

## Excavations at Clatchard Craig, Fife

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with contributions from R Hope-Simpson, Audrey Henshall,  
D Williams, J G McDonnell, R McCullagh, Lin Barnetson  
and others

*‘Hard adjoining to Denmil there is a great rock, on the top of the which stood a strong castle, doubly trenched . . .’*

Sir James Balfour, 17th century, quoted by Sibbald (1803, 70).

### SUMMARY

*The hillfort of Clatchard Craig occupied the prominent hill of that name above the small town of Newburgh, Fife. Some trenches across the multi-vallate defences were opened by P R Ritchie in the winter of 1953–4 and further rescue excavations undertaken by R Hope-Simpson in 1959 and 1960 which form the basis of this report. Since then the site has been totally quarried away. The excavation showed multi-period use of the site. Neolithic and Iron-Age pottery was found, but no structures. The multiple ramparts were all of Dark-Age date. Ramparts 1 and 3 were timber-laced and had been burnt. Radiocarbon dates from structural timbers suggest that these two ramparts were constructed in the sixth or seventh century AD. Ramparts 3a to 6 probably represent further phases of fortification. The latest Dark-Age defence, Rampart 2, possibly also timber-laced, followed a different line. It incorporated mortared Roman stones in its make-up, and its stone facing walls were partly preserved. Dark-Age finds from the site include a small metal disc decorated in hanging-bowl style, two sherds of E-ware, a silver ingot, and a group of clay moulds for casting penannular brooches of eighth-century type and other objects. The only significant structure in the interior was a paved hearth, post-dating the clay moulds, which probably lay within a rectangular building.*

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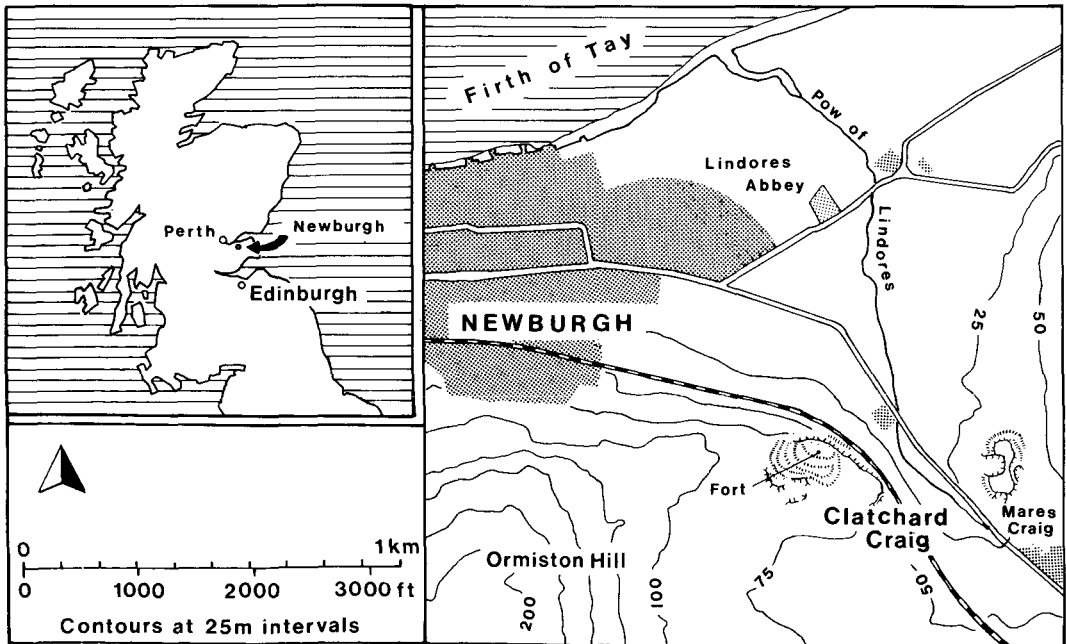
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1 LOCATION AND HISTORY

An extension of the Ochil Hills runs along the south shore of the Firth of Tay, forming a fairly solid barrier at the west end, but breaking up into more isolated blocks towards the east. A number of hillforts are strung out along the steeper northern edge of this ridge. One of these was Clatchard Craig, NGR NO 243 178, sited on a prominent hill which rose to 390 ft (119 m) OD above the small town of Newburgh on the narrow coastal plain, about 1 km from the south shore of the Firth of Tay (illus 1, 2). The fort stood in the open mouth of a valley offering three good lines of communication from the coast through the Ochils back into the centre of Fife and on to the south, all three now utilized by roads and one also by the railway from Perth to Kirkcaldy.



ILLUS 1 Clatchard Craig: location map

To the north the hill rose to a precipice some 60 m high, to the south-west it was joined by a low saddle to the higher summits of Ormiston Hill and Black Cairn Hill. There is a univallate fort on the latter. Below the site a small burn, the Pow of Lindores, drains Lindores Loch into the Firth of Tay. At the base of the precipice runs the railway. To east and west of the fort the view was shut off by higher hills, and to the south by undulating country, but to the north it appears to have had an uninterrupted view some distance up and down the Firth.

Immediately across the burn another smaller hill, Mare's Craig, was destroyed by quarrying in the 1920s, when long cist burials and a small iron Celtic bell were found (see Section 11). Near this are the ruins of Denmylne Castle, a late 16th-century tower house. Nearer the coast are the ruins of Lindores Abbey, an important Tironensian house founded in the late 12th century.

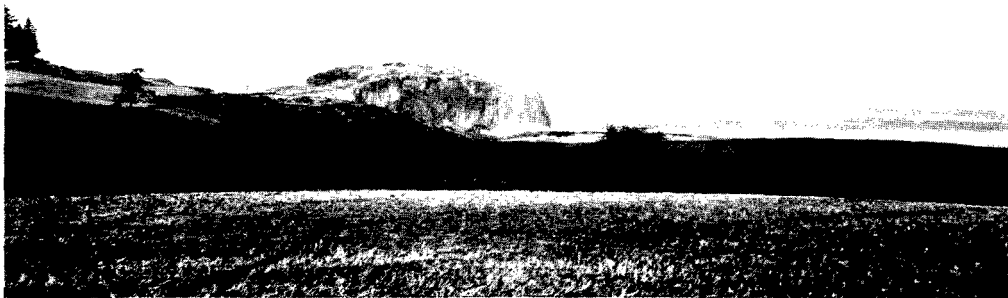
Clatchard Craig took its Gaelic name (*clach* – stone, *ard* – high, *creag* – rock) from a prominent geographical feature, a projecting pillar of rock some 90 ft (27 m) high and 25 ft (7.60 m) wide, known as the High Post, which 'rose in one columnar mass from the base to the summit of the craig', closely adjoining the precipice. This pillar was blown-up with dynamite in 1846 during construction of the Edinburgh and Northern Railway (Laing 1876, 15, note 1).

There are a few historical records of Clatchard Craig. The fort is first mentioned by Sir James Balfour of Denmilne and Kinnaird, Lord Lyon King at Arms to King Charles I and King Charles II in an undated manuscript (National Library of Scotland, Adv MS 33.2.34, f 13v). Speaking of Denmill Castle, he continues

'... hard adjoining to it is thair a great rock on the tope of the w(hi)che stuid thair a strange castell double trinshed leueiled with the ground by Martius Comander of the Thracian Choorts under the emperour Commodus, the ruine of thes Trinches may to this day be perceiued'.

Sir Robert Sibbald (1711, 8) believed the site to be an outpost of a Roman port on the Firth of Tay. He transcribed Balfour's note, but read strong for strange, as quoted above. Miller (1845) refers to 'the remains of a fortification similar to some of the outworks of the Roman camp at Ardoch'. He also mentions a cist containing an urn 'of rude workmanship' and a skull and some bones found at the foot of Clatchard Craig.

Laing (1876) describes the 'High Post' and its destruction by dynamite. He also gives a plan and section of the site, showing entrances through the outer ramparts on the east side, which are discussed below. Rea (1902) gives a sketch of the hill from below the railway. The OS 6 in map of 1920 shows a rather summary version of the ramparts, but is important as it gives a complete contour survey of the



ILLUS 2 Clatchard Craig from the west in 1959

hill before any quarrying took place; this map was used to complete the metric contours on *illus 1*. Another important record is the plan, section and description made for the *Fife Inventory* (RCAMS 1933, 3–6, *fig 71*).

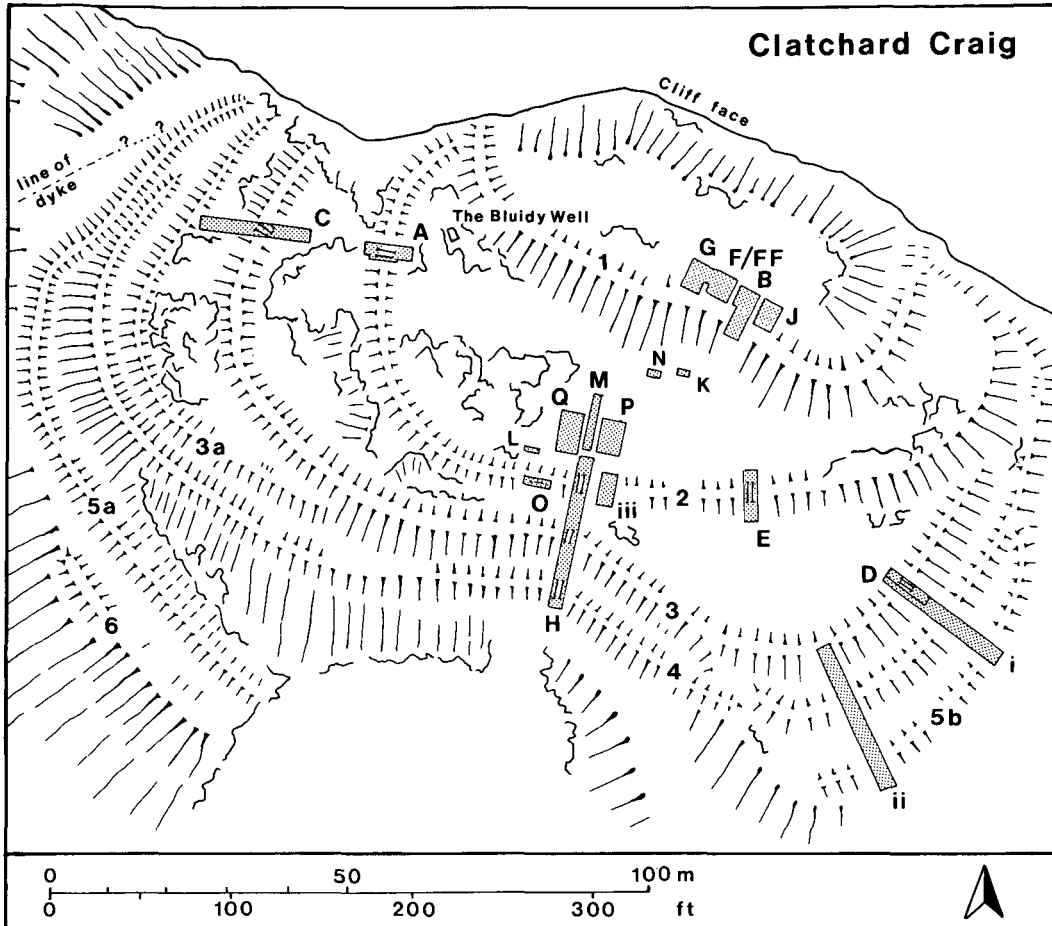
Unfortunately the railway remained a threat to the site in a more insidious way. Clatchard Craig, like the Mare's Craig, was formed of andesite, a hard stone which has largely been used as ballast for railways, though it is also used for roadstone and concrete aggregate. A quarry began to eat into the hill. Between the two World Wars the Ministry of Works made an application to the Ministry of Transport for the preservation of the fort on Clatchard Craig. This was unsuccessful, as the Ministry of Transport felt the stone was necessary for road metalling. Quarrying operations in the vicinity proceeded, and the threat to the site grew ever more acute. Nothing could be done during the war, but in the 1950s, as the quarry reached the edge of the site, the Ministry of Works initiated excavation, first a short investigation by P R Ritchie in the winter of 1954–5, and then a more extensive campaign by R Hope-Simpson in 1959 and 1960. The present report has been compiled by the writer on behalf of the Scottish Development Department (Ancient Monuments) from the records and interim accounts prepared by the excavators, and with their full co-operation. Between approximately 1950 and 1980 the fort was totally quarried away.

## 2 DESCRIPTION

The present writer never saw the fort, and the following description draws on the few existing records. The most important of these are the plan, section and description by Calder in the *Fife Inventory* (RCAMS 1933, 3–6, *fig 71*), an air photograph taken by the RAF in 1932 (*ibid*, *fig 10*; this paper, *illus 4*), and an air photograph taken by Malcolm Murray during the excavations in spring 1960, when the quarry had already destroyed the east side of the fort (*illus 5*). The present plan of the fort (*illus 3*) is based on that made by Calder in 1925 (RCAMS 1933, *fig 71*) with some modifications made by the excavators; no new survey was attempted.

The hill of Clatchard Craig rose to 390 ft (120 m) OD, dominating the mouth of the Lindores valley. The sheer cliffs on its northern edge were particularly conspicuous. To west and east the hill fell away in relatively steep slopes, only on the south-west was it joined by a saddle to the main bulk of Ormiston Hill. It appears from air photographs that the hill sloped away to the south in a series of broad steps or terraces. The fort occupied the whole upper part of the hill, comprising the two top steps, and the ramparts were often sited on the edges of the scarps, making the maximum use of the natural contours and projections of the underlying rock. To the north where the site fronted on the great precipice there was no rampart (or at least none survived); on all other sides there were multiple ramparts. On the plan (*illus 3*) these have been numbered arbitrarily from the centre outwards as 1–6 (in place of the Greek letters alpha to epsilon used by Hope-Simpson). Two extra stretches of rampart on the south-west arc meant that in that sector there were eventually no less than seven ramparts.

It was recognized before excavation that Rampart 2 was probably of a different period to the rest: it was on a different alignment, and paid less attention to the contours of the hill. It has in fact proved to be of later date. The other ramparts are in some measure concentric, though diverging at times to follow scarps. Rampart 1 ran along the top of a steep scarp some 4.50 m high, enclosing the top of the hill, a sub-rectangular area of some 70 m by 28 m (250 ft by 100 ft). The interior was in part fairly level, but on the north side sloped away towards the cliff face. Rampart 3 enclosed a larger area, 120 m by 75 m (400 ft by 250 ft), including a lower terrace, though this was much cut up by scarps, hollows and irregular rock surfaces. Considerable amounts of burnt timber in this rampart were visible even without excavation. The outermost ramparts, 4 and 5b on the south-east, 3a, 4, 5a and 6 on the south-west, conformed to the same general outline as rampart 3, producing overall a somewhat



ILLUS 3 Plan of Clatchard Craig (after RCAMS 1933) with trenches I–III, Ritchie 1953–4; A–Q, Hope-Simpson 1959–60

kidney-shaped plan. There was a large, apparently natural indentation in the hill on the south side, on which ramparts 5a and 6 abutted; rampart 5b also terminated at its west end at the top of a natural scarp, and there is no reason to suppose that ramparts 5a and 5b ever joined up. Laing's plan of 1876, allowing for a less accurate survey, shows the same extent of 5a and 5b as Calder's of 1925.

It may be noted that two other stretches of rampart shown by Calder between ramparts 2 and 3, and 4 and 5b, in the south-eastern sector have been removed from the plan as both Ritchie and Hope-Simpson identified these as natural features. Ritchie has also noted (ms note on plan in NMRS – National Monuments Record of Scotland) 'this appears to be incorrect' at the far north-western end of rampart 4, and this end section is drawn more lightly than the rest in Calder's original survey (in NMRS). It may well be that rampart 4 stopped at the point where rampart 5a swings in towards it.

A serious problem arises as to where the entrances lay. Calder (RCAMS 1933, 6, fig 71) suggested there had been an original entrance to the south, where his plan shows a wide gap in rampart 4, a gap with some feature crossing it in rampart 3, and a narrowing of rampart 2.

‘The entrance has been on the south where there is a noticeable, though gradual, turning in of the defences on both sides of a distinct break 38 ft (11.60 m) wide in the outer of the two main lines. The gap is not, however, so clearly defined in the inner line, but this is definitely reduced in height for a space corresponding to the break in the outer line’.

It is not entirely clear which ramparts he refers to: probably ramparts 2 and 3. In fact excavation 1959–60 showed that all three ramparts were continuous at this point, and Hope-Simpson noted that the appearance of a break or reduction in height was due to the ramparts dipping as they crossed a natural hollow in the ground. It may also be that this line was used as an entrance after the fort was abandoned and the ramparts partly worn down by men and animals passing over them.

The position of the original entrance remains obscure. Laing (1876; illus 3) shows entrances in the three outermost south-eastern ramparts, two in a line with the middle one off to one side, and there are two corresponding gaps shown on the 6 in OS map of 1914. It is unlikely these are genuine entrances. The entrances of multi-vallate forts, of whatever date, usually pass through the ramparts in a straight line, as at Drumglow, Fife (RCAMS 1933, 290) or at a slightly oblique angle, as at Craigie Hill, West Lothian (RCAMS 1929, 207) and Dunsinnan, Perthshire (Alcock 1982). Probably the entrances had been hidden by the collapse of the ramparts. Nevertheless the entrance through the outer ramparts may have been in the south-eastern sector since it appears that the easiest approach to the fort was from the east. There is one possible entrance in rampart 4, just west of Cutting II.

Many Scottish forts have some source of water such as wells or rock-cut cisterns within the ramparts, but the Bluidy Well shown on the plan (illus 3) was a natural feature, as Laing (1876, 7, note 2) noted:

‘What is called the “Bluidy Well”, which the rising generation look on with mysterious awe, as the place where the combatants washed their swords after a battle, is merely a hollow in the rock, which retains rain water having a reddish tinge imparted to it by the nature of the rock’.



ILLUS 4 Air photograph of Clatchard Craig in 1932 (photo: RAF)

Alcock (1977, 6) found that St Fillan's Well at Dundurn was also a natural hollow in the rock filled by rainwater, but it had been walled round at two different periods.

An earth and stone dyke adjoining the fort was described by Laing (1876). This led from the north-western corner of the site some 690 yards (631 m) 'up the sloping hill to the west' before it turned abruptly south for some 360 yards (326 m). The line of this dyke is shown on illus 3 and part of it appears on the 1960 air photo (illus 5). Laing and Hope-Simpson considered this dyke to be the boundary of a cattle enclosure contemporary with the fort. However, the straight line shown by Laing, and its abrupt corner, suggest a recent field boundary.

The vegetation on the hill at the time of excavation consisted of thick coarse grass, and some patches of scrubby gorse.

### 3 THE EXCAVATION OF 1953-4

The imminent destruction of the hillfort by quarrying caused concern to the Inspectorate of Ancient Monuments of the Ministry of Works, and an attempt was made to investigate the fort in the winter of 1953-4. Rescue excavation under the direction of P R Ritchie was concentrated on those parts of the south-eastern ramparts closest to the quarry and most vulnerable to destruction. Excavation took place from 28 to 30 December 1953, and again from 19 February to 5 March 1954. Weather conditions were very bad with deep snow in March bringing excavation to a premature close. A short report appeared in the ninth report of the Scottish Regional Group of the Council for British Archaeology (Ritchie 1954). Unfortunately some of the excavation records are at present inaccessible.

Some six cuttings were laid out, but only those visible in 1959 and planned by Hope-Simpson are shown on illus 3. During the short period of excavation Cuttings II and III were merely deturfed, but more progress was made with Cutting I through the three outer ramparts. This showed all three ramparts to have a core of rubble and earth. Ramparts 4 and 5 both had a row of large boulders at the front, and at one point Ritchie thought a rock-cut ditch had been quarried between them. This was probably a local fault in the rock, as found elsewhere on the site in 1959-60. A 'series of hearths' reported under rampart 4 are probably the burnt level found under the same rampart in Trench H. Pottery was recovered from the burnt level and a fragment of shale armlet was found in rampart 4. The complex inner rampart 3 was not fully studied, but Ritchie found this to be stone-faced on both sides. A burnt, radially-split, timber ran from front to back within the thickness of the wall. Outside the rampart, burnt undressed timbers rested against the outer face. Ritchie noted the skilful use of rock outcrops to reinforce the man-made defences.

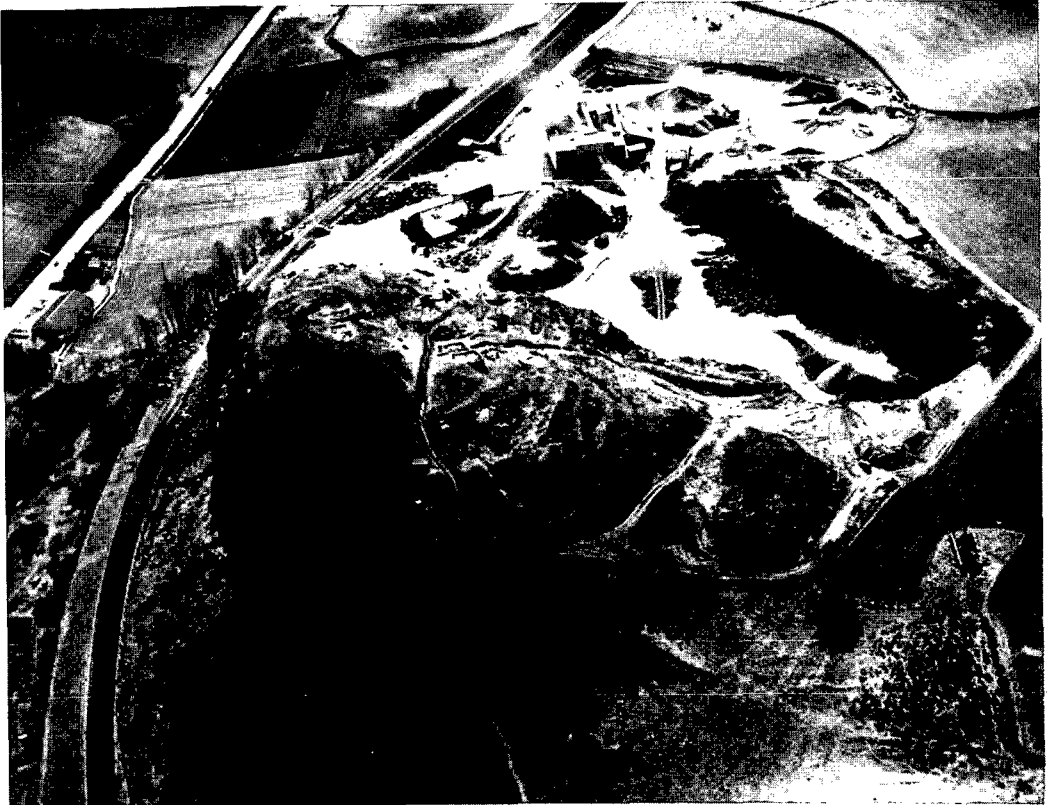
A field study of the site was also carried out and provided useful information about the ramparts. Two short, discontinuous, stretches of rampart shown on the plan in the Fife *Inventory* (RCAMS 1933, 4-6, fig 71) were found to be natural features. These lay between ramparts 2 and 3, and 4 and 5, on the south-east of the hill, and have been omitted from the new plan (illus 3).

### 4 THE EXCAVATIONS OF 1959 AND 1960

Joanna Close-Brooks and R Hope-Simpson

This section is based on RHS's draft report, modified in the light of the radiocarbon dates. Where the JCB has differed from his interpretation this has been indicated as far as possible. The initials RHS and JCB have been used for brevity.

The records of the excavation, now housed in the National Monuments Record of Scotland, include the excavation plans and sections drawn up as for publication, numerous photographs, a draft



ILLUS 5 Air photograph of Clatchard Craig under excavation in 1960

report on the actual excavation, and a list of the finds from each trench. All artefacts found had been three-dimensionally recorded, and together with the wood samples, slag and animal bone had been carefully packed and labelled. Some specialist reports had also been obtained on individual items. In 1976 Mrs Claris Hastings wrote an undergraduate dissertation for Edinburgh University on the excavation using these records. Her work included research into the historical records of the site, and the first complete catalogue and discussion of the finds, which have been of help in writing this final report. The plans and sections have been redrawn for this report, since much of the numbering and lettering on the originals would not have been legible when reduced, but they follow the originals as closely as possible.

When at the end of 1958 the Ministry of Works asked R Hope-Simpson to excavate some part of the fort before it was quarried away, stretches of the eastern ramparts had already been destroyed and other parts of the fort damaged by quarry roads. Excavations were limited by the availability of staff and workers, so only two short seasons took place from 16 March to 1 April 1959, and 24 March to 21 April 1960. The 1959 campaign was confined largely to individual rampart cuttings, while the long section, Trench H, and the sheltered interior area between ramparts 1 and 2 were left for 1960. Ramparts 1 (Trench B), 2 (Trenches A and E) and 3 (Trenches C and D) were investigated in 1959. Ritchie's Cutting I was so close to the quarry face as to make excavation dangerous, and only part of this cutting could be reopened as Trench D.



The discovery of Neolithic pottery in Trench B and Dark-Age moulds in Trench F was followed up in 1960 (illus 5). Trench F was reopened, renamed FF, and widened all round by 6 in (15 cm). Trenches G and J were dug to west and east of F and B to test the extent of the occupation. The long section (Trench H) through ramparts 2, 3 and 4 was completed. A small area excavation (M–Q) was sited near the north end of Trench H, in the hope of relating results to those obtained in that trench, and also avoiding the muddy tracks and drilling equipment occupying an alternative area near Trenches N and K. On the last day Trench A was extended westwards to explore more of rampart 2, where a mortared stone had been found in 1959.

#### NEOLITHIC AND BRONZE AGE

Early Neolithic pottery was found on top of the hill in Trench B with a few scraps in Trenches J and E (illus 3, 7). No structures were identified. The main group of sherds may have been at the bottom of a pit truncated by later activity in the area, and others in a few patches of old buried soil. As excavated, the sherds were confined to a small area, but the concentration at one end of Trench B suggests there could have been more beyond the limits of the trench. A S Henshall (Section 5) reports that a minimum of seven pots are represented, mostly carinated. They belong to the early Neolithic Grimston-Lyles Hill series, whose chronological range in Britain, as known at present, spans the second half of the fourth millennium to the later third millennium bc.

The few other sherds of early Neolithic pottery in Fife are stray finds from later sites, four sherds from Barns Farm, Dalgety and one from Calais Muir, Dunfermline (Watkins 1982, 112–13). Clatchard Craig, in contrast to these and other sites in south-east Scotland noted below by Henshall, had Neolithic occupation on a hilltop. Mercer (1981a, 187–98) has discussed the evidence for hilltop occupation and defence in Neolithic Britain and Europe. Clatchard Craig may now be added to the two sites he was able to list for Scotland, Balloch Hill, Argyll (see also Peltenburg 1982) and Traprain Law, East Lothian.

For the later Neolithic, Laing (1876, 8–9, 48) records that a carved stone ball had been found at Clatchard but subsequently lost. Laing was familiar with Neolithic stone balls, but it is not clear if he actually saw this one. He describes it as about the size of an orange, elaborately carved in relief, leaves being represented as springing from the stalk and covering the lower half of the sphere (this could indicate an unfinished ball). A recent corpus of stone balls shows a concentration in north Fife, including two from Newburgh and one from Grange of Lindores (Marshall 1977; the ball there listed as from Clatchard (*ibid*, 77), was dug up in Newburgh). Considerable late Neolithic activity in Fife has been shown at Balfarg (Mercer 1981b). However, the stone ball from Clatchard, if indeed Neolithic, was probably only a chance loss and need not indicate occupation.

A burnt and broken flint tool, 145, from rampart 2 in Trench E could be Neolithic or Bronze Age. Two small sherds, 20, from Trench FF level 4 may be from the base of a beaker. No other evidence for Bronze-Age activity was found during excavation. Miller (1845, 50–1) records a stone cist containing an urn of rude workmanship with a skull and some bones found at the foot of the hill shortly before 1836. This was probably a short cist with a beaker or food vessel, but need not be connected with occupation actually on the hill.

#### THE RAMPARTS

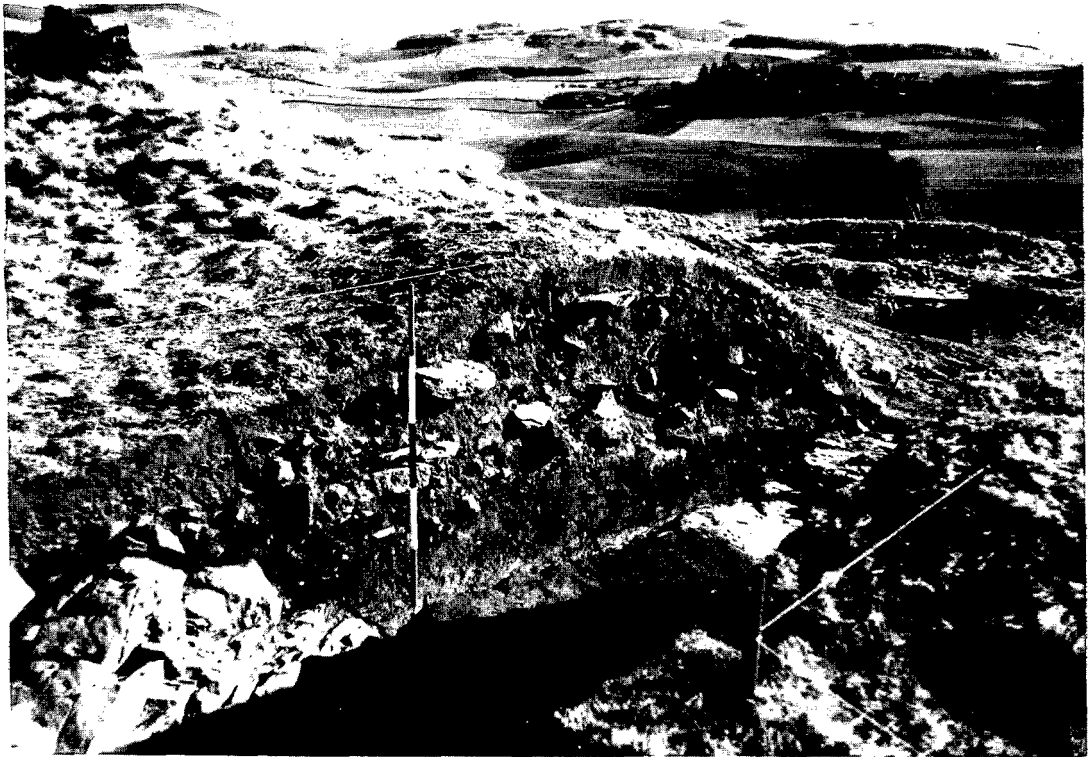
R Hope-Simpson excavated sections across ramparts 1–4, and P R Ritchie partly investigated ramparts 3, 4 and 5b (Section 3). Ramparts 1 and 3 are described first, followed by ramparts 4 and 5b. Rampart 2, which may be the latest, is described last.

