

II. DESCRIPTION OF THE PLANS. BY THOMAS ROSS,
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The situation and condition of the plateau of Inchtuthil, with its camp and other works, having been already described by the Hon. Mr Abercromby, it only remains for me to fill in with some details the general outline drawn by him. The illustration (fig. 4) will give a general idea of the appearance of the site of the large camp previous to the commencement of the excavations.

From the end of February till the end of August 1901 I visited Inchtuthil almost every Saturday, or sent an assistant (Mr G. W. Tod), for the purpose of taking measurements of the work as disclosed by the workmen, and before they restored the ground to its natural condition by filling in the excavated soil. So that a complete record of every excavation made within the plateau is delineated to scale on the plan (fig. 5), the dotted lines showing the position and extent of the exploratory trenches.

The south-western corner and horn of Inchtuthil is cut off from the remainder of the plateau on which the camp and redoubt are situated, by a ditch and rampart, the ditch being on the outside and the rampart next the camp (see the plan on fig. 6, and sections D and E on fig. 7). The length of this ditch is about 530 yards by about 16 feet wide, it is V-shaped, and is 6 to 8 feet deep. Where the rampart is preserved it is



Fig. 4. General view of the site of the Roman Camp on the plateau at Inchtuthil before excavations.

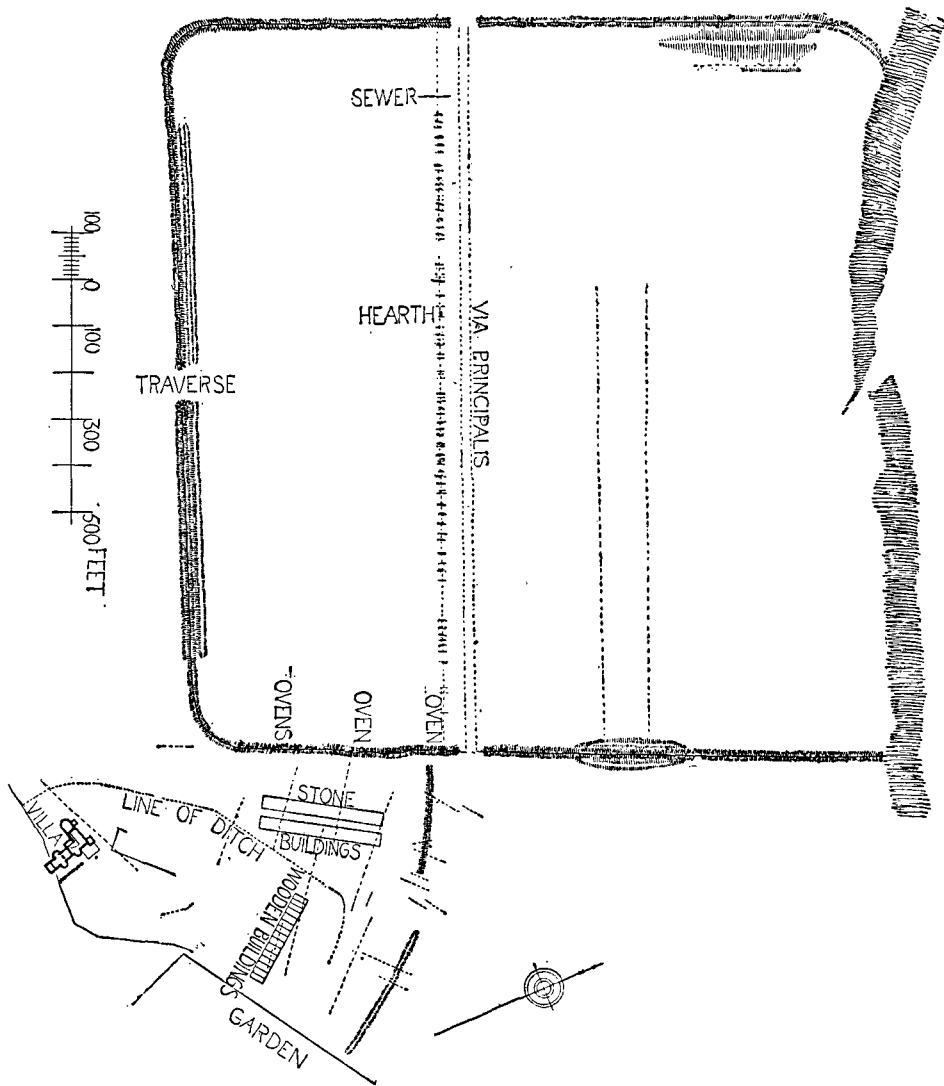


Fig. 5. Plan (No. 1) of the large Camp at Inchtuthil, showing the situation and extent of the exploratory trenches.

5 feet 3 inches high by about 20 feet wide ; the scarp of ditch and mound are continuous. The rampart seems to have been continued at both ends along the face of the declivity towards the north-east. At the south end this is more distinct than at the north, where a slight break occurs. This western vallum appears to have marked the extent of the circumvallation of the plateau, as no remains of any rampart between it and the fort (see plan fig. 6) are now visible. It was entirely made up of the gravel thrown out of the ditch, and it may here be stated that the whole plateau is composed of sand and coarse gravel, and that all the ditches to be hereafter described at the camp and at the redoubt are of the V-shape section.

The camp is a square of about 520 yards, and contains about 56 acres, including space occupied by defences.

Along the north side the camp had a strong natural defence in the steep bank and in the marshy nature of the ground below ; but although no complete defence is to be found along the top of the steep banks at any part, at several places the extreme edge is higher than the surface, as already indicated, and is suggestive of a rampart. The modern walk round the island has interfered with this. On the other sides the camp is defended by a single rampart and a ditch outside, except on the south-east, where the rampart is double. Near the north-west corner of the camp at A (see figs. 6 and 7), an extra ditch was found, but it was not found at any of the other cuttings, and no explanation can be given of its meaning. The main ditch at this point is 20 feet wide by 6 feet deep. The width of the rampart is indeterminate ; it lay on a bed of prepared sand about 12 inches thick. The middle section for a width of about 11 feet was composed of thick vegetable laminæ in layers of about 4 inches thick, and alternating from a brown to a black tint. Between this and towards the ditch there was a section of small stones mixed with white clay for a width of about 10 feet 6 inches and a depth of about 2 feet ; from this to the edge of the ditch was coarse gravel. It is difficult to say whether at any point round the camp there was a berm.

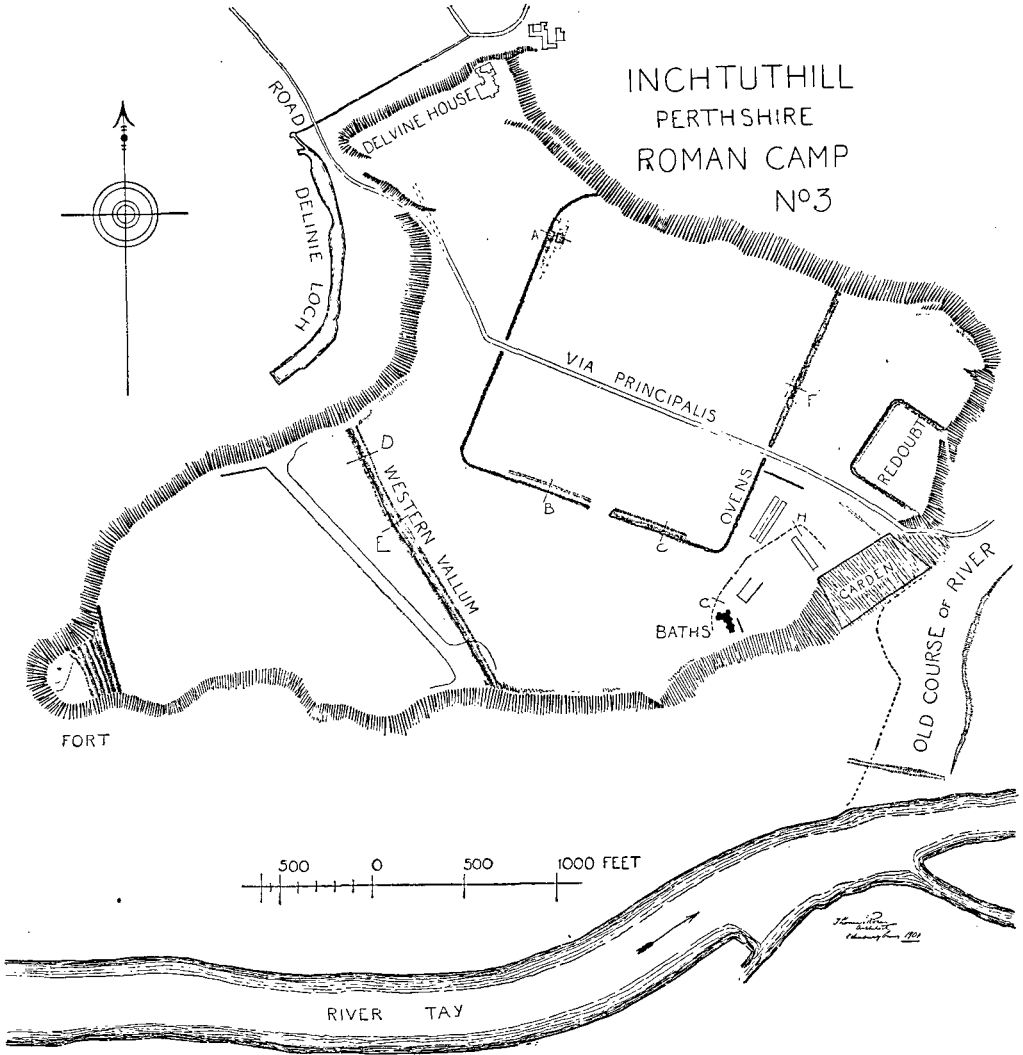


Fig. 6. Ground Plan of the whole Plateau and Military Works at Inchtuthill.



