

I.

THE VITRIFIED FORT AT RAHOY, MORVERN, ARGYLL. BY
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The vitrified fort of Rahoy is situated on the top of a small steep conical hill that rises some 200 feet above the level of Loch Teacuis. The fort is 830 yards west 5° north of Rahoy House and may be located by the formula $56^{\circ} 38' 24''$ N., $5^{\circ} 51' 48''$ W. It stands just opposite the narrowest point in Loch Teacuis and commands a view of the entrance to the loch from Loch Sunart on the north-west and the pass to Loch Aline on the south-east. The hill itself is formed by bands of the local psammitic schist lying on edge; the conical shape is due to the wearing away of dolerite dykes which have been intruded into the schist at various angles or by lines of weakness caused by "faults." The bands of schist vary in composition and hardness, and are often penetrated by veins of quartz. The bands in the vicinity of the fort are mostly siliceous and hard, but these alternate with softer bands containing more mica in thin layers. Owing to the alternation of hard and soft bands, the rocks on the hill-top have weathered very irregularly, causing the knobs, pinnacles, and sharp variations of level noted below. The banded structure also tends to make the blocks weathered or quarried off exposed faces cubical in shape, since the "backs" are more or less at right angles to the bedding planes. The weathering process is still going on actively on the steep slopes of the hill, which must have been much more nearly vertical when the fort was built. A granite boulder which has been transported by ice from the Strontian region was found on the summit.

The hill-top is surrounded with a bank enclosing a crater-like depression, roughly circular and measuring about 50 feet from crest to crest. Oaks and birches had been growing on the bank and within the crater, but had been felled before we arrived. The bank was still grass-grown save where Mrs Newton had made a cut through the bank on the west, exposing the vitrified core, which also projected through the turf at several points.

Excavations began on 2nd July 1936 and were continued till the

22nd; they were resumed on 17th June 1937 and ended on the 30th. In 1936 attacks were made on the rampart simultaneously from outside and from within the fort, the former operations being under the more special supervision of W. Thorneycroft, those in the interior of V. G. Childe. A line running north and south magnetic across the fort was used as a base for all operations (Plate I).

The Outer "Face" of the Rampart.—Cuts from the outside have been numbered in accordance with the figures on a clock dial, but XII is actually 4 feet east of base. In every section as the vitrified mass was approached many loose stones were encountered. Many of these were of considerable size and parallelopiped in shape so as to be suitable for use in dry stone building. Some were pinkish, others unaffected by heat. Almost everywhere the vitrified mass was markedly undercut at the edge. Black char was generally found on the rock under the overhanging edge. At III remains of a carbonised hazel stem, $3\frac{1}{2}$ inches thick, were lying in the black under the overhanging vitrified matter, and in a cleft of bed-rock at IV burnt animal bones were included in the black char. At I and V vitrified masses were actually welded on to the rock beneath. At IX the solid rock that here falls away steeply was observed to have been strongly heated some way down the slope. Underneath the outer vitrified mass (vitrified material extends further out than usual at this point, but a very distinct break was found by the section, 3 feet or so inwards from the outer face) a piece of solid micaceous schist, $\frac{1}{2}$ inch thick, came away welded to a lump of vitrified material, while the living schist's surface was "pimpled" by reason of fused mica having been extruded through a siliceous layer.

At XII it was possible to tunnel some 5 feet inwards under the vitrified mass up a natural cleft in bed-rock. The stones removed in tunnelling were comparatively loose though they had been heated. Excavation from the inside disclosed at the inner end of the cleft the mouth of a built culvert, and rain-water actually drained out along this channel during the excavations. The solid rock, both inside and out, had been heated and some pieces of fused stone were lying loose in the culvert. The black deposit found opposite the culvert's mouth inside the fort (p. 31) continued overlying the rock throughout our tunnel.

At X a section of dry stone walling, 4 feet long and about 15 inches high, was found below the vitrified face between two ridges of bed-rock (fig. 1). There was the usual black layer in front of the wall. The latter might have been built after the vitrification to underpin the mass where the loose stones, usually found below it, had been removed by some agency.

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Section through Rampart.—The first operation conducted in the interior of the fort was to cut a section through the westward rampart along an axis at right angles to our base line. Starting at base line near the fort's centre, slabs of a pavement, with a deep black deposit over and between them, were exposed less than 1 foot beneath the turf. The pavement was followed westward for 8 feet from base line till an outcrop of bed-rock



Fig. 1. Segment of Outer Face at X.

came up to pavement level (198.75 O.D.). Stones, possibly fallen from the wall, began to appear here in abundance under the turf, and, 10 feet west of base, we first encountered an upper layer of black deposit (at 200 O.D. and 6 inches thick) which extended westward for 7 feet, gently rising (section Q-P). Stones mixed with brown or reddish sandy earth separated this "upper black" from the black deposit on the pavement and bed-rock. On the latter, stray burnt bones began to turn up amongst loose stones 12 feet from base line, and continued to be found for about 9 feet. At 16 feet from base the bed-rock, having risen to a boss at 199.2 O.D., suddenly dipped again about a foot, the cleft being filled with a deep black deposit. At 21 feet from base the stones of the bank were compact enough to stand as a more or less vertical face, which could not, however, be accepted as an actual built wall. As soon as

this dubious face had been removed, we were confronted by a solid vitrified face rising 3 feet above bed-rock.

The face was eventually cut through with dynamite and a sledge-hammer. The vitrified mass proved to extend for over $9\frac{1}{2}$ feet horizontally. Just below its outer edge a stone suitable for building was observed resting on bed-rock 32 feet from base. Beyond this point the rock sloped away steeply. In the section thus obtained the following points deserve particular attention.

Immediately outside the vitrified mass were the usual loose unheated stones of all sizes up to 1 foot square by 8 inches, but mostly smaller and mixed with sand, earth, and roots. Above the vitrified mass were smaller fragments consisting of all varieties of the local schist. Inside the fort large stones, some cracked with heat, were commonest below the level of the vitrified mass but near to it.

The mass of stones solidly fused together had a vertical thickness varying from 2 to 3 feet. Near the bottom of the mass, at least, the stones are small where not vitrified, the spaces between them being filled up with material that has been melted.

Near the outer edge of the mass and embedded low down in it were fragments of charcoal, apparently derived from a branch some 3 inches thick and 1 foot 8 inches long, lying horizontally at right angles to the line of the wall. Vitrified mineral had penetrated into the pores of this charcoal, forming a cast of the wood fibres and cellular structures. Similar casts of wood in vitrified material have been noted at Tap o' North, Finavon, and other vitrified forts. Our branch must have been heated to a high temperature in the absence of air to convert it into charcoal. The volatile organic matter and water have been distilled off and the spaces left on the branch's exterior have been more or less filled with molten mineral.










