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Excavation of an Iron Age open settlement at Dalladies, Kincardineshire

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SUMMARY

What follows is the report of the partial excavation of a strange site which does not fall readily into one of the accepted categories of field monument. It may be useful to the reader to know at the outset something of the approximate date and nature of the site, for these emerge only slowly in the report. The site appears to have been an agricultural village of circular, timber-framed houses with which were associated a curious variety of ditches. Some of the ditches, all of which were deliberately filled in, had possessed timber frame constructions within them or stone walls, and there are certain parallels to be made with souterrains. The C14 dates range from about the 3rd-century BC to the 6th-century AD.

INTRODUCTION

During the two seasons of excavation at the Neolithic long barrow at Dalladies (Piggott 1974), the process of gravel-extraction which constituted the threat to the long barrow changed the shape of the landscape around us as we dug. At some time in the early summer of 1971 a feature was remarked in the working face of the gravel-pit on our route to and from our site. It appeared to be a bisected pit cut down about one metre into the gravel and refilled with dark loam and much charcoal. When some more topsoil was stripped off preparatory to further gravel-digging we were able to examine the surface of the gravel newly exposed and, after some patient cleaning up, we recognised that the feature seen in section was not a pit but a linear ditch, that there were a number of probable post-holes, more ditches, an area of paved floor and close by a maze of intersecting ditches (see f1 to f12 on the site-plan, fig 22).

With the approval and active assistance of the company digging the gravel, William Clark and Company, and with the financial and moral support of the Department of the Environment a brief season of rescue excavation amounting to $2\frac{1}{2}$ weeks was undertaken in September 1971. A second season followed from the end of June until late July of 1972 and a third and last at the same time of year in 1973, all funded by the Department of the Environment. In all about 11 weeks of excavation were carried out by a small team led by the present writer and drawn from among our Edinburgh undergraduates and volunteers. Their dedication and determination ensured such success as the excavation achieved, for it was not an easy or a rewarding site to dig. I also pay grateful tribute to our good friends on the staff of Wm Clark & Co, the Ancient Monuments Inspectorate, the late Miss Margaret Cowell and Dr Wilfred Dally of Edzell, without whose help on and off the site little if anything would have been achieved.

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THE EXCAVATION

Dalladies is a farm at the very southern boundary of the parish of Fettercairn and the former county of Kincardineshire on the N bank of the North Esk a little downstream from Edzell on the opposite bank. It is now in Kincardine & Deeside District, Grampian Region. The National Grid Reference is NO 626673. The site which was named Dalladies 2 to distinguish it from the nearby long barrow, and which has now been totally destroyed, stretched along the edge of a prominent river terrace well above the water-meadows between it and the river (fig 1). The terrace was formed of various grades of gravel ranging from heavy pebbles 10 cm in diameter down to coarse grits, part of the extensive fluvio-glacial fan spreading from the mouth of Glen Esk. On top of the gravel was a remarkably thick topsoil in some places approaching a metre in thickness.

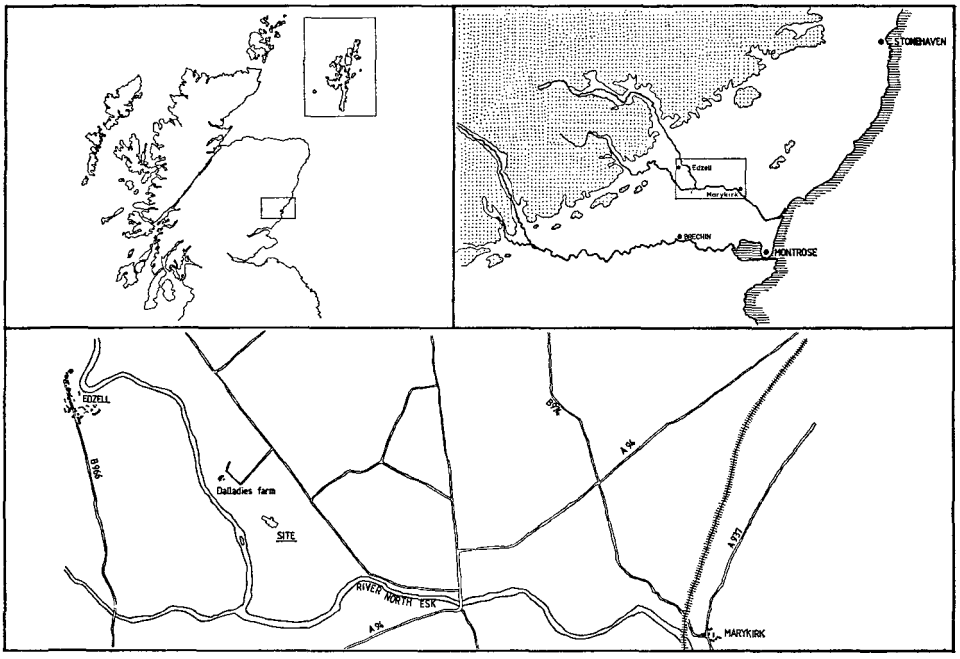

FIG 1 Site location map

In view of the unknown extent of the site, the difficulty of excavating a site so little understood, and the ever-quickening pace of gravel extraction it was inevitable that compromises were made; it was impossible to excavate everything as one would have wished. In the first place the excavation areas were stripped of topsoil by machine, a service freely provided by Wm Clark & Co, but the price was paid in terms of damage to the top surface of the gravel and the features caused by the heavy tractor shovels available. In some areas the tractor shovel might leave the base of the topsoil, but elsewhere the top of the gravel might have been removed and features quite severely truncated. Within the excavation area it was necessary to select what was to be excavated, particularly in the first season, as there was neither time nor manpower to do more. When excavation ceased in 1973 it was known that more of the site existed to the NW, but the pace of gravel-extraction and a change of management in the company meant that, though parts of the site were seen, they were destroyed unexcavated and unrecorded. Before our arrival a considerable area of the site to the SE of our excavation area was probably destroyed, quite

unwittingly. Having seen the surfaces stripped and cleaned for excavation the foreman at the gravel-pit assured us that similar soil-filled features had held up their work on occasion; these features had lain generally along the edge of the terrace which was being dug away. And the Arbroath Antiquary Club have reported their work on a feature some 100 m or so SE of our site (*Discovery and Excavation Scotland 1967*, 29–30). Members of that society who had been concerned with that investigation kindly visited our excavations and discussed their findings with me. Bearing in mind that the feature which they had investigated had been partly dug out by machine it was of course impossible to be sure of its precise size and shape, but it was quite clear that it corresponds in general form and content with many of the ditch-features reported here. The plan of the feature excavated by the Arbroath group, together with a drawing of a perforated sandstone slab recovered from the soil fill of the ditch are reproduced here in fig 18. These extensions of the site to the NW and the SE of the excavated area serve to emphasise the linearity of the settlement.

To the NE of the area shown on our site-plan we had an opportunity to examine an extensive area of gravel surface stripped of topsoil stretching practically to the former site of the Neolithic long barrow. Only one shallow, circular hollow was found about halfway to the barrow's site. Similar pits were found within the settlement area, and another similar pit with similar fill was found on the S side of the E end of the long barrow itself. Another feature found in the excavations of the barrow, but post-dating it and perhaps to be linked with the settlement site here reported, was a narrow, straight ditch which ran across the façade of the barrow and terminated with a square end which interfered with the N horn of the façade. In the fill of this ditch was found another perforated sandstone slab like that found by the Arbroath Antiquary Club in their investigation, tenuous dating evidence indeed for linking the ditch in some way with the later settlement.

There were three classes of soil-filled feature cut down into the gravel, post-holes, pits and ditches, and the simplest course is to dispose of them by description in that order.

