

# The Lunan Valley Project: medieval rural settlement in Angus

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## ABSTRACT

*In 1983/4 the Lunan Valley Project (later named Angus Archaeology Project) investigated part of lowland Angus for evidence of medieval settlement and land management.*

*The likely enclosure ditches around two historically 'known' medieval settlements were identified from aerial reconnaissance. One was subsequently excavated at Chapelton, and its medieval date was confirmed, but limited excavation within the enclosure failed to locate contemporary houses. A single small excavation at Red Castle, Lunan Bay, provided indications of interrupted occupation on part of the hilltop site from the late prehistoric or early medieval period to the documented abandonment of the castle. Further excavation and ground survey in the area produced evidence of a disastrous medieval sandstorm taking valuable land out of cultivation and probably causing the desertion of a pre 13th-century settlement at Corbie.*

*Without excavation a study of land divisions (upstanding and identified from cropmarks) provided limited information on the rate of change of the countryside through the medieval period. Most major boundaries, and a few minor ones, survived in use from the last prehistoric period to, and through, the medieval period. But the location of settlement, generally unchanged from the earliest documentary references (late 12th century to 16th century) appears to have undergone changes in the preceding millennium.*

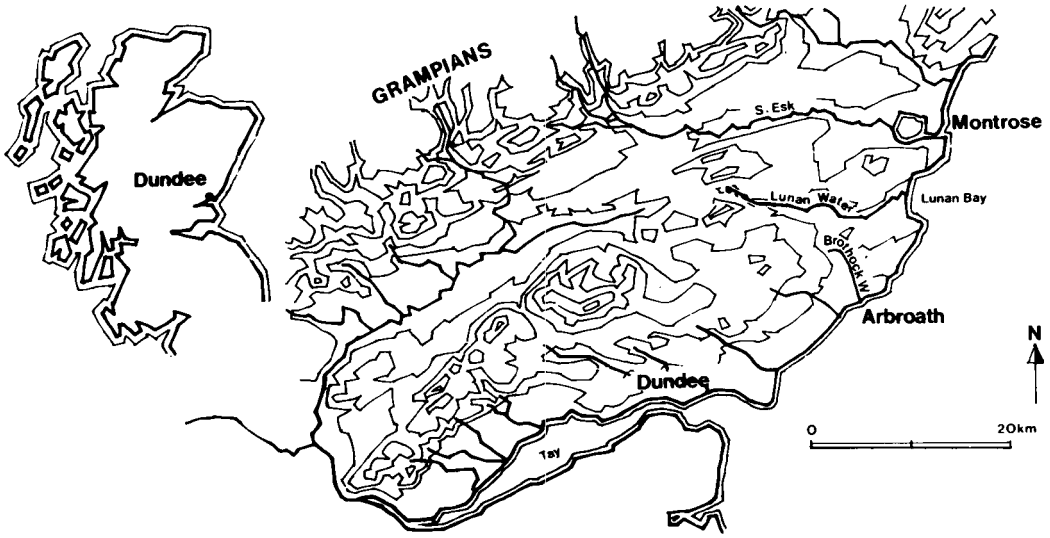
## INTRODUCTION

The gravels of the Lunan Valley, Angus encourage excellent conditions for cropmark photography. Archaeological sites defined in the ripening barley fields have been recorded since the 1960s, most extensively (and intensively) by the Royal Commission on Ancient and Historical Monuments of Scotland. The two most abundant recognizable monuments in the cropmark record are the barrow burial and the ring-ditch house (see Hill 1982 and Feachem 1965, 113–14 for definition). Both were investigated by excavation before 1982 (RCAMS 1978, 9; Kendrick 1982) and both belong broadly to the later prehistoric period. Before 1983 no medieval settlement sites could be identified confidently in the cropmark record (illus 1).

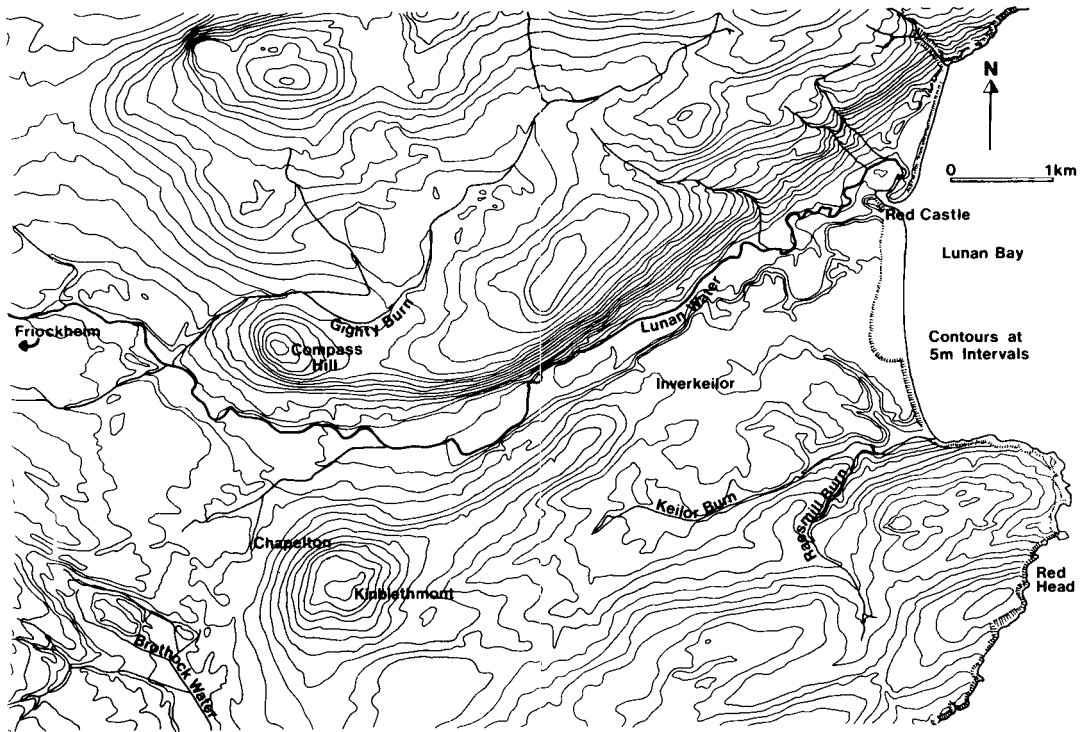
The fluvio-glacial sands and gravels producing good cropmark conditions in the area are restricted to the Lunan and Brothock valleys. Elsewhere the drift is predominantly boulder clay, with occasional lenses of gravel. Between Compass Hill and Kinblethmont Hill the gravels are found on narrow undulating terraces overlooking the alluvial floodplain; to the west the southern terrace spreads out around the headwaters of the Brothock Water (illus 2).

Towards Lunan Bay the narrow northern terrace backs against the foot of a basalt and andesitic

\*Douglasmuir Farmhouse, Friockheim, Angus



ILLUS 1 Lunan Valley: location



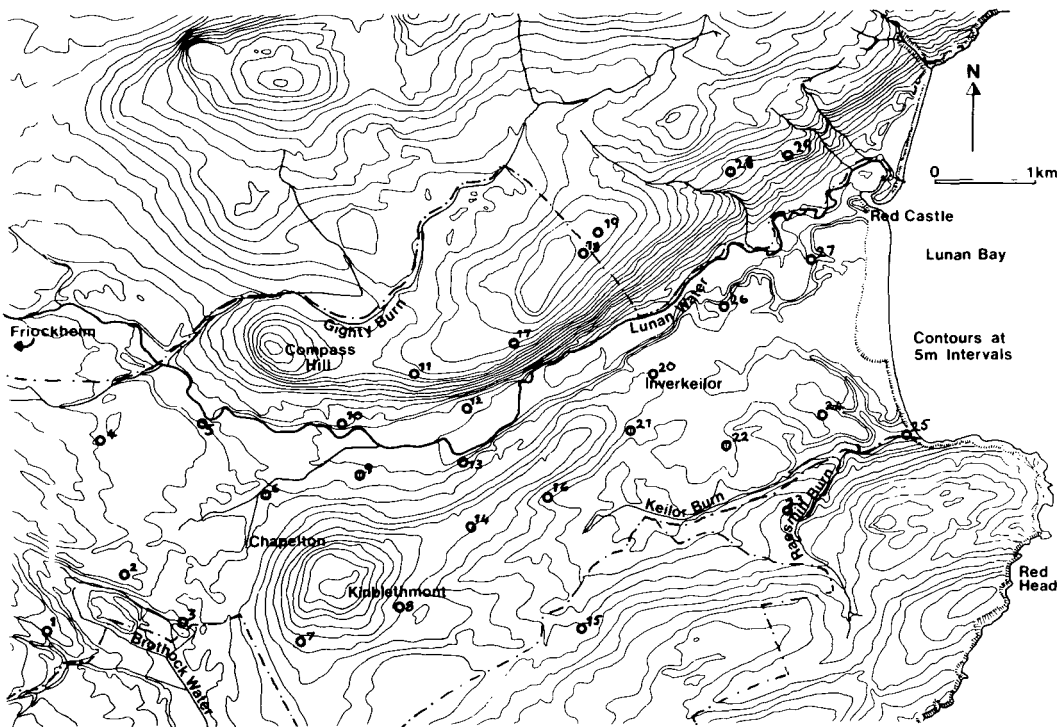
ILLUS 2 Lunan Valley E of Frickheim

lava ridge; the southern terrace backs against a parallel ridge of Lower Old Red Sandstone. Most prominent at Kinblethmont Hill, the sandstone ridge has been eroded to seaward by a high interglacial (or pre-glacial) sea, blanketed in marine clay around the headwaters of the Keilor Burn, and later covered by fluvio-glacial sands and gravels from Inverkeilor to Lunan Bay (Rice 1962, 14). Thus the undulating gravel terrace on the south side of the Lunan Water widens east of Inverkeilor and appears at Lunan Bay in a long fossil cliffline above the 25 foot raised beach from Red Castle to the mouth of the Keilor Burn. Beyond it to the south a second ridge of basalt and andesitic lava forms a headland just N of Red Head.

Since fieldwork in the Lunan Valley from 1982 to 1984 was based on the cropmark record (in particular the photograph collection of RCAMS), excavation and survey concentrated on the two wide gravel terraces SW of Compass Hill and Inverkeilor.

The investigations were undertaken by the Lunan Valley Project (renamed the Angus Archaeology Project in late 1983) as part of the Manpower Services Commission's Community Enterprise Project/Community Programme. The Project was sponsored by Tayside and Fife Archaeological Committee and, in late 1983 and early 1984, by Angus District Council's Department of Libraries and Museums.

The excavations at a late prehistoric site at Ironshill (1982) and in Arbroath (1982 and 1983) are not included in this report.



ILLUS 3 Pre 18th-century documented settlements, parish of Inverkeilor/Lunan: 1 Newton of Boysack, 2 Leys of Boysack, 3 Templeton, 4 Douglasmuir, 5 Boysack, 6 Westfield, 7 Kinblethmont Mains, 8 Kinblethmont Home Farm, 9 Lawton, 10 Waulkmill, 11 Hodgeton, 12 Bandoch, 13 Balmullie, 14 Gilchorn, 15 Brunton, 16 Bryanton, 17 Fallaw, 18 Hilton, 19 Arbikie, 20 Kirkton, 21 Myreside, 22 Anniston, 23 Inchock, 24 Newbarns, 25 Corbie, 26 Ironshill, 27 West Mains of Red Castle, 28 Courthill, 29 Hawkhill

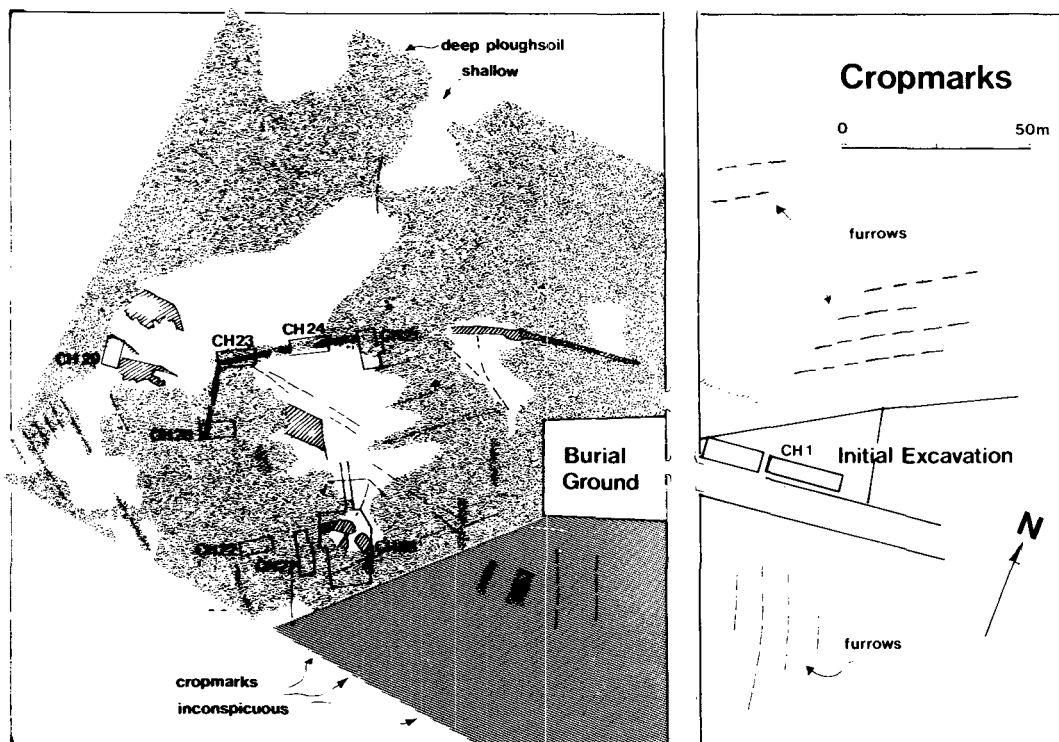
## MEDIEVAL RURAL SETTLEMENT

Outside the burghs in lowland Scotland the archaeological record of medieval settlement is poor. Between Friockheim and Lunan Bay the cropmark record is heavily biased towards the prehistoric, with only one potentially medieval group of buildings, at Anniston (NGR NO 673 489; RCAMS photos AN 3240, AN 4718). This imbalance is partly caused by the insubstantial nature of medieval buildings in contrast to the ring-ditch houses, producing no recognizable structures to associate with possible medieval enclosures. But it also owes much to continuous settlement on medieval sites to the present day. The early sites have generally been kept out of cultivation. A distribution map of late medieval settlement in the valley can be compiled from contemporary references (illus 3). This map compares closely with late 18th-century and modern ones. Earlier references, whilst containing recognizable farm names, provide insufficient data for constructing a map. Only Red Castle, Inverkeilor and Kinblethmont have histories reaching back to the 12th century.

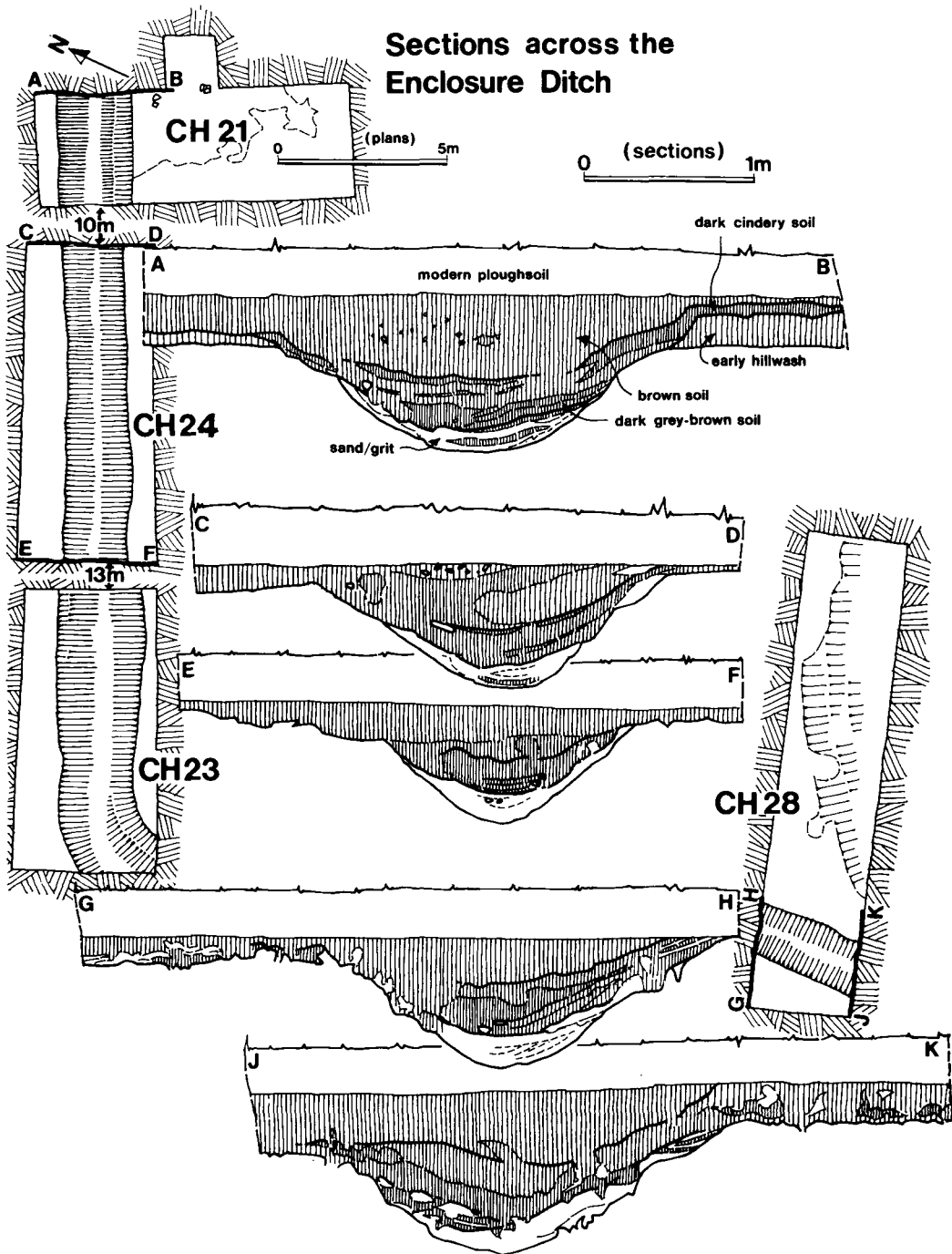
One priority of the Project in 1983 was to find and investigate a medieval settlement site under cultivation at Chapelton. Another was to investigate likely continuity into the medieval period; to this end a small excavation was undertaken at Red Castle. The Chapelton and Red Castle excavations form the main part of this report on medieval settlement.