Below the vitrified mass the stones are loosely welded together near the top, and further down only cracked and discoloured by heat. The stones get larger towards the base of the underlying layer of unfused stones.

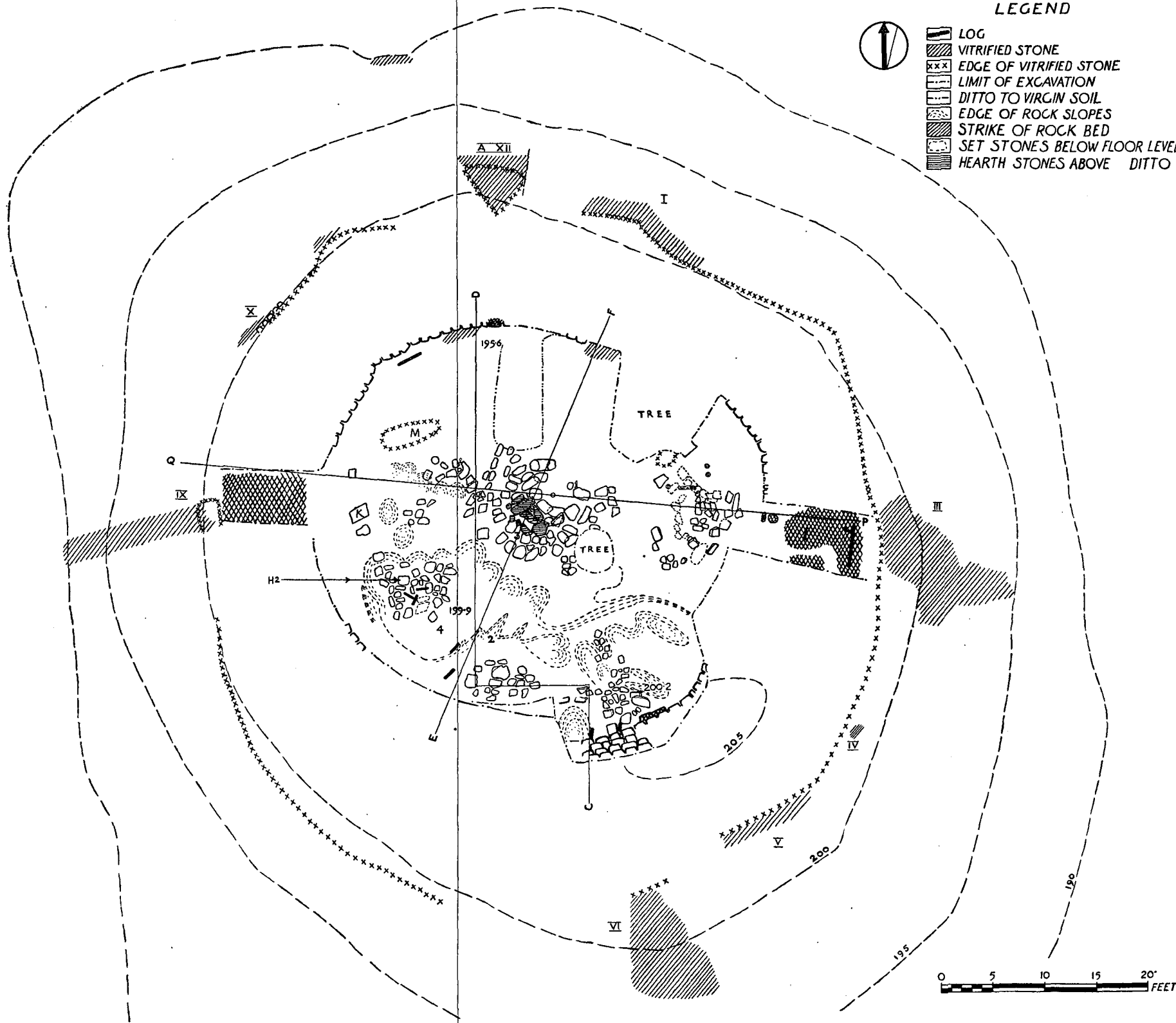
The bed-rock at the bottom had everywhere been slightly affected by heat. But throughout the section under the vitrified mass deposits of black material and burnt bones were observed in hollows of the rock.

In 1937 the rampart was cut through along the eastern extension of the same line, starting on the outside at the point numbered III, where the turf had already been removed in the previous year. Under the rampart's outer margin was a flat-topped boss of bed-rock, 199.2 feet above O.D. at 33 feet from O. Hence the rock sloped westward,

LEGEND



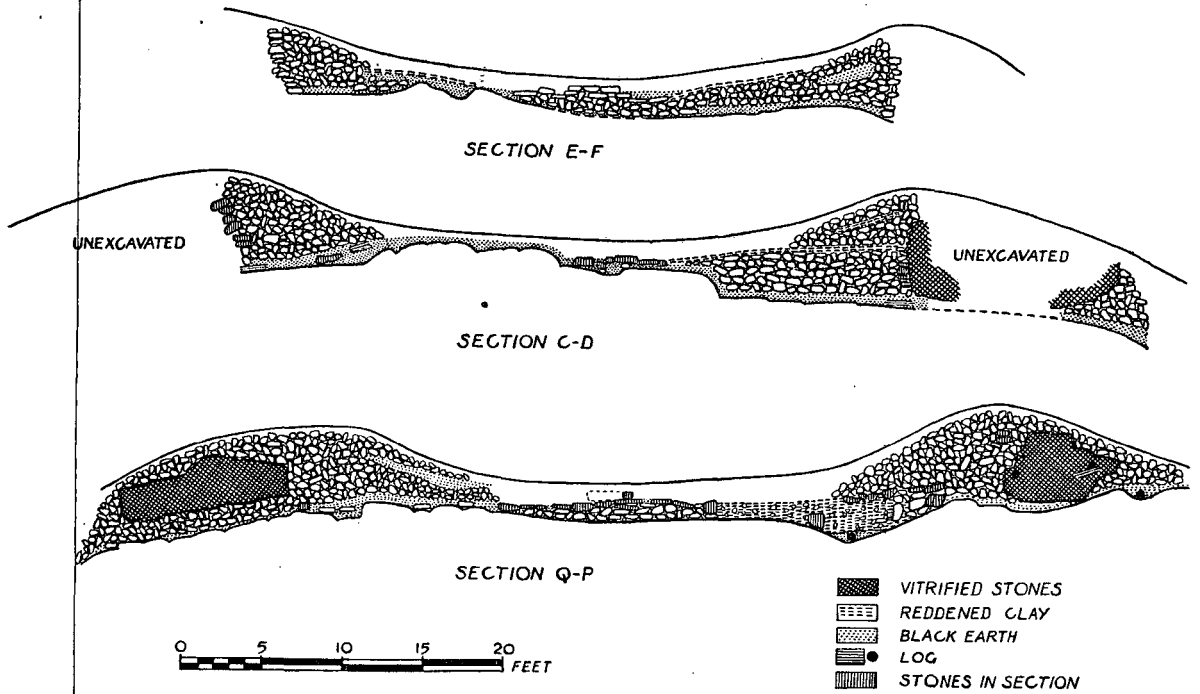
-  LOG
-  VITRIFIED STONE
-  EDGE OF VITRIFIED STONE
-  LIMIT OF EXCAVATION
-  DITTO TO VIRGIN SOIL
-  EDGE OF ROCK SLOPES
-  STRIKE OF ROCK BED
-  SET STONES BELOW FLOOR LEVEL
-  HEARTH STONES ABOVE DITTO



RAHOY PLAN.