In general, the ramparts were built of earth, stones and the orange, yellow or purple clay (mostly labelled ‘subsoil’ on the sections) that occurred on the hill in pockets in the bedrock. Several

sorts of stones were used in the ramparts and their revetment walls; andesite from the hill itself (about 60%), rounded river stones from the Tay (20%), red sandstone (10%), yellow sandstone (5%) and others (5%). All the ramparts excavated probably had stone facing-walls front and rear, though the manner of their construction and state of preservation varied.

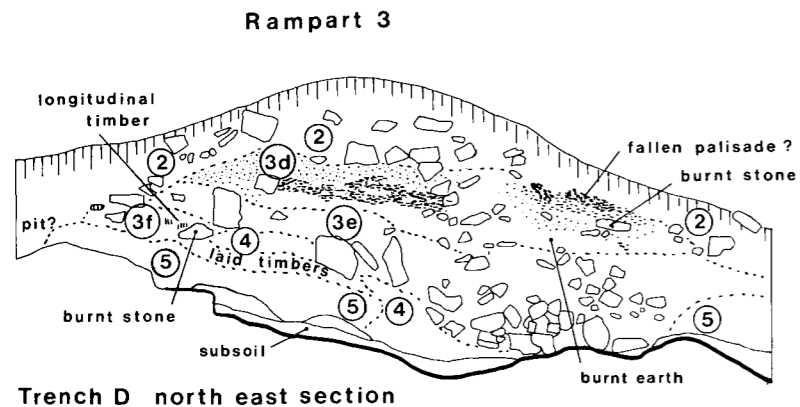
#### Rampart 1

This rampart defended the upper enclosure, an area of some 1850 sq m on the summit of the hill. It was investigated in Trench B only (illus 7, 8, 9). The rampart was built above uneven bedrock, the deeper hollows in which were filled with natural orange clay and some patches of undisturbed subsoil, level 11. Above this was level 9, small stones and compacted earth, which extended both before and behind the rampart, and contained some animal bones. RHS considered this to be the bottom level of the rampart, but to JCB it appears more likely to be the old soil upon which the rampart was built.

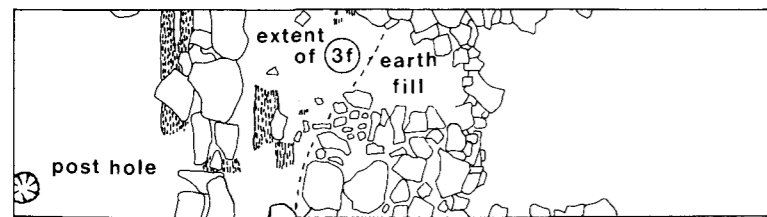


ILLUS 8 Section of rampart 1, Trench B

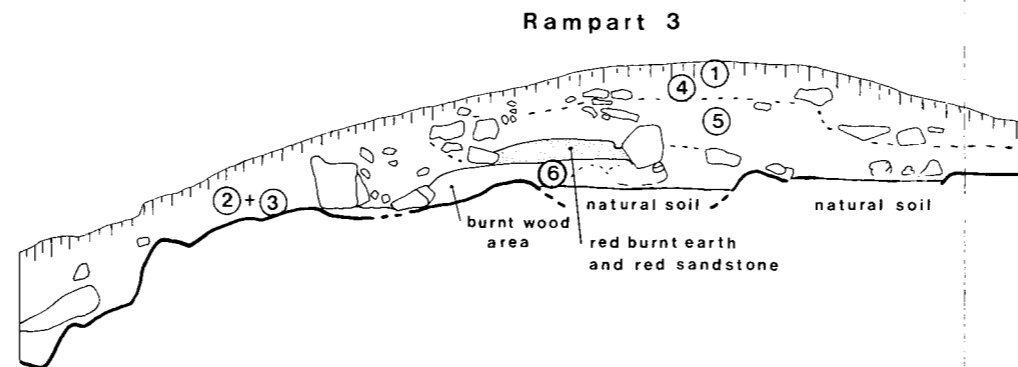
The core of the original rampart, levels 6 and 7, was composed of earth and some stone. In level 6 transverse timbers had been burnt *in situ* and survived as large blocks of charcoal (illus 7). The two best preserved timbers lay some 2.30 m apart at the same level. One timber, at the south-eastern side of the trench, extended back some 1.80 m from the front face, and was about 0.30 m wide as excavated. Wood sample B6 taken from this timber proved to be large fragments of radially split oak, the original diameter of the timber having been greater than 0.40 m (Section 7). Part of a similar beam was found by the north-western side of the trench. Round these timbers the earth was burnt reddish-brown, while the whole front part of level 6 was blackened by fire (dotted on section). The corresponding part of level 7 was discoloured



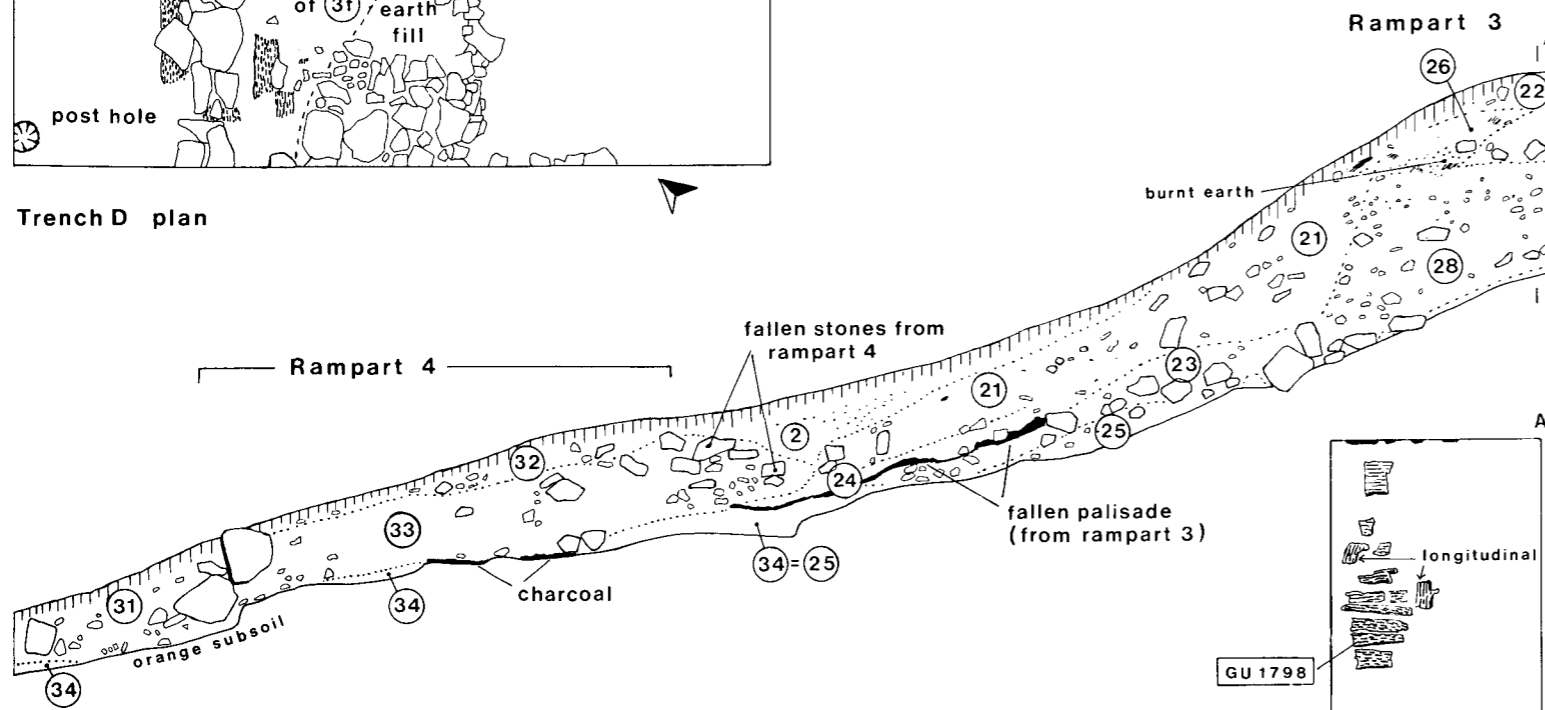
Trench D north east section



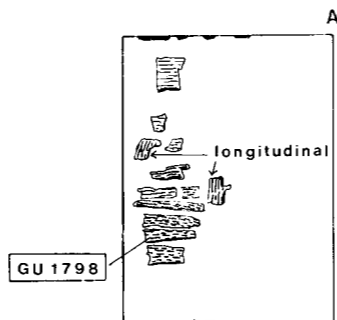
Trench D plan



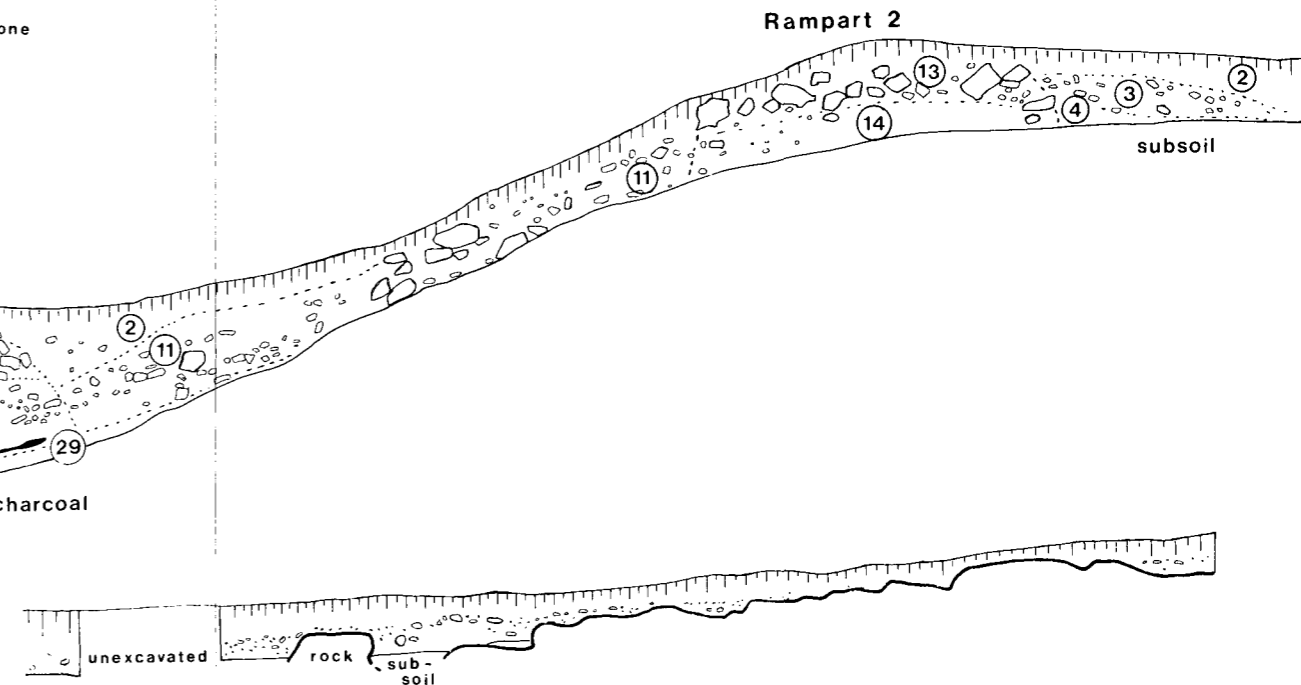
Trench C north section



Trench H west section

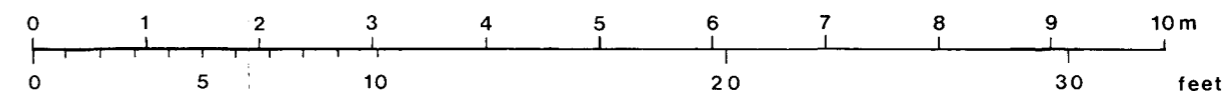


Plan of timbers at level 26

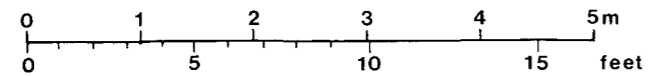
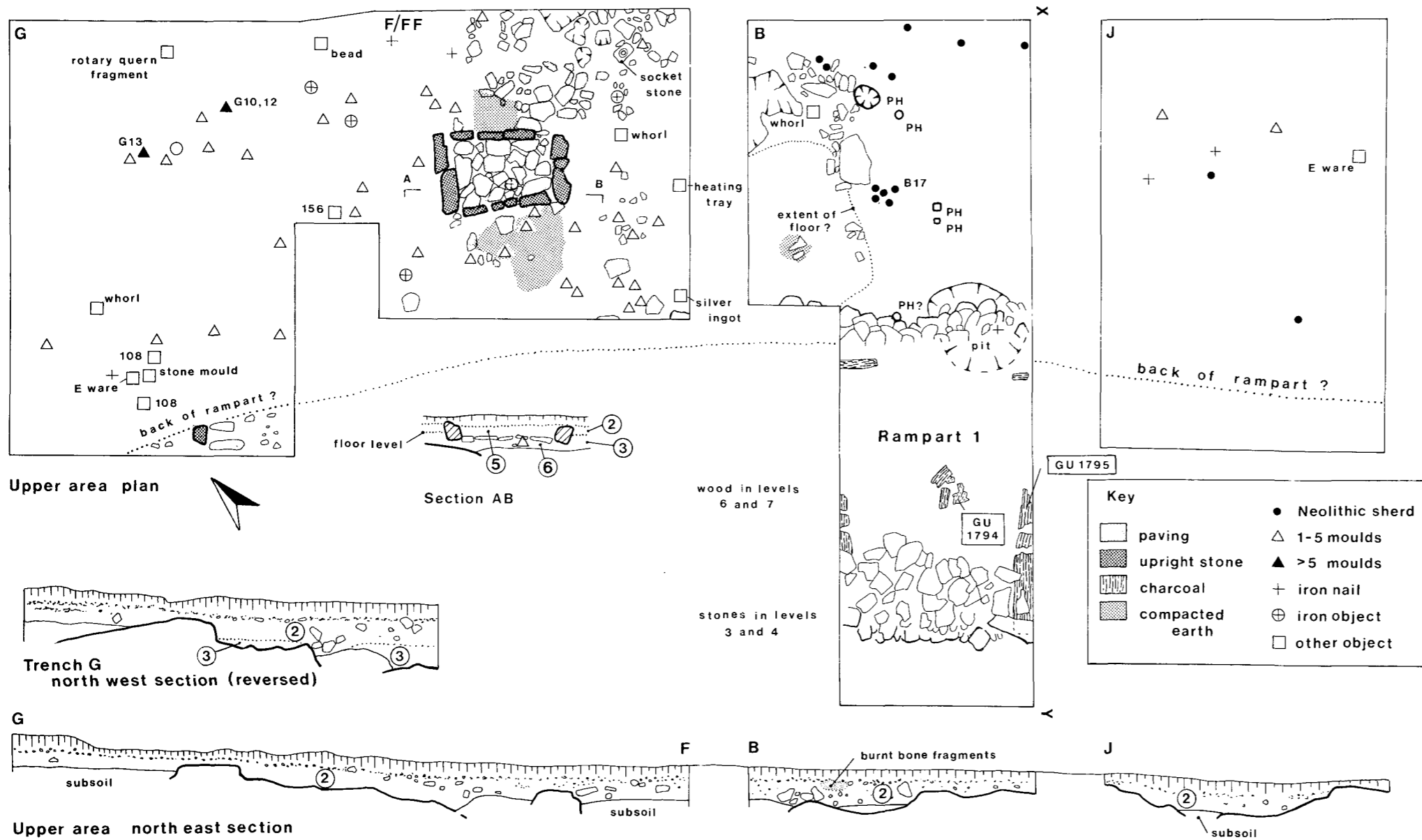


Trench H continued

Trench M west section



ILLUS 6 Sections of ramparts 2, 3 and 4

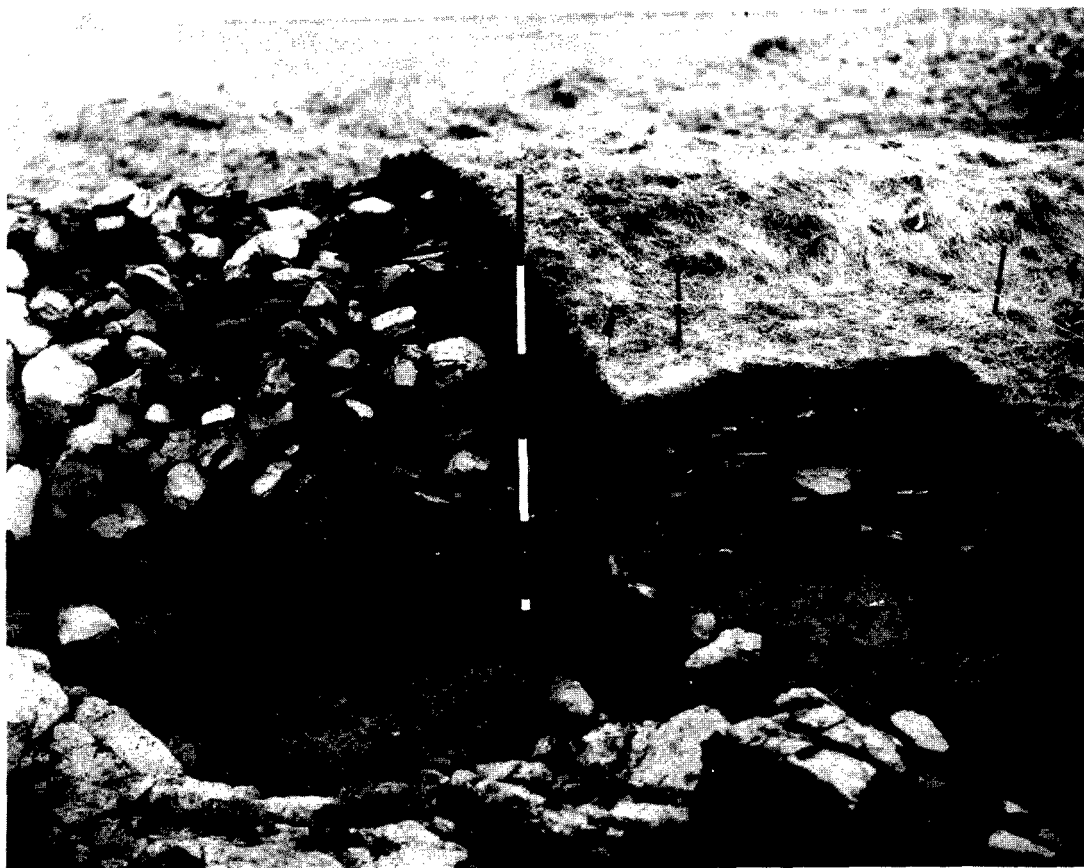


ILLUS 7 Plan and sections of excavations in upper enclosure, with distribution of finds (Iron-Age sherds omitted)

pink (lighter dots). About the centre of the rampart was a smaller area of burnt timber, haphazardly aligned. Wood sample B5, from one of these pieces, seems to have been a thin board with a maximum thickness of 30 mm. A line of vitrification seen running transversely across the width of the rampart in levels 6 and 7 probably represents another transverse timber. There were also traces of longitudinal timbers at the back of the rampart. Radiocarbon dates of  $1560 \pm 55$  bp (GU-1794) and  $1350 \pm 75$  bp (GU-1795) were obtained from samples B5 and B6 respectively.

At the front of the rampart, the stones shown in plan (illus 7) must be largely in level 3, since the large stone on the south-eastern side is shown both in plan and section to overlie the long timber in level 7. The lower stones could conceivably be part of the wall face *in situ*, but seem rather far back. Timbers in the bottom metre or so of a timber-laced rampart generally do not penetrate the front face, like upper timbers, but stop behind it. Thus the stone shown in section (but not on the plan) in front of the long timber seems in a better position to be part of a stone wall-face. At all events timber-laced earth ramparts clearly had to have front revetments, and on a steep rocky hillside these were most likely to be stone walls. The actual wall face here will have stood in front of the timbers as planned and will have fallen off downhill.

It is difficult to interpret levels 3 and 4 as recorded in Trench B, and as partly investigated in Trenches G, F and J. Again the tumbled stones, level 4, at the back of the rampart seem too far in to be the actual retaining wall, and must be largely collapse from level 3. In Trenches B, F and G a floor level associated with a stone hearth, and with eighth-century AD clay moulds in and under it, was found, as discussed below. The clay moulds and the silver ingot in the south-east corner of Trench F are in an area covered by tumbled stones from the back of rampart 1, as shown in the section. RHS does not explain the relationship of the



ILLUS 9 Back of rampart 1, Trench B

tumble to the floor, but the sections and photographs suggest that the tumble overlies the floor. The best explanation of all these problems would seem to be that the tumble at the back of the old rampart 1 and the remains of its back wall, if any, had been cut back into to make room to construct the hearth and its associated floor. Some of the cleared material may have been piled back on top of the old rampart; indeed it is not impossible that level 3 represents a rebuild, with a new, narrower stone-faced rampart built on the old one, but the records preclude certainty. Finally the stony level 3, whether part of the original rampart or an eighth-century AD rebuild, collapsed as level 4 over the edge of the floor and over some of the clay moulds.

Beneath the back of the rampart was an irregular pit, about 1.20 m in diameter and 0.60 m deep, which cut through level 9 and the natural clay beneath. Into its fill of black earth and charcoal, level 8, had subsided some of the stones at the back of the rampart. This pit must pre-date the rampart.

The only finds in rampart 1 were bones of cattle, sheep, pig and red deer (Section 10). It will be seen that the bones from level 3 have been kept in Group 1, though their status is uncertain; but the numbers are small and their inclusion does not change the list of species.

### Rampart 3

Rampart 3, which defended a larger area of some 120 m by 75 m, was examined in Trenches C, D and H, and had already been sectioned by Ritchie in Cutting I. In all these trenches there was evidence that the rampart had been timber-laced and burnt, and the tumbled remains of stone wall-facings were found. What happened to the east end of rampart 3 is not clear on the plan, but it may have been buried under the later rampart 2.

### Trench C

This was a long cutting 59 ft (18 m) long and 8 ft (2.44 m) wide on the west side of the fort, sectioning rampart 3 and continuing down the steep slope below it (only the rampart is shown in *illus 6*). Neither wall face remained in place, but many stones, some of considerable size (one was 1.22 m high), had tumbled down the slope in front. A few very large stones of the front wall were still in position, according to the 1959 interim report, but their position is not noted on the section, though the stones in question can be seen on a photograph. Photographs also suggest that the bedrock under the rampart dipped abruptly towards the south side of the trench, perhaps contributing to the instability of the wall face. The width of the rampart can only be an estimate, but was probably around 4-4.30 m at the base.

The base of the rampart, level 6, was a layer about 0.13 m thick of small stones, carbonized wood and reddish or blackened earth. Part of a burnt transverse timber some 0.60 m long lay against the north side of the trench at this level. The stones near this timber had vitrified surfaces. A sample from a patch of burnt wood at the same level but against the south side of the trench was examined and proved to be of oak derived from a large timber. Above level 6 a band of red burnt earth and burnt sandstone is shown on the section. The upper part of the rampart core, levels 4 and 5, consisted of loose earth and stones. A small stone disc, *161*, which may be a roughout for a spindle whorl, was found in level 5.

### Trench D

The upper end of Ritchie's Cutting I was reopened where it cut rampart 3 as Trench D. The remaining part of the rampart was excavated and one section of the trench drawn (*illus 6*). The levels in this trench are difficult to interpret. A fault in the natural rock underlay the rampart, and RHS records that this was filled (deliberately?) with loose stones and earth (levels 4 and 3e), set partly on natural yellow or purple clay, partly on what may have been the old buried soil (level 5). Above this was the rampart proper, level 3d. However, laid timbers in fairly large pieces, mainly longitudinal, were found at the base of the rampart in level 3f, underlying part of 3e. It seems therefore that the upper part of 3e is also rampart, and only the lower part of 3e adjacent to 4 is filling the fault. Level 3d contained burnt transverse timbers similar to those in trenches C and H, and the earth round these was extensively burnt. RHS suggested that the rampart front could be seen in the centre of the trench, immediately in front of the large horizontal band of timber, and that the timber and burnt earth in front of this was tumble, incorporating a fallen palisade. However, this implies a rampart only some 3 m wide, considerably smaller than in trenches C and H. JCB would prefer some other explanation for the considerable difference recorded between the front and rear parts of level 3d. Slumping over the loose fill of the fault does not seem sufficient. This may be an area where the front of the rampart had been pulled off and timber piled up against the core to make it burn.

A few animal bones were found in this rampart, in levels 2 and 3, and one sherd of Iron-Age pottery



ILLUS 10 Section of rampart 3, Trench H (montage, with some distortion)

just behind the rampart. About 1.20 m behind the rampart a posthole about 0.23 m diameter was seen to cut the yellow subsoil.

#### *Trench H*

Rampart 3 was also sectioned in Trench H (illus 6, 10), the long section set across ramparts 2, 3 and 4 where they lay closest together, in the hope of establishing their relationship. At this point there was a natural hollow or gully in the side of the hill. Whereas in Trenches C and D rampart 3 was sited on the edge of a flat terrace above a slope, in Trench H it was built on a pronounced slope because of the hollow. The different build of the rampart in this trench, and the fact that the burnt timbers appear to be higher in the rampart, were simply due to the problems of building on a slope, which involved a considerable build-up at the base before a level platform was achieved on which the rampart could rise.

Rampart 3 probably had stone facings front and rear. None of the actual faces remained *in situ*, but substantial amounts of tumbled stone were found in front of and behind the rampart (illus 11). The walls must have stood outside the surviving rampart core, while the large block seen in section in front of the base of the rampart might be wall footing *in situ*. This would give an estimated rampart width of at least 3.50–4 m.

It is not clear how much old soil was on the slope before the rampart was built. RHS distinguished level 29 as the old turf-line and/or soil before construction of the rampart. JCB notes a prominent line of small stones some 10 cm above level 29 and parallel to it and to the slope of the hill, and suggests that this deposit marks the top of the old soil, being stones dropped as rampart construction began. It would be odd for rampart fill to lie at this angle. The front wall would have been built first, and as it rose earth and stones tipped in behind would have lain more nearly horizontally. Such a deep buried soil, comprising level 29 and the bottom 10–15 cm of level 28 (here called 28a), also appears to extend beyond the back of rampart 3 into the base of level 11, and to be the level on to which the back of the rampart had collapsed. Animal bones were found in this old soil in level 29 below the rampart.

Lying on top of 29, at the base of 28, was a sloping deposit marked 'charcoal' on the section, and described as 'apparent traces of beams running transversely in the rear 1.80 m of the rampart, near its base'. They seem not to have been clear enough to plan, but were thought to belong to the burnt rampart. However, the wood was well buried in earth and unlikely to burn with the upper part of the rampart, nor was the soil round it reddened as generally happens when timbers burn *in situ*. JCB would argue that 28a is part of the old buried soil under the rampart, and this charcoal is under it and so represents an earlier clearance phase on the hill, perhaps from burning scrub and whin on the slopes.

The base of the rampart, level 28, consisted of stones of various sizes and of black earth, the colour of which RHS thought probably indicated a large quantity of timber had been used, since decomposed. The



ILLUS 11 Rampart 3, Trench H, with fallen stones in front of rampart

upper back part of the rampart, level 27 was made up of some very large stones and 'earth of a light consistency', behind the timbers in level 26. RHS considered that stones at the back of the rampart represented 'an irregular revetment of flattish stones laid with a batter of approximately 60% at the base', but JCB thinks the actual wall face had probably collapsed, and was represented by the tumble in level 11 behind the rampart.

High up in the front of the rampart in level 26 was an important group of timbers burnt *in situ*. About nine horizontal transverse timbers were found, lying parallel side by side across the trench. Their front edges had been destroyed, but they survived as lengths of up to 0.90 m running back into the rampart core. The earth round the timbers was blackened by fire, and some stones round them had partly vitrified surfaces. The timbers varied in size, and widths of from 0.10 m to 0.30 m were recorded. Several pieces can be seen from photographs (illus 12) to have been roundwood. Traces of two longitudinal timbers were also noted. Some burnt timbers are also shown slightly higher in the section. A sample of one timber was examined before its use for C14 dating, and proved to be oak roundwood of about 0.08 m diameter (Section 7). These timbers correspond to those found in C6 and D3, and to the horizontal timbers seen by Calder high up in rampart 3 in the sector just east of Trench H (RCAMS 1933, fig 71).