### EXCAVATIONS OF THE BURIAL GROUND, CHAPELTON (CH20)

During four months from September to December 1983, eight trenches were cut in the recently harvested field W of the Chapelton burial ground. The first trench cut across the ditch recognized as a



ILLUS 4 Chapelton: cropmarks and location of trenches

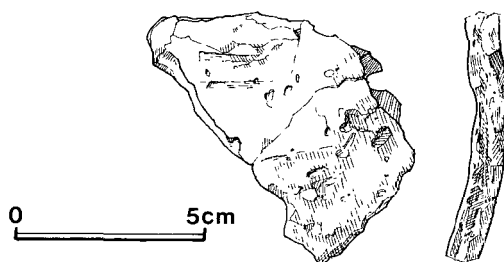


ILLUS 5 Chapelton: sections across the enclosure ditch

cropmark; when this produced stratified medieval material several trenches were opened to investigate the ditch further and to look for traces of contemporary vernacular buildings (illus 4). No dwellings were detected in the relatively small area stripped, but a group of four corn-drying kilns were exposed.

The enclosure ditch (illus 5; CH 21, 23, 24, 25, 28)

In five trenches a 28 m length of enclosure ditch was excavated (illus 5). In the northernmost trench at least the ditch had been cut through a cultivation soil overlying natural sand and gravel. In none of the trenches were there any traces of ploughing at the base of this soil, but in trench 21 the soil produced a large sherd of early pottery (illus 6). The base of a posthole detected low in the soil may be contemporary with the enclosure.



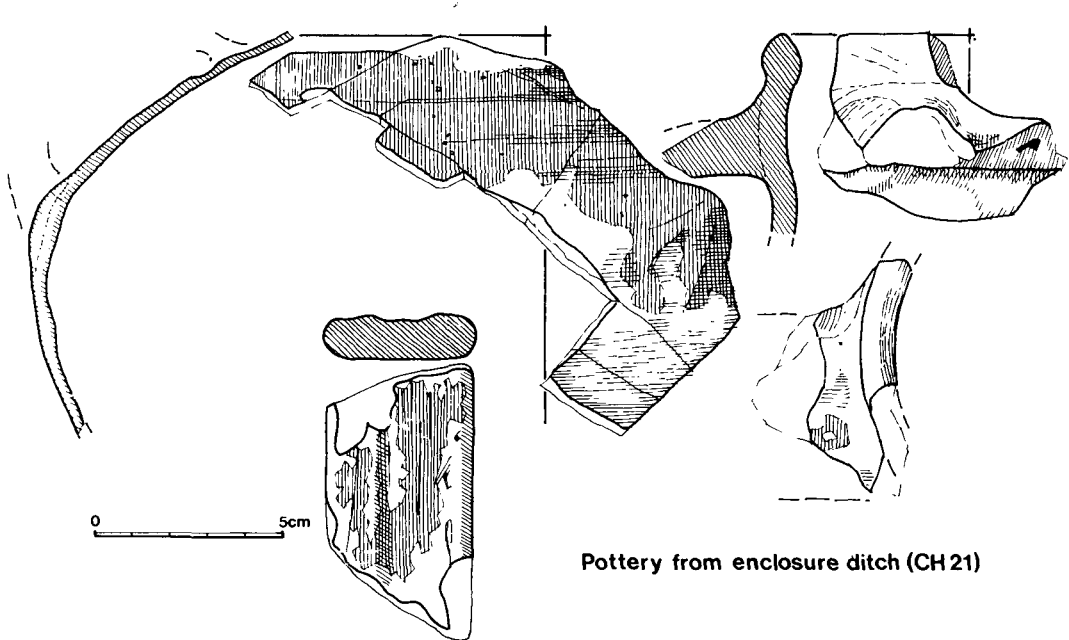
ILLUS 6 Chapelton: early pottery (CH21)

The excavated ditch varied in depth between 0.6 m and 0.9 m. The survival of a cindery soil sealing the east end of the ditch in trench 21 suggested that its original depth was only slightly more; severe truncation from ploughing would have dispersed this layer. Evidence for an external bank with the ditch is mostly negative.

In trench 23, in the angle of the ditch, a shallow feature had been cut respecting the edge of the ditch, beside the lip, without its subsequent infill being contaminated by upcast weathering from a sand and gravel bank. In trench 28 the eastern side of the ditch had a gentle slope lined with sandy clay and possibly trampled by animals, whilst the outer slope was steeper, more akin to a barrier.

There was no sign of recutting in the ditch, but occasional cleaning would have been necessary to maintain the feature for any length of time. Any such cleaning had been efficient; the only deposits found in the ditch represented a gradual infilling late in its use. Dirty sand and grit at the base, slumped from the weathered sides and bank, were separated into layers by occasional lenses of fine dark silt. As the eroding sides stabilized, brown soil became the dominant fill, separated again by dark silt bands. Particularly amongst these layers of soil with silt, thin lenses of pale grey sand lined either the upper or lower surface of isolated blocks of dark silt, reminiscent of decayed turf sods. In trench 21 this level also contained patches of charcoal-flecked soily clay (daub?) and smoke-stained stones, with a large quantity of glazed pottery sherds (illus 7), scraps of calcined bone, and a piece of rolled bronze sheet. The accumulation of homogeneous brown soil in the upper part of the ditch, containing a few erratic sherds of pottery, post-dates the use of the enclosure.

Generally the ditch fill was most contaminated with debris towards the burial ground (in trench 21), the fill becoming cleaner and free from daub to the west. The dark cindery soil overlapping the inside edge of the ditch in trench 21 may relate to a building very close to the excavation, or even



ILLUS 7 Chapelton: medieval pottery

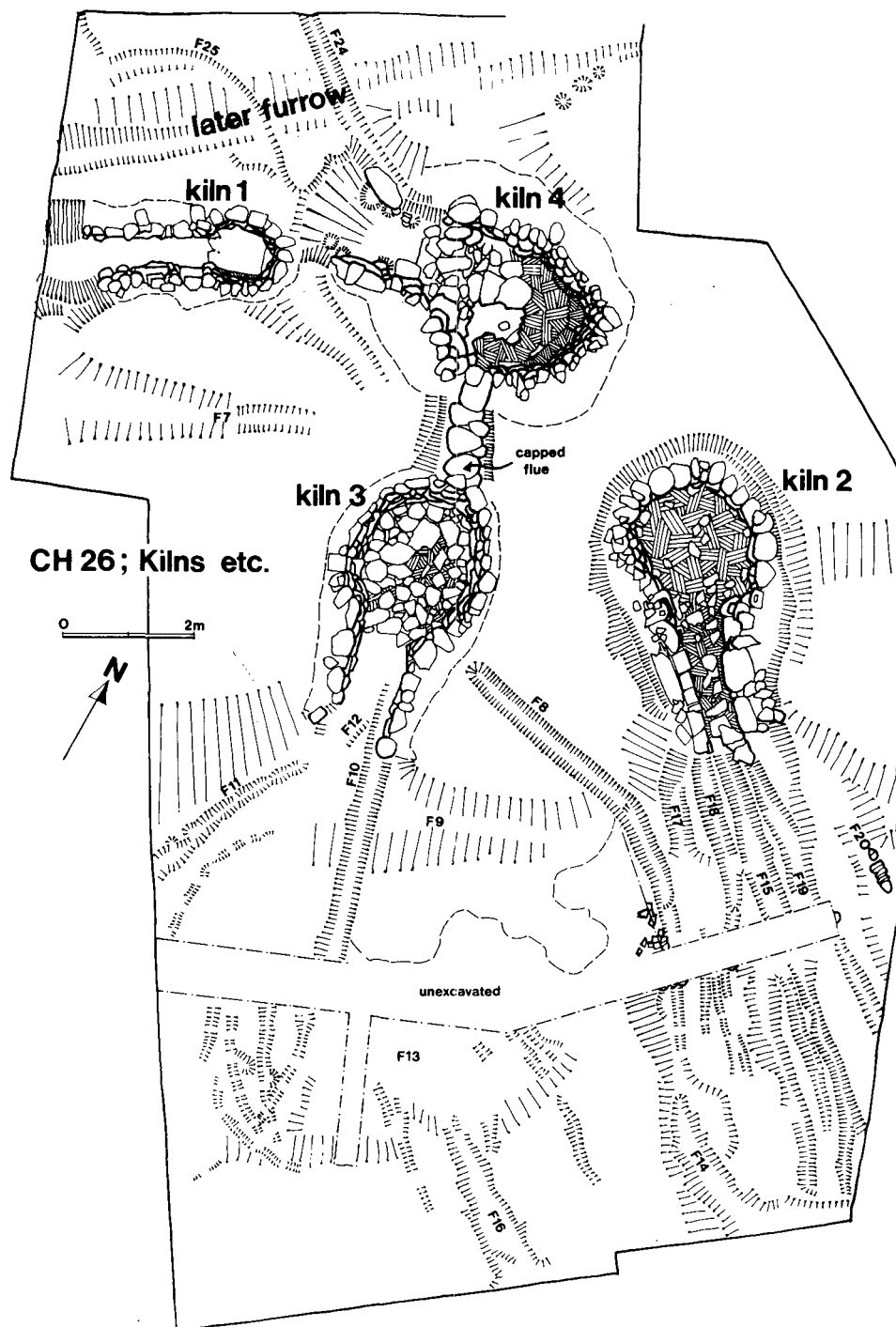
partly within it. The lack of similar material in trenches 25, 23 and 28 suggests that settlement was concentrated close to the burial ground.

#### The Corn-drying Kilns (illus 8; CH 26)

The cropmark of an apparent wide penannular ditch was investigated in a hand-dug trench. When the 'ditch' resolved itself into a collection of stone-lined kilns a mechanical excavator was employed to uncover the whole group to assess the drying capacity of the kilns and investigate any buildings nearby. A sequence of kilns with overlapping lifespans would provide an indication of the status of the Chapelton settlement at various times; such a sequence could be extracted from the truncated remains.

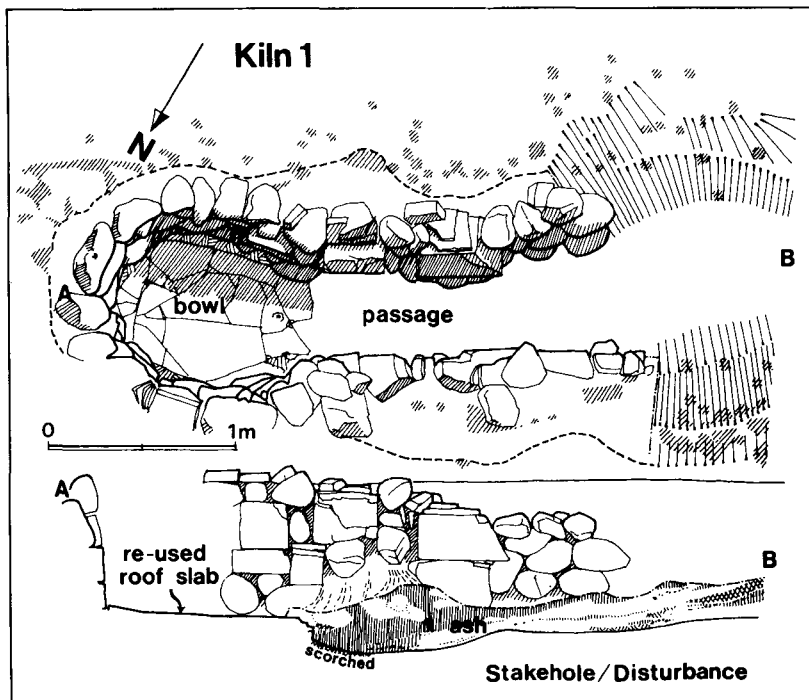
Kiln 2 was one of three with large oval bowls c 1.5 m across, and the first of the four to be built. Cut into a hillside, the bowl and passage were lined with boulders recovered from the surrounding fields or reused. An original white clay floor was damaged in the passage by the fire that heated the bowl and by frequent cleaning-out of ash. A second floor, of slabs and boulders, overlay the original, and was sealed by a second layer of clay in the bowl. To preserve as much stonework as possible the kiln was not fully excavated; limited investigations of the passage floor presented an untidy picture of stones replaced and overlain with more in response to fire damage. At some stage during these repairs the shattered inner skin of stone on the west wall of the passage was replaced by dressed sandstone blocks looted from an early building of architectural pretensions (see below). A second kiln was built.

Kiln 1 was smaller than the other three, with a bowl only 0.5 m across at the base. A large stone roof-slab, trimmed to fit, floored the bowl (illus 9, 13). Other fragments of roof-slab and dressed stone blocks, looted from a medieval building, were built into the walls (see below). Once again heat was supplied by a fire in the passage, stones in the adjacent walls had split in the heat and the passage floor had worn away as ash was cleaned out. Debris from the last few firings, including some charred grain, was recovered from the passage floor.



ILLUS 8 Chapelton: kilns etc (CH26)





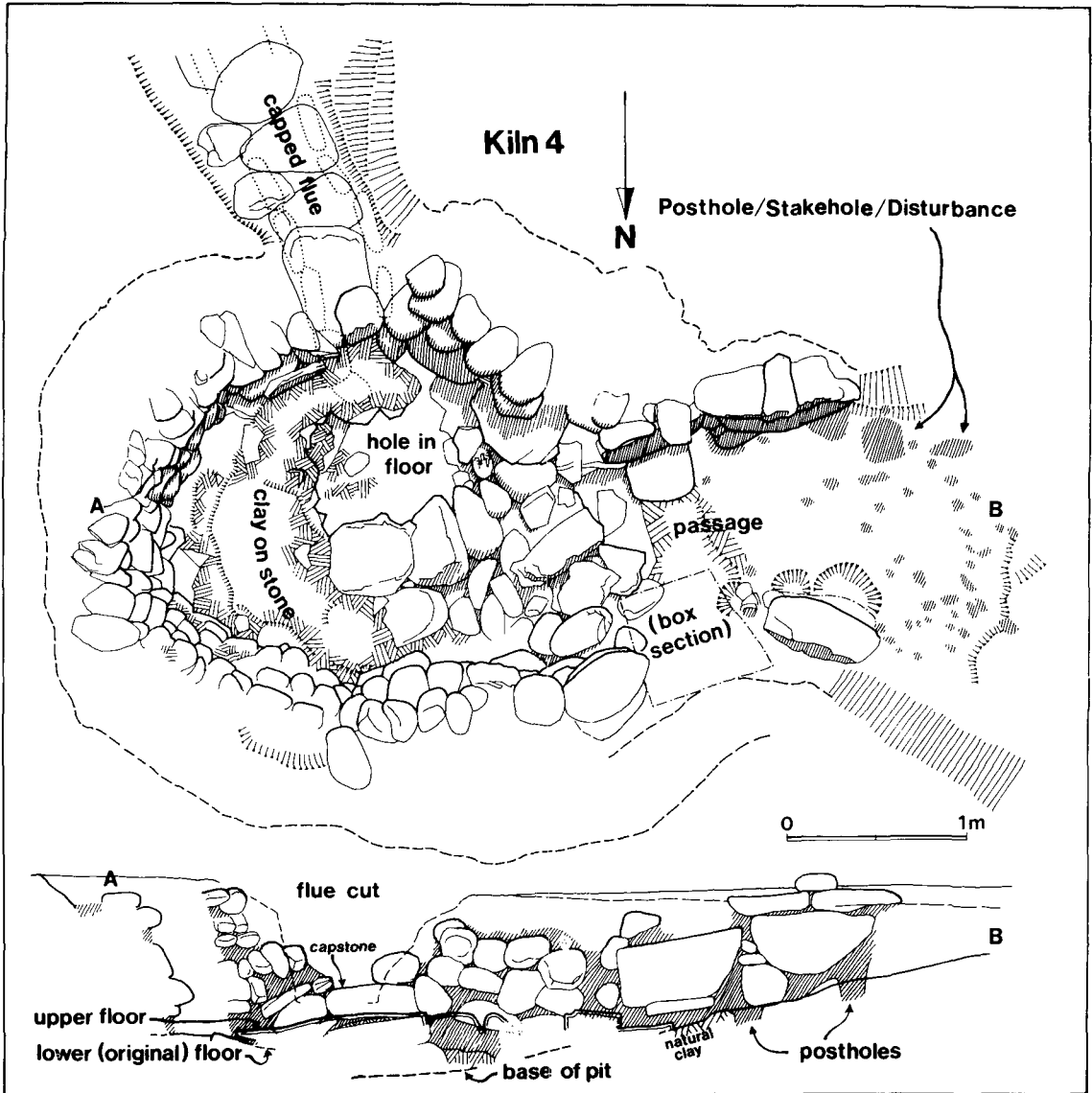
ILLUS 9 Chapelton: kiln 1 (CH26)

Kiln 4 was built in the space between the earlier two, bringing the number in use – or at least usable – to three. Unusually, the new passage sloped down to the base of the bowl from its entrance beside the smaller Kiln 1. There was no sign of fire in the sloping passage; perhaps before its first use Kiln 4 was modified to draw heat from another direction (illus 10).

The sloping passage should have allowed heat to draw into the bowl, as a down-draught pulled through by the outlet above ground level. However, at some point after construction started, a flue lined and capped with stone was sunk into the ground on the south side to draw hot air into the bowl immediately over its base. The heated air then collected below a second floor before issuing through a hole in its centre. The second floor was smaller than the first and the stone wall at the east end of the kiln was drawn in to meet it. This piece of wall touched neither floor; it sat on dirty clay originally retained with timber (see reconstruction sketch, illus 11).

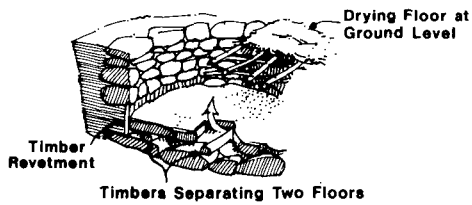
Only in this kiln were postholes found below the stone walls of the passage. As found the postholes appeared to be sealed by the stonework, but this was probably a result of the walls 'creeping' inwards when the vertical supports disappeared. The upright timbers are not likely to pre-date the introduction of the flue and second floor, despite the apparently contradictory evidence of the stratigraphy.

