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RECONNAISSANCE EXCAVATIONS ON EARLY HISTORIC FORTIFICATIONS AND OTHER ROYAL SITES IN SCOTLAND, 3: DUNDURN

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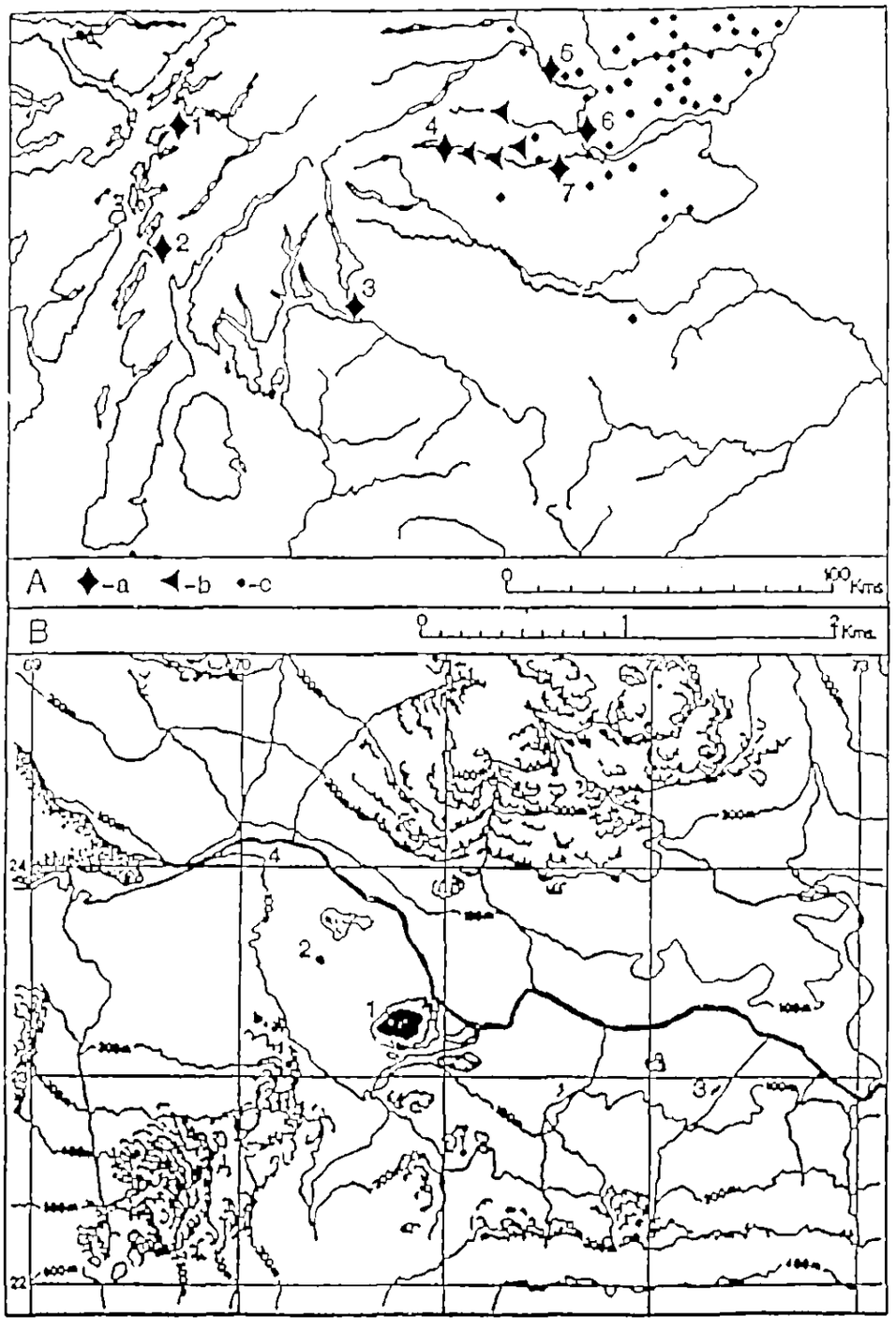
CNTENTS

INTRODUCTION

The excavation of Dundurn which is reported here was part of the University of Glasgow's programme of research on Early Historic fortifications in Scotland - fortifications, that is, defined on the basis of historical references in the 6th - 9th centuries AD. The aims of that programme were set out in the first consequent excavation report, that on St Abb's Head, in Proceedings, Vol 116 for 1986, and are not repeated here. One aspect of the policy must be stressed, however: namely, that it concentrated on the observed defences, and made no extensive exploration of occupation levels within them.

The present report first surveys the known history of Dundurn, and its superficial appearance before excavation. There follows a detailed account of the structural sequence in each of the five excavation areas ('Cuttings'), backed by detailed lists of features and summary lists of associated finds. An illustrated catalogue of the finds, and a list of radiocarbon age-estimates follows. On the basis of this, the evidence for chronology is analysed, and the structural sequence is then summarized. An analysis of the faunal and botanical remains completes the report.

This report, published in microfiche, has the closely defined aim of reporting the excavated evidence from Dundurn itself. The wider implications of the excavations, especially in relation to hypotheses about nuclear forts, and the political and military role of the site in early Strathearn, and about aspects of the material culture and economy of Dundurn will be found in the Excavation Synthesis and Discussion in the printed section of Proceedings.



ILLUS 18 Location maps for Dundurn. A, the wider setting: a, major sites: 1, Dunollie, 2, Dunadd, 3, Dumbarton-Alt Clut, 4, Dundurn, 5, King's Seat, Dunkeld, 6, Scone, 7, Forteviot. b, chambered tombs of Clyde type in SE Scotland. c, Pictish stones.

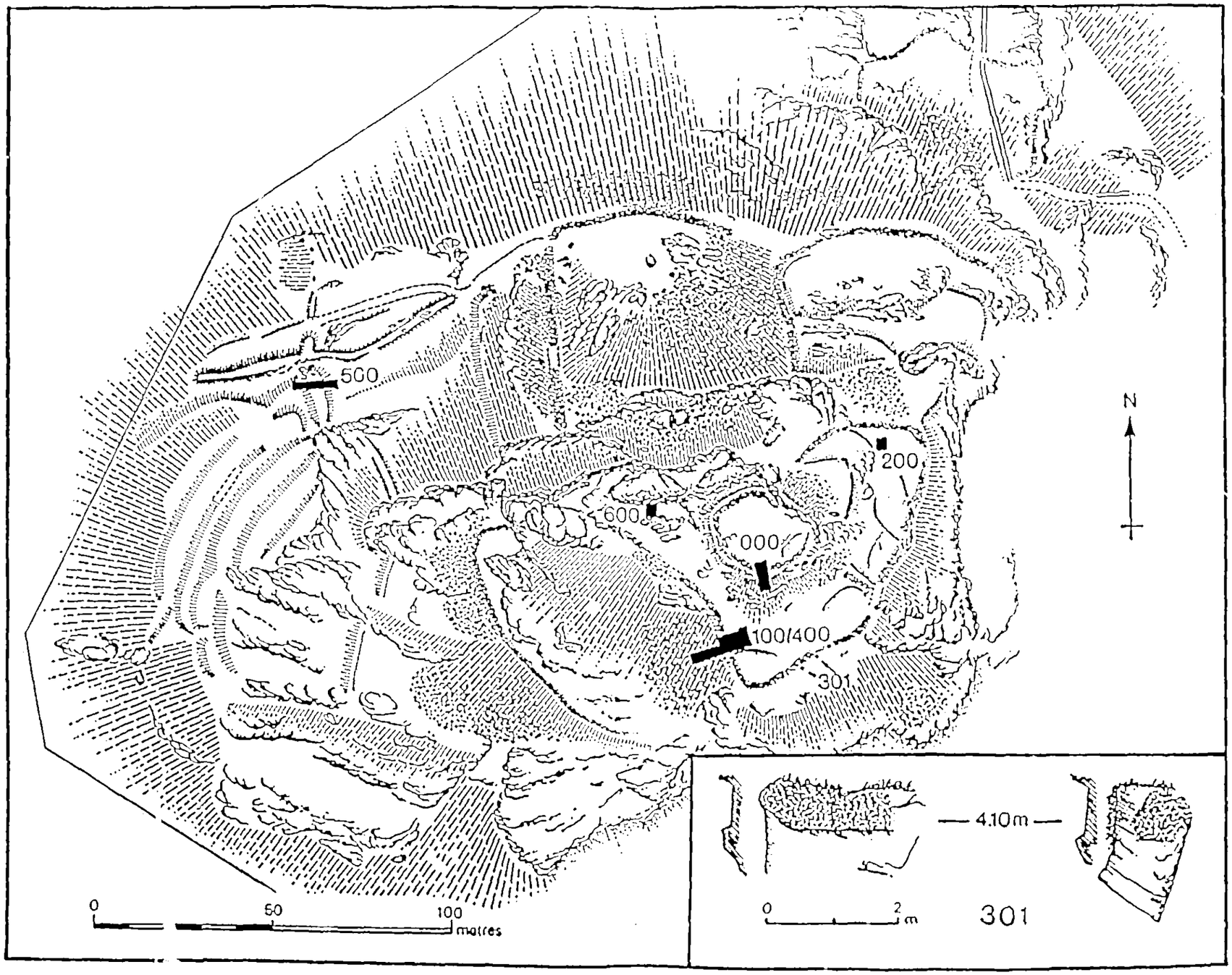
B, the environs of Dundurn: 1, Dundurn, 2, possible ecclesiastical enclosure, 3, Kindrochat chambered tomb, 4, area of rig-and-furrow

HISTORY AND TOPOGRAPHY

The fortified hill of Dundurn stands at the western end of the valley bottom of the river Earn, just below its outfall from Loch Earn (NGR NN 7023), (illus 18). Two notices of the site have long been known to historians. The Annals of Ulster, here probably based on a contemporary annal compiled at Iona, recorded in AD 683 'The siege of Dunadd and the siege of Dundurn'; cryptic references which tell us nothing of the protagonists nor of the reasons for the two sieges. We should not even infer that there was any political or military connection between them. Secondly, the Scottish Regnal Lists relate that Girg son of Dungal died in Dundurn, at a date which may be calculated as AD 889. The reliability of this reference is less certain than that from the Iona Annals.

These two references have led to the description of Dundurn as the capital of the Pictish kingdom of Fortrenn. This bald statement must be qualified on two counts. First, although Early Historic kingdoms undoubtedly possessed major political centres, which were often fortified, the concept of a single centre serving as <u>the</u> capital is certainly inappropriate. Secondly, the firm attribution of Dundurn to the Picts may be questioned, given that it lies about 25 km west of the two nearest Pictish carved stones, with the next nearest being over 40 km away. Indeed, its location at the western end of Strathearn, and the eastern end of major passes through the southern Highlands, made it equally accessible from British Strathclyde and Scottic Dalriada.

The fort of Dundurn occupies a craggy pyramidal hill, rising for about 60 m from the valley floor in a series of steps or terraces to a marked rock boss at about 152 m OD (illus 19).



ILLUS 19 Site plan by Royal Commission on Ancient Monuments (*Crown Copyright*), showing cuttings of 1976-77 excavations; inset detail of rock-cut grooves, 301

Before excavation, there were slight traces of ruined walling around parts of the summit boss; and great quantities of rubble, suggestive of collapsed ramparts, around the edges of the major terraces. In Christison's plan (1898, Fig 75) these suggestions of ramparts are firmed up to show a defended summit surrounded by three enclosed plateaux, on what he calls an 'altogether exceptional site'. He further comments on the way in which the edges of the terraces have been utilized, and outcrops of rock have been linked together, 'just as the nature of the ground dictated'.

Christison also noticed, at the NW foot of the hill, an enclosure protected by an earthen mound rather than by stone ramparts, and itself approached by a 'covered way'. He failed, however, to comment on the cultivation terraces which cross the lowest part of the western spur. All these features are clear on the new plan of Dundurn, specially surveyed for this paper by the kindness of the Royal Commission on Ancient and Historical Monuments of Scotland (illus 19).

The visible remains of a defended summit, surrounded by lower walled enclosures looping out from it, led Stevenson to include Dundurn in the category of 'nuclear forts' propounded in his seminal paper on Dark Age capitals (Stevenson 1949). Apart from the plan itself, the characteristic features were the linking of rock outcrops, and the exploitation of natural scarps, aspects already commented on by Christison. Moreover, Dundurn, as we have seen, was mentioned as undergoing a siege in AD 683. Dunadd, mentioned in the same Annal, likewise has ramparts of nuclear layout, set on a craggy hill with a summit boss and surrounded by well defined terraces.

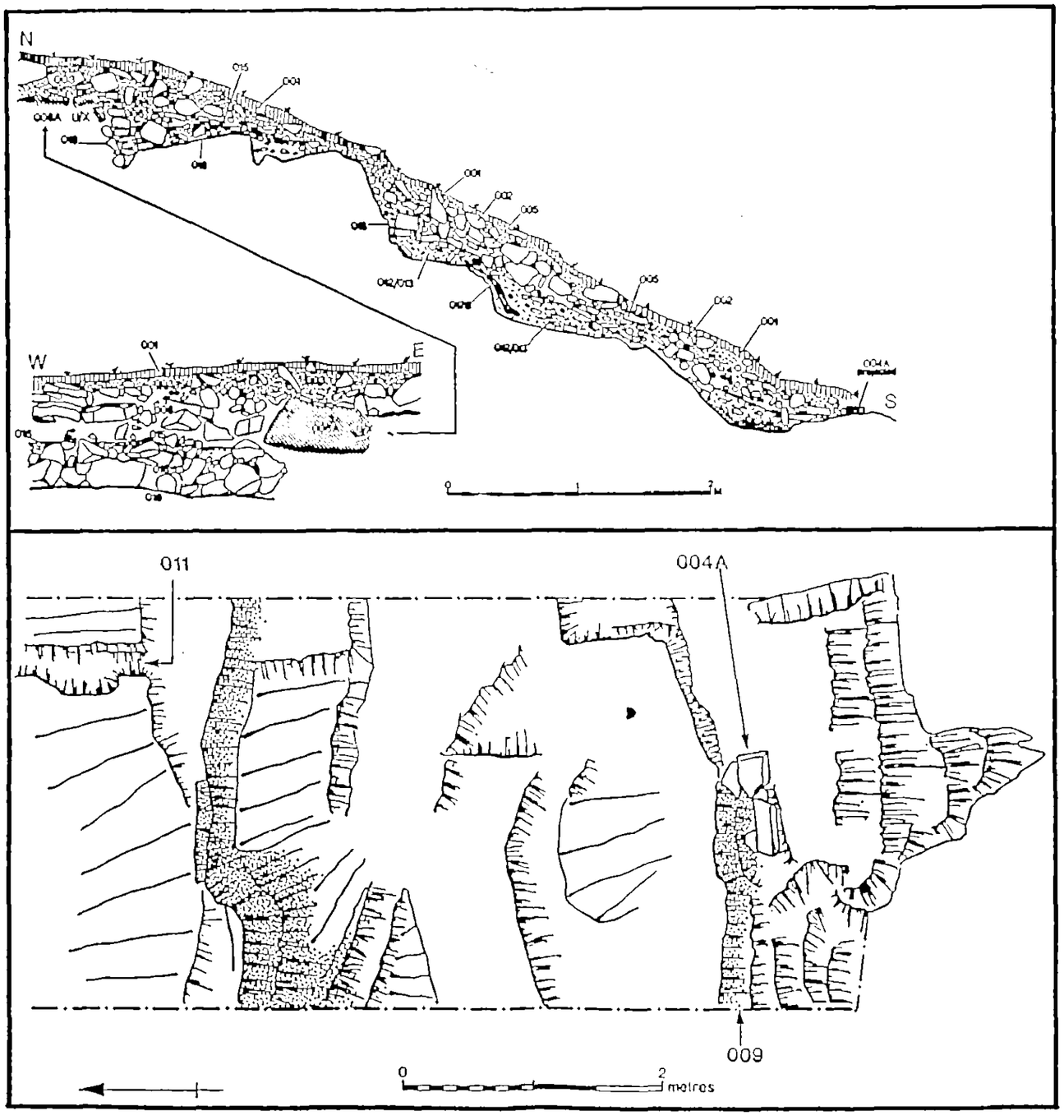
Dunadd had been excavated, at a low technical standard, in 1905 and again in 1929. Dundurn, equally classic as a nuclear fort, and equally established in the Early Historic period, was still unexplored when the Glasgow University programme of research on Early Historic fortifications was first set up. It was obviously an early target for the programme; and in 1976-77 became the second site to be excavated.

The major cross-rampart cuttings were DN 000 (illus 20), across the southern slope of the summit boss; DN 100/400 (illus 21-26)across the western edge of the uppermost terrace; and DN 500 (illus 27) across the earthen bank at the NW corner of Dundurn. Minor explorations were DN 200, an uncompleted excavation on the upper terrace; DN 300 which recorded minor features; and DN 600 (illus 28), the so-called St Fillan's Well. These are now reported in detail.

THE STRUCTURAL SEQUENCE AS EXCAVATED

CUTTING DN 000 (illus 20)

In 1976, Cutting 000 examined the structures enclosing the summit of the hill and a small portion of the interior. The trench was sited on the south side of the summit boss. The 3.0 m wide trench was laid out across traces of rampart rubble on the slope in a slight hollow between outcropping ribs of bedrock and extended into the adjacent area of the level interior: approximately 5 m of the slope and 2 m of the interior were examined. Upon stripping the turf it became clear that the trench was in effect laid out over two distinct deposits. Those on the summit were separated from those on the slope by a ridge or scarp in the bedrock, which severed any possible stratigraphic link. This bedrock ridge, which is in fact the top of a nearly vertical



ILLUS 20 Cutting 000: E and N faces and bedrock plan. Stipple on plan indicates shattered or quarried rock

scarp (0.75 m high) running E-W, conditioned both the site formation processes and the construction of the defences; it also limits our ability to relate the two sequences of material. (In the course of this discussion we will frequently use this scarp for locational reference.) Because of this situation, the slope and the interior deposits will be discussed separately and, when appropriate, possible relationships between the two will be suggested.

In the body of this account, three-digit numbers refer to specific features which are described in detail at the end of the discussion.

SLOPE DEPOSITS AND RAMPART EVIDENCE

Before any building began on the slope, the turf was stripped and the naked bedrock exposed. In places the freshly shattered appearance suggested that the natural surface had been worked to suit building requirements, perhaps with the aid of fire. The principal human feature is the previously mentioned steep scarp at the head of the slope; others include an apparent slot at the foot of the slope which may have held a horizontal timber oriented E-W. This slot is closely aligned on a pronounced groove (303) cut through an upstanding rib of bedrock about 4 m E of the trench edge. The groove is formed by a scoop approximately 0.5 m wide, quarried to a depth of about 0.25 m. It is clearly a deliberate cut and presumably held a horizontal beam. At the head of the the slope, on the level summit, there was an enhanced natural fissure (011), interpreted as a combined post-setting and slot for a horizontal beam running N-S and tying into the primary defence on the slope. It is worth drawing attention here to the fact that in other places on Dundurn bedrock has been worked, apparently to

support timber beams. On the summit, the feature known as St. Fillan's Chair is clearly quarried into protruding bedrock, possibly to bed a horizontal timber; and on the first terrace below the summit are two rock-cut grooves which were the object of investigation in Cut 301 and are discussed below in the section on trench 100/400.

The earliest deposits consisted of pebbles mixed with fragments of burnt animal bone, charcoal and a nail fragment, found lying in hollows of the bedrock (020). These deposits were shallow and discontinuous, and represent debris from the initial period of construction.