A radiocarbon date of  $1400 \pm 55$  bp (GU-1798) has been obtained from wood sample 4, from one of the group of transverse timbers in level 24, as indicated on illus 6.

In front of rampart 3 lay a mass of fallen stones and black earth from the collapsed rampart, levels 21, 23 and 25. A spread of charred timbers in level 24, which extended downhill beyond the main mass of stones was interpreted during excavation as a fallen breastwork from the top of the rampart and is marked as such on the section. Certainly this distinct deposit was not the burnt timbers from the rampart core. It could, however, have been the remains of timber and brushwood piled up against the rampart face and set fire to in order to destroy the rampart. The fact that the wall face tumble, level 23, appeared to the





ILLUS 12 Burnt timbers in rampart 3, Trench H

excavators to underlie the burnt wood, level 24, could agree with either solution, the wall face having either fallen or been pulled down first. One sample of the level 24 wood was kept: this comprises six pieces of wood of uniform growth, about 60–80 mm thick, which may all be from one timber: the pieces examined so far are willow. It may be that a stone-faced rampart would have had a stone breastwork; however, if it was of timber, some form of hurdling, as suggested for Moel y Gaer, rampart A (Guilbert 1975, fig 1) and Crickley Hill (Dixon & Borne 1977: particularly the Neolithic rampart, fig 1) may be more likely here than a carpentered structure as suggested for South Cadbury (Alcock 1972, figs 18, 19). Willow 60–80 mm thick is a bit large for hurdling, though a rampart breastwork may have been stouter than usual. Modern hurdles in Hampshire use split hazel up to about 40 mm (Norwood 1977, 165–70), while from the Somerset levels Coles *et al* (1982) describe Iron-Age hurdles: the largest pieces were split oak 40–60 mm thick from Meare West, and most were smaller. Ritchie (see Section 3 above) also found lengths of burnt, undressed timbers lying close in front of rampart 3 in his Cutting I. Overall, it seems likely that this was wood placed to burn the rampart rather than a fallen breastwork, though it could be that elements of both survive in the same deposit.

Two Iron-Age sherds were loosely associated with rampart 3 in Trench H, sherd 34 from level 22, the very top of the rampart, and rimsherd 35 found 0.90 m deep in H level 21, the tumble in front of rampart 3. A clay ball with pricked decoration, 105, was also found in the tumble. Iron slag was not found in the main core of the rampart, but a few pieces occurred in the disturbed top level, 22, and in the collapse, level 23. Animal bones were found in and under the core of the rampart, and in the tumble. Their possible significance for pre-rampart occupation is discussed below.

#### Discussion of ramparts 1 and 3

The burnt, timber-laced ramparts 1 and 3 are the earliest identifiable fortifications at Clatchard Craig. It seems likely that these two ramparts were built, and later destroyed, at the same time,

though it is not possible to prove this either from archaeological evidence or radiocarbon dates. The four dates obtained for ramparts 1 and 3 indicate that the ramparts were constructed in the sixth or seventh century AD (see Section 6). The chronological position of the outer ramparts is not completely certain, but it seems that these ramparts were either contemporary with, or later than ramparts 1 and 3, and at all events not earlier.

In the areas excavated, there were no ditches, due to the steep slopes and the hard underlying rock. The ramparts are thought to have been of wall construction with stone facings front and rear, though the faces had collapsed and only a few foundation stones were found possibly *in situ*. No postholes for upright timbers were found, and while these could have straddled the rampart cuttings, mostly some 8 ft (2.44 m) wide, the hard nature of the rock makes it unlikely that vertical timbers were used. The possibility that the pit under the back face of rampart 1 in Trench B was actually a posthole for a vertical timber recessed in the wall face has been considered and ruled out. The construction therefore involved stone wall faces, a mixed earth and stone core and horizontal timber-lacing. The distinction made by Avery (1976, 11–13) between timber-laced ramparts, with horizontals only, and timber-framed ramparts, with vertical timbers also, is followed in this discussion.

Horizontal lengths of burnt timbers were found in the ramparts (illus 12), and the earth round them was burnt red or black, while stones in contact with the timbers often had vitrified surfaces. Cindery slag-like deposits from Trench C and Cutting III are actually burnt earth (Section 9). It appears that the timbers had burnt to charcoal only where some air could reach them and elsewhere had simply rotted away. The transverse timbers had burnt further into the centre of the rampart than the longitudinal timbers, presumably because the former conducted air towards the centre as they burnt away, and the latter only sideways. The fact that longitudinal timbers were only found along the edges of the rampart may therefore be due to differential burning, rather than their original absence further into the centre. Rampart 1 in Trench B, and rampart 3 in Trenches C and H had burnt most heavily on the outside, but in Trench D timbers in rampart 3 had burnt right across the rampart, if anything more heavily at the back. This would be consistent with a wind blowing from a south-westerly direction at the time of firing, with the windward side of the ramparts burning most strongly.

The problems of firing timber-laced forts, and the reasons for doing so, have been discussed mostly in relation to vitrified forts, but the same arguments apply to other burnt forts. Burning a timber-laced rampart, stone or earth filled, causes it to collapse. However, recent experiments in the Cotswolds (Dixon 1976, 165–66) and Scotland (Büschenschütz & Ralston 1981; Ralston 1983 and this volume), as well as the original more successful attempts by Childe and Thorneycroft (1938) have shown that it is extremely difficult to fire a timber-laced stone rampart, never mind an earth one. In fact, to make such a rampart burn, it is probably necessary to pull down part of the facing wall, pile up timber and brushwood against it, and set fire to it with the wind blowing in the right direction. It therefore seems certain that most forts were not burnt by accident, but deliberately destroyed by the enemy after capture. Some excavators of burnt forts have remarked that the burning is uneven, heavier in some parts of the rampart than others. At Clatchard Craig ramparts 1 and 3 were burnt at all points sampled. This may be further evidence of deliberate destruction.

The three sections of rampart 3 (illus 6) look surprisingly different. In Trench D the front part of the ramparts seems to have suffered some unexplained disturbance. In Trench H, the drawn section alone would suggest a two-phase rampart, with levels 26 and 27 being a rebuild on top of the surviving core, 28, of an earlier rampart. However, in the context of the other two trenches and the excavator's observations it is clear that the different construction of the rampart here is due to the lie of the ground. In Trench H rampart 3 crossed a natural hollow and was built on sloping ground, so the bottom part of the rampart had to be built-up to a level surface on which the timber-lacing could be laid.

Traces of burnt horizontal timbers were found in position in both ramparts. These timbers were apparently at the base of rampart 3 in Trench C, but some 0.50 m up in ramparts 1 and 3 in Trenches B and D, and about the same height above ground level at the back of rampart 3 in Trench H. The transverse timbers were particularly well preserved in Trench H, and appeared to form a platform or raft of timbers laid side by side, some 11 parallel timbers being planned, nine close-set. They could be traced up to 0.90 m into the core, and presumably extended right across the rampart originally. In Trenches B (rampart 1) and D and H (rampart 3) longitudinal timbers were also noted. Their height in Trench B is unknown. In Trench H they were on the same level as the transverse timbers, in Trench D some 0.30 to 0.60 m lower down. In Trench D the longitudinal timbers seem to have been laid more or less side by side, and there was also one transverse timber at this level. A sloping line of burnt timbers recorded at the base of rampart 3 in Trench H is not easy to interpret as structural timbering and may represent burning before the rampart was constructed.

This evidence could be interpreted to suggest that in general a level of transverse timbers was laid, either as a solid platform or widely spaced, with a similar layer of longitudinal timbers immediately above or below (we do not know which); on this was put earth or stones to a height of some 0.30 to 0.60 m, and then the double layer of timbers was repeated. Differences in the construction noted in some sections may be due either to imperfect preservation of some timbers, or to an original variation in the level and character of the timber-lacing.

Most of the timbers used were roundwood, but one radially-split timber was used in rampart 1, and another in rampart 3, both as transverse timbers. There is no evidence as to whether the timbers were notched or latched together in any way. The timber-lacing was probably continuous throughout the ramparts, since it was found in all sections cut across them. A continuous stretch of burnt timber in part of rampart 3 was plotted by Calder (RCAMS 1933, fig 71) from surface observations.

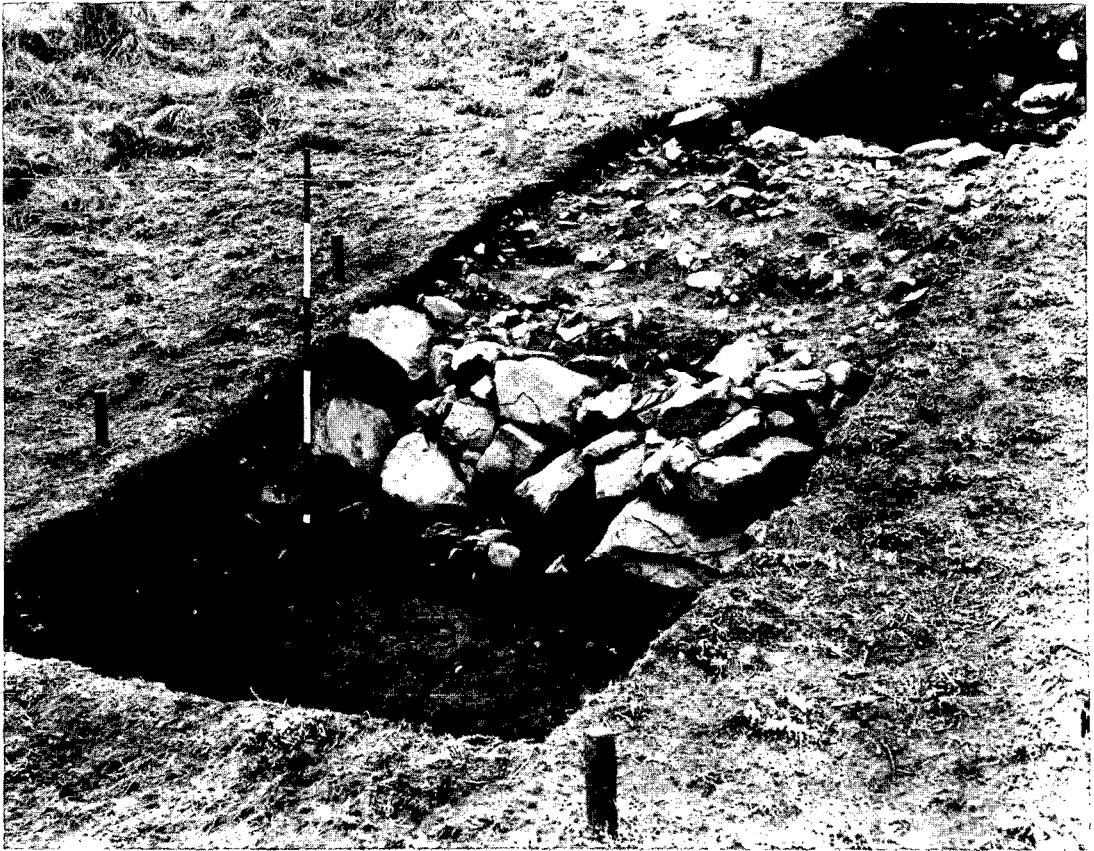
### The Outer Ramparts, 3a to 6

Rampart 4 was excavated by RHS in Trench H, and by Ritchie. Rampart 5b was excavated only by Ritchie. Other than this, the outer ramparts were destroyed without investigation. The numbering system applied to the ramparts in this report is arbitrary; it should not be taken to imply that rampart 5a is necessarily contemporary with 5b, for instance.

In Trench H rampart 4 was excavated as part of the long section cutting three ramparts. The rampart was constructed of earth and stones with stone faces front and rear. The back revetment was tumbled, but the lower courses of the substantial front revetment were found in position, and were generally massive blocks (illus 13). RHS noted that the tumble in this area, level 31, also included large blocks up to c 3ft by 1 ft 6 ins (0.90 m by 0.45 m) from the upper courses of the wall. The rampart was about 4.40 m wide. Ritchie found this rampart retained in front by a basal course of large blocks in his Cutting I.

Below the rampart a thin band of old pre-rampart soil was recorded, level 34. Areas of charcoal were also noted here: 'signs that some timbers, apparently transverse, were used at the base of the rampart, but there are no signs of destruction by fire at this level'. The 'hearths' recorded by Ritchie (1954) under rampart 4 in his Cutting 1 are almost certainly similar patches of charcoal. The fact that the earth was not reddened round the charcoal makes it unlikely this is the timber-lacing of a burnt rampart. There seem to be three possibilities: one, that the charcoal is actually in or under level 34, and represents some much earlier episode of burning; two, that the charcoal lies on top of a very thin buried soil, and represents burning perhaps to remove scrub and brushwood before the rampart was built; three, that the charcoal shown under rampart 4 is the same deposit as that recorded in level 24, contemporary with the destruction of rampart 3. In the latter case, rampart 4 must be later than rampart 3. From the recorded evidence, it is not possible to decide between these alternatives.

No charcoal for a radiocarbon date was recovered from rampart 4, so only the stratigraphy of the deposits at the back of this rampart could give a clue as to its chronological relationship to rampart 3. It is clear that tumbled stones from the back of rampart 4 overlay part of the collapse of rampart 3 (level 24), including the burnt deposit. There can be no question of rampart 4 being an earlier Iron-Age rampart, it is



ILLUS 13 Front revetment of rampart 4, Trench H

either contemporary with rampart 3 as RHS thought or later. The crucial point, as RHS saw, was the relationship of the burnt deposit in level 24 to the back wall of rampart 4. He notes:

'it was observed that the forward part of this fallen material did not extend further forward than the back of rampart 4, while it is partly sealed by fallen material from the back of this rampart'.

This sounds like conclusive evidence for contemporaneity. But doubts creep in, since it is not clear that the level on which the back wall stood was correctly observed; it may have been higher than the top of level 24, which could run under it, even if the charcoal temporarily stopped; or the charcoal, as noted above, may continue as the isolated charcoal patches in level 34. Thus the relationship of rampart 4 to rampart 3 remains an open question.

Several Iron-Age sherds were found in levels related to rampart 4. Sherds 36 and 37 were found on top of the rampart, but not certainly in it, and sherds 38–40 in level 34 below the rampart. Further sherds found under rampart 4 in Cutting I are lost. A bronze ring, 125, came from the collapse at the front of rampart 4 (illus 28).

West of Ritchie's Cutting III, the plan shows a distinct break in the line of rampart 4, with the rampart terminal on the east side of the break apparently turned. This could be an original entrance. Ritchie laid out a cutting about 36 ft long by 20 ft wide (c 11 m by 3 m) over this terminal, as shown on a

sketch plan in the NMRS. Photographs of this cutting deturfed seem to confirm the line of the rampart as shown on the plan; the earthen core of the rampart survived, and a ragged line of stones at the base of the front wall petered out at the terminal. The cutting was not excavated further.

Rampart 5 was explored only by Ritchie in Cutting I. It was of similar build to rampart 4, with large blocks in position at the base of the front wall (illus 14). Ritchie also deturfed a small cutting just west of Cutting I in which more of this basal course was exposed.

### Discussion

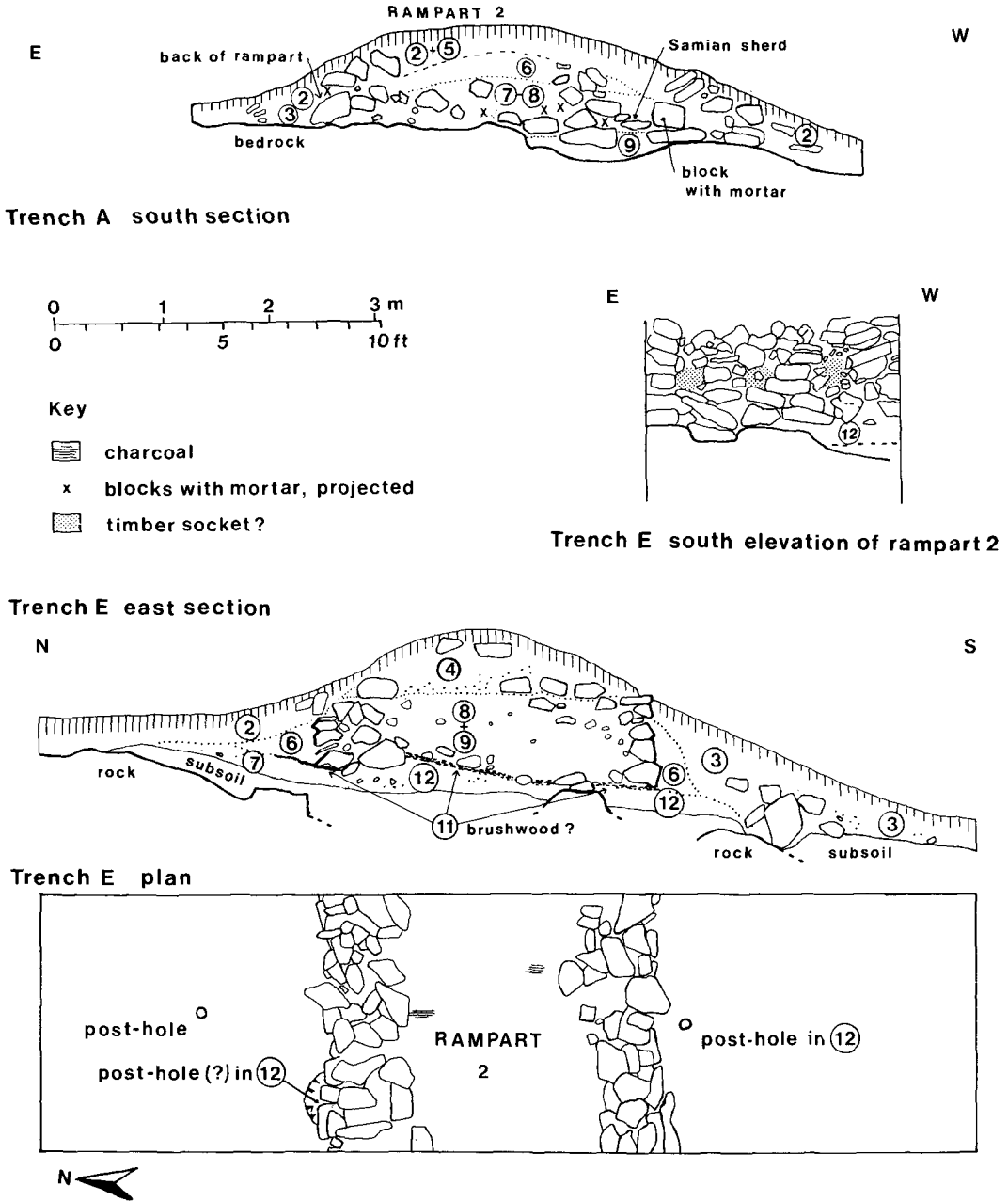
The date and sequence of the outer ramparts remain debatable. Here the plan can only be used in conjunction with the air photographs; for instance, the east end of rampart 3a does not run under rampart 3, but runs up to the foot of a scarp below it (illus 3, 4). Rampart 3a seems from its plan to be contemporary with rampart 4, and ramparts 4 and 5b are of similiar build. Thus ramparts 3a to 5b, and perhaps 5a and 6, could be contemporary. The problem is whether these systems are also contemporary with ramparts 1 and 3. The evidence of Trench H rather suggests that they had stood at the same time, though this is not conclusive (see above). Other arguments, such as the different build of ramparts 4 and 5b, the better survival of the stone faces, the fact they are not obviously burnt, and the possible entrance in rampart 4, all suggest that these ramparts could be later than rampart 3.

There are no excavations of Dark-Age forts with close-set multi-vallation to compare with Clatchard. At Burghead, the multiple ramparts have not been sampled, only the single ramparts of the large enclosures (see Small 1969; Edwards & Ralston 1978). However, for the pre-Roman Iron



ILLUS 14 Front revetment of rampart 5, Cutting I

Age excavation has shown that extensive multi-vallation tends to be the result of a complex sequence of rebuilding, as at Hownam Rings (Piggott, C M 1948), Kaimes Hill (Simpson 1969), Woden Law (Richmond & St Joseph 1982) and now Broxmouth (Hill 1982), where a fort with three ramparts, increased to four on one side, has undergone no less than five major phases of fortification, two



ILLUS 15 Sections of rampart 2

univallate and three bivallate. This certainly suggests that one or more phases of refortification might be expected among the outer ramparts at Clatchard Craig, despite the evidence recorded in Trench H. At the very least, it is likely that ramparts 3a to 6 were built after the destruction of ramparts 1 to 3, and it is possible that some of the outer ramparts in this group replace, or were added to, others.

### Rampart 2

This rampart enclosed both the summit of the hill and a part of the terrace below it, an area of some 100 m by 60 m (5000 sq m). Unlike the other ramparts, it did not follow the contours of the hill. At the west end it ran uphill, while on the south-east side it crossed the level ground of the lower terrace. For the east end of the rampart the plan, *illus 3*, follows Calder (RCAMS 1933, fig 71); the air photographs, *illus 4, 5*, do not help to interpret this part of the circuit. The position of the entrance is unknown. While rampart 2 was not nearly so strategically sited as rampart 3, by shortening the circuit it combined the enclosure of a substantial area with economy of time and labour in construction. The rampart was investigated in Trenches A, E, H and O. Preservation was best in Trench E, which is described first.

### Trench E

In this trench the rampart was extremely well preserved (*illus 6, 15, 16*). It was 3-40 m wide, and survived to a maximum height of 1-20 m. The rampart had been constructed over an irregularity in the rock filled with natural orange subsoil, over which was a stony layer, 7 and 12, mainly of small rounded stones



ILLUS 16 Front revetment of rampart 2, Trench E

and brown earth of a hard consistency. Above this was a thin dark layer, 11, composed of small burnt timbers or branches laid transversely, (fragments up to 8 mm diameter were noted and are marked as 'brushwood' on illus 15). This layer protruded beyond the faces of the revetment walls, and appeared to have been laid as a foundation before the construction of the rampart proper. The front wall still stood some 0.90–1 m high. It was neatly built of flattish stones, but little care had been taken to set them in courses (illus 16). The wall was simply a facing to the core behind, and could not have stood unsupported. Three gaps in the wall, about 0.45–0.60 m up from the base and 0.60–0.75 m apart centre to centre, were interpreted as sockets for the ends of transverse beams. The surrounding stones had collapsed downwards or sideways into these holes as the beams decayed. Only lower courses of the inner revetment wall were still in position. The core of the rampart, levels 8 and 9, was of stones and brown earth. Some fragments of burnt timber were found in level 9, directly behind, and on a level with two of the beam sockets in the outer wall face.

Several iron nails were recorded as from level 9, suggesting another Dark-Age rampart with nailed timbers (cf Dundurn and Burghead: Alcock 1980). However, after cleaning only one piece is part of a corroded nail, too small to fasten timbers, while the others are small fragments of iron slag, so there is no evidence here for a nailed rampart.

A hard-packed layer of black earth, level 6, perhaps originally mud, was found at the base of the rampart, adhering tightly to the outside faces of both the inner and outer revetments. It seemed to the excavator that this was an original feature, masking the lower part of the stone rampart face and the timber sockets. If so, it compares with the turf dumps noted by Avery *et al* (1967, 214, 250) protecting the foot of stone ramparts at Rainsborough, Northants.

One posthole and two stakeholes in Trench E may related to earlier activity. One stakehole was noted just in front of the rampart, and another behind it, while a probable posthole some 0.50 m in diameter and 0.30 m deep with two packing stones at the bottom of it was seen (though not excavated) beneath the back wall-face of the rampart, cutting into the orange subsoil (illus 15). There was no break in the wall face above this, so it is best interpreted as a pre-rampart feature, rather than as holding a post incorporated in the rear rampart face.

#### *Trench A*

This cut obliquely across rampart 2, so the rampart width is exaggerated in the section (illus 15) but is recorded as about 12 ft (3.66 m). The rampart still stood some 2 m high in the middle. The underlying rock surface was, as usual, highly irregular. A dip in the rock below the rampart, most pronounced on the north side, was filled with large stones and very dark earth, level 9, whose colour and consistency was thought to be due to the presence of timber. In the upper part of level 9 some traces of burnt wood were found, about 30 mm and never more than 50 mm in diameter. It seemed that small timbers or branches had been laid here, as in Trench E level 11, but that these had been disturbed by subsidence of the rampart core above the softer fill of the natural depression in the rock. The inner revetment of the rampart was preserved to a height of two or three courses, but much of the outer revetment had tumbled forward down the slope. Only one course remained *in situ*, and on the south side this had slid forward. The main body of the rampart, levels 6, 7 and 8, were composed of stone of various sizes and looser earth of a light brown colour, with some traces of burnt timber in level 7. Three pieces of this have been examined and shown to be oak roundwood (see Section 7). The considerable quantity of stone in the rampart core (illus 15) contrasts with the mainly earth core in Trench E.

A squarish stone block with a large lump of mortar adhering to it was found in the rampart immediately behind the front revetment. In 1960 Trench A was extended eastwards, and five more stones with mortar attached were discovered within the rampart core, two of the six being red sandstone. None of the stones was dressed. Their positions have been projected on to the section, illus 15. Analysis of the mortar by Dr N Davey (Section 8) shows that the aggregate contained a high proportion of crushed tile, and the mortar is most likely to be Roman. A Samian sherd, 44, was found in the body of the rampart, in level 7.

#### *Trench H*

Rampart 2 was sectioned at the point where Calder's plan (RCAMS 1933, fig 71) shows what could be interpreted as a blocked entrance. However, the surviving remains, though slighter, suggest a rampart of the same build as that excavated in Trenches A and E (illus 6, 15, 16). The width of the rampart was about 3.30 m. Level 14 on the natural rock consisted of smallish stones and light brown earth, and contained some charcoal fragments and animal bones. RHS called this the lowest level of the rampart fill,



but also suggested it was put down to make a level for the rampart revetments. JCB suggested this level was indeed below the rampart, and perhaps the old ground before its construction. Little of the rampart had survived. Only the lowest course of the front revetment was still in position, while the back revetment had collapsed. Both in front of the rampart in level 11, and behind it in level 3, a considerable quantity of fallen material showed that the rampart was originally higher. Stones from the front of the rampart had fallen downhill for a distance of up to 3 m. All of level 11 and much of level 3 appears to have rested directly on the natural subsoil with no intervening old soil preserved. Probably the old soil from both before and behind the rampart had been scraped-up to help build it, and also to present a clean, sloping scarp in front of the rampart. The surviving rampart core, level 13, was of large or medium-sized stones with some boulders, and loose brown earth.

There is no evidence from Trench H to support the idea of an original entrance, later blocked, in rampart 2. The reduction in height of the rampart here before excavation was simply due to its being less well preserved, possibly having been worn down by people and animals passing over it in the centuries since it went out of use.

#### *Trench O*

A section some 5-50 m long of the front face of rampart 2 west of Trench H was deturfed and cleaned for photography, but not excavated. Two or three courses of stone were exposed. Some stones used in the revetment were larger than those in Trenches A or E, but compare with the basal course found in Trench H.

A few finds came from rampart 2, beside the mortared stones and the Samian sherd. Part of a flat rotary quernstone, *150*, was found in Trench A level 3, the collapse behind the rampart, and had perhaps been built into the rampart. Two pieces of a grindstone, *152*, were built into the front revetment of the rampart in Trench E (illus 32). There were also two small iron nails, *140* and *141*, a worked piece of wood, *163*, and two tiny fragments of Neolithic pottery, *13*. Sherds of Iron-Age pottery, *27*, *28*, *30*, *31* and *33*, were found in Trench H, level 11 among the tumbled stones in front of rampart 2, and probably came from the body of the rampart. A quantity of animal bones and iron slag were also found in rampart 2, particularly animal bone in Trench A and iron slag in Trench E. These are considered below with the interior of the fort.

#### *Discussion of rampart 2*

Excavation showed that rampart 2 at Clatchard Craig was of wall construction, with a drystone face front and rear, and a core varying from mostly earth to mostly large stones. Burnt brushwood and small timbers in levels E 11 and A 9 were apparently laid down before the rampart was constructed, and may represent the burning-off of scrub and vegetation on the hill before the rampart was constructed. If so, this shows that the hill had been unoccupied for some time while the scrub grew. A burnt layer at Burghead may be of a similar nature (Edwards & Ralston 1978). Sockets in the front wall of the rampart in Trench E suggest it was timber-laced. Traces of burnt timbers in the core of the rampart in levels E 9 and A 7 had appeared to show that the rampart was burnt, though not heavily. However, the radiocarbon date from A 7 of  $1475 \pm 55$  bp (GU-1796) is indistinguishable from the four dates obtained from the burnt ramparts 1 and 3. This supports a different interpretation, that the burnt material in rampart 2 is simply rubbish derived from earlier ramparts. The soil cover on the hill was thin, and building material scarce, so earth to fill the core of rampart 2 in Trench A may have been obtained from rampart 1 above it. The radiocarbon date thus only provides a *terminus post quem* for the rampart. How much later the rampart was constructed is unknown. Though it now seems this rampart was not burnt, it may have been timber-laced, on the evidence of the beam sockets identified in Trench E.