Post-holes

Now that all the post-holes and presumed post-holes may be seen on one single plan (see fig 22) it is clear that they may be divided into a number of groups; there are areas of the site where there were many post-holes and much larger areas where there were none. There is even a sort of regularity with which post-hole groups occur across the site. Reading across the site-plan from the SE to the NW (right to left) we may number the groups more or less in the order in which they were found and explored. Group 1 is closely associated with feature 1 (f1) and consisted of rather small and shallow post-holes. Group 2 lies in the angle of f2 and f12 and is numbered f17 on the plan. Group 3 is associated with f18, and close by, to the N of f24 is another small group which we can call Group 4. A larger group, Group 5, is found to the N again associated with f20 and f22. Group 6 is numbered f303 on the site-plan, and Group 7 is numbered f301. Finally, beyond Group 7, at the northern extreme of the area excavated, lay another group of post-holes, Group 8, patently a neat and simple circle of small circular post-holes with a few 'extra' post-holes. Outside these post-hole groups there were very few post-holes. Three large post-holes were associated with f6; a large and a small post (numbered f16 on plan) had stood quite isolated to the SW of f14; single, quite small post-holes were found close to f313 and sandwiched between the terminal of f307 and f305.

The components of group 2, labelled on the site-plan compositely as f17, were found on excavation to be post-holes with, in some cases, the pipes of rotted posts clearly visible. The posts must have been quite substantial for their diameters ranged between 200 and 300 mm.

The packing of the posts in their holes was achieved partly by large stones such as sandstone slabs, foreign to the immediate location of the site, and partly by gravel; the smaller posts might be packed entirely in gravel. The depths of post-holes varied considerably, the deepest being 400 to 450 mm deep, but these depths relative or absolute cannot be taken to be significant as they were in large measure affected by the use of the tractor shovel to remove the topsoil. In some cases, as for instance with the two post-holes under the paving, the total original depth of the post-hole survived to be excavated; but in other cases, such as the two small post-holes on the N side of the group, all that was left to excavate was the shallow bowl at the bottom of the post-hole. Because almost all the holes in this group and in groups 6 and 7 can be positively identified as post-holes by reason either of their packing or the pipes representing the posts themselves, all the similar circular holes in the other groups, excavated or unexcavated, have been termed post-holes also. All the post-holes in this group were sectioned. It was hoped that the compound post-holes would reveal their history in section, but with rare exceptions this did not happen. And this experience was repeated in the other groups; very few of the post-holes showed anything in their sections which could not have been learned from their plans.

Within the post-holes of Group 2 (f17) it is possible to discern that 12 of them lie around the circumference of a circle, or nearly so. The dashed line in fig. 2 is a geometric circle which best fits the post-holes; it is of 9·75 m diameter, and it is suggested that the 12 post-holes, together with a thirteenth supplied in the area of f12, represent a circular, timber-framed house. The enclosed area is about 75 square metres (approximately 800 sq ft), which would represent a substantial living floor area. The function of the post-holes outside the circumference of this circle is not clear, but it might be thought that those inside the circle had some structural role in supporting the presumably conical roof. If that was so then there was no obvious symmetry which would help us to identify that function, unless they were the post-holes of posts inserted as need arose to support sagging portions of the roof here and there.

A neatly edged but irregularly shaped area of paving lay part within and part without the post-hole circle of group 2. The southern end of the paving ran down over the lip of the innermost ditch of the complex feature f2, so that we may conclude that the open ditch and the paving must have been contemporary. The relationship between the paving and the post-hole circle seems also to have been one of contemporaneity. Two post-holes underlay the paving and must have been dug before the paving was laid; but there were gaps in the paving precisely where the posts would have risen, which suggests that posts and paving coexisted. If that is accepted then we have a useful stratigraphic link between a house and one of the ubiquitous and puzzling ditch-features. The function of the paving in relation to the house is probably to be explained not as a paved entrance into the house, for the presence of one of the main structural perimeter posts in the middle of the paving is against that; when the paving was lifted it was found that there was a slight hollow in the surface of the gravel below, and we may be safer in thinking that the paving was merely a filling for an inconvenient hollow both inside and outside the house.

In contrast with the post-holes of group 2 those of group 1 were uniformly smaller. They had also been severely truncated by the tractor shovel when stripping the topsoil; and, in view of the sloping surface of the gravel, falling to the SE at this point, it is quite likely that a number of post-holes were completely removed in that SE quadrant of the group. Although they are shown in black on the site-plan, which should indicate that they remained unexcavated, they were in fact dug; but this would have been very difficult to show on the plan, so they were left solid black for clarity. They were extremely shallow in some cases, amounting to no more than a couple of centimetres; but other examples were better preserved and serve to show that in general