SECTION F

INCHTUTHILL

PERTHSHIRE

SECTIONS OF DITCHES

N^o 2.



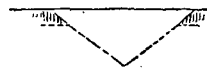
SECTION E



SECTION D



SECTION C



SECTION C



SECTION B



SECTION H



SECTION A

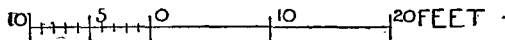


Fig. 7. Sections of the earthworks and ditches, Inchtuthil.

Section B (figs. 6 and 7), on the south-west side of camp.—This section in the centre is composed of laminæ of alternating brown and yellow tints, about 9 feet wide by 2 feet 6 inches high. To the outside of this, for a width of about 5 feet, and an average height of about 18 inches, there was a kind of buttress of red quarried sandstone from West Gourdie.¹ From the buttress to the ditch, a length of about 15 feet, was composed of gravel—the spoil of the ditch. The height of the rampart at this section is about 5 feet 6 inches, and the width of the ditch is about 21 feet 6 inches by 5 feet 3 inches deep at section C (figs. 6 and 7). The rampart was very much worn down by agricultural operations, and what little remained was coarse gravel—the spoil of the ditch.

The double ramparts seen at section F (figs. 6 and 7) were very much wasted by agricultural operations. The inner one had a foundation with large Gourdie stones. The remainder of the works consisted of the spoil of the ditch. The ditch is about 23 feet 6 inches wide by about 6 feet deep. This double rampart exists only on the north side of the *via principalis*.

Ovens.—In the continuation of this ditch, to the south of the *via principalis*, four ovens were found. The furthest south one was considerably larger than the others; it and the two lesser ones at the north extend across the ditch and rampart, and the remaining one lies parallel to the ditch. They are circular in form (see fig. 8), and are built in rough courses of natural boulders (see fig. 9), cemented with clay and paved on the floor. The large oven measures 6 feet 3 inches in diameter. The smaller ones vary from about 3 feet to 4 feet and 5 feet 6 inches in diameter. These ovens must have been wrought and superintended from the ditch, which was thus apparently the bakehouse. The thickness of the oven walls was not ascertained, but this was probably considerable, and they must have been domed over in stone and provided with furnace doors in front, as indicated by the ruins. The bounding lines on the oven plans merely indicate the extent of the excavations. There are the remains of flues about 4 or 5 feet above the level of the cell for carrying away the

¹ West Gourdie is the name of a quarry still in use, and situated at a distance of about 2 miles from Inchtuthil.

INCHTUTHILL OVENS

Nº 4

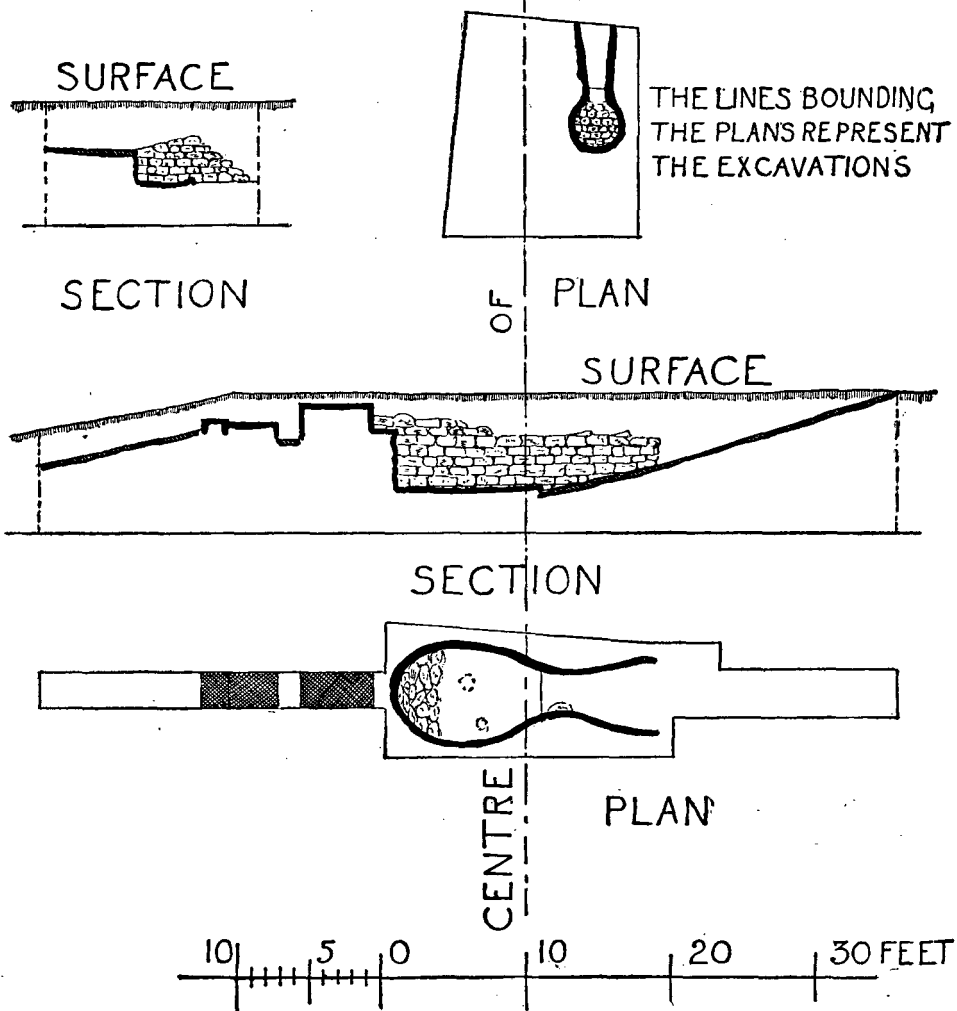


Fig. 8. Ground plans and sections of the Ovens found in the rampart at Inchtuthil.

smoke, and in them, as well as in the ovens, there were found large quantities of charcoal.

Drain.—A small part of a built drain or sewer 2 feet 6 inches wide,

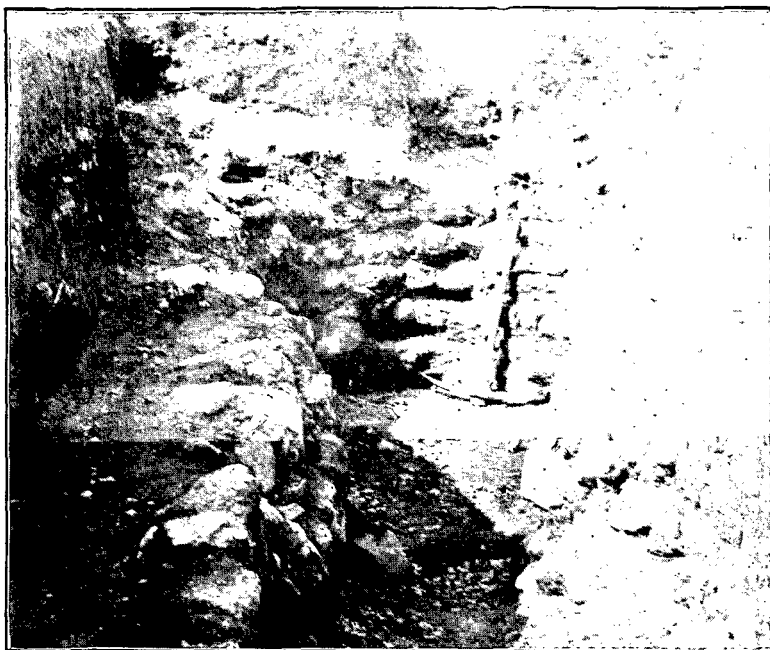


Fig. 9. View of the southmost of the Ovens at Inchtuthil.

with a paved floor, was found in the west side of the camp. Its position is shown on the plan (fig. 5). The sides of the drain were 2 feet 2 inches high inside and 2 feet 4 inches more to the surface of the ground, so that the cover being only about 2 feet below the surface has disappeared. The object of this drain was not evident.

Via Principalis.—The *via principalis* was found as shown on the plans (figs. 5 and 6.) It extended down towards the river through a natural hollow at the south-east on the one hand, and continues on the other

towards the edge of the plateau near Delvine House. There was no trace of it found down the steep banks nor on the level ground below, where several cuts were made for the purpose of ascertaining if there had been an approach to the island in this way. There was a gateway through the defences on the south side of the camp, but none on the north side facing the steep bank. None of the entrances were protected by traverses. The level or unexcavated space between the ends of the ditches at the east and west gateways is about 60 feet, and in the centre of this space is the *via principalis*, about 20 feet wide, so that there was a clear unprotected space of 20 feet on each side. At the south gateway the corresponding space between the ditches is about 100 feet wide, and the roadway through it was about 20 feet wide. The *via principalis* was constructed of layers of gravel and loam, doubtless obtained from the soil alongside.

On the line of the trench shown to the south of the *via principalis*, at a distance of about 200 yards from the west end, there was found a square-shaped excavation, measuring 5 feet from east to west by 3 feet 6 inches, and 3 feet deep. It was filled with charcoal, and had all the appearance of having been a hearth (see fig. 5).