Kiln 3 replaced Kiln 4, removing the firepit and blocking the buried flue of its predecessor. In size, shape, fabric and alignment it is similar to the first kiln built, but like Kiln 4 it incorporated no dressed stone in its walls or floor. As in the case of Kiln 4, its passage bore no sign of fire. There was no flue built into this kiln, and the dearth of fire damage in the passage indicates a short working life. When Kiln 3 was built the earliest two were still in use; the oldest kiln (2) went out of use first, followed by the two others (see below).



ILLUS 10 Chapelton: kiln 4 (CH26)

**KILN 4 Reconstruction**



ILLUS 11 Chapelton: kiln 4, reconstruction

Demolition of the kilns was generally restricted to dismantling any structures above ground. The stonework of Kiln 4, the first to be abandoned, had been knocked in on the north side, and some stone had been robbed near ground level. The top few courses of walling in Kiln 2, the second to be abandoned, may have been robbed out before the depression was backfilled with broken roof slabs, but in Kilns 1 and 3 stonework below ground level was intact. The presence of dressed blocks in the backfilled bowl of Kiln 1 is surprising. Even if the destruction of this kiln accompanied the desertion of the Chapelton settlement, such excellent stone would still have been ideal for other buildings or dykes in the neighbourhood.

### *The Kilns – function and reconstruction*

The Chapelton Kilns were corn driers, used to prepare wheat for milling. None of the bowls was subjected to intense heat – the stonework had not been shattered nor the clay baked – and charred wheat was recovered in quantity from the flue into Kiln 4, in small pockets accidentally built into Kilns 2 and 4, and spread through the ash pulled back from the fire in Kiln 1. Nowhere can the burnt grain be considered a product of the drying process, rather it seems to have been accidentally drawn into the fires or more likely deliberately used as fuel. Mixed with small twig and grass-stem fragments, the considerable quantity of grain from the Kiln 4 flue (all wheat; R McCullagh, pers comm) was generally small seed, possibly waste from threshing and thus no reliable indicator of the standard of grain dried.

Structurally the Chapelton corn kilns are similar to post-medieval examples from rural Scotland (cf Barclay *et al* 1982; Close-Brooks 1980). Heat from a fire in the passage was drawn into a bowl (kept clean as a fire precaution) and thence up through a permeable floor on which the grain was spread.

Although permanent protective covers are known from the wetter parts of Scotland, even on the west coast corn kilns were predominantly open above ground, perhaps covered with makeshift tent structures to protect the grain from occasional showers (A Kahane, pers comm). At Chapelton no stacked turf could be identified over the stonework (cf the kiln from Abercairny, Perthshire; Rideout & Gibson, forthcoming) and no coherent arrangement of stakeholes could be extracted from the mass of stakeholes and disturbance around the lip of the bowl cuts or behind the stone walls.

In the bowl of Kiln 4 a single long charred timber amongst the demolition debris may have been a joist supporting a twig-and-straw drying floor, but may equally have come from another structure. It certainly need have nothing to do with roofing. The layer of broken roof slabs in Kiln 2 was not a collapsed roof *in situ* where it fell; the slabs were too fragmentary and arranged too erratically. The slabs were also too few to have been a corbelled conical roof of the Orkney type.

Some corn kilns are found attached to buildings, to make better use of the heat generated and to ensure a weather-proof cover during loading and unloading. At Chapelton no barns or domestic buildings were found, but the ground around the outside of the stone-walled passages was crowded with evidence of structural timberwork and heavy wear.

Two substantial slots (illus 8, F10, F24) were associated with the use of Kiln 4, probably supporting freestanding external timber walls. Two irregular curving features (illus 8, F11, F25) were either badly damaged by animal burrows or may be the burrows alone. As sets of contemporary burrows they are still valid indicators of wall-lines, concentrated in ground protected from human trampling. Two irregular cuts through the iron-panned gravel (illus 8, F14, F16) and a tangled pattern of thin cuts in the iron-panned base of F13 (a shallow hollow) defy interpretation.

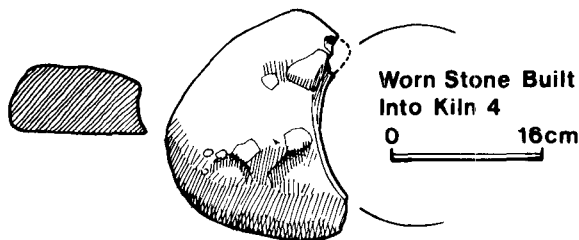
Generally the subsoil in CH26 was badly disturbed. The severity of the damage compared with other Chapelton trenches probably reflects a high population of burrowing vermin associated with grain processing. Although animal burrows alone may have picked out the line of two walls (see above), the punctured subsoil surface made the identification of stakehole structures virtually

impossible. Long use of the kiln complex, with inherent wear of surfaces and particularly animal damage served to confuse rather than enlighten the excavators.

There was no indication of the access points to the drying floors; only in the modified Kiln 4 could grain be loaded, turned and unloaded along the passage after the kiln had been heated.

Worn hollows showed the direction of access to the kiln passages. The mouth of Kiln 1 was approached directly along a deepening, narrow, revetted hollow, the mouth of Kiln 4 along a slight hollow flanking the north side of Kiln 1 (and down a slight drop behind the Kiln 1 bowl from the east) then down a steep slope. Kiln 3 was approached through a shallow scooped area from the south and down a gentle slope from the east. Kiln 2, the longest-lived of the four, was approached from the south-east.

In the hollowed approach to Kiln 2 a collection of parallel slots appeared to be wheel-ruts south of the cross-baulk, where they exhibited rounded profiles worn into iron-panned gravel, but they changed character as they cut through fine sand towards the mouth of the passage. F8 diverged from the kiln as a deep (0.65 m) timber bedding-slot, whilst the other four converged on the mouth as sharp-sided slots lined with patches of clay and pairs of stakeholes. The slots may originally have supported tunnel structures to help draught, and were possibly abandoned as the hollow filled with mud and loose stone, worn smooth underfoot where the hard iron-pan crust provided a stable footing in the mire.



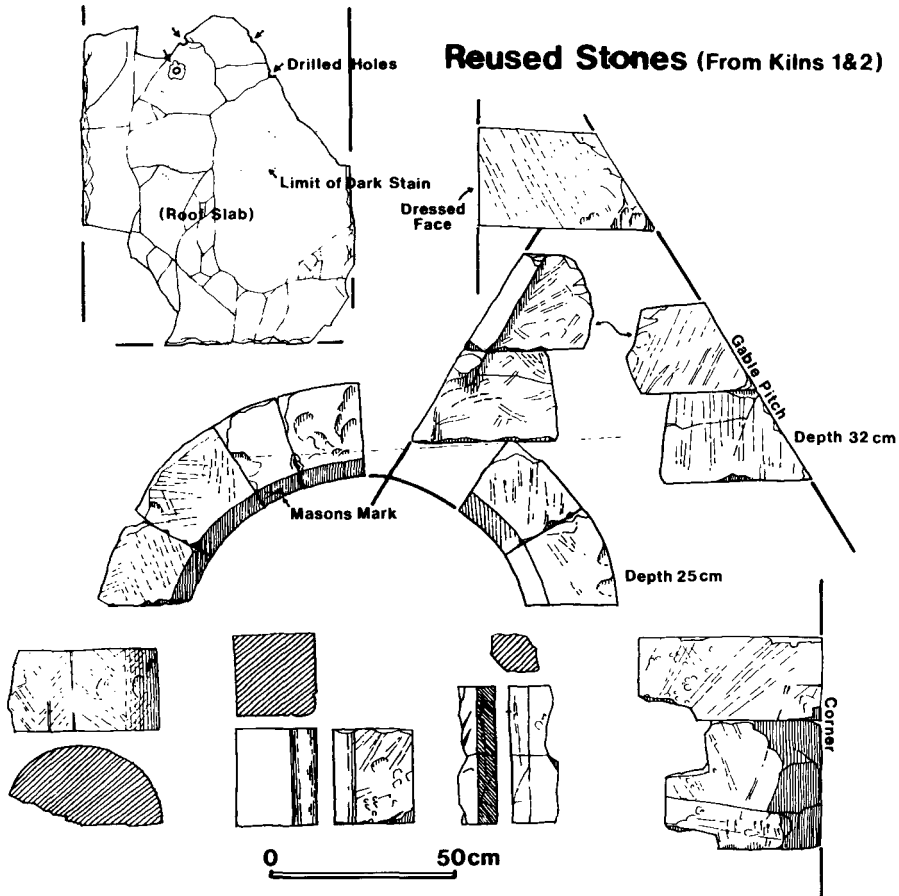
ILLUS 12 Chapelton: Worn stone built into Kiln 4

#### *Dressed stones from the kilns*

Incorporated into the fabric of Kiln 1 and in renovations to Kiln 2 were dressed blocks of red sandstone (illus 13). Six bevelled blocks formed most of an arch (of eight stones) spanning 0.9 m. A simple mason's mark was still visible on one of those stones. Corner stones, from the outside junction of adjacent walls and from recesses, lights and doorways, included a single broken stone with bevelled corner and a complete one with a corner bead. Most corner blocks were simple, with two adjacent faces finely dressed and no corner moulding, but two of these had rectangular holes cut away from the corner. The holes had been cut before the stones were in place on the original building, perhaps only to tie into surrounding stonework securely.

The roof of the dismantled building was represented by three blocks from a gable, a single almost complete roof 'slate' and many 'slate' fragments. The two least damaged gable blocks had stone projections which would have overlapped the stone roof, providing a seal without the need for 'slates' overhanging the gable or separate coping slabs. The gable pitch reached almost 60 degrees.

The almost complete roof 'slate' – of the same grey stone used locally for roofing into the 19th century – measured 0.7 m across by at least 0.9 m. Its top and corners had been broken to fit the bowl of Kiln 1.



ILLUS 13 Chapelton: reused stones (CH26)

### Reconstructing the dismantled building

The fine masonry in the kilns is unlikely to have been part of a domestic building, and there are no indications that it had been removed from a castle. It is tempting to consider the stonework once part of a medieval chapel at Chapelton, but this would not allow its robbing and removal to the kilns until well into the late 16th century (see below). More likely the stone was robbed from a different ecclesiastical building, perhaps the chapel of St Lawrence at *Kynblathmund* or a structure associated in folklore with nearby Templeton (see below).

Two medieval ecclesiastical buildings in the area provide a guide to the character of the dismantled chapel. One is the chapel of St Murdoch's at Ethie (NGR NO 703 479), the other the church at St Vigeans (NGR NO 638 429). Both are built predominantly of the local red sandstone.

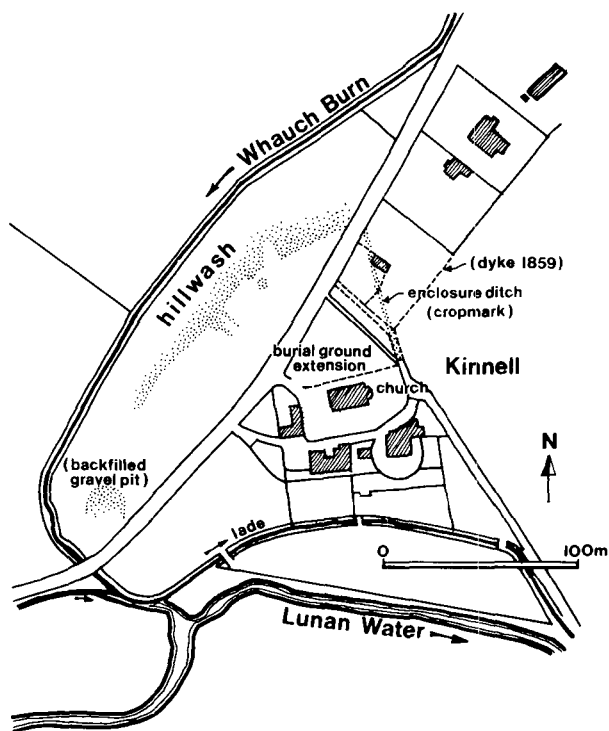
Although ruinous, the medieval chapel of St Murdoch's at Ethie has a gabled east wall in relatively good condition, standing almost to its original height. The wall has no window and is c 1 m thick below the chamfered intake at the level of the eaves. The dressed stone edging blocks on the gable have all been removed, but the reconstructed edge would probably pitch at over 55 degrees. Although some of the facing blocks on the gable wall are roughly squared, particularly below the intake, the corner stones have been finely dressed.

The church at St Vigeans, once the church serving Arbroath, is still upstanding but was renovated in the late 19th century. Fortunately notes were made on the fabric of the structure during renovation, and a sequence of development attempted (Duke 1872, 481–98). Before the 19th-century rebuilding there was no window at the east end; for the Norman church ‘the ornamental work could hardly have been very extensive. Probably it was confined to the doorway and windows’ (*ibid*, 483). The dressed stone from the Chapelton kilns was probably robbed from a similar building, with a single arched doorway for access and minimal light provided by small rectangular windows. Unfortunately the simple decoration on the stones provides no secure date for the original structure.

#### The nature of the medieval settlement at Chapelton

The evidence for settlement at Chapelton during the medieval period is provided only by the domestic debris in the enclosure ditch (see above). The grain-drying kilns are assumed to be medieval on negative evidence alone – on the dearth of post-medieval debris associated with them. The inclusion of simply decorated dressed stone blocks in the kilns merely draws the kilns forward from prehistory into at least the medieval period. Assuming the kilns to be contemporary with settlement close-by, kilns and domestic debris in the enclosure ditch (and thus the ditch itself) can comfortably co-exist.

Although no domestic buildings were excavated the site of the buildings can be deduced from the distribution of debris in the ditch. The concentration of pottery sherds, daub, charcoal and burnt bone in the easternmost segment of excavated ditch suggests habitation close to the burial ground, east of the kilns. This then is ground masked from the aerial photographer by deep hillwash. The



ILLUS 14 Kinnell: plan

earliest trench of the 1983 Chapelton excavations failed to bring any evidence of medieval settlement east of the present burial ground (no sign of structures and no pottery), indicating a fairly restricted built-up area within the enclosure ditch. Assuming a chapel and yard in the present burial ground to be contemporary with enclosure ditch, kilns and houses this would further reduce the area for domestic buildings.

The status of the settlement would have been relatively high, with its chapel and up to three known grain kilns serviceable at any one time. If the function of the enclosure ditch was to restrain livestock from the arable around the settlement, the number of animals involved would suggest more than a single farm. Economically Chapelton held a good site, about midway between the medieval burghs of Arbroath and Brechin on the road connecting the two. (The exact pre-enclosure line of the track is uncertain, but must have passed within 200 m of the present burial ground).

Chapelton has been identified at the 16th-century village of *Quhitfield*, mentioned in the *Liber* of Arbroath Abbey (Warden 1882, 435), but its origins are not recorded. Another reference from the *Liber* would allow for the village to be the late 12th-century settlement of *Kinblethmont*, but the documentary evidence is ambiguous (*Arbroath Liber*, I, 99).

#### OTHER MEDIEVAL SETTLEMENTS IN THE AREA

Two settlements close to Chapelton are better represented in the documentary record. Boysack, 1.3 km to the north, lies on the south bank of the Lunan Water and is referred to as *Ballisac* in 1220 (*Arbroath Liber*, I, 158); Kinnell, 1.8 km further NW on the north bank of the Lunan Water is referred to as *Kynel* in the *Liber*. Both sites are still occupied, and both were surveyed from the air (together with Chapelton) during the summer of 1983. Around Kinnell, under good conditions for aerial photography, indications were found of a settlement similar to medieval Chapelton. Around Boysack, under poor conditions, results were disappointing.

#### Kinnell

Documentary material does not help to locate precisely a medieval settlement at Kinnell. Although the present church enjoys a commanding position overlooking the junction of the Whauch Burn and the Lunan Water, there was no village outside the kirkyard in the late 18th century (*SAS Inverkeilor*, 321), and a century later Warden argued for the medieval church and nearby baronial residence on the other side of the Lunan Water, 1 km to the south-west. None the less, a church was built on the present site at Kinnell in the second half of the 18th century, and a precursor on this site is indicated by the earlier 18th-century manse beside it, and more significantly is suggested by Pictish symbol-stone fragments recovered from the present kirkyard (*SAS Inverkeilor*, 1882, 45; Warden).

Most of Warden's site for early Kinnell, 1 km from the present church, has now been removed by gravel-quarrying; during the summer of 1983 attention was focused on the land immediately around the church for cropmarks of an early settlement (illus 14).

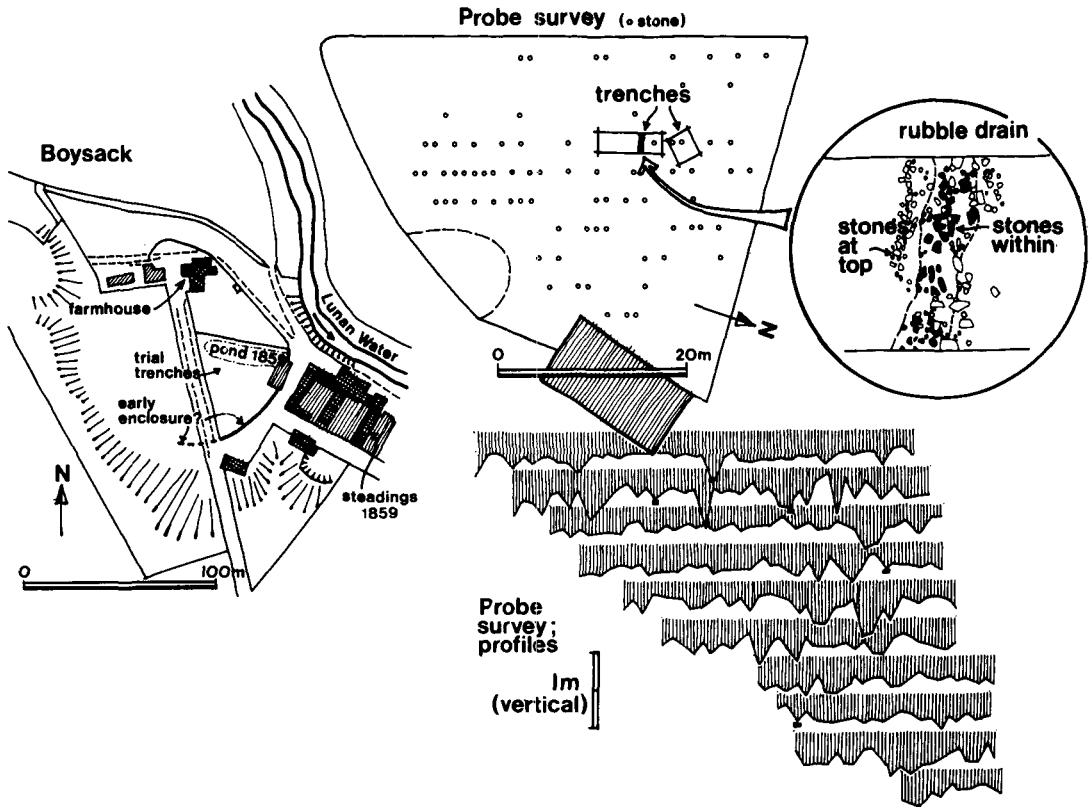
The large field immediately E of the church was under spring barley in 1983. To the west, across the road, a field of pasture ran down to and beyond the burn. To the south the grounds of the kirk manse, the garden of another house, and a small field of pasture closed the gap between the churchyard and the Lunan Water floodplain.