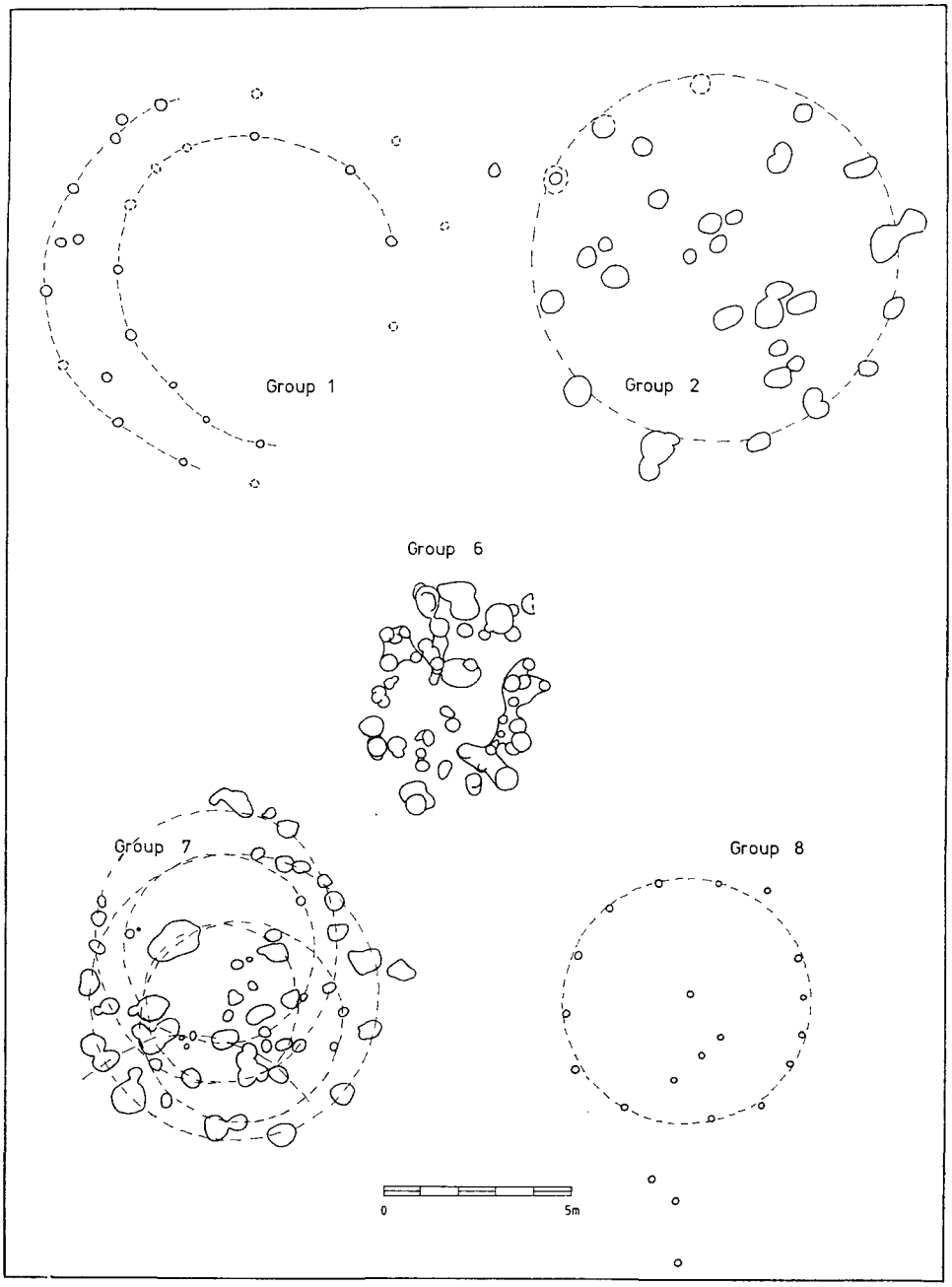

FIG 2 Plans of groups of post-holes

the post-holes, and therefore presumably the posts they held, were of smaller diameter than those of the neighbouring group 2. In the post-holes of group 1 nothing but loamy soil was found; there was no sign of either pipes or post-packings. A suggested partial reconstruction of the group is put forward on fig 2, where an oval plan is proposed. Certainly a double and somewhat irregular oval accounts for almost all the post-holes and at the same time accords with other known plans and structural conventions. The outer oval would exceed 11 m in maximum diameter and the inner oval would vary between about 7·5 m and 8·5 m in diameter. The outer oval would represent the wall of the house, while the roof presumably rested jointly on both ovals. There are places where posts on the inner oval seem to be paired with posts on the outer oval, and I have tentatively used these pairs to reconstruct the positions of some of the roof timbers; presuming the pairing of posts and extrapolating the arcs of the ovals it is possible to restore the 'missing post-holes', as has been done in the drawing on fig 2. For what it is worth, the reconstruction of the roof emerges as probably having a short ridge along the axis of the oval and two half-cones at either end. Of all the plans recovered this one is distinct in two respects; it is clearly an oval house, if the reconstruction is accepted at all, and, whereas the other plans rely on a single ring of posts (albeit perhaps supplemented by irregularly-sited internal posts) group 2 seems to consist of a double ring.

Of groups 3, 4 and 5 little can be said, and it is more profitable to pass at once to the remaining three groups, which can be fairly readily interpreted as houses. Group 6 (see fig 2) proved to be a dense concentration of post-holes of various sizes which were found underneath a rather greasy, dark disc of soil, which was probably the earth-floor of the house. Even if it is impossible to reconstruct a geometric house-plan out of the post-holes the presence of a hearth in one part of the floor serves to identify the post-hole group as a house or series of houses built on the one site. None of the post-holes revealed any evidence in section of the sequence of posts in closely-set post-holes, so that it is impossible to separate out the post-holes into two or more sets. Many of the post-holes were peculiar in that they were in sets, several post-holes apparently having been dug from the bottom of irregular pits. A few of the post-holes revealed the odd packing-stone, a sandstone slab set on end, but otherwise the fill of the post-holes was rather featureless dark soil. One large post-hole at the E side of the group had a slab set flat on its floor, presumably as a base on which the post might stand; as such it indicates that that post-hole housed a structurally important member. The general dimensions of the post-hole group perhaps give us the best indications of the maximum size of the house or houses which stood there. Measurements across the group range between about 4·5 m and a little over 5 m, substantially the smallest house on the site. The area of the floor material exceeded the area of the post-hole group; its size and shape were determined in part by the very slight natural hollow in which it lay, one suspects, and in part by the activities of the machine in stripping the topsoil. All that we may conclude is that the 'floor' was not made specially for the interior of the house, but rather was a trodden area in and around the house. The hearth had a floor of shattered sandstone slabs and some small edge-set slabs at the edges. Inside the soil was very black with comminuted charcoal fragments. Although the 'floor' was grey and black with ash and charcoal no animal bones were found and no fragment of an artefact.

The neighbouring post-hole group, f301 or group 7 (see fig 2, bottom left; figs 3 & 4), like group 6, first revealed itself as an extensive area of very dark, compact, almost greasy soil, in plan showing a tendency to the circular. Its SE side was paved with slabs of sandstone and schist set in the same dark soil. The soil of the floor contained no artefacts or animal bone, but considerable quantities of charcoal in minute fragments were noticeable along with pieces of shattered sandstone slabs and bits of burnt soil. The paved area exhibited a clearly-defined curving line

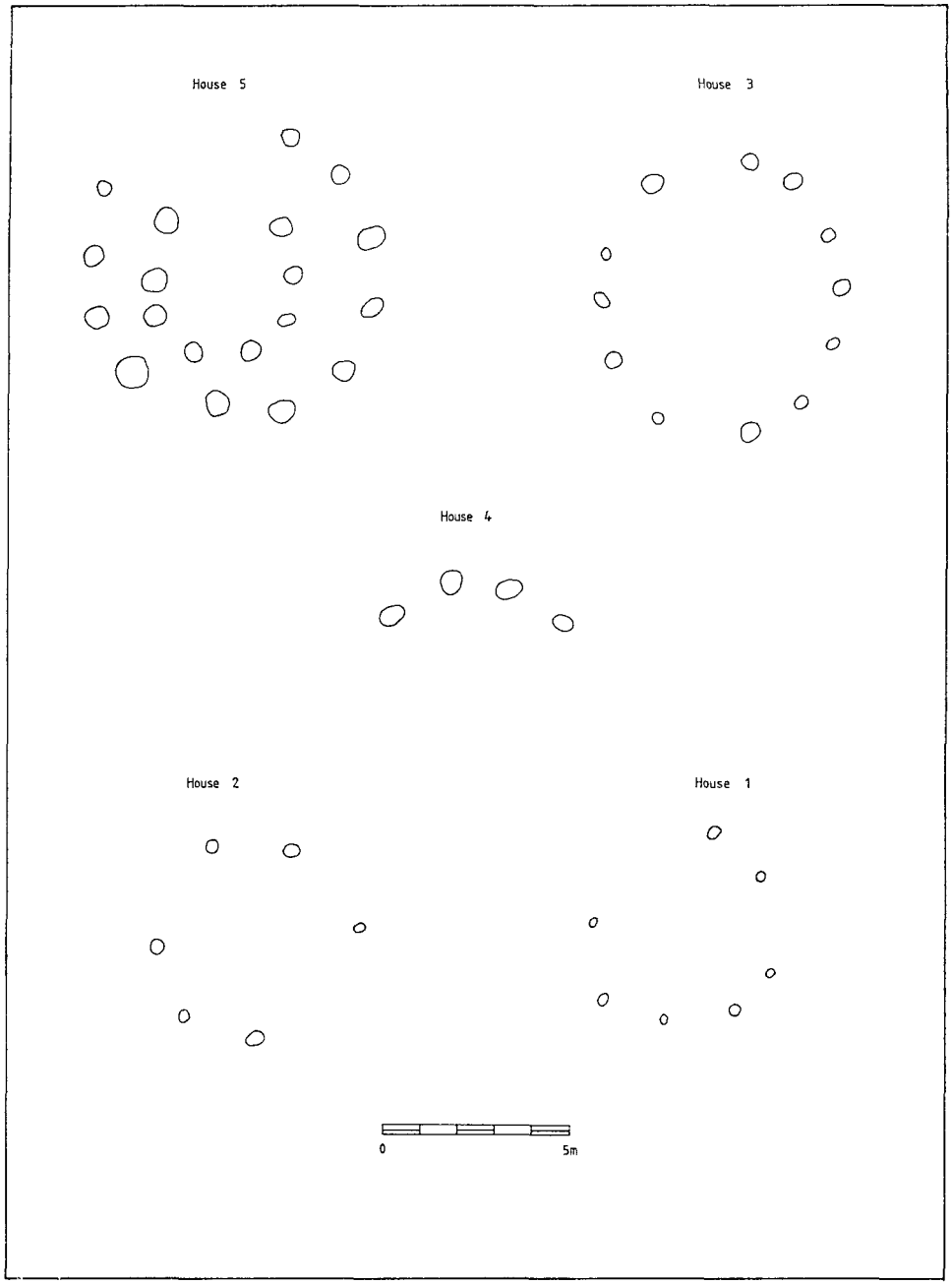

FIG 3 Suggested reconstructed plans of successive houses in post-hole group 7, feature 301