The mortared stone in rampart 2 seems certain to be Roman. No other mortar containing quantities of crushed brick or tile is known in Scotland. At Ruberslaw, Roxburghshire, dressed Roman stones in the ramparts of a fort are thought to derive from a Roman building on the hill (RCAMS 1956, 28-29, 103, suggest a signal station). At Clatchard this seems unlikely, but a good source is near at hand, for the large Severan military fortress at Carpow lies just over 3 km west on the

south bank of the Firth of Tay. This fort was occupied by a sizeable vexillation of contingents from the legions *II Augusta* and *VI Victrix* for a short period around AD 208–11, and perhaps for a few years after (Birley 1963; Leach & Wilkes 1978). Among the structures with stone walls were the legate's house and the headquarters, both faced with red sandstone rubble blocks bonded with cement on a core of rubble and cement. The rubble core (Birley 1963, pl 22) would have provided just the kind of material found in rampart 2 at Clatchard Craig. It may seem surprising that stone should be brought from 3 km away, but perhaps the ready availability of building stone at Carpow made carting it to Clatchard more worthwhile than digging down through the old collapsed rampart to find stone on the spot. Certainly the builders of rampart 2 were selective in their choice of revetment stones. Stone may have been obtained from even farther away on other sites. At Dundurn, the old red sandstone used in the paving of the Primary Dun (seventh-century AD) may have been quarried some 15 km away (Alcock 1978, 3).

#### THE INTERIOR: LOWER ENCLOSURE

For convenience, the area within rampart 1 on top of the hill will be called the upper enclosure, and the lower terrace enclosed by rampart 3 the lower enclosure. Traces of occupation within the circuit of the ramparts, or even sealed under the ramparts, were slight. The only obvious structure was the well-built hearth of the eighth century AD or later found on top of the hill. Some Iron-Age pottery was found in the interior, and other sherds in the core of the early ramparts, as also was animal



ILLUS 17 Trenches in lower enclosure, looking east; rampart 1 in background

bone. Two metal objects 123–4 and a Samian sherd 44 are of the second–third century AD, while other finds, and the sequence of Dark-Age ramparts, suggest an extended occupation in the sixth, seventh, and eighth centuries AD. As few finds are stratified, it is difficult to link occupation evidence with particular stages of the defences.

The lower terrace enclosed by rampart 3 was larger, flatter and more protected than the top of the hill, and extensive occupation might have been expected, but no structures were identified in an area excavation of some 60 sq m in Trenches M, P and Q. This area is on that part of the terrace also enclosed by rampart 2. Soil cover was mostly very thin; as RHS suggests, much of the original soil may have been used to build ramparts, especially rampart 2. Plans and sections of the area show little, so only one is published,

the section of Trench M (illus 6). The subsoil in the interior was as usual irregular, with deep pockets in the rock filled with dark subsoil in the north-east and south-east corners of Trench Q (illus 17). Small red and white sandstone blocks and other imported stones and a few lumps of charcoal were all found together with much fragmented andesite in the southern part of all three trenches. Two very large but shallow hollows had been noted behind rampart 2, one shown in RCAMS 1933, fig 71, and another east of this. The excavation did not help to explain their purpose. It may be conjectured that they were quarry scoops connected with the building of rampart 2, or simply natural features, or even due to later disturbance (a clay pipe-stem was found 0.36 m deep in Trench Q).

Three small trial trenches were also dug. Trenches L and N were unrewarding, and rock was reached at a depth of less than 0.60 m. Trench K at the back of the terrace had deeper soil cover, 0.66 m; some large stones at the west end of this trench may have been from the collapse of rampart 1 above it. Three substantial sherds of Iron-Age pottery, 15, were found here.

In Trench E there was a little evidence of pre-rampart structures. One posthole some 0.50 m in diameter and 0.40–0.50 m deep, with two packing stones at the bottom, was found sealed beneath the back of rampart 2 but not excavated (illus 15). In the same trench two stakeholes, about 60–80 mm in diameter, were cut into the orange subsoil either side of the rampart and may pre-date it.

Artefacts were found in the outer enclosure, and a considerable quantity of iron slag, but only one fragment of animal bone. Eight Iron-Age sherds, 15–20, were found in the area excavation. In addition, five Iron-Age sherds were found in Trench H among the tumble from rampart 2, probably derived from the make-up of the rampart and so collected with soil from the area of Trenches M, P and Q.

Other finds associated with ramparts 2, 3 and 4 could also belong to the Iron-Age occupation of the hill. The stone disc, 162, from the core of rampart 3 seems to be a spindle whorl rough-cut (illus 30). Other Iron-Age sherds were found as follows: 34, in the top of rampart 3; 43, in the fall of rampart 3; 38–40 (five sherds) in or under rampart 4; 36–7 in the disturbed top of rampart 4. The sherds found under rampart 4 by Ritchie are lost. A small decorated clay ball, 105, from the fall of rampart 3 may well be Iron-Age. A bronze ring, 125, was found in the fall of rampart 4; a shale ring, 117, under rampart 2; part of a shale bracelet, 115, in the fall of rampart 3, and part of another, 116, in rampart 4; all these could be Iron-Age.

Three finds from Trench P in the outer enclosure are post Iron-Age, but only one is strictly Dark-Age, though it is argued below that much of the iron smithing slag found in trenches M, P and Q may be contemporary with the sixth century and later ramparts. An openwork ornament, 123, is of the mid second to early third century AD (illus 28, 29), and a brooch pin, 124, probably from a small penannular brooch and found with 123 could well be contemporary. The small pelta-decorated disc, 122, is of the mid sixth to early seventh century (illus 28, 29), and should belong to occupation related to the ramparts.

Three other finds which are certainly or probably post-Iron Age, but not closely datable, came from rampart 2. These are a flat rotary quernstone, 150 (in the fall of the rampart), (illus 30), and a sherd of late second- early third-century Samian with rubbed edges, 44, found in Trench A with the mortared Roman building rubble noted above; and a grindstone from Trench E. While these objects could all have been brought over from Carpow, as has been suggested for the mortared stones, they seem more likely to belong to the sixth–seventh century occupation of the hill. It is surprising that so little recognizably Dark-Age material was found in the outer enclosure despite the extensive Dark-Age fortifications.

The significance of the openwork ornament, 123, and of the pin, 124, is uncertain; the Samian sherd 44 may be connected, being of the same date. These could represent small-scale native occupation on the hill in the second–third century AD, or support the idea of a Roman building on the hill at this time, or have been brought over from Carpow. The writer prefers the first suggestion, of a small native settlement, at least for the metalwork.

A large quantity of iron slag was recovered from Trenches M, P and Q, most of it being smithing rather than smelting slag (Section 9). This collection of slag may have built up slowly over a long period of time, rather than being the result of a sudden burst of activity. It seems plausible to imagine a resident blacksmith during most phases of occupation. Some of the slag could be as early as the Iron-Age occupation attested by pottery, but there is some evidence that much of the slag dates after the construction of ramparts 1 and 3, but before the construction of rampart 2. Although iron slag was found in rampart 2 in all three trenches, a few pieces in Trenches H and A and some quantity in Trench E (mostly smelting slag), no smithing or smelting slag was securely stratified in ramparts 1 or 3, though there are three ambiguous pieces in the fall of rampart 3 and the disturbed top of this rampart. Slag in all these ramparts would most probably have been collected from the outer enclosure together with turf and soil to build the ramparts. If much iron slag had been produced before the construction of ramparts 1 and 3, it would have been incorporated in their make-up.

Animal bones were found associated with several of the ramparts, but not in the interior. Presumably bones from rubbish deposits on the hill were accidentally dug up and included in the earthen core of the ramparts. Those bones found in or under ramparts 1 and 3 are considered to relate to an earlier phase of occupation, probably Iron-Age, rather than to the short period while the ramparts were under construction (but if these two ramparts were not contemporary, this applies only to those bones in the earlier rampart). The bones in rampart 2 could relate to any earlier occupation, Iron-Age or Dark-Age. It is unlikely that any bones belong to the Neolithic occupation, judging by the presence of horse bones, the similarity of preservation in all the bone deposits, and the restricted occurrence of Neolithic pottery on the site.

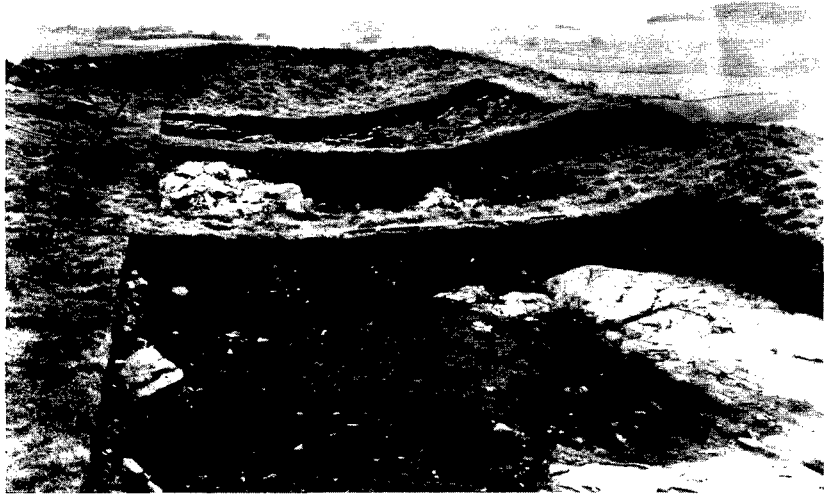
Animal bones were found in rampart 3 in level C6, D3 and H26–8; also in the disturbed top of the rampart, H22, and sealed under the rampart in H29: all these must predate rampart 3. More ambiguous deposits were those in H25, which RHS thought pre-dated rampart 3, but which could post-date it if the slope below had been cleared of soil at the time of building, and H34 which is sealed by rampart 4. These could be contemporary with rampart 3 or later. Taking the bones from all these deposits together, and also those from Cutting I and rampart 1, the species present in or under the ramparts are cattle, sheep and pig, with one red deer bone, a horse tooth and one horse bone (probably pony).

Animal bones were also found in the later rampart 2, a few pieces in Trenches E and H, and a considerable quantity in Trench A from levels in and under the rampart. These may relate to either Iron-Age or earlier Dark-Age occupation. The species represented are cattle, including a neo-nate calf, sheep, pig, pony and red deer, as in the group from the earlier ramparts. In both groups the bones seem to be from middens rather than just food debris, and suggest a farming community. Four valves of decayed mussel shell, *Mytilus edulis*, and fragments of other were found in rampart 2, in level A7.

#### THE INTERIOR: UPPER ENCLOSURE

##### Miscellaneous occupation traces

Most of the identifiable Dark-Age finds from the site came from the upper enclosure, but despite an area excavation of some 70 sq m in Trenches G, F, B and J, little evidence for structures was found. Soil cover was thin, and the underlying rock uneven (illus 18). The trenches excavated were behind rampart 1, so any structure or activity there would have gained some slight shelter from the rampart. This rampart has a strange curved appearance in the plan (illus 3), for in order to conform to the edge of the hill it turns south across Trench G and was found only in the south-eastern corner of that trench. The sections show that the tumbled back edge of the rampart appeared in all the trenches. A few post- or stakeholes could belong to any phase of the occupation. The irregular pit below the back of the rampart in Trench B must, however, pre-date the defences. It may be Iron-Age or later, since there is no evidence for its being Neolithic.



ILLUS 18 Rampart 1 and trenches in upper enclosure, looking south-east

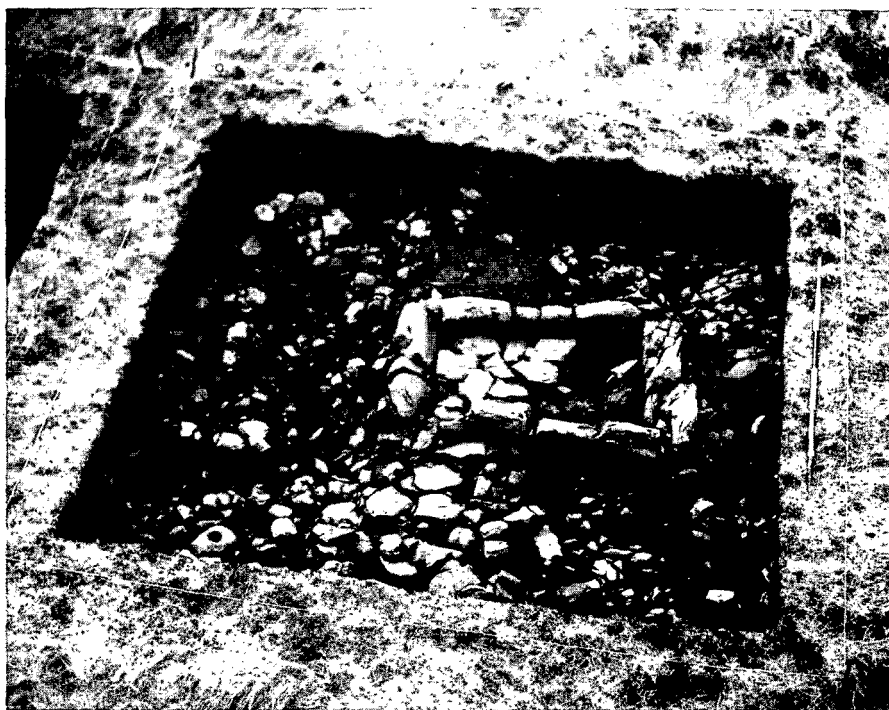
Finds from the interior include six sherds of Iron-Age pottery, 21–26, and a saddle quern rubber or small quern, 149, probably of the same date. Three stone spindle whorls, 157–159, (illus 30) and a stone pounder, 156a, could be Iron-Age or Dark-Age. Since an unfinished whorl, 161, was found in rampart 3 it is quite likely some whorls are Iron-Age. The 12 iron finds from the upper enclosure, mostly nails or objects of undiagnostic type, are most likely to be Dark-Age, since iron finds are more abundant on Dark-Age than Iron-Age sites. No iron slag is recorded from rampart 1, but animal bones found in the make-up of the rampart should pre-date the defences.

#### Hearth and floor

The main structure found was the hearth and associated floor in Cuttings F and B. Dark-Age material was found in Trenches G, F and B, including clay mould fragments of the eighth century AD and other objects connected with fine metalworking. Two pieces of clay mould were found under the hearth and others in and under the floor.

The hearth, 1.80 by 1.10 m, was neatly constructed with red sandstone kerbstones and flat limestone floor slabs (illus 7, 19). Above the slabs was a layer some 0.13–0.15 m thick of small stones and loose crumbly earth with a little ash (level F5), which probably represents a resurfacing of the hearth. The top of this level was a ragged surface of small chunky stones, disturbed by turf roots. Samples of burnt stone from the hearth were taken by G Connah and H A Barker of Cambridge for archaeomagnetic dating but proved to be unsuitable. In level F5 were found a few animal bones and a small iron hook, 128 (illus 28). Other animal bones were found close to the hearth or under it. Two clay mould fragments, 68 and 103a, were found under the hearth paving. Associated with the hearth was a floor of thin flat limestone slabs and compacted earth (levels F3, FF4, BExt5) into which the kerbstones were set. Traces of this floor were intermittent, but the flat stones formed a sporadically paved area round the hearth. A pivot stone, 154, was found on the edge of the floor north-east of the hearth and seemed to be *in situ* (illus 7, 19, 32). The floor was traced over much of Trench F and part of Trench B, but could not be found in Trench G. Its surface was some 0.25–0.30 m below the turf, and there was about 0.15–0.30 m of dark soil between the floor and the subsoil.

The hearth was very close to the back of rampart 1, which by the eighth century AD was ruinous. Before the hearth was built the collapsed material at the back of rampart 1 must have been cleared back to the line of the original wall-face or even behind it. The clearance of tumble seems to have extended right across Trench G, where Dark-Age objects were found close to the back of the rampart, though the floor was not traced there. Whether this extensive clearance was accompanied by a reconstruction of rampart 1 is unknown. Some of the cleared material could have been piled back of top of the old rampart to make a new but narrower defence. RHS suspected some repair or



ILLUS 19 Hearth and socket stone in Trench F

modification of the back of the rampart in Trench G, where a vertical slab and an upright stone were found. Eventually the back of the rampart collapsed again, sealing part of the floor, which photographs appear to show underlying rampart tumble in the south-western corner of Trench B. The dotted line at the back of the rampart on illus 7 shows approximately where the rampart was cut-back to; the original wall-face may have been further out.

The hearth found in Trench F was surely within a structure, though no traces of walls were found. The hearth is so close to the rampart that any building must have had one wall more or less up against it, or even used the back of the rampart as one wall. Wooden walls set in sill beams, or extensively robbed low stone walls, would have left little or no trace. On the basis of the few prototypes in Southern Scotland and Northern England, some known only from air photographs, any structure would have been rectangular (Reynolds 1978), and there is no room for a round building.

The hearth would have lain centrally within the width of a building; the pivot stone and the rampart, each lying about the same distance either side of the hearth may thus define the sides of the building, which would have been about 3-50 m wide overall. The position of the east end may be shown by the extent of the floor traced in excavation. The position of the west end is quite uncertain, for the hearth may not be central but nearer one end. No floor was identified in Trench G so the building may have ended around baulk F/G. If so, it was only some 6-7 m long; but if the hearth was centred in the long axis, then the structure was about 9 m long. A building even 9 m by 3-5 m is far smaller than the great wooden halls at Doon Hill or Yeavinger (Reynolds 1978). The Clatchard building may have been subsidiary to a larger structure elsewhere on the hill; it may have served some other purpose such as a kitchen or workshop; or it may simply have been the dwelling of someone much farther down the social scale.

It would be tempting to associate the clay moulds and other metalworking finds with this hearth and suggest that fine metalworking was carried out here, under cover and out of the wind. However, stratigraphy suggests otherwise. Two clay mould fragments were found actually under the hearth (illus 7, Section AB), while other fragments were found extensively both in and under the floor, as well as in the occupation level, FF3, identified above it in 1960. Many other clay mould fragments were found at various depths in Trench G, and a few in Trench J, all beyond the identifiable limits of the floor; thus the spread of moulds is both vertical and horizontal. Plotting all the fragments on to the plan it could be seen that joining pieces of individual moulds or valves, for instance 47, were found widely scattered across these trenches, and also occurred both in and under, and above the floor. This does not make sense if the metalworking were contemporary with the hearth. Perhaps fragments could have been trampled into the floor, and other bits carried lower by burrowing animals, but the horizontal scatter does not conform in any way to the putative structure. The pattern of mould debris can best be explained if the metalworking pre-dates the hearth and floor. Some moulds may have been scattered when a level area was made on which to build. The numerous fragments found in or near findspots G10 and G13 were in a channel in the natural rock surface, and thus survived *in situ*.

The hearth and floor are then later than the eighth-century moulds. There is no material in this area recognizably later than the moulds, in fact the only later material from the whole site are two bits of clay pipe-stem from Trenches H and Q, and two pieces of modern glass from Trenches H and O. It seems likely that the hearth and floor immediately post-date the metalworking activity and belong to the same general period of occupation. If the hearth and floor are much later, they must at least pre-date the general use of medieval pottery in the area, as none was found on the site. At Perth, an important urban centre, imported pottery was in use in the 12th century, and locally made wares in 13th-century levels, but how this compares with rural areas is unknown at present (information from Lisbeth Thoms).

### *Metalworking*

The evidence for fine metalworking includes many broken fragments of clay moulds, part of a flat-based crucible and a silver ingot. No actual metalworking hearths or furnaces were found (though scraps of hearth or furnace-lining were recovered), no scrap metal, dribblets or sprues and none of the typical small round- or pointed-base crucibles. It seems that either the main focus of the metalworking lay outside the area excavated, or some of the usual residues had been removed by later activity. All the metalworking debris was found in the upper area, except one mould fragment, 104, from Trench M, and some small pieces of burnt clay.

The clay mould fragments, 47-104, represent a minimum of 22 separate moulds, probably more (illus 22-26). All identifiable pieces are parts of two-piece moulds; all except perhaps 56 have been used and then broken to release the cast object. Those for identifiable objects are: a mould for a large

penannular brooch with expanded ends, a mould for a smaller penannular brooch with round terminals, and two or three moulds for pairs of small penannular brooches with expanded terminals; eight or so moulds for large flat ring-shaped or circular objects, some of which could be the backs of brooches; others for unknown circular objects; one for a concave-sided plate; two moulds for pins with knob heads, three moulds for pin shafts, and one mould which could, doubtfully, be for a late form of handpin. Thus all the identifiable moulds are for decorative metalwork, mostly personal ornaments. There is no reason to believe that these moulds are anything other than contemporary; indeed they may represent only a few weeks' work. Of this metalworking material, only the brooch moulds are potentially datable; they are discussed in the catalogue, where it is suggested that they date to the eighth century AD.

It is interesting to note how often clay moulds for metalworking have been found on Dark-Age sites, often without extensive excavation, as at Dunadd (Craw 1930; Lane 1984), Mote of Mark (Curle, A O 1914; Laing 1975; Graham-Campbell *et al* 1976; Longley 1982), Dunollie (Alcock 1978), Dalmahoy (Stevenson 1949, 196), and in Pictish contexts at Dundurn (Alcock 1977, 6), Craig Phadrig (Small & Cottam 1972), Gurness (Hedges 1987) and Birsay (Curle, C L 1982). The moulds from Clatchard Craig provide for the first time some information on brooch production in southern Pictland. Of the other sites, only Dunadd, Mote of Mark and Birsay have produced groups of brooch moulds, and those from Clatchard compare most closely with those from Birsay, though there are differences in detail. The important new finds from recent excavations at Dunadd (Lane 1984) are not yet published. The old moulds from Mote of Mark and Dunadd are mostly for Class G brooches, a type with an exclusively west coast distribution in Scotland, but the new excavations at Dunadd have produced rather different brooch moulds, some with 'Pictish' features.

Some of the other finds from the area could be connected with metalworking activities, in particular the silver ingot, 121 (illus 28), the stone mould, 155 (illus 30), the flat-based crucible or heating tray, 107 and the pebble with the accidental glossy deposit, 156. The perforated object 109, probably part of a tuyère, may belong to an earlier iron-working phase, since part of what may be another, 110, was found in rampart 2, and some other small pieces of fired clay could be connected with iron-working. The two possible tuyères would not have been tubular objects, but just lumps of clay plastered round the nozzle of the bellows, much like a piece from Birsay (Curle 1982, 42, no 405, illus 25). The object 108 cannot be identified, but 109 may be part of a large crucible or pottery lamp. The tiny fragment of fifth-century glass, 119, is of uncertain purpose (illus 28). Such glass, often found on post-Roman sites (Dunadd, Mote of Mark, Dumbarton, Dundurn) is generally interpreted as cullet, scrap glass to be melted down and reused, for instance as settings on brooches, as could be the case here, but some glass at least may have been originally imported as complete vessels and kept as prized possessions. Adomnan writing in the late seventh century refers to the arch-magus at the court of King Brude near Inverness drinking from a glass vessel that shatters in his hand (Anderson & Anderson 1961, 80a).

### *Other finds*

Several objects typical of Dark-Age occupation were found at the top of the hill other than the metalworking debris and the piece of fifth-century glass. There are two sherds of E-ware, 45–46 (illus 21), found on opposite sides of the area excavated, a glass bead probably of the fifth-sixth century AD, 120 (illus 28), a hollow bone pinhead or playing piece, 114 (illus 28), and a flint used as a strike-a-light, 143 (another, 144, is a stray find) (illus 30). There is also the small disc with pelta ornament in hanging-bowl style, 122, found in the lower enclosure at the north end of Trench P (illus 28, 29). It is probable that many or indeed most of the following objects from the upper enclosure are also Dark-



Age rather than Iron-Age; the 13 iron objects *126–138*, mostly nails or pins, but including the socketed object *127*, the knife blade *129*, and the unidentified *126* (illus 29); the rotary quern fragment *151*, and the spindle whorls *157–159* (illus 30). The small broken iron hook *128*, once riveted to a vessel, and found in the upper part of the hearth, is the only stratified find (illus 28). It may have fallen off a metal cooking-vessel used on the hearth.

In general, these finds compare with those from other excavated Dark-Age sites in Scotland. E-ware, hollow bone ‘pinheads’, imported glass, flat rotary querns and moulds for decorative metalwork are all typical, as is the absence of any native pottery. It is, however, curious that the characteristic bone pins and combs have not been found at Clatchard Craig, though animal bones survived, a bit decayed but identifiable. Perhaps worked bone, with its outer surface removed, was just sufficiently less resistant than unworked bone to decay completely. The only surviving bone object, the ‘pinhead’ *114* (illus 28), is very fragile; it seems to have been burnt which may account for its preservation.

A considerable quantity of animal bone was found in Trenches B, F and G. The bones have been described in four subgroups, Groups IIIA–D, which do not necessarily have any chronological significance (fiche 1:C10). They probably represent scattered debris from middens rather than having any direct connection with the hearth in Trench F, though some bones were found round it. It is not possible to assign these bones to any single phase of occupation on the hill, but they may well be Dark-Age. The species present are cattle, sheep and pig.

#### DISCUSSION

While radiocarbon dates have helped to clarify the outlines of the defensive sequence at Clatchard Craig, many details are still obscure, and the relationship between the occupation evidence and the defences can only be guessed at. No defences have been identified that could belong to the pre-Roman Iron-Age occupation attested by pottery for which a date within the period fourth century BC to first century AD has been hazarded. Two small metal finds, *123–4*, suggest occupation also in the second or third century AD. The earliest defences are apparently the burnt, timber-laced ramparts 1 and 3, built either together or separately in the sixth or seventh century AD. It has been argued above that ramparts 3a to 6 represent a reconstruction of the defences rather than outworks contemporary with ramparts 1 and 3; if so, then some of the iron slag and animal bone in rampart 2 should belong to this second defensive stage. This may date to the later sixth or seventh century AD or later, depending on the actual date of the earlier ramparts. Finds which may relate to some phase of the defences include the glass bead *120* and the fragment of glass *121*, the two E-ware sherds *45–46* and the pelta-decorated disc *122*. Finally there is rampart 2, the latest rampart, incorporating Roman mortared stones and a few pieces of burnt timber, probably debris from earlier ramparts. There may have been a gap in time between the earlier defences and the construction of rampart 2, since its builders totally ignored the old lines of defence. As to the date of this rampart, it is clearly Dark-Age, and later than the other ramparts on the site, but cannot be dated more closely. It could be contemporary with the hearth (and ?house) and subsequent eighth-century metalworking activity in the upper area, or it could be earlier or later.

During the Dark-Age occupation there are a few hints, but no more, that the main focus of domestic settlement was in the upper enclosure, where most of the small finds were scattered (spindle whorls, strike-a-light, E-ware sherds, bone ‘pinhead’, etc) whereas the animal bone finds could suggest that some farm animals were kept in the lower enclosure (neo-nate calf from Trench A), and other activities such as iron smithing were also carried out there, though bronze casting took place in the upper enclosure. Only investigation of other similar sites can show if this deduction is likely to be correct.

A long cist cemetery on a nearby hill, the Mare's Craig (Section 11; illus 1) may have been used by the occupants of Clatchard Craig, but its destruction by quarrying in the 1920s means that we know nothing of its extent or date. A small bronze-coated iron Celtic bell was found there.

While Pictish defended settlements and actual houses are little known, there are indications that settlement in this period was concentrated in the lowlands on the best soils for agriculture. Evidence for this can be seen in the distribution of long cist cemeteries and sculptured stones. Of these, only the sculpture can be at all closely dated, and some must be contemporary with the later occupation at Clatchard. Fife has seemed to have rather few symbol stones, but more have been discovered recently, and are mapped in MacNeill and Nicolson 1975, maps 8–10. Pictish symbol stones of the period around 675–750 AD have been found not far from Clatchard Craig at Lindores and at Westfield Farm, Falkland (Ritchie & Ritchie 1982), at Strathmiglo (*Discovery Excav Scot* 1969, 25) and at Abernethy (Allen 1903, 282). An exception to the lowland distribution is the unusual bull stone found in an equally unusual context within the fort on top of the East Lomond hill (Corrie 1926). A little further south, there are numerous Pictish symbols incised in the Wemyss Caves (RCAMS 1933, 286). Of later Pictish sculpture probably of the later eighth or ninth century AD in the vicinity of Clatchard Craig there are fragments of plain cross-slabs from Abernethy, part of a sculptured cross-slab from Carpow, and the worn remains of a fine free-standing cross at Mugdrum (Allen 1903, 311–13, 367); all on the narrow coastal plain along the south shore of the Firth of Tay.

There are a limited number of known Dark-Age fortifications with which Clatchard Craig can be compared. These include the Pictish sites of Craig Phadrig, Dundurn, Burghead and Green Castle, Portknockie (the last three having burnt, timber-laced ramparts), some other timber-laced forts farther afield such as Mote of Mark and Dumbarton Rock, and the historic sites of Dunadd and Dunollie (all discussed in Alcock 1981; 1984). In size, Clatchard Craig with some 0.8 hectares enclosed by rampart 3, and some 0.5 hectares by rampart 2, compares fairly well with other Pictish fortifications as shown by Alcock (1984, fig 2.4), only Burghead being substantially larger. Timber-laced ramparts seem to be a common feature of Dark-Age forts. Only in plan does Clatchard Craig seem at first site unlike other Dark-Age sites, and indeed until the radiocarbon dates appeared ramparts 1 and 3 were taken to be Iron-Age, and to compare with Iron-Age vitrified forts such as Finavon. In a Dark-Age context there is no particularly good parallel for the plan of Clatchard with its two timber-laced ramparts except Burghead, though something similar may have resulted from the reconstruction now suggested for Craig Phadrig (Alcock 1984, 23) and the arrangement of ramparts at a 'nuclear' fort such as Dundurn in its latest phase results in more than one enclosure, though these are arranged differently. Perhaps we should look again at the old excavations of timber-laced forts at Castle Law, Abernethy and Castle Law, Forgandenny, not far away, and both with two partial or continuous wide-spaced timber-laced ramparts (Christison 1899; Bell 1893; Christison 1900, 74). In both forts wide sockets in their walls suggest at least one level of close-set timbering that might compare with the evidence from Trench H level 24 at Clatchard. It could be that, despite finds of Iron-Age pottery and of a *La Tène* brooch from Castle Law, Abernethy, the ramparts of these forts are Dark-Age like ramparts 1 and 3 at Clatchard.