Along this line small excavated trenches, about 12 inches to 18 inches in breadth, occurred at about every 3 or 4 yards apart. These, it is conjectured, indicate the foundations of timber buildings, but they were not followed up.

Between the entrance through the south side of the camp and the mouth of the ravine the *via principalis* seems to have been protected by a rampart and ditch; a great accumulation of soil was found at this part, running parallel to the roadway. The rampart is shown extending from the present garden wall in a north-western direction. Three sections were made across it, one of which revealed a large Gourdie sandstone about 18 inches by 12 inches, lying on the bottom, with layers of gravel above. This stone may be quite accidental, and probably got into its position in the alterations which subsequently took place. Another had a layer of blue clay at bottom, resting on gravel, and the third exhibited layers of small stones about 6 inches or 8 inches in size, bedded in clay.

The ditch, which begins at the large camp, and extends in a south-eastern direction, was about 16 feet wide by 7 feet deep, and V-shaped.

The Redoubt.—To the south-east of the large camp, at a distance of about 140 yards, there is a smaller camp, called the Redoubt on the plan

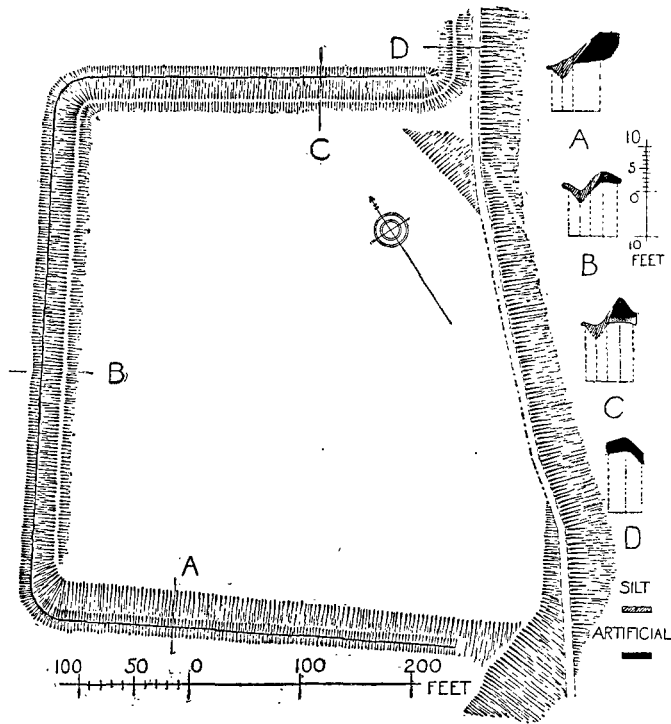


Fig. 10. Plan of the Redoubt with sections of the ditch and rampart.

(figs. 6 and 10) over-looking the Tay. It measures about 163 yards by 140 yards, and contains about 4.7 acres. These measurements include the space occupied by the defences. Like the large camp, it comes up to the edge of the plateau, and has defences on three sides complete, with indications of the remains of the rampart at the top of the steep bank. These

defences (see plan and sections in fig. 10) consist of a single rampart and ditch, the latter, of course, to the outside; it measures 18 feet wide by about 4 feet in depth. The ramparts measure about 24 feet wide by about 5 feet high, the latter being composed of the spoil of the ditch, with some additional material of the same nature. Neither gateway nor signs of occupation were found. A flat space on the south-east might have been used for an entrance, but although several sections were made, no certain proof of this was obtained.

Adjoining this redoubt, on the south, where the ravine already referred to as containing the continuation of the *via principalis* passes, the position of another and perhaps earlier occupation was found. The defences of this work had been levelled for cultivation, but from the contour of the surface and the great depth and extent of superimposed soil, the various lines were fairly well made out. In cutting the sections on this area, the existence of a ditch 9 feet 6 inches wide by 4 feet 6 inches deep was revealed; these are shown by section G, H, in figs. 6 and 7. Two breaks in the continuity of this ditch were located; these were each 16 feet wide, and probably indicated entrances, see plan (fig. 6). Within these defences were discovered the marks of supposed bedplates of various timber erections; the most complete, as indicated on plan (fig. 5), is about 200 feet long by 30 feet wide.

Buildings.—On the east of the large camp, and south of the *via principalis*, there were discovered the remains of two rows of stone buildings (see plan, fig. 5), each about 27 feet wide by about 250 feet long; they were separated from each other by a street about 17 feet wide. Most of the stonework had been removed, but stones from Gourdie quarry and Meikleour quarry were found in patches throughout the whole length. Also the layer of clay which is generally under the foundations of Roman walls was discovered very complete and entire.

The most remarkable discovery at Inchtuthil was the finding of the buildings of the villa, with the bath, the situation of which is shown on the general plan (fig. 5), while an enlarged plan is given in fig. 11. It was not expected that there would be found in this locality on the north

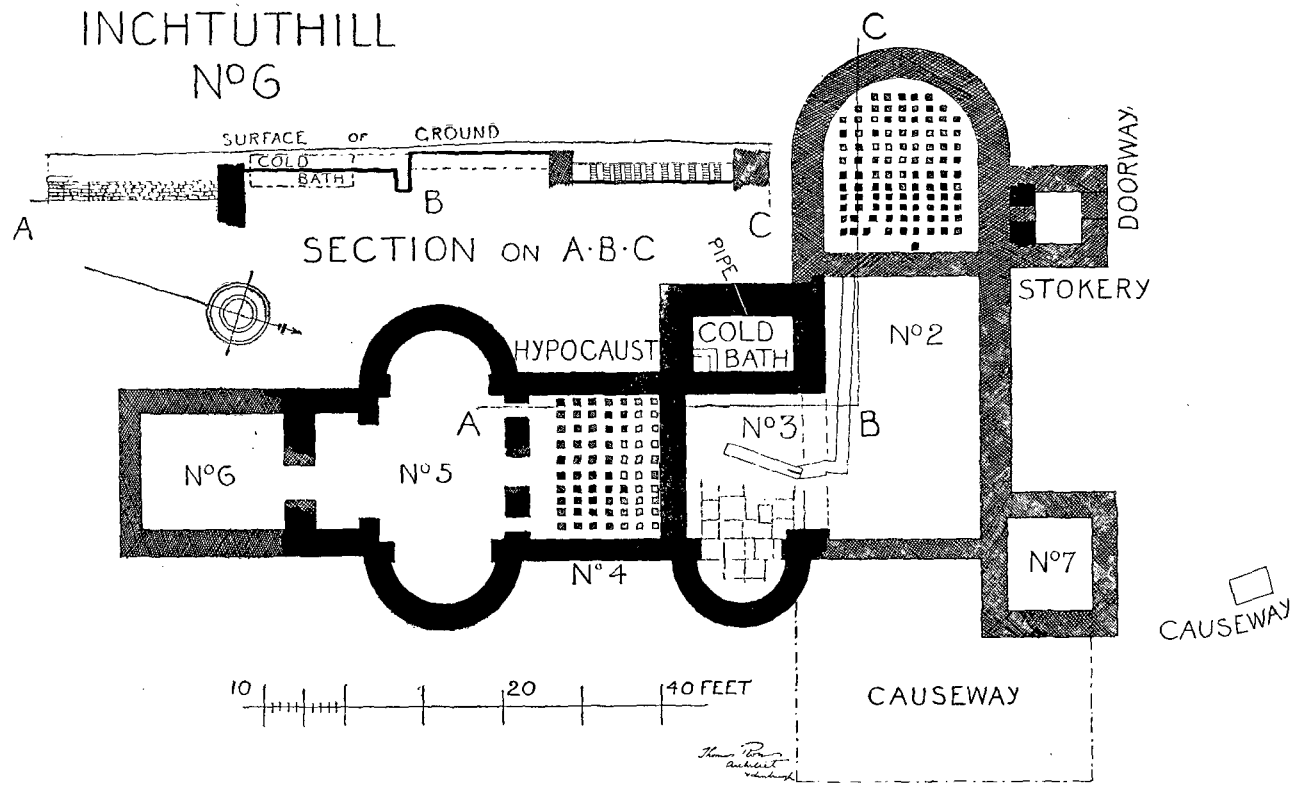


Fig. 11. Plan and section of the Bath-house or Villa at Inchtuthill.

side of the river Tay a building of this type, so manifestly resembling what might be anticipated in connection with the settled, luxurious life of a long subdued and peaceful colony. And to discover, well within the Caledonian borders, such evidences of refinements and leisure as the arrangements of this house betoken, seems to open up a new view on the subject of the Roman occupation of North Britain. No writer seems to have anticipated that anything in the nature of such a secured settlement as this villa indicates would ever be found north of the locality of the Antonine Wall; and although we know from Pennant that in the beginning of the eighteenth century very considerable remains, apparently of a nature similar to this, were discovered at the west side of the camp, still, from the unsatisfactory way in which they were recorded, these discoveries have made little or no impression. But, in the light of the results of the excavations now described taken in connection with the character of the skilfully planned house and its artistic adaptations, its evident tokens of comfort and luxury, we are forced to the conclusion that it was the intention of the Romans to remain in occupation of this part of the country. This villa is not a structure of the kind that would have been erected by a General merely marching to suppress a temporary insurrection of natives who were threatening the safety of the settled country further south.