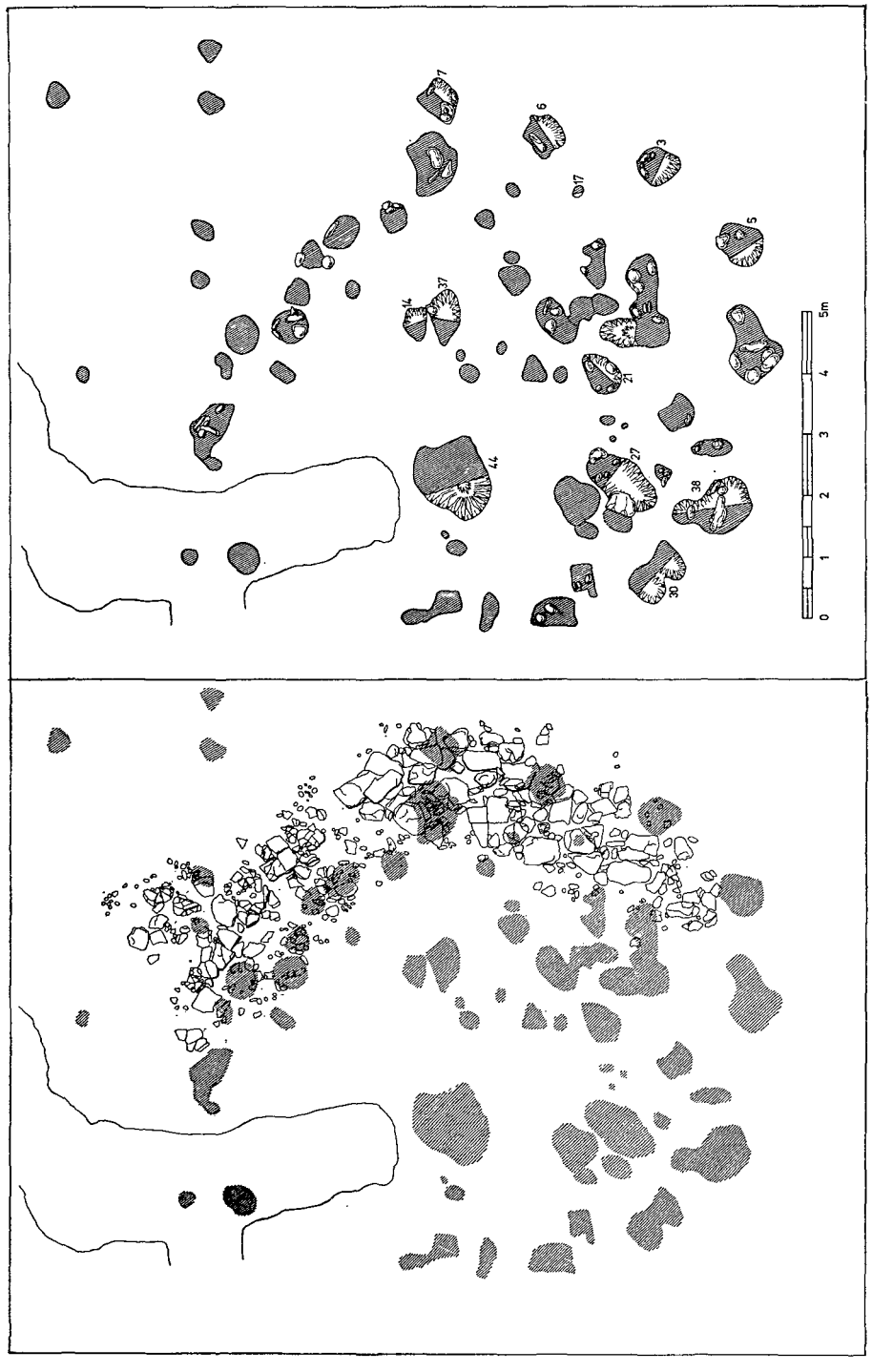

FIG 4 Feature 301 (post-hole group 7). Plans with and without paving

running through its middle (emphasised by a heavy line in the drawing). The line was in fact a division of the paving whereby that to the SE of the line was slightly raised by 30–50 mm. Among the paving stones to the NW of the raised line were a number of spaces left unpaved, but with small stones and occasional upright slabs protruding. These spaces proved to be underlain by post-holes. The partial overlying of the post-holes by paving, yet leaving an aperture for the post itself, suggests that the paving and the post-holes were contemporary; and, indeed, the plan of the paving with its kerb-like line and the curve of post-holes of one of the houseplans in the SE quadrant seem to belong together.

Once the skin of dark, greasy soil and the paving had been removed, in the very shallow hollow in the gravel which was thus revealed there began to appear a considerable number of irregularly-shaped, soil-filled holes. Exigences of time in the third season prevented the complete

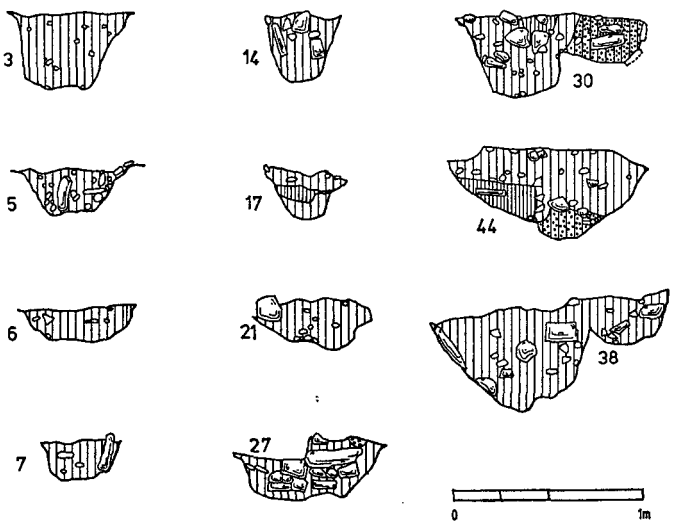

FIG 5 Feature 301. Post-hole sections

investigation of all the holes, but those which were sectioned proved to be post-holes, in some cases having the post-packing of stones still recognisably intact. Some of the features proved to be complex post-holes but in only one case (see fig 5) was there an indication in our section of the chronological relationship between two post-holes.