PLATE I.

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RAHOY SECTIONS.

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after an interruption at 30, down to 197·5 at 28 feet from O, but rose again to a narrow ridge, 198·4 feet above O.D. about 20 feet from O. Thereafter it sloped down again more steeply to 197·2, 17 feet from O. A solid vitrified mass was encountered first at 30 and was split off in sections. On the north wall of the cutting the mass of solidly fused stones was more or less continuous over a width 6·5 feet and attained a maximum thickness of 3·75 feet. On the south the mass was only about 3 feet wide and rather thinner than on the opposite side. The vitrified mass was deeply undercut near its outer edge, so that a foot of loose stones intervened between its under-surface and the rock, but 28 feet from O the lowest fused stones were barely 6 inches above bed-rock.

A thin layer of black material covered the rock all through the section and filled up depressions to a depth of 4 inches at 31 and 23 feet from O. In the black material a few scraps of burnt bone and charcoal were observed, and in the dip at 31 remains of a charred hazel stem, 3·5 inches thick, ran parallel to the rampart edge. In the body of the vitrified mass itself some 2 feet above the rock casts of horizontal beams, similar to that described in west cut but 4 or 5 inches thick, were detected 29·5 and 24·5 feet from O. Both stems ran parallel to the line of the wall, the first being clearly traceable for nearly 4 feet. Immediately below it the cast of a stouter beam, lying radially to the rampart and sloping down towards the interior, was observed, and is shown in fig. 2. Other less complete casts of timbers were also encountered in cutting through the mass, and in a few instances contained the friable remains of carbonised hazel wood. The wood was reduced almost to an amorphous powder, but by mounting it in paraffin Mr M. Y. Orr was able to recognise the vegetable structure under the microscope.

The vitrified mass ended, even on the north wall of the cut, east of the bank's present summit, 24 feet from O. West of this point only isolated vitrified stones were found in an accumulation of stones 6 feet high. Most of these stones were small, irregular, and cracked by heat, but 23·5 feet from O, two good building stones were included in the bank, 4 feet above the rock; they doubtless represent two courses from the inner face that had fallen outward. No built inner face was encountered though its anticipated line was approached from the interior that had already been excavated up to a point where the stones would stand almost vertical 18 feet from O. At this point paving-stones resting on a loose packing 199 feet above O.D. belonged definitely to the internal structure of the fort. Upon and below the pavers was a thick deposit of loose black material and very numerous burnt bones.

This deposit, over 9 inches thick, extended to the crest of the bed-rock ridge 19.5 feet from O, and then contracted quite abruptly and changed its character. It is possible that this contraction may mark the original line of the wall-base. A large block resting upon the sloping rock just beyond the outermost paver very likely belonged to a foundation course that had slipped a little down the declivity.

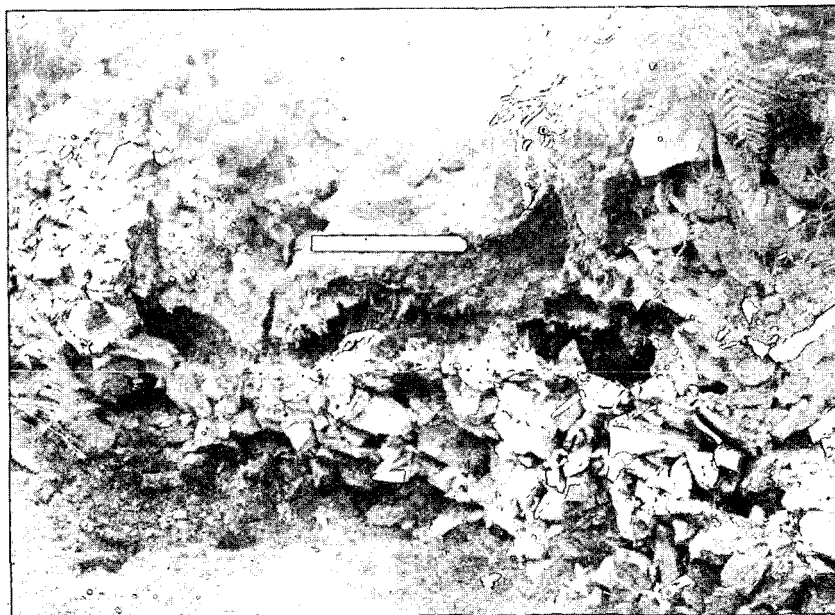


Fig. 2. Cast of Log in vitrified Mass.

The interior of the fort was excavated down to bed-rock by quadrants starting from the east-west section and working outward till a wall-face, or something like one, was encountered (save where oak-stumps were too deeply rooted to be removed without danger). It thus appeared that the original rocky peak enclosed by the rampart was extremely uneven. Obliquely across the south-west and south-east quadrants runs a narrow platform at an average height of 199.5 feet, but rising to bosses more than 200 feet above O.D. and interrupted by fissures. Many of the latter illustrate the differential erosion of the several kinds of schist, here lying on edge (the lines on the plan indicate the strike), but others, with smooth sides and a V-section, suggest quarrying. Within the enclosure the rock dips to the south-west, so that between the rampart and the platform there is an area lying nearly a foot below the latter.

To the north and north-east too the rock dips away in steps, first to a narrow irregular terrace about 198·7 above O.D. and then to an almost flat surface about 196 feet above O.D. This low platform drains through a culvert under the rampart into the natural crevice mentioned on p. 24 (section C-D).

The centre of the fort is occupied by the pavement resting on or



Fig. 3. Central Pavement and Hearth.

flush with the rock terrace (fig. 3) that we exposed almost immediately under the turf in the first section. The average surface level of the paving-slabs is 198·75 O.D., and they cover an irregular area some 14 feet across. The majority of the paving-stones are large slabs of micaceous schist only 2 to 2½ inches thick, but solider blocks, often flat on the upper side only, occur among them. The eastern edge of the pavement in particular was constituted by very stout blocks as much as 9 inches thick. Where the bed-rock slopes away under it, the pavement is supported by a packing of stones that is certainly deliberate and, along base line, attains a depth of 1 foot 4 inches. Between and under the paving-stones was a very black deposit extending down to solid rock. The same deposit with its top coming up to pavement level extended northward along base line, where paving-slabs were missing for 5 feet,

but no further. It is therefore integrally connected with the pavement. The black deposit included a very little burnt bone and considerable quantities of small charcoal, but no large timbers.