There was nothing in the appearance of the surface of the ground to indicate the existence of buildings at this place; the site is a slightly rising one, and the higher floors of the villa (see the section, on fig. 11) were very little below the level of the surface of the ground, while at the excavated hypocausts there was a considerable depth of soil. This difference in the depth of the soil affected the appearance of the grass on the surface, and a trial cutting at the south-east corner of the large camp revealed the trench already referred to, and shown by a dotted line on the plan in fig. 6. This trench appeared to be a part of a work which had been abandoned, and in following it up this building was come upon. There is no reason for supposing that this is the only building on Inchtuthil, as the Society has not examined the whole island, or anything like it.

On the plan (fig. 5) there is shown the position and length of every cutting we made, so that at any future time the work we have left undone may be taken up by consulting this plan.

The buildings shown by the black tint on the plan of the villa (fig. 11) are all in existence for heights about 3 to 4 feet, as shown by the section on the plan, and by the views from photographs (figs. 12 and 13). The walls indicated by hatched lines are more or less imperfect, in some places the only indications being the disturbed nature of the soil found in the tracks cut for the foundations, but the general outline of these walls, as shown on the plan, may be accepted as accurate. As will be seen from the section the floor of the hypocaust on the north side is at a higher level than that of the hypocaust on the south side; whether this indicates two distinct buildings or not, it is not easy to say. Had the walls been standing to a greater height, the absence or presence of doors of communication would have probably made this clear.

From the existence of a rough causeway of concreted cobbled stones laid on the natural gravel surface at the north end of the east front, we may assume that the entrance was in this quarter,—the causeway indicating a street or roadway along this front.

We will begin the description of the building with the apsidal hypocaust, which is situated at the north-west corner at C on the plan (fig. 11), and measures 22 feet long by 19 feet 6 inches wide (these figures and those which follow for the other apartments being all taken within the walls). It contains 103 pillars, in a more or less complete state. It will be observed from the plan that only one pillar of the eastmost row is shown; there were no indications of the eight other pillars required to complete the row, but it is likely that they did exist, as necessary to support the floor above, in which case there would have been 111 pillars. They are of brick, and some of them stood to their entire height when first discovered, with portions of the broken tile pavement over. The floor of the hypocaust on which the pillars rested was of concrete $3\frac{1}{2}$ inches thick, lying on broken stones. The general view given in the photograph reproduced in fig. 12 is taken from the north side, looking

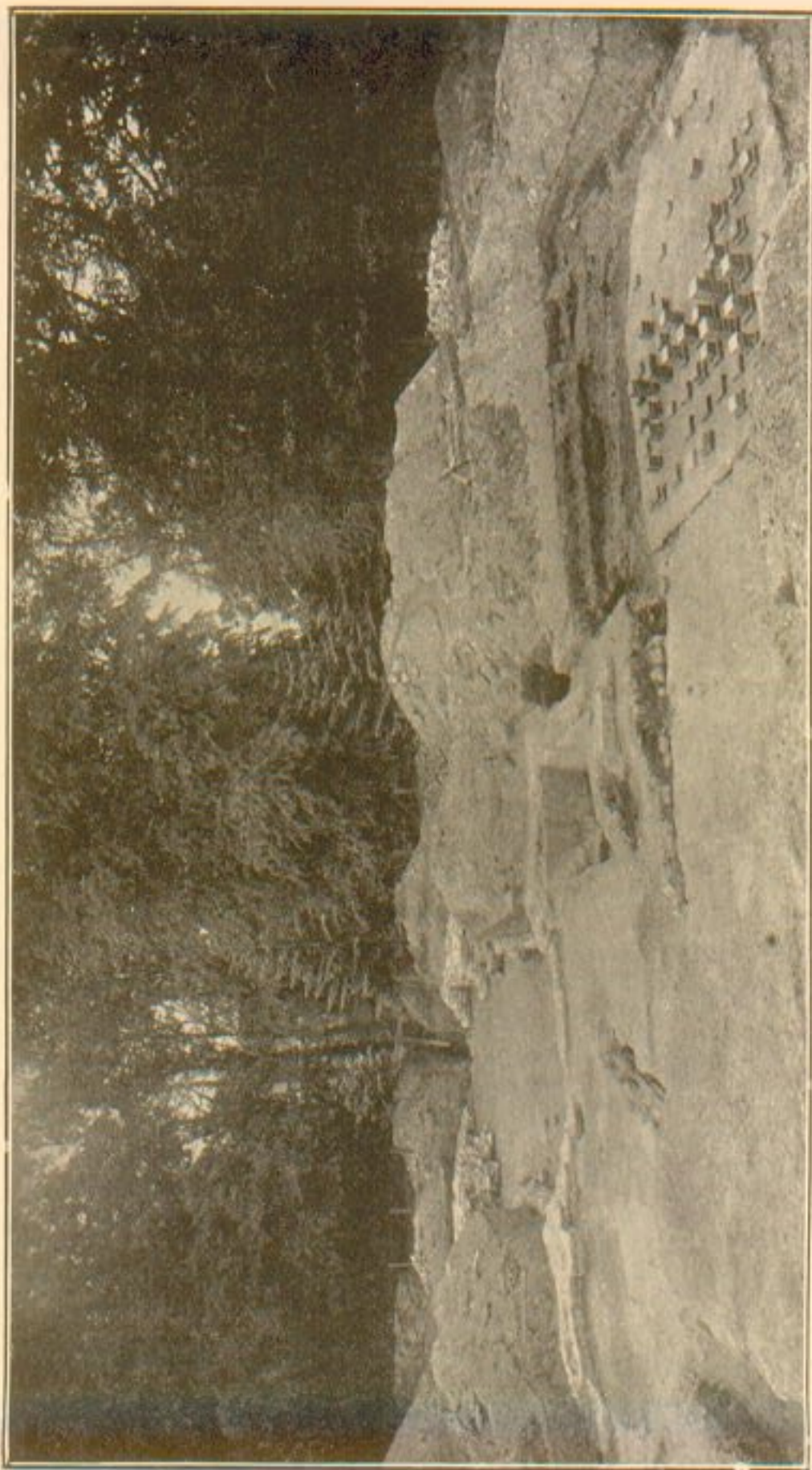


Fig. 12. General view over the Hypocaust, Bath, and adjoining rooms, of the Villa at Inchtuthil, looking south.

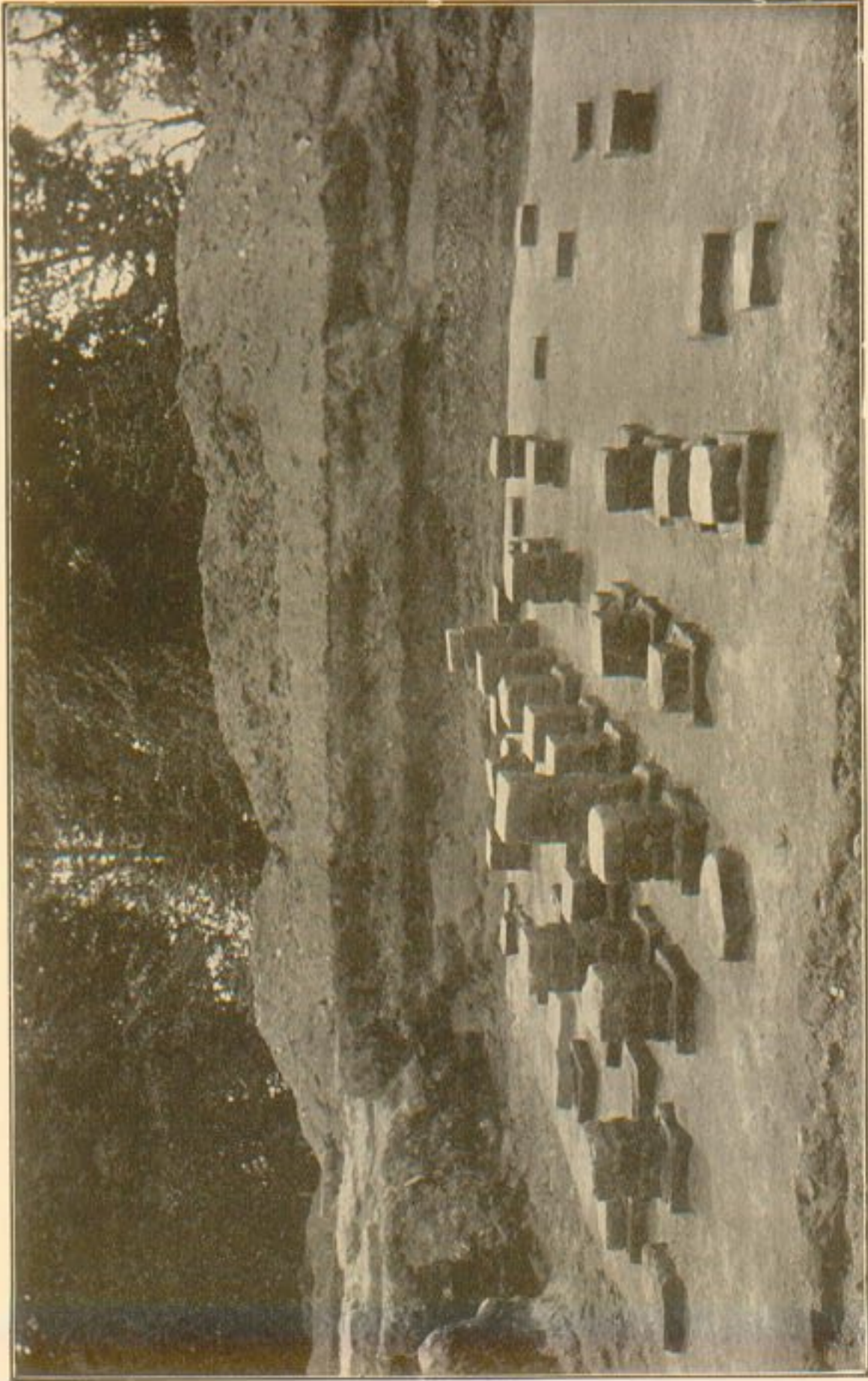


Fig. 13. Enlarged view of the Hypocaust with its Pillars, at west end of the Villa at Inchtuthil, looking south.

south. The enlarged view of the hypocaust alone, with its pillars (fig. 13) is from the same side, also looking south.