These basal pebbles were sealed by deposits of loose chippy stones and also some larger rubble in a matrix of charcoal-stained dark soil containing burnt animal bone and copious charcoal derived from both oak timbers and hazel twigs. Two intermingled deposits, believed to relate to the same construction/destruction episode, were designated 012 and 013; other features also hinted at the nature of the burnt structure (014, 017, 019). The only distinction between 012 and 013 was that there was a higher concentration of nails in the latter than the former; much charcoal, including both twigs and beams was present in both. Careful plotting of the distribution of nails failed to reveal any pattern indicative of structural members, but the nails themselves have implications for the nature of the structure which will be considered below.

Within 012/013, sub-features were found which suggest the nature of the first structure on the citadel slope. Features 014, 017A, 017B are all charred fragments of oak beams, 200 mm or more in scantling, two of which are oriented N-S, at right angles to

the bedrock scarp, while the other is parallel to that scarp. All three provided material for radiocarbon age-estimates (see Tables 2 and 3 below). These three burnt beams, together with the other charcoal, which includes hazel twigs, and the nails show that the first building phase contained a substantial timber element. The nails are critical for our interpretation of this phase. To summarize the full discussion of the nails in the finds report: the range of sizes extended from small examples 47 mm long to spikes 170 mm long; however, the majority fall into a group 100-120mm long. Thus, the majority would have been used to fasten timber members - struts or planks - no more than 50-80 mm thick, and even the long spikes would not be appropriate for timbers much thicker than 120-150 mm.

The presence of both timber and nails suggests an analogy with that length of the rampart at Burghead which had likewise contained both elements (Young 1891; 1893). At Burghead, as at Dundurn, there were logs or beams of 150-230 mm scantling. To these were fastened planks, varying in width, and 50-80 mm thick: just the thickness for which the Dundurn nails were most suitable. Admittedly Dundurn lacked the iron 'bolts' of estimated length 200 mm and breadth 25 mm which were recorded at Burghead: but these can hardly have 'riveted' together (the excavator's expression) logs of 200 mm scantling. They can only have secured planks to the beams, both of them having first been drilled to receive the bolts.

On the Burghead pattern, in so far as it can be deduced from Young's report, supplemented by Small's observations (1969), the Dundurn beams and planks, nailed at right angles to one another, and perhaps infilled with wickerwork, would have been laid

horizontally between layers of earth and rubble. The one thing lacking at Dundurn to complete the analogy with Burghead is the large squared blocks of stone which provided the front and rear revetments at the latter fort. At Dundurn, the rampart backed on to the quarried scarp of the summit boss, so no rear revetment was needed. Large stones from the front face could well have been salvaged to be used in building the rampart of phase 3 which followed on the destruction of the earlier defence.

The front of the rampart appears to have been based on horizontal beams, set in rock-cut grooves where they crossed spines of rock (eg 009; 303); the rear was tied back into slots cut in the solid rock of the summit (eg 011) (illus 20). Its overall width was about 4.40 m, and it rose to a height of at least 2 m. It is possible that it then ran back level to the interior, perhaps with a wicker breastwork at its outer edge. Its overall plan and dimensions can be established on the basis of slight traces of stonework around the summit boss: an irregular oval, about 25 by 17 m internally.

This primary timber-reinforced structure, assigned to phase 2B, was comprehensively burned, and the charred debris was then dragged downhill, so that some of it occurred in cutting 200, and more importantly, in trench 100/400 as features including 110, 415, 429, 430, thus providing a valuable stratigraphic link between activities on the summit and those on the terrace below: Horizon Event 2.

The burning of the timber-reinforced enclosure of the citadel was evidently followed immediately by the building of a new defence; no turf was allowed to grow over the burnt debris. This construction is represented by the rubble of a stone rampart (005)

and associated structural features (004, 004A, 009, 010, 017). Feature 005, which extended over the whole slope, reaching a maximum depth of about 0.5 m, was a tightly packed deposit of large stones and small boulders, which had evidently not been shaped or worked. The stones were from a mixture of geological sources: schists, sandstones, quartzes and others, of which about 50% were schists. The stones had a marked water- or glacier-worn appearance: 45% had certainly been rolled. It is reasonable to believe that these stones derived immediately from the valley bottom.

Feature 005 is interpreted as the core of a dry-stone rampart, which may have been timber-reinforced, but in which nails had not been used. It has been assigned to phase 3 of the site. In places the disposition of the stones suggested traces of beam slots. Feature 009 represented the remains of the front revetment and an associated beam slot oriented parallel to the scarp. Only two slabs of the revetment survived, (004A), at the centre of the trench at the foot of the slope, lying in the beam slot cut into the bedrock in phase 2B. The slot evidently housed a beam perhaps 250 mm wide and seems to have extended behind the front revetment of the rampart. The less well-preserved feature 004 is taken to be a continuation of the same beam slot. Feature 017 is another setting of sandstone slabs presumed to be a fragment of a beam slot. This is located midway up the slope in the heart of the rampart and is oriented across the slope-face like 009. The third possible slot, 010 was represented by lines of larger stones with smaller stones between them; when the latter were removed a ragged slot about 200 mm wide was revealed. This feature was located near the top of the slope and was approximately parallel to the other

two.

Very few nails were found in the make-up of this second rampart and those were assumed to be residual from the earlier timber-reinforced structure. They are all without exception in a poor state of preservation, whereas many of those found in earlier features were exceptionally well-preserved. The dry-stone rampart is likely to have been on the same scale as its predecessor, with its front revetment, (004A), located in the rock-cut slot of phase 2B. This would suggest a wall c. 4.40 m wide and rising to at least 2 m high on its outer face. Although there is no evidence of burning or deliberate destruction, this rampart is in such a ruinous state that any more detailed reconstruction would be pure speculation. Indeed, since 005 is at most 0.5 m deep, the scarcity of rampart-rubble might cast doubt upon the existence of anything beyond the simplest of structures. Even when the rubble from feature 002 is included this does not allow for any substantial walling. Feature 002, the final deposit on the slope, seems to represent the collapsed debris from the phase 3 citadel rampart; it was distinguished from feature 005 by its looseness and complete lack of structure.

Also relevant to the interpretation of the citadel layout are the possible traces of an entrance staircase, 302. Located part-way up the rock outcrop which forms the south side of the citadel were two courses of stone walling. Because of their position mid-way up the crag it seems unlikely that they represent a rampart. The lower portion of the crags are naturally stepped and the walling may represent a continuation of the steps. No excavation was carried out here so the existence of a staircase is not certain.

If, as the field remains suggest, the rampart extended around and enclosed the entire summit, then the resulting structure (an irregular oval about 25 by 17 m internally) would be comparable in form and situation on a craggy hilltop to the small fortified structures known as duns. Only a few instances of timber-laced duns have been inferred - perhaps unjustifiably - from the evidence of vitrified walls (Ritchie and Ritchie 1981,109; Feachem 1963,175; Childe 1938,23-43). Available dating evidence suggests that they belong to the Pre-Roman Iron Age. On the other hand, duns with no observed timber-lacing were common in Argyll in the 1st millennium AD, where a majority of excavated examples was occupied after AD 500 (Alcock & Alcock 1987, 85).

SUMMIT INTERIOR

On the more or less level area of the summit boss, excavation was deliberately restricted so as not to prejudice future excavation by unduly disturbing stratification or structures. Consequently, evidence of structures on the citadel is very slight.

The interior deposits, as explored, exhibited at least two, and more probably three, phases of building. There is little evidence for a pre-existing soil or turf, so we must suppose that the summit was largely bare rock. On excavation, the bedrock of the summit presented a fairly level, if deeply fissured, surface. The earliest feature (011) was a combined post-setting and beam slot, which had been cut into a pre-existing cleft in the bedrock. In plan it was an irregularly-sided gully capable of holding a beam 250 mm wide projecting over the scarp edge and providing a setting for a post up to 400 mm in diameter. If a post occupied this feature it would have decayed or been removed before the next

deposit, but a beam could have remained in place while the interior deposits were being laid down. The most attractive interpretation is to see 011 as contemporary with the other rock-cut features of the phase 2B timber structure. This suggestion is supported by the presence of large pieces of charcoal in 011. If on the other hand it represents a post-setting, then it is the only feature of an otherwise unknown structure, which pre-dates all other summit structures.

Directly upon the bedrock and sealing 011 was a deposit of large stones and boulders (016), evidently intended to serve as the foundation for a tightly packed paving of rounded pebbles, gravel and yellow soil (015) above it. Only a small area of this deposit was seen (perhaps 6 m^2), and it is interpreted as a deliberate floor or yard. It overlay the burned beam 011; and there was no trace of burning on its surface. It is most probable, therefore, that it was laid down after the burning of the phase 2B defence. For these reasons, it is assigned to phase 3, along with all overlying deposits. On the available evidence, however, it is not reasonable to assign these deposits to sub-phases.

Upon the pebble surface was a deposit of tumbled sandstone slabs and blocks (006). It is suggested that this tilted and uneven deposit represents the collapse of a dry-stone building rather than a deliberately laid paving. The only evidence for this internal building was a short stretch of walling only two courses high in the NE corner of the trench (006A). As excavated, this wall of well-laid sandstone (ORS) slabs was over 0.5 m wide and appeared to be the corner of a building, the remainder of which was otherwise entirely beyond the limits of the trench. This

structure was left unexcavated. The deposit 006 was over 0.2 m deep in places and this suggests that the building in question was substantial. The deposit is remarkable not only for the presence of a building, but also for the use of Old Red Sandstone. The nearest outcrops of ORS are approximately 15 km downstream on the Highland Boundary Fault. Also from some distance away came a roughly hewn slab of tufa with adhering mortar, and two smaller lumps of tufa. The tufa with mortar (SF 030) was found amongst the rubble while the smaller lumps were found in the packing of the irregular drain (008) cut through the rubble.

Tufa, because of its porosity and consequent lightness, was sometimes used in the vaulting of Roman military bathhouses. The occurrence of red tile fragments, used as aggregate in the mortar adhering to the tufa block SF 030, as well as in other mortar fragments found unstratified in molehills on the summit, argues strongly for such a source here. The robbing of Roman structures for building materials for post-Roman ramparts is known, for instance, at Cadbury (Alcock 1972, 67, 176), Clatchard Craig (Close-Brooks 1986,) and Rubers1aw (Curle 1905). In this case, the nearest possible site is Dalginross 7.5 km down the valley, where no bathhouse has been discovered, perhaps because of the very limited excavation there. The closest certain example is that excavated at Strageath 20 km downstream (Wilkes pers. comm.). Incidentally the fabric of the Strageath bathhouse was largely undressed sandstone blocks set in clay - perhaps the source of the ORS making up 006.

The final summit deposit (003) was a solid floor made up of large stones and small boulders packed with gravel and small stones. The large stones are identical to those in the final

slope deposits (002) and in the rampart core (005) of the phase 3A citadel. This indicates that this final paving is likely to be contemporary with or later than the rampart. The QRS building and subsequent floor on the summit are thus not absolutely tied to the slope deposits and rampart sequence. This means that the final floor could be contemporary with the phase 3A rampart; or with the phase 3B reinforcement of the terrace wall; or, least likely, could have been built from the debris of the ruined rampart.

LIST OF FEATURES AND SPECIAL FINDS IN CUTTING DN 000 (illus 20)

3.0 m wide cut from 2.0 m within summit interior across the ruinous rampart on S slope.

Feature	SFs
000 UNSTRATIFIED	
	177 Glass sliver 6 lumps vitrified rock
001 TURF	
Covering both slope and summit. Charcoal noted towards foot of slope. Small fragments of mortar with flecks of red tile similar to that noted on SF 030 were collected from molehills on the summit.	006 Chalcedony blade 007 Fe nail 008 Fe nail 204 Fe nail 205 Fe nail 215 Fe nails (2) 218 Stone disk fragment
002 SLOPE RUBBLE	
Tilted loose rubble composed of large stones and small boulders (up to 0.5 m diameter). Stones were about half schists with remainder being sandstone, quartz and unidentified types. About 45% of the stones showed marked evidence of having been rolled by glacial or water action: rounded shape and no sharp edges. Only a small amount of charcoal and burnt bone was noted.	209 Fe nail 210 Fe nail 211 Fe spike 216 Fe nail

003 LEVEL STONES AND GRAVEL

Identical to those described in 002, but more tightly packed within a matrix of grit and small gravel. This deposit was located on the level summit. It formed a level surface and perhaps represented a metalled floor.

212 Fe nail
213 Fe nail
214 Fe nail
2 lumps vitrified stone

004 SLUMPED REVETMENT

On W side of trench (but not appearing in recorded section or plans) was apparent slumped revetment, with pockets of charcoal.

004A IN SITU REVETMENT

In the centre of the trench, two sandstone(?) slabs of the front revetment remained in situ, respectively 400 x 180 mm and 300 x 200 mm, each 100-150 mm thick. These remained in position because they lay in the rock-cut slot, 009 FRONT BEAM SLOT, aligned with 303 SUMMIT SLOT.

005 CORE

Made up of large stones and small boulders of which 45% were rolled or water-worn (as in 002 and 003). The deposit extended from the scarp in the bedrock at the top of the slope about 4 m downhill to the foot of the slope. At its deepest point the deposit was about 0.5 m deep. This deposit was more firmly packed than 002 above it and in places appeared to be level-laid. Lines of large stones gave the suggestion of a beam slot (see 010).

019 Fe spike
023 Fe nail
221 Slingstone

006 SANDSTONE SLABS

Deposit of Old Red Sandstone slabs and blocks covering level area of summit. Tilted and uneven surface, apparently collapse from a dry-stone building (006A). ORS slabs and a block of tufa with adhering mortar presumed to have been robbed from a Roman building, were found in this layer.

030 Tufa block

006A DRY-STONE BUILDING

The corner of this appeared as solid laid stonework, 2 courses high, in NE corner of trench. Not further excavated.

007 YELLOW PATCH

A patch of soil 200 x 250 mm, 150 mm deep, sealed by a slab of 006. Possible post-hole or (more likely) decayed sandstone block. Located on level summit about 1.5 m back from the scarp edge.

008 POST-SETTING

Defined by upright stones around a loose gravelly fill. Roughly rectangular 400 x 350 mm, about 200 mm deep. Either contemporary with 006 paving or later, but certainly earlier than 003. Located on level summit about 1 m behind scarp edge. Not certainly a post-setting, possibly a drain. Upon excavation the rectangular setting was revealed to be a narrow gully cut through 006 running towards the scarp. From this gully came two fist sized fragments of tufa, similar to SF 030, but without mortar.

009 FRONT BEAM SLOT

A rock-cut groove, shown on bed-rock plan as up to 500 mm wide [not 15 cm wide as stated in Site Book] and aligned on rock-cut groove 303. The two revetment slabs, 004A IN SITU REVETMENT, lie at the forward (i.e. S) edge of this, at about 4.40 m from the head of the scarp. Behind them was charcoal from a beam or plank, packed around with flat-laid slabs.

010 UPPER BEAM SLOT

Suggested by lines in the rubble of rampart 005 formed by large stones and infilled by smaller loose stones. The lines formed a ragged slot approximately 200 mm wide, oriented E-W and situated about 1 m downhill from the bedrock scarp. Roughly parallel to slot 009/004 and about 2.5 m uphill from it. Little charcoal was observed.

011 RUTH'S CHARCOAL

Natural cleft in bedrock possibly improved to take beam or post. 250-400 mm wide by 850 mm long and oriented N-S, it intersects the bedrock scarp at right angles. Filled with large chunks of charcoal and a few fragments of calcined bone. Sealed by large rock of 016.

012 SUB-CORE

Dark charcoal-stained soil with small, chippy, angular stones and gravel sealed by rampart core 005. Soil was very loose and uncompacted. It contained a large quantity of charcoal from both hazel twigs and oak beams, which provided material for radiocarbon sample 001. Large quantities of burnt animal bone - including pig and juvenile sheep or goat - were present.

132 Hazel nut shells
219 Fe object
220 Fe nail
223 Fe nail

013 NAILS

Under the rampart core 005, this was similar in composition to 012 but contained a large number of nails and a greater concentration of charcoal. Many of the nails have evidently been scorched and in general are very well preserved. Charcoal derived from oak beams and hazel twigs provided radiocarbon samples 002 and 003.

028-
032 Fe nails (4)
037 Fe nails (2)
038 Fe nail
043 Fe nail
045 Cu alloy strap tag
047 Fe strip
050-
129 Fe nails (83)

014 TIMBER BEAM

Charred end of an oak beam resting against scarp-slope and oriented at right angles to it. 80 x 70 x 20 mm. Part of radiocarbon sample 002.

015 YELLOW CHIPPY

Level surface of small, rounded pebbles compacted into a firm surface. Located on level summit and lacking associated features. To W (near 007) it assumes a yellowish colour, while further E it is a darker brown. Sealed by Sandstone Slabs (006) and not completely covering the boulders of 016 below. Rare finds of charcoal and cattle teeth. Probably a metalled surface.

225 Stone disk

016 BIG BOTTOM BOULDERS

\ pitching of large boulders directly on uneven bedrock surface, forming the base for 015.

017 FLAT STONES

Setting of sandstone slabs, two courses high; possibly a beam slot. Located approximately 1 m downhill from the bedrock scarp against a minor step in the bedrock near the E section. Oriented E-W and extending about 1 m. Originally thought to be associated with charred timbers 017A and 017B, but later seen to be part of rampart 005.

017A BEAM A

Fragment of charred oak beam lying against and parallel to a minor step in the bedrock. Approximately 200 x 300 x 50 mm. Sealed under 017 slabs. Part of radiocarbon sample 003.

017B BEAM B

Fragment of charred oak beam sealed under 017 and oriented at right angles to minor step in bedrock (and 017A). Approximately 250 x 100 x 50 mm. Part of radiocarbon sample 003.

018 BEDROCK

Natural steps and scarps apparently enhanced by human agency, perhaps with the use of fire.

019 DIRTY SLABS

Setting of sandstone slabs at base of 012/013 and resting on 018 and 020. Located 1 m down hill from bedrock scarp, towards centre of trench. Function unclear. About 700 x 200 mm in area.