The barley field E of the church produced the cropmark of a linear ditch continuing the line of the east wall of the kirkyard N to intercept the road. If this cropmark represents an enclosure ditch similar to the one at Chapelton it must turn W into the pasture. Unfortunately the build-up of hillwash in this part of the field prevented any such feature from registering as the grass elsewhere was parched. Further S, within the hypothetical enclosure, two disc-marks too small for prehistoric ring-ditch houses but compatible with the corn kilns from Chapelton, appeared as the field dried out. An

ambiguous rectangular mark also appeared at an early stage; it may represent a building. It would be reasonable to expect the medieval settlement in the gap between the kirk and burn, on the same side of the church as early Chapelton to its chapel.

**Boysack**

Later medieval Boysack is easily located. A 'manor place and fortalice' are mentioned in a retour of the estate in the early 17th century and are marked on Roy's map over a century later as 'Castle of Boysack' (Warden 1882, 434; *Military Survey of Scotland*). The present farmhouse of Boysack has incorporated part of a massive wall – part of the earlier residence – in its fabric.



ILLUS 15 Boysack: plan and details of probe survey

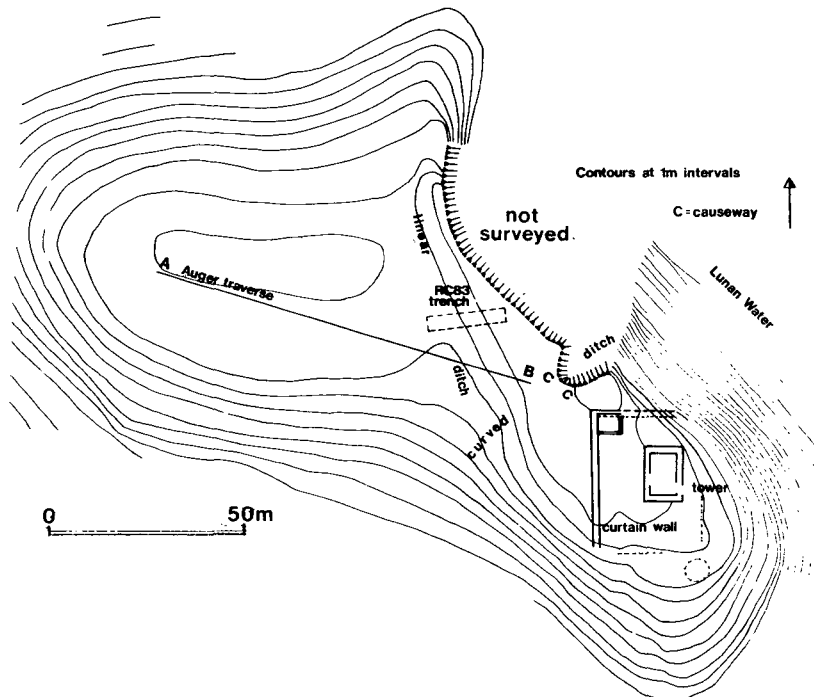
Unfortunately the ground around the present farmhouse inhibits clear cropmarks; Boysack is situated on a shelf where hillwash has accumulated from the higher ground to the south and west to mask early features (illus 15). Furthermore, during the summer of 1983 neither of the important fields immediately S and W of the house was under barley. No cropmarks were photographed close to the farmhouse, or identified on earlier photographs, and a trial trench 40 m from the house found no medieval material (BK 83). A probe survey looking for stonework and ditches in the field was inconclusive.



## RED CASTLE (illus 16, RC 83)

## The site

The stonework remains of Red Castle occupy a promontory at the seaward end of a low hill, overlooking the mouth of the Lunan Water. The top of the hill is isolated from a wide terrace at the same height to the south by a gap carved down to the late Boreal/Atlantic sea level.



ILLUS 16 Red Castle: plan

The final meander of the Lunan Water cuts into the north side of the hill, almost dividing the ground into two discrete lobes connected by a high col.

## History and building remains

The original Red Castle is ascribed to the reign of William the Lion, as a royal stronghold passed on with the Barony of Red Castle to Walter de Berkeley (Warden 1882, 446). None of the standing stonework can be attributed to this period, and no references can be found to subsequent phases of major building and rebuilding on this site.

In the late 16th century the castle was apparently damaged, but within two years of its attack the castle was considered a 'safe' residence, suggesting that its injuries were only slight. The castle was last occupied in good condition at the end of the 17th century, and the fabric remained in good repair until being unroofed in 1748. The structure remained otherwise intact up to 1770 (Warden 1882, 449).

The present castle comprises two elements, both seriously damaged by stone-robbing and threatened with collapse over an eroding cliffline. An L-shaped length of thick wall surmounted by a

parapet is part of an enclosure ascribed to the 13th century on its style of construction. Within this enclosure there survives the northern half of a rectangular tower attributed to the 15th century (Simpson 1941).

Only the north-west corner of the curtain wall has survived robbing. From here the upstanding wall runs S for 35 m. Although the south-west corner has been removed above ground level its position can be found by extending the lines of the upstanding west wall and robbed south wall (visible as one of two parallel low ridges or as the gully between) to their intersection 40 m from the north-west corner.

A recently excavated circular depression (probably part of the Second World War coastal defences) has obscured the position of the south-east corner. The line of the robbed east wall is indicated during drought conditions by a narrow band of healthy grass in a slight linear depression. At its south end this depression is masked by the fringe of upcast spoil from the recent circular excavation.

The north-east corner of the curtain wall has long since collapsed into the Lunan Water; at present the north wall is represented by a short well-preserved length running from the north-west corner. At some stage the wall has been sliced through obliquely and the exposed end refaced; the continuing line is visible as foundations exposed at the clifftop.

Buildings between the tower and the curtain wall are indicated by stone projections and linear grooves on the inside face of the wall, and an obliquely cut niche on the north-west corner of the tower. There is no evidence for buildings against the outer face of the curtain wall.

#### Earthworks

Well outside the curtain wall a linear ditch is visible as a wide shallow depression isolating the castle and a narrow wedge of ground above the cliff from the rest of the hill. Before excavation this ditch, the pre-castle fortification noticed by 19th-century historians (Warden 1882, 446), was thought to be a prehistoric promontory defence similar to those on clifftop sites between Lunan Bay and Arbroath. The position of the ditch suggests that it dated from a time when the cliff line was considerably further away.

A more likely medieval ditch was represented as part of a causewayed circle concentric to the curtain wall. North of the causeway, running to the present cliff, a deep cut has been accentuated by trenching and the digging of an observation post as part of the Second World War coastal defences. West of the causeway the ditch is just perceptible as a change in slope, running obliquely down the hillside and merging into the linear ditch. At the point where the circular and linear ditch meet, a sharp break in slope marks either a late field boundary or (more likely) a defensive work associated with the castle.

#### The excavation

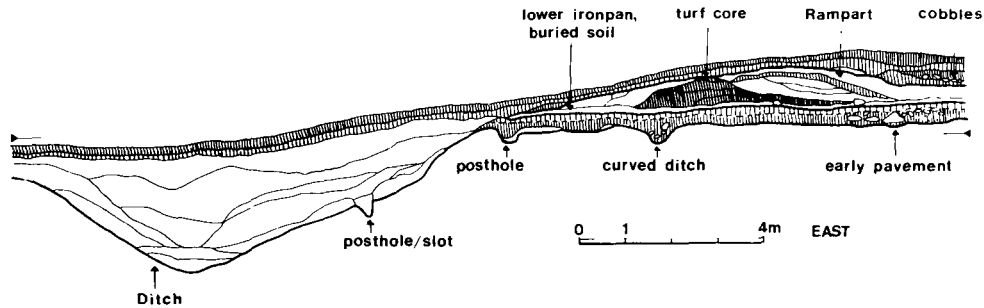
A trench was cut across the shallow depression of the linear ditch (illus 16). The initial 10 m length trench only cut the ditch and was subsequently extended to investigate the associated rampart.

The wide, deep ditch was cut in the medieval period to defend ground to the east; a *glacis*-style rampart was constructed on its inside edge. The ditch cut and the bank sealed pasture that had formerly been under the plough. The site had evidently been occupied by an earlier stone-built structure; a substantial quantity of red sandstone had been used as rough paving and posthole packing.

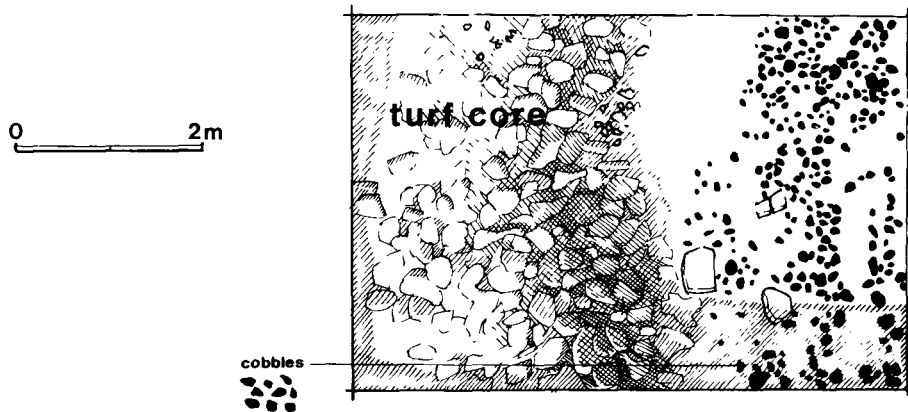
Good preservation at Red Castle was provided by an accumulation of windblown soil on the ground, rapidly building up in the later medieval period, and barely damaged by ploughing since the abandonment of the defences.

### *The ditch and rampart (illus 17, 18)*

An untidy heap of turf stripped from the ditch area formed the core of the rampart (illus 17, 18). This central ridge was covered with upcast sand and gravel, and some redeposited topsoil, with tiplines demonstrating its gradual construction from the south (the direction of the medieval castle). In the 4 m strip excavated through the rampart, no evidence of revetment was found; gravel upcast spread to the edge of the ditch. No sign of a timber or stone barrier on the rampart survived; the rest of the bank had been truncated by ploughing, but stone recovered from the fill of the ditch was insufficient to be reconstructed into a wall of appreciable size.



ILLUS 17 Red Castle: section across ditch and rampart



ILLUS 18 Red Castle: rampart core and cobbled surface behind

Behind the rampart a rough and shallow surface of pebbles may have formed a parallel track (or pavement), but not until sometime after the rampart was built; an accumulation of soil separated it from the immediately post-construction level.

The ditch had a maximum depth of 2.7 m and a width of almost 10 m when last in use. Its original width is unlikely to be less than 8.5 m. Sand and pebbles weathered from the sides made up the earliest fill, followed by more substantial slumping, particularly from the east, the rampart side. There was no sign of deliberate backfilling, and most of the infill had a high soil content. The site of the ditch was not ploughed until it had silted to within a little more than a plough-depth of its present level, and must have acted as a trap for soil blown down the Lunan Valley on the prevailing westerlies.

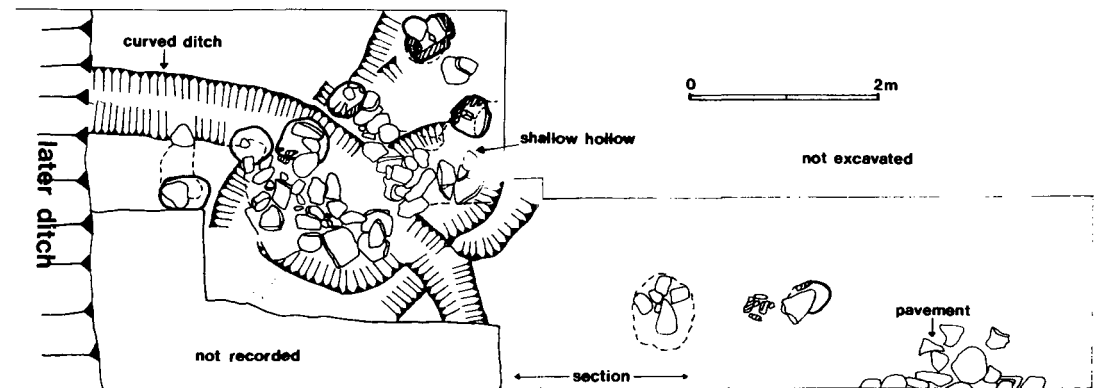
A posthole or slot (the feature ran into the section) had been cut into the east slope of the ditch, perhaps during construction. The timber embedded in the cut was removed or decayed during subsequent slumping.

#### *Cultivation before the construction of ditch and rampart*

Below the rampart three layers of soil overlay natural sand and gravel. The lowest contained charcoal, was darker than those above, and was partly associated with occupation. Above this was a layer of soil with a higher sand content, separated from the rampart by a thin sandy layer sandwiched between iron-pans. The pans follow the pre-rampart ground level closely, formed against the heavier, more consolidated, material under the bank. There was no trace of cultivation rigs below the rampart, and a period of open pasture was represented by the smooth surface of the iron-pan layers, a stone-free margin below the pans (see Evans 1975, 98) and the heap of cut turfs forming the core of the gravel rampart.

At an earlier stage the ground was cultivated. (Had it been pasture since the desertion of the site below, earthworks would have persisted on and around the earlier structures.) The junction between the sandy soil and the heavier one below represents the base of the later ploughing and provides a link with the fields at Corbie (see below). Windblown sand must be responsible for the change in soil texture; the subsoil is isolated from the sandier ploughsoil by a heavy soil. No ploughmarks were visible in the soil interface for comparison with those at Corbie (between heavier and sandier soil), but the relatively sudden deposit of sand on the early field provides a reference from one end of Lunan Bay to the other.

Some of the stones in the heavier soil below were damaged by ploughing, but these were few. Stones had generally been left undisturbed after the desertion of settlement, and the soil amongst them mixed with charcoal. Cultivation of the ground between the desertion of settlement and accumulation of sand must have been undertaken carefully, possibly using spades alone. No plough- or ard-scores were found at the base of the earlier soil.



ILLUS 19 Red Castle: below rampart and soil

#### *Early occupation (illus 19)*

About half of the trench area below the rampart was taken down to the early settlement level and recorded. At the east end a narrow strip beside the main section uncovered the corner of a coarse pavement and three postholes; at the west end part of a curved ditch was found cutting a shallow hollow infilled with stones and associated with more postholes.

The curved ditch, describing part of a circle of 8 m diameter (outside edge), deepened away from the edge sheared off by the later defensive ditch, increasing from less than 0.2 m to almost 0.4 m in depth. With so little available in plan it cannot certainly be ascribed to a circular feature. The hollow it cut was irregular

and rarely more than 0.1 m deep, with its long axis crossing the trench obliquely. Worn into sand subsoil, the hollow may be an accident of wear, infilled with pieces of slabs and pebbles to maintain a flat surface. A linear group of postholes along one side was not matched by a group along the other. Small pieces of charcoal were concentrated most densely in the soil within the irregular hollow, but no finds were recovered.

### Implications of the excavation

#### *Dates and continuity*

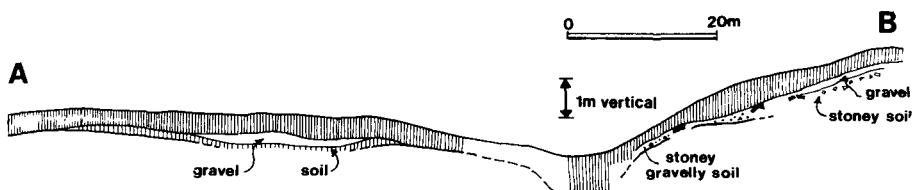
A useful reference between Red Castle and Corbie is provided by the change in soil texture prior to the rampart construction. Although Red Castle has not provided a sand-sealed early medieval horizon, the change in soil sandiness between the early settlement and later defences relates to the start of the sand problem on the Corbie fields. Dating the sandstorms remains a problem, but at Red Castle a *terminus ante quem* is suggested by medieval glazed pottery sherds in the fill of the ditch. An early medieval date for the disaster is supported.

The early settlement suggested by hollows, postholes and the curved ditch yielded no *terminus post quem* for the sandstorms and cannot itself be dated at present. The features formed no familiar pattern for a late prehistoric domestic site, and provided no finds. They do little more than indicate occupation away from the castle during the prehistoric or early medieval period, and hint at a Red Castle before the late 12th century.

The hint of an earlier stone-built defensive structure is given by the quantity of red sandstone incorporated in the early structures. Although red sandstone is available in the glacial drift under surrounding fields, stone from the fields is assorted, predominantly andesite, quartz and granite. The predominance of red sandstone suggests that it had been collected or quarried specifically, and not for infilling irregular hollows. The excavation demonstrated that the long linear ditch was medieval, and not cut along the line of earlier defences. If an earlier promontory fort occupied the site under the present castle, a curved defence similar to that at Red Head (NO 702 474) could be expected. If the early rampart was built of imported red sandstone it would have first acquired the name 'red' and later provided a supply of stone on becoming redundant.