The pillars were 2 feet high, and were composed of six bricks $8\frac{1}{2}$ inches by 8 inches square by $2\frac{3}{4}$ inches high, and a base brick 11 inches square by 3 inches high; this allows about $\frac{5}{8}$ of an inch for mortar joints. Some were without the large base brick, nor were they strictly in a line, as will be seen on the plan. In the filling up of the ruins after the place was abandoned they may have got displaced. The pavement tiles of the floor over the hypocaust are of the same material as the bricks, and are 17 inches square by $3\frac{1}{2}$ inches thick. Many of the bricks and tiles are indented on one face with shallow circles within circles, and some with oblongs similarly treated. These markings provide the necessary *key* for mortar which is wanting on a smooth surface.

Stokery.—The stokery, adjoining the hypocaust, was separated from it by a double wall. The hatched portion on the plan (fig. 11), between the two dark parts, is at a lower level, indicating the position of the furnace door; the dark shaded parts are about 2 feet 6 inches high, and of stone, with brickwork at the sides of the furnace door, but of a rough and patched description of masonry. The floor of the stokery is about 12 inches lower than that of the hypocaust, and on it was found, in my presence, an oval leaden ring, measuring $4\frac{1}{2}$ inches by $3\frac{1}{2}$ inches.

A doorway was found in the north wall of the stokery, 2 feet above the floor, and having a width of about 3 feet. This is the only indication of a door in the whole building.

The apartment over the hypocaust, as will have been gathered from the foregoing description, is completely gone, but the floor of this apartment, measuring to the surface of the large tiles, supported by the pillars, was 2 feet $3\frac{1}{2}$ inches above the hypocaust floor. The floor of the next apartment to the east, marked No. 2 on the plan (fig. 11), is 1 foot $6\frac{1}{2}$ inches above this last level, so that there must have been steps between these two apartments, unless the floor over the hypocaust was made up $18\frac{1}{2}$ inches with concrete over the large tiles; that it had concrete

with a mosaic floor is likely enough, judging from floors found elsewhere, but not, probably, of such a thickness.

This apartment No. 2 measures 33 feet long by 19 feet wide. It will be seen from the plan (fig. 11) that it is of an L-shape, with a south



Fig. 14. View of the Flue passing from room No. 2 to room No. 3.

recess at the east end, No. 3, measuring about 18 feet square; over and above this, it has an apse projecting to the east 8 feet by 11 feet 4 inches wide; the floor of No. 3 is lower by 2 feet than the floor of No. 2. There is a flue, constructed of stone (figs. 11 and 14), extending from the level of the hypocaust floor along beneath the floor

of room No. 2 for a distance of about 27 feet; it is near the south side of the room, but is not parallel with its axis; it branches off southwards in a curious irregular manner, bending in various directions, and terminates in room No. 3, having traversed a distance of about 42 feet; it measures 1 foot 4 inches wide, and is 3 feet 10 inches deep below the floor of No. 2. This flue has been covered with concrete, and at the first bend this covering still remains 7 inches thick, and is flush with the floor of No. 2. It is probable that Nos. 2 and 3 were two separate rooms, divided by a wall, as indicated by dotted lines; this would leave No. 2 a large parallelogram and No. 3 a smaller with an apsidal end. The floor of No. 3 has been laid with tiles, as is indicated by distinct irregular squares marked on the concrete—the matrices, as it were, of the tiles; these are shown on the plan. The thickness of the partition wall between these two apartments seems to be determined by the line which marks the cessation of these matrices or cores on the north side of room No. 3, and this leaves an equal return of the east wall of this room on each side of the apse; in other words, places the apse on the central line; further, this position of the partition wall crosses the flue in the space of the second part of its bend; the face of the wall next No. 2 nearly coincides with the edge of the broad pilaster at the east end, and crosses the flue at a nick seen on the plan, and the side of this partition wall next to the room No. 3 crosses the flue at the point where there is a step down in the flue of 6 inches into this room. The space on the floor supposed to be occupied by this partition wall is very rough and irregular; and the fact that the level of room No. 3 is about 2 feet lower than the floor of room No. 2, and the circumstances connected with the flue just referred to, all seem to indicate that these were two rooms, and probably the face of the broad pilaster indicated one side of the doorway of communication.

Possibly the room projecting at the north-east corner (No. 7, on the plan fig. 11), was an entrance porch, but nothing remained of it except the clear outline of its foundations.

To return to the description of the flue: at the point where the step

down in it occurs, that is, just within the room No. 3, the flue is divided into two passages by a central division made of cement, about 1 inch thick, in a very neat and careful manner; it is broken, but its remains extend to about 1 inch in height, and for about 2 feet from the step along the last bend of the flue. The flue at this point where the division occurs (fig. 14) is about 3 feet below the floor of the room No. 3.

In none of the plans or descriptions of baths or villas known to me is any similar contrivance known or described. I may, however, draw attention to a division of a flue, but of a different kind from this at Inchtuthil. In Lower Thames Street, London, a Roman building was discovered in 1848. It had a hypocaust, with an apse towards the west, and a heating flue leading from it, as at Inchtuthil. In this flue, at the entrance, there was placed a triangular-shaped pillar, which divided the mouth of the flue into two channels.¹

Excavations were made to see if the flue was continued further than it is drawn on the plan, but it is quite certain that it terminated in the abrupt manner shown. If the hot air and smoke escaped at this termination into the room, the effect must have been uncomfortable. It may be suggested that the division in the flue may have been continued along nearly to the end of the flue, and that one channel was a flow and the other a return, and worked by means of valves, and that the return ended by communication with an upright flue to the open air, and thus allowed the smoke to escape.

A cold bath, in most perfect preservation, is situated outside the angle formed by the walls of rooms Nos. 2 and 3; it measures 12 feet 5 inches long by 7 feet wide by 4 feet deep. It is lined with cement mixed with pounded brick about 6 inches thick, and finished with a smooth coat of cement both on sides and floor; the floor is graduated to the centre of the west side, where there was found a lead escape pipe at the lowest level, running in a diagonal line through the outside wall (see plan fig. 11, and view fig. 15). No continuation of the pipe, or of a drain, was found outside, although something of the

¹ *Archæological Journal*, vol. 5.

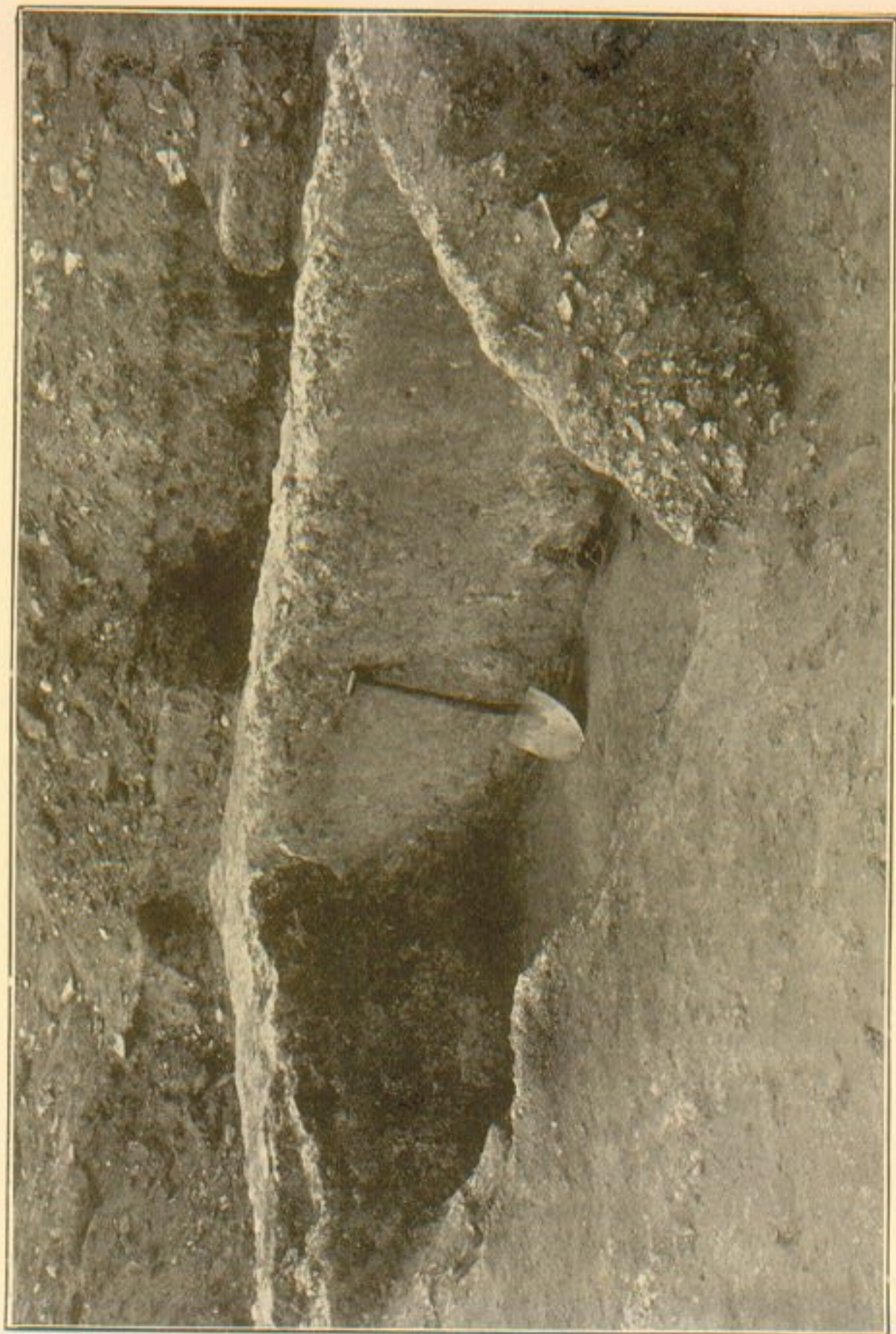


Fig. 15. View of the Bath, showing the orifice of the escape pipe of lead, at the bottom.