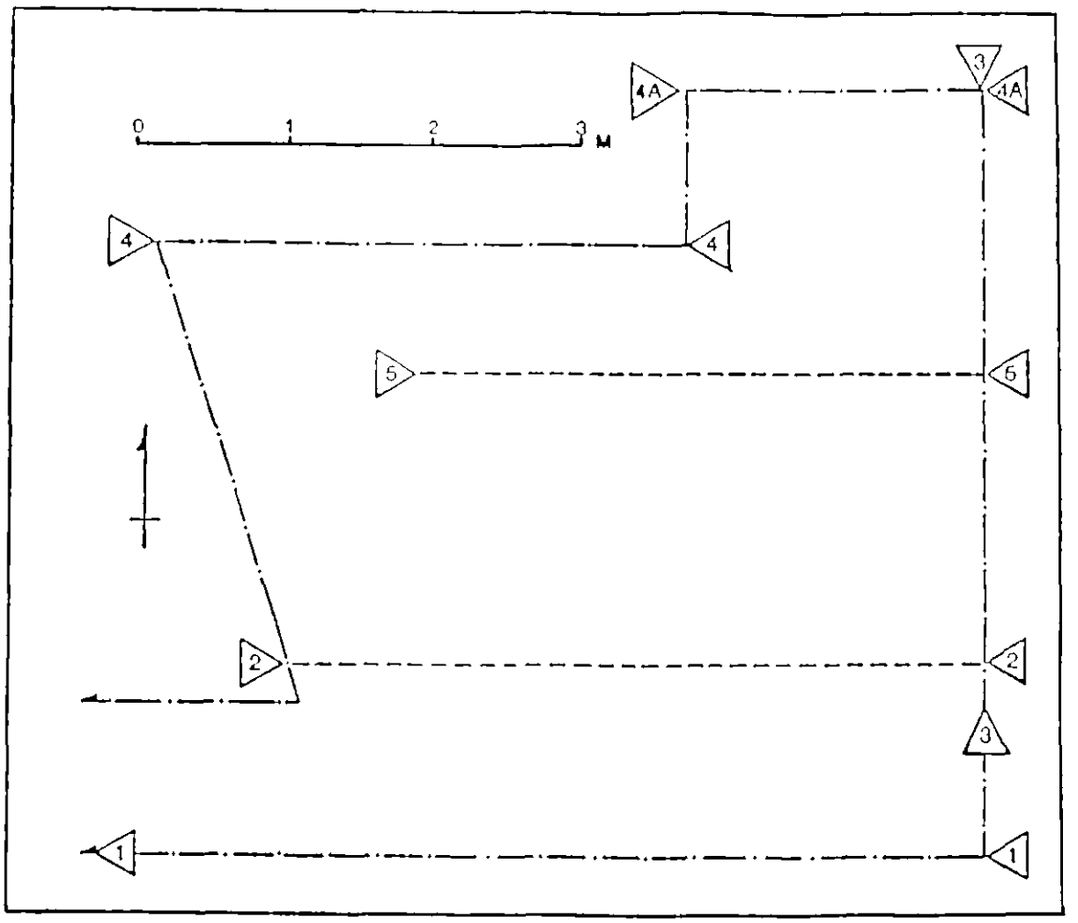
020 BASAL PEBBLES

Small water-worn pebbles filling hollows in the bedrock beneath 012/013. Charcoal, burnt animal bone, and a small quantity of vitrified rock recovered. 224 Fe Nail

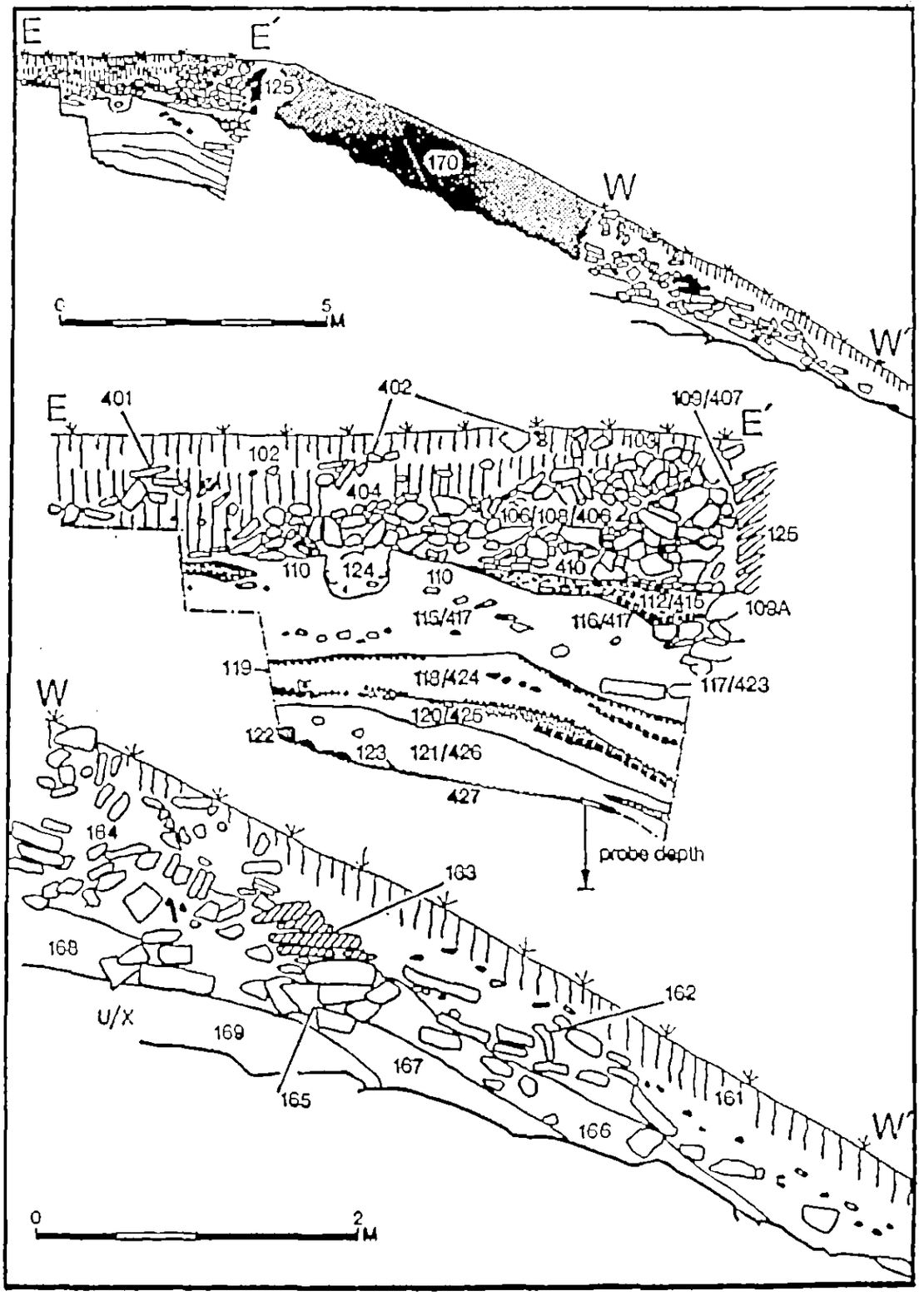
CUTTING DW 100/400 (illus 21-26)

The trench was located on the upper terrace, initially on level ground behind the west-facing rampart, just below the summit which lies to the north (investigated in cut 000). The excavations on the terrace examined the terrace rampart and the deposits which accumulated behind it. The trench was located where surface features suggested the presence of a circular building butting on the rampart. The 4 m square was laid out over a quadrant of the supposed building and its intersection with the rampart. Outcrops of bedrock in the immediate vicinity of the trench suggested that the soil in the trench would be no more than 1.0-1.5 m deep. Both suggestions were disproved by excavation: no circular building was discovered and the archaeological deposits were over 2.8 m deep. Subsequently the trench was extended from the 4 m square behind the rampart in a cut 1.5 m wide and about 13 m long extending from the SW corner across the rampart and down the slope. During the course of excavation the trench was expanded slightly to follow the inner face of the rampart and to examine the north side of a wall which appeared in the north section. However, the excavation goals remained essentially to investigate the rampart section and the interior deposits.

Neither of these goals was completely achieved because of the complexity and extent of the deposits. In the interior deeply stratified deposits were excavated to a depth of 2.4 m and probed a further 0.5 m without striking bedrock. The rampart core and front face were not investigated as completely as intended because of the instability of the rubble, which presented a distinct safety hazard. None the less, a long clear sequence was established which allowed the construction of the rampart to be



ILLUS 21 Cutting 100/400: outline plan, showing location of section lines



ILLUS 22 Cutting 100/400: S face, section line 1

linked with the interior deposits which, in turn, could be linked with the citadel sequence (trench 000) in Horizon Event 2. The structural sequence is summarized in simplified form in Table 1 below. It has been possible to identify successive episodes of activity on the terrace, all of which took place in the second half of the 1st millennium AD. It will be convenient to describe these episodes individually from the earliest to latest.

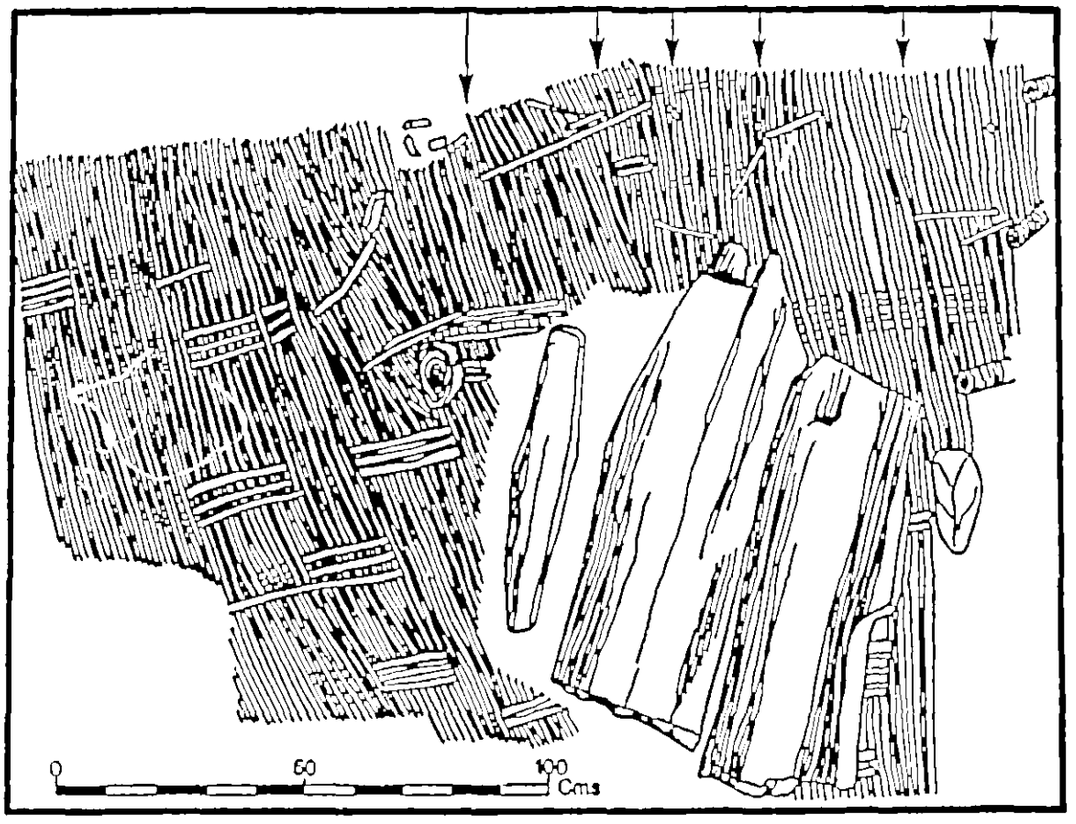
1) Phase 1 : earliest known occupation

The bottom metre or more of the excavated deposits was damp and preserved organic materials extremely well. The earliest deposit (427) was only probed and sampled. It consisted of a dark brown stony soil containing many animal bones. The bone provided C-14 sample 10. The nature of the deposit is unclear, but it may be inferred from the depth of this deposit (probed to 0.5 m without reaching solid rock) that a revetting of some description would have been needed to prevent it from sliding down the hill. It may be that some of the large timbers which were found re-laid as feature 122 originated as members of this hypothetical revetment or palisade (see below).

2) Horizon Event 1 : Wattle Floor (DN 123; illus 23)

Sealing 427 was a woven hazel matting (123) which was pegged into place by at least 6 stakes to form a floor. Such a use of wattlework can be paralleled in Irish crannogs such as Ballinderry No 1 (Hencken 1936, pl XXI), and in the laying of paths in towns such as Viking York (Hall 1984, fig 69). These parallels do not allow us to determine whether the surface 123 was indoors or out; neither do the associated features entirely resolve the question.

The principal associated feature was a tank (428) (illus 25) built of upright slabs which were set directly on the wattle



ILLUS 23 Wattle floor DN 123, and overlying timbers DN 122. Arrows indicate vertical stakes

and sealed by clay and moss. Although only partially excavated, the tank was at least 1 m by 0.4 m and 0.25 m deep. It may have served as a cooking trough; parallels for this may be drawn with the tank discovered at Ardestie (Wainwright 1963, 67), which seems to have been outside.

In total, an area of wattle floor roughly 3 m^2 was exposed, which, in addition to the stone tank, contained several built timber features: a single post (10 mm sq), a short segment of wattle walling (1 m long and 0.15 m high), and a beam 80 mm long retained by two large stakes. However, because of the small area exposed, it was not possible to interpret their structural significance.

Lying directly upon the wattle surface were numerous pieces of timber, mostly worked, and varying in size from small scraps to split oak logs (see illus 38 and cat nos 82-95). At least two episodes of deposition are suggested by the orientation of one group of planks at right angles to the other. Most of the timbers were not in their primary position, as the frequency of pegs, drilled holes and worked edges attests, but none the less they seem to have performed a structural function in their re-used position. In places they were aligned parallel to one another to form rough discontinuous floors, comparable in their fragmentary preservation to crannog floors. An alternative interpretation is that the timbers belong to collapsed structures, to furnishings contemporary with the wattle floor, or to other rubbish that accumulated in this damp area behind the rampart.

One timber (cat no 82) requires special mention. This particularly stout oak log was subjected to a combined dendrochronological and radiocarbon study (sample 011). The sheer

size of this timber, a portion of a trunk split lengthwise and 930 x 330 x 95 mm in size, suggests a substantial structure; and the presence of a mortice hole implies that it came from the inferred revetment or palisade retaining the lower deposits. In that case, its primary use would have been in the defences of Phase 1.

3) Phase 2A : Damp Midden

Immediately after the structures represented by these timbers were abandoned, a midden bega o form on the wattle surface. The damp conditions preserved excellently the twigs, bark, wood shavings, grasses, fern and mosses which formed this midden (121, 426). The bracken, which predominates, probably represents floor-material, bedding or possibly thatching, originally used elsewhere and periodically discarded as it was renewed. The deposit, although tightly packed and obviously compressed, was still up to 0.35 m deep and clearly represents a considerable period of deposition. During the cleaning and disposal of the bracken, various other debris became incorporated with it, including a large quantity of well-preserved animal bone, some organic artefacts, and even human faeces. The analysis of the faunal remains, together with the finds which included evidence of craft production in leather, bone, and fine metal, are the subjects of their own reports below. Unburnt hazel twigs provided two radiocarbon samples (006 and 009). An analysis of the botanical material appears in Brough and Dickson 1989.

4) Phase 2B : Occupation Floors

Capping the damp midden was a series of interleaved layers of clay, gravel and sandy soil with ash (118, 119, 120, 424 and 425)). Even over the limited areas exposed during excavation, these deposits were discontinuous and contained no features which

might be considered as structural. It seems most reasonable to regard them as patchy floors deposited in an attempt to create a dry and level surface over the wet midden. The clays are fairly clean and devoid of artefacts, while the interleaved sandy layers evidently incorporate material from the settlement and its vicinity. From these layers came a few finds of a domestic nature, such as a quern fragment and an E-ware sherd, as well as charcoal and burnt bone suggestive of hearth sweepings. None of this domestic debris could be said to be in its primary context.

On top of the clay and sand layers, there accumulated a deep layer of occupation debris, including built structures. The first of these structures was a discontinuous - or damaged - paving of mica-schist and sandstone slabs (117/423). The occupation deposits were dark charcoal-stained soils, containing decayed bone, and surrounding several built features (illus 26,c). These included a rough stone kerb (418) - a possible wall footing - which was only one stone wide in most places and oriented roughly at right angles to the terrace edge; a smaller stone line (419) of unclear purpose; and a single post-hole (420). Given the area of excavation it is not possible to interpret these structures or propose any specific activity associated with them.

5) Horizon Event 2 : Destruction Debris

The occupation levels were sealed by features containing charcoal, including a charred beam (110, 412, 414), and isolated patches of fire-reddened and cracked stones (413, 429, 430) as well as occasional vitrified stones and a few nails. The event most likely to be represented by these deposits is the destruction of the nailed, timber-framed citadel structure. The one post-hole (416) associated with the destruction deposits, and a second

linear stone kerb (114) are not fully intelligible as part of the destruction process. They may relate to the subsequent occupation of the terrace. The fact that only a few nails from the nailed citadel defence found their way into the 100/400 destruction layers may indicate that nails had been salvaged for reforging.

6) Phase 3A : Construction of Terrace Rampart

Reused material from the destruction of the primary citadel (2B) was incorporated into the stone and clay footing (112/415) of the terrace rampart. This charcoal provided material for radiocarbon sample 08, which gives a somewhat remote terminus post quem for the construction of the rampart: remote, because the charcoal is likely to derive from the building-materials of the Phase 2B citadel. The terrace rampart itself (109/407/125 and 161-170) was a massive structure which, it may be inferred, was some 8.0 m wide and at least 4.0 m high at its front face. Structurally later than the rampart, but probably of contemporary build, was a paving (410) of mica-schist blocks, boulders and split cobbles that was most continuous near the rear revetment. Post-hole 420 was probably contemporary with the rampart. Two further post-holes (111 and 124) were located 3 m and 2.5 m to the rear of the revetment. No specific structure can be inferred from these post-holes.

The structure of the rampart is only partially understood. The material of the rampart core (170) was so loosely piled that it collapsed continuously during excavation, making the digging dangerous and inhibiting stratigraphic control through the body of the rampart. Nevertheless, it was possible to infer the location of the front revetment, partly from the occurrence down the slope of massive blocks and boulders (165) which may have served as a

foundation for the rampart face; partly from a concentration of sandstone slabs which had apparently fanned out forwards and tilted backwards as the whole face had slid forward (163). The reason for this particular mode of collapse was that the supposed foundation had not been based on solid bedrock; and the whole body of the rampart was laid on a 20° slope of made ground, including some occupation debris, which was no doubt lubricated by rain water percolating through the loose rubble core.

There is some suggestion that horizontal timbers had been used in the construction of the terrace rampart. The bottom course of the rear revetment had slumped inwards, and some higher courses were separated by gaps filled with small stones, perhaps as the result of the decay of horizontal timbers in the wall face. If horizontal timbers had been used in this way, it would parallel their use in the rear face of the rampart at Burghead (Small 1969, 61).

If the pitched boulders and sandstone slabs (163) do indeed mark the approximate line of the front face, then the terrace-rampart stood some 8 m wide. Because of the slope of the hill, its front face cannot have been less than 4 m high. These dimensions account for the large quantities of rubble that litter the slopes of Dundurn, around both the upper and lower terraces.