The dashed lines in fig 2, bottom left, outline the geometric circles (or in one case ellipse) which best fit the majority of post-holes. Of course, the reconstructed shapes are purely tentative, the more so since most of the post-holes were not excavated completely; and a certain amount of licence has been employed in interpreting how many separate post-holes went to make up the more complicated shapes. This complex or group of post-holes may be reconstructed as representing a series of wooden houses built to replace one another on the one site. The tangled picture of group 7 in fig 2 is taken apart in fig 3, and it is seen that the basic principles of the disentanglement were that the plans should be assumed to have been circular, that the posts of each circle should be reasonably evenly spaced and of the same general size, and that concentric circles of different radii should be taken to represent a single house. House 5 is reconstructed as a double circle of rather large post-holes, the outer representing the wall and outer roof supports, the inner circle representing an inner circle of roof supporting posts. The diameter of

the outer circle, post-hole centre to post-hole centre, is about 7·70 m. The two circles are not exactly concentric, but very nearly so, and it is also noticeable that the inner ring of posts does not match with the outer post for post but rather each inner post stands opposite the space between two posts of the outer ring (that is, with necessary exceptions). Both inner and outer ring fail in the NE quadrant. There are two post-holes missing in the outer ring, one of them within the area of the terminal of f309. That latter may have been simply missed by the excavators during the excavation of the backfill of f309, or, if f309 postdated the house, the construction of the ditch would have obliterated any post-hole there. Whatever the explanation, the gap in the perimeter of the outer ring is reduced to one post-hole, and it is noteworthy, through not explicable, that the gap in the outer ring coincides with that in the inner ring. Perhaps it was in some way a feature of the construction method. One more point deserves mention in connection with House 5, and that is the apparent correlation between House 5 and the paved area. In particular, the kerb-like, raised edge running through the paving runs quite neatly outside the circumference of the circle, and the posts which stood in the perimeter post-holes have gaps in the paving through which they emerged from the underlying post-holes, which themselves were partly overlain by paving slabs. The way in which the paving lies partly inside the house and partly outside is not easy to interpret, though one may remark a generic similarity with group 2, f17, and its paving. The lack of subsequent disturbance of the paving by post-hole digging suggests that House 5 may be last, or certainly late, in the sequence of buildings, while the observation that post-holes were completely obscured by the paving (unfortunately not post-holes which can be associated with others in a reconstruction) clearly demonstrates that House 5 was not the first building on the site.

One post-hole of House 5 (30 on fig 4) showed itself to be secondary to another post-hole immediately to the S (see section fig 5). That primary post-hole may be tentatively linked with three others to form an arc, which it is suggested is the very incomplete remains of another circular house called House 4. The spacing around the arc averages 1·7 m and the diameter of the circle would be approximately 6·4 m. No satisfactory explanation can be given as to why the arc, if it is real and not imagined, is so incomplete, but lack of time to complete the excavation of this area and in particular to look beyond the obvious focus of interest may be in part responsible. Further, there is a distinct possibility that there was differential preservation of post-holes in this area: because of the paving and greasy floor-soil the tractor shovel which had stripped the topsoil rode over that area, while outside that zone the tractor shovel was more brutal and the probability that the upper parts of the post-holes were accidentally removed is great, especially to the W.

House 3, however, fell within the area superficially investigated. In plan it seems to be oval, its shortest and longest diameters being about 6·5 m and 7·25 m respectively. There would appear to have been 11 posts in the oval, which would produce an average spacing between posts of 1·96 m. It must be admitted that, while the agreement between the theoretical, geometric shape and the actual lie of the post-holes is very good, the spacing of the posts around the perimeter and the homogeneity of post-hole size are not so satisfactory. The most interesting aspect of House 3 is that one of its post-holes was dug in the floor of the ditch-feature, f309. The floor of the ditch would have been almost a metre below the then ground level and it is inconceivable that this one post-hole was dug so deep unless it were dug to support a post put in place while the ditch was open. In this context it is important to remark that the post-hole in question is not like the socket which is usually associated with ditches on this site. Thus it would seem likely that House 3 and the ditch-feature f309 were contemporary and in some way complementary structures. In that House 3's post-holes do not coincide with the paving it is impossible to learn

what was the relationship between Houses 3 and 5, and it is possible that House 3, and thus f309 with it, were later than House 5; if that were so, it would explain why no packing-stones were found to aid in the recognition of the missing post-hole of House 5 within the area of the terminal of f309.

Houses 2 and 1 were apparently the smallest in the group. Though on different centres they were remarkably alike in size, layout and post-hole size. Each was close to being a true geometric circle with seven small posts around the circumference of circles of 5·2 m and 5·4 m respectively. Perhaps these similarities may suggest that the two houses were immediate neighbours in the sequence of buildings on the site, the one the replacement for the other. No clue exists to tell us the earlier of the two, nor is it possible to give any exact order to the whole sequence of buildings. If House 5 were the ultimate or penultimate building, as suggested already, then one might argue that the larger buildings of the group were late and thus infer that the small houses, Houses 1 and 2, were early. The residue of post-holes not used in the reconstruction of the five houses discussed have not formed any convincing, or even mildly persuasive, geometry.

The last group of post-holes, group 8 (see fig 2, bottom right), was revealed by the tractor shovel working alongside us at the very end of our third season. It was recorded exactly as seen and uninvestigated, its post-holes apparently severely truncated by the machine. Of the sparse group of post-holes 14 fit on or close to the circumference of a circle of about 6·6 m diameter. Given the relative precision of the circle it is strange to note that the spacing of posts around the perimeter is rather irregular, a feature noted elsewhere at Dalladies.

To recapitulate then, it is possible to identify among the eight groups of post-holes two circular or sub-circular houses (groups 2 and 8), a site where four, five or six successive circular or near-circular houses had stood (group 7), a small house or succession of small houses of unknown shape (group 6), and a house which was probably oval in shape and quite large (group 1). In a few cases it was possible to identify parts of the floors, trodden earth and paving, both inside and outside the houses, and in one house the hearth survived. Only in two cases (groups 2 and 7, House 3) could a house be related to other structures on the site: in group 2 the paving linked the house with one of a stratified sequence of ditches suggesting that the house and paving belonged with one of the ditches, and House 3 of group 7 belonged with the ditch f309, to be discussed below. It is regrettable that, within the apparently long life of the site as a whole, it is impossible to show that any house was contemporary with another; no stratigraphic links could be demonstrated across the site. It is clear, however, that, with one or two post-hole groups representing successive houseplans on the one site and with other groups apparently representing only single buildings, the settlement enjoyed a complex history. No house produced any cultural material which could either date it or illustrate something of the life lived in and around it.

Pits

There were found here and there about the site a few, shallow pits. None was cut more than about 0·3 m below the surviving surface of the gravel, though all had been to a greater or lesser extent truncated by the action of the tractor shovel.

One pit had been cut into the edge of a refilled ditch (pit f2·1 in the f2 complex of ditches). The pit itself contained layers of burnt soil and carbonised grains of barley in some quantity. The only other material was a tiny amount of burnt bone. In shape the pit was small and cylindrical. Whether it was dug to house a fire to parch barley, or something of the sort, or whether it was dug merely to conceal or dispose of the results of some accident in the parching of grain

is difficult to decide. On the one hand no evidence was observed of burning or scorching of the gravel or soil sides of the pit, as might have been expected if a fire, or series of fires, had burned in the pit. But on the other hand the neat stratification of hearth material, uniformly burnt from top to bottom, and the position of the carbonised barley, lying mostly around the edges of the pit, are consonant with repeated *in situ* fires rather than with the tossing into a pit of the jumbled debris from some fire. Also, against the rubbish pit hypothesis, one might question the sense in digging out the hearth when clearing the fire. On balance, then, it seems more likely that fires were built in the pit and above them barley was roasted or parched. The barley from this pit was identified by Mr Kenneth MacLean, to whom I am most grateful, and a radiocarbon test on a sample of this carbonised barley gave a date of ad 501 ± 65. (Full details of radiocarbon dates will be found in the consolidated list appended to the discussion of chronology at the end of this paper.) A similar pit with identical contents, burnt soil below and carbonised barley above, was observed but not properly investigated on a one-day visit to the site in 1974. On that occasion the pit had been almost destroyed in the clearing of soil from the very edge of the river terrace some distance beyond where we had finished excavating in 1973. As well as hearth material in the form of soil there were seen some scorched sandstone slabs, which had presumably also served in some way in the construction of the fireplace, and apparently on top of the hearth, though badly disturbed, was a large quantity of carbonised barley mixed with greater quantities of charcoal and ash from a wood fire. In the same general area were traced a number of ditch features generally like those of the excavated part of the site, so there is no reason to think that the damaged pit was not a part of the same extensive site.