kind must have existed. The steps to the bath are partly built of brick and stone, and have been covered with cement; the bottom step is all brick or tile, except one stone at the corner. One tile measures 21 inches by $3\frac{1}{2}$ inches on the face. The second step is entirely built of Gourdie stone, and the top step is of bricks and broken tiles; on one of the latter are the indented lines of the mortar key. There appears to have been a 4 inch scarcement round the bottom; this is similar to the Roman bath at Carpow, down the Tay, near Abernethy. The position of these steps show that this bath was entered from room No. 3.

We now come to the description of the remaining portion of the building. Nos. 4, 5, 6 on the plan (fig. 11) extend in a southern direction for a distance of about 65 feet; their floors all at the same level, are lower than those of Nos. 1, 2, 3. From the floor of No. 3 there is a fall of 4 feet to the floor of the hypocaust, No. 4. Nos. 4, 5, and 6 were doubtless fitted with hypocaust pillars, although these were only found in No. 4 (fig. 11), which measures about 18 feet by 16 feet 6 inches, and contains seventy pillars, constructed of brick in the same manner as those in the hypocaust already described, but they were in a more ruinous condition; the pillars of the northmost row are within 3 inches of the corresponding wall, while at the south end there is a vacant space of about 3 feet 5 inches in width, in which no trace of pillars existed. There are three openings from this hypocaust into the next central apartment (No. 5), a portion of the masonry of one corner of which is shown in fig. 17. The plan of this apartment is of a refined architectural description, and may be described as a central oblong chamber, measuring about 18 feet 4 inches from east to west by 16 from north to south, with projecting alcoves or apses, one to the east and another to the west. On the south there is an ala of the same depth as the apses. This apartment measures 34 feet 9 inches by 24 feet. In the finished room above (for what remains is merely the basement or hypocaust) we can see that this room was probably of a highly decorative character, with pilasters at the side of each alcove and of the ala, with arches thrown across from pilaster to pilaster, and the

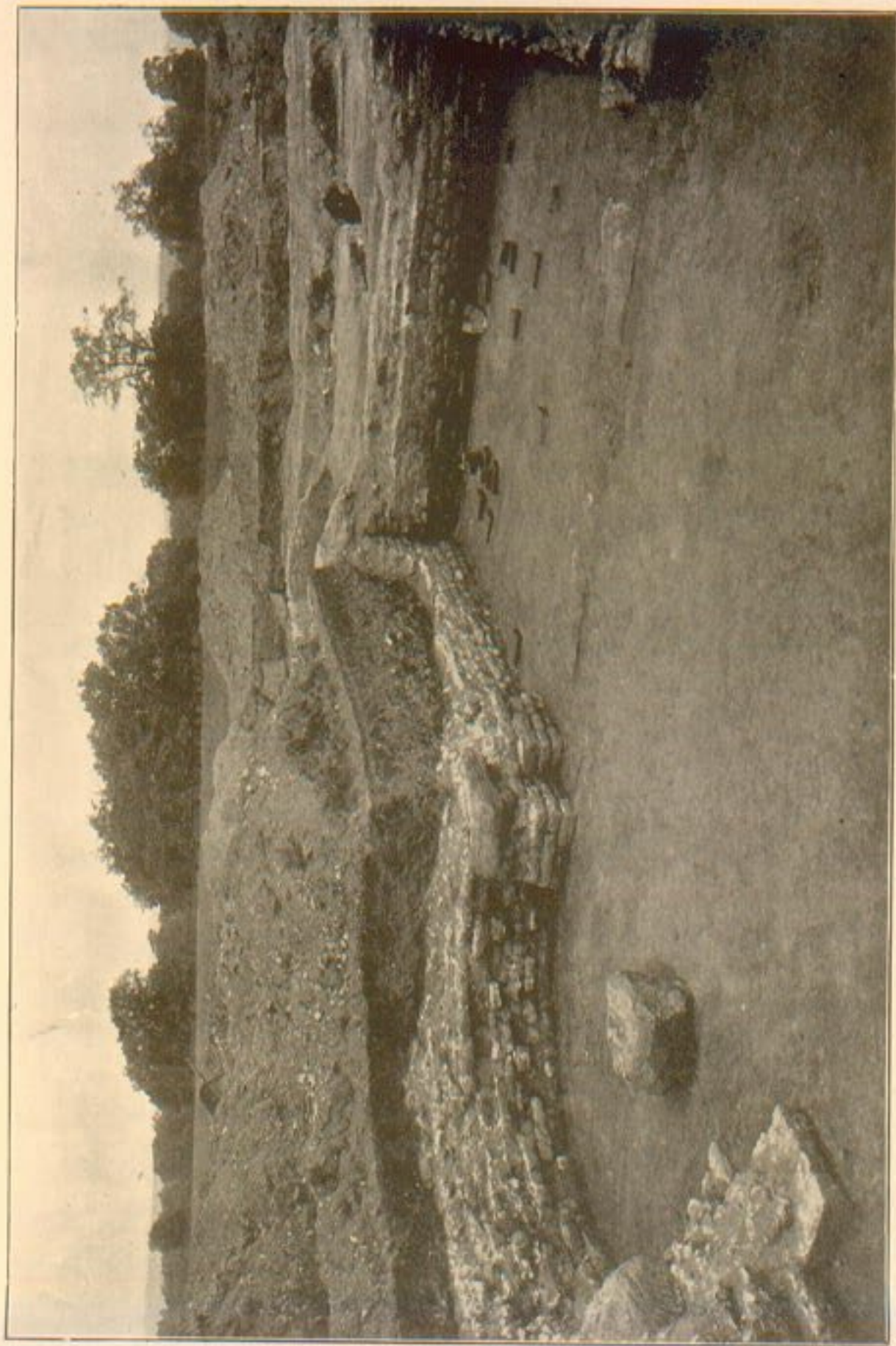


Fig. 16. View of the Hypocaust in room No. 4, and apsidal end of room No. 5 looking north-west.

alcoves finished with semi-domes. That attention was given to decorative effect is shown by the large pieces of red-coloured plaster found on the floors; portions of buff, green, and black were also found. Of the southmost apartment (No. 6), measuring 18 feet by 14 feet, there is nothing to say, as the tracks of its foundation only exist.

In the west wall of No. 4 the courses of the masonry near the centre



Fig. 17. Masonry of south-west corner of room No. 5.

are distinctly wavy—not quite level—as if a slight settlement had taken place. The east wall exhibits no such defect. This settlement would seem to indicate that the wall above was of considerable weight. In connection with this defect, the west wall has been most carefully pointed by its Roman builders with fine hard lime, now perfectly white and clean, and the joints have been most carefully drawn in with a

trowel as shown in fig. 18. From this, one might surmise that the hypocaust was seldom used after this pointing was done, as otherwise it would have got blackened; but on the other hand, the filled-in earth might have a cleaning effect on hard dry line.

In chamber No. 5 there was found a well shaped hollow brick, evidently part of a flue; it measures $9\frac{1}{2}$ inches long by $4\frac{1}{2}$ inches

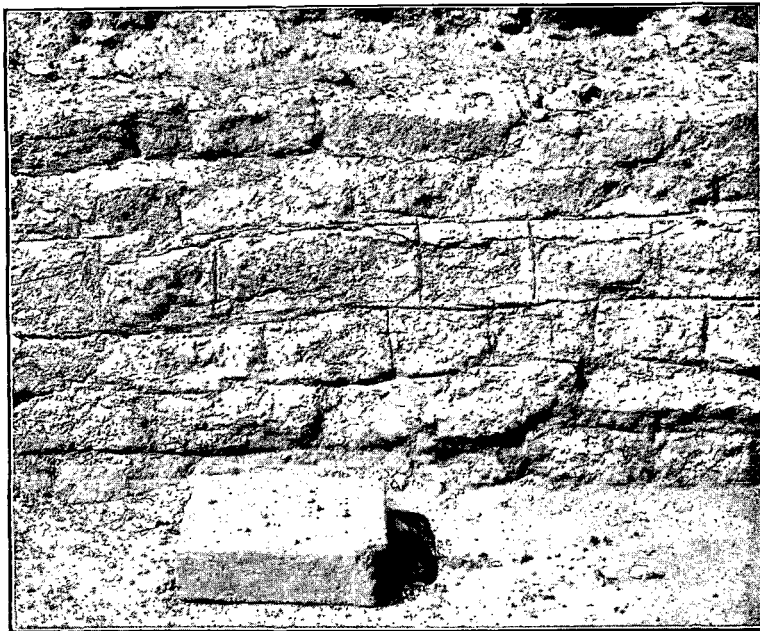


Fig. 18. Pointed Masonry in west wall of the Hypocaust, room No. 4.