At or near the western edge of the paving the stumps of two posts of oak, still standing 3 or so inches high, were preserved in a damp corner between packing-stones. One post rested on a flat stone as footing, the other went down to bed-rock, though not into a well-defined socket. In the same region, about 8 feet west of base, a collection of larger stones vaguely suggested the ruins of a wall, but as its components were all loose above the black layer its direction and function cannot be defined. Immediately beyond the eastern edge of the pavement there was another large accumulation of substantial stones going down to bed-rock, but no order could be discerned among the stones, which were entangled with the roots of an oak tree.

In the centre of the slab pavement stands a raised hearth formed of heavy blocks, 4 inches or so thick, resting on the paving-slabs. As discovered there was a gap on the north-east side of the hearth. But the stone flanking this on the east, which was quite loose and undermined by oak roots, would conveniently fill the vacant space. If this stone had been displaced by roots from the gap, the original hearth would have been roughly rectangular like those found at Finavon. The big hearth stones were cracked and reddened by heat. South of them an irregular heap of blocks, including a broken saddle quern, lay piled upon the pavement, but represented, if anything, a backing to, rather than a continuation of, the hearth.

The limits of the pavement are regrettably vague, and beyond them neither floors nor constructions could be recognised with complete certainty. In clearing the north-west quadrant we reached, below debris fallen from the walls (including a band of upper black that began generally 10 to 12 feet from our centre), at the level of the pavement a brown layer of compacted earth and small stones. This "floor," at first flush with the pavement, sloped up towards the periphery to 200 feet above O.D. Stones and debris generally came away easily from its surface, but the big mass of vitrified material, marked M on the plan, was embedded in it; very few burnt bones were encountered above the "floor." It sounded quite hollow, and the removal of a stone from it exposed a gaping cavity. The excavation was pushed on at this level, till, about 18 to 19 feet from the centre, the loose rubble fell away from a sort of wall-face, very irregular and coursed only for short segments, but sufficiently solid to stand nearly vertical (fig. 4). It proved to approximate to the contour of a circle with diameter 40 to 45 feet.

Under the "floor" was a cavity going down to the low platform. The space between the floor and the gently sloping rock-surface was filled with large angular fragments of local rock, many reddened by heat. There was very little earth between them, but fragments of burnt animal bones were found at all levels between the blocks of rock. The large masses of vitrified material, M, went down below the "floor"



Fig. 4. Inner Face in north-west Quadrant and Culvert (right).

level, and at one point bits of burnt bone were fused on to their under-side. Small pieces of vitrified matter were found only a few inches above bed-rock. The rock-surface itself was covered with a thin black layer, which comprised hardly any bone, but some substantial pieces of carbonised wood.

The coursed masonry of the wall-face previously exposed did not go down to the rock-surface, but the lintel of the culvert, already mentioned, fitted roughly on to the same circle as the segments previously exposed. The lintel, a flat slab about 1 foot long, was tilted, and at its centre about 18 inches above the sloping rock. It supported two building stones fused together (fig. 4, and section C-D).

In the south-west quadrant the rock rises quickly beyond the edges of the pavement to the high platform. Its flat surface was covered

with black material and the remains of charred wood. Under these the unevennesses of the rock had been bridged over with flat slabs. Among these the cracked slabs marked H2 had evidently been the site of a hearth. Near them a bed of charred bracken stems was resting on the pavement, while above the black layer was a deposit of reddish rather sandy material mixed with stones.

Over the hollow platform to the south the same sort of "floor" deposit as that described in the north-west continued at about 200 feet above O.D. But under it was a dense black layer comprising many carbonised logs. The hollow itself was partly filled by large irregular blocks set flat face up and roughly horizontal 199.65 feet above O.D. They resemble paving-stones, but are set so far apart as to look more like stepping-stones; they would serve admirably as supports for beams. The series of stones continues on into the south-east quadrant, into which the hollow extends (see section E-F).

In both quadrants about 20.5 feet from O the wall debris could be left standing as a nearly vertical face some 5 feet high. Though charred material and burnt bones continued under this "wall," it was accepted as the true inner face of the rampart in the south-west quadrant. In the south-east quadrant, however, excavation was pushed further out and disclosed behind this false face the segments of unmistakably coursed masonry walling described below.

In the south-east quadrant the rock platform was partially paved with small slabs as in the south-west. Similar small paving-slabs continued over the edge of the slope down northward from the platform, but the slabs here were tilted with charred timbers between and under them. Further north and in the north-east quadrant a hollow "floor" deposit similar to that noted in the north-west continued the level of the central pavement. Here, 2 feet north of axis and 8 feet east of base, a large cracked slab at floor-level looked like a hearth; burnt bones lying all around at pavement-level afforded further evidence of occupation on the "floor." Nearby another large mass of vitrified material was embedded in the floor. From 10 to 15 feet east of base the floor was bright red instead of being brown. Just south of our axis was a line of paving-slabs some 3 feet wide extending from 13 feet east of O to the supposed line of the wall-face, which had here totally collapsed (fig. 5). This paving was obviously hollow, as earth trickled down any gap between the slabs.

On raising the paving-slabs and the red "floor" a hollow space was exposed bounded on the north-east by a built wall that crossed our axis 13.5 feet from O, but could not be traced as far as the line of