#### *The causewayed ditch*

With the medieval date of the long linear ditch established it becomes likely that the shorter, curved, causewayed ditch round the castle ruins belongs to an earlier period. A resistivity survey over the causeway failed to find evidence that the ditch was ever continuous; ditch, causeway and hypothetical internal stone wall are likely to be part of a prehistoric or early medieval defensive site.



ILLUS 20 Red Castle: auger traverse

*Settlement W of the linear ditch*

The hilltop was augered (at 5 m intervals) for evidence of settlement. One borehole produced soil-with-charcoal, but otherwise results were disappointing. The lack of stone underground was particularly significant, arguing against occupation extending over the whole plateau. The ground is at present under pasture and has not been ploughed in 30 years (local information); if sown with barley it might still produce cropmarks of late prehistoric settlement and burial, similar to the adjacent high ground on the south (illus 36).

## CONTINUITY OF SETTLEMENT

At Chapelton no medieval houses were recognized in the small areas excavated. If any had been in these areas their remains were too insubstantial to be identified by trial excavation. If the houses were originally elsewhere in the enclosure – which is more likely – their remains were too insubstantial to produce identifiable cropmarks. If Chapelton is typical of medieval settlement sites in the Lunan Valley, we cannot expect to find a medieval equivalent of the late prehistoric ring-ditch house in the cropmark record. However, the lack of a house-cropmark cannot be held fully responsible for the poor showing of medieval settlement amongst the cropmarks. Two elements at Chapelton can be used to identify the type of site: the marks of the enclosure ditch and the grain kilns. Both have tentatively been recognized at Kinnell (see above).

None the less, the enclosure-with-kilns site is poorly represented. To a small extent this reflects the difficulty of identifying grain kilns amongst the cropmarks, but in the main it simply reflects the paucity of settlement sites abandoned.

The earliest surviving map of the Lunan Valley sufficiently detailed and reliable to show the distribution of farms was produced in the late 18th century (Ainslie 1794), during the agricultural improvements. The distribution of settlements has barely changed since. A contemporary account from the minister of Inverkeilor claimed that the area had not been depopulated during the Improvements, and that very few farms were abandoned (*SAS Inverkeilor*, 286). The claim is supported by the *Military Survey of Scotland* of the mid-18th century and by documents from the 17th century (*Charters and Retours*: see Warden 1882, 425–59). Earlier references to local settlements become scarce, but most place-names mentioned can be matched with farms in operation today.

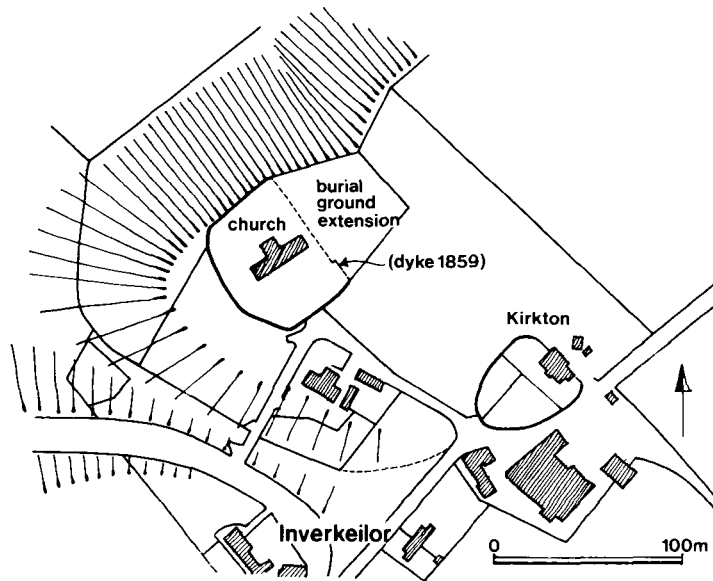
The inertia of improved farms can be put down to two causes unrelated to market forces or politics. One is the high standard of stone-built farmhouses and steadings of the late 18th and 19th centuries; the other is the near-permanent division of land once enclosed with stone walls. An improved farm could not be relocated without a great deal of effort, inconvenience and financial loss.

Although no medieval farm buildings were found during the Project's work in the valley, the Inverkeilor parish entry in the *Old Statistical Account* states that the pre-improvement farms were not 'neat commodious and substantial' with 'a complete steading or set of offices'. Only by the late 18th century were 'the houses of cottagers and tradesmen . . . generally of stone, and some of them slated'. (*SAS Inverkeilor* 286). Poor pre-improvements' building standards provided no incentive for the static location of settlement over a long period.

None the less, according to the documentary record, settlements were generally static from the late medieval period into the improvements, presumably constrained by a fairly inflexible division of land and particularly by the inflexibility of enclosures immediately around the settlements.

In his contribution to the *Old Statistical Account* the minister of Inverkeilor, working from memory and no doubt exaggerating the former rural poverty, refers to 'few enclosures, and those of earth' in the mid 18th century (*SAS Inverkeilor*). Few ditches associated with such enclosures have been identified as cropmarks around farms continuously settled from the medieval period to the

present day. Only two farms in the Lunan Valley east of Friockheim have produced cropmarks of (possible) earlier enclosures extending out from the present nucleus, one at Hodgeton (NO 643 494) on RCAMS photo AN 3455, the other at Westfield (NO 628 484). The almost complete absence in the cropmark record of enclosures beside present farmhouses indicates how static settlement was from the late medieval into the 19th century. The medieval enclosures were either obscured by the improved steadings and yards or incorporated in the line of new stone dykes. The latter is suggested at a few farms where curved lengths or complete circuits of stone walling appear out of place in the generally rectilinear improved layout. At Boysack (illus 15) a curved segment of a wall isolates the oldest part of the farm from the improved steadings. At Kirkton, Inverkeilor (NO 664 496) the main house is isolated by a circuit from the improved steadings (illus 21). Kirkton farmhouse, closer to the kirk and on higher ground than the present steading, is likely to be the earlier site of the farm assuming the concentric wall to mark the line of its earlier enclosure. Although curvilinear walls are associated with planned landscapes at the centre of large estates from the 18th century (as at Kinblethmont, NO 638 470 and Lawton House, NO 637 485) small discrete enclosures concentric to farm buildings may have an early ancestry.



ILLUS 21 Kirkton, Inverkeilor: plan

In most cases the present enclosures round medieval farm sites in the Lunan Valley are used as gardens and working areas for storage and maintenance; under these conditions the lack of cropmark evidence for medieval settlement in the valley is likely to continue.

### MEDIEVAL LAND MANAGEMENT

A study of medieval land-use in a specific area is concerned with the contemporary rural economy (in terms of wealth and pastoral or arable bias) and land-division. Archaeological information on the economy of the Lunan Valley is scarce; only one rural medieval settlement has been

excavated, and this provided no animal bones (owing to soil conditions) to balance against the cereals recovered. Documentary evidence contributes little to our knowledge of the economy, most sources looking back from the time of the Improvements into what is still post-medieval, and doing so with a bias against the 'old ways' (eg Roger 1794). Since the Lunan Valley has a poor documentary record of early land-divisions and enclosures, a study of the physical division of the medieval period depends largely on the archeological record. Upstanding earthworks exist on marginal land (on the fringes of pre-improvement arable), ditches and cultivation furrows may be detected as cropmarks and early enclosures have frequently been incorporated into surviving field boundaries.

The Project's investigations of medieval land use relied heavily on the cropmark record of land division to assess the stability of the medieval landscape, with occasional surveys of upstanding material and few excavations. An understanding of rig and furrow became crucial to the research; as work continued it became clear that the rigged landscape was not static, but was capable of realignment in its early development and, more surprisingly, at a late stage when the rigs were prominent features. An early adoption of rig and furrow in the area is now dubious in the light of the evidence from Corbie (see below), and this may effectively remove the early medieval period of land-division from the cropmark record. Alternatively, the early medieval landscape may have been largely enclosed, perhaps continuing a prehistoric tradition.

A degree of continuity is inevitable in the landscape. Major land divisions, particularly those involving natural features, have occasionally survived in use from prehistory to the present day.

#### MAJOR LAND DIVISIONS

The boundary between the parishes of Inverkeilor and Kinnell follows Gighty Burn down to the Lunan Water from the north, and follows Buckie Den Burn away to the south-west (illus 22). A short distance from the Lunan Water the present boundary diverges from Buckie Den Burn and follows a more direct course, roughly parallel to the burn. In the medieval period the boundary, originally following Buckie Den Burn precisely, would have separated the lands of Boysack and Kinnell. Earlier it played a part in the siting of cemeteries. Large prehistoric barrow cemeteries are situated on each side of the Lunan in the downstream angle with the two burns (RCAMS photos AN 2819, 2821).

Elsewhere in the Lunan Valley medieval estate boundaries tend to follow water courses, but without any hint of prehistoric ancestry. The boundary between Inverlunan and Inverkeilor followed the Lunan Water to the sea; that between Inverkeilor and Ethie followed Keilor Burn; that between Arbroath Abbey and Kinblethmont followed the Magungie Burn (Warden 1882, 436). In all cases the natural boundaries are potentially pre-medieval in origin, but difficult to prove.

Before the early 17th century Boysack and Kinnell were separate estates; there is no cropmark evidence of a boundary in the arable between them, but once again a burn (flowing from the Kitchen) would have formed a convenient division (illus 22). Since the two estates were held by a single landlord before the major period of enclosure no irregularity in the present field layout can be expected to mark the boundary.

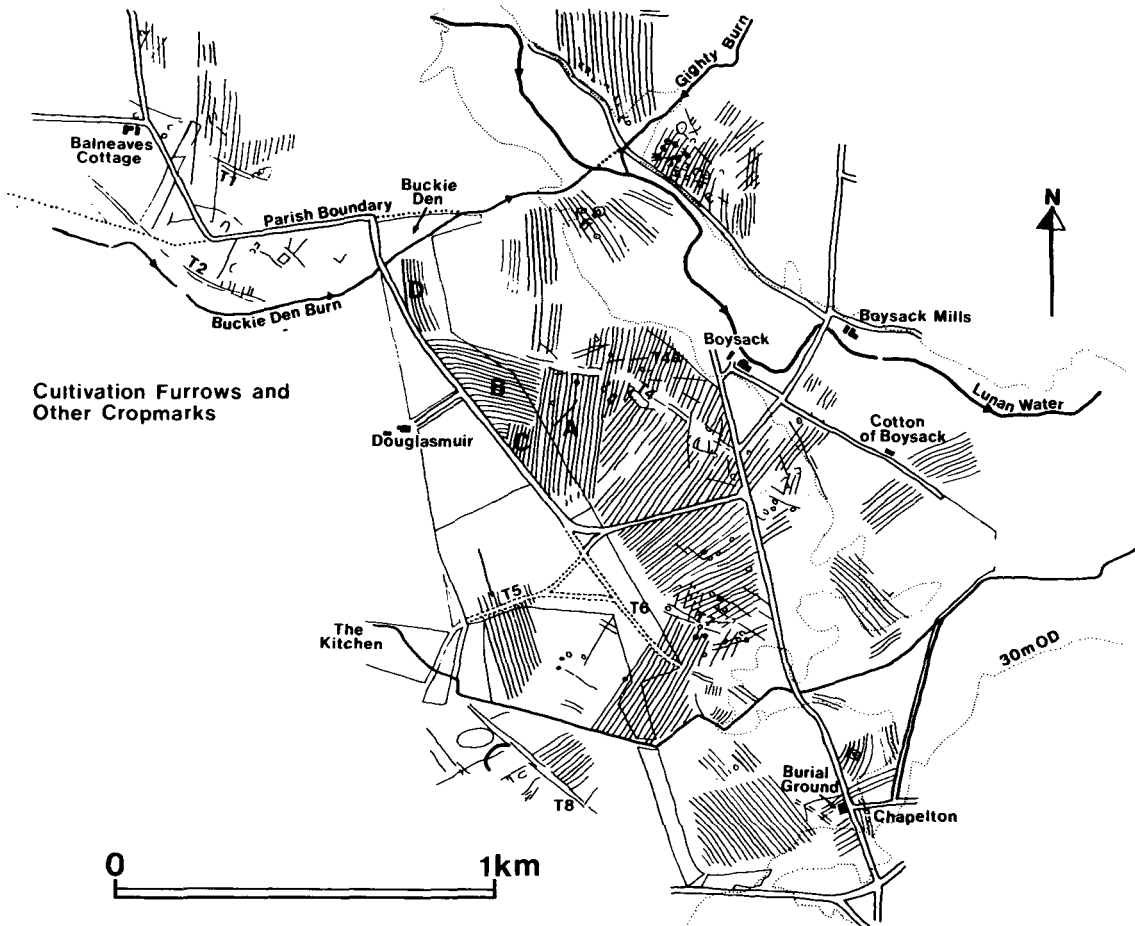
The medieval landscape would have evolved from a developed late prehistoric ancestor; the arrival of Norman landlords in the 12th century is unlikely to have caused a sudden change in the established pattern of land division.

#### OTHER LAND DIVISIONS

In the developed open landscape of the 17th century permanent boundaries could be expected around the arable, in the form of a head dyke, and on each side of trackways through the arable. Otherwise headlands (with no ditch to produce a cropmark) divided the fields.

North of Chapelton the cropmarks of furrows were plotted to fix the position of the medieval





ILLUS 22 Cropmarks NW of Chapelton

headlands (illus 22). Pre-enclosed trackways were similarly plotted; most were recorded on a survey of unenclosed land towards the end of the 18th century (Ainslie 1794). An upstanding head dyke and adjacent rigs were surveyed in an early plantation at Douglasmuir.

#### Trackways

Tracks of Chapelton detected by cropmarks, and others defined by upstanding earthworks in the Douglasmuir plantations (unploughed at least since the mid 18th-century *Military Survey*), are plotted and numbered in illus 22. Several are recorded in use through unenclosed land and plantation at the end of the 18th century (Ainslie 1794), but their course through unenclosed land is difficult to determine precisely from the survey, which was plotted at one inch to the mile with few marked reference points.

Two tracks leading through the plantation are conspicuously marked by parallel banks with internal ditches (T5 and T6), and both were imposed on the rigged land. T6 leaves the plantation at its south-east corner but is barely definable by cropmarks in modern arable. Only one of Ainslie's tracks

produces conspicuous cropmarks (T8); here substantial roadside ditches would have been required because of the locally poor drainage; elsewhere natural drainage would have sufficed.

The line of tracks was not static over the medieval period. A predecessor of T6 is marked by a headland and a roughly parallel group of linear ditches (T7, *illus 23*), whilst the conspicuous track T4 appears to precede the one recorded by Ainslie running from Boysack to the north-west. A broken belt of parallel ditches (T4a) certainly fits Ainslie's track, and does not interfere with the long rigs sweeping back from immediately S of Boysack to the Douglasmuir plantation. But like tracks T5 and T6 in the plantation, T4a overlies some rig and furrow. The earliest use of the track can only be late medieval (and may be as late as the 18th century), the latest 19th century.

Its predecessor T4 may have been in use throughout the medieval period. Though crossed by the long rigs already mentioned, its line forms a break and change of alignment amongst the cropmark furrows more central to the present field. Its line runs parallel with the present Boysack/Cotton of Boysack road (the likely route between medieval Brechin and Arbroath) and with a collection of short linear ditches to the south. The track, road and ditches indicate a partitioned landscape predating the open fields, and exerting an influence on the later land division. There is no association between the distribution of ring-ditch houses and this early enclosed landscape, but a degree of continuity is inevitable in dividing land under continuous cultivation.

South-east of Balneaves Cottage (*illus 24*) the straight length of parish boundary followed by the present road formed the north edge of the 18th-century Douglasmuir plantation. Cropmarks of earlier land divisions between the road and Buckie Den Burn pay no respect to the present line of the boundary. Neither does the trackway T2. The present enclosed landscape aligns with the parish boundary/road, almost at right angles to the 'wide-rig' furrows on the Balneaves side of the boundary. But crossing these alignments obliquely a second track (T1), passing by a small group of near-circular enclosures, and two linear ditches adhere closely to the pattern of land division south of the road. As we saw in the field west of Boysack (*illus 23*) fragments of an early enclosed landscape appear as cropmarks, and imprint some of that pattern on the open field layout by providing the alignment of trackways.

Since the early pattern pays no heed to the present parish boundary, we can reconstruct the earlier major land division on the line of Buckie Den Burn. It is probably just a coincidence that a *cursum*-type monument aligns closely with the tracks and ditches. (The monument extends across Buckie Den Burn.)

#### The Douglasmuir head dyke

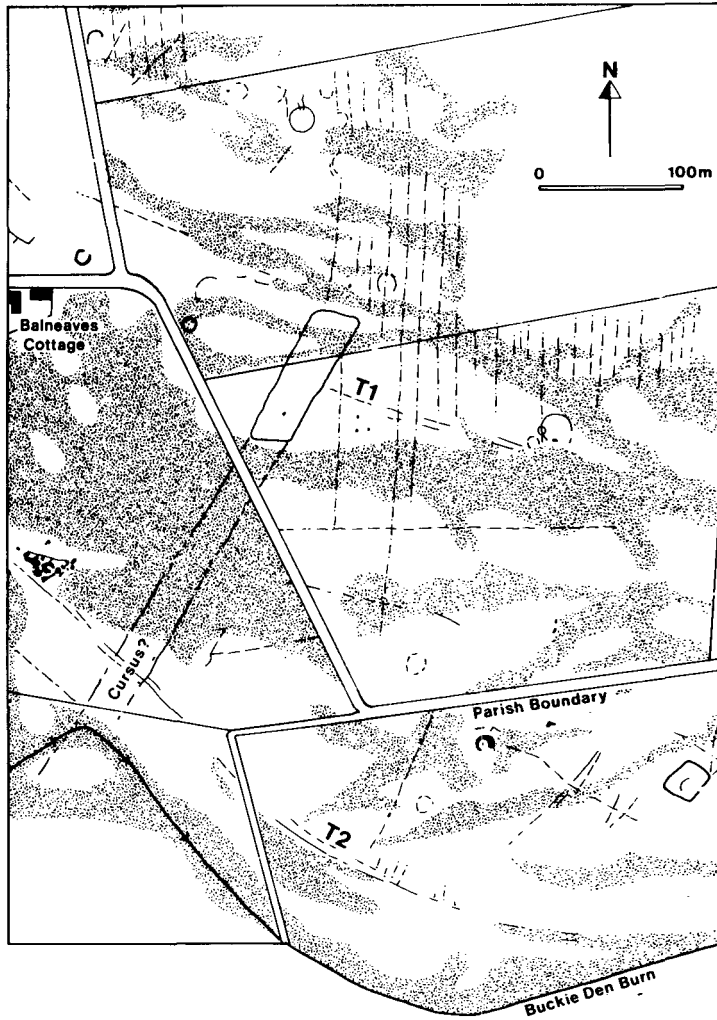
The significance of the Douglasmuir head dyke as a medieval land division depends on the date at which the wasteland/arable boundary was pushed this far into the 'muir'.