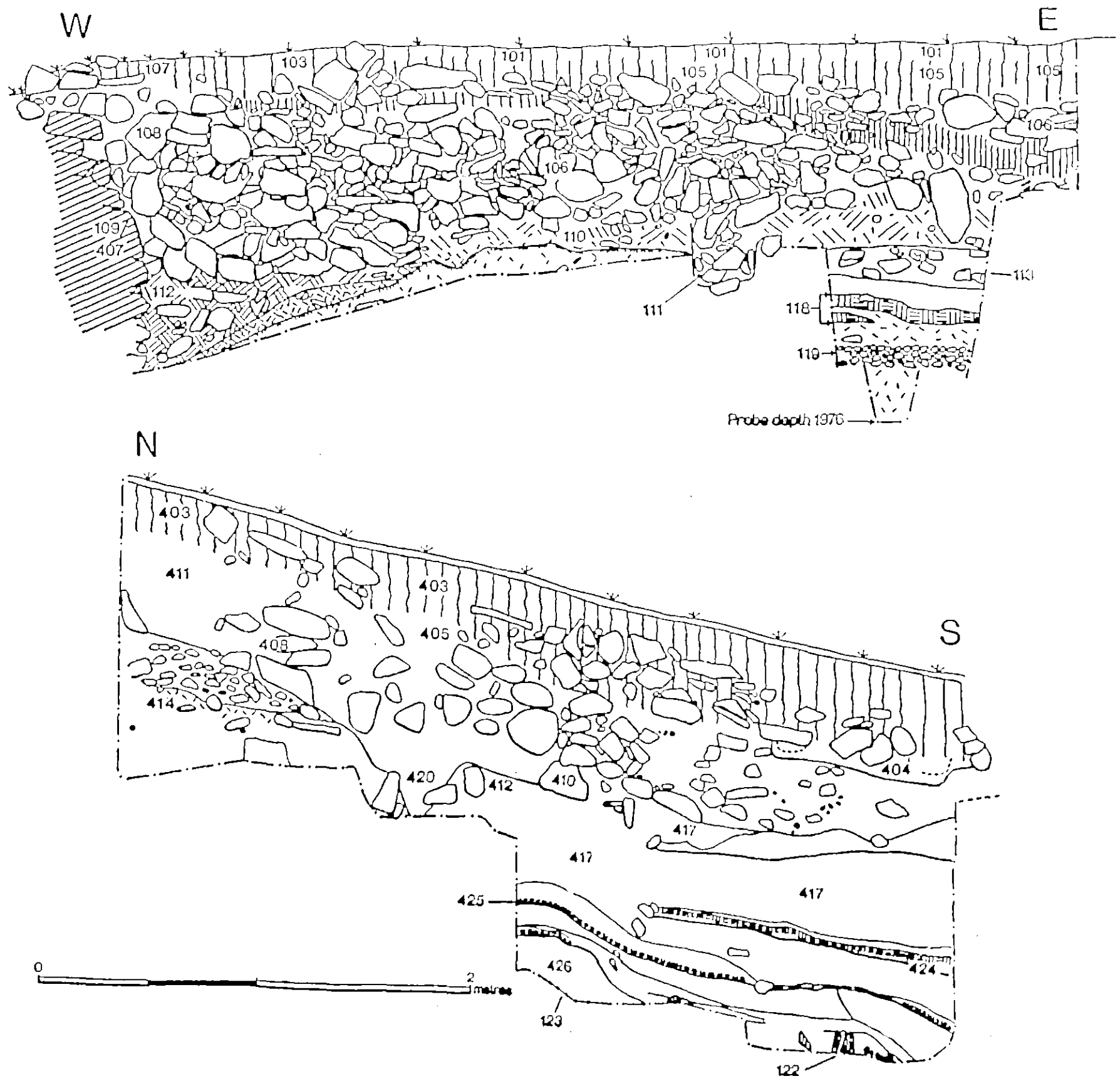
Some of the core material shows evidence of having been burned and may derive originally from the primary citadel. In general, however, the construction materials are closely comparable to those used in the second phase of the citadel; that is, there is a core principally of water-worn boulders, faced by revetments of sandstone slabs and perhaps containing a timber component.

7) Phase 3B : Rampart Reinforcement and Final Terrace Occupation

Shortly after the construction of the terrace rampart, and before any appreciable accumulation of occupation debris to its rear, the rampart began to fail and, in order to stabilize the inner revetment, masses of rubble (106/108/406) were piled against it. Few certain traces of activity within the rampart may be ascribed to the post-stabilization phase, but a stratigraphic relationship can be drawn between the reinforcement and a ragged stone wall, built roughly at right angles to the terrace rampart (illus 26). This sinuous wall (408) actually penetrates the rampart (407) and rampart-stabilization (406), and its function is unclear. It may represent an internal building or a division within a larger structure. Whatever its purpose, it was rebuilt at least once (405) (illus 26) and possibly twice. A turf (404), in which two hearths were built, formed over some of the consolidation rubble.

8) Final Collapse and Abandonment

The last activities attested on the terrace may be partially consolidation, but equally may simply represent the collapse of the interior structures, or of the second citadel. Although artefacts were discovered in these layers, no significant associations exist between any of the objects and their contexts: modern sheep bones were mixed with objects of antiquity. The final process on the terrace was the formation of turf and growth of nettles.



ILLUS 24 Cutting 100/400: Section lines 2 (N face, 1976) and 3 (E face)

LIST OF FEATURES AND SPECIAL FINDS IN CUTTING ON 100/400 (illus 21-26)

Trench 100/400 was excavated over two seasons and each season employed its own series of feature numbers: 100s in 1976 and 400s in 1977. The initial trench was laid out as a 4 metre square behind the W facing terrace wall. Only the southern third of this area was examined in depth during 1976: numbers 101-125 refer to this area. In 1977 a 1.5 m wide extension of the SW corner of the square was laid out across the terrace rampart and down the slope: numbers 161-170 refer to the rampart. Also in 1977 the northern two thirds of the original square, as well as a small 1 x 2 m extension to the NE, were excavated: numbers 401-427 identify this work.

Where deposits were excavated in successive seasons or out of sequence, they acquired two or more feature numbers. The concordance of numbers and simplified matrix at the end of the descriptions should resolve any ambiguity.

FEATURES 101-125

Feature	SFs
101 NETTLE ROOTS	
Topsoil below a growth of nettles. Dark brown loam with much small and large grit. Modern sheep bones present. Deposit confined to S half of trench.	
102 TURF	
Turf and topsoil to N of 101. Buff-grey soil with few stones.	246 Slingstone
103 ROOTY ROCKS	
Turf roots overlying a dense concentration of split boulders and large stones in SW corner of trench.	001 Glass boss 222 Slingstone

104 PALE BROWN SOIL

Light brown powdery soil in N half of trench, below 102. Practically stone-free, aside from numerous large pebbles, probably slingstones. Frags of burnt bone and a small lump of vitrified stone.

002 Fe Blade
261 24 Slingstones

105 SUB-NETTLES

Dark brown powdery silt, similar in texture to 104, but with abundant small stones and large grits. Under 101 and in S half of trench. Modern sheep bones in top of this layer as well as frags of burnt bone and a lump of vitrified rock.

003 Flint scraper
004 Utilized flint flake
005 Imported potsherd
009 Flint blade
244 ?Slingstone

106 OVERALL RUBBLE [=108, 406]

Dense layer of rubble of various sizes including sandstone slabs and pieces of bedrock, but principally river boulders all in a matrix of black humus soil. This deposit represents final consolidation and collapse of terrace rampart and extended over entire area of trench. During the 1977 season different components of the deposit were recognized. In order to equate the two sets of context, this deposit was retrospectively divided into 106A & 106B See descriptions of 401, 403, 404 & 406. Several lumps of vitrified rock were noted. Charcoal twigs provided C-14 samples 004 and 005.

012 Spindle whorl
013 Fe blade
014 Fe object
015 Fe pin/nail
016 Whetstone
017 Red glass frag.
020 Fe pin/nail
026 Fe sheet with nail
136 Fe nail
138 Pin-sharpening stone
203 Fe nail
230 7 Fe nails
260 Utilized stone

107 EXTENSION TURF

Turf and topsoil of an extension, 1.0 x 1.4 m, to terrace trench to the SW in order to seek rear wall face. Same as 103.

108 EXTENSION RUBBLE [=406]

Rampart consolidation rubble as in 106 (equated with 106B and 406). Contained vitrified rock, scraps of animal bone and charcoal.

036 Fe nail
042 Fe nail
135 Fe knife

109 SANDSTONE BLOCKS [=407]

Roughly coursed wall of sandstone blocks and slabs of schist identified as rear revetment of terrace rampart. Horizontal gaps, filled with small stones, suggest original beam-slots. Gap under apparent bottom course: ? did it rest on a timber beam.

035 Fe nail

109A BOULDER FOUNDATION

Loose rubble, including blocks of varied size and large rounded boulders, beneath bottom course of 109. Presumably a foundation for the revetment

110 BASAL BLACK [probably =412/414, 413, 429, 430]

Deposit of black charcoal-stained soil: rich in fine charcoal fragments and poor in burnt bone. Presumed to represent destruction deposit of primary summit defence. Charred grains of oats and barley recovered. Iron pan at base of layer, not visible in S section.

134 Flint flake
228 Glass sliver

111 POST-HOLE

Cut through 110 and sealed by 106. Centred 2.30 m to rear of revetment 109, 0.30 m in diameter and 0.30 m deep to accommodate a post about 150 mm in diameter. Small quantities of burnt and unburnt bone fragments and charcoal noted.

130 Fe nail

112 CHOCOLATE BROWN [=415]

A dense deposit of boulders packed in chocolate brown clay lapped up against 109 and ran under it. It also overlay 110 in places. Rare pieces of charcoal and burnt bone, and a lump of vitrified rock were recovered.

261 Flint flake

113 TEST HOLE

Small sondage conducted at end of 1976 season in attempt to plumb depth of trench. No bottom reached.

114 STONE LINE

Linear feature of river cobbles and mica-schist blocks oriented roughly E-W. 1.7 m long and only one stone wide (15-25 cm). Sealed by part of 110. Not a building.

115 BASAL GREY [=417/422]

Powdery, grey, charcoal-flecked soil. Little burnt bone. The iron pan at the base of 110 was discontinuous, and where it was absent it was difficult to distinguish 110 from 115. Presumed to contain occupation debris.

116 PEBBLY GREY [=417/422]

Similar to 115, but damper and containing quartz pebbles and sandstone chips. Possibly below 115, certainly below 112 and running under foundations of rear revetment.

139 Whetstone
145 Whetstone

117 TILTED SLABS [=423]

Sandstone slabs and flattish boulders, under 115/116. Possibly continuous over whole area, and in places 2 or 3 layers thick. Some charcoal and burnt bone recovered from this. This may be either rubble from a tumbled wall/rampart or a badly disturbed paving. Whole surface dipped to W and slabs tilt to S.

118 YELLOW CLAY LENSES [=424]

Series of clay lenses beginning yellow but becoming grey and brown with increasing depth. Interspersed between deposits of ash, charcoal and decayed bone. The layers of clay are discontinuous but as a group extend over the entire area to a depth of about 0.3 m. Dipping down to W and S. Gives impression of rapid and deliberate infilling or levelling.

154 Half quern stone
253 Fe nail

119 COMPACT PEBBLES

Lens of river pebbles packed with clay.

120 DARK SANDY [=425]

Below 118/119 a dark layer, very sandy, with a high admixture of clayey soils, up to 150 mm thick. Part of same filling operation as 118? Containing pieces of badly preserved wood and burnt bone.

137 Decayed wood
155 E-ware sherd

121 WOOD LAYER [=426]

Waterlogged deposit of brown peaty lenses highly compressed around twigs, bark, rushes, nutshells and very well preserved animal bones.

161 Antler tip

122 TIMBER

Several layers of massive well-preserved timbers mostly laid E-W to suggest a rough, discontinuous surface set in a matrix of vegetable debris. Many timbers show signs of having been worked and presumably are being reused here to create a drier surface. Some timbers may be in their primary location and appear structural, e.g. the bases of squared posts/stakes which survive in several areas.

123 WATTLE

Hazel wickerwork floor staked into position by 6 stakes underneath timbers of 122. Evidently extends over most of area, but dips, and then breaks off to W.

124 POSSIBLE POST-HOLE

Cut into 110, 0.40 m diameter x 0.25 m deep in south section 2.3 m behind revetment.

125 UPPER CORE

Loose stones immediately west of inner revetment (109) containing some charcoal.

FEATURES 161-170

161 TURF

Formed on a soil of variable depth overlying the front of the terrace rampart and the stable collapse in front of it.

162 LARGE TUMBLE

Slabs and blocks, mostly large, but with smaller stones and soil interspersed. Clearly distinguished from 163 SLAB REVETMENT, which is more concentrated.

163 SLAB REVETMENT

Slabs, especially of sandstone, roughly alined across the trench, suggesting a front revetment which had slid forward and simultaneously collapsed backwards. Founded on 165.

164 CORE

A mixture of slabs and boulders of varied size, becoming increasingly unstable to E, i.e. uphill.

165 PITCHED BOULDERS

A concentration of large, more or less pitched, boulders, directly below 163 SLAB REVETMENT; has the appearance of a pitched foundation for the front revetment of the terrace rampart.

166 BROWN SOIL

A brown soil with some stones. The revetment-collapse 162 LARGE TUMBLE lies on the surface of 166, and 165 PITCHED BOULDERS is dug into it, so it seems to form the ground surface for the building of the front face of the terrace rampart. Patches of similar brown soil appear among the rubble of 164 CORE. Downhill, 166 lies directly on bedrock.

167 YELLOW SANDY SOIL

Under 166, and continuing uphill beneath 165 PITCHED BOULDERS, to merge with 168. Immediately below 163/165, it lies directly on bedrock.

168 YELLOW STREAKY

Lenses and streaks of yellow sand and clay, with charcoal flecks.

169 DARK SOIL

A dark charcoal-flecked soil, underlying 167/168, and itself lying directly on bedrock. The occurrence of animal bone was especially noted.

170 UNSTABLE CORE

The main body of the rampart. A dense scree of stones of all sizes, too unconsolidated to allow the growth of turf, or to permit controlled excavation and recording.

FEATURES 401-430

401 UPPER EASTERN STONES

Principally rounded boulders plus some slabby stones in dark brown matrix. Some fired clay recovered. Under turf (102) and topsoil (104) in eastern third of 4m² trench. 234 Fe nail

402 UPPER WESTERN STONES

Dark powdery humic soil containing small to medium mixed stones. Evidently late collapse of rampart after the formation of a turf. 236 Fe nail

403 PALE STONES

Large river boulders in matrix of pale brown loam. Possibly not just collapse but a rebuild of wall 405/408.

237 Fe nail

404 ORANGE BURNING

A dark brown humic soil - a buried turf - with distinct signs of localised burning - hearths.

192 Glass inlay
194 Fe? knife frag.
238 2 Fe nails

405 STONE ROW

Raggedly built wall or kerb of boulders, cobbles and slabs, bedded in yellow clay (illus 26). Oriented approximately at right angles to rear revetment (407) and actually breaks through revetment face. Also appears to cut into or overlie the main consolidation of revetment (406). This feature, which in places spreads to over 1 m in width, overlies a better built wall (408). Some charcoal present.

239 Fe nail

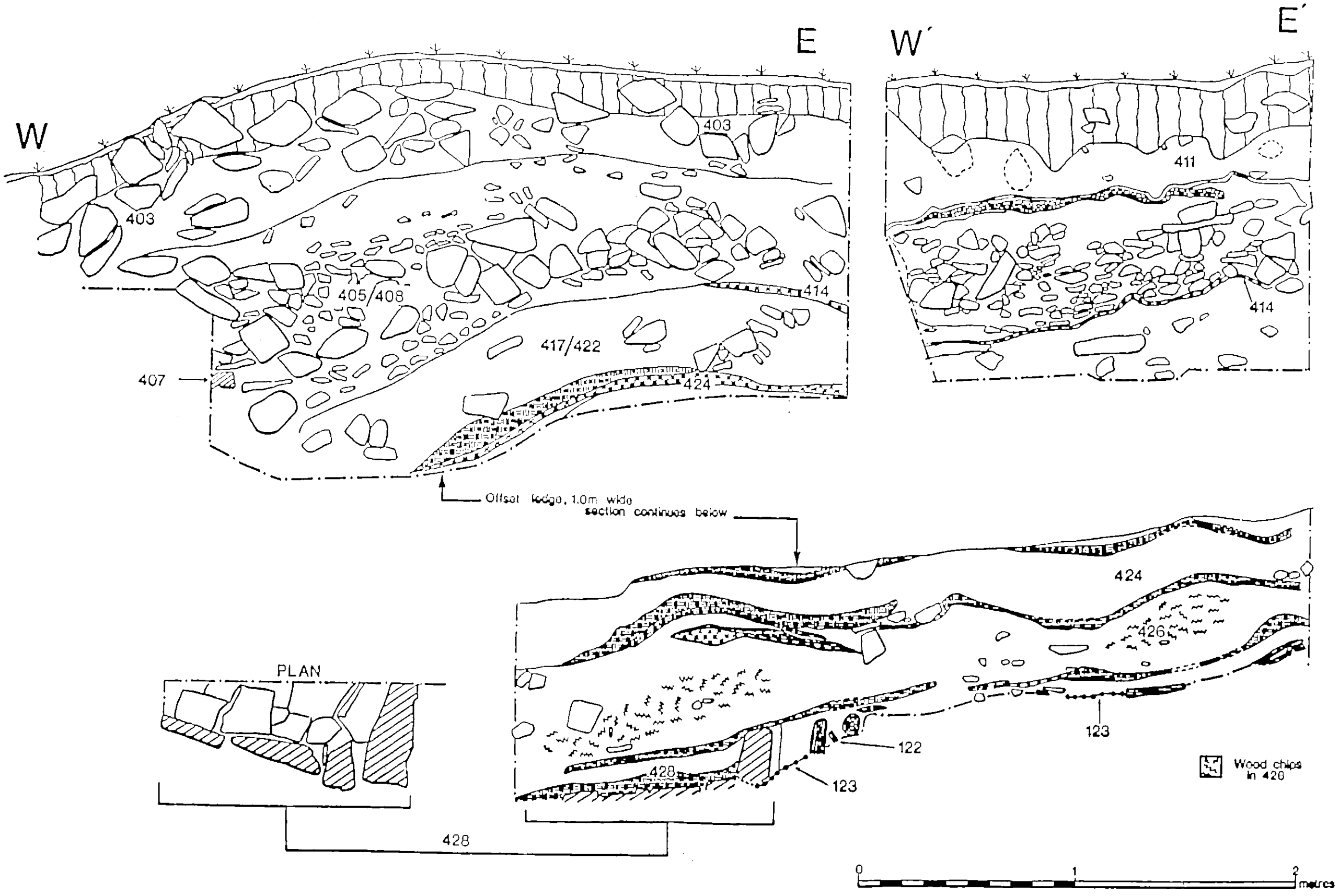
406 BLACK RUBBLE

Dense layer of loose rubble including sandstone and rock-of-hill, but mainly river boulders in a matrix of black humic soil. Sealed below a buried turf (404) and packed against rear revetment (407), evidently to consolidate the structure: in fact, stones lock into gaps in ragged face of 407 (=109). Towards revetment, soil becomes stickier and chocolate in colour. Fragments of burnt bone, wood and hazelnut present as well as vitrified rock. Mixed charcoal provided C-14 sample 007.

240 3 Fe nails

407 REVETMENT

Coursed wall of sandstone and mica-schist slabs forming the rear of the terrace rampart, penetrated by both 405 and 408.



ILLUS 25 Cutting 100/400: Section lines 4 and 4A (upper N face 1977); and section line 5 (lower N face 1977) with inset plan of tank 428

408 SINUOUS WALL

Linear feature, standing six courses high in places and running away from revetment at right angles (illus 26). Raggedly built of boulders and schist blocks, bound by yellow loam. Backed to E by yellow clay of 405 and to W by rubble of 406. Like 405, this cuts through rampart and postdates consolidation (406).

144 Padlock

409 DARK BROWN SOIL

Dark brown soil amid closely packed rubble at the base of 406, with charcoal and burnt bone in small amounts. Overlay 410 MICA-SCHIST BLOCKS.

410 MICA-SCHIST BLOCKS

Coarse paving of mica-schist blocks, boulders and split cobbles of all sizes (illus 26. Note that the S part of this paving was removed without planning). Structurally later than revetment 407, but possibly contemporary in use. Most continuous near revetment.

411 YELLOW SANDY

Light brown sandy loam, practically stone-free, sealing 429 and 430 and lapping up against wall 408. Seen only in extreme NE corner of trench, N of 408. Bottom of layer is iron pan.