Although the fort at Burghead is on a completely different scale to Clatchard, it also has two enclosures defended by burnt timber-laced ramparts, and an outer set of multiple ramparts of unknown date (Young 1891; 1893; Small 1969; Edwards & Ralston 1978). The arrangement of the timber-lacing in the north-eastern rampart at Burghead, as recorded by Young (1890, figs 1, 2) is of interest for Clatchard. Young found a massive timber-laced rampart with stone facing-walls on both sides. The transverse timbers did not penetrate the front wall, but regular rows of sockets were found in the rear wall. The transverse timbers lay 3 ft (0.90 m) apart in rows, and a layer of longitudinal planks lay on the timbers, nailed to them with large iron bolts. The successive double layers of timbers

were also 3 ft apart, except near the base of the rampart where they were set closer. The arrangement of the layers of horizontal and longitudinal timbers, the lack of uprights, but not, of course, the use of planks and nails, find parallels at Clatchard Craig.

The small area excavated, and the narrow cuttings across the ramparts, make it difficult to draw many definite conclusions about the total extent and the length of the various phases of occupation at Clatchard Craig. Nevertheless, the rescue excavations of 1959–60 have produced important and unexpected evidence about the various phases of occupation, and in particular Pictish occupation, on this site. When more similar sites have been excavated on a larger scale and published, it may be possible to see more accurately how Clatchard Craig fits into the general picture of fortification and settlement in Dark-Age Scotland.

#### CLATCHARD CRAIG: SUMMARY OF USE OF HILL

(The numbered events are not necessarily consecutive. Related events in brackets.)

##### Neolithic

- 1 Earlier Neolithic pottery deposited.
- 2 Late Neolithic stone ball lost.  
(Beaker or early Bronze-Age cist burial at base of hill: one ?beaker sherd found on hill in excavation.)

##### Iron-Age and Roman

- 3 Iron-Age occupation attested by a scatter of pottery in both upper and lower enclosures (fourth century BC–first century AD?)
- 4 Limited occupation in the second–third centuries AD suggested by a few artefacts.

##### Dark-Age

- 5 Construction of the timber-laced ramparts 1 and 3 in the sixth or seventh century AD; their subsequent destruction by fire.
- 6 Construction of ramparts 3a–6, perhaps added to 1 and 3, more probably replacing them; perhaps two or more phases.
- 7 Occupation in the interior attested by finds including two sherds of E-ware, a glass bead, a scrap of imported glass, a pelta-decorated disc, animal bones and iron slag etc may be contemporary with one or other or both of the defensive phases listed under 5 and 6.
- 8 Construction of rampart 2 on a new line, perhaps after a break in occupation.
- 9 Final occupation in the upper enclosure, with the collapsed back of rampart 1 cut away. A short phase of fine metalworking activity in the eighth century AD succeeded by construction of a paved hearth apparently within a rectangular building. The relationship of this occupation to rampart 2 is unknown.

(Long cist cemetery on Mare's Craig: may be contemporary with the Dark-Age occupation.)  
(c 1025: Viking hoard of silver coins and 'gold chains and bracelets' deposited at Parkhill, Lindores.)

##### Medieval

(Late 12th century: foundation of Lindores Abbey.)

#### 4 DETAILS OF TRENCHES AND LEVELS

These are on fiche 1: B3–7.

## 5 CATALOGUE OF ARTEFACTS

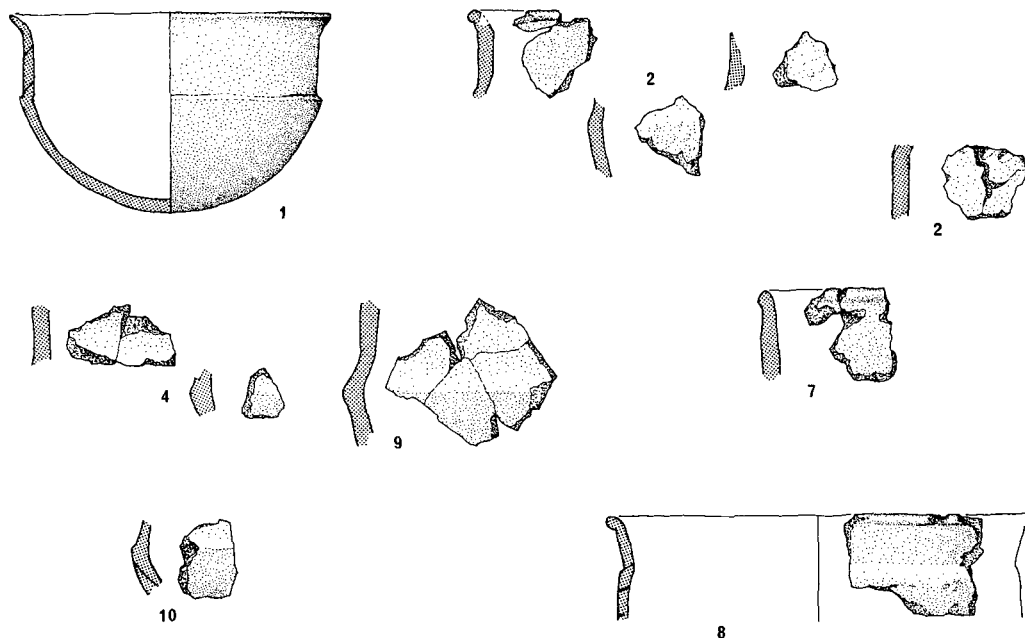
The finds from the excavations of 1959–60 are in the Royal Museum of Scotland, Edinburgh. The museum catalogue numbers are those of this catalogue prefixed by the letters HHC. Each entry is followed by its excavation code; the trench letter (eg 'B'), the level within that trench (eg 'level 5') and the finds number prefixed by 'sf' for small find. Finds and levels were numbered from one within each trench. Finds with no illustration reference are not illustrated.

Two objects from P R Ritchie's excavation are included in this catalogue (116, 148) as are a few stray finds made on the hill before and after the excavations (118, 144, 160, 147); some of the latter are now in Perth Museum.

## NEOLITHIC POTTERY (illus 20)

Audrey S Henshall

- 1 Nearly quarter of a carinated bowl providing the complete profile (the bowl now restored), also three small rimsherds and two wall sherds probably from the bowl; hard dark grey fabric with buff grits, burnished outer surface becoming brown towards the base, semi-burnished inside; rim diameter 170 mm. *B level 5, sf 17* (illus 20).
- 2 Sherds from the rim and neck, carination, and many from the body and base including some large pieces; the fabric more heavily gritted than 1 and including some quite large grits which produce distinctive lumpy surfaces, some sherds pinched and uneven, wipe marks inside, a tendency for the surfaces to split apart; fabric 5 to 7 mm thick. *B level 5, sf 17* (illus 20). One sherd probably from this pot is distorted, having two depressions which appear deliberate and to have been made with a thumbnail beside a broken edge. *B level 2, sf 12* (illus 20).
- 3 Sherds from the wall and base, apparently all from one pot; fabric heavily gritted, slipped surfaces extensively scorched reddish-brown outside but black inside, tending to split apart; 10 mm thick (possibly the lower part of 7). *B level 5, sf 17*.



ILLUS 20 Neolithic pottery (scale 1:4)

- 4 Sherds including one from the carination, one from the concave neck, the rest from the wall and base, probably all from one pot; fairly hard well-gritted fabric, thick semi-burnished tool-marked slip black-brown outside and black inside, some sherds damaged by burning; about 10 mm thick (see 9 below). *B level 5, sf 17* (illus 20).
- 5 Two small rimsherds; fabric as 7 and probably from the same pot. *B level 5, sf 17*.
- 6 Two tiny wall sherds; rather soft dark brown fabric with white grits and sparse mica, one burnished outside, 8 mm thick. *B level 5, sf 14*.
- 7 Rimsherd, the pot probably not carinated or shouldered; fairly heavily gritted black fabric, slipped semi-burnished surfaces (see 5 & 3 above). *B level 2, sf 6* (illus 20).
- 8 Sherd from the rim and neck of a shouldered bowl, also a wall sherd; hard dark brown fabric with small grits and fine mica, semi-burnished surfaces with white grits showing; rim diameter 250 mm. *B level 2, sf 2, 3* (illus 20).
- 9 Sherd from the neck and carination; fabric as 4 and probably from the same pot; diameter at the carination about 300 mm. *B level 2, sf 2* (illus 20).
- 10 Sherd from the carination, also two wall sherds; hard black fabric with relatively large buff and dark grits, semi-burnished surface. *B level 2, sf 1, 2, 3* (illus 20).
- 11 Two wall sherds; fabric as 8 and probably from the same pot; 5 mm thick. *B level 2, sf 13, 15*.
- 12 Two wall sherds, one 3 mm thick with slightly concave section suggesting it is from a neck, the other 5 mm thick, both very hard fabric with sparse grits including fine mica, brown outside, black inside, burnished surfaces. *J level 2, sf 11, 22*.
- 13 Two tiny wall sherds; hard dark brown fabric 4 mm thick, possible from the same pot as 12. *E level 11, sf 12* (in or under rampart 2).

#### Discussion

The sherds represent a homogeneous group of pots, a minimum of seven being distinguished on the grounds of fabric and form (listed in the catalogue under the numbers 1, 2, 3/5/7, 4/9, 8/11, 10 and 12, with the tiny wall sherds 6 and 13 omitted from the following comments). Of these seven pots, four were certainly and one probably carinated, one had an unusual shouldered profile, and one was almost certainly neither carinated nor shouldered. The rims are slightly everted and simple, either thinned at the edge as on 1, or rolled. The carinations are all different, a narrow ledge (1), a sharply defined angle (10), a gently defined angle (9), and a slight and unemphasized angle (2) all being present. Pot 8 has a well-defined, slightly everted, shallow neck below which there is a narrow rounded shoulder. Pot 3/5/7 seems to have had a simple form with vertical walls. Pots 1 and 8/11 are of medium size with rim diameters of 170 and 250 mm, pot 2 was considerably larger judging by the curve of pieces of the lower wall but the exact dimensions are unknown, and pot 4/9 was large, measuring about 300 mm at the carination.

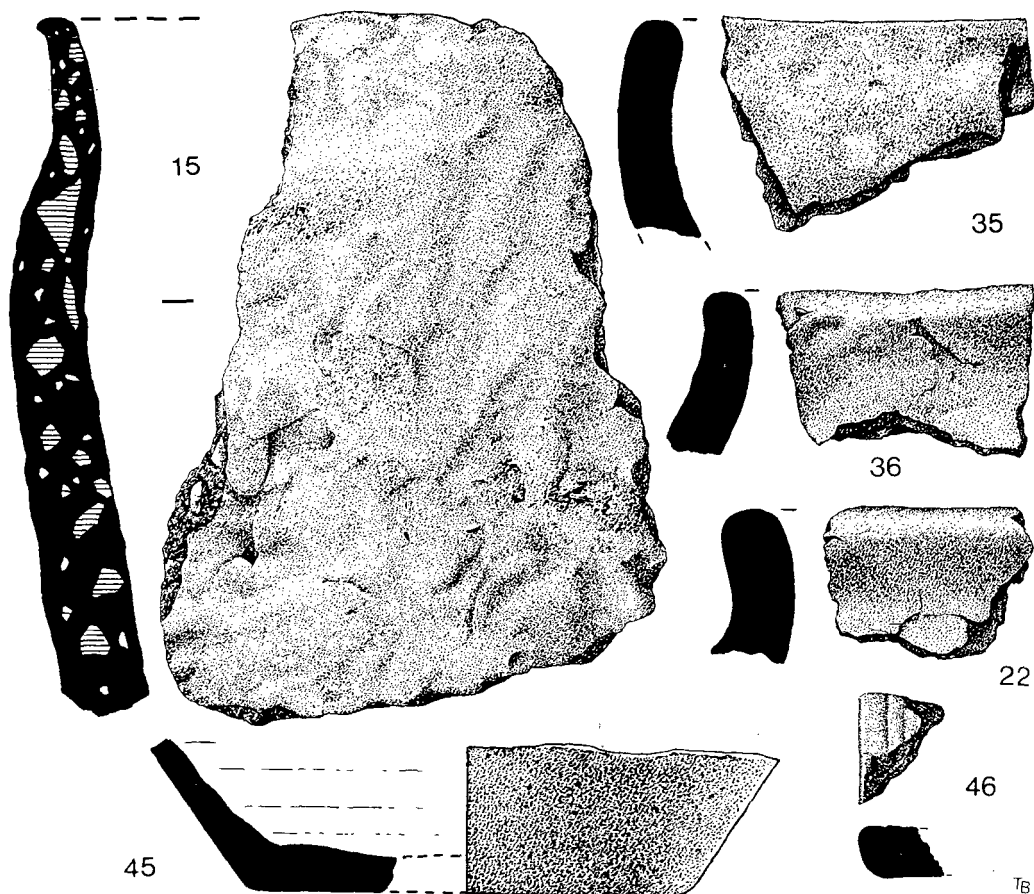
There is no decoration except for one puzzling sherd made of the distinctive fabric of pot 2. Unfortunately the sherd has broken. Most of it is flat but along one side it is angled, and along the outside of the angle are two or possibly three impressions which appear to have been made with a thumb- or finger-tip.

The quality of the pottery is mainly very good, in some cases exceptionally so, the vessels being carefully formed, well finished, and some of the fabric very hard. The pottery varies from black to dark mid brown, some sherds, such as the base of 3, are pinky-brown, probably due to scorching. The surface generally has a slip outside and sometimes inside also, and may be burnished or semi-burnished (ie less highly polished). The sherds 12 are remarkably hard, 3 to 5 mm thick. Pots 1, 8/11, and 10 are hard and the first two relatively thin, with fine grits in the fabric, though 1 and 10 include some larger pale grits. The two pots 3/5/7 and 4/9 are more heavily gritted and the former is rather friable, but heavy slips cover the fabric. Pot 2, also fairly heavily tempered but with more angular grits, tends to break apart through the core; it has a harsh feel, the surface having been smoothed over projecting grits which give it a pimply appearance. The junctions of building rings can be detected in the neck of 1 and the body of 8 and 10.

The pottery clearly belongs to the early Neolithic Grimston-Lyles Hill Series, at present only sparsely represented in south-east Scotland. Most of the sherds from this region are too small to merit discussion and none has significant associations. The sherds of the most fragmentary pots from Clatchard Craig, 4/9, 7, 10, can be compared in general terms with some sherds from amongst a range of Neolithic material from the eroding middens at Hedderwick, East Lothian (Callander 1929, 35, 67–72, but these particular sherds not listed or illustrated), or with the small group from below the Neolithic cairn at Pitnacree, Perthshire (Coles & Simpson 1965, 41–3), and they would not be out of place in the local pottery

style which can be discerned in north-east Scotland (Henshall 1984), particularly if they come from more open bowls than illustrated. One of the two pots from Bantaskine, Stirlingshire, may be noted for its quality and delicacy comparable with Clatchard Craig 1 and 8 though it is a larger vessel with an open S-profile (Callander 1929, 35, 56-7; the gently rounded carination survives but was not illustrated, rim diameter about 250 mm).

The significant features of the Clatchard Craig pots are the forms of 1, 2 and 8 with their vertical, straight-section, necks and relatively deep proportions, and the lack of fluting on all the pots. These features distinguish them from the Scottish north-eastern style. In making further comparisons, the simplicity of the Clatchard Craig rims should also be noted. Amongst the Grimston pottery of eastern and north-eastern England fluting is rare, the dominant form is an open shallow bowl with a simple rim, carinated or with an S-profile, and generally with a concave-section neck. However, deeper forms are present in small numbers (eg Manby 1975, 28) but precise parallels for Clatchard Craig 8 are hard to find unless the very large assemblage from Broome Heath, Norfolk, is consulted (Wainwright 1972, 22-46, 70-75). The affinities between the eastern English sites and the assemblage from Auchategan, Argyll, have been pointed out by Scott (1978, 56-8). There is a liking at this site for fairly heavy rims and open forms, but there is a considerable number of deep carinated bowls among which one or two approximate to the form of Clatchard Craig 2 and 8. Deep carinated forms, though with heavier rims, are also known in the south-west at Luce Sands and Cairnholy (McInnes 1964, 42-7; Piggott 1949, 119).



ILLUS 21 Iron-Age pottery 15, 22, 35, 36; E-ware 45, 46 (scale 2:3)

It would be unwise to attempt any elaborate conclusions from so small a group of sherds as those from Clatchard Craig, especially lacking any considerable quantity of comparative material from central or south-east Scotland, and a close connection with the pottery cited from south-west Scotland should not be stressed. The chronological range of English and Irish material is through the second half of the fourth millennium until the late third millennium (Wainwright 1972, 73–5). The earliest dated group of Grimston-Lyles Hill Series sherds in Scotland is at the beginning of the third millennium at Boghead, Moray (Henshall 1984); the latest, at Auchetegan, Argyll is dated to 2300±100 BC.

The circumstances of the deposition of the Neolithic sherds at Clatchard Craig are not clear. All (except for two minute wall sherds 13 from Trench E) came from the top of the hill in Trenches B and J (illus 7). Trench B had a shallow covering of earth and small pebbles (level 2) over a very uneven bedrock, and in places soil- or clay-filled deeper fissures in the rock. Numerous sherds of pots 1–5 were found as a group in a sticky brown clay deposit adhering closely to the rock surface in a cleft in the bedrock, but three other sherds including 7 and 9 probably belonging to pots in this group were found nearly 3 m further north, one of them only some 20 cm below the turf. Almost all the rest of the Neolithic pottery lay scattered across the north end of Trench B, with two tiny sherds in a distinctive fabric from Trench J. Two even tinier scraps in the same fabric from Trench E could conceivably have fallen downhill from Trench J. Sherds 6 and 11 from three spots at the far north-east end of Trench B were found in pockets of reddish soil very near the natural clay or rock. Thus while sherds 7 and 9 may well represent part of the main deposit (pots 1–5) which had been disturbed by later activity, many of the other sherds could represent an original Neolithic scatter in a few undisturbed pockets of old soil. In any case there is no reason to doubt that the sherds are contemporary.

#### BEAKER POTTERY (?)

- 14 Two small flat sherds, worn on the outside, probably from the same pot; thin brown ware, only about 6 mm thick, small quartz grits. Possibly from the base of a beaker. *FF level 4, sf 36.*

#### IRON-AGE POTTERY (illus 21)

A general description of the pottery is given first. In the individual descriptions, only variations from this are noted.

The ware is coarse and handmade, usually about 13–15 mm thick, light to dark brown on the surface, some colour variations within a sherd, the inner surface often blackened; quite hard-fired, with grits of varying sizes up to 12 mm. Small grits pushing through the surface give a pimply appearance to some sherds, and several have wipe marks on one or both surfaces. Most sherds are weathered, and most are quite small, only 15 (three pieces) 27 and 37 being substantial pieces. A minimum of nine individual pots are represented, probably more.

#### Interior, lower enclosure

- 15 Rimsherd, and two body sherds (not illustrated), from a large jar. Hard fired with unusually large angular grits up to 14 mm long, probably andesite, and some smaller grits of iron ore, perhaps haematite. Surface reddish-buff, darkened outside near the rim; building rings crudely smoothed on the outer surface. There is a slight neck below the flat rim. *K, sf 1 and 2 (illus 21).*
- 16 Two body sherds, reddish outer surface. *M level 2, sf 1.*
- 17 Body sherd, softer fabric, buff surfaces, small dark grits. *M level 3, sf 18.*
- 18 Body sherd similar to 17. *Q level 3, sf 11.*
- 19 Body sherd, buff surfaces. *Q level 4, sf 15.*
- 20 Tiny body sherd, red outer surface. *Q level 2, sf 1.*

#### Interior, upper enclosure

- 21 Tiny body sherd, fabric similar to 24. *G level 2, sf 40.*
- 22 Rimsherd, sooted inside. Apparently from a shouldered pot contracting to an upright neck with flattened rim; rim angle uncertain. *F level 2, sf 7 (illus 21).*
- 23 Body sherd; red surface, burnt since firing. *FF level 4, sf 37.*
- 24 Body sherd, thin brown flaky fabric with darker core, 7 mm thick, wiped outside, sooted inside. *B level 2, sf 4.*
- 25 Body sherd as 24; probably same pot. *B level 5, sf 16.*
- 26 Body sherd as 24. *B level 5, sf 6.*

## Trench H, level 11: fall of rampart 2

- 27 Large body sherd, 10 mm thick, pimply surface; reddish exterior, slightly sooted inside. *H, sf 18.*  
 28 Body sherd, weathered; possibly same pot as 27. *H, sf 15.*  
 29 Body sherd. *H, sf 16.*  
 30 Body sherd. *H, sf 13.*  
 31 Body sherd, fabric similar to 24, but thicker. *H, sf 14.*  
 32 Body sherd, soft buff surfaces, very similar to 18. *H, sf 17.*  
 33 Body sherd, buff surfaces. *H, sf 12.*

## Trench H: levels associated with rampart 3

- 34 Body sherd, dark brown, smoothed outer surface. *H level 22, sf 20 (top of rampart 3, just below turf).*  
 35 Rimsherd, gently incurved, rounded rim; angle of rim uncertain; smooth surface, brown, darkened outside; sandy fabric with small to medium mixed grit. *H level 22, sf 21 (fall of rampart 3) (illus 21).*

## Trench H: levels associated with rampart 4

- 36 Rimsherd, flattened, rounded top, everted rim; angle of rim uncertain; dark outer surface. *H level 32, sf 4 (top of rampart 4, just below turf) (illus 21).*  
 37 Small body sherd, light brown surface; trace of two finger-tip and nail impressions on broken edge of sherd. *H level 32, sf 25 (top of rampart 4, just below turf).*  
 38 Body sherd, *H level 33, sf 35 (in rampart 4).*  
 39 Large body sherd, pimply outer surface, buff, darkened in places; 9–10 mm thick. *H level 34, sf 37 (buried soil below rampart).*  
 40– Three small body sherds from two or three different pots: 40 sooted inside; 41, 42 soft buff outer surfaces. *H level 34, sf 36 (buried soil below rampart).*

## Trench D

- 43 Several small fragments from one pot, soft buff surfaces. *D level 2, sf 5 (fallen rubble behind rampart 3).*

## Discussion

Despite the Dark-Age date of ramparts 1, 2 and 3, all the indications are that this pottery is Iron-Age. It compares well in fabric and shape with pottery from Broxmouth, while the rimsherd 35, which seemed to be sandier than other pieces, is not only similar to Broxmouth Type 1 sherds but also matches a rimsherd from Finavon. Some sherds seem more like Broxmouth Type 1 (c fourth century bc) and some Type 2 (c mid second century bc to first century ad), and while these comparisons are far from exact, they offer the only clue to dating at present. As a very crude guide, sherds 15–19, 32, 33, 35 and 36 may compare with Type 1, and sherds 22, 23, 28, 30, perhaps 37 and 39 with Type 2 at Broxmouth (Cool 1982). Thus only pottery comparable to Type 1 was found in the lower enclosure, while pottery comparable to both Types is found in the outer groups. The fact that some sherds were found in the body of the ramparts or collapsed rampart material supports the idea that this pottery could well be earlier than the dated ramparts. Comparisons with Broxmouth may be used to suggest with caution that the Clatchard Craig pottery may derive from an extended occupation in the last few centuries bc and perhaps the first century ad.

Finally the Clatchard pottery was compared with one of the few extant groups of local handmade pottery dating from the early centuries AD; the sherds from the souterrains at Ardestie and Carlungie in Angus. Wainwright (1963, 112–16) thought the native pottery might belong to the time of the destruction of the souterrains c AD 200–250, while the site as a whole he thought was occupied around AD 150–450. Whatever the date of this pottery, it is different in form and fabric to anything from Clatchard Craig, and seems to have been fired at a higher temperature.

Sherds 21, 24–6 and 31 are not quite like the other Iron-Age sherds. The first four are very thin and in a flaky fabric with uneven surface similar to the Neolithic pot 2, but rougher and grittier: 31 is similar but thicker: just possibly 14 is a related base. However, David Williams found no difference between 24 and other Iron-Age sherds in thin section (see below).



## THIN-SECTION ANALYSIS OF PREHISTORIC POTTERY FROM CLATCHARD CRAIG

D F Williams\*

A number of samples of prehistoric pottery, mainly Iron-Age, from Clatchard Craig were submitted for thin-section analysis under the petrological microscope. A macroscopic examination using a binocular microscope ( $\times 20$ ) revealed that some of the sherds contained clearly visible inclusions of igneous rocks and discrete grains of quartz, mica and pyroxene.

Several of the pottery sherds were either friable or too small to contemplate petrological sampling, while certain others were of a unique character and so were also left intact. A selection was made of seven of the larger body sherds which were then thin-sectioned (nos 15, 22, 24, 27, 29, 33 and 39). This revealed fragments of rock of an andesite or basic igneous composition, with discrete grains of quartz, mica (both muscovite and biotite), plagioclase feldspar, hornblende and pyroxene. Since Clatchard Craig is situated on the north-west of the Ochil Hills, a formation of Old Red Sandstone lavas composed principally of andesite and associated rocks (MacGregor & MacGregor 1948), a fairly local source is suggested for the pottery.

## ROMAN POTTERY

Brian R Hartley†

- 44 Small body sherd of samian ware, probably East Gaulish, and certainly of late second- or early third-century date. It comes from an enclosed vessel, probably of the general type of Dechelette 72. It has been reused as a sherd, since two of the corners have been rubbed down. *A level 7, sf 3 (in the core of rampart 2, behind the front revetment).*

## DARK-AGE POTTERY: E-WARE (illus 21)

Ewan Campbell‡

- 45 Wheel-thrown basal sherd with string cut-off marks. Lower body shows strong internal rilling. External surface smoothed with irregular wipe-marks, but some grits protrude. Basal diameter about 100 mm. the form is similar to other small E1 jars: but could also belong to an E4 jug or pitcher, as the bases of these are poorly known. No sooting on base. Fabric: hard (about Moh's 6), laminated with air spaces, fracture hackly, feel rough. Inclusions: abundant sub-angular quartz, poorly sorted, 0.5–2.0 mm. Sparse rounded orange earthy iron ore. Colour: uniform yellowish-buff, with a denser orange patch on exterior. *G level 2, sf 21.*
- 46 Small sherd of typically wheel-thrown strap-handle. The sherd is from the opposite side of the handle to the characteristic 'roll', but is quite distinctive and can be matched with handles from Dunadd. Thickness 9–10 mm. The surface is minutely pitted, perhaps due to repeated handling. Fabric and Inclusions as 45. Colour: beige/buff/biege. *J level 2, sf 18.*

## Discussion

Both sherds of E-ware could be from a single vessel, a strap-handled jug or pitcher of Class E4 (Thomas 1959). Analysis of the E-ware assemblages (Campbell, in prep), shows that this is an uncommon form, accounting for about 10 vessels out of a total of about 160 in the British Isles. Single examples are known from Tean, Scilly; Dinas Powis; Mote of Mark and Dumbarton; and there is a concentration of at least six at Dunadd. There are also tubular spouted pitchers from Buston Crannog and Scrabo, Co Down.

Opinions on the dating of E-ware have varied widely in the last 25 years, ranging between the fifth and ninth centuries. Current opinion favours a lower bracket of latest sixth or seventh century, at least in the north (Warner 1979; Alcock 1982, 358), but the upper limit remains unresolved. Similarly, opinions on the provenance of the pottery have ranged over most of north-west Europe. Although a south-western French source is now generally accepted (Peacock & Thomas 1967), the petrological evidence is not convincing (Campbell 1984), and other workers have urged caution in accepting this region (eg James 1977, 245–7).

The presence of E-ware has been taken to indicate trade with the continental source of the pottery (Hodges 1977). However, the widespread occurrence of small numbers of E-ware vessels in the interior of

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Ireland, and in central and eastern Scotland, would appear to rule out direct contact between all these sites and the continent. A more likely explanation would be secondary redistribution from major coastal centres around the Irish Sea. This redistribution could be interpreted in economic terms, or as some form of gift exchange (Grierson 1959). The eastern Scottish distribution, with single vessels at Dundurn, Craig Phadrig and Clatchard Craig, concentrates on 'high status' defended sites in the traditional Pictish area. (The supposed sherds from Abercorn and Craigs Quarry are medieval; I have not been able to examine those from Elie.) Although the sample is probably biased by the location and size of excavations, this association is supported by the presence of the E4 form at Clatchard Craig, as this is a form associated with 'high status' sites elsewhere. This suggests that the present distribution of E-ware in eastern Scotland can best be viewed in the light of Picto-Scottish political relations rather than as the result of continental trade.

#### THE CLAY MOULDS (illus 22–6)

Many fragments of clay moulds were found at the top of the hill in the adjoining trenches F/FF and G, and only three fragments elsewhere; two nearby in Trench J, and one piece further downhill in Trench M. Joining pieces of single moulds were found scattered over Trenches F and G.

All the identifiable pieces are parts of two-piece moulds. The mould fabric is free of grit and generally rather sandy; the outer surfaces have fired red, reddish-brown or yellow, but the matrices and the surrounding inner surfaces are generally grey. An exception is 56, part of a back valve for brooches where the matrix remains reddish-brown. Extra clay has usually been plastered over the edges of the two valves to hold them together for casting, but this is often indistinguishable in section from the original mould. The shape of the gates suggest that, as at Birsay (Curle 1982, 37) the moulds were held at an angle to the vertical while the metal was poured in.

The two halves of the mould are here called valves. The valve for the back of an object is called the back valve and similarly for the front. The two can readily be distinguished since the front valves consistently have projecting keys and the back valves have matching sockets. The front valves also have concave edges that curve over the rounded, convex edges of the back valves.