The edge of the fields had retreated to its present extent by the mid 18th century (the earliest record so far of the plantation), but may have crept up to the line of the dyke only as late as the early 17th century. This is the first reference to a settlement at Douglasmuir (Warden 1882, 433), at a time of popular 'outsets' on to the waste. If the dyke is late, an earlier line can be provided down one side or other of the set of rigs labelled A in *illus 22, 25*. The sets of rigs A, B, C and D were surveyed in the plantation during early 1983, and no significant changes in rig width were found between sets A, B and D. On these grounds the head dyke may have marked the boundary of arable land extending west unbroken from Boysack in the late medieval period.

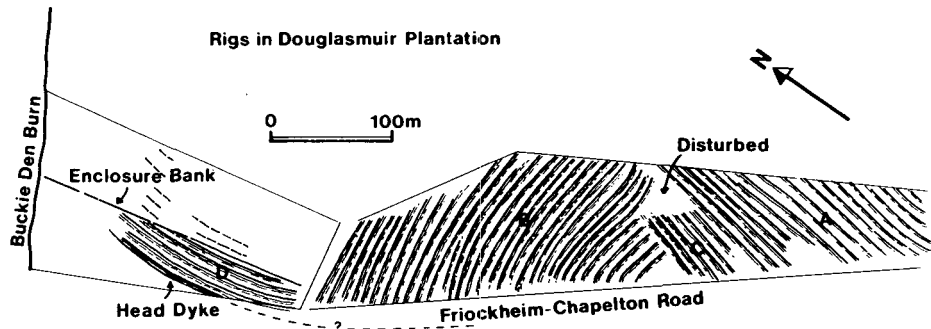
The dyke stands no higher than the rigs to the east, with a slight ditch on its west side. As surveyed (it has not been sectioned) it measured only 4 m wide, about half the width of the adjacent rigs. Running S, it disappears below the present road and must run SW below the road for a



ILLUS 23 Cropmarks NW of Chapelton, SW of Boysack



ILLUS 24 Cropmarks SE of Balneaves Cottage



ILLUS 25 Rigs in Douglassmuir plantation

considerable distance. The rough ground (under woodland and scrub) W of the road bears no sign of cultivation.

South of Douglasmuir, on ground recently upgraded from waste to pasture, a low bank was photographed from the air in 1983. Aligned with a set of rigs, but not enclosing them, the right-angled linear bank is either a head dyke adopted for a while during outsets on to the south end of the muir or an enclosure bank associated with the later plantation.

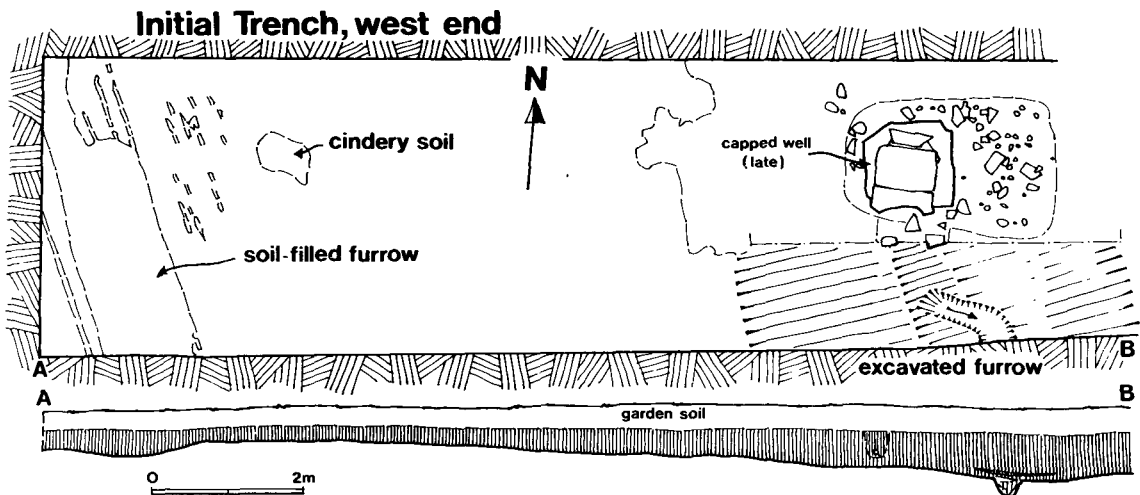
Waste ground is scarce between Chapelton and Lunan Bay; no other head dykes were recorded in the valley, and none was identified with certainty from cropmarks.

#### RIG AND FURROW

A cultivation furrow was investigated in the main excavations at Chapelton, and two were identified in the initial trench E of the burial ground. As cropmarks the spacing of these furrows corresponds to the spacing of upstanding rigs in the Douglasmuir plantation. At Douglasmuir the rigs are known to have gone out of use by the mid 18th century; at Chapelton they were not laid out before the abandonment of the medieval settlement. In much of the Lunan Valley only a single regime of furrows is detectable as cropmarks, but occasionally overlaps indicate a modification to the pattern, and under extraordinary conditions at Newbarns (close to Lunan Bay) at least two separate patterns are visible. Excavations at Corbie, beside the Bay, provided an insight into early medieval ploughing; here rig-formation was actively discouraged.

#### The Chapelton excavations

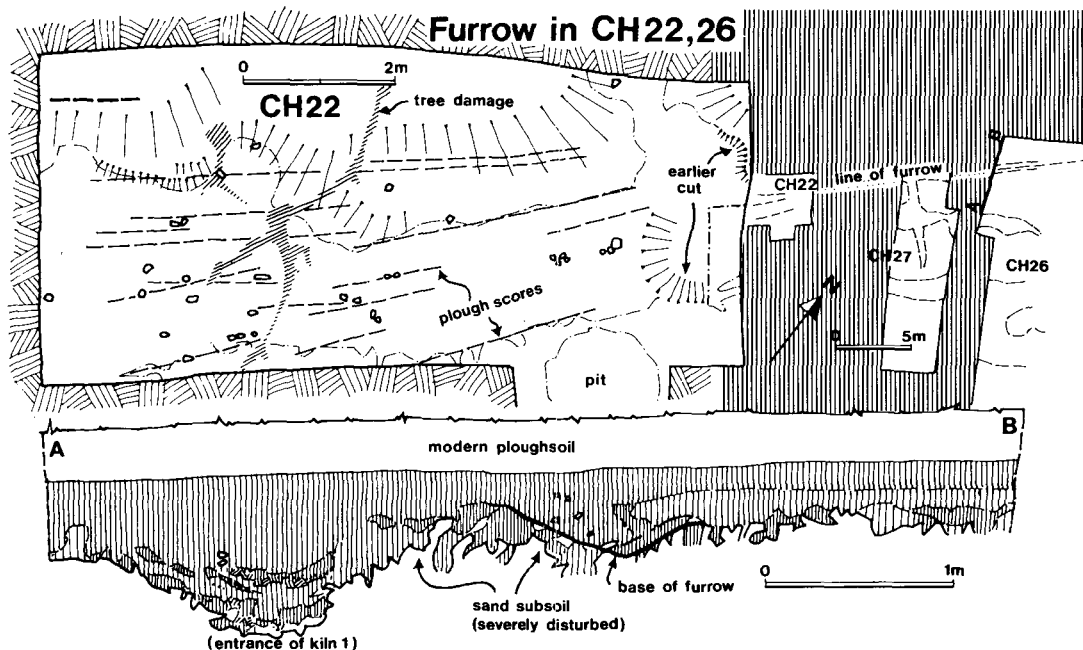
Before excavations started W of the present burial ground a trench was cut into a track-side garden close to the east. (CH1; illus 26). Below garden soil two cultivation furrows were intercepted running N-S, part of a set visible on aerial photos S of the adjacent lane. At the west end of the trench the surviving furrow was a shallow cut in the gravel subsoil flanked by traces of parallel plough scores. About 11 m to the east the second furrow had been disturbed by a later well; only a short length was excavated, cut into natural gravel on one side and into deep hillwash on the other. The base of the furrow had been deepened with a spade-cut channel for drainage; the furrow fill was iron-panned and gleyed.



ILLUS 26 Chapelton E of the burial ground (CH83): plan

An amorphous patch of grey ashy soil directly overlying subsoil between the two furrows resembled the soil associated with the backfill of the enclosure ditch in trench 21 (see above) but only one sherd of (late) medieval pottery was recovered from the 80 m<sup>2</sup> of the excavation.

In the main excavations a single furrow was excavated in two trenches (illus 27). In CH22 the furrow was found at the base of a deep accumulation of hillwash, defined as a wide gentle hollow scored with two converging sets of ploughmarks. Large pebbles and pieces of red sandstone were scattered through its lower fill. A pit immediately SE of the furrow and another cut on the line of the furrow base were earlier, probably associated with the medieval settlement.

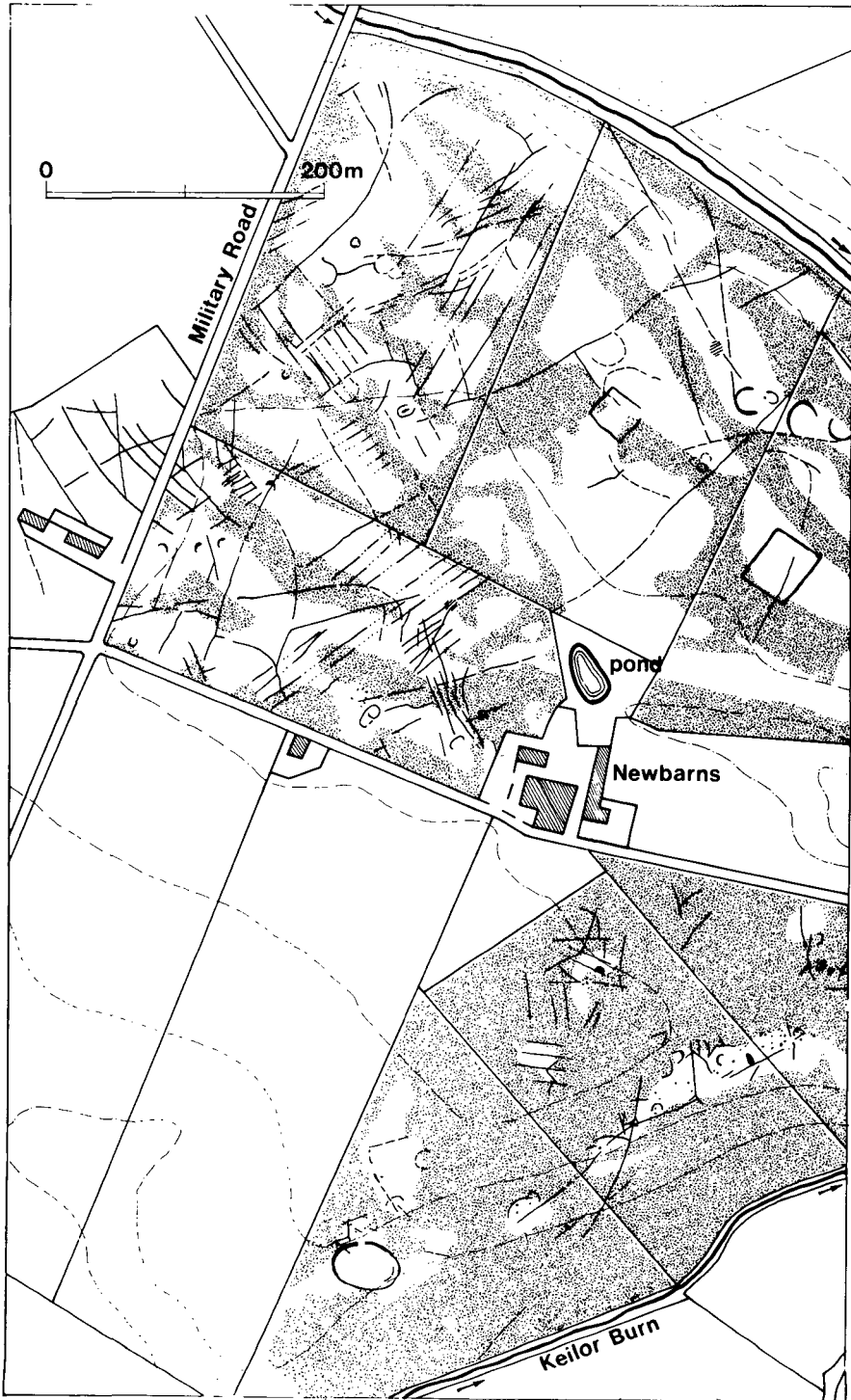


ILLUS 27 Chapelton: Furrow in CH22, CH26

In CH26 the furrow clearly cut the backfilled kiln site, and cropmarks showed that no furrows around Chapelton paid any respect to the line of the enclosure ditch. No post-medieval finds were recovered from the furrow, but the five sherds of medieval pottery recovered must be treated with respect. Four came from a 4 m length of the furrow immediately N of Kiln 1, the fifth from the 10 m length emptied in CH22. The pottery is more likely to be associated with the abandoned settlement than the later field.

### Douglasmuir

Finds from the infill of furrows will not date the establishment of the rigs. The evidence can only be sought on the old ground surface sealed below an upstanding rig. Sadly (on reflection) none of the upstanding Douglasmuir rigs were excavated by the Project. Excavation over most of the plantation area would probably have found little, if any, dating evidence, but the ground occupied by the set of rigs C is potentially productive. These rigs were inserted into a space between A and B, the most westward rig encroaching on to at least one of the B rigs. The ground occupied by C is no less suitable for cultivation than that occupied by B; either its later cultivation was an oversight when the land was



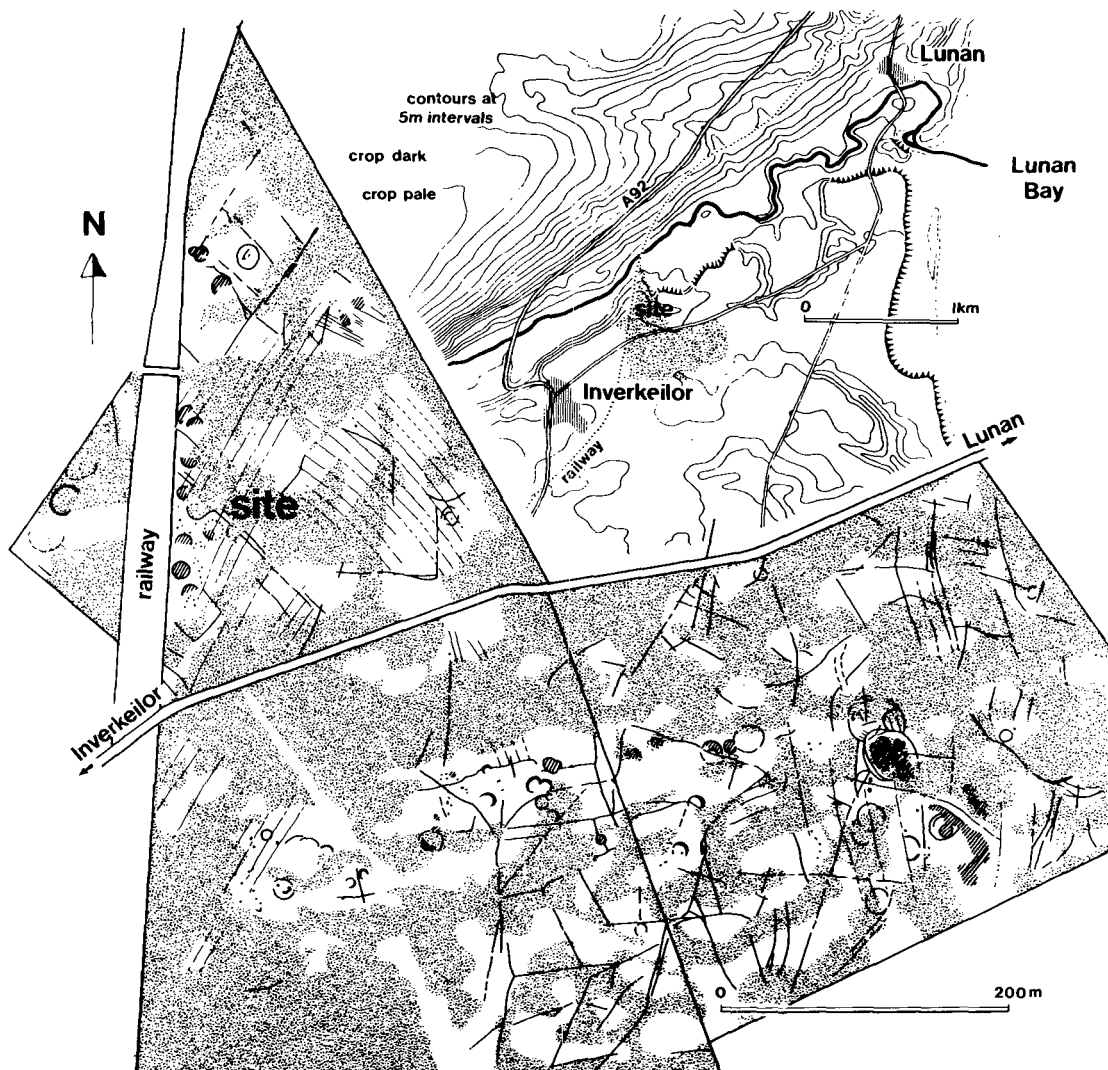
ILLUS 28 Cropmarks around Newbarns

divided into strips, or it was the site of a small enclosure/settlement. If it was a settlement, occupation debris can be expected not only on the old ground surface below the C rigs, but also scattered under the earlier adjoining rigs.

### Newbarns

At Chapelton there are no cultivation rigs associated with the medieval settlement, and no sign of a contemporary enclosed landscape. Around Boysack there is evidence of some continuity from an early enclosed landscape to later rigged open fields, but the spacing at Boysack is similar to that at Chapelton. There is potentially a gap in the cropmark record where early patterns of cultivation rigs have been erased by later ploughing.