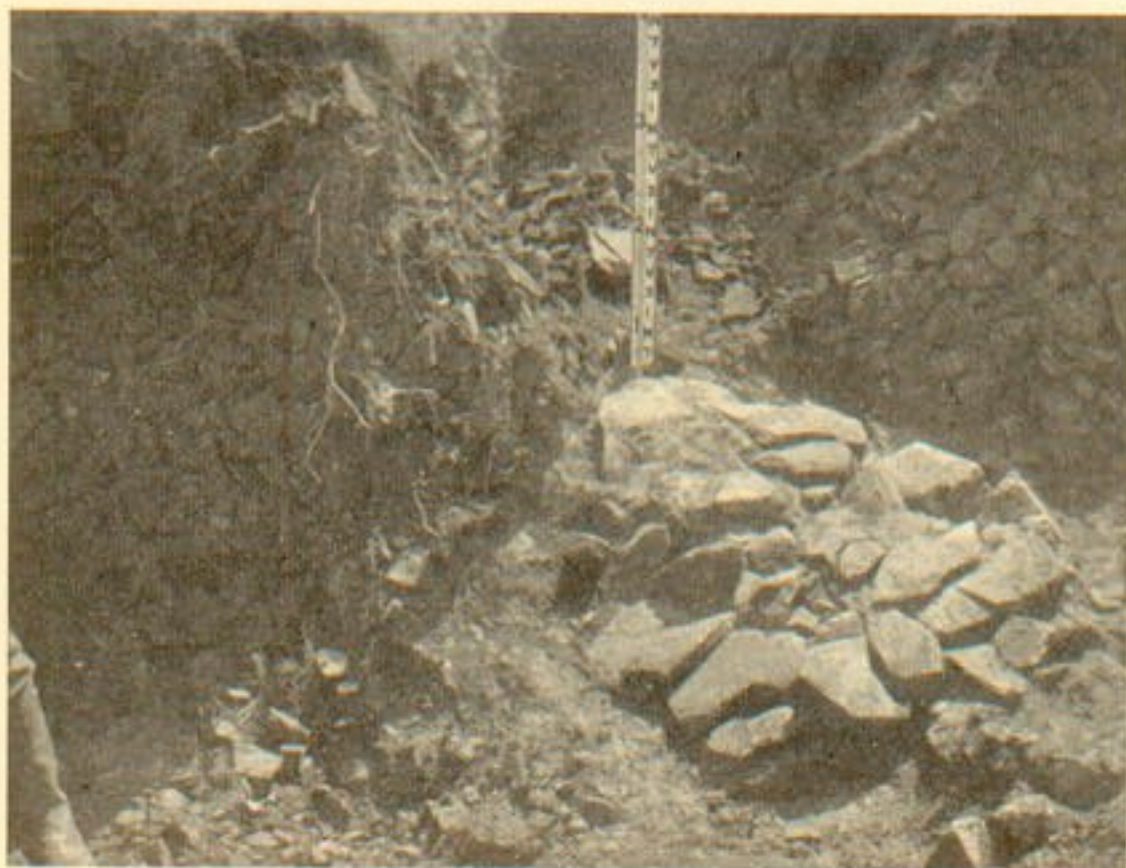


Fig. 5. Paving over "Cellar."



Fig. 6. "Cellar" after removing Pavement.

rampart. This wall (fig. 6) stood three courses high, and was composed of flat slabs measuring between 18 by 6 by 12 and 15 by 7 by 9 inches and resting on bed-rock at 196.3. From the wall's base the rock floor slopes up towards the south-west, and after 1.5 to 3 feet reaches the base of a not quite continuous line of solid blocks that may be treated as the south-west boundary of the hollow structure.

Towards its south-eastern end this hollow contained only loose black earth and stones though the "floor" above it was red; westward, as far as 13 feet east of O, the whole cavity was filled with red earth and the stones of its "walls" gave the impression of having been intensely heated. The rock floor of the cavity was, however, covered throughout only with a thin layer of black earth in which carbonised logs were preserved. This ruinous structure is reminiscent of a cellar or oven, since its rock bottom was 2 feet below the level of the pavement and the supposed "floor" that continues it.

Beyond the north-east wall of the "cellar" no structures were found until we reached the inner face of the rampart, four courses of which, resting on bed-rock, were exposed here. In this corner bed-rock reached the lowest level uncovered within the fort, 195.6 feet above O.D. The moisture accumulated in this hollow had preserved two stout oak posts, 6 inches in diameter, that had once been standing erect on the rock.

CONCLUSIONS: THE WALL.

The Inner Wall-face.—The many barrow-loads of fallen stones banked up against the rampart inside the fort led the excavators to expect a well-built face within the vitrified core, such as had been exposed at Finavon. But only the ghost of such a wall survived. In 1936 we discovered in the north-west quadrant a culvert with two courses of masonry above the lintel. These stones were vitrified, but no additional courses of masonry were recognisable above them; the lintel itself on which they rested was tilted and supported by extremely rude building. East of the culvert the wall had obviously collapsed, but west of it we exposed a few short segments in which two or three slabs still retained their relative positions as wall courses. But these segments lacked any solid foundation. The section seen to the left in fig. 4 is resting loosely on the supposed "floor" at 199 feet O.D.; below it there was no sort of coursed masonry, though it kept its position fairly well when we dug down to bed-rock, almost vertically below, at 196 feet. A carbonised log was lying on the rock parallel to the wall-face almost beneath it. In the south-west quadrant we accepted as wall-footings

angular blocks planted firmly on bed-rock, above which the mass of stones would stand almost vertically although no coursed masonry, and indeed no suitable building stones, were included in the "faces" thus obtained.

It was not till 1937 that we discovered a really convincing section of wall. Then in the south-east quadrant, after removing some false

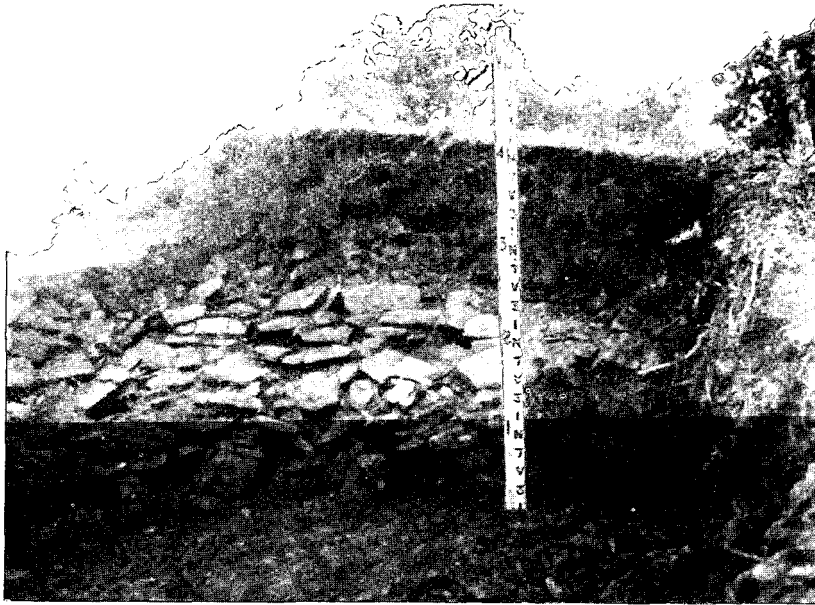


Fig. 7. Inner face in south-east Quadrant.

faces and rejecting some angular "footings," we reached a relatively long continuous segment of quite recognisable building. Over an arc of chord 15 feet two and sometimes three courses were in place 1.5 to 2.75 feet above the rock (section C-D). For a shorter distance four or five courses above the foregoing were also preserved (fig. 7) (they were found only when we were sloping off the bank for safety at the end of the excavation). But these additional courses were tilted bodily outwards: while they added only 2 feet to the vertical height of the wall, they would, if bent back to the vertical, have stood 2.5 feet straight up since the topmost course was no less than 1.5 feet back from the line of the perpendicular to the bottom course. The masonry of this section was composed mainly of long flat slabs 13 to 17 inches in length and 4 to 5 inches thick.