wide by $3\frac{3}{4}$ inches high; the centre was cut out, so that it resembles a box without the ends and the lid; the width inside is $3\frac{1}{8}$ inches, so that the sides are nearly $\frac{3}{4}$ inch thick. The brick is clean and neatly made. Such bricks are very frequently found in Roman baths and villas, and their purpose in heating such buildings is quite well known and understood. Thus, in the hypocaust beneath the Roman

baths found at Caerwent in Wales, there are fifteen flues constructed of bricks similar to the one found at Inchtuthil. These bricks lined the bath at the ends and one side, and as they got warm with the hot air and smoke circulating through them, they warmed the water. They have also been found in the walls of chambers simply for heating the atmosphere of the room. Curiously enough, the brick found at Inchtuthil was filled with cement in an exceedingly rough manner. There was only one found, but without doubt they formed an important feature in the economy of the house. When we consider that the ruins exist within a few feet from the surface of the ground, and that the plateau has been cultivated for ages, we can readily suppose that large quantities of the materials have been disposed of, and this all the more easily when we know that a village or clachan existed about this part of the ground down till the nineteenth century. This nearness to the surface, with alternating damp and dry weather, has disintegrated the lime in the brick pillars, which accounts for their looseness.

In connection with this hollow brick, I may here note that there was found in the filled-in ditch of the early occupation, north of this building, a drain pipe not unlike an ordinary modern half diameter field drain pipe. It is graduated in its length, so as to give a rapid flow;¹ its dimensions are length $11\frac{5}{8}$ inches, at one end it is $5\frac{1}{2}$ inches in width by $3\frac{3}{4}$ inches, at other end $4\frac{1}{2}$ inches in width by $2\frac{3}{4}$ inches; the thickness of the tile is 1 inch.

In describing this building I have considered it most expedient to treat it as it occurs, without any reference to the probability of its having been a bathing establishment for the soldiers, or the residence of a prefect.

It would be easy enough to go over the rooms, appropriating them to the various offices of the Roman bath, following well accredited examples, but before this can be satisfactorily done more evidence must be brought

¹ Pipes of this description have been made so as the connection might overlap, *i.e.*, the small end was inserted into the larger one of the next, like a faucet; a pipe of the same shape as this one was built among the masonry forming the steps of the bath, or cistern.

forward as to the existence of certain indispensable requisites of such an establishment; the existence of hypocausts, with their pillars and suspended floors, while necessary accompaniments of public baths, were considered equally necessary by the Romans for the private and public residences of people of rank and position. On this point Dr Collingwood Bruce remarks: "The idea has been extensively adopted that all the buildings provided with hypocausts were public baths. The Romans were great bathers, but we must not overlook the difference between the climate of Italy and Britain; warmth would be the first requisite here. Nearly all the remains found in Northumberland prove that the necessities of war were chiefly attended to, not the requirements of luxury."¹ He continues, in regard to certain descriptions of so called "baths,"—and his remarks are strictly applicable to Inchtuthil,—"but though we are told which was the apodyterium, which the tepidarium, the caldarium, and the frigidarium, nothing is said about those essential requisites in a public bathing establishment—the pipes for the introduction of the water, the boilers for heating, and the basins for holding it; these did not exist. A portion of one of the smallest of the chambers here was indeed walled off and carefully lined with cement, so as to form a reservoir 10 feet long by 7 feet 3 inches broad, but this was the only indication of a bath. Similar cisterns have been found at Cilurnum, Borcovicus, and elsewhere; these were probably the only arrangements made for bathing, even in the dwellings of the tribune and the prefects, and these were probably supplied by hand with hot or cold water, at the command of the master of the house."

The Fort.—At the south-west corner of the plateau (as shown in the general plan, fig. 6), there is a projecting horn, forming the highest part of Inchtuthil. It extends to about $2\frac{1}{4}$ acres, and is defended against the other parts of the island in the most formidable manner by five ditches and ramparts, having a breadth of about 200 feet, so that the area of the defences slightly exceeds the area of the defended fort. Fig. 19 gives a more detailed plan on a larger scale with sections of the

¹ *The Handbook to the Roman Wall*, 3rd ed., p. 61; also *The "Roman Wall"*, p. 135.

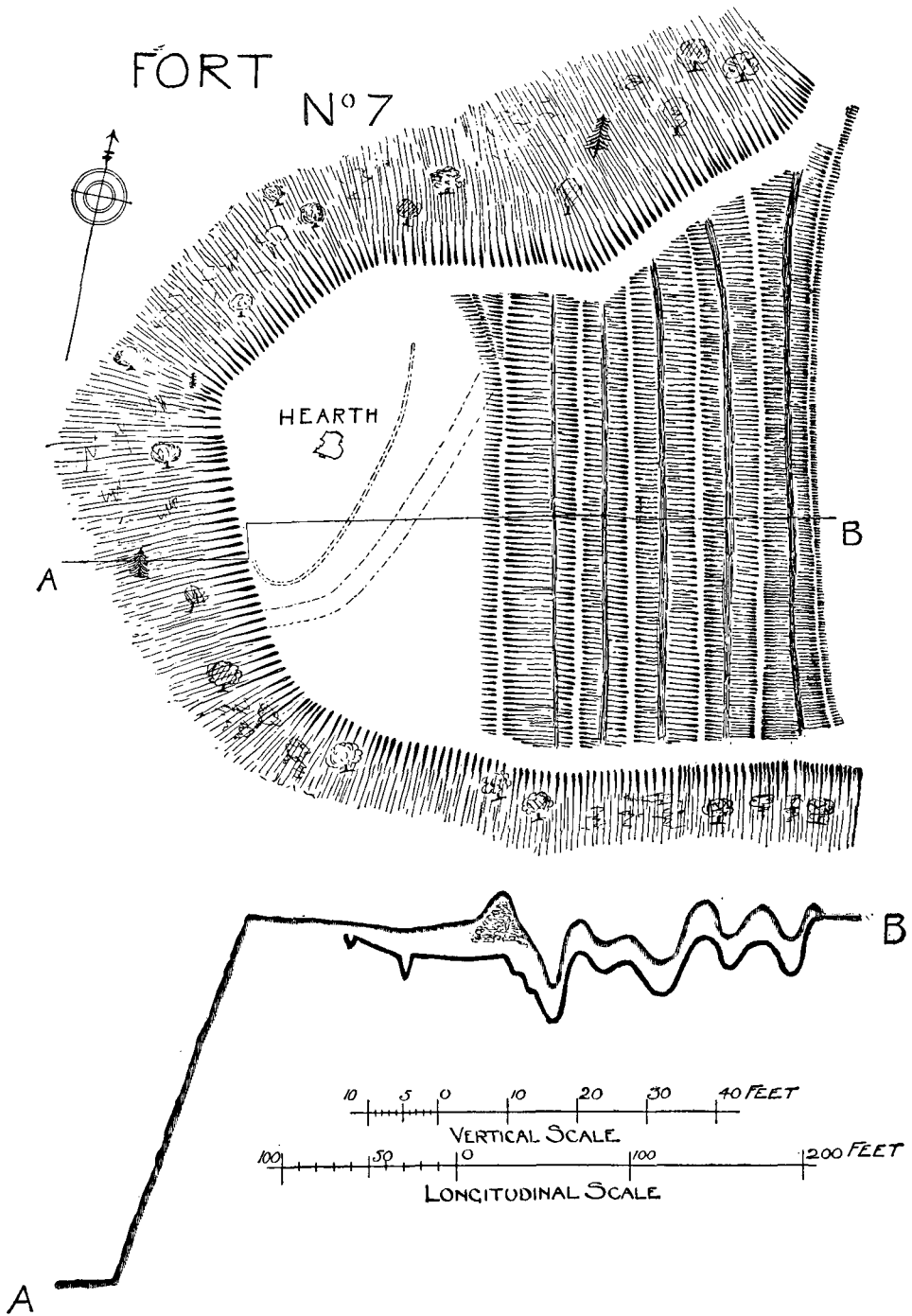


Fig. 19. Enlarged Plan and sections of the Fort occupying the south-west corner of the Plateaus of Inchtuthil.

artificial defences and of the natural defence of the steep bank of Inchtuthil.

The four outer rampants are composed of the gravel from the ditches, while the innermost one, so steep as to be almost unscalable, was supplemented with large stones from Gourdie quarry. These stones are irregularly piled on each other. The total climb from the bottom of the ditch to the top of the rampart is about 19 feet.

The ditch of an earlier work, filled up, was found inside the fort. It was of a curved form, and is shown by a dotted line on the plan, fig. 19. There is also shown by a similar line the track of what is believed to have been a palisade at the inside of the ditch (see the section on fig. 19).

In the centre of the fort there is a very rough hearth, probably about 10 feet in extent each way, composed of large stones, boulders and some roughly squared. Large quantities of charcoal were lying about. The hearth rises probably about 18 inches towards the south-west, where there appeared to be a portion of a wall about 2 feet high and nearly 3 feet long by 18 inches wide surrounding the hearth on that side. But all this is very uncertain. A view of the hearth as excavated is given in fig. 20.

The only find in the fort was a part of the upper stone of a quern. There is a slight rampart on the top of the steep bank composed of gravel, with traces of black vegetable matter, either of wood or turf.