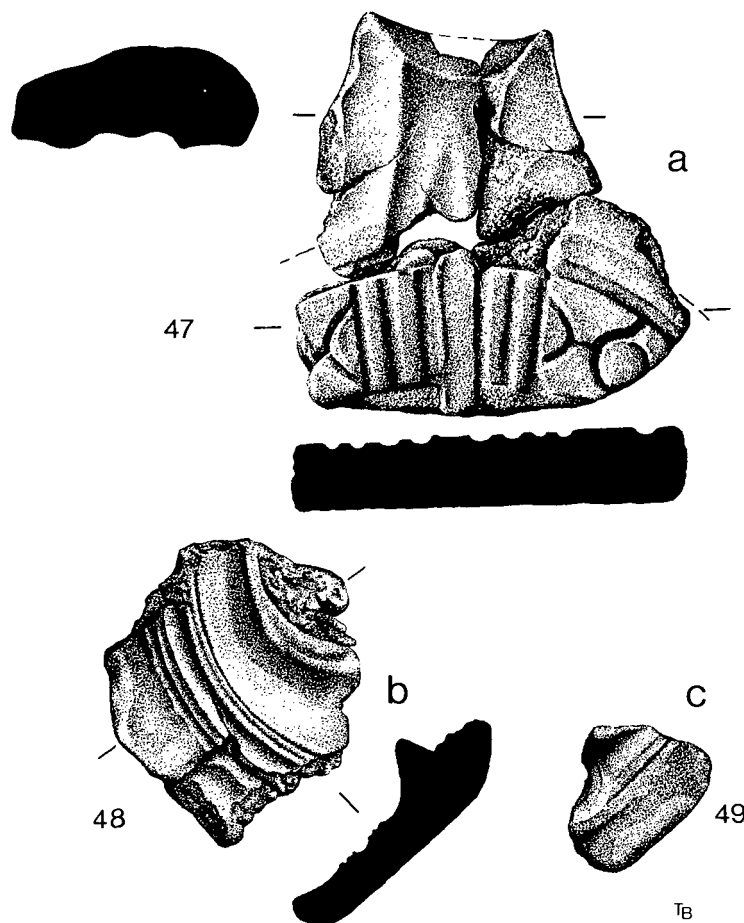
Most of the moulds have been drawn with the pouring gate at the top, but the brooch mould 51–52 and the pin moulds 77–79 have been reversed to show the resulting object the right way up. For fragments such as 67–69, 73, 85 and 86 the orientation is unknown. In the catalogue the detailed description of the object cast in each mould refers to the object itself, unless the contrary is specified, not to the matrix where such features are reversed; thus mention of raised or sunk features refer to those on the cast object, not in the matrix.

In 1974 the matrix surfaces of a number of moulds were examined by H McKerrell, in the hope of identifying the metal cast in the mould. Moulds with significant traces of zinc were nos 53, 55, 57, 58, 59, 64 and 65, but no other metals had left traces except iron which is normally present in the clay itself. Moulds examined but with no traces of zinc were 47–49, 51, 52, 56, 68, 77, 78, 81, 84 and 88. The presence of zinc does not necessarily show that brass or zinc-rich objects were being cast, since Dr Paul Craddock informs me that zinc is commonly found in the exposed surface of the clay linings of furnaces and crucibles not used for zinc or brass. Such is the volatility of zinc that even small amounts in the metal will penetrate into the clay wall. However, it is of interest that all the multiple moulds for small penannular brooches show traces of zinc except 56, which is also distinguished by not having a grey matrix, whereas no traces of zinc were found on the moulds for the larger penannular brooches, or on various fragments of moulds for larger unidentified objects.

#### Interior: within rampart 1

##### *Penannular brooches*

- 47 Part of a front valve for a large brooch with triangular terminals. The gate, which has lost some of its inner surface, has two splayed leads, one running into each terminal of the brooch which was cast upside down. The expanded terminals were ornamented with raised mouldings outlining shaped panels and forming three transverse bars at the ends. The outer edge of the terminal had a flat flange outside the raised moulding, but the inner edge seems to be lost, since the division between the terminals continues to the broken edge of the mould. The surviving width across the terminals is 75 mm; the original width across the hoop was around 120–130 mm. Pieces of this mould were found widely scattered across cuttings F and G: the left half of the gate in *F level 2, sf 5*, the top right



ILLUS 22 Parts of a clay mould for a penannular brooch (scale 2:3)

fragment and the terminals in *FF level 4, sf 20*, and the lower right part of the gate in *G level 2, sf 13* (illus 22, 26).

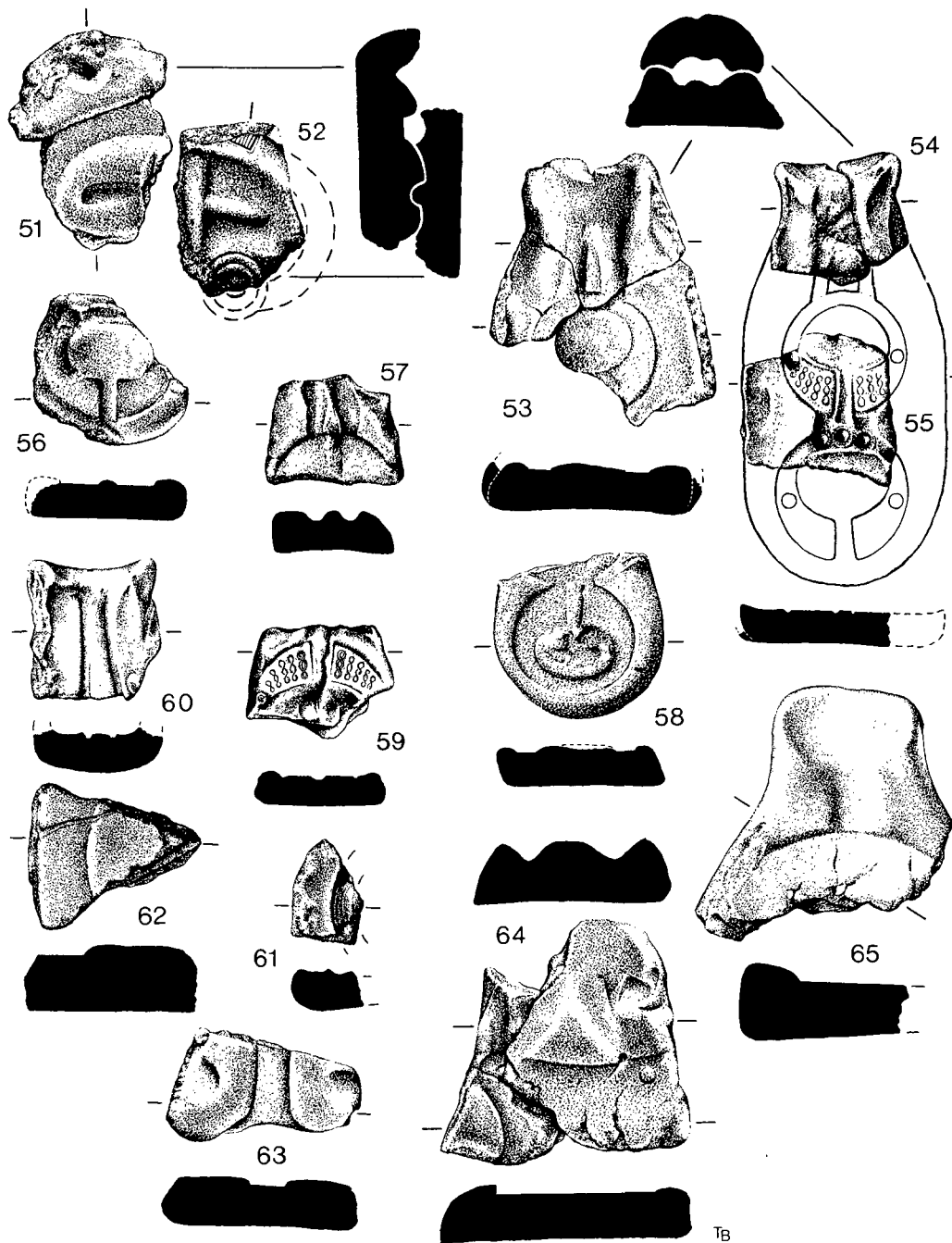
- 48 Part of a front valve with a matrix for a brooch hoop. From colour, texture and size it could belong to mould 47. The hoop was 11 mm wide and convex in section with two raised mouldings along each edge. The width across the brooch, when complete, may have been around 110–20 mm, but it is impossible to estimate accurately from so small a piece. The mould seems to have been made with a central hole, unfilled by the added 'envelope'. *F level 3, sf 2* (illus 22).
- 49 Fragment with a brooch hoop matrix, probably part of 48. There is also part of a cusp, either for one end of a panel at the top of the hoop, or for the junction of hoop and terminal. *G level 2, sf 13* (illus 22).
- 50 Fragment, 25 mm long, of the edge of the same mould as 48 and 49, but without the matrix. *G level 2, sf 13*.
- 51–52 Parts of the back and front valves of a mould for a penannular brooch with round terminals, the back valve 51 from *G level 2, sf 22*, the front valve 52 from *FG level 2, sf 2* (illus 23). The valves have been keyed together by prominent ribs in the centre of the front valve which fit sockets in the back valve; there is also a notch on the edge of the back valve, partly covered by an extra layer of clay. The pouring gate must have been at the terminals (at the bottom as illustrated).

The surviving matrix is for part of the hoop and one round terminal of a penannular brooch about 60 mm wide. The hoop as cast had a flat back, a convex front and a panel of fine linear decoration in relief. The two border lines stood higher than the transverse infill. The round terminal had a central boss, possibly with a flat top, surrounded by two fine raised mouldings, and was backed by a cusp.

- 53–55 Parts of the front and back valves of a mould for two small decorated penannular brooches; 53 and 54 from *G level 2, sf 12*, 55 from *FF level 3, sf 19*. The front of the gate, 54, fits the back 53, while the other front piece 55 almost certainly fits 53 also, and has the same colour and texture. If 55 is not part of the same mould it belongs to an identical one (illus 23, 26). The mould has a double gate leading to the hoop of a brooch; from its terminals there are two leads to the hoop of a second brooch. The brooches were 27 mm wide, their backs plain and flat, their fronts decorated. The expanded terminals had a pattern of triple-twisted, two-line skeins in relief (impressed in the matrix) and a flat-topped knob where they met the hoop; in the centre of the hoop was a group of three small knobs surrounded by a band filled with fine transverse relief lines which circled tightly round the knobs and was itself interlaced to form another simple skein pattern. The front valve preserves only the terminals of one brooch and the hoop of the second, but it is most likely that the brooches were identical and made from the same pattern.
- 56 The lower part of the back valve of a mould similar to 53–55 for a brooch with expanded terminals, but not part of 53. It may be unused. *G level 2, sf 12* (illus 23).
- 57 Part of a back valve of a similar mould for two penannular brooches, but with the brooches cast upside down. There is a double lead from the gate to the brooch terminals. *G level 2, sf 10* (illus 23).
- 58–59 The lower part of a back valve, 58, of a mould similar to 57 and possible part of it, from *F level 3 sf 13*, and a joining fragment of the front valve, 59, from *F, level 3, sf 19*. The front valve has skein decoration on the brooch terminals identical to that on 55, and the matrices were probably made from the same pattern (illus 23, 26).
- 60 Part of a front valve with a gate and two leads. It is similar to 54, but cannot be compared closely since much of the surface of 54 is damaged. This may be part of a brooch mould. *G level 2, sf 12* (illus 23).

#### *Other objects 1*

- 61 Small fragment of the edge of a front valve. The matrix is worn but preserves part of a ring, or the hoop of a brooch, decorated with raised lines and a transverse bar or stop at each end, similar in size to brooches 53–9. If this is the panel at the top of a brooch hoop, then the brooch was cast upside down like 58. If not a brooch, it may be the edge of some disc or ring-shaped object. *G level 2, sf 13* (illus 23).
- 62 Part of a mould for a large ring-shaped object, flat on one side, possibly the hoop of a large brooch at least 5 mm wide. Diameter perhaps around 110–20 mm. *F level 2, sf 15* (illus 23).
- 63 Part of a back valve with the matrix for a flat object with curved edge and a flat channel leading to it, either part of the object or a wide lead. *F level 2, sf 15* (illus 23).
- 64 Part of a back valve, the gate having two wide splayed leads to the corners of a flat plate. This had concave sides and two rounded corners, each with a knob on the matrix to make a rivet hole in the plate. Another tiny separate fragment preserves a third corner also with a rivet hole. Maximum width of object 42 mm. *G level 2, sf 12* (illus 23).
- 65 Part of a back valve with gate and single lead for a circular object slightly convex at the back, about 70 mm diameter. *FG level 2, sf 4* (illus 23).
- 66 Fragment of a back valve, 42 mm long, with part of the gate and matrix for a curved object similar to 65. *G level 2, sf 5*.
- 67 Part of a back valve, 65 mm long, for a flat object with curved edge. The matrix has an uneven surface. *G level 2, sf 7* (illus 24).
- 68 Part of a back valve for a thin flat circular (?) object. If a complete disc, the diameter was about 120 mm. *FF level 6, sf 31 (below hearth paving)* (illus 24).
- 69 Part of back valve, 38 mm long, with matrix for part of a flat object with curved edge. *FF level 4, sf 26* (illus 24).
- 70 Small piece of back valve, 30 mm long, thicker than 69, with similar matrix. *G level 2, sf 13*.
- 71 Fragment of a back valve, 21 mm long, for a thin flat object with curved edge, probably a different mould to any of the above. *G level 2, sf 11*.
- 72 Two pieces of the edge of a mould for a circular object, slightly convex on one side, about 80 mm diameter, and 6 mm thick, so thinner than 62 above. Larger piece 24 mm long. *G level 2, sf 8, 13*.



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ILLUS 23 Clay moulds for penannular brooches and other objects (scale 2:3)

- 73 Part of a back valve for a circular object, convex at the back, about 50 mm diameter. The matrix reaches the edge of the mould, there is no flange. *FG level 2, sf 2.*
- 74 Part of a back valve for a thin elongated object with flat back and curved end. Fragment 31 mm long; object about 7 mm wide. *G level 2, sf 13 (illus 24).*
- 75 Small fragment, 21 mm long, of the front valve for a plain flat object, with straight or possible concave side. If concave, this may be related to the back valve 64. *G level 2, sf 8.*
- 76 Small fragment, 30 mm long, of mould for flat object with straight side. *FF level 4, sf 38.*

#### *Small pins*

- 77, 78 Part of the back valve, 29 mm long, and front valve of a mould for three or more small pins. The two pinhead matrices are for ball-shaped heads, flat on top, and there is part of the shaft of a third pin. Almost the whole depth of the pinhead is sunk in the back valve, so on the front valve it appears to be simply round. The key sockets of the edge of this mould are thin and elongated. The two pieces were found together. *G level 2, sf 12 (illus 24).*
- 79 Tiny piece of mould, 17 mm long, with the head of a pin. The pin had a round head topped by a flat disc. *G level 2, sf 29 (illus 24).*
- 80 Fragment of edge of mould with part of pin shaft, possibly from a mould similar to 78. Shaft 7 mm long. *F level 2, sf 2.*
- 81 Small burnt mould fragment, all edges broken, 15 mm long, with parts of two pin shafts side by side; possibly from a mould similar to 78. *G level 2, sf 8.*

#### *Other pins*

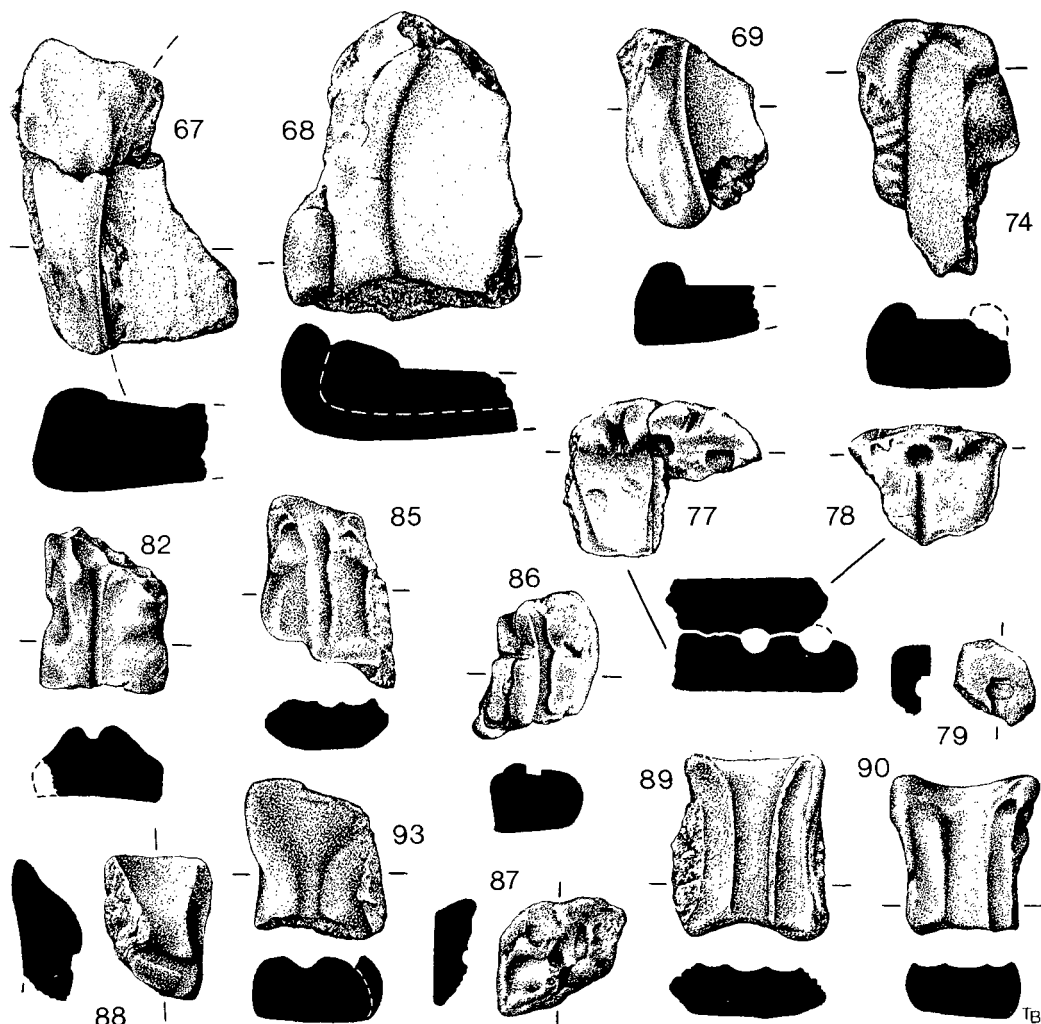
- 82 Part of back valve, 32 mm long, with part of gate leading to a single narrow channel, perhaps a pin shaft. *F level 2, sf 10.*
- 83 Fragment of a narrow mould, 20 mm long and 20 mm wide, with a single pin shaft, broken each end. *J level 2, sf 9.*

#### *Other objects 2*

- 84 Small burnt fragment of straight edge of mould, 19 mm long, with a pin shaft or rod having three transverse mouldings, and a trace of another shaft parallel to the first. *FF level 3, sf 16.*
- 85 Part of front valve of mould and gate, 42 mm long, with an irregular matrix for a pin shaft or a curved object. There is an elongated key on the face of the mould. *F level 2 (illus 24).*
- 86 Part of a back valve, 22 mm long, for a curved object with a flat back. If circular, the diameter was about 80 mm, and the ring is 3 mm wide. The mould was made as a ring with a hole in the middle, for both sides are preserved. At the bottom in the drawing there is a peculiar feature, for the object bends at 90° and sticks down into the mould like a short pin, 8 mm long, not quite reaching the back. *G level 2, sf 5 (illus 24).*
- 87 Part of the end of a thin front valve, 27 mm wide, with a broad flat flange carrying three elongated keys. The central area has lost its surface and the right side is missing. The only trace of the matrix is a small blackened hole for a boss or rounded knob. This might be part of a handpin mould, with the pinhead about 10 mm wide; the shape and size are right and the surviving knob is in the correct position to be the end of a 'finger'. *FF level 4, sf 34 (illus 24).*
- 88 Part of a gate from a front valve and part of the matrix retaining a small rectangle, 11 mm by 7 mm, with a raised edge. *F level 2, sf 6 (illus 24).*

#### *Gates*

- 89 Part of front valve with broad lead, 32 mm long. *FF level 2, sf 14 (illus 24).*
- 90 Part of front valve with broad lead, 28 mm long. *FF level 4, sf 33 (illus 24).*
- 91 Part of front valve with single narrow lead or matrix or pin shaft, 24 mm long. *FF level 4, sf 38.*
- 92 One corner of a front valve, 25 mm long. *F level 2.*
- 93 Part of back valve 28 mm long. *F level 2, sf 9.*
- 94 Part of back valve split down the middle, 30 mm long. *G level 2, sf 7.*
- 95 Top of back valve, 20 mm long. *G level 2, sf 34.*
- 96 Top of back valve, 24 mm long. *FF level 4, sf 20a.*
- 97 Fragment. *FG level 2, sf 8.*



ILLUS 24 Clay moulds (scale 2:3)

- 98 Fragment. *G level 2, sf 8.*  
 99 Fragment. *J level 1, sf 2.*

#### *Other fragments*

- 100 Part of a large mould with the edge of a matrix for a ring or hoop, 24 mm long, thickened towards the middle. Possibly part of the large brooch mould 47. *F level 2, sf 5.*
- 101 Seven small fragments of the edges of relatively thin moulds, the largest piece 22 mm long; most may belong to brooch moulds 53–8. Five fragments *G level 2, sf 13*, the others *G level 2 sf 5* and *FG level 2, sf 8.*
- 102 Four small fragments, the largest 18 mm long, broken from a long narrow mould or moulds, convex in section. No matrix preserved, but the shape suggests moulds for single pin shafts. *F level 2, sf 17; FF level 3, sf 18; FF level 4, sf 32; G level 2, sf 10.*
- 103 Twenty-four fragments of moulds from 12 to 34 mm long, most tiny and without any trace of matrix.

*G level 2, sf 5 (two pieces), 40, 48 (two); F level 2, sf 2, 5, 6 (four), 11 (two), 17; FF level 3, sf 4, 13; FF level 4, sf 21 (four), 25, 28, 33, 34.*

103a Fragment. *FF level 6 (below hearth paving), sf 39.*

Interior: between ramparts 1 and 2.

104 Part of back valve 28 mm long with raised border and part of matrix for flat object with curved edge; similar to 69. *M level 2, sf 15.*

#### Discussion

The clay moulds show considerable uniformity in technology, texture, colour, key patterns and so on, and are here treated as a single chronological group. They may all have been made within a few weeks or even days. The moulds for recognizable objects comprise: a mould (or parts of two moulds) for a large penannular brooch, 47–9; a mould for a brooch with round terminals, 50–1; parts of three or more moulds for casting pairs of small brooches with triangular terminals, representing at least six brooches, 53–9; eight or so moulds for large flat disc or ring-shaped objects, some of which could be the backs of brooch hoops; a plate with concave sides and rivet holes in the corners, 64; multiple moulds for small pins, 77–9; parts of mould gates and other fragments. The minimum number of separate moulds represented seems to be around 22.

#### *Penannular brooches*

The brooch fragments 47–9 have features relating them to brooches in the St Ninian's Isle hoard, and the other brooches could fit into a similar context. The smaller brooches will be considered first. The brooch with round terminals and a rectangular panel on the hoop, 50, is related to brooches from the Croy hoard and from Ervey Crannog, Co Meath (Wilson 1973, pls 38a, 42e). Stevenson (1974, 36) sees such disc-ended terminals as coming late in the Pictish series. The small brooches with triangular terminals, 53–9, are too simple to make much of any comparisons. They are generally similar to a small brooch with triangular terminals from North Uist (Close-Brooks & Maxwell 1974, fig 1, no 959) and to moulds for making small brooches from Birsay (Curle 1982, 111, nos 305–10, ill 16), though perhaps less similar to a small brooch from Coll (*Proc Soc Antiq Scot*, 15 (1880–81), 79–80, fig 1). Such small brooches are probably contemporary and cheaper versions of large brooches with more elaborate triangular terminals. The skein pattern (this useful term was coined by Elizabeth Fowler) on 55 and 59 is again a simple motif, found only occasionally on metalwork, for instance on the elegant brooch from Co Cavan (Cone 1977, 141–2, no 41) or on an Anglo-Saxon disc from White Low, Derbyshire (Ozanne 1962, 27, fig 11). As one element in more complex interlace pattern, it could appear on its own at any time (Nordenfalk 1977, fig III, top). A comparable Birsay brooch also had a simple raised motif, a triple loop (Curle 1982, ill 11, no 305). There is no obvious analogy for the three knobs surrounded by milled bands of the hoop of 55.

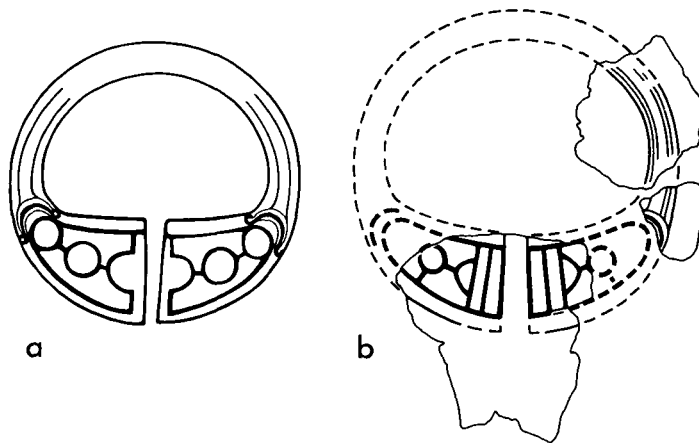
The large brooch fragments, 47–9, will be discussed as a unit, for if the hoop and terminal fragments belonged to different but contemporary moulds this would not affect the argument. Penannular brooches with larger triangular terminals are found in the later Pictish series described by Wilson (1973). Other features typical of brooches in this series are the ribbed hoop and the cusp on moulds 48 and 49. Wilson has used the term cusp for an arc, rising towards the centre of the brooch, found at the junction of hoop and terminal, and sometimes at both ends of the central panel on the hoop. Stevenson (1974, 36–8) has commented on the development in the eighth–ninth centuries of pseudo-penannular brooches in Ireland and penannular brooches in Scotland, after the magnificent examples of Tara and Hunterston, which he dates to around AD 700. Among the Picts shapes of terminals other than triangular became popular. Indeed, once those apparently penannular brooches with triangular terminals which are actually pseudo-penannular brooches whose connecting bars



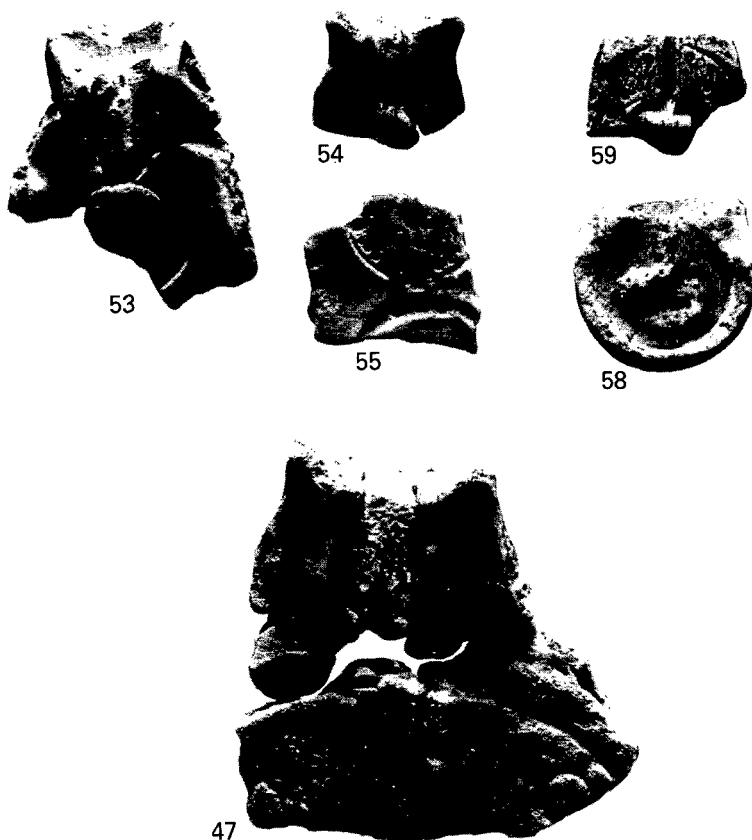
have been cut (Stevenson 1974, Table 3) have been eliminated, only a few larger brooches with triangular terminals remain for comparison; two with flared terminals from the St Ninian's Isle hoard (Wilson 1973, pls 31, 33c), a fragment from Croy (*ibid*, pl 38b), a brooch from Aberdeenshire (*ibid*, pl 44c), an unusual brooch from Canterbury, Kent (*ibid*, pl 44d) and a brooch long said to have been found near Perth (*ibid*, pl 43). Stevenson (1985) has now shown that the last was originally 'said to have been found near Cluny Castle' (between Blairgowrie and Dunkeld). Much the closest comparison for the Clatchard mould is with this Cluny brooch, but too much should not be made of the geographical proximity, since the find spot is still uncertain. The two brooches are very similar (illus 25).