While this segment of wall really preserved the effect of its original

curvature, it cannot be regarded as actually *in situ*. Below the courses of long slabs are only loose and irregular stones, save at one point where a lower course was noted; at the same point the two lowest surviving courses are vitrified. Nowhere was a genuine foundation course solidly based on bed-rock discovered, but at two points radial beams could be seen running in under the building, while everywhere black earth and

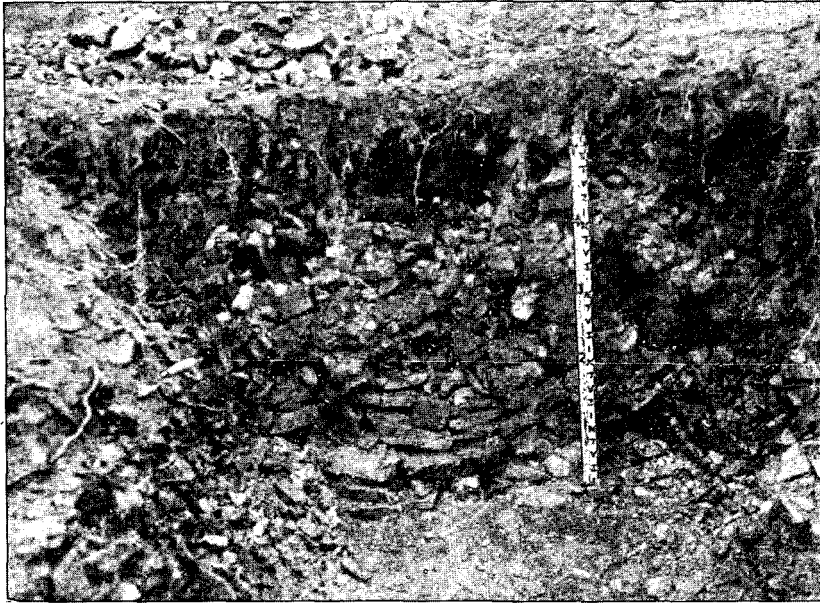


Fig. 8. Inner face in north-east Quadrant

charred wood lie under the stones that now support the masonry. Evidently the wall had fallen outward until the surviving courses came to rest leaning against the rubble of the core.

Where the rock slopes down from the high platform, the mass seems to have slid forwards; more or less continuous courses of building slabs, apparently corresponding to those preserved in the segment described, appear 1.5 to 2.5 feet in front of the positions they would be expected to occupy in a continuation of the curve just traced, but here more obviously insecure and out of place.

The true line of the wall was, however, recovered in the north-east quadrant. Here discontinuous strips of wall stand four or five courses high and resting directly on the rock at about 196 feet above O.D. under what appeared from the surface to be the lowest section of the rampart where the fort's entrance might have been expected (fig. 8).

The foregoing observations prove that the rampart was in fact once faced on the inside with a built wall composed in part of coursed masonry. But the surviving segments of this masonry are everywhere distorted, the successive courses fit only very loosely together, stable foundations are missing. If it be assumed that the rampart was actually composed of stone and timber on the *muris gallicus* principle, the observed phenomena become intelligible. The decay or combustion of the transverse tie beams will account for the yawning gaps between the building stones as well as for part of the distortion. The absence of a foundation course is explicable if the wall rested on a raft of timbers as did that of Burghead. The black material and charred timbers found in front of, and even running under, the wall afford some justification for assuming such a wooden substructure. Finally, the combustion of the wall timbers could explain the vitrification of the core in accordance with the suggestion of Déchelette confirmed by our own experiments.

No solid face of vitrified stone was discovered within the area bounded by the wall just described. Isolated masses of stones fused together were indeed found in the interior. Many of these lay high up among the stones fallen from the rampart and had clearly themselves tumbled inwards. But several masses lay on or were embedded in the supposed floor. In the north-west quadrant a particularly large mass composed of contiguous, but no longer continuous, blocks of fused stones extended for over 7 feet at M on the plan. At its eastern end it seemed to be resting on, or protruding from, the "floor" at 198.6 feet O.D., but further west it was traced below the crust though it did not touch bed-rock. At this level burnt bones were fused on to its under side. As burnt bones were found scattered about at all levels below the "floor," this observation may indicate that the mass fell in among the stones and bones while still in a molten state. Alternatively, since there are other traces of bones adhering to vitrified material even in the core of the rampart, bones may have been included in the rubble filling of the hypothetical Gallic wall and actually served as additional fuel for its vitrification.

Within the wall-core behind the face the vitrified masses observed *in situ* were nowhere more than 3 or 4 feet deep. While in the west section a single mass extended continuously over a width of 9 feet, the maximum width observed in the east section was only 6.5 feet. And here the superficial area of solidly fused stones was seen to be limited by lateral breaks. In other words, a continuous vitrified core to the rampart is only an assumption not fully supported by observations.

Nowhere in either section did the vitrified mass rest on bed-rock, though places have been described already where the vitrified material is actually fused on to the rock. On the other hand, black material was found in patches or continuously all along both sections under the vitrified stones. It might be derived from the combustion of the timber substructure of our Gallic wall. The casts of horizontal timbers, so clearly defined in the east section, are conclusive evidence for the former existence of beams within the wall-core arranged much in the way attested by excavation in the Gallic wall at Burghhead and described by Cæsar in Gaul.

Admittedly a *murus gallicus* should have a coursed outer face at least as well built as the inner face, but in this case, the wall being built in a circle, the expansion of the stones caused by the heat during vitrification would thrust outwards and naturally destroy the outer face, whereas the inner face, being backed by the mass of the wall, although crushed and distorted, would tend to survive. The only trace of such a face at Rahoy is the rather miserable little segment at X on the north-west. Elsewhere no outer face whatsoever survived. Nevertheless plenty of stones suitable for facing a wall were encountered in all external cuts. Accepting the segment of outer face exposed at X as marking the outer margin, the rampart will have had a thickness of 10 feet, or 12 feet if the corresponding inner face be supposed to have slipped outward. Owing to the immense distortion of the face the diameter of the enclosure can be estimated only within limits of 4 to 5 feet; 42 ± 2 is as near as we can get to the internal width. In all probability the wall was intended to be a true circle. Certainly, as at Finavon, no attempt has been made to adjust it to natural contours.

THE RELICS.

