example of this form of association between underground storage facility and above-ground timber-built building. In light of the results of the work at Dubton Farm we should increasingly expect more diverse features to be recognised as part of this tradition in the future. The uniqueness of a site should not be stated as an unusual feature. As Armit (1999, 582) points out 'the manifest variation among souterrain forms and sizes across Scotland renders any suggestion of common function highly dubious'. The souterrain tradition thus needs to be reappraised to take into account these miniature features. This collection of souterrains at Dubton does not provide well-defined answers to the question of function, but these examples certainly enhance the diversity of features that can be grouped together as souterrains. None of the Dubton examples can be assigned to Wainwright's Southern Pictland tradition (1963) of large stone-lined structures, but they show that the builders of both the Southern Pictland series and the Dubton Farm features, were linked by a familiarity with a known regional building tradition.

Disappointingly, there were no features that could be confidently identified as the structural remains of a settlement associated with the souterrains, still less any clear examples of round timber-built houses. The interpretation of some features as postholes belonging to circular structures is necessarily tentative and is based on rings of putative postholes that can be traced within a concentration of pits. There is no stratigraphic link between any possible structure and the other elements of the site.

Nothing survived of any possible floors. It remains difficult to pronounce on whether any of the possible structures were contemporary with the souterrains, but the presence of Iron Age pottery has provided a roughly contemporary date for activity within the area.

The site of Dalladies, examined by Watkins, also has parallels with the possible structures at Dubton Farm. An arc of three postholes was found in association with one of the ditch-souterrain features there, and is similar to the double arc of three and four postholes that were identified in Area C. These remains could represent a partially-eroded circular structure but, although the subsoil has been truncated, it is difficult to believe that all trace of the rest of the structure has been completely destroyed. The postholes may then reflect a more irregular, or incomplete circular structure.

Unfortunately no artefacts or materials suitable for radiocarbon dating were recovered from these features. Further small post-defined structures, almost circular in plan and with a diameter of roughly 5m, could be identified between the two groups of souterrains.

Presuming that the informal above-ground structures represented by the surviving postholes and the souterrains do not belong to completely separate phases of occupation, the proximity of these possible structures to the souterrains is variable. Neither of the two sectors with possible structures is located immediately beside any of the souterrains. The main area displaying postholes lies equidistant between the two areas with souterrains, at a distance of approximately 25m from both. Although some postholes were found immediately beside the Area C group of souterrains these do not appear to represent a significant structure, and the best candidate for a possible structure identified in Area C lies almost ten metres to the south-east. It would be excessive to claim that posthole arrangements and souterrains are mutually exclusive; there is evidence around souterrain A175 that suggests that a circular structure may lie partially outwith the excavation area. A series of three postholes describe a rough arc, which appears to be structural, perhaps a component of a large building. If this were the case, the souterrain A175 would lie immediately beside the structure, which would incorporate at least two large pits within it. Interestingly, this would also accommodate the curve of the paved area (Illus 14). Paved structures beside other Angus souterrains are well documented: however, the area of paving close to souterrain A175 is unusual, as it stands proud of the subsoil surface. If it is assumed that a significant proportion of the original depth of any features have been planed away by agricultural activity over some considerable time, it seems odd that the paving, were it to be associated with the souterrain, should have survived intact. The two cannot be stratigraphically linked and the survival of the paving is certainly unusual unless it is of relatively recent age, but the association of the two can not be not discounted. A deep modern agricultural linear mark passed close to the western edge of the paving and would surely have disturbed the paving should it have extended to the west or south-west. However, no evidence for such disturbance was visible within either the topsoil or the subsoil here.

Conclusions

The archaeological excavations at Dubton Farm have provided a significant amount of new information from a range of features and artefacts that form an important contribution to our knowledge of prehistoric activity in Angus. The site revealed two distinct phases of settlement and use—an earlier, Neolithic, itself divisible, and later (Iron Age) prehistoric activity. The quantity of

artefacts recovered during both the evaluation and excavation stages of the fieldwork has greatly enhanced the limited artefactual record so far known from the area. In particular, the addition to the Neolithic pottery assemblage of Angus is noteworthy, it having increased almost tenfold with the addition of over 200 vessels from Dubton. The evidence for natural resource exploitation, and for cereal cultivation, by the Neolithic communities has been enhanced by the important plant remains found here. This is the largest Neolithic plant assemblage in terms of numbers of grains and seeds counted, and complements the assemblage from Balbridie to the north of the Mounth. The importance of the association of some of the pottery with lithics from secure contexts, coupled with this evidence for the exploitation of both natural and cultivated food resources, cannot be understated.

The results of this excavation have included a number of seemingly unique features. However, it must be remembered that the unique is not unusual within prehistoric archaeology, in so far as we have only a limited evidence framework to explain the characteristics of a site. Although it is currently impossible to determine the exact function of some of the features scattered across the site, it should be understood that this does not mean that the features were in any way exceptional during their use; it is only for the moment, as archaeological evidence begins to accumulate from the north-east lowlands, that they exist as enigmatic phenomena within the landscape.

Archive

The full project archive has been deposited with the National Monuments Record of Scotland. Copies of the reproducible elements of the archive will be deposited with the Angus Council Sites and Monuments Record. Finds disposal will be conducted through the Treasure Trove procedures.

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Abstract

Cropmarks of a possible prehistoric settlement were excavated in advance of development and a suite of archaeological features, representing a number of different phases of Neolithic and Iron Age origin, were identified. Many of the more substantial features were of early Neolithic date. At least six clusters of pits with charcoal-rich fills were recorded containing pottery and carbonised plant remains. Nine very large, deep and stratigraphically complex pits were identified cut into the gravel ridge, from which a considerable amount of Neolithic pottery was retrieved. Four Iron Age souterrains were identified and fully excavated: two produced fragments of rotary quern and large quantities of charcoal and charred timber. All of the souterrains were small in size. They were cut into soft subsoil but retained a vertical sided profile that suggests they had been timber-lined and rapidly backfilled. A number of adjacent features may represent above ground timber structures associated with the souterrains.

Keywords

Iron Age
Neolithic
pits
pottery
plant-processing
souterrains

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