241 Fe nails

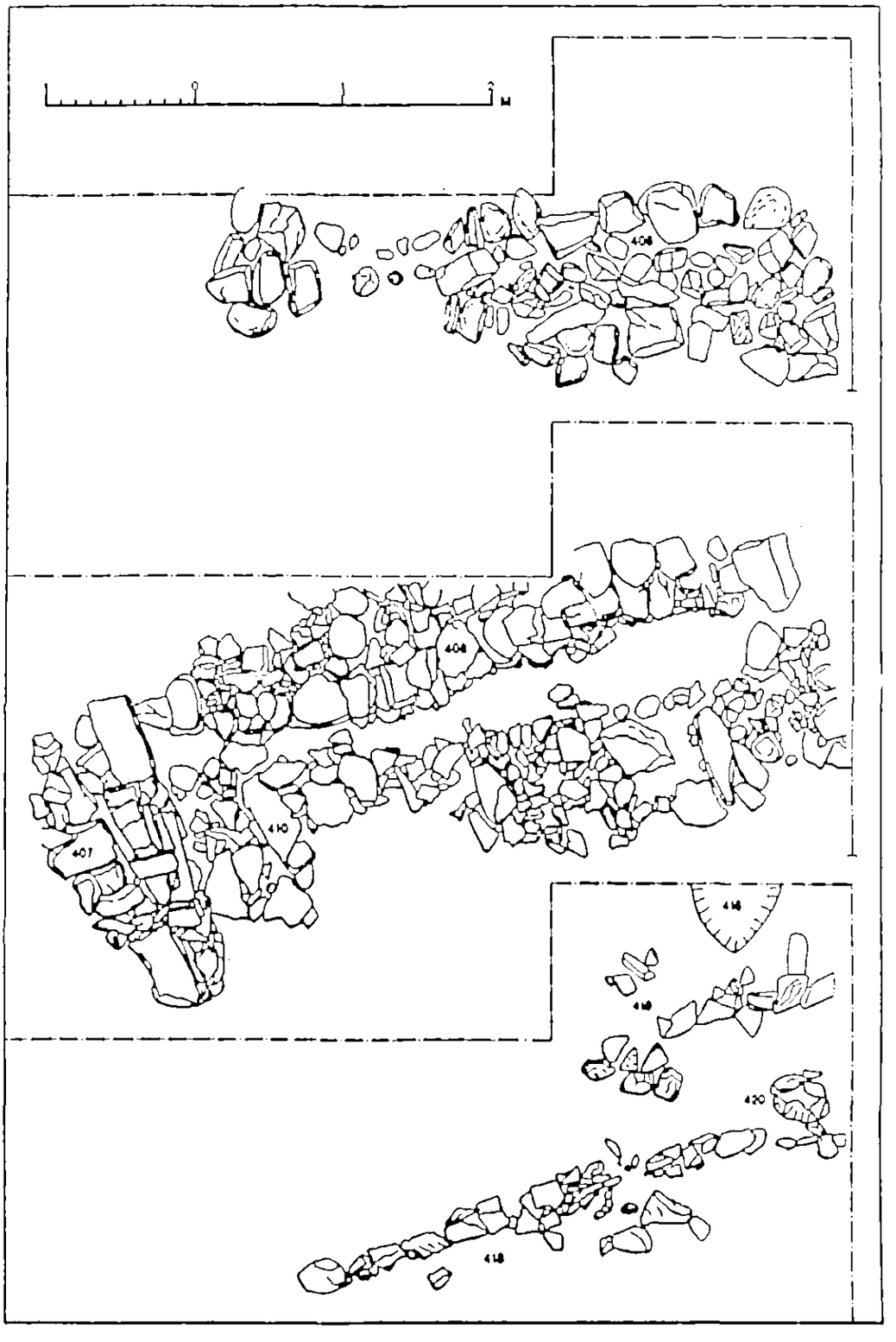
412 BLACK MAMBA

Moist, sticky black soil in north of trench with considerable charcoal and a little burnt bone. Runs under 408 and 410; over 417. Very similar to 414.

413 GLASS PATCH

Black soil with chippy (burnt?) stones seen in SE of trench under 404.

140 Glass beaker frag.
226 Fe nail
292 Fe nail



ILLUS 26 Cutting 100/400: stone lines and other features: upper, 405; middle, 407, 408, 410; lower, 416, 418, 419, 420

414 BLACK PEBBLY

Essentially the same as 412, but with pebbles. Copious amounts of charcoal including a charred beam at least 410 x 200 mm, as well as decayed animal bones.

149 Crucible frag.
243 Fe spike frag.

415 CHOCOLATE BROWN WEDGE

Stiff brown clay with tightly packed stones - including lumps of vitrified stone, very small quantities of bone and charcoal. Underlies rear revetment 407 and laps against bottom course. Mixed charcoal used for C-14 sample 008.

416 HUGH'S POST-HOLE

Ring of stones outlining a post setting in 414 against N section about 3.5 m behind revetment 407. Dimensions 0.4 x 0.3 m; would have accommodated a post 0.1 m in diameter. Depth not recorded.

417 BASAL BLACK

Black charcoal-stained layer containing charred wood and bone. Extensive deposits up to 0.4 m deep. Contains several built features and probable occupation deposits. Decayed bone fragments present and bands of coarse grained sand. A lump of vitrified rock.

151 Fe point
152 Stone disk

418 LONG STONE LINE

Rough kerb of stones within 417 (illus 26). Oriented at right angles to revetment (407), linear feature over 4 m long running from 1 m W of 407 into E section, only one stone (0.25 m) wide in most places.

419 NORTH STONE LINE

Rough kerb of stones within 417 (illus 26). Approximately parallel to 418, about 0.75 m to the north. More spread than 418, only 2 m long, running into E section.

420 YELLOW POST-HOLE

Setting of stone in a post pit containing yellow sandy soil (similar to 411). Cut through 412 into 417, sealed by wall 405/408 with which it may be related. Evidently dug to accommodate a post about 0.15 m in diameter.

421 ALAN'S POST-HOLE

Setting of small stones and post-pit appearing in 417. Located south of 418, 0.25 m from E section. Approximately 0.3 m in diameter, depth not recorded and post-pipe not seen.

422 BEHIND LONG STONES

Same deposit as 417, located north of stone line 418.

191 Fe object, ?knife

423 TILTED SLABS

Larger exposure of sandstone and mica-schist slabs and split boulders, but not continuous over whole trench under 417/422. See 117.

189 Fe strip

424 YELLOW CLAY LENSES

Series of lenses of clay and dark grey ashy soil with considerable charcoal and decayed bone. Layers of clay are discontinuous, suggesting worn and sagging floors, or perhaps discrete dumps of material. Bright yellow bottom layer. See 118.

425 BOTTOM YELLOW

Grey gritty soil with much charcoal flecking and some burnt bone suggesting a component of hearth sweepings. This was capped by compact pebbles and by yellow clay. Essentially 119 and 120 excavated as one layer. Not a regular surface, very uneven.

159 Mould frag.

426 VEGETABLE LAYER

Mixed layer of compact dark brown peaty material with masses of well-preserved wet reeds, rushes and wood. Containing lens of dark grey sand similar to 425. Same as 121 and 122. Much animal bone, well preserved. Unburnt hazel twigs provided C-14 samples 006 & 007. Oak timber for C-14/dendro sample 011.

156 Glass bead
157 Bone needle
158 Bone pin
162 Crucible rim
170 Leather scraps
171 Shoe
172 ?Crucible frag.
173 Stone gaming piece
174 Wooden ladle
190 Leather scrap
193 Leather scrap
197 Clay mould/'sketch pad'
229 Bone disk
247 Bone point
248 Bone ?pin

427 BELOW WATTLE

Dark brown soil with stones containing much animal bone. Not excavated. Probed to 0.5 m without reaching solid.

196 Crucible base

428 TANK

Built of stone slabs caulked with clay and moss. Surrounded by (?cut into) 426 and filled with similar but looser material. Evidently resting on wattle, therefore contemporary with wattle floor. Located about 1 m behind revetment 407, only partially excavated. Walls of vertical slab with a large boulder at one end, forming a rectangular box around a flagged base. Exposed dimensions 1 m x 0.4 m x 0.25 m deep, but undoubtedly larger. Perhaps a cooking trough?

429 CHIPPY

Loose angular small stones, fire-reddened. Apparently derived from burnt primary citadel. Not seen while digging - labelled in section. Appeared to run below 411 & 408 and above 430.

430 BURNT ANGULAR BLOCKS

Just below 429 a loose rubble exhibiting evidence of burning presumably from same source. Stones are somewhat larger than in 429. Rests on 414.

NOTE ADDED IN EDITING 1988/89

Each of features 412, 413, 414, 112/415, probably 429 and 430, and possibly 110/417 contains some or all of the following: much charcoal, including a charred beam; fused or vitrified stones, or other heat-affected stones; iron nails. During excavation these features were considered to have spread downhill, whether as a result of human or natural agencies, from the burning of the nailed and timbered defence of the first phase on the citadel. Appropriately they are concentrated in the N and E of Cutting 100/400.

These are now seen as marking Horizon Event 2, at the division between Dundurn 2B and 3A.

CUTTING 200

A 2.5 metre square cutting located on a small terrace below and E of the summit, in order to investigate a level area of the terrace, where black soil had been noted in molehills and where a growth of nettles had suggested human activity. Excavation demonstrated ample evidence of domestic activity in the form of rubbish and artefacts, but no structures were discovered. Because of pressure to complete other trenches, this one was not completely investigated. No radiocarbon samples were obtained, nor is it possible to link the stratigraphy with that in trenches 000 and 100/400. Nevertheless, the trench did reveal intensive activity on the terrace, hinted at a substantial depth of archaeological deposits in the area, and demonstrated that burnt material and nails from the destruction of the phase 2B citadel had spread this far east along the upper terrace.

Below the turf and topsoil (201 and 202) was a layer of loose slabby rubble (203), completely lacking in structure and suggesting collapse. Below this was an extensive layer of smaller chippy stones (204) in a black soil matrix (205) which was also structureless and consistent with collapse. Below the chippy stones the black soil continued over the entire area of the trench. This soil contained considerable amounts of what appeared to be domestic occupation debris as well as many artefacts, some of which may be tools for leather- or wood-working.

This layer of domestic rubbish overlay a surface of yellow clay and a large pit or ditch occupying the northern third of the cutting. The edge of the feature is marked by an arc of tilted stone slabs (208) and its upper fill consists of a loose black

soil with chippy stones. At this point excavation halted and was not recommenced in the second season. The nature and character of the large pit was not revealed, but the looseness of the fill suggests that it is of some depth.

LIST OF FEATURES AND SPECIAL FINDS IN TRENCH 200

A 2.5 m square located on the terrace below the summit to the east.

Feature	SFs
201 TURF	
Black powdery soil much penetrated by grass and nettle roots. Vitrified rock.	201 Fe nail 249 Fe nail 250 Fe nail 255 Worked flint
202 FIRST SCRAPE	
Continuation of powdery black soil below Turf (201). Vitrified rock and some burnt bone.	010 Blue glass bead 011 Worked flint 251 Fe nail 252 Fe nail
203 SLABBY STONES	
Layer of loosely jumbled slabs of schist, both rolled and quarried. Continuous over entire area, but not regular enough to be described as a floor. Small quantity of burnt bone, one lump of vitrified rock.	253 Fe nail
204 CHIPPY STONES	
Consistent layer of stones smaller and thinner than those in 203. Not hard-packed and lack of grit infilling or traces of wear suggest that this is tumble and not a floor. Small fragments of burnt bone, charcoal and vitrified rock.	

205 SUB-CHIPPY

The soil between and below the 204 stones. Contains large quantities of burnt bone and charcoal. Presumed to be occupation debris. Seals large pit or ditch in N of trench (207 & 208) and area of clay layers to S of pit/ditch.

018 Worked jet
021 Fe object
022 Fe washer
024 Fe padlock spring
027 Perforated slate
033 Flint blade
034 Fe pin
131 Quern frag.
200)
202)Fe nails
254)

256)5 Flint flakes
257)

206 TEST HOLE

A 1 m square pit dug in NE corner to preview stratification. Abandoned after short period.

259 Worked sandstone slab

207 BLACK PIT

In N of trench a loose black soil with chippy stones. Upper fill of very large pit, the south edge of which was defined by 208. Considerable burnt bone, charcoal and some vitrified stone.

039 Fe object
041 Fe nail
048 Fe nail
049 Fe pin

208 STONE LINE

A curvilinear line of tipped stones forming the south edge of a large pit or ditch, most of which falls outside trench to the north.

Excavation halted and not resumed, following the exposure of features 207 and 208.

DN 300 : UNEXCAVATED AND ROCK-CUT FEATURES FROM VARIOUS AREAS OF THE SITE

301 ROCK-CUT GROOVES ON SOUTHERN SLOPES (illus 19, inset)

On the southern side of the Upper Terrace (investigated in 100/400), below the break in slope two rock ribs protrude from the steep grass slope. Cut into both ribs were slots (70-80 mm deep), which are aligned and oriented nearly E-W. Clearance of the turf revealed the existence of wall core or tumble against the inner sides of the grooves. The width therefore was not determined. Minimally they are both 30 mm wide. In length the western groove runs 0.87 m, while the east one extends 0.45 m. The west one has been excavated to a depth of 70 mm, the east 80 mm. Although closely aligned, the western groove is about 0.45 m higher than the eastern; moreover the western groove has a slight slope from E down to W.

It is possible to explain the grooves either in terms of seating for timber beams or for a front revetment of stone. Although quite probably part of the same structure, if the grooves were for bedding timbers it is unlikely that they seated the same member. It is possible to link these features with either the putative early palisade of Dundurn phase 1 or with the phase 3 stone terrace rampart (109).

302 TWO-COURSE WALL

At the time of excavation, part-way up the rock outcrop which forms the S side of the citadel boss there were large stones. Given their location midway up the crags, it seems unlikely that they represent a front revetment to a defensive wall. They may be part of a stairway into the summit enclosure. The crag below the stones is naturally steppy. These stones have subsequently

disappeared.

303 SUMMIT SLOT

A groove cut through an upstanding rib of bedrock on the summit slope E of trench 000. The cut is crescentic in transverse profile. It is 0.55 m across at the top and curves to a nearly flat base 0.25 - 0.30 m wide. On the uphill side at least 0.30 m of rock have been excavated, on the downhill side, a shallowly sloping curve 120 mm long (perhaps 80 mm vertically) has been cut. On average perhaps 0.20 m of rock has been quarried away. The groove is 0.60 m long and could have accommodated a beam perhaps 250 mm wide. The feature may be related to the beam slots in the citadel structures; it is aligned with beam slot 009.

304 ST FILLAN'S CHAIR

The topmost rock boss of Dundurn is well-seen as a protruding feature in Christison's views of the site (1898, figs 76, 77; illus 2 in this report). Its eastern side has been quarried to form a step known as St Fillan's Chair. The back of the 'Chair' is up to 0.35 m high and 1.7 m wide, and the level bottom is about 2.0 m from front to rear.

Traditionally the step was considered to have been worn by St Fillan kneeling in prayer, but it has certainly been deliberately quarried. Given the frequency of rock-cut beam slots at Dundurn, it may be suggested that this had been done to ease a timber structure over the summit boss. But given its prominence from the valley floor, it is more probable that it served a ceremonial function, perhaps as a royal inaugural seat.

305 CULTIVATION TERRACES (illus 19)

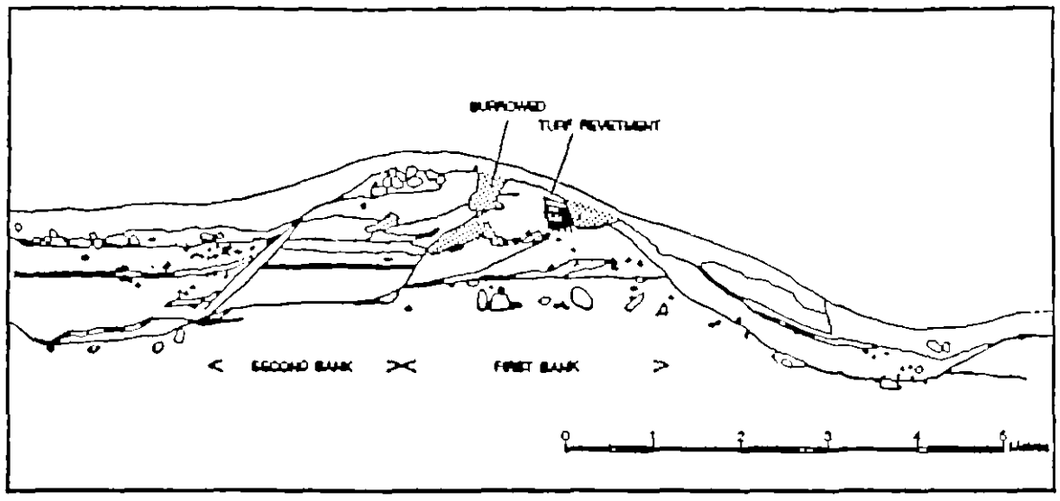
Five narrow terraces curve around the lower reaches of the western flank of the hill, which is the gentlest and most rock-

free of any of Dundurn's slopes. The longest of the terraces runs some 60 m and the shortest 20 m; and they are generally quite narrow, 3 m or less in width. It has been suggested (Graham 1939) that they were for cultivation, and this seems more reasonable than an explanation in military terms. On the current view that terrace-cultivation was introduced to south-eastern Scotland by Anglian settlers in the seventh and later centuries AD, it may be that the terraces are contemporary with the fortifications and in particular with the earthwork enclosure immediately to the north. On the other hand, since no excavation was conducted, it cannot be ruled out that the terraces may be the product of an intensive period of pre-improvement agriculture in the 18th cent AD.

CUTTING DN 500 (section, illus 27)

A trench 2 x 12 m was laid out across the earthen bank which runs south from the inner end of the outermost entrance passage - the sunken way flanked on the north by a bank with large orthostats. The excavated bank runs from a pair of large boulders, which presumably mark the entrance, and perhaps the site of a gateway, up a pronounced slope to steep crags. The bank thus serves to restrict traffic to the entrance passage, as well as to define the western boundary of the NW earthwork enclosure. The excavation was intended to determine the structure and date of the bank and, if possible, whether it was contemporary with the main stone-built ramparts.

In the event, the excavation met with limited success for several reasons. The most destructive of these was the presence of rabbit burrows, which had obliterated all but the grossest stratigraphic distinctions. The topographic situation also contributed largely to the difficulty of interpreting the remaining features. Because of the slope up which the bank runs, the soils making up the bank have evidently settled and slipped downhill, thereby distorting the deposits as they appear in section. This is particularly true of the accumulation of material in the ditch in front of the bank. A second problem of silting is caused by the overall siting of the bank at the foot of the hill, where it traps hillwash and water from above. The accumulation of hillwash is considerable and the water-logging of the area behind the bank and in the entrance passage is almost perpetual. The final problem, also attributable to water-percolation, is that of leaching and the the migration of humus and iron salts in the soils. Taken as a group, these factors made



ILLUS 27 Cutting 500: S face

it impossible even to recognize buried ground surfaces or the boundary between natural and made-ground with any confidence.

During excavation, many distinct changes in the colour and texture of the soil were noted without being understood. It therefore is not worth describing the features in detail; what is offered is a description of the structure of the bank in broad terms. No feature-list is given here, there were no finds, and the section drawing (illus 27) is a simple outline drawing. A fully annotated section has been deposited with the site archives.

Two periods of bank construction can be discerned which, although different in detail, are of a similar type and on a comparable scale. Both may be described as simple dump ramparts with an external ditch. The first bank seems to have been made in two stages. Its basal layers appear to incorporate glacial tills from in front of the bank (a dark orange gravel?) and perhaps also from behind it (grey-green clay-silt). In any case a prominent ditch was created in front of the bank, but hardly any ditch behind it. Upon this foundation was placed a lighter, sandy soil held in place by turves. Its profile is uncertain - to the rear it has been heavily burrowed and it appears as if its front face has slipped back into the ditch. Minimally this first bank was 3 m wide at its base and 1 m high; when the 1 m deep ditch is taken into account this gives an effective height of 2 m. Whether there was any breastwork or palisade is impossible to tell, as a result of burrowing damage.