Although the whole interior of the fort was excavated to bed-rock by trowelling, the number of relics recovered was very meagre. Pottery and bone implements were totally absent. Pottery was certainly not made by the fort's occupants, presumably owing to the lack of deposits of suitable clay in the vicinity. Doubtless wooden vessels took the place of pots. The soil conditions are such that no unburnt bone survives. The relics recovered are listed below, the find spots being indicated by the corresponding numbers on the plan.

(1) Small scraper made from a broken pebble of flint, obtainable locally from the cretaceous limestone deposits surviving on the hill-tops—found in the black deposit between the slabs of the pavement.

(3) and (6) Broken saddle querns, one lying immediately south of the central hearth, the other among loose stones presumed to have fallen from the rampart, *above* the red and lower black layers in the south-west quadrant. Saddle querns alone were found in the vitrified fort at Duntroon, Crinan.

(4) Looped and socketed iron axe-head found lying in charred

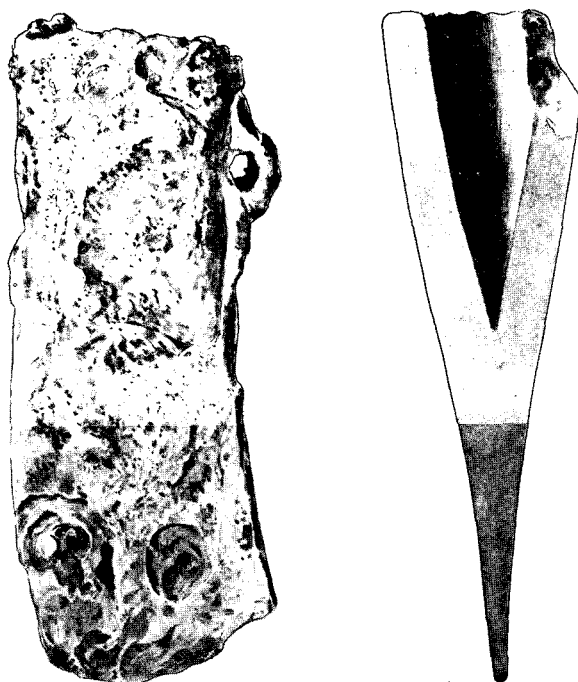


Fig. 9. Socketed Iron Axe from Rahoy. ($\frac{1}{2}$.)

material on the rock in south-west quadrant; a length of charred oak, plotted before the discovery of the implement, pointed to the find spot, and may have been the handle, but was too much disintegrated to reveal any shaping. The axe is 7.12 inches long and 2.6 inches wide at the blade. The loop seems to be .8 inch wide but is much corroded (fig. 9). Our axe makes the twelfth and largest extant specimen of a rare British type discussed by Rainbow in *Archaeological Journal*, vol. lxxxv, 1928, pp. 85 f. Like six of the other examples the implement is asymmetrical: the cutting edge droops or broadens downward as in Rainbow's group B. "The transitional character of the technique of these axes carries," writes Rainbow, "with it a general application as to their date in the

transition period between the Bronze and Early Iron Ages." But no specimen is more precisely dated than ours. Fortunately the early fibula found at Rahoy confirms the inference from the implement's obvious resemblance to a cast bronze "socketed celt." In view of the doubts as to the method of manufacture provoked by this similarity we submitted the specimen to Dr C. H. Desch, F.R.S. His report,

printed below, proves that the implement has in fact been forged, not cast. A duplicate which we had forged in iron weighed 4 lbs.

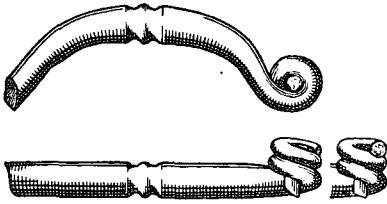


Fig. 10. Bronze Fibula. (†)

(2) Part of the bow and spring of a bronze fibula. The foot is unfortunately missing, as is half the spring, which was, however, evidently bilateral (fig. 10.) Enough remains

to show that the brooch belongs to the La Tène series and probably to a rather late version of the La Tène I type. The closest parallel is the (also imperfect) brooch from the Gallic-walled fort above Abernethy. Outside Scotland better analogies are to be found in Switzerland than in Britain.

Few though the relics be, they are of a nature to furnish information on two of the most important issues raised by the representative vitrified fort. On the question of dating, the exclusive use of saddle querns and the iron imitation of a bronze axe both suggest some time in the pre-Roman Iron Age. The brooch justifies more precision, and with all reserve a figure shortly after 200 B.C. might be hazarded. Rahoy thus strengthens the evidence from Dunagoil and Duntroon for a La Tène Age for vitrified forts north of the Clyde-Forth line as suggested in the *Prehistory of Scotland*. Still more explicitly do the relics support the theory of a cultural community between the vitrified and Gallic-walled forts which have been provisionally grouped together as the Abernethy Complex. In any case, the typological parallelism between the fibulae from Rahoy and from Abernethy establishes the general contemporaneity of a vitrified with a Gallic-walled fort.

Acknowledgments.—We are indebted to Mrs Newton of Rahoy for permission to excavate the monument, for kind hospitality and much practical assistance during the excavation, and for presenting the relics to the National Museum. The success of the excavation is largely due to the skilled co-operation of Mr J. I. Sutherland, who, as foreman during both seasons, gave us the benefit of his four years' experience in archaeological

excavation, and of Mr Keith Webster of Dalrulzion. Dr J. B. Simpson, who was conducting field work in the district, very kindly came to our aid in the solution of geological problems. We have also to thank Dr C. H. Desch of the National Physical Laboratory for examining the axe, and Mr M. Y. Orr of the Royal Botanic Gardens for identifying the charcoal and carbonised wood.

Mr Orr's examinations of the portions of carbonised wood submitted to him show a predominance of oak followed by hazel, with a smaller amount of willow or poplar and birch and a very little elm. The post stumps found near the hearth and in the north-east quadrant were of oak. The stem found under the outer edge of the vitrified material at III and the very friable charcoal enclosed in the vitrified core proved to be hazel. Only in the case of a minority of the specimens, and these all of oak, does Mr Orr add "condition suggests burning."

REPORT ON THE AXE. By Dr CECIL H. DESCH, F.R.S.

The iron axe was cut in half and one section ground, polished, and etched. The three photographs show its structure. Fig. 11 is the cross-section after light etching, slightly enlarged. The dark border



Fig. 11. Cross-section of Axe slightly enlarged.

and bands are the corrosion product—rust which has crystallised in course of time. The white is iron, and the grey portions are iron containing enough carbon to make it steely. Fig. 12 shows, at 150 diameters, large crystals of nearly pure iron, with inclusions of dark cinder (slag). Fig. 13, also at 150 diameters, shows a part containing much more carbon, about 0.3 per cent. Some parts had still more carbon.

The structure is that of a bloomery iron of remarkably good quality.