The outline of the pattern on the terminals is the same, as first recognized by Claris Hastings, with raised mouldings framing circular and semi-circular cells connected by short bars within a triangular frame, and with a flat flange outside the mouldings. The background on the terminals of the Cluny brooch is filled with careless cast interlace, but the Clatchard terminals as cast would have been plain with mouldings outlining blank cells, the general effect being shown by the fragment from Eia, Sogndal, Norway (Wilson 1973, pl 47c). These cells were probably inlaid with filigree, not of such good quality as on the Hunterston brooch, but perhaps similar to the simpler filigree inlays on brooches such as Kilmainham and Breadalbane, and another brooch said to have been found with the one already mentioned 'near Cluny Castle' (Wilson 1973, pls 47a, 46a, 42d). This second Cluny brooch has an interesting mixture of cast decoration and applied filigree. All the brooches with applied filigree so far known are of silver, albeit generally bad quality silver, so the find of the silver ingot 121 in the same general context as the brooch moulds 47-9 may be significant. The ribbed decoration of the hoops on moulds 48 and 49 is related to that on the second Cluny brooch and on some brooches in the St Ninian's Isle hoard.

Unfortunately, it is not possible to arrange the later Pictish brooches in chronological order. Apparent degeneration patterns, as from fine filigree to cast interlace, and from attached bird's heads to cast skeuomorphs, may simply represent contemporary but cheaper versions. The disc-ended terminals of 50 could be seen as late in the series, but the triangular terminals of the small brooches on moulds 53-9 and the large brooch on mould 47 do not flare inwards like those on the two brooches from the St Ninian's Isle hoard and the small brooches on the Birsay moulds, and this could be an earlier trait. The Clatchard moulds do not seem to be for the latest brooches in the series, such as the



ILLUS 25 Diagram of designs on a, brooch from 'near Cluny Castle' b, mould fragments from Clatchard Craig (tentative reconstruction) (scale 1:3)



ILLUS 26 Clay moulds for penannular brooches (53, 54, 55, 59, 58, 47) (scale 2:3)

new brooch from Aldclune, Perthshire (Stevenson 1985), but cannot otherwise be more closely dated than to the eighth century AD. They provide a small but valuable group of brooch moulds from southern Pictland to set against the only other brooch moulds so far found in Pictland, those from Birsay in the north.

#### *Other objects*

Of the plate with concave sides, 64, little more than one corner of the back survives on the mould, and it is not easy to identify. If reconstructed symmetrically with a rivet hole in each corner and cast decoration on the missing front, it might have been a decorative plate similar to an Anglo-Saxon piece from Bjorke churchyard, Norway, which Wilson (1964, 13, pl 1c) suggests may be from a box or book-binding. Another interpretation, perhaps less likely, would be that folded in half it formed the attachment plate for a buckle.

The multiple moulds for small pins, 77-9, have close parallels at Birsay (Curle 1982, ills 18, 57), Mote of Mark (Curle 1914, fig 15), Dunadd (Craw 1930, fig 7) and Dunollie (Alcock 1978, fig 2); at Birsay they seem to be eighth-century like the brooches.

The fragment of ring-formed mould for casting a ring(?), 86, is paralleled by a rather similar fragment among the later group of moulds, perhaps of the seventh-eighth centuries, from Gurness (Close-Brooks 1987).

The identification of 87 as part of a handpin mould is very tenuous. However, the shape of the valve is right, so far as it goes, and its thinness is typical of the top of front valves for projecting-headed

pins, judging by those from Gurness. If indeed for a handpin, it was probably a late type. A pin of Duignan's (1973) Class IIIa, imperforate and loopless, comes from Dunadd (Stevenson 1955, fig B, 15) and a mould for another from Gurness (Close-Brooks 1987); Stevenson (1955) argued for a seventh–eighth-century date for these, so an eighth-century handpin mould at Clatchard is not impossible.

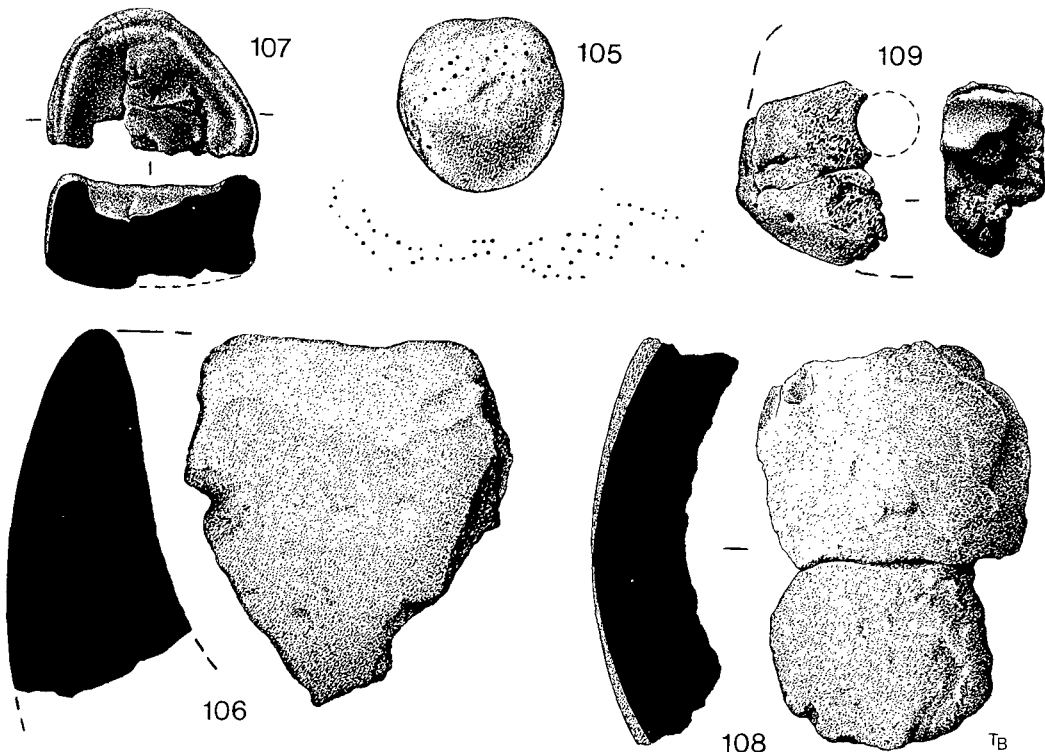
OTHER FIRED CLAY (illus 27)

- 105 Pottery ball, irregular shape, 35 mm diameter, with an irregular pattern of pricked holes. *H level 21, sf 21 (fall of rampart 3)* (illus 27).

There is a similar ball from Traprain Law, where plain clay balls were also found (Curle & Cree 1916, 68, fig 40, 7). These, as Dr D V Clarke first suggested, may be gaming pieces closely related to small stone balls from Traprain Law, Broxmouth, and other Iron-Age forts in south-east Scotland (Close-Brooks 1983b, 222; Cool 1982). The pricked decoration may have distinguished important pieces or 'kings'. Such clay and stone balls could have been used with a dimpled board or on sand as Henshall (1982, 231–2) notes for glass balls, or they could have been rolled like marbles. The only dated balls are those from Broxmouth (Cool 1982) and Kaimes Hill (Simpson 1969, 26) found in contexts of the fourth century bc.

- 106 Rim from a thick-walled, curved sided vessel, 35 mm thick, with a few large grits; it has been fired to a high temperature. Buff-brown inside; orange outside, blackened towards base. It could be part of a large crucible or lamp. *F level 2, sf 16* (illus 27).
- 107 About half of a small oval crucible with flat base, 20 mm high, 41 mm wide. The upper surface is vitrified, smooth, glossy red and black. X-ray fluorescence analysis in 1974 showed high lead and a little tin on this surface. *FF level 3 sf 8* (illus 27).

There are two similar crucibles, not vitrified, from Birsay (Curle 1982, 41–2, nos 410–11). Bayley (1982, 492) has discussed similar finds from England and Scandinavia, often described as heating trays, and



ILLUS 27 Baked clay objects (scale 2:3)

they are also found on Irish sites including Lagore (Hencken 1950, 237, fig 117). They are characteristically found with metalworking debris and have a high lead content on the vitreous upper surface, but their use is at present unknown. Bayley discounts suggestions that they were used to hold fine metalwork while filigree or granulation was attached, or that they were heating trays used for small-scale cupellation or refining of silver. Their use as heating trays for enamelling is also doubtful (Bayley, pers comm).

#### HEAVILY BURNT CLAY: MOSTLY METALWORKING DEBRIS

- 108 Part of an object, the outer surface curved in both directions, the inner surface lost. Burnt orange and pink, some small stone grits; surviving length 80 mm. Perhaps from a large crucible, or some other object related to metalworking? *G level 2, sf 20 and 53*, joined (illus 27).
- 109 Fragment of an object with part of a smooth cylindrical perforation; the end is heavily burnt and partly vitrified. Part of a tuyère? *FF level 4, sf 32 (in collapse of rampart 1)*.
- 110 One large piece and some smaller fragments of an object with one curved and heavily vitrified corner; 65 mm long. Possibly from a tuyère, but no perforation survives. *E level 11 (base of rampart 2)*.
- 111 Large lump of burnt clay, 72 mm long. Heavily vitrified. *A level 7, sf 7 (upper stones of rampart 2)*.
- 112 Fragment, 38 mm long, with smooth inner surface, outer surface lost. Possibly from 106 or similar vessel. *FF level 3, sf 17*.
- 113 Large featureless piece, 40 mm long. Perhaps a lump of the clay used for making the moulds, accidentally fired? *F level 2, sf 6*.

A few small pieces of burnt clay, some partly vitrified, have not been separately catalogued. It is not easy to decide if they are mould or metalworking debris, or accidentally fired clay. They were found as follows; *G level 2, sf 27, 33, 47; M level 2, sf 15 (vitrified); Q level 4 sf 15 (vitrified)*.

#### BONE

- 114 Hollow bone knob with a perforation on the underside, 18 mm wide; conventionally identified as a pinhead. Found with it is a short bone pin, broken at one end, now 13 mm long, which fits the hole in the knob. Both pieces are burnt. *FF level 3, sf 15 (illus 28)*.

This bone knob belongs to a well-known group made from sections of hollow long bone which are closely related to solid round or bun-shaped knobs made of bone or animal teeth, all perforated below and sometimes retaining part of an iron or bone pin. They are known chiefly from broch or wheelhouse sites in the far north. Long thought to be pins, they were listed as such by Stevenson (1955, 292–3). Since then those from Burrian and Birsay have been fully published (MacGregor 1974; Curle 1982). The three more southerly findspots are widely scattered: Buston Crannog, Ayrshire; Corbridge, Northumberland; and Clatchard Craig. The distribution may partly reflect differential preservation due to soil conditions.

The identification as pinheads depends on a round knob from the Broch of Ayre, Orkney, with an iron pin some 54 mm long below the head. The writer believes that many of these knobs, particularly those flattened below, are actually pegged playing-pieces used with perforated boards or just stuck in the ground. The discovery of some 11 examples at Ballinderry Crannog, five apparently found together, may support this view. The same arguments apply to the large jet or shale 'pinheads', usually with flattened bases, from various sites including Traprain Law (at least 14 knobs), Mote of Mark (Curle 1914, 161–2), Birsay (Curle 1982, 66–7), and Hill of Crichtie (13 knobs; Ralston & Inglis 1984, 57–8).

#### SHALE

- 115 Part of an armet, D-shaped section, flat underneath (perhaps originally round, now split); 16 mm wide. *H level 24, sf 33 (fall of rampart 3)* (illus 28).
- 116 Part of an armet, D-shaped section, flat inside, 9 mm wide, estimated diameter 90 mm. *From 1954 excavation, Cutting II, make-up of rampart 4, lower core centre* (illus 28).
- 117 Most of a ring, flattened in section, 20 mm diameter. *H level 14, sf 29 (on the rock, in or under rampart 2)* (illus 28).
- 118 Large oval slab, 185 mm long, with a crudely chiselled central perforation. Perhaps a roughout for a large armet? Found on Clatchard Craig by Mrs Bell before 1974. Perth Museum (illus 31).

Part of a rectangular block of shale, 85 by 72 by 22 mm, found in Trench G, seems to be unworked and has not been catalogued. It may represent the raw material from which the pieces above were cut.

Fragments of shale armlets occur frequently on Iron-Age sites, but may also occur in late contexts, for instance those in Norse horizons at Birsay (Curle 1982, 118). Nos 115–17 were found in or under ramparts, and may well be Iron-Age. The stout ring, 117, has too small a central hole to be a finger ring, and may have been strung as a bead. It might be related to the larger rings from the neighbouring fort at Castle Law, Abernethy (Christison 1899, 30) and from Finavon (Childe 1935, 74–6). There are rather closer parallels in rings from Castle Law, Glencorse (Childe 1933, 385) and from Traprain Law.

#### VESSEL GLASS

John Hunter

- 119 Body fragment, 15 mm long, from a blown vessel of thin yellow-green glass with traces of three applied narrow trails. Type of vessel indeterminable, although probably of a tall beaker type. A fifth-century date is suggested. *From the 1959–60 excavations, no find spot recorded* (illus 28).

#### GLASS BEAD

Margaret Guido

- 120 Annular bead of opaque dark olive-green glass with an applied angular wave in opaque yellow; 15 mm diameter, 8 mm high. *FG level 1 or 2, sf 1* (illus 28).

Such beads are fairly widespread in Northern Europe and are known from a number of Anglo-Saxon cemeteries. They date mostly to the fifth–sixth centuries AD, or not long after. X-ray fluorescence by Dr J Tate gave the following results. The yellow glass showed mostly lead and tin with small amounts of iron, manganese and calcium. The colourant was therefore most probably lead–tin oxide, there being no trace of antimony. This is to be expected in post-Roman glass (Biek & Bayley 1979). The dark green glass showed far less lead and tin, together with the appearance of copper. The colour probably comes from the combination of copper and iron in the leaded glass.

#### SILVER

- 121 Bar-shaped ingot, tapering very slightly to one end, the faces concave and the sides faceted; 73 by 10 by 5 mm. Weight 28.42 g. *FF level 4, sf 40* (illus 28).

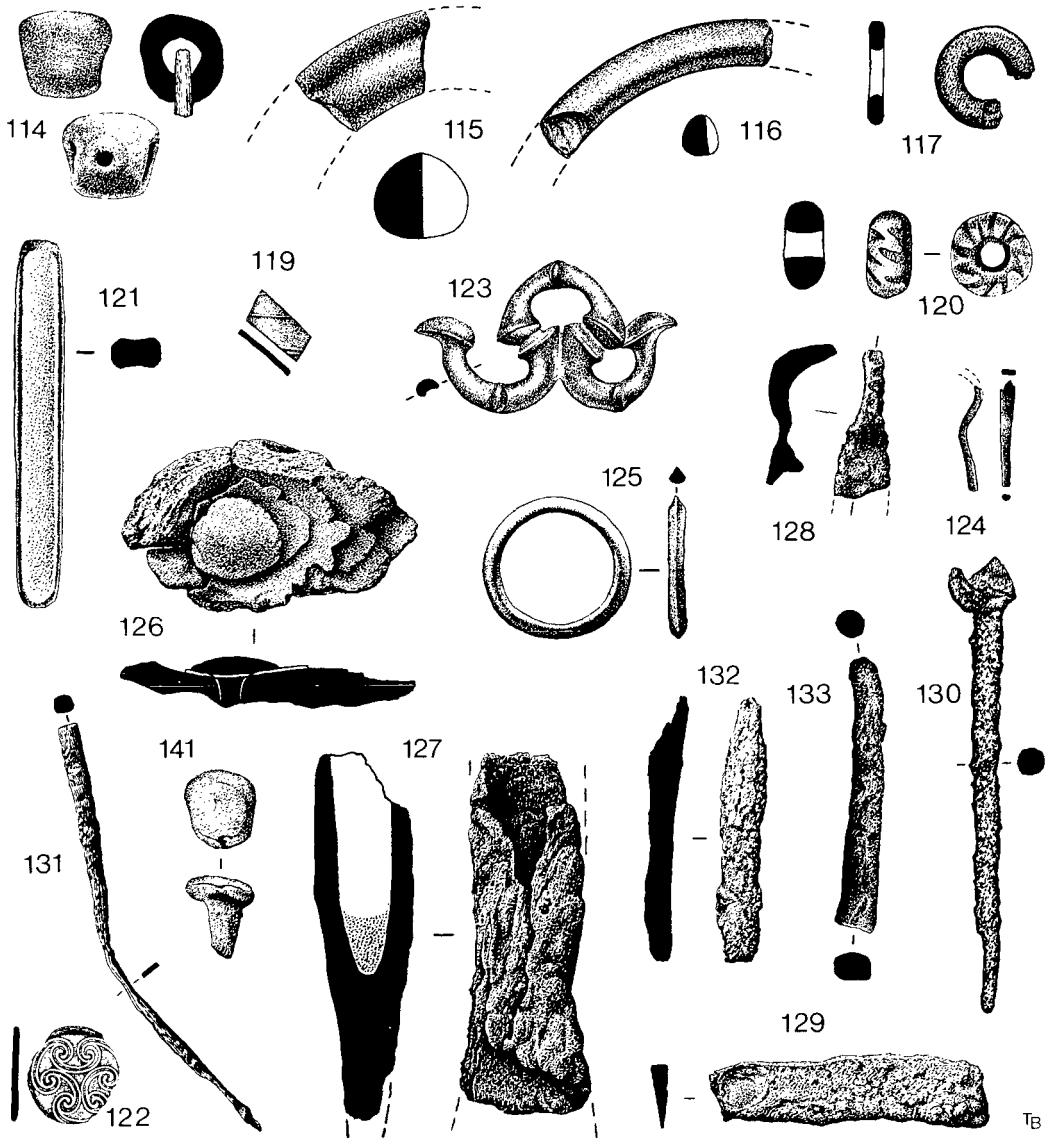
X-ray fluorescence analysis of the surface of this object by Nick White in 1981 gave the following result:

	Copper	Zinc	Lead	Silver
Uncleaned:	17.2%	1.9%	1.5%	79.4%
Cleaned:	20.7%	1.8%	1.5%	76.1%

Also present were traces of Gold (0.5%) and Bismuth.

There are parts of similar ingots in a hoard from Oldcroft, Glos dated by 3335 coins to about AD 354–9 (Rhodes 1974). Other similar ingots appear in Viking-age hoards, and in particular in many of the 10th-century Norse coin hoards in Scotland (Graham-Campbell 1976). The latest example seems to be the piece in the Bute hoard of around 1150 (*ibid*, 123–4). Such silver ingots had a long life. Although a Norse coin hoard of c AD 1025 with ‘gold chains and bracelets’, now lost, was found close by the hill at Parkhill, Lindores (*ibid*, 128–30), the Clatchard ingot probably belongs to the Pictish metalworking phase with the brooch moulds.

There are few relevant analyses for comparison. The old analysis of the Pictish massive silver chain, perhaps seventh century AD, from Hoardweel, Berwickshire, showed it to be 76.5% silver, and 19% copper, similar to the Clatchard ingot (Smith 1881). Recent XRF analysis of part of another chain from Nigg Bay, Kincardineshire shows 92.7% silver (Inglis & Ralston 1984, 55). On the other hand chemical analyses of the brooches and brooch pins in the St Ninian’s Isle hoard (Small *et al* 1973, 174–5) showed them to be generally base silver with large amounts of copper and a little tin, but all different and ranging from 26% silver and 70% copper (brooch 28) to 91% silver and 5% copper (brooch pin 25). Nine brooches and six pins had less than 50% silver in their composition. It looks as though tin bronze was often added to purer silver to make it go farther when casting brooches.



ILLUS 28 Objects of bone 114; shale 115-17; glass 119-20; silver 121; bronze 122-5; iron 126-41 (scale 2:3)

BRONZE OR COPPER ALLOY

122 Flat disc, decorated on one face; corroded and powdery, with much of the edge missing; estimated diameter 22 mm, thickness about 10 mm. The cast design of six interlocked peltas is formed from pairs of thin lines of metal set against a recessed background which may once have held enamel, with a plain border, mostly missing. *P level 2, sf 11* (illus 28, 29).

X-ray fluorescence analysis of this disc in 1974 showed that, in its present degraded state, it is at least 90% tin, with very small amounts of lead and copper, a mere trace of silver, and no antimony; but it may

originally have been a tin-bronze. R Bruce-Mitford has kindly drawn my attention to an analysis from Sutton Hoo, which shows that while one end of the suspension ring from escutcheon 1, hanging-bowl 3, has tin as its major element, with some copper also present, the other end has about equal amounts of tin and copper (Bruce-Mitford 1984, 314). The report suggests that the ring was originally a fairly normal tin bronze, and that its present state may be due both to differential segregation in the alloy during cooling, and to corrosion whereby copper has leached out of the ring leaving behind a network of tin oxide. This process could explain the present composition of the Clatchard disc.

The disc is closely related to the escutcheons and discs of hanging-bowls. It is perhaps nearest in its threefold layout to Longley's Group 4 (Longley 1975, 25–7, fig 15) in which decoration, typically of 'Dunrobin spirals', covers the surface in a whirling triskele design, though peltas are more common in other groups. Peltas feature most frequently on Group 1 openwork escutcheons which Stevenson (1976, 250–1) suggests may be seventh century, and occasionally on the border of Group 2 pieces (Longley 1975, fig 10; Kilbride-Jones 1980, figs 77, 80, 83). Peltas occur on hanging-bowls at Sutton Hoo in a few cases; round the edge of the fish escutcheon, in the centre of an escutcheon on bowl 1 (perhaps of c AD 600) and as a plain four-pelta pattern on an escutcheon on bowl 3 (Bruce-Mitford 1984). All these, however, have peltas arranged in even numbers, usually two, four or eight, often in a cruciform arrangement. The triple design of the Clatchard piece, and its technique, link it with the smaller and simpler discs of Longley's Group 4. All of this would be consistent with a date in the later sixth to the mid seventh century, as suggested by Longley (1975, 27) for the majority of his Group 4 pieces.

The Clatchard disc, with a diameter of 22 mm, is smaller than any of the hanging-bowl discs except the tiny and untypical discs on the base of the Lullingstone bowl (Kendrick 1932, pl 4). The smallest typical discs seem to be two from Stoke Golding, the smallest 24 mm in diameter, and one from Kingston (Longley 1975, fig 15g, h, i). While all these discs are from hanging-bowls, the Clatchard disc could have belonged to some different object. An instance in a slightly later context would be the discs, some 17 mm in diameter, on the back of the Breadalbane brooch (British Museum 1923, 135, pl 12).



ILLUS 29 Decorated disc 122 and openwork ornament 123 (scale 1:1)

- 123 Cast openwork ornament, 52 mm long, 3 mm thick. The individual elements are slightly concave at the back. *P level 2, sf 2* (illus 28, 29).

The pattern is built up of three curved elements ending in trumpet mouldings. These are arranged symmetrically but for one free end. A similar arrangement of three curves occurs on the neckguard of an unprovenanced, possibly North British helmet (MacGregor 1976, 89–90).

This piece belongs to a large group of openwork mounts which have been found in Roman military contexts and come from auxiliary equipment. Oldenstein (1976) illustrates numerous auxiliary fittings from the frontier forts of Upper Germany and Rhaetia. These have a wide range of openwork decoration, some of Celtic inspiration. The Clatchard piece is closest to his group of 'fittings with trumpet ornament', small pieces mostly without obvious means of attachment or use (*ibid*, 203–7, pls 69–70). While many are undated, the range seems to be from the middle of the second to the early third century AD. The trumpet ornament is thought to show British influence, and related British pieces should be of similar date.

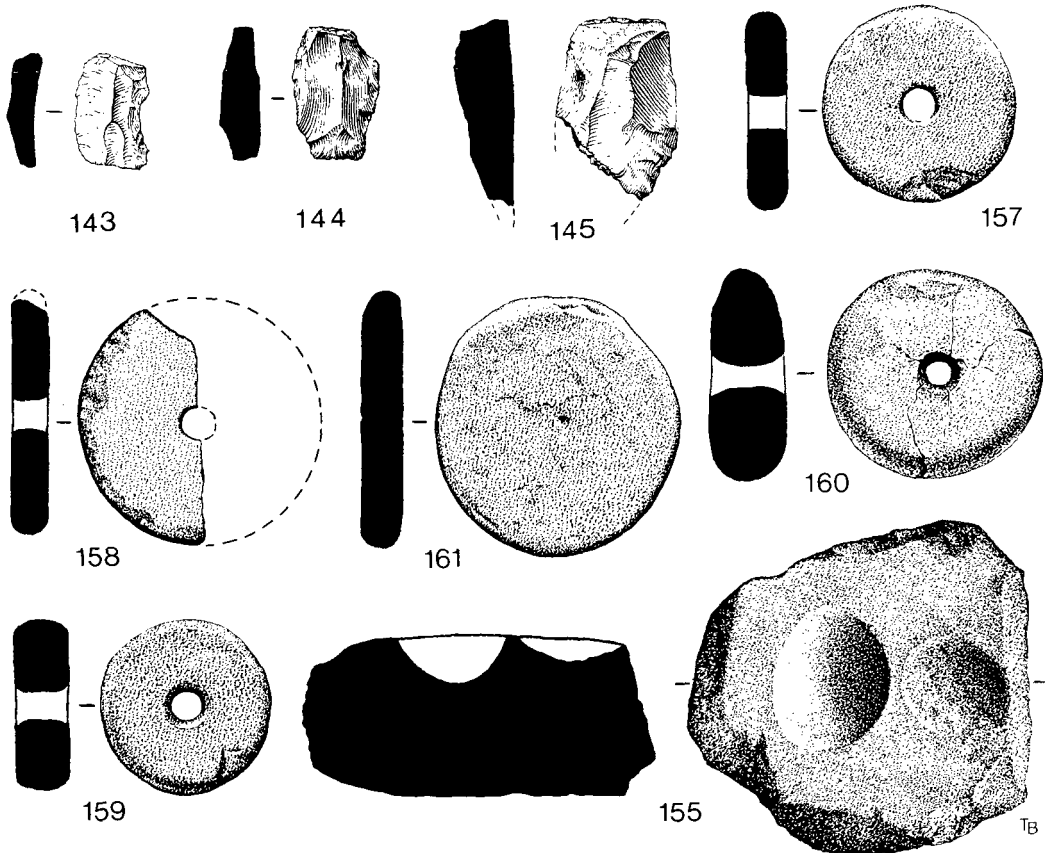
MacGregor (1976, 186–9) discussed such pieces from a North British viewpoint. Examples have been found mostly at Roman forts, with several from Corbridge; in Scotland pieces have been found at Newstead and at the native sites of Castle Law, Glencorse and Traprain Law. She argues for native manufacture of some pieces. The Clatchard mount, which is connected not only by its layout but also by its trumpet mouldings to other North British pieces such as the Deskford carnyx and the massive armlets (MacGregor 1976, nos 188 & 231–50) may well be British made. There is a fragmentary openwork fitting from Carpow (Birley 1963, 206, fig 11, no 8) but it belongs to the general continental group with an exact parallel from Pfanz (Oldenstein 1976, pl 82, no 1084).

The use of the Clatchard fitting is obscure as it has no means of attachment. It was found with the brooch pin 124, but there is no wear or corrosion on the fitting, as there would have been if the pin was once attached to it, so it is best to regard the two pieces as separate.

- 124 Part of a brooch pin, now 22 mm long, part flattened and curved to fit over the hoop, both ends missing. *P level 2, sf 2* (illus 28).

This is probably the pin from a small penannular brooch with knobbed ends of the type often found on Roman and native sites of the first two centuries AD in Scotland. Those from Newstead (Curle 1911, pl 58 except nos 7 & 13) and Traprain Law (Burley 1956, 162–4) may serve as examples. Similar pins were used on dragoonish brooches.

- 125 Ring, 30 mm diameter; the section angular outside, rounded inside. *H level 31, sf 7 (fall of rampart 4)* (illus 28).



ILLUS 30 Objects of flint 143–5, and stone (scale 2:3)



## IRON

## Interior of fort, within rampart 1

- 126 Fragmentary object, apparently an iron plate, with all edges broken; 60 mm long. It has been covered on one side with some organic substance now perished, perhaps bone, and overlaid with bronze sheet, all held together by a flat-headed iron rivet. Perhaps part of the handle of an iron knife? *G level 2, sf 3* (illus 28).
- 127 Part of a socketed implement with flattened blade, broken at each end; now 71 mm long. *F level 2, sf 8* (illus 28).

This may have been a spearhead, but the proportions seem wrong. It might be a spud, a small agricultural tool used for weeding or cleaning spades etc. Rees (1981, 21, fig 21e) notes that Roman-British examples are quite common. A tool from the souterrain at Ardestie may be related (Wainwright 1963, 132, fig 36).

- 128 Small hook with part of attachment plate; the broken hook is round in section; the flattened plate has one rivet surviving. *F level 5, sf 12 (from the upper part of the hearth)* (illus 28).

Probably a hook to take the handle or suspension ring of a metal vessel. If contemporary with the hearth it may date to around the eighth century AD.

- 129 Part of a knife blade, flat on top, broken each end, now 57 mm long. *FF level 3, sf 7* (illus 28).
- 130 Pin or nail, with flat head in same plane as shaft, 9 mm long. An X-ray failed to reveal the form of the head, but it was not a ring head; it may have been a round knob. *FG level 2, sf 5* (illus 28).
- 131 Part of pin or rod, bent and corroded, section originally round; 92 mm long. *FG level 2, sf 6*.
- 132 Fragment of nail shank, 52 mm long. *G level 2, sf 25* (illus 28).
- 133 Fragment of nail shank, 53 mm long. *B level 8, sf 19* (illus 28).
- 134 Part of pin or nail shank, 59 mm long. *F level 2, sf 4* (illus 28).
- 135 Fragment of nail shank, 23 mm long. *FF level 3, sf 5*.
- 136 Corroded fragment of nail shank, 40 mm long. *B level 5, sf 15*.
- 137 Fragment of nail shank, 33 mm long. *J level 2, sf 20*.
- 138 Tiny fragment, perhaps nail shank, 35 mm long. *J level 2, sf 7*.
- 139 Fragment of curved iron rod, broken at each end, 35 mm long. Perhaps modern. *FF level 3, sf 30*.