The second bank was constructed on top of and behind the first. Here too there are suggestions that material was quarried from both sides of the bank. To the rear the accumulating hill-wash would have provided a brown loam, while a clearance of the

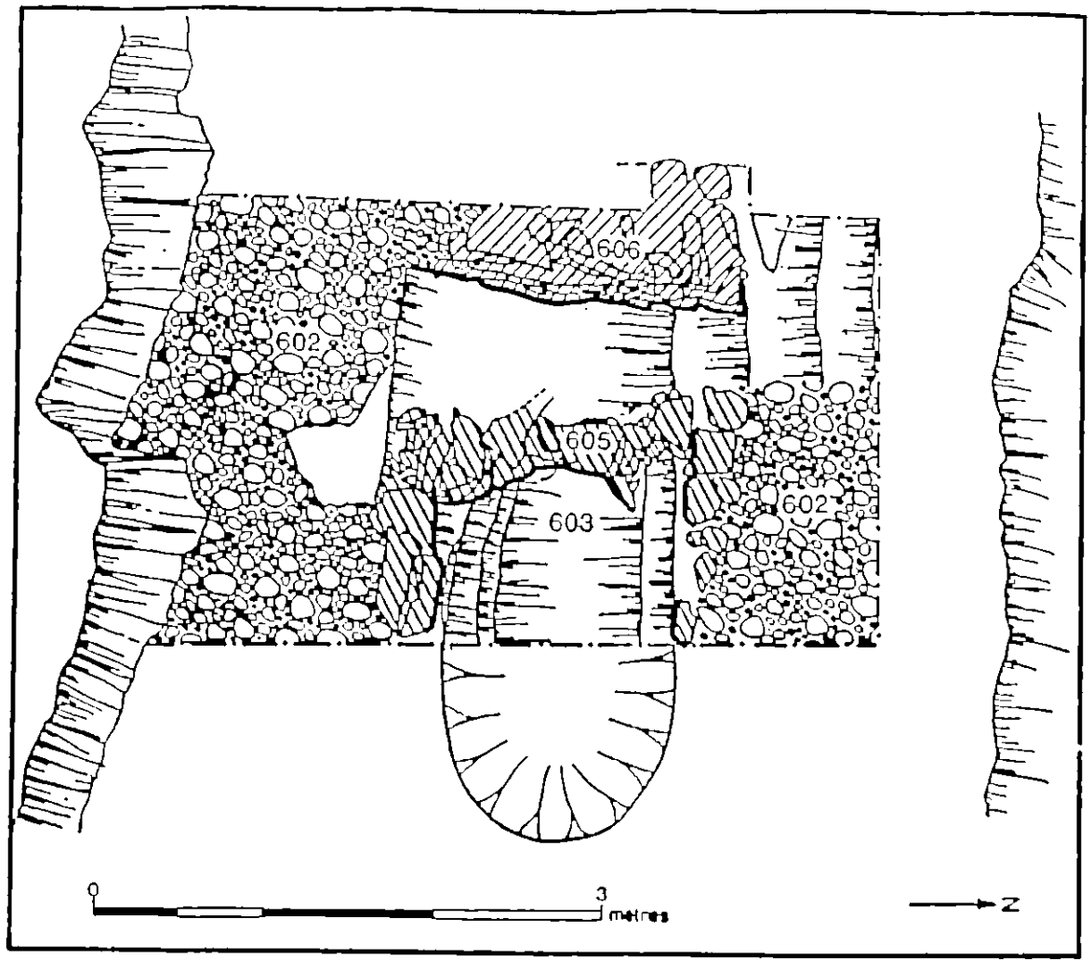
front ditch would have yielded an orange loam. Both these soils are seen to overlie the rear of the first bank. The profile of the second bank is more clearly preserved in the section allowing us to see that it was much broader than the first (5.5 m), but perhaps not much higher (1.4 m). The principal differences between the two banks were: the absence of turves at the front, and the presence of a ragged line of large stones, 0.9 m wide, running along the crest of the second bank. There are no tumbled stones in the silting before or behind the bank, so it is unlikely that there was ever any large number of stones, forming a rough wall, on the crest of the bank. It is possible that the stones formed the packing of a palisade trench. Rabbit burrows have, however, removed any possible confirmatory evidence such as a trench or timber impressions.

In conclusion, the building techniques used here are unlike anything encountered in other trenches. This is perhaps to be expected, given the ready availability of soil at the foot of the hill. It does not rule out the possibility that the bank is contemporary with some of the other defences. Indeed its location suggests that it played an integral role in the final configuration of the fort's defences. However, in the absence of artefacts or samples suitable for radiocarbon dating, such a hypothesis remains unproven.

CUTTING DN 600: ST PILLAN'S WELL (plan, illus 28)

Because of the extremely dry summer weather of 1977 it was possible to investigate the so-called well and the structures around it. Accordingly a trench was laid out over the western half of the damp, reedy area which indicated the 'well' and across the narrow terrace on which it was located. The intention was to determine the nature of the well: whether it was spring-fed or filled by rainwater and whether it was a natural or artificial feature. The excavation revealed that the 'well' was formed by building a wall around a natural hollow in the bedrock. No spring was present, but on one occasion overnight rain indicated that the hollow worked effectively as a reservoir. Artefacts recovered from the well were ample and well dated to the recent past. Unfortunately no dating evidence for the construction of the 'well' or adjacent features was recovered.

Before stripping the turf, the 'well' was marked by a damp hollow surrounded by reeds and grass. Upon stripping the thin turf a uniformly well packed surface of cobbles, boulders and sandstone slabs (602) was found to surround a uniform black soil with a high organic component that was still wet (603). Twenty-five British coins of low denomination dating from 1906 to 1975, plus a Victorian halfpenny too worn to date, and 2 Belgian coins of 1965 and 1975, were recovered from this damp soil. They indicate continuing veneration or respect for the well. Various other objects of recent date were recovered, including fragments of ceramic and glass containers, perhaps intended for collecting well water. The most interesting item is a fragment of a 19th century gravestone (SF 170) which came to be deposited in the well. (Note that, as shown on the plan, 602 has been stripped out



ILLUS 28 Cutting 600: plan

from between the two walls, 605 and 606. Moreover, no attempt is made to reproduce graphically the character of the rubble.)

The edges of the well were defined by a crude dry stone wall constructed of undressed blocks (605) built across a flat bottomed cleft in the bedrock which runs E-W. The wall approaches 1 m in height on the W side and defines an area 1.4 m across and 1 m lengthwise to the section. If the section is located across the mid-point of the well, this would make the well approximately 1.4 x 2.0 m in area. The bottom of the hollow itself was about 0.56 m below the foot of the wall on either side, making this the effective depth of the well.

The well wall (605) retained a mass of small cobbles and loose black soil (607) which in turn lay against a much better built wall (606) W of the well. This wall extended from the bedrock outcrop towards the cliff on the N edge of the terrace; it did not, however, reach the cliff, but stopped about 1 m short of it. It was not clear whether it had originally terminated here or was broken through at a later stage. The wall, which stood almost 1.5 m high and 0.8 m thick, in effect created a passage along the cliff edge. The depth of soil retained by this wall suggests that other structures have been preserved further to the W.

Clearly the W wall (606) pre-dates the current well structure, but no absolute chronology can be offered for either wall or for the well itself. The recent character of the finds confirms the local reports that the basin was cleared out within living memory. Nothing in the character of the two successive walls precludes them from being of considerable antiquity; though not necessarily contemporary with the fort itself.

LIST OF FEATURES AND SPECIAL FINDS IN TRENCH 600, ST FILLAN'S WELL

The trench examined the small pool and enclosing wall known as St Fillan's Well, located on a narrow ledge of the upper terrace to the W of the summit boss. The 2.5 m wide trench sectioned the 'well' itself and surrounding features and extended approximately 4.5 m N from a bedrock outcrop towards the cliff edge.

601 TURF AND LOOSE STONES

The thin turf and loose stones immediately below it which surrounded the well

SFs

141 George V ½d
142 Victoria ½d
143 Cu alloy ferrule
179 Glass bottle frag.
183 Stoneware bottle frag.
185 Elizabeth II 3d
186 Stoneware bottle frags.

602 COMPACT STONES

Densely packed cobbles and a few slabs surrounding the well-hollow. Well bedded; bedrock pokes through in places.

603 DAMP BLACK

Dark humic soil in well basin, from surface down. Essentially the silt and offerings collected in the well. No finds pre-date the 20th century. This fill occupies a natural hollow in the bedrock. There is no sign of a spring.

146 Modern Belgian coins (2)
147 New pennies (4)
148 New ½ pennies (2)
163 New 2 penny
164 New pennies (3) + Edward VII farthing
165 1d (8 from 1911-67)
166 ½d
167 New ½ penny
168 Elizabeth II shilling
169 George V 3d
178 Gravestone frag.
180 Brass cartridge case
181 Clay pipe frags.
182 Stoneware bottle frag.
184 Wooden stake, modern
187 Stoneware bottle frag.
188 Glass jar frag.

604 CHARCOAL PATCH

Small area of burnt material in NW corner of the trench sealed by 602 and nesting on bedrock.

605 ROUGH BLOCK SURROUND

A coarse dry stone wall surrounding the natural hollow in the bedrock and defining the W edge of the 'well' basin. Retaining 607 and standing 1 m high in places.

606 WEST WALL

Well-built wall of dressed slabs of sandstone with a few boulders. Stands about 1.5 m high (9 courses) and is about 0.8 m thick. Located about 1 m W of the 'well' as defined by inner face of 605. The wall runs N-S from bedrock to within 1.6 m of cliff edge where it either is broken through or terminates. Lower courses are bound with clay and the whole structure was sealed by 602 and 607.

607 BETWEEN WALLS

A fill of small cobbles and black earth behind the western portion of the well wall (605).

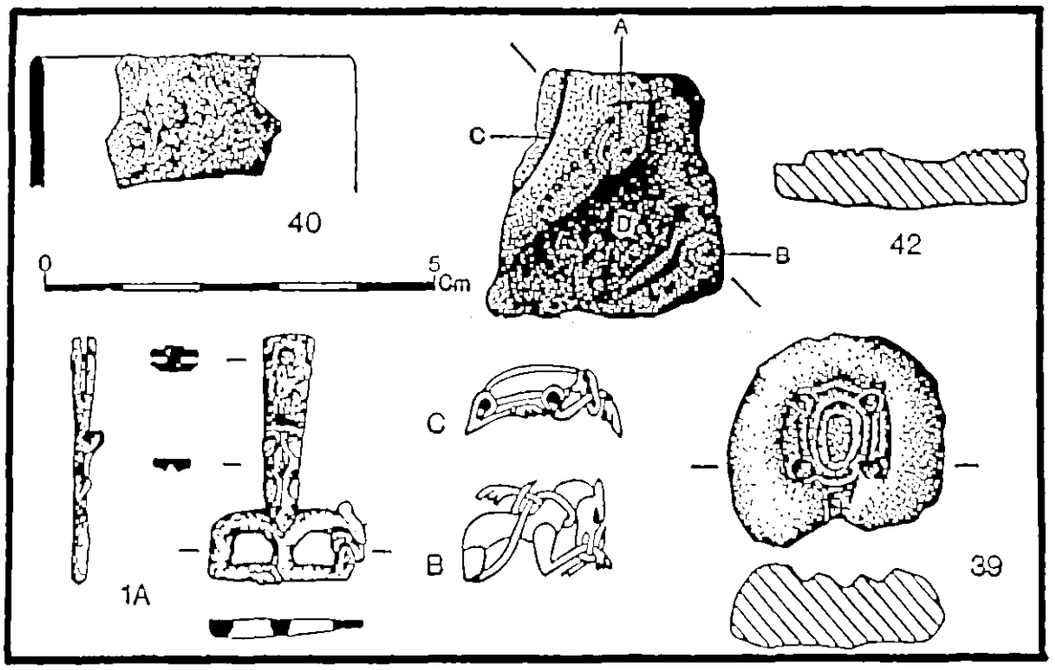
CATALOGUE OF FINDS

The finds are catalogued by material - metal, including coins; glass; ceramics, i.e. pottery and other fired clay; bone and antler; leather; stone; wood - and then by type of object. Full descriptions and discussions are given only for objects of Early Historic date. The description of each find is normally preceded by a catalogue number, running in continuous sequence throughout the catalogue; then a feature number e.g. DN 013, where the first digit designates the Cutting (here DN 000), and the following digits give the context; then, where appropriate by the special find number (SF). Objects illustrated in the catalogue are marked by an asterisk *. Where necessary, dimensions are specified by L = length, W = width, D = diameter.

METAL OBJECTS

BRONZE (illus 29)

1.* DN013, SF045 Zoomorphic Dangle. This has a split shank, with a rivet (which has lost its domed head), to fasten it to a leather or cloth strap, and a wide terminal at right angles to the shank. The object measures 33 x 21 x 3 mm. It seems too flimsy to have secured one strap to another, and is most probably, therefore, an ornamental dangle. No close parallels are known to the form, but both shank and head bear zoomorphic ornament of recognizable lineage. The shank bears a horse (?) head, with protuberant eyes and lentoid nostrils, akin to those on early cruciform brooches. The terminal is in the form of a quadruped with a double-arched body, prick-ear, and frond-like feet, the fore-paw being thrust into the wide open jaw. This is a simple version, appropriate to its medium, of the animals in the side panels of the zoomorphic carpet page of the Book of Durrow (fo. 192 v); and this, in turn



ILLUS 29 Fine metal-working. 1A, silvered bronze dangle with self-biting beast, B, C, parallels from Book of Durrow and Sutton Hoo great gold buckle; 39, mould for head of stick pin; 40, thin-walled crucible; 42, mould and motif-piece, showing two ribbon animals at A and B.....

has a cousinly relationship with the little beast crouching at the end of the great gold buckle from Sutton Hoo.

The surface appearance of the dangle suggested that it was of base silver. Analysis, carried out by Dr. Elizabeth Slater, determined that the bulk composition was a high tin bronze (15.4% tin). Silver was present, however, in a strongly demarcated surface zone, suggesting the object had been silver-plated.

Probably not earlier than 625-650 AD.

2. DN601, SF143 Ferrule. Tapered sleeve, L 31 mm, large D 14 mm, small D 10 mm. Modern, perhaps the tip of walking stick or shepherd's crook.

3. DN603, SF180 Rifle Cartridge for a bullet D 0.3 inches.

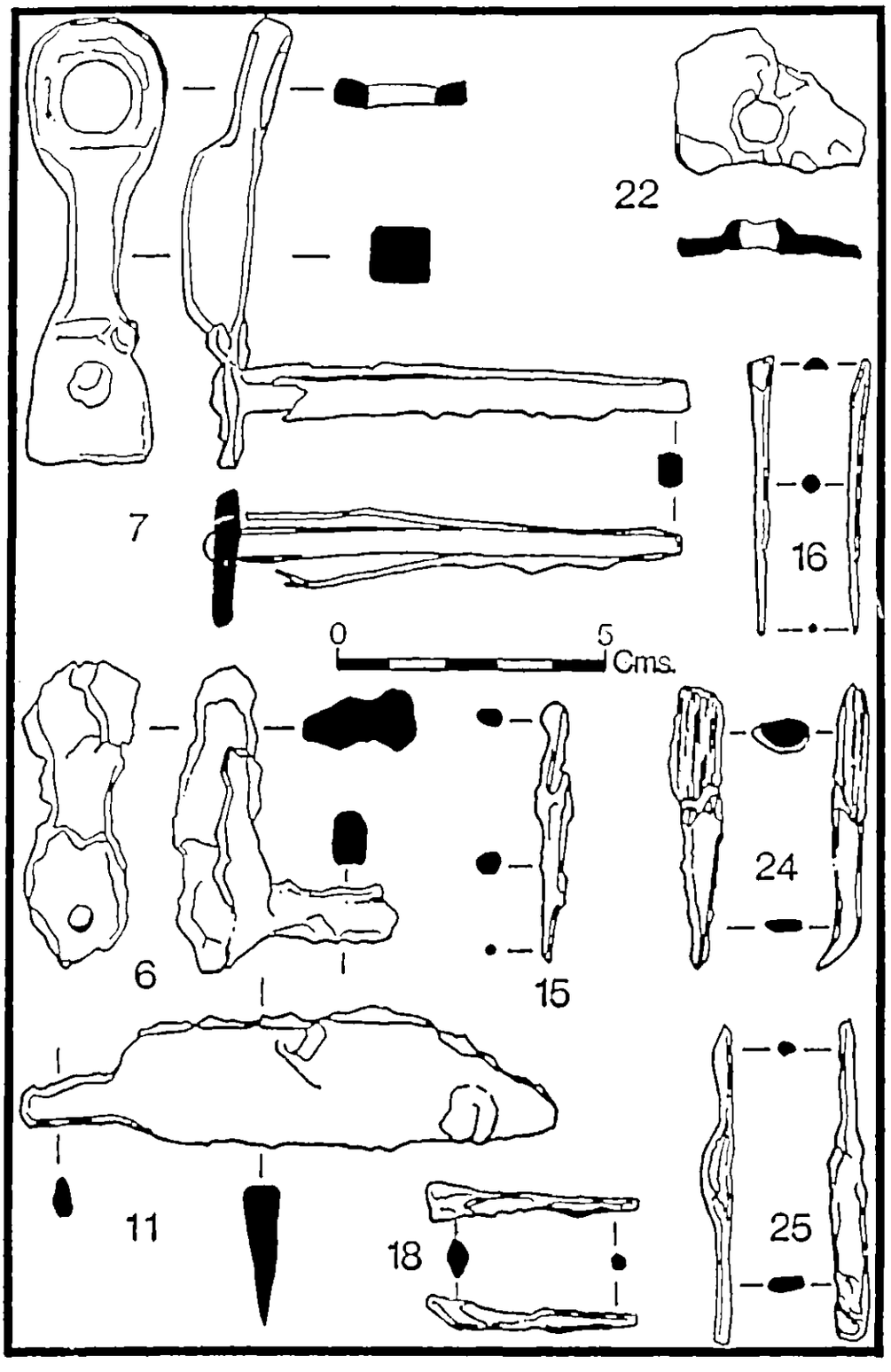
IRON OBJECTS (illus 30)

4. DN423, SF189 Flat strip, heavily corroded and broken into eight fragments, possibly all parts of the same object. L about 245 mm, tapers from 10 x 4 mm down to 7 x 3.5 mm. Incomplete, broken at both ends.

5. DN013, SF047 Flat strip, heavily corroded and bent nearly 90 degrees 10 mm from one end. 32 x 12 x 3 mm. Incomplete, broken.

6.* DN408, SF144a Padlock fragment, heavily corroded. Catchplate and part of spring of 'barrel' padlock. A smaller version of SF024. Hasp is 56 x 20 x 12 mm, the spring is broken and extends 25 mm from the catchplate.

7.* DN205, SF024 Padlock mechanism. Spring and catchplate exceptionally well-preserved. Catchplate has ring at one end and spring-shank extends from the opposite end. The spring-shank runs through the catchplate and has been fastened in the manner of a rivet by hammering. Catchplate is roughly dumb-bell-shaped, L 82mm. The ring end is 26 mm across and the ring D 13 mm. The



ILLUS 30 Iron objects

spring end is roughly 24 mm square. The shank connecting the two ends is 10 x 13 mm. The spring-shank is 81 x 5 x 5 mm.