Two other pits, f11 and f31, were in one detail different from the others on the site and identical to each other. The distinguishing feature was one of shape, for these two pits were double-O in shape, two linked shallow circular hollows with round bottoms. The gravel around and under f11 in particular was scorched and discoloured, and both pits' interiors were linked with scorched and fire-cracked red sandstone slabs and burnt soil. Their refill was of soil with a heavy admixture of charcoal, ash, burnt clay and tiny crumbs of calcined bone, more pronounced in f11 than in f31. These double pits, which cut into the gravel only some 200–300 mm, must have served in some process which required great heat and their special, figure-of-eight shape. An identically-shaped shallow pit, again associated with clear signs of burning, has since been found in association with the settlement of Newmill, near Bankfoot in Perthshire, excavated by the present author in 1977.

A pit which was to some extent similar to those two double pits was f306 in the NE part of the excavation area. It was circular, shallow and round-bottomed, a single version of the double pits in form; its fill was similar to theirs but not so fiery. Below a black and ashy soil, which contained a good mixture of pebbles, many of them large, were some sandstone slabs laid around the centre of the bottom of the hollow. Two more pits were discovered at some distance from the settlement site proper, and both once again shallow, circular hollows. One was approximately half way to the Dalladies long barrow, and the other was at the southern tip of the façade of the long barrow. Both had sandstone slabs lying on their floors, and both had charcoal and tiny amounts of the familiar burnt bone in their fills. The pit at the long barrow also had a bead of some sort of once molten iron debris.

In every case the fill of the pits was artificial; in no case was any silting or other natural backfilling observed. It is important to note that materials such as charcoal and calcined bone which were found in the fill of many of the pits also occurred in most of the ditch-fills; thus, even if any pit had not been used for some pyrotechnic process, its fill was likely to contain the by-products of such processes, as was also the case with any ditch.

The Ditches

The most numerous class of features, and the most prominent and enigmatic, was the ditches, for want of a better title. The ditches were found on every part of the site. They varied in plan, in size, in depth and in internal arrangement. Most ditches ran in a curve, though two (f1 and f7/10) were straight; one ditch (f6) ran in a curve in one direction, turned and curved back in the opposite direction. Most ditches ran for a few metres only, but one or two were very much more lengthy. Throughout most of the site ditches were separate from one another, but in two places, most notably in the southern complex of ditches, they cut across one another or were laid out where other ditches had already been backfilled. Most ditches had clearly defined, roughly semicircular terminals, though f12 was square-ended and several others were rather amorphous and ill-defined.

In section (see figs 6–11) there was a similar variety of depth and profile. The broadest ditch was several metres wide but less than half a metre deep below the surface of the gravel. Other ditches might considerably exceed one metre in depth. A single ditch might vary in depth along its length. There was no uniformity of profile; ditches might be square, U-bottomed,