Pennant (vol. iii. p. 68) regards this fort as a citadel of the Picts, where, encamped, they were "impregnable against the neighbouring nations." And the line of rampart and ditch between this and the camp he regards as their first defence against an enemy. He further mentions, on the evidence of the Rev. Mr Bisset, minister of Caputh, that the large (Roman) camp was enclosed with a wall 14 feet thick, and that in the course of ploughing there had been found frequently "ashes, cinders, brick, iron utensils, weapons, and large pieces of lead," just the same kind of relics as those discovered by the Society; and to the west

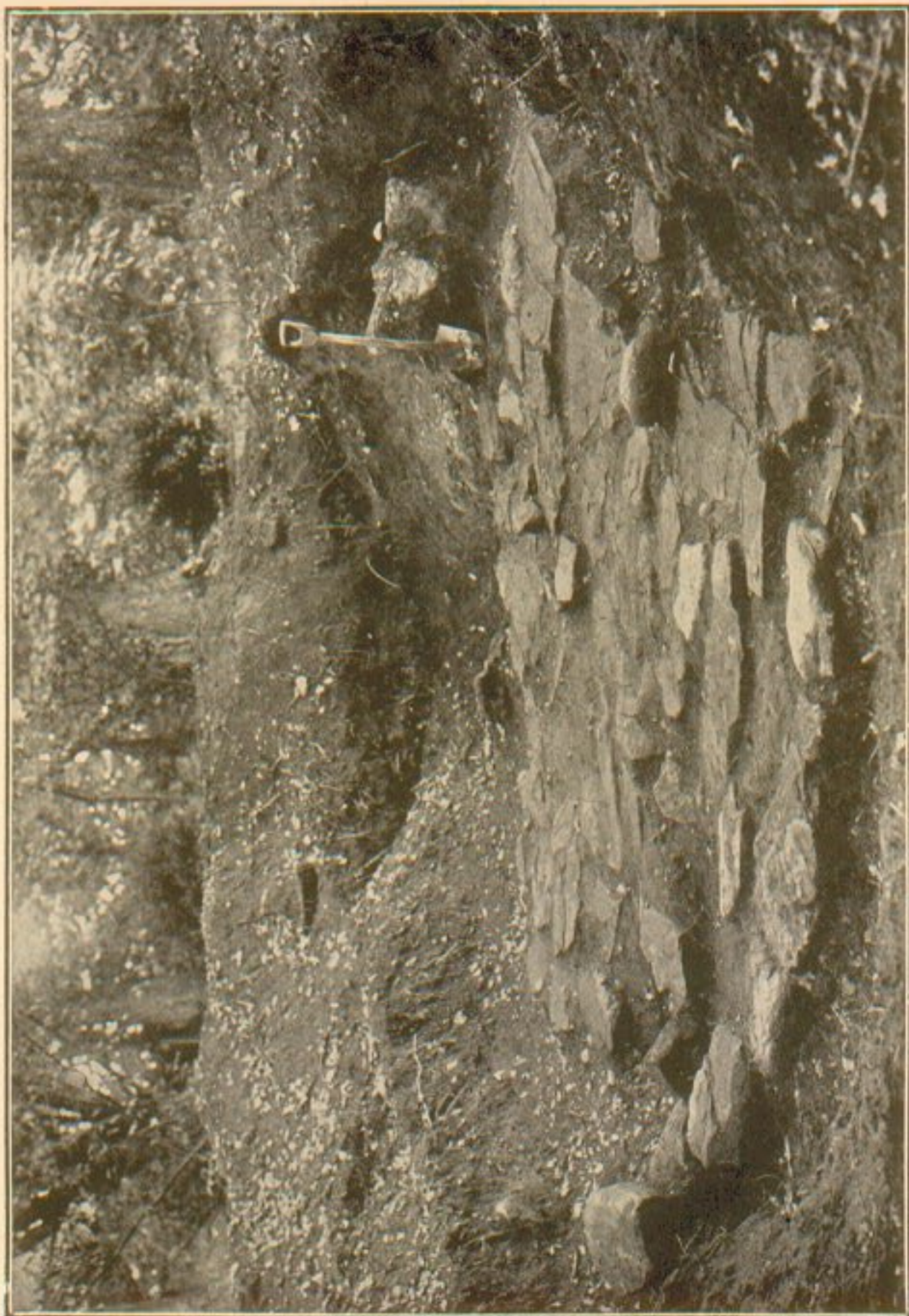


Fig. 20. View of the general appearance of the Hearth after excavations, looking south-west.

“there were discovered the vestiges of a large building, the whole ground being filled with fragments of brick and mortar.” He also refers to a “rectangular hollow made of brick,” which was then entire, and was 10 or 12 feet long by 3 or 4 feet wide and 5 or 6 feet deep. This information, taken along with that instructed by the Society’s excavations, indicate the importance of Inchtuthil in Roman times.

Cleven Dyke.—The Cleven Dyke is situated about $1\frac{1}{2}$ mile north of the junction of the rivers Isla and Tay, and not far from Cargill railway station, the road between which and Blairgowrie passes through the dyke.

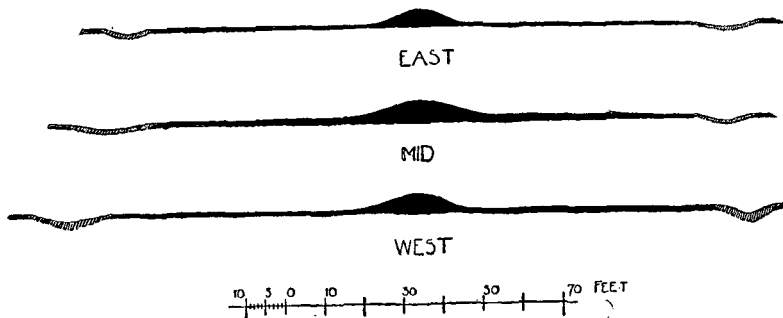


Fig. 21. Sections of the Cleven Dyke.

The dyke extends along a fir wood for a distance of about 2000 yards, or nearly $1\frac{1}{4}$ mile in an east and west direction. It is quite clear and distinct for this length, the ground probably never having been under the plough. Cross cuttings were made in the beginning of September 1901 at three places, one in the centre and one towards each of the ends. They all showed very much the same section (fig. 21), viz., a central rampart about 10 yards wide and about 6 feet high, composed of sand and gravel, with a kind of clayey sand at the extremities of the mound for a distance probably of 2 yards,—the object of this being evidently to prevent the gravel and sand from slipping. On each side of the rampart there is a level space about 19 yards wide, and terminating

with a ditch ; the ditches are about 6 yards wide, and about 3 feet or 3 feet 6 inches deep. Thus we have a total width over the ditches of about 60 yards.

The rampart and the ditches run in a perfectly straight line and parallel to each other through the whole length of the dyke. A little to the east of the Blairgowrie road there are the remains of a circular rampart with a ditch outside, about 90 yards in diameter over all. This ditch intersects the northern ditch of the Cleven Dyke. Opposite this, the south ditch and the dyke are both interrupted, indicating a traverse or entrance.

Continuing the present straight line of the dyke in a south-easterly direction for a distance of about 2000 yards, we reach the river Isla ; this is through cultivated fields, where all traces of the continuation of the dyke are obliterated except a mound (called Prætorium on the Ordnance Map) which is situated about 220 yards from the river, and on the south side of the line of the centre of the dyke. This mound has not been examined.

It is possible that the dyke extended to the Isla, and would thus enclose the supposed Roman camp at Meikelour, which lies in the fork comprised between the two rivers at their junction.

Down the Tay, about 350 yards from the point of its junction with the Isla, and on the same side as the Meikelour camp, there is a strongly defended mound, covered with dense underwood and trees. In the fields between this place and the junction of the two rivers, as we were informed, is the site of another supposed Roman camp, the ditches and ramparts having been visible within living memory.

About one mile south of this there is marked on the Ordnance Map another site of a supposed Roman camp. Returning to Cleven Dyke, if its line is continued across the Isla for a distance of two miles it strikes another supposed Roman camp situated between Lintrose House and a place called Camp Muir. A little more than a mile to the north of this there is shown on the Ordnance Map the so-called Roman Camp of Coupar-Angus, so that the locality is very remarkable, and might be made

still more so by bringing in the further away camps of Inchtuthil on the one hand, and Grassy Walls on the other. In the appendix to *Pennant's Tour*, vol. iii. p. 457, there is a communication by Mr Thomas Marshall, Perth, relative to the Roman remains in this locality, and with special reference to the Cleven Dyke. Speaking of a supposed Roman road which runs up from Perth, he says: "At the spot where the road touches on the Illa, a bridge is supposed once to have stood: the necessity is evident, for on the opposite side was a considerable Roman post. The Romans profited of the commodious accident of the two rivers, the *Tay* and the *Illa*, which unite at a certain distance below. These formed two secure fences: the Romans made a third by a wall of great thickness, defended again by a ditch both on the inside and the outside. These extend 3 miles in a line from the *Tay* to the *Illa*, leaving within a vast space, in form of a *Delta*. Near the head of the bridge is a large mount exploratory, and probably once protected by a tower on the summit. On a line with this are two others; one about the middle of the *Area*, the other near the *Tay*. [These are round; but Mr Marshall doubts whether they are the work of art.] But close to the Junction of the *Tay* and *Illa* is a fourth, artificial, which is styled the *Carrack-know* or the *Boat hill*, and seems designed to cover a landing place. I must note that the wall is styled the *Cleaving Wall*."