8. DN013, SF120b Spherical lump, D approximately 20 mm. Heavily corroded, no distinguishing features.

9. DN104, SF002 ?Knife blade. Now fragmented beyond all recognition, no description available.

10. DN012, SF219 Pear-shaped lump, heavily corroded, no distinguishing features. L 85 mm, maximum W 40 mm.

11.* DN108, SF135 Angled-backed knife. Heavily corroded, but complete. Total L 103 mm, blade L 85 mm, tang L 18 mm. Cutting edge is straight, back is squared and about 7 mm thick. The back is angled at widest point of blade (25 mm), which is 30 mm behind the tip.

Probably post-800 AD.

12. DN106, SF013 ?Knife blade, very badly corroded. Incomplete, L at least 60 mm at time of discovery.

13. DN417, SF151 Point, ?Spear head. Heavily corroded triangular object. Tapers from a maximum W 28 mm to sharp point. L 90 mm, but incomplete, broken at base. Flattened oval cross-section 10 mm thick. No surface detail.

14. DN404, SF194 ?Knife blade. Heavily corroded, possible tip to blade encased in rust. 42 x 23 x 12 mm.

15.* DN106, SF015 Pin, needle shaft or fine nail. Round section tapers to fine point, opposite end is slightly swollen suggesting a ball-headed pin. Detail obscured by rust, 45 x 4 mm.

16.* DN207, SF049 Pin, needle shaft or fine nail. Round section tapers to fine point, possibly incomplete: no head. Detail obscured by rust, 55 x 3.5 mm.

17. DN106, SF020 Pin or nail. Round-sectioned rod tapers abruptly

to an off-centre point. Incomplete: no head. Detail obscured by rust, 38 x 5 mm.

18.* DN205, SF034 Pin or fine nail. Round section tapers to fine point. Opposite end hammered into a chisel-shape. Covered with rust, but seems complete, 39 x 4 mm.

19. DN106, SF014 Hook, ?strike-a-light. Heavily rusted square-sectioned rod bent into a tight-mouthed hook. Overall length about 90 mm, bent length 48 mm, 9 mm square in section. Possibly half a strike-a-light or steel of the type in which both ends are bent round so that they nearly meet against the mid-point of the rod.

20. DN422, SF191 Flat strips, heavily rusted, possible knife blade. Two fragments, incomplete: 32 x 21 x 7 mm and 18 x 22 x 4 mm.

21. DN106, SF026 Sheet perforated by nail. Rectangular sheet 30x 35 x 5 mm pierced by centrally placed round-headed nail (head D 20 mm, broken shank L 10 mm). Sheet acts as washer to distribute stress.

22.* DN205, SF022 Perforated sheet, irregular form and lacking some of circumference, possibly a disk or washer. Damaged in antiquity, perhaps original D 38 mm. Overall form slightly convex, perforation (D 8 mm) has slight flange (2 mm high) protruding to convex side. Present dimensions 37 x 29 x 2.5 mm. Heavily corroded.

23. DN203, SF253b Flat strip with slightly hooked end, other end broken away, 24 x 8 x 3mm.

24.* DN207, SF039 Tanged cutting tool or scriber. Slightly curved chisel-like edge set at 45 degree angle to short, rectangular-sectioned shaft. Tang is oval-sectioned and still retains some of wooden handle. 50 x 9 x 7 mm, tang L about 25 mm, blade L 8 mm.

Angle and form of the edge suggest that it was used to carve wood or leather.

25.* DN205, SF021 Tanged pointed tool. Probably an awl. Fine-pointed round-sectioned shaft fixed to flat tang. Actual tip is rusted and may be broken. Possible traces of wood adhering to tang. 58 mm overall, working end 21 x 3 mm, tang 37 x 7 x 3 mm.

IRON NAILS (illus 31)

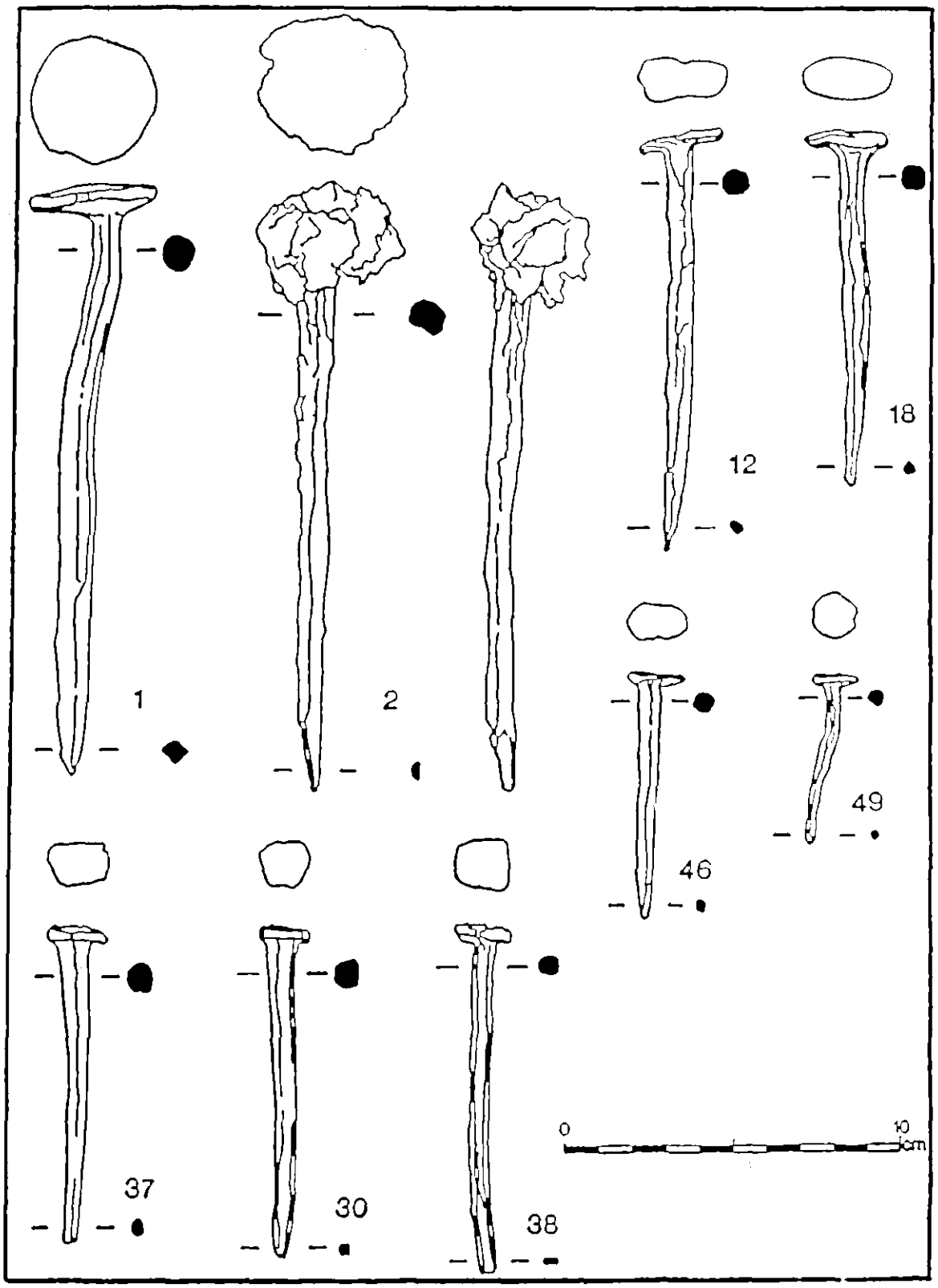
Nails constitute the largest group of artefacts of a single type. Over 100 were found in Cutting DN 000, and it may be calculated that not less than 2500 had been used in the primary citadel defence. They have been subdivided into five classes based upon size and head type, from class I - spikes (the largest) to class V - small nails. Details of the classification procedure and a discussion of the differing nail types are found in the Nail Report which follows this catalogue. The majority have unfortunately deteriorated too badly to allow classification, and they will be described only briefly. Because of their quantity, the nails are numbered separately from the main run of catalogue numbers.

1.* DN013, SF031 Class I Spike. Best preserved example, rust free. Slight red colour indicative of scorching. Round flat head slightly off centre, D 38 mm. Shank is rounded and tapers to fine point, D 7-10 mm, L 170 mm.

2.* DN013, SF112 Class I Spike. Much grit corroded to head. Squarish shank tapers to fine chisel end. L about 165 mm.

3. DN005, SF019 Class I Spike? Heavily corroded and fragmented, incomplete. Head lost. L 95 mm.

4. DN106, SF230g Class I Spike. Heavily rusted. Round head D 22 mm, L about 130 mm.



ILLUS 31 Representative iron nails

5. DN108, SF232 Class I Spike. Missing head and shattered, L 120 mm.

6. DN154, SF234 Class I Spike. Fragment of shank L 66 mm.

7. DN403, SF237 Class I Spike. Badly rusted and broken, L 95 mm.

8. DN405, SF239 Class I Spike. Fragment, badly rusted, round head D 2.3 mm, L 90 mm.

9. DN411, SF241 2 Class I Spikes. Badly rusted and splintered. Round heads D 29 mm, L 95 mm.

10. DN414, SF243 Class I Spike. Tip only, rusted to piece of wood. L 67 mm.

11. DN002, SF211 Class I Spike. Heavily rusted, shank only with wood adhering, L 90 mm.

12.* *DN013, SF063 Class II. Well-preserved, little rust.* Rectangular head 26 x 11 mm, round-sectioned shank tapering to fine point D 7 mm, L 120 mm.

13. DN013, SF088 Class II. Rectangular head 25 x 15 mm, tapering round-sectioned shank D 8 mm, L 106 mm. Surface covered by rust.

14. DN013, SF114 Class II. Rectangular head 21 x 9 mm, square-sectioned shank 5 x 5 mm, L 110 mm, point covered in rust.

15. DN013, SF096 Class II? Heavily corroded, most of head missing, L at least 110 mm.

16. DN013, SF086 Class II. Head covered in rust, round-sectioned shank, fine point L about 115 mm.

17. DN013, SF098 Class II? Heavily rusted. Head 15 x 12 mm, L 110 mm.

18.* DN013, SF085 Class II. Well-preserved. Subrectangular head 26 x 13 mm, L 105 mm.

19. DN013, SF037b Class II. Well-preserved. Rectangular head 15 x 23 mm, L 120 mm.

20. DN013, SF050 Class II. Rusted, rectangular head 24 x 14 mm, L about 115 mm.

21. DN013, SF094 Class II. Heavily rusted and broken. Original L over 105 mm. Shows signs of having been exposed to high temperatures.

22. DN013, SF099 Class II. Heavily rusted and broken. L about 105 mm.

23. DN106, SF231 Class II. Badly rusted, but complete. Rectangular head 18 x 16 mm, L 120 mm.

24. DN201, SF249 Class II. Rectangular head 25 x 14 mm, broken shank L 23 mm.

25. DN013, SF065 Class II or III. Good condition. Subrectangular head made by hammering top of shank flat, clearly showing that head and shank were made from single iron rod. Head 19 x 13 mm, L 102 mm.

26. DN013, SF037a Class III. Well-preserved, but missing tip. Irregular head 17 x 13 mm, L 95 mm.

27. DN013, SF032 Class III. Upper portion well-preserved. Irregular head 22 x 20 mm. Tip rusted and broken L 80 mm.

28. DN013, SF066 Class III. Well-preserved. Oval head 20 x 13 mm, Flattened, blunt tip L 71 mm.

29. DN013, SF028a Class III. Well-preserved, but bent. Subrectangular head 18 x 14 mm, L about 100 mm.

30.* DN013, SF029 Class III. Well-preserved, red tint indicative of scorching. Square head 15 x 13 mm, square shank, L 95 mm.

31. DN013, SF073a Class III. Incomplete. Square head 13 x 14 mm, L 27 mm.

32. DN013, SF073b Class III. Incomplete. Subrectangular head 15 x 10 mm, L 65 mm.

33. DN013, SF058 Class III. Incomplete. Square head 12 x 11 mm, L 80 mm.

34. DN013, SF078 Class III. Head badly decayed, L 110 mm.

35. DN013, SF091 Class III. Head obscured by rust, chisel pointed, L 85 mm.

36. DN01 3, SF060 Class III. Head intact, rest very decayed. Round head D 17 mm, L at least 100 mm.

37.* DN013, SF064 Class III. Good condition, sub-rectangular head 17 x 13 mm, L 90 mm.

38.* DN013, SF081 Class III. Fine condition. Square head and shank. Head 18 x 15 mm. Flattened chisel point, L 100 mm.

39. DN013, SF069 Class III. Incomplete. Round head D 16 mm, L 57 mm.

40. DN013, SF070 Class III. Rust-damaged, bent. Square head 16 x 16 mm, L about 115 mm.

41. DN013 , SF057a Class III. Incomplete. Oval head 16 x 11 mm, L 46 mm.

42. DN013, SF057b Class III. Incomplete, badly rusted. Square head 15 x 13 mm, L 68 mm.

43. DN013, SF051 Class III. Rust-damaged, but intact. Oval head 17 x 13 mm, flattened chisel point, L 107 mm.

44. DN013, SF087 Class III. Round head D 17 mm, L 105 mm.

45. DN013, SF115 Class III. Round head D 20 mm, L 85 mm.

46.* DN013, SF067 Class IV. Fine condition. Oval head 16 x 11 mm, L 73 mm

47. DN013, SF068 Class IV. Rust-damaged. Square head 11 x 13 mm, L 67 mm.

48. DN413, SF242 Class IV. Heavily rusted and incomplete. Oval or rectangular head 12 x 15 mm, L 51 mm.

49.* DN001, SF008 Class V. Fine condition. Tack-like proportions. Subrectangular head 13 x 13 mm, square-sectioned shank, fine point, L 47 mm.

50. DN404, SF238b Class V. Heavily rusted, but complete. Round head 13 x 11 mm, L 41 mm.

51. DN106, SF230e Class V. Badly rusted. Round head 23 x 22 mm, L 40 mm.

52. DN406, 240b Class V. Rusted, incomplete. Round head D 12 mm, L 31 mm.

53. DN202, SF252 Class V. Heavily rusted, but complete. Subrectangular head 13 x 14 mm, L 44 mm.

54. DN205, SF254 Class V. Heavily rusted, complete? Subrectangular head 12 x 13 mm, L 40 mm.

55. DN207, SF 048 Class V. Round head rusted, D 15 mm, L 42 mm.

The remaining 98 nails were too badly corroded or too fragmentary to allow classification.

NAIL REPORT

By far the commonest type of artefact from the site is the nail. Including objects listed as 'pin or fine nail' (e.g. cat nos 15-18) 158 nails or fragments of nails were recorded, of which 91 came from a single context (013). This deposit has been interpreted as the burnt remains of the primary defence of the summit (phase 2B), in which wood played a large part. From the total sample of excavated nails some 55 were well enough preserved for inspection and analysis. The following discussion and classification is based essentially on the well-preserved examples, 36 of which again derive from feature 013. All but one

of the other well-preserved examples come from later contexts in the DN 000 sequence. The relative scarcity of nails in those deposits suggests that most, if not all, were derived from the debris of the primary citadel construction.

There is of course no way of knowing whether the sample of nails which has survived in good condition accurately reflects the original group of nails used on the site. It seems likely that taphonomic factors analogous to those which affect deposits of faunal remains have skewed the sample. For instance, we may suppose that the smaller, finer nails are under-represented amongst the identifiable ones, simply because being smaller they are more likely to have rusted into oblivion or beyond the point of recognition. On the other hand, the larger nails and particularly the spikes, being more robust, are more likely to survive and to be identifiable, even when badly corroded. Another factor which may be of relevance to archaeological recovery is that the large nails would have been easier to salvage and more worthwhile to reforge. These are not factors which may be quantified, but they should be borne in mind when considering the relative abundance of the different classes of nails.

CLASSIFICATION

This classification was arrived at inductively by examining the best preserved nails (essentially numbers 1-55) and considering their length, robustness, head shape and shank shape. In the end head shape and length were taken to be the key criteria for grouping the nails. It is suggested that these two factors, and especially size, have important functional properties relevant to the use of the nails, and that therefore they may reveal distinctions recognized by the users and makers of the nails.

Class I

These consist of large round-headed spikes and are represented by one example in mint condition (SF031), a heavily corroded but complete example and nine or more large fragments. In total 11 positively identified spikes were found out of the collection of 55 well-preserved nails, that is 20%. The well-preserved example is 170 mm long, has a roughly circular head 35 mm in diameter and a shank which has a maximum width of 10 mm. The shank appears to have been forged from a square-sectioned rod, the corners of which have been rounded off. It tapers gradually from 10 mm to 7 mm until near the end where it has been hammered into a fine pyramidal point. Its head appears to have been fashioned from the same rod simply by hammering it flat. The finish of the metal is reasonably coarse which, along with its square section, would provide good holding power, while the fine point would facilitate driving. Judging from its length, spikes of this size would have been used in joining timbers which were not more than about 110 mm thick. The diameter of the shank makes it unlikely that it could have been used on timbers any narrower than 100-150 mm without causing them to split, unless they were pre-drilled. The large head seems to go beyond the needs of driving or holding and may have been intended to exhibit the presence of the nail.

Class II

These are long nails with rectangular heads. They range between 105-120 mm in length, with most tending towards the long end of the range. They are represented by 13 examples, which is 24% of the recognizable nails. The heads tend to be at least twice as long as they are wide, forming rough but clear rectangles often with bowed sides. On those nails in good condition it can be

clearly seen that the heads were forged by bending the shank and hammering the head out flat. The off-centre positioning of many heads makes this particularly obvious. None of the shanks are strictly square in section, but exhibit a multifaceted surface. They taper, in some cases irregularly, to a fine pyramidal point.

Class II nails may be termed common nails and would be suitable for general carpentry purposes, where bigger timbers are involved, up to say 75 mm thick in a butt joint. In particular it may be suggested that they would be suitable for joining the load-bearing timbers of a building frame, and for pinning together joints (e.g. mortice-and-tenon) of even larger timbers , if such pinning were considered necessary.

Class III

These differ from class II in being shorter (95-105 mm, mostly less than 100 mm) and in having square, polygonal or even round heads. This is the largest group with 21 members or 38% of those identified. The heads are rarely perfectly square or circular but tend to have four sides and to be roughly as wide as they are long. They exhibit no tendency towards the pronounced rectangularity of class II heads. Like class II they appear to have been headed in the same operation as the forging of the shank and shaping of the tip, but unlike class II these heads are well centered on the shank. The shanks retain their original square section with rounded corners and this too distinguishes class III from class II. The points of class III nails are flatter than any of the other groups, some have tips like chisels. A few have shanks as heavy as typical class II nails, thus making it impossible to distinguish the IIs from the IIIs in a headless or broken state.

In terms of use, IIs and IIIs may have been hard to distinguish; both are common nails. Class III nails would obviously have been used in work involving lighter timbers, say no more than 60 mm thick. It is possible to suggest that class II and III nails were designed for slightly different jobs simply on the basis of their size. If this is correct then the distinction between the two groups would have been one familiar to a blacksmith or carpenter. Indeed the heads may have been intentionally differentiated to make it harder to confuse the two types. Certainly class II nails seem better suited to heavy framing, whereas class III nails seem suitable for flooring, roofing, walling and other non-load-bearing functions. The covering and dividing elements of a building may have required more nails than the framing and this may explain the predominance in the archaeological record of the class III nails. Alternatively it may be that the distinction has no functional significance and simply reflects the work of different smiths.