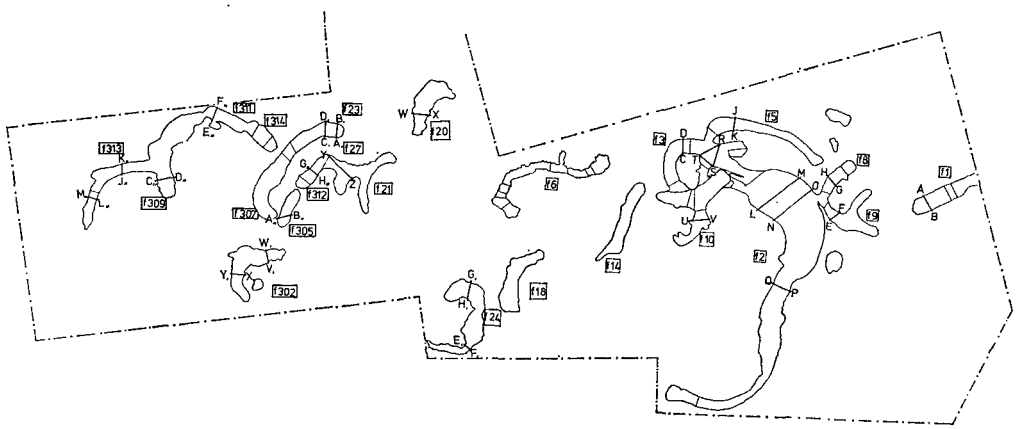

FIG 6 Key to ditch sections

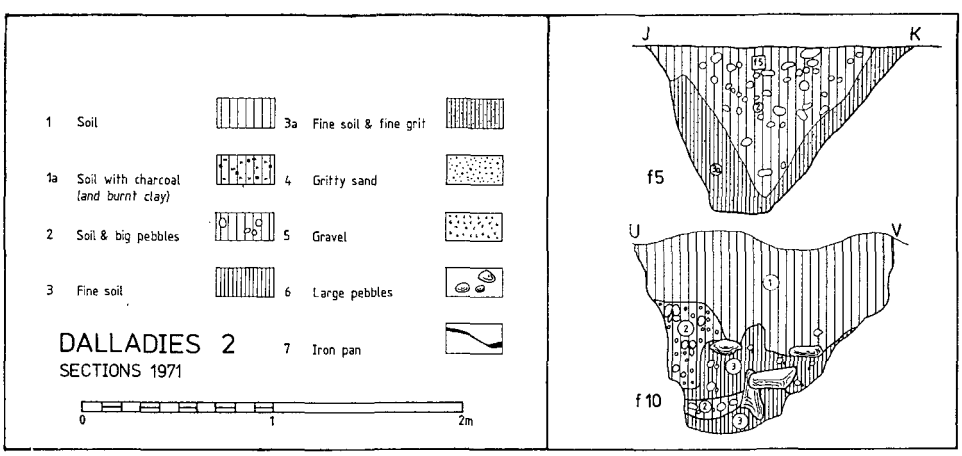

FIG 7 Ditch sections: features 5 and 10

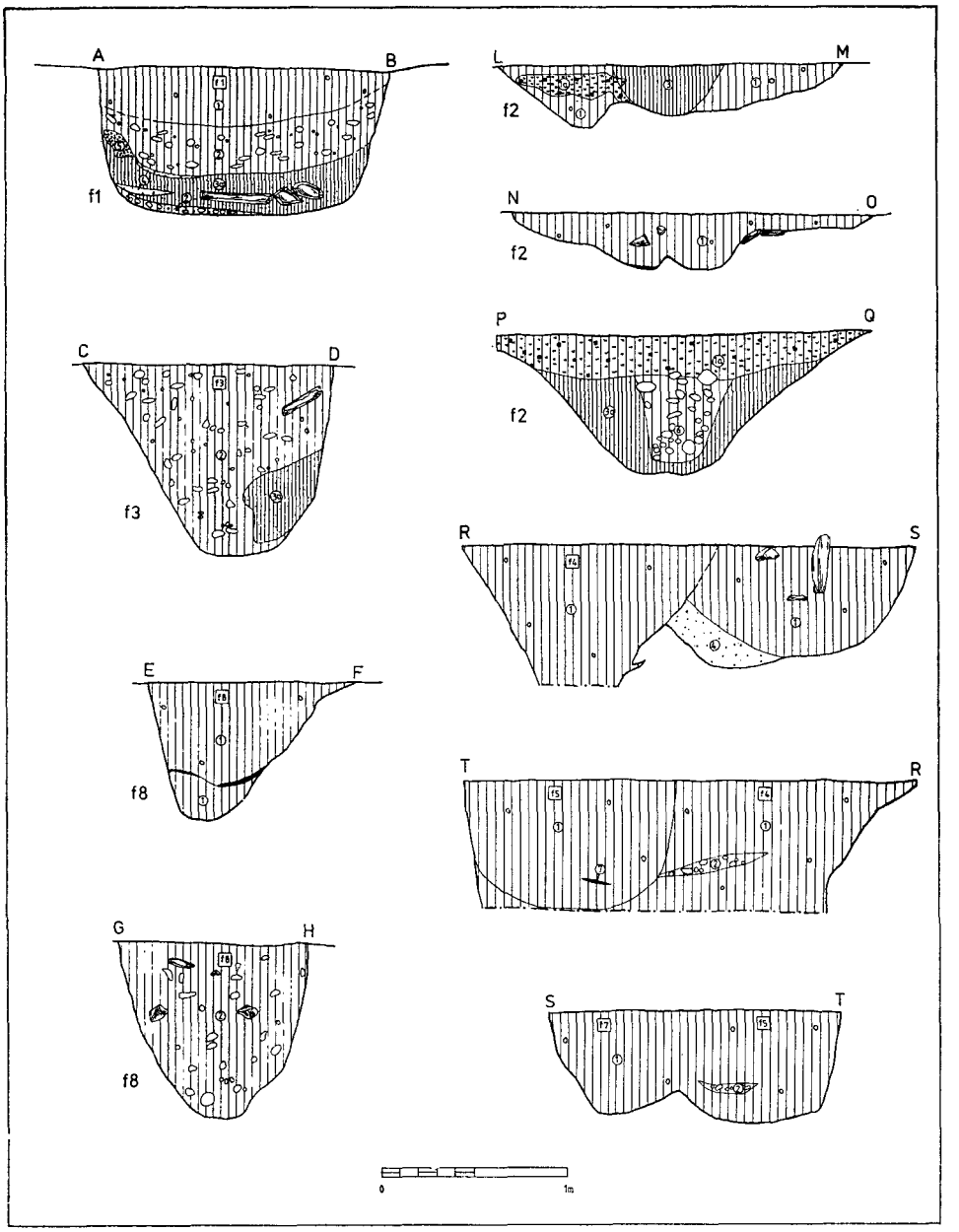

FIG 8 Ditch sections: features 1, 2, 3, 8 and the complex intersection R–S–T (key to symbols, fig 7; key to plan, fig 6)

V-shaped or indeed rather irregular. A number of ditches possessed internal features of wood or of stone; there were found inclined or vertical stone slabs set against the sides of ditches, drystone walls, drystone panels between wooden posts, sockets for posts and stake-holes for smaller pieces of wood. None of the ditches preserved any feature which unambiguously betrays their function; indeed, very few ditches were found to have any sign of even a trodden floor.

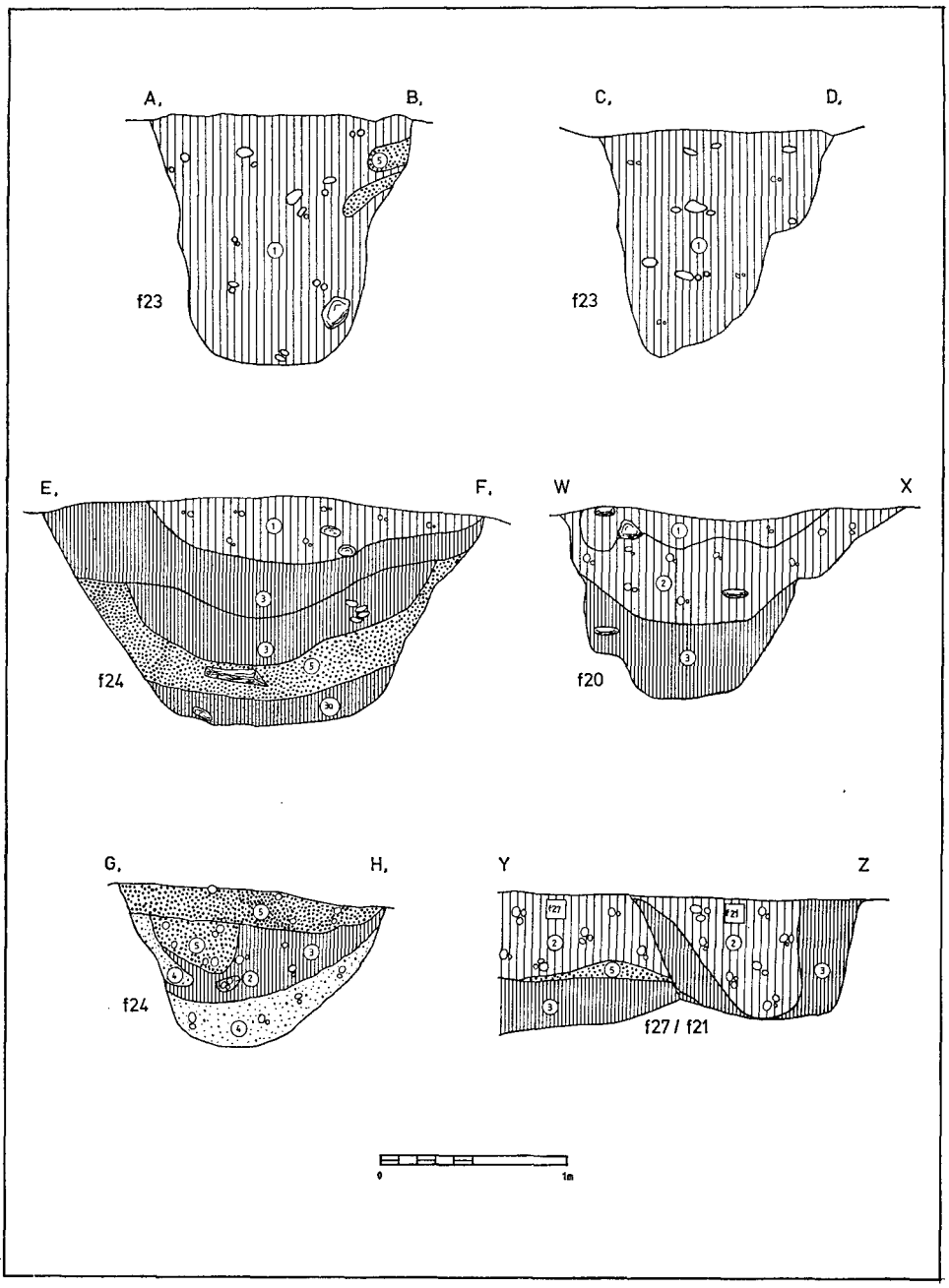

FIG 9 Ditch sections: features 20, 23, 24 and the intersection of features 21 and 27 (key to symbols, fig 7; key to plan, fig 6)