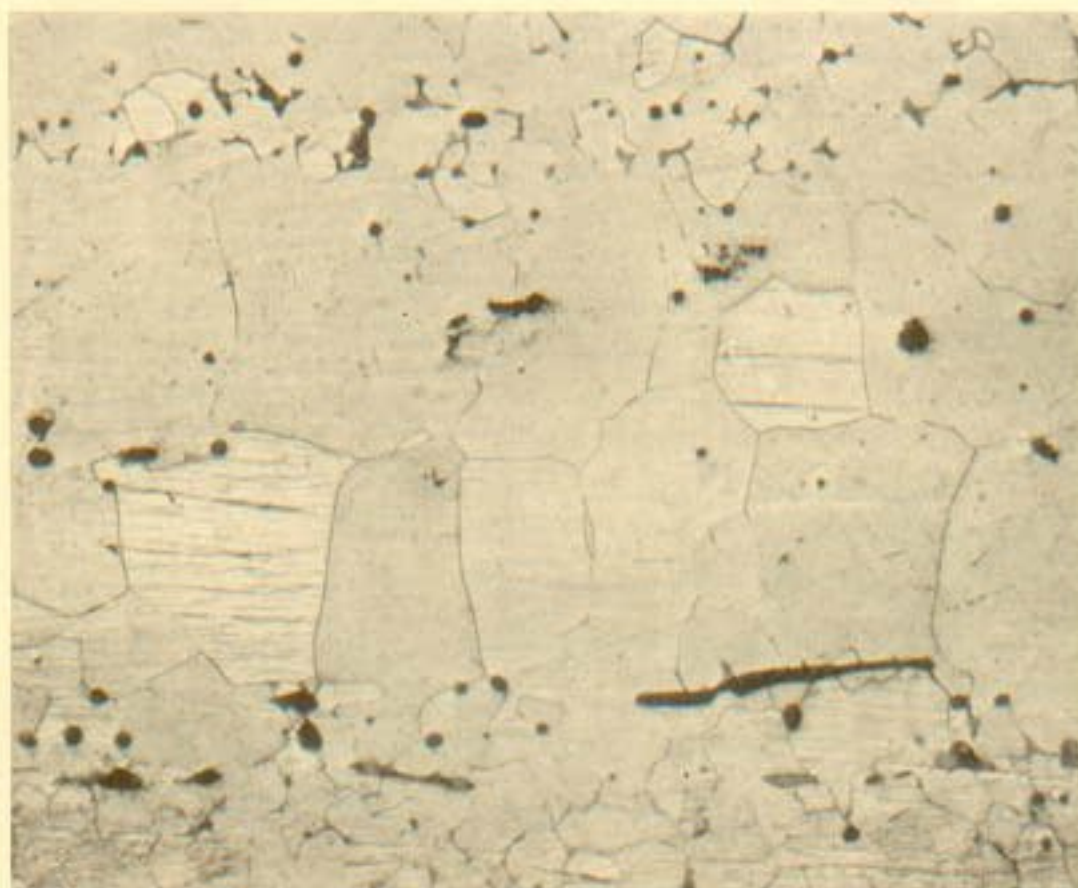


Fig. 12. Section of Axe. ($\times 150$.)

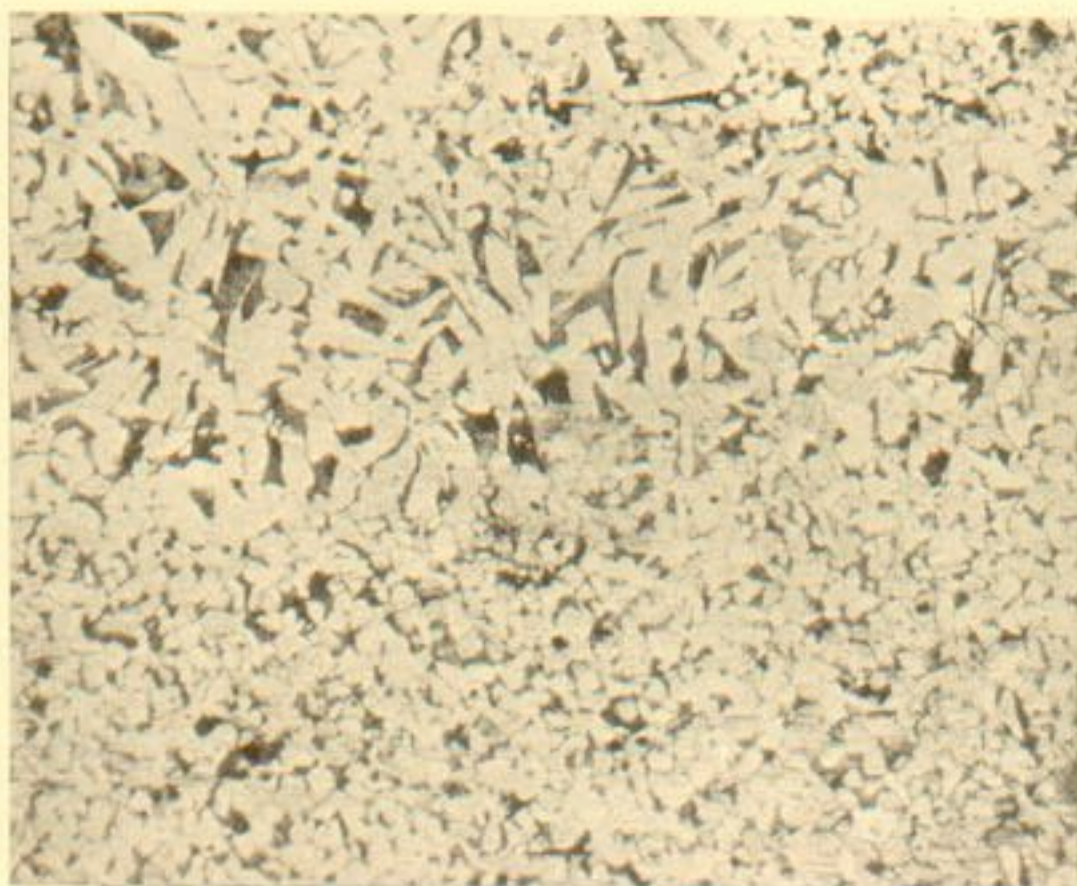


Fig. 13. Section of Axe. ($\times 150$.)

THE VITRIFIED FORT AT RAHOY, MORVERN, ARGYLL. 43

The variation in carbon is usual, but I have examined few bloomery irons which are so clean and well forged. The bands extending right across the greatest width of the axe show that welding was imperfect, which is to be expected in the absence of a power hammer, but it is remarkable that pieces of iron so large should have been united so well, with presumably only hand hammers.

The preservation of the specimen is remarkable; the faces have only a thin layer of rust, and it is only on one edge that extensive rusting has occurred.