On level ground W of Newbarns, close to Lunan Bay, cropmarks are particularly well defined



ILLUS 29 Cropmarks around Ironhill



(illus 28); relatively slight features have survived, preserved by the occasional deposition of windblown sand and sandy soil. Early land divisions are well preserved as almost complete patterns of ditches (as at Ironshill; see illus 29), and at least two separate sets of furrows can be distinguished.

#### The Corbie excavations (CO 83)

Even under good preservation conditions at Newbarns, the earliest cultivation furrows are barely visible as cropmarks. The slightest depressions would need extraordinary conditions for preservation and would only be accessible by excavation, sealed under an earthwork (where they would be slightly damaged by the feet of the builders) or better still sealed under a natural sudden deposit. Under the latter conditions ground ploughed but not developed into rigs at all could even be identified. These conditions were found closer to Lunan Bay near Corbie. An early medieval sand deposit overwhelmed the contemporary fields which had been ploughed in such a way that rig formation was actively discouraged.

Following an auger survey on rough pasture in late spring 1983, two trenches were cut through a deposit of windblown sand on to the sandy ploughsoil of a medieval field (illus 30). Below this a less sandy ploughsoil overlay fluvioglacial gravels. A shallow ditch and several postholes had been disturbed by the earlier ploughing; several flint flakes and a quantity of unglazed, handmade pottery sherds were recovered from the earlier ploughsoil, perhaps associated with settlement pre-dating the ploughing.

#### *The truncated features (illus 31)*

In Trench 2 a shallow curvilinear ditch and pit had been truncated from a ground level one plough depth (or spade depth) above the surface of the gravel. Neither was more than 0.2 m deep.

Several clusters of stones low in the heavy ploughsoil – and one higher – may be packing from postholes cut into the soil without penetrating the ground below.

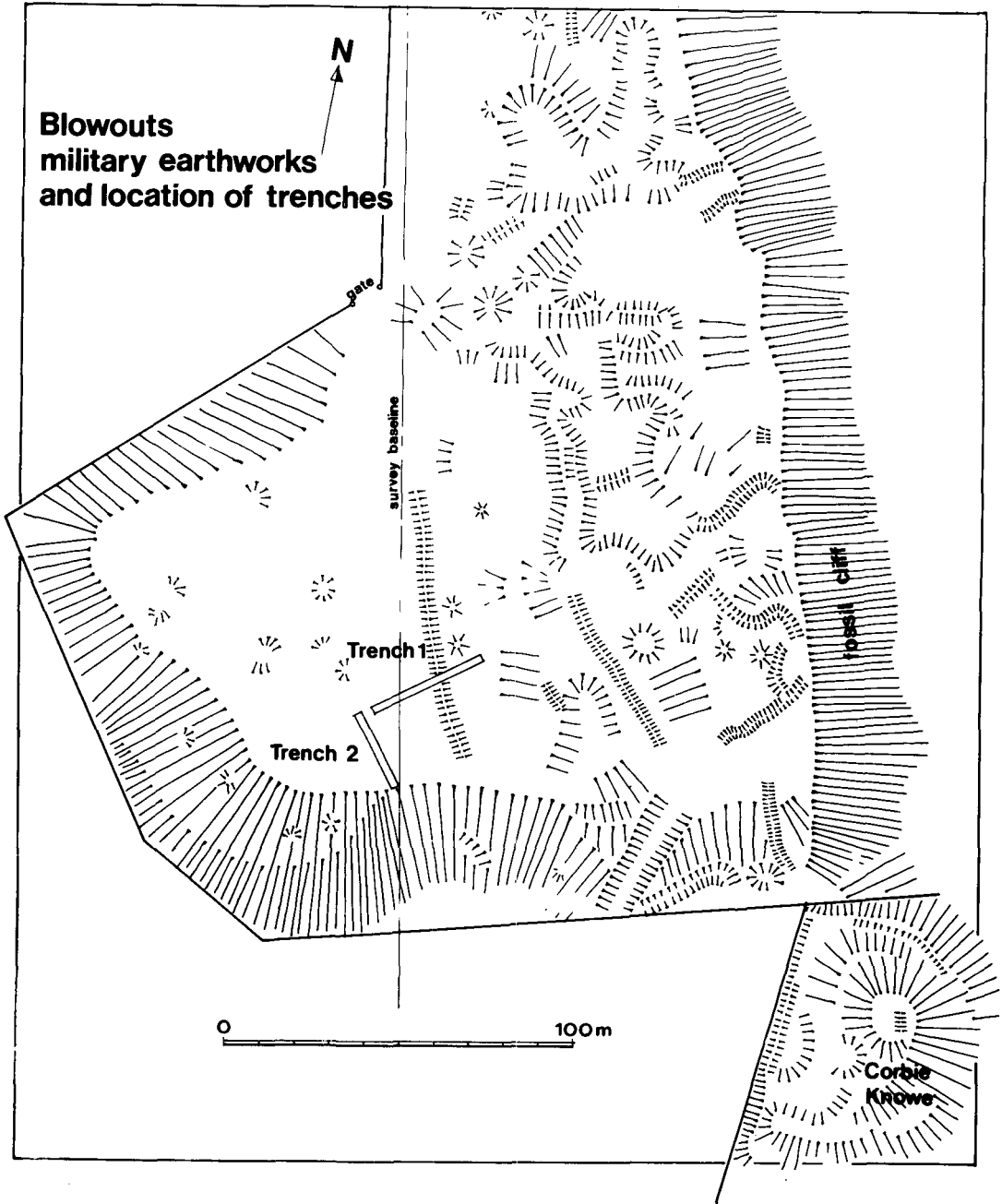
In so small a trench the distribution of features is not worth discussing, but their preservation is worth a passing comment. Early ploughing, with mouldboard (see below), was capable of the same total truncation of soil fills as modern ploughing. For all the excellent preservation afforded to the medieval field surface by the sudden deposition of windborne sand, the features below were no better preserved.

#### *The field surfaces*

Ploughmarks were observed on the surface of the earlier ploughsoil in Trench 1, sealed by windblown sand. Only the landward end of the trench was taken down to this level; the deeper sands overlying the seaward end discouraged excavation. The observed ploughmarks were not as well preserved as in the soil surface above, being clipped and truncated by the later ploughing. The alignment of the parallel scores was NNE–SSW, almost at right angles to the later ploughing. In profile the scores presented a sharp south-east edge and gentler slope on the north-west edge, suggesting the use of a mouldboard on the plough. The very shallow angle on the north-west and the absence of a second set of scores intersecting the first argues against the profile being produced by an ard dragged at an angle.

Better preserved ploughmarks were recovered from the surface of an overlying, sandier, ploughsoil. Windblown sand had accumulated on the ground, to a depth of less than 0.1 m, shortly before the ultimate ploughing of the field. The turning under of this sand blanket enabled individual furrows to be observed quite clearly in section (illus 32). A mouldboard was certainly in use at this stage, and the extraordinary preservation of individual furrows along the recorded section of Trench 1 has enabled the reverses in direction of ploughing to be roughly reconstructed. Illustration 32 attempts to show the irregular nature of the final ploughing, with changes of plough direction taking place neither at regular intervals nor at set numbers of scores. The ploughing pattern revealed here is certainly not the one to produce upstanding cultivation rigs, and does not suggest individuals' land allocation in strips as would be expected for later medieval arable.

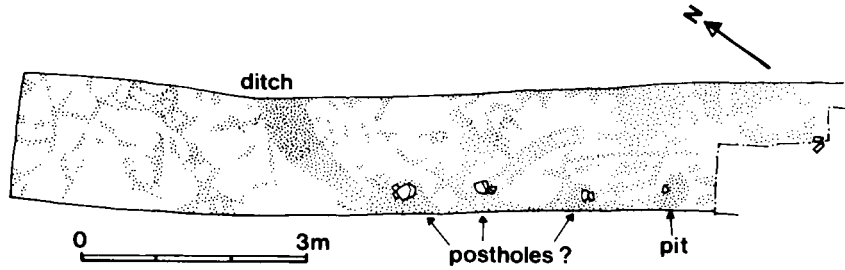
It cannot be argued that the sandy ploughsoil had become marginal land, and that this land had caused a change of regime from rig and furrow to area ploughing; there was no rig formation on the earlier soil.



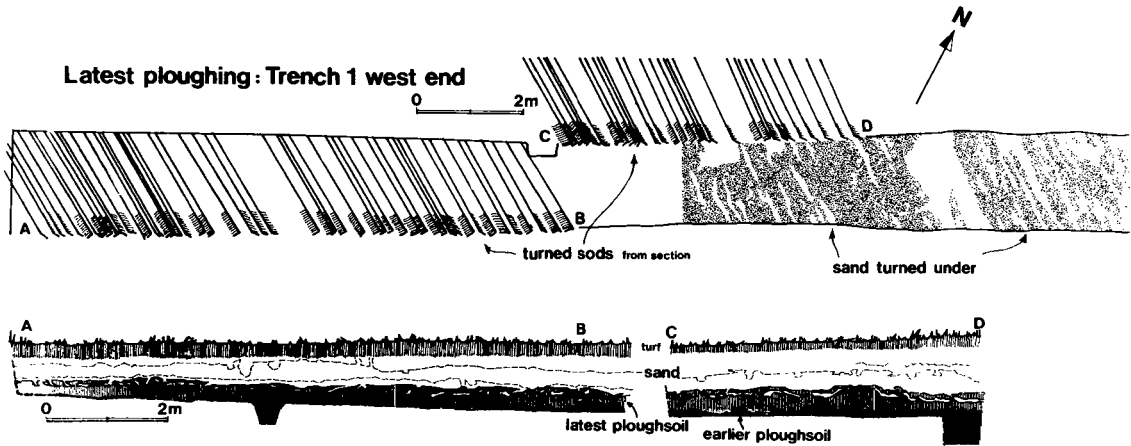
ILLUS 30 Corbie: plan of blowouts, etc

*The windblown sand*

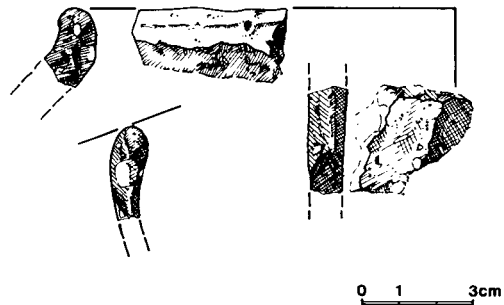
Augering demonstrated that the sand overlying the most recent ploughsoil was over 1 m deep on the seaward side of the promontory. At the seaward end of Trench 1 it approached a depth of 2 m, whilst at the south end of Trench 2 its base was only 0.2 m from the top of the turf. In Trench 1 the sand could be



ILLUS 31 Corbie: truncated features, trench 2 north end (CO 83)



ILLUS 32 Corbie: latest ploughing, trench 1 west end (CO 83)



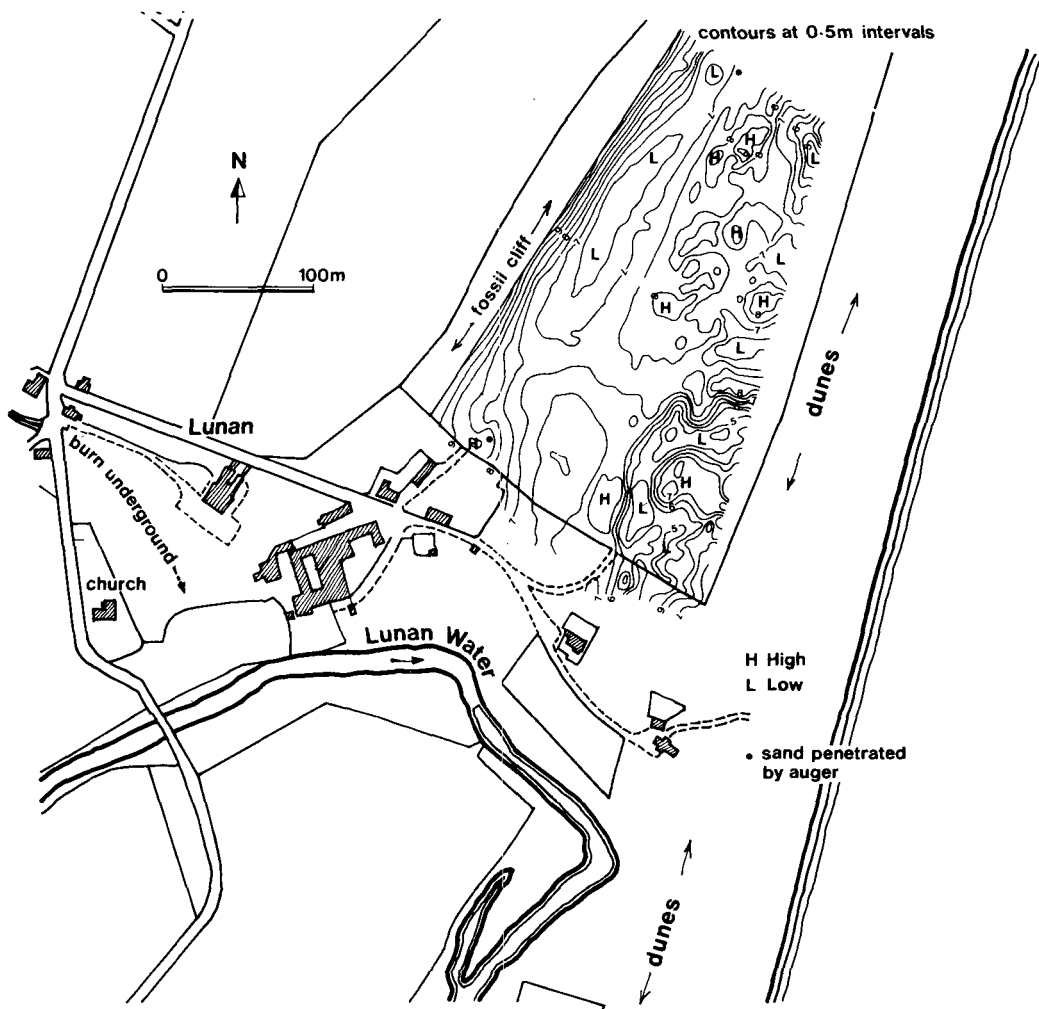
ILLUS 33 Corbie: Pottery from early field soil (CO 83)

separated into three distinct layers; clean pale sand overlying darker silty sand covering a thin layer of clean sand. This need not represent three distinct periods of accumulation, indeed the lack of wind lines within the deposit make this unlikely. The layering may represent no more than changes in wind direction during a short spell of sandstorms. Clean sand sealing the ploughmarks would arrive from the beach below, followed by sand mixed with silt from the fields landward, carried on the prevailing westerlies, followed finally by a further gale from the east. There is no reason to extend the accumulation over more than a single season.

The disastrous spell of sandstorms was preceded by a period of more gradual sand accumulation. The last deposit before the disaster was turned under by the plough but had not been mixed into the soil by repeated ploughing and the action of worms and roots. Earlier accumulations had been mixed into the soil, producing the sandier texture of the later ploughsoil. Although contemporary farmers coped with the gradual sand accumulation for some years before the disastrous storms, over those years the sand problem was not a minor irritation growing increasingly severe. The movement of sand started suddenly, with sufficient deposited in the first year to produce the clear change in texture between the earlier and later ploughsoils. The earlier ploughsoil, though up to 0.5 m deep and thus partly out of plough-reach towards the end of its life, showed no increase in sand content towards its top.

*Implications of the Corbie ploughing on the cropmark record*

The use of a plough-with-mouldboard at Corbie puts the latest cultivation into the medieval period; the lack of documentary references to the sandstorms provides a *terminus ante quem* in the late 12th century (see below). The field might have been abandoned during the first millennium A D,



ILLUS 34 North end of Lunan Bay: contour survey

but the date does not affect the problem that Corbie brings to light. At some stage in the early medieval period ploughing was taking place without dividing the field into strips and in such a way as to discourage rig formation.

Corbie might be exceptional, but there is nothing to support this view. The ground was not marginal; on the contrary it was well drained, light and well maintained. A short distance inland, beyond the fringe of the blown sand, cropmarks of prehistoric settlement are abundant; early medieval settlement is likely to have been much closer, at the mouth of the Keilor Burn (see below). Before the disaster the Corbie field would have been prime arable close to settlement.

Unfortunately no field edge was crossed with the two trenches; we cannot tell whether the ploughing relates to an open arable landscape or the earlier enclosures. (Since no linear 'drifts' of sand were found by augering through the shallower sand blanket to the west, or found upstanding at present ground level, it could be argued that no enclosures were upstanding at the time of the disaster.) If the Lunan Valley generally was ploughed similarly to the Corbie field in the early stages of the open fields, a hiatus in the cropmark record of developing land-use is inevitable.

#### THE WINDBLOWN SAND

##### Red Castle and north end of Lunan Bay

North of the Lunan Water the ground immediately behind the present sand dunes is pasture. Turf overlies a thick blanket of windblown sand. It was hoped that a contour survey of the present ground surface could be combined with an auger survey to demonstrate the relationship between the buried landscape and the relief of the sand cover. Unfortunately the windblown sand was too deep (greater than 1.2 m) for auger penetration over most of the area. In only two bores (illus 34) was the sandcover less than 1.2 m deep. A layer of windblown sand was nowhere visible in the banks of the Lunan Water, but a very sandy soil was exposed cutting field drains NW of Red Castle (illus 35), and in the adjacent riverbank.