Class IV

There are only two clear examples of these small nails which resemble scaled down versions of class III nails (65 and 72 mm). The subrectangular heads, like the other types of nail, were fashioned from the shank. The shanks are oval in section, except towards the tip where they become square and taper to a fine pyramidal point. The rough appearance of the head and the stoutness of the shank suggest that class IV nails were not finishing nails, that is nails used in fine joinery. They are capable of fastening timbers up to about 40 mm thick.

Class V

There are seven nails which may be described as tacks. They

are relatively small (40-50 mm overall), have fine square-sectioned shanks and proportionately large, flat round heads (e.g. 14 mm in diameter). Their size limits their use to timbers under 25 mm. It is possible that they were used in furniture-making, where their narrow shanks would produce a good clean finish. It may also be the case that the large heads were intended to be decorative.

GENERAL COMMENTS

The first thing to be said, in view of the presence of Roman building materials on the site, is that the Dundurn nails bear little resemblance to the best studied group of nails discovered in a Roman military context, namely, those from Inchtuthill. There, only a fraction of the hoard of over a million nails was studied; nevertheless it is clear that they differed from the Dundurn nails in terms of their regularity and in specific details of form (Manning 1985, 289-92). Analysis indicates that the ten different types of nail were manufactured to precise criteria and shows that there were many forms for which there are no close parallels from Dundurn. The Roman nails were far more regular both in their square-sectioned shanks and discoidal heads; the forms of the heads differ from the somewhat irregular heads found on the majority of the Dundurn nails.

In comparing these nails with others from Early Historic sites in Scotland, the Dundurn group stands out both in terms of the range of forms present and the total numbers. For example recent excavations at Dunollie (Alcock and Alcock 1987) produced a dozen nails with ovoid and subrectangular heads and square shanks, which were probably 50-70 mm long (Duncan 1982 ii, 18); but these all came from post-medieval levels. The various excavations at

Dunadd produced a fair quantity of nails, for example Craw (1930, 117) records '26 nails measuring from 5/8 inch to 3.25 inches in length' and '23 nail-like objects'. The photographs in Craw's report and Duncan's illustrations of the Dunadd nails (1982 ii, 18-20) show several examples which are closely paralleled at Dundurn. In particular, there are examples with round heads on slender shanks - both short tacks and longer nails. Common nails with squarish heads and polygonal-sectioned shanks similar to Dundurn class III are also illustrated. It would appear, from Duncan's dissertation, that 24 Dunadd nails survive, among which the variety is great enough to suggest a range of uses nearly as broad as at Dundurn. Among sites in Pictland, Clatchard Craig has produced only nine possible nails, all of which are incomplete and lack heads. On the basis of the shank size two examples would fit into the Dundurn classes II or III (Close-Brooks 1986, 171, nos. 130-9), but nothing more can be said about these especially as Close-Brooks thinks that some of them may well be iron pins.

Because the majority of the Dundurn nails were found, along with charred beams, in the supposed citadel defence, it is natural to compare them with other iron nails or spikes recovered from timber-laced ramparts. In Europe, Cotton's study of <u>muri gallici</u> showed that the iron nails or bolts were of 'remarkably constant' form; normally quadrangular in section, headless but with a flattened top, and tapering to a point. In size they range 'between 14 cm and 55 cm, but average about 20-25 cm' (Cotton 1957, 168). Nearer at hand, at the major Pictish stronghold of Burghead, the iron bolts or rivets were so corroded that Young, the excavator, could not determine their length 'but they were likely not under 8 inches [i.e. 200 mm] in length, by nearly an

inch broad, and had square heads...the head simply [being] the bolt made flat' (1891, 444).

It is immediately evident that the Dundurn nails differ from those from Burghead and the Celtic muri gallici in two ways. Firstly, they have properly formed heads, projecting at right angles to the axis of the nail. Secondly, they are all smaller than the average of 200-250 mm from muri gallici and the estimated 200 mm plus from Burghead. It follows that earlier statements about the summit boss of Dundurn being 'defended by a wall of dry-stone, stabilized by...oak beams, nailed together with massive iron spikes in a manner reminiscent of...Burghead' (Alcock 1981, 168) can now be seen as misleading, in relation to both Dundurn and Burghead. At the same time, it is evident that the Dundurn nails would have been quite adequate for fastening planks some 60-75 mm thick to larger beams on the Burghead model.

The economic implications of the quantity of nails used at Dundurn are discussed briefly in the printed report on the material culture of the site. The final point which needs emphasis here is that the nails indicate a range of forms all of which can be readily explained as having been used in the construction of timber buildings and furnishings which are paralleled on other sites of some social pretension elsewhere in Scotland.

COINS

A total of 28 modern coins was found in Cutting DN 600, St Fillan's Well. In summary they comprise: Victoria, 1d, 1; Edward VII, farthing, 1; George V, ½d, 2; 1d, 3; George VI, 1d, 1; 3d, 1; Elizabeth II, 1d, 4; 3d, 1; ½p, 3; 1p, 7; 2p, 1; 1 shilling, 1; Belgian, 50 centimes, 1; Belgian, 1 Franc, 1.

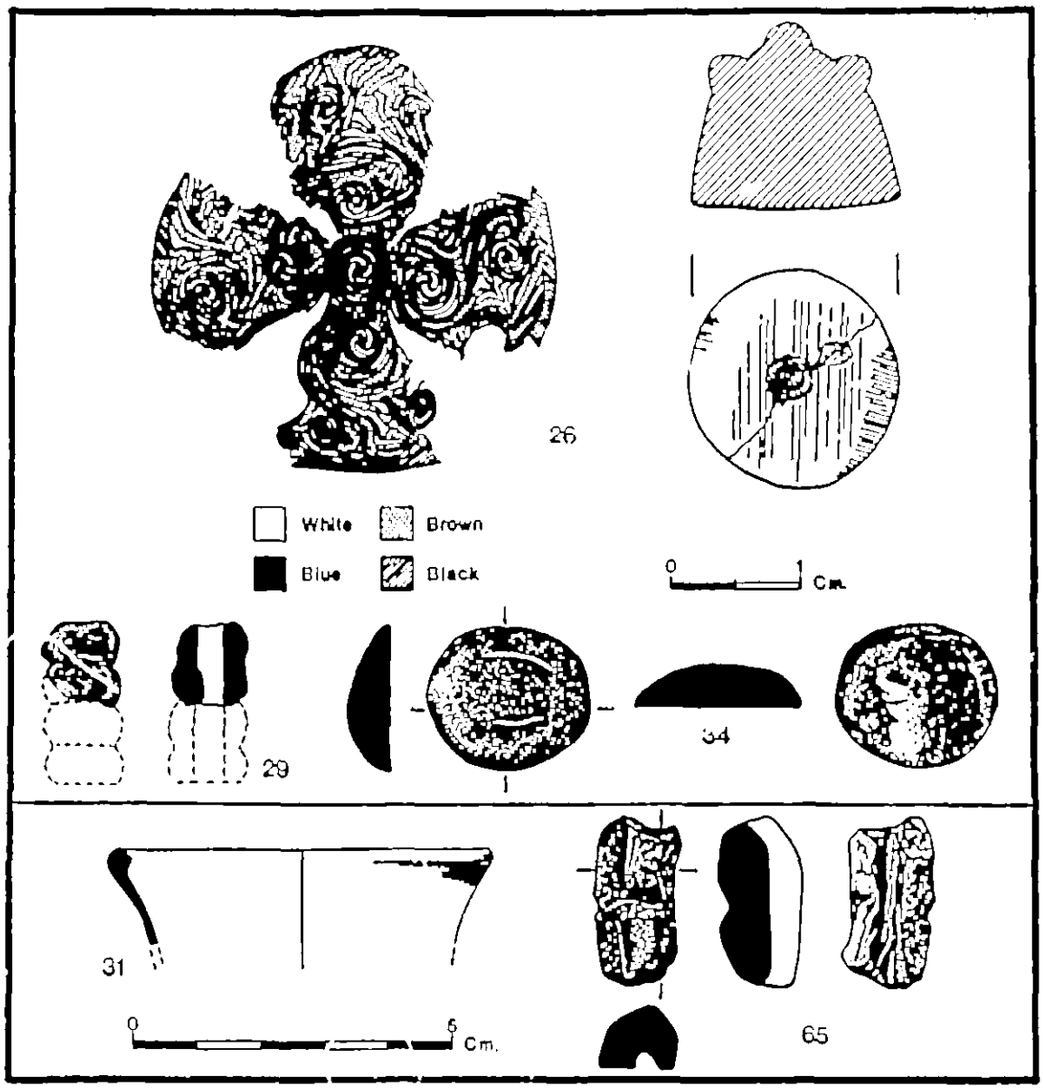
A full list is deposited in the site archive.

GLASS OBJECTS (illus 32)

26.* DN103, SF001 Knobbed Boss. A dome 14 mm tall, D 15 mm at the base, composed of four elements: 1) a base with a central perforation, of plain dark green glass so dark as to appear black; 2) on this is raised an apparently hollow dome, of parabolic profile, composed of swirling stripes of opaque white glass against a dark brown background; 3) in the lower wall of the dome are five irregularly spaced disks each with four swirls of light blue glass in a darker blue background; 4) on the top of the dome are five rounded knobs also of lighter swirls in a dark blue background. The perforation in the base, D about 3 mm, contains orange-red, greyish-green, and pale yellow deposits, of which the first two may be corrosion products from a copper alloy tube or rod, and the third may be either a cement or a filler for the hollow glass dome. It has not been possible to determine the dimensions of the hollow, and therefore it is not shown in the profile drawing.

The combination of form and ornament make this object unique in known Insular glass-work, although individual elements can be readily paralleled. For instance, spiral-ornamented knobs are too common on both pre- and post-Roman beads to require documenting. But the use of multiple loops or swirls instead of a continuous spiral is extremely rare. D. B. Harden (1967) commenting on such inlays on a set of playing pieces from Welwyn Garden City, could cite no insular parallels. They are known, however, on both pin-heads and beads from Ireland (Armstrong 1922; Hencken 1950).

As for the purpose of the boss, a clue may be provided by the basal perforation and its contents. The boss may have formed the



ILLUS 32 Objects of glass and (no 65)jet

ornamental head of a long dress- or hairpin, for such ornate versions of bobble-headed bone pins are certainly known in Ireland. The form of the wide, flat base is, however, unlike that of the Irish pin illustrated by Armstrong (1922, 74, fig 2, no 8) or, more recently, that from Movilla Abbey, Co. Down (Ivens 1984, 101-2) so this suggestion is perhaps improbable. More probably, the hole was designed to receive a short bronze shank, either to fix the boss ornamentally to some larger object; or alternatively so that it could be used as a playing piece on a perforated board like that from crannog No. 1 at Ballinderry (Hencken 1936, fig 66, no 125).

The favoured interpretation is as a decorated rivet head, or ornamental boss, from some larger object, such as a cross, chalice or casket. It is accepted that much of the ornament on Irish and Pictish sculpture represents stone skeuomorphs of jewelled, metal-cased wooden crosses. Ornamental bosses - originally reproducing the domed heads of the nails which secured the transom of the cross, but eventually taking on a life of their own - occur on Pictish cross slabs, on the high crosses at Iona and Kildalton, Islay, and by a direct line of transmission, on the south cross at Kells. On the Nigg, Ross, cross slab (Allen and Anderson 1903,III, 75-83) some of the bosses are further embellished with spiral-decorated knobs, a close skeuomorph of the Dundurn boss. It is claimed here, therefore, that the boss had been designed to ornament a jewelled cross, or some other high class object, secular or ecclesiastical.

Probably post-800 AD.

27. DN202, SF010 Blue Glass Bead. Fragment of a tubular bead, originally 7-9 mm diameter with walls 1 mm thick. Longitudinal

fragment L 9 mm and broken at both ends; hence too fragmentary to illustrate. Translucent cobalt blue. Closely paralleled by beads cited by Guido (1978, 94-5).

?2nd-7th cents AD.

28. DN106, SF017 Red Glass Fragment. Triangular piece (8 x 10 mm) from an extremely thin (0.5 mm) vessel. Degree of curvature very slight and fragment too small to estimate size of vessel; but probably from a beaker. Transparent bright red colour, no cloudiness, few bubbles.

29.* DN426, SF110 Blue Glass Bead. Fragment of segmented bead, original D 5 mm with walls about 1.5 mm thick. Longitudinal fragment L 6 mm and broken at one end, two segments preserved. Translucent cobalt blue. Many voids on interior surface. (cf. Guido 1978, 91-3).

?2nd-7th cents AD

30. DN000, SF177 Glass Sliver. Faint blue tint, slight curvature suggests it comes from a vessel or tube D 10-20 mm. Dimensions: 13.5 x 4 x 1.8 mm. No bubbles visible, probably modern.

31.* DN413, SF140 Beaker Fragment. Rim sherd of a glass vessel. Slightly everted rim with an interior lip and gradually tapering sides. Original D c. 60 mm. Transparent dark olive-green. From a cone beaker or possibly a squat jar, of Teutonic manufacture, in the sense used by Harden 1963, 1987.

6th-7th cents AD.

32.* DN404, SF192 Glass Inlay or Gaming Piece. Translucent, olive-brown/yellow. Flat-bottomed oval (10 x 12 mm) plano-convex disk only 3 mm high. Highly polished upper surface; numerous voids on the underside, from sliced-through bubbles. Either an inlay for jewellery or less probably a gaming piece.

33. DN110, SF228 Glass Sliver. Fragment shaped like a split grain of rice (7 x 3 x 0.5 mm). Transparent, colourless.

34. DN601, SF179 Bottle fragments. Several fragments from a single small octagonal vial of clear glass. Modern.

35. DN603, SF188 Bottle fragment. Clear, modern.

CERAMICS (illus 29)

36. DN105, SF005 Pottery Bodysherd (by C Coutts, University of Sheffield). The sherd is hard, wheel-made and well-fired, with a slightly scorched outer surface. The surface is a reddish-yellow colour (Munsell 5YR 7/6), with a light grey core (Munsell 5YR 7/1). Visual examination of the sherd shows little in the way of tempering material or other inclusions, apart from a few large lumps of iron ore (up to 2 mm across). Thin-section analysis reveals a dense and gritty anisotropic brown clay matrix, containing numerous sub-rounded to sub-angular quartz and quartzite crystals, ranging from 0.1-0.5 mm across. A few crystals of olivine at <0.2 mm were also visible.

The 4 mm thick, undecorated bodysherd is not particularly distinctive, but comes from the wall of a vessel at least 13cm in diameter. Assuming that the AD 800 plus date is correct for its context, the fineness of the fabric suggests that it is most likely to be from a Carolingian ware made in the Central Rhineland. The thin-section analysis supports a 9th century Rhenish source, but until more is known of medieval pottery in the area, a later date cannot be completely ruled out.

Probably 9th cent AD.

37. DN120, SF155 E-ware Bodysherd. Fabric light grey/buff, quartz temper protrudes from surface, haematite is evident. Nearly as hard as stoneware, throwing lines evident on interior, but faint

on exterior. Flatness of the sherd suggests a large form, i.e. not a beaker or E5 lid.

Probably 7th-8th cents AD

38. DN414, SF149 Crucible Fragment. Body sherd 19 x 14 x 6 mm. Fabric light grey/buff, sand-tempered, soft. On the exterior is a translucent yellow/green glassy substance with swirls of pink. Interior is a bubbly, black carbon-rich material overlying a dark glassy substance with light blue patches and hints of red/brown. XRF analysis suggest that these deposits derive from working silver and copper (see XRF report below, sample 7556).

39.* DN425, SF159 Mould Fragment. Buff fabric contains sand, mica and quartz, surface is much abraded. Most probably an open mould for casting a stick pin with an unusually ornate head in the form of a central oval with four projecting bosses in a square array. There appears also to be one or more mouldings parallel to the main outline. A broadly similar ornament is seen on the head of a gilt bronze pin of eighth-century date from Coileagan an Udail, N. Uist (Crawford and Switsur 1977, 131, pl xiv a). Two perforations on the long axis of the latter show that it is a pin for a pseudo-penannular brooch; but there is nothing to suggest that the Dundurn example was anything but an ordinary stick pin. The stratification, immediately above the vegetable layer DN 426, would suggest a date in the 7th cent AD.

40.* DN426, SF162 Crucible Fragment. Rim sherd of exceptionally thin walled (2 mm) cylindrical vessel which has been exposed to high temperatures. Fabric is grey, finely tempered and very hard. Irregularities in the rim profile and lack of throwing marks suggest a handmade vessel. Curve of rim suggests D c. 40 mm, fragment measures 16 x 21 mm. Exterior is coated with a reddish

vitreous material.

41. DN426, SF172 Crucible Fragment. Body sherd 15 x 11 x 4 mm. Fabric is grey, fine grained and hard. On the exterior is a bright red vitreous material, on the interior is a carbonised substance with flecks of 'gold'. XRF analysis suggests it was used in bronze working, no gold was present (see XRF report below, sample 7555).

42.* DN426, SF197 Clay Motif Piece/Mould Fragment? Thin slab of hard fired clay bearing decoration on one surface. Incomplete, broken on all four edges, now 28 x 29 x 7 mm.

The most obvious feature of the ornament is two ribbon-like animals, probably serpents, at points A and B. In the case of A, the eye, and a splayed eye-surround, are seen: to the left, a row of circles marks the line of the body. With B, the ribbon-body is outlined, and the head and eye are plain: it is likely that the jaw has been lost at the edge of the fragment. The outlines of these animals have been firmly drawn on damp clay with a fine rounded point, and a similar instrument has been used for the eyes. The body ornament, of open circles in the case of A, and dot-and-circle on B, is punched. The ribbon around the eyes is picked out in a light pointillé. These animals appear to be sketches for relief versions of filigree animals with beaded ribbon bodies, rather than moulds. The impressions are too fine to run metal into, and lack raised edges to retain the metal. It is almost certain, therefore, that the designs are sketches for inlays, drawn on damp clay.

This does not, however, account for the firing of the clay slab. It is possible that the slab did function as a mould, though not utilizing patterns A and B. At point C occurs a deep sharply impressed regular curve, running off either edge of the

fragment. This appears to be a mould for casting a circular object, most probably a penannular brooch with an external hoop diameter of about 50 mm. It is impossible to know whether this mould was in one or two valves; if the latter, then the shallow depression at point D may have served to key-in the other valve.

This fragmentary, but no less remarkable, motif-piece was shown to the Society of Antiquaries of London in 1980 (Alcock, 1980, 344-5 and pl LXVa), but evoked no comments or suggestions for parallels.

Probably not earlier than 625-650 AD.

In addition to the catalogued ceramics, fragments of clay pipes and stoneware bottles were found around St Fillan's Well, Cutting DN 600 in features 601 and 603. They have not been catalogued, but the relevant SF numbers are 181-183 and 186-187.

XRF REPORT

The X-Ray fluorescence analysis of two crucible fragments from Dundurn, Perthshire was undertaken by Dr. James Tate of the Conservation and Research Laboratories of the National Museum of Antiquities of Scotland in October 1984.

The technique of X-Ray fluorescence analysis has several limitations as regards application to the study of metal working crucibles because the residues or 'glazes' tend to be thin, layered or inhomogeneous. Briefly summarized, the limitations as they determine the sort of interpretation the data can sustain are as follows: XRF does not detect chemical compounds, only the presence of constituent elements. XRF is not a reliable method of determining the relative proportions of the elements present. Thus, for example, copper, tin, and lead may be observed but this does not necessarily imply the presence of bronze, although it