## Trench E: core of rampart 2

- 140 Highly corroded object, possibly remains of head and part of shank of nail; now 29 mm long. *E level 9, sf 5*.

'Iron nails' were recorded at seven places in rampart 2 in trench E, but the others are small pieces of slag.

## Trench H: core of rampart 2

- 141 Head of nail, 15 mm diameter; shank broken off. *H level 13, sf 9* (illus 28).

## Trench H: fall of rampart 3

- 142 Fragment of nail shank, 41 mm long. *H level 21, sf 12*.

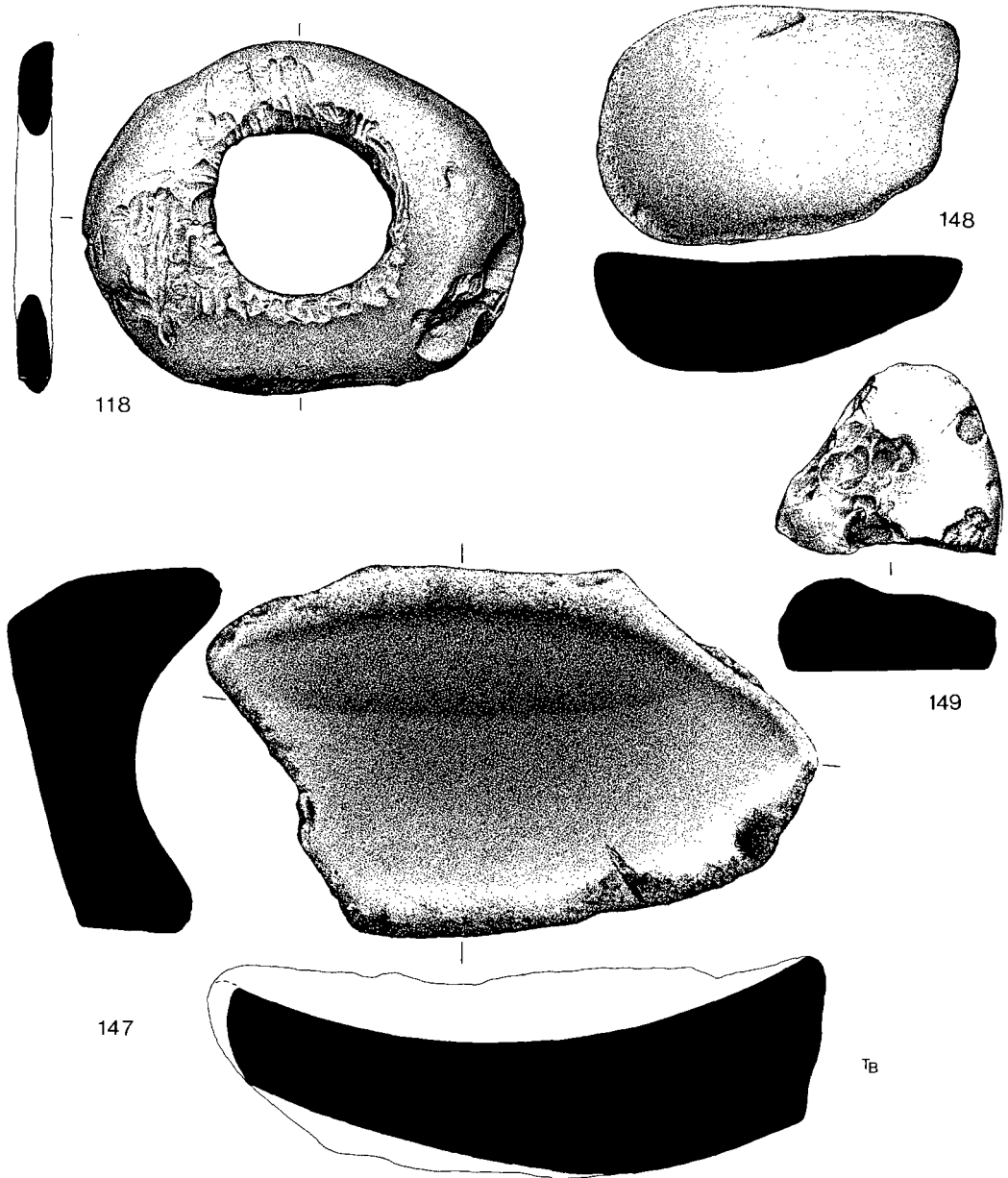
## STONE

## Flint artefacts

- 143 Short stout blade of yellow-brown flint, 22 mm long, with steep use-marks on the dorsal face along one concave edge. This piece and 144 were examined for microwear traces by Nicholas Card, who reports 'this piece has very probably been used as a strike-a-light along one lateral edge'. *FF level 4, sf 25* (illus 30).
- 144 Stout flake of grey flint, tip damaged; steep use-marks on dorsal face on both lateral edges; 26 mm long. Card reports 'this has probably been used as a strike-a-light, not so extensively as 143, but it shows evidence of use along both edges'. Found on Clatchard Craig by J S Richardson in 1951. RMS cat no AA 261 (illus 30).

Small flints used as strike-a-lights have been found at Mote of Mark (Laing 1973, 123). On this basis the Clatchard flints may be Dark-Age. It is, however, possible that similar flints were used in earlier contexts but have not been recognized. Curle mentions one from Traprain Law (Curle & Cree 1916, 84).

- 145 Thick burnt flake, damaged at both ends, 36 mm long. A little surviving retouch suggest it was a knife. *E level 7, sf 1* (illus 30).
- 146 Small flaked chunk of yellow-brown flint with patch of pebble cortex; 18 mm long. *M level 2, sf 14*.



ILLUS 31 Querns (scale 1:6); shale object 118 (scale 1:3)

## Saddle querns and rubbers

- 147 Deep saddle or trough querns of greenstone; 500 mm long, 300 mm wide. The quern is irregular in shape, and part of one end is missing (on the left as drawn). *Found on the quarry floor in 1966 by Mrs F Blair (Discovery Excav Scot 1966, 26). Perth Museum. (illus 31).*
- 148 Rubber of granite for a saddle quern; 300 mm long, 195 mm wide. The grinding surface is convex transversely, but concave longitudinally, and is worn out to the edges. Probably a rubber, just possibly a small saddle quern. *From 1954–5 excavation (illus 31).*
- 149 Part of a small basalt rubber for a saddle quern, the grinding surface flat all over (the upper surface is drawn); 150 mm long. *FG level 2, sf 9 (illus 31).*

The saddle quern rubbers and the trough quern could all belong to an early Iron-Age occupation on the site attested also by pottery and small stone balls. Though trough querns are more common in Bronze-Age contexts, they have been found in small numbers on early Iron-Age sites (Close-Brooks 1983a). Whether such pieces are really in use in the Iron Age or merely relics of early occupation is not yet clear.

## ROTARY QUERNS AND GRINDSTONE

- 150 Quernstone of psammitic schist, probably an upper stone. Now very friable, no original edges or surfaces preserved and handle hole lost; 347 mm diameter, 43 mm thick. *A level 3, sf 1 (in tumble from rampart 2) (illus 32).*
- 151 Small fragment of quernstone with two utilized surfaces, probably used in turn as both top and bottom stone; 138 mm long, 67 mm thick. *G level 2, sf 16.*

Thin, disc-shaped rotary querns were in use over a very long period, and their typology is not yet understood. There is at present no evidence for their use in Scotland before the first century BC (Henshall 1982, 237).

- 152 Grindstone of sandstone with cylindrical perforation; 322 mm diameter, 95 mm thick. The outer edge shows rotary wear and has worn very smooth. Parts of the top and bottom surfaces have flaked off, but where preserved they are smoothed and hollowed by use of a whetstone, or show knife cuts. Found in two pieces, both built into the front wall of rampart 2. *E level 10, sf 2 and 6 (illus 32).*

Grindstones with circular perforations, mostly smaller than the Clatchard stone, are known from Dark-Age contexts at Dunadd (Christison 1905, 308) and from Carraig Aille and Lagore in Ireland (O’Riordain 1950, 85–6; Hencken 1950, 173). There are three grindstones from Dunadd: one is comparable in size to the Clatchard stone but has a square axle hole. Later grindstones all seem to have square axle holes. Grindstones in Roman contexts seem to be most uncommon; there is, however, one example from Croy Hill (Macdonald 1937, 69–70), now in the RMS, reg no FR 510. This is not dissimilar to another grindstone from excavations in the amphitheatre at Chester (Thompson 1976, fig 30, no 68), which was found built into a post-medieval cellar, but has a cylindrical perforation and is probably Roman, since it has the stump of a leaded-in iron handle. This, and the rind slot, are unusual features for a grindstone. The grindstone from Clatchard Craig could be of Roman or Dark-Age date.

## Other stones

- 153 Small boulder of reddish sandstone with one face worn smooth and concave by use as a whetstone; 228 mm long. *Trench A or E, from rampart 2 (illus 32).*

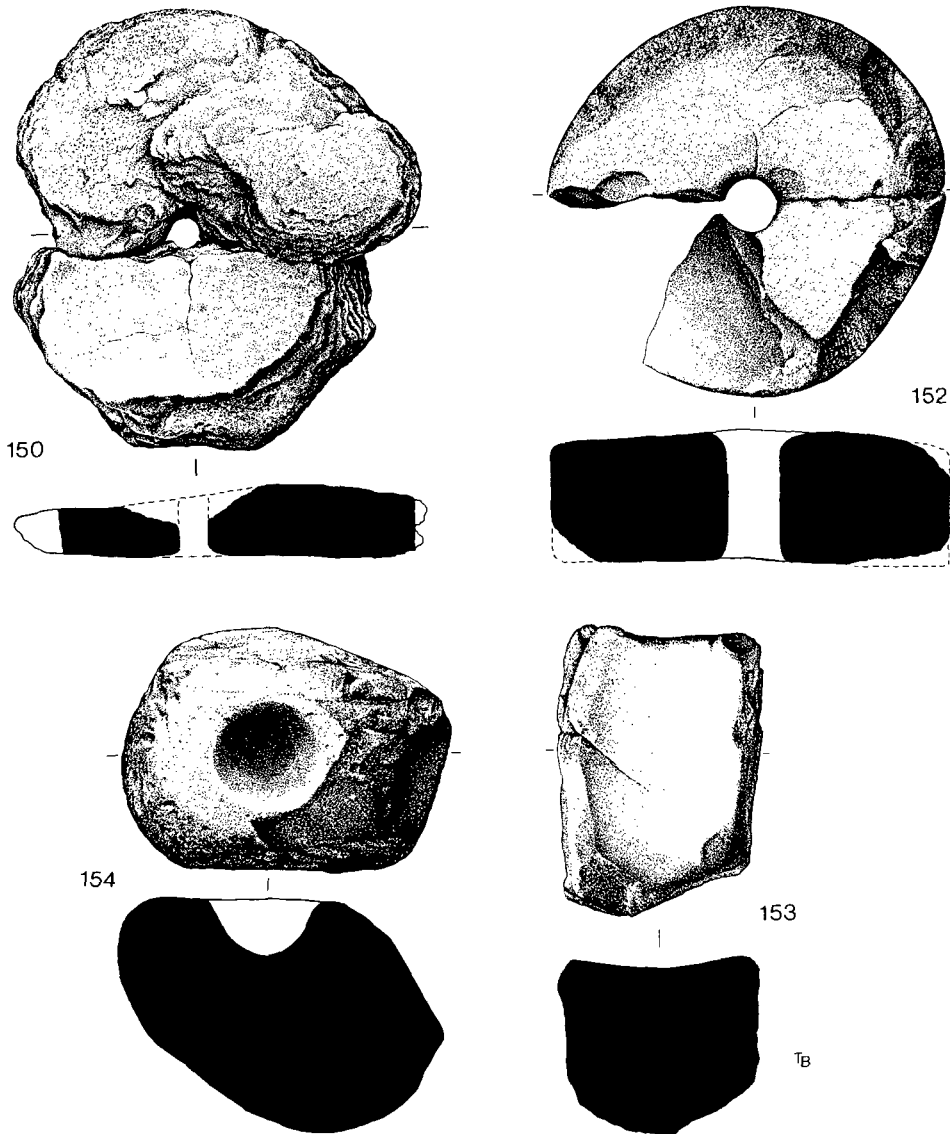
This is probably a reused Roman stone. There are Roman building stones in the RMS with similar hollowed areas from casual use as whetstones.

- 154 Socket stone of sandstone, made from an irregular boulder with flattened top, the socket worn by rotary motion; 260 mm long. *FF level 4, sf 41 (illus 32).*

This socket may have been *in situ* in a doorway.

- 155 Mould of sandstone with one oval, concave, slightly blackened matrix more or less in the centre of a flat stone block; a second depression is natural. The block is 70 mm long; the oval matrix 23–28 mm across. *G level 2, sf 51 (illus 30).*

Stone moulds for small circular castings occur on other Dark-Age sites, including Dunadd (Christison 1905, 312 fig 34) and Birsay (Curle 1982, 45–6, no 573), but the other examples have flat bases. The



ILLUS 32 Querns 150, 153, grindstone 152, and socket stone 154 (scale 1:6)

bowl-shaped matrix on 155 is unusual, but the blackening implies it has been used for casting. Stone moulds in this period are invariably used for casting ingots or flans, not objects, except for the tiny moulds used for casting glass studs, such as Lagore (Hencken 1950, 6–7, 129, fig 62), and Dun Cuier (Young 1956, 315, fig 13:19). The Clatchard matrix seems too large for a glass stud, though the domed shape would be appropriate.

- 156 A small corner of a natural stone; 35 mm long; one end burnt at a high temperature, probably accidentally. It has on it a glossy red and black deposit apparently similar to that on the crucible 107. *FG level 2, sf 3.*
- 156a Pounder; a roundish quartzite pebble worn smooth at both ends and along one side, with batter pits at one end; 84 mm long. *B level 5, sf 7.*

Such pebble tools, often worn into facets at the ends, are found on Iron-Age and Dark-Age sites all over Scotland, though they are most numerous on wheelhouse sites in the north and west. A typical selection from the more unusual context of a late Bronze-Age settlement at Green Knowe, Peeblesshire is illustrated by Jobey (1980, 89, fig 9). Most of the tools are quartzite, selected for its hardness. Until recently the purpose of these tools has been uncertain. They have been called either hammers or grinders, and the latter seemed more likely, since the typical facets on the worked surfaces seemed to be the result of grinding. Now practical experiment has changed the picture. Similar wear patterns have developed on the quartzite pebbles used by Dr Malcolm Fenton to reproduce Bronze-Age battle-axes by pecking or hammering stone cobbles into shape (Fenton 1984, 223, pl 7a). While more experiments are needed, it now seems probable that tools such as 156a are actually pounders or hammers used to dress other stones. In southern Scotland one use for such tools would have been to shape quernstones.

#### Spindle whorls

- 157 Sandstone, 38 mm diameter. *B level 2, sf 5* (illus 30).  
 158 Part of a sandstone whorl, finely smoothed both sides; 48 mm diameter. *G level 2, sf 45* (illus 30).  
 159 Sandstone, 33 mm diameter. *FF level 3, sf 3* (illus 30).  
 160 Siltstone, broken and repaired; 40 mm diameter. *Found on Clatchard Craig in 1966 (Discovery Excav Scot 1966, 26)*. Perth Museum, 20/1966 (illus 30).  
 161 Disc of chloritic schistose grit, surface flaked, edges rubbed down irregularly; 51 mm diameter. Centrally on one face is a small shallow hole. Possibly an unfinished spindle whorl. *C level 5, sf 1* (in rampart 3) (illus 39)

Spindle whorls of these simple shapes could be Iron-Age, Roman or Dark-Age.

#### WOOD

- 163 Part of an artefact made of hazel, burnt; 32 mm long, broken each end. Section now oval, probably originally round, 25 mm by 20 mm; at one end the stump of a tenon 17 mm across. Possibly part of a handle, or a small peg or trenail for fastening timbers. *A level 9, sf 2* (in or under rampart 2).

## 6 RADIOCARBON DATES FROM CLATCHARD CRAIG

Many samples of burnt wood were collected during the 1959–60 excavations, most being individually recorded, and some being large pieces from substantial timbers. These were stored in plastic bags or boxes, carefully sealed, though in some cases duplicate labels inside the bag had rotted. Five samples of wood charcoal were submitted to Glasgow University Radiocarbon Laboratory for this report, and the following determinations were received from Dr M Stenhouse in 1984:

#### DATES BP ± 1σ

- GU-1794 1560 ± 55 δ13C: -24.4%  
 Rampart 1, Trench B, level 6, sample 5 (*Quercus* sp)  
 GU-1795 1350 ± 75 δ13C: -25.5%  
 Rampart 1, Trench B, level 6, sample 6 (*Quercus* sp)  
 GU-1796 1475 ± 55 δ13C: -23.8%  
 Rampart 2, Trench A, level 7, sample 3 (*Quercus* sp)  
 GU-1797 1470 ± 60 δ13C: -25.9%  
 Rampart 3, Trench D, level 3 (*Alnus glutinosa*, *Quercus* sp)  
 GU-1798 1400 ± 55 δ13C: -24.4%  
 Rampart 3, Trench H, level 27, sample 4 (*Quercus* sp).

Details of the wood samples are given in Section 7. The two samples from rampart 1 and one sample from rampart 3 are from structural timbers burnt *in situ*, and their positions are plotted on the plans or sections (illus 6 & 7). The smaller timber sample from rampart 3 in Trench D was from a

heavily burnt layer. The four samples from ramparts 1 and 3 should date the construction of these ramparts.

Dr Gordon W Pearson of the Palaeoecology Centre, The Queen's University of Belfast, has most kindly commented on the determinations and provided calibrated dates from the curve given in Stuiver and Pearson 1986.

	1 $\sigma$	2 $\sigma$	
	cal AD	cal AD	
GU-1794	422–559	390–609	} rampart 1
GU-1795	634–713	561–813	
GU-1796	543–638	437–659	} rampart 2
GU-1797	543–643	434–663	} rampart 3
GU-1798	606–665	554–685	

All the dates are statistically compatible. The greatest difference lies between the two from rampart 1, GU-1794 and GU-1795, and even these are compatible at the two sigma level. The dates do not show whether ramparts 1 and 3 are contemporary or not. Dr Pearson comments that it would be unrealistic to argue that the dates show contemporary building of the two ramparts, but that they are nevertheless consistent with such an assumption, should it be made on archaeological grounds.

It has been argued in the text that rampart 2 was not burnt, and is indeed later than ramparts 1 and 3. The few scraps of burnt timber found in rampart 2 were probably scraped up with earth and stones from the two earlier burnt ramparts as building material, so GU-1796, which is compatible with the other four dates, gives only a *terminus post quem* for the construction of rampart 2.

Some or all of the five dates from the ramparts may be averaged out to give a more precise determination. Just which dates should be so used depends on how the archaeological evidence is to be interpreted. Dr Pearson has calculated, using a mean calibrated date for the two samples from rampart 1, that there is a 95% probability that the date of construction of rampart 1 lay between cal AD 437 and 653. However, if ramparts 1 and 3 were contemporary, which is archaeologically possible, a mean calibrated date for the four samples from these two ramparts gives a 95% probability that the date of construction lay between cal AD 548 and 651.

No allowance has been made in these calculations for any difference between the date of the sample and the age of the tree when felled. However, the C14 samples at Clatchard all represent short elements of the tree-ring sequence, and were judged to be later rather than earlier in the life of the tree; so any uncertainty in this area would be more than masked by the uncertainties in the radiocarbon dates.

Given all the uncertainties, it seems best to conclude for the moment that ramparts 1 and 3 were constructed at some time within the sixth or seventh centuries cal AD.

## 7 CHARCOAL FROM CLATCHARD CRAIG

R P J McCullagh\*

The full report, which includes details of the samples used for the radiocarbon dates, is on fiche 1: B8–11.

### SAMPLES USED FOR RADIOCARBON DATES

Rampart 1	Trench B	Level 6	Sample 5	Lab no 2859	GU-1794
Rampart 1	Trench B	Level 6	Sample 6	Lab no 2856	GU-1795

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Rampart 2	Trench A	Level 7	Sample 3	Lab no 2853	GU-1796
Rampart 3	Trench D	Level 3		Lab no 2855	GU-1797
Rampart 1	Trench H	Level 26	Sample 4	Lab no 2858	GU-1798

### *Trench B, Level 6, Sample 5*

Timber from core of rampart 1 (illus 7).

All the charcoal appears to come from a radially split timber of *Quercus* sp (oak). This seems to have been a thin board, maximum thickness c 30 mm, and has preserved a growth sequence (45 rings in 30mm) late in the parent tree's lifespan. Most of the charcoal represents the same c 50 years of that lifespan.

Sample weight: 110 g.

### *Trench B, Level 6, Sample 6.*

Transverse timber from the core of rampart 1 (illus 7).

Large fragments of a radially split timber, original radius of unconverted timber in excess of 200mm and sample comes from outer area of that girth. All the charcoal is of *Quercus* sp (oak).

Sample weight: 85.5 g.

## 8 MORTAR ANALYSIS

N Davey\*

The full report is on fiche 1: B12. It concludes that the high proportion (69% and 74%) of crushed tile in the two samples of mortar from the body of rampart 2 in Trench A, level 7, 'could quite well be of Roman origin'.

## 9 SLAG FROM CLATCHARD CRAIG

J G McDonnell†

The full report is on fiche 1: B13-C5.

### SUMMARY

The early manufacture of iron artefacts required two processes. The first was the smelting of the iron ore to produce metallic iron, the bloom. Secondly the smithing process, which includes the consolidation of the bloom, the manufacture of artefacts, and the subsequent alteration, repair, and recycling of artefacts.

Residues are by-products of both processes. They can be divided into two broad groups, the diagnostic residues, principally the silicate slags, and the non-diagnostic residues, furnace lining and fuel-ash slag. The non-diagnostic residues may also be by-products of other pyrotechnological processes, eg kilns, non-ferrous working as well as domestic hearths and fires. The silicate slags are by-products of both the smelting and smithing processes. It is therefore of importance to distinguish between the slags from each process to identify the technologies practised on the site in the past.

The assemblage from Clatchard Craig contained 14.94 kg of residue (over 250 individual specimens) and the visual classification is shown in table 1 (fiche 1: C2). This included 0.86 kg of furnace/hearth-lining and fired clay; 0.75 kg of fuel-ash slag (FAS); and 1.49 kg of 'earthy' fuel-ash slag. The furnace/hearth-lining was typical, having a vitrified surface, degrading (in cross-section) to heavily fired clay. It derives from the tuyère zone (air inlet), of the furnace/hearth where the temperature is greatest, and oxidizing conditions prevail, causing vitrification of the clay surface. The tuyère mouth (a hole 1 to 2 cm in diameter) is often preserved, although at Clatchard Craig only fragments of the mouths occurred. The quantity of furnace/hearth-lining was normally less than 100 g from individual layers. The exceptions were Trench G (180 g), and Trench E, Layers 9 and 11 (575 g); the latter was associated with a concentration of slag. Fuel-ash slag is a high temperature product between siliceous material and fuel ash. Morphologically it is light grey/cream in colour, often vitrified, low density, and occurs as rounded globules fused together. The

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'earthy' fuel ash slag in rampart 3 from Trench C, Layers 3 and 4 (570 g) and Cutting 3 (925 g) occurs in large lumps and includes other foreign material, eg charcoal, pebbles, etc. and probably derives from a lower temperature reaction of siliceous material in the soil or rampart with fuel ash, resulting from the burning of the timber-laced rampart.

The diagnostic silicate slags (12.51 kg), were classified into three groups, possible smelting(?) slag (2.070 kg), smithing slag (9.770 kg), and cindery fuel-ash slag (0.670 kg). The overall distribution of the slag in ramparts 2 and 3, inside the ramparts, and in Cutting 3 are shown in table 2 (fiche 1: C3). Over 50% of the slag was found in Trenches L, M, P and Q and therefore cannot be satisfactorily phased. The slag from rampart 3 (Trench H, Layer 22, sf 19) was a single large hearth-bottom (a plano-convex accumulation of slag in the base of the smithing hearth). The smithing slag from rampart 2 and from Trenches L, M, P, Q, comprised hearth-bottoms and randomly shaped lumps. The smelting(?) slag was distinguished on the basis of greater apparent density, a uniform fine crystalline fracture, and fewer vesicles. Several pieces of smelting slag occurred as slag-cakes (plano-convex lumps of tapped slag cooled in small pits in front of the furnace.) The remainder was morphologically the same but occurred as randomly shaped lumps.

It is reasonable to assume that all smelting(?) slag derives from the smelting process, and it is also possible that some of the smithing slag has been mis-identified and derives from the smelting process, although the quantity is probably small. The texture of the Clatchard Craig smelting slag suggests a furnace technology in which the slag did not achieve the totally fluid state, remaining in a pasty condition, and was removed by raking-out rather than tapping, ie free flowing.

The nature of the excavations does not allow any assessment of the extent of the iron-smelting and smithing activity at Clatchard Craig. The lack of evidence from other trenches indicates that the ironworking activity was concentrated in the vicinity of Trenches L, M, and P and that the slags were later incorporated in rampart 2. Had the slags been dumped some distance from the hearths and furnaces, a wider distribution would have been expected. The quantity of slag (12.5 kg) from a limited area does suggest quite intensive ironworking activity.

#### CONCLUSIONS

The Clatchard Craig residues included quantities of furnace/hearth-lining, fuel-ash slag, (including a distinctive 'earthy' form) and ironworking silicate slags. The chemical analysis confirmed the presence of smithing and smelting slags concentrated in the area of Trenches L, M, and P and rampart 2. The analysis also indicates the use of 'bog ores' as a possible ore source. No conclusions can be drawn as to the extent of the ironworking activity owing to the limited area of excavation. The morphology of the smelting slags indicates a low level of technology similar to that observed in Iron-Age and Anglo-Saxon England. Archaeological evidence suggests that the slag from Clatchard Craig may date to the fifth, sixth or seventh century AD.

## 10 ANIMAL BONES FROM CLATCHARD CRAIG

Lin Barnetson

The full report is on fiche 1: C6-14.

#### GENERAL NOTES

Bones from all parts of the skeleton are present in most of the deposits available for examination, indicative, presumably, of midden debris rather than food residue alone. As the burnt and calcined bones included horncore and tooth fragments besides ribs and limbs, this is probably not the result of cooking (roasting) processing only. The cuts on the cattle bones appear to be butchering marks but there are also some fragments which bear marks comparable to dog-gnawing marks, for example, the pig distal humerus epiphysis in Trench D. The pigs generally seem to be immature whereas both mature and immature specimens of cattle and sheep are present. The neo-nate calf from Trench A, level 7, was surely not food debris.

Preservation of the whole is reasonably good, for example, the comparatively fragile *bullae tympanica* of an ox is present in Trench A. Unfortunately many of the bones are missing but at least most of the material is identifiable to species and some pieces were sufficiently intact to permit measurements to be taken.



## 11 MARE'S CRAIG, FIFE (illus 1)

Mare's Craig, a smaller hill with precipitous sides, lay across the burn from Clatchard Craig at NGR NO 248 177. This hill had already been partly quarried by 1914, as shown by the 25 in OS map of that year. The rest of the hill was destroyed in the 1920s by further quarrying, when burials were found and a small Celtic bell, now in Perth Museum. The iron bell, some 160 mm high, was originally bronze-coated; an account of its finding in a 'mound' with dressed stones and mortar is given by Watson (1929). It may date to the seventh, eighth or ninth century AD (Bourke 1983). A human skull was also found at this time. Information on the burials is imprecise. Among the OS records there is an *ms* note written in 1952 by a Professor D Baird of St Andrews, who states that the quarry master had found about 20 years previously 'a lot of old urns and bronze things' which Baird assumed to be a typical late Bronze-age urnfield, and that the urns were apparently removed by Coates of Paisley. However R B K Stevenson (1952, 111) included the site in a list of long cists as follows: 'the quarry-master has stated that in the late 1920s cist burials were associated with what he took to be the site of a chapel. This is the site where a small Celtic bell was found, now in Perth Museum'. Dr Stevenson has kindly confirmed that he discussed these finds with Tom Bell of Bell Bros, who operated the quarry, and was told that a number of skeletons in cists had been found. While the distinction between long and short cists was not specifically discussed, he formed the impression from the number of skeletons that had been found that it must have been a long cist cemetery. It seems most probable that this is correct, and that Professor Baird's information was the result of a misunderstanding.

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In the two short campaigns of excavation RHS was assisted by his wife, Mrs W J Hope-Simpson, by Mr Malcolm Murray (1959), and by Mr Derek Simpson (in 1960). Mr Murray was also responsible for photography on the site in 1959, and in 1960 this responsibility was shared by Mrs Hope-Simpson and Mr James Pugh (Ministry of Works). Mr Ian Goodwin (of the Ministry of Works' staff at Stirling Castle) served as foreman in 1959 and 1960, and Mr Samuel Kennett (also of the Stirling Castle staff) helped in 1960. Several undergraduates from the University of Edinburgh Department of Archaeology helped in the excavation and/or field conservation, and some employees of the quarry company (Bell and Co Ltd) worked as labourers. The names of all these persons were duly recorded in the draft report, and gratitude is here again expressed to all concerned.

The excavation was a rescue operation, and many of the staff, including the director, had no experience of sites of this nature. From September 1960 to August 1963 RHS was a Research Fellow at the University of Birmingham, working almost exclusively in Aegean Prehistory, and in September 1963 he emigrated to Canada, where he joined the Department of Fine Art at the University of Toronto. From September 1964 he has been a member of the Classics Department of Queen's University at Kingston. For various reasons his work on the Clatchard Craig report was intermittent and could not be fully concluded. He is extremely grateful to all who have assisted in the production of this present report.

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