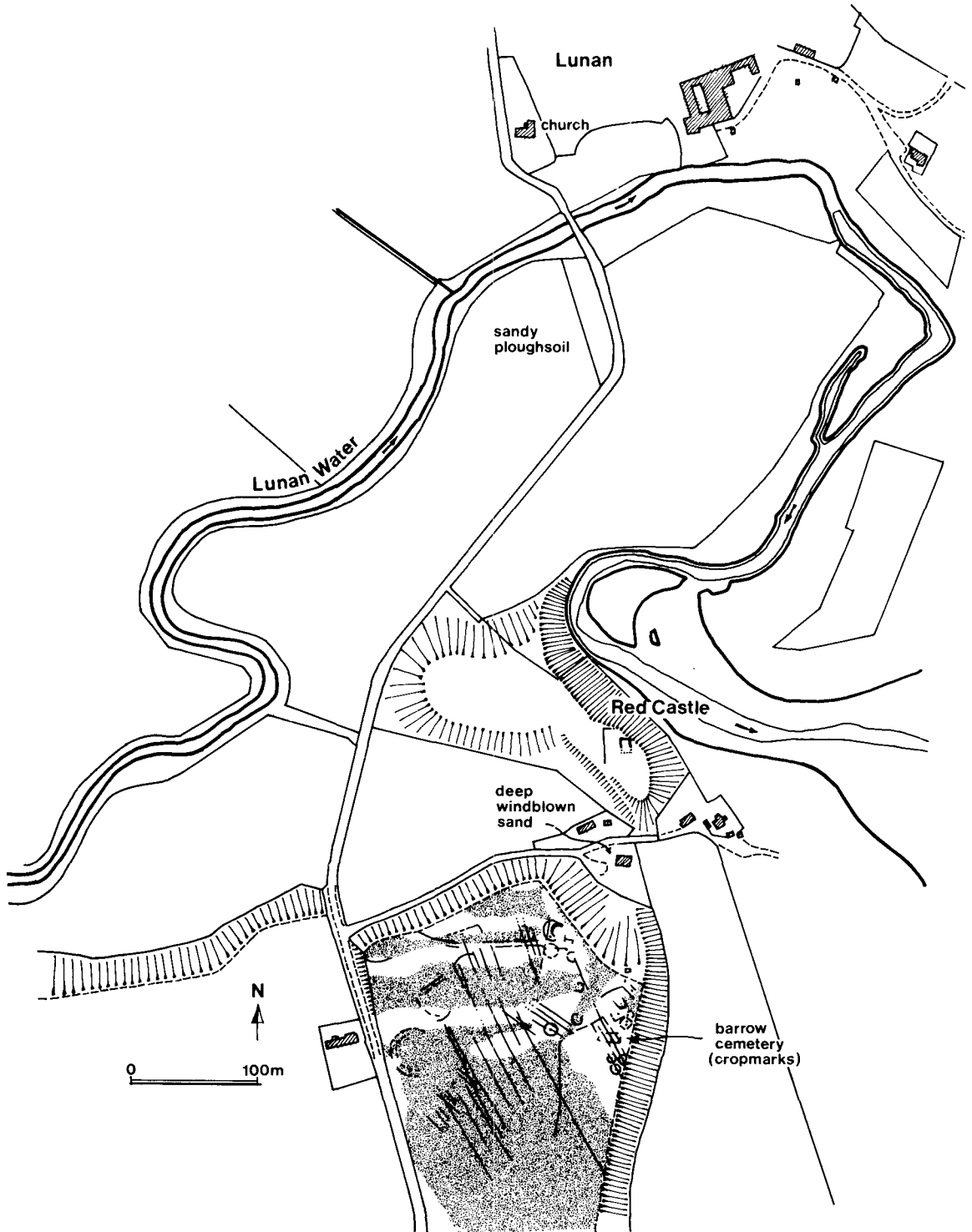
Around Red Castle two banks were considered possible dune formations, but one was clay, relating to a former estuary (late Boreal/Atlantic). The second, between the Castle hill and the adjacent cliff, had at least a capping of windblown sand (to over 1.2 m depth). If any settlement associated with Red Castle existed in this gap (there was certainly activity beyond the gap represented by cropmarks) it will be in good condition below the sand.

##### Corbie

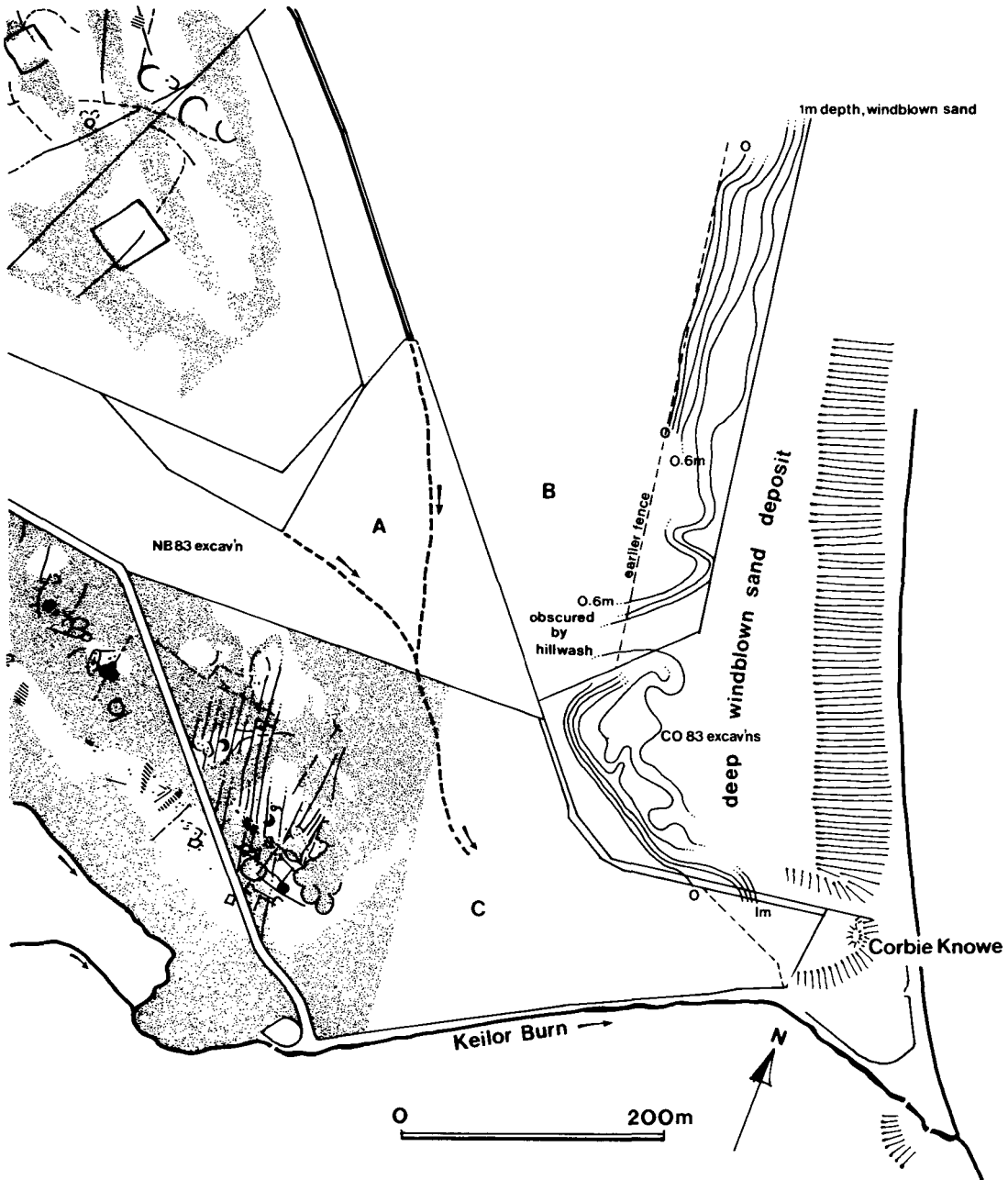
The strip of rough grazing running from 700 m N of Corbie Knowe was augered at intervals early in 1983 before excavations (see above) provided a rough date for the windblown sand deposit. In 1984 augering resumed, around Corbie Knowe, around the edges of fields (A, B and C in illus 36) and well into the field bordering the long narrow strip of grazing (B). Exposures of soils were recorded on the narrow raised beach seaward of the fossil cliffline, in the face of the cliff at the far north end of the grazing, and around Corbie Knowe. The auger survey was designed to assess the extent and severity of the natural disaster, and at the same time (inevitably) to define the area of good preservation below sand and to identify indications of occupation brought to an end by the drifting sand. Because of the limitations of the short (1.2 m) auger the survey could not assess the extent of the blown sand, but a conservative estimate of the area of good preservation could be plotted.

Illustration 36 shows the extent of *known* windblown sand in the Corbie area. Unfortunately the edges of this area are not archaeologically significant. At the north end the edge follows the recently removed fence separating arable and 'muir', whilst W of Corbie Knowe the sand edge follows a similar fence of the recent past. Interestingly this line continues into the rough ground to the north, following a boundary that certainly has not been in use since the late 1850s (first Ordnance Survey plot). But this earlier boundary is unlikely to relate to a land division contemporary with the disaster. No arrangement of dykes and ditches could contain the shifting sand. Instead the abrupt edges of sand must mark the limit of land brought into cultivation since the disaster, excepting the most recent encroachments on to the 'muir'.

The failure of the auger survey to find sand deposits under recultivated land is not surprising. Some of the sand had been ploughed into the present topsoil (the soil in fields A, B and C contains a higher proportion of sand than the earlier buried soil found in the Corbie excavations), much will have been blown



ILLUS 35 Red Castle and the mouth of the Lunan Water: plan



ILLUS 36 Corbie: plan of windblown sand and cropmarks

and washed off high ground when annually stripped of vegetation and broken up by ploughing, and the rest on low ground is now buried deep below hillwash. (Augering at 5 m intervals along 80 m beside the fence between fields A and B failed to penetrate hillwash.)

Though unproven, the original burying of two burns that converged in field B may be a result of deep sand accumulating in the hollows. Even the course of the combined stream through field C is uncertain, the undulating base of the valley – possibly buried dunes – apparently blocking an exit to the Keilor Burn.

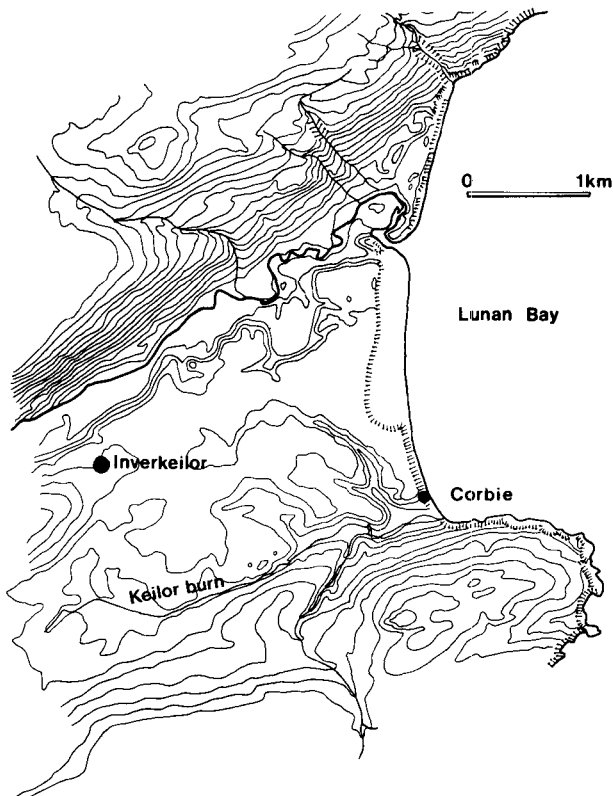
### *Corbie and Inverkeilor*

At the north end of the rough grazing buried soil was barely touched; where it was sampled charcoal was scarce. Around Corbie Knowe the soil was exposed in two faces, and more frequently sampled by auger; charcoal was relatively profuse, particularly in the area currently occupied by caravans. This is the only indication of occupation found on the survey, and is hardly conclusive.

Corbie Knowe is an artificial mound, probably funerary but possibly reused as a motte (N Bogdan pers comm). Although overlooked from the top of the fossil cliffs to the north the Knowe commands a convenient raised position at the mouth of the Keilor Burn. This burn marks the boundary between the baronies of Red Castle/Inverkeilor and Ethie, and sitting at the mouth of the burn Corbie may have been the major settlement of the early territory of Inverkeilor.

The earliest reference to Inverkeilor is late 12th-century, when the kirk and chapel of *Inverkiledes* were presented to the new Abbey at Arbroath by the Lord of Red Castle (*Arbroath Liber*, 37). A good deal of land in Red Castle/Inverkeilor fell into the hands of the Abbey in the late 12th and 13th century, but nowhere is there a reference in the *Liber* implying the consecration of a kirk on a new site or the movement of population from the coast. It must be assumed that the kirkton of Inverkeilor has occupied its present site since the late 12th century. The present site is 3 km from the mouth of the Keilor burn and 1.5 km from the nearest point on the burn (illus 37).

Whether the name of the parish, Inverkeilor, describes the mouth of the burn or merely a site somewhere beside the burn, the Kirkton fails to meet the description. On place-name suggestion, and the convenience of a potential site at Corbie, a shift in emphasis (and major settlement) from Corbie to the present village of Inverkeilor can be put forward. On the negative documentary evidence this shift can be given a *terminus ante quem* in the late 12th century. The obvious cause of the shift is the spread of sand over



ILLUS 37 Corbie and Inverkeilor



the coastal arable; an early medieval date for this disaster is supported by evidence from the Corbie and Red Castle excavations (see above). In all, there are strong indications of a well-preserved early medieval settlement beside Lunan Bay at Corbie.

## CONCLUSION

Survey and excavation on upland marginal land in Scotland, investigating the abandoned medieval landscape, have provided a partial picture of settlement and land-use. Inevitably the characteristics of isolated sparse settlement, frequently short-lived, with a strong pastoral element, have been too widely applied to Scotland as a whole. This incomplete picture of the Scottish countryside has been criticized (Dodgshon 1980, 62–3), but has not yet been amended. The historian has attempted to redress the balance using documentary material, but the late-medieval and post-medieval studies rarely provide the information for a detailed picture. It has fallen upon the archaeologist to provide material for the Scottish lowlands to compare with the evidence from the highlands.

In the Lunan Valley aerial photographs provide most information on earlier landscapes; the failure of aerial photographs to find a medieval landscape distinct from the late prehistoric and the present one is significant. There is no distinct medieval landscape. The medieval settlements have generally not moved, though most expanded during the late 18th- and 19th-century Improvements. Inevitably some early settlements have been abandoned; either these cannot appear in the cropmark record because they are too deeply buried at the south end of Lunan Bay or they have been misinterpreted or unclassified on the aerial photos. Considering the reluctance of rural medieval buildings to show in the crop (none was seen at Chapelton), any number of ‘empty’ rectangular and ovoid ditched enclosures in the valley may have been medieval farms. And not only should the ‘empty’ enclosures be considered medieval; ditched and palisaded enclosures apparently only containing prehistoric ring-ditch houses may themselves have continued into the medieval period, their conspicuous buildings being replaced by ‘invisible’ successors.

Continuity from the prehistoric to the medieval periods should be considered as seriously as continuity from the medieval period to the present. If the Improvements of two centuries ago failed to alter the pattern of settlement in the Lunan Valley, economic and political events of the first millennium AD should have made little impact. The lack of medieval settlements in the cropmark record is not as surprising as the profusion of late prehistoric ones.

Most major land divisions appear to have survived the last two millennia virtually intact by following natural watercourses. Using so convenient a boundary, it is more than likely that these divisions originated far back in prehistory. Only the minor divisions have certainly passed out of use, but even these left an impression on the open landscape of the later medieval period. West of Newbarns (illus 28), the earlier furrows respected the alignment of an older network of fields; only with the construction of the 18th-century military road and the re-enclosure of the land was the pattern erased, and even here a dyke W of the road respected the old line.

On the whole very little new evidence was brought to light in the Lunan Valley from 1982 to 1984, but this paucity may be considered significant. If evidence cannot be found it must be hidden; in this case the medieval is hidden mostly amongst the modern, with some concealed amongst the prehistoric. It is not logical to assume periodic large-scale change in a developed arable landscape. As Barrow pointed out, ‘by the twelfth century and probably long before, the pattern of rural settlement was chiefly determined by the amount of ground that could be ploughed and sown, and of the crops that could be harvested’ (Barrow 1973, 278).

Many questions remain unanswered, and cannot be answered without large-scale excavation.

The medieval rural house is yet to be found in the valley, changes in building traditions from later prehistory into the medieval period have yet to be studied on a multi-period site, and early ploughing has yet to be dated clearly and related to the old enclosed landscape.

Although the 1982–4 fieldwork in the Lunan Valley was research rather than ‘rescue’, many of the important sites were found to be under threat. Red Castle, the best candidate for a multi-period settlement site, is wasting into the mouth of the Lunan Water below. But more dangerously the farms, continuously occupied from the medieval period at least, are undergoing substantial redevelopment. Already the steadings of many have been replaced with large steel-framed sheds; preparing the site for the new shed frequently involves levelling a shelf across a sloping farm site and backfilling with hardcore and concrete. Although the medieval farms under the present farmhouse enclosures are generally safe from this threat, those below the Improved steadings are efficiently erased from the countryside. There are obvious problems involved in excavating a working farm, but without an effort being made in this direction an important type of monument will be largely removed before a single example has been seen.

#### ACKNOWLEDGEMENTS

Thanks are due to the Manpower Services Commission for financing the Lunan Valley Project, and to Jill Kendrick and Tayside and Fife Archaeological Committee for getting the Project started. Further thanks to TFAC – particularly to Gordon Maxwell, Edwina Proudfoot and Liz Thoms – for encouragement and advice throughout the 18-month project and beyond, to the completion of this report.

Thanks to the Royal Commission on Ancient and Historical Monuments of Scotland, Angus District Council Libraries and Museums Department, City of Dundee District Council Art Galleries and Museums, G Whittington and St Andrews University Geography Department, Bruce Walker, Ian Ralston, Nick Bogdan, Anne Kahane, SDD Ancient Monuments Branch, and Tom Boyle.

Most of the fieldwork was supervised by other people; my thanks to John Cannell, Jill Cockshott, Annemarie Gibson, Brian Kerr, Daragh Lahane, Iain Lappin, Fiona McCubbin, Ann Thomas, Tommy Webster, and Steve Zylawij, particularly to John, Annemarie, Brian, Tommy and Steve, who supervised and recorded work at Corbie, Red Castle, the two sites at Chapelton, and Boysack. Thanks also to Bill, Billy, Bob, Brian, Dave, Derek, Doris, Dougie, Elaine, Graeme, Grant, Harry, Iain, Jim, Kathy, Kevin, Mark, Rob, Sandy, Sharon, Stan, Steve, Stu, Tek, and any other diggers whom I can’t remember at the moment.

And finally, special thanks to the landowners and farmers of the Lunan Valley, particularly from Newbarns, Red Castle and Templeton. Without their co-operation and goodwill we would have found even less.

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