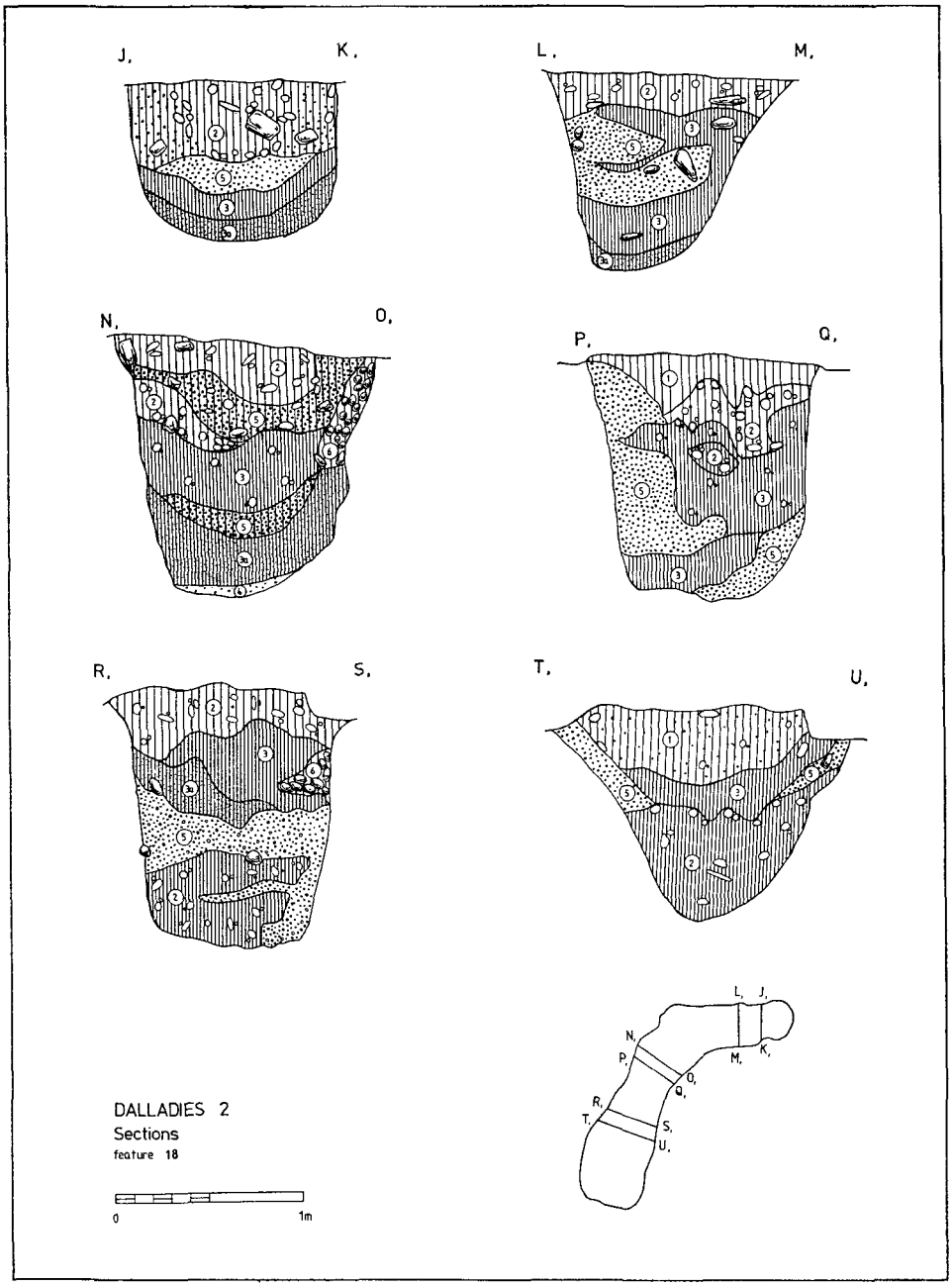

FIG 10 Six sections across feature 18 (key to symbols, fig 7)

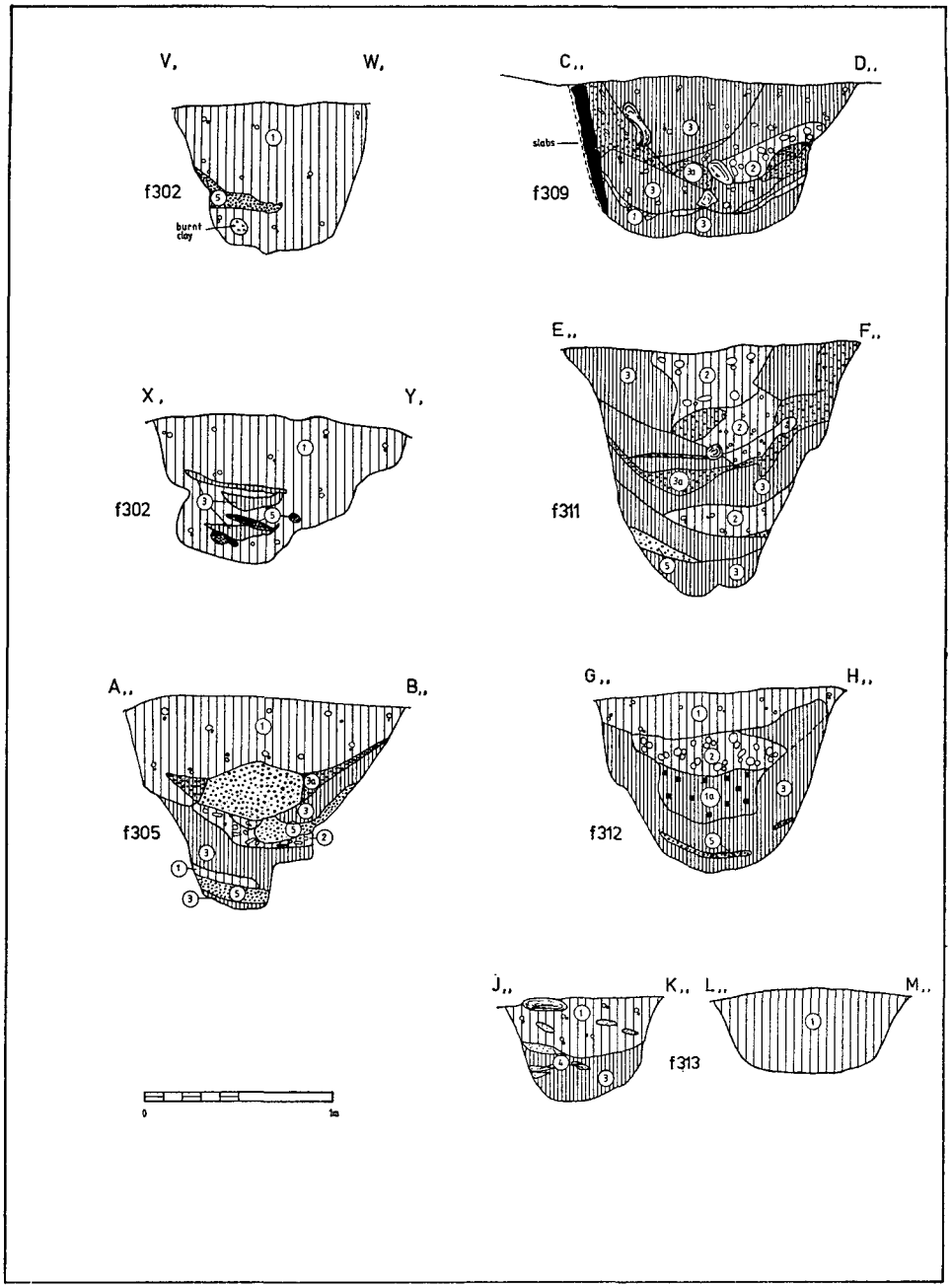

FIG 11 Ditch sections: features 302, 305, 309, 311, 312 and 313 (key to symbols, fig 7; key to plan, fig 6)

In one important respect all the ditches were alike: all had been deliberately backfilled in their turn with soil and gravel. The fills of the ditches contained very few artefacts and covered even fewer, lost or abandoned on the floors. In any case the artefacts scarcely contribute to our understanding of the ditches. No two fills were exactly alike. There were varying proportions of gravel and soil and various mixtures; some soil was rich, dark brown loam while other soil was grey and black with the inclusion of much charcoal. Not infrequently there were considerable quantities of lumps of charcoal and occasionally lumps of burnt clay as from hearths. Tiny amounts of white, calcined bone-ash occurred in almost every deposit where there was charcoal. Gravel occurred in all the forms which we were able to note in nature in the vicinity, ranging from large, fist-sized pebbles at one extreme to fine grit and sand at the other.

It was notable that in many ditches the lower portions of the fill were very soft and uncompacted, whereas, again in many instances, however varied the lower fill, the uppermost part was a very compact layer of soil which tended to dry out and bake hard and grey. No ditch showed any sign of silting or natural collapse of the gravel sides of the ditch. Having left the 1971 excavations open we returned nine months later to find that much of the area was still untouched; as a result we were able to observe the effects of one (quite moderate) winter's exposure on some of the ditches. In all cases the frost and rain and wind had detached some gravel from the sides, but in the cases of the more steeply-sided ditches the weathering effect was dramatic. In particular f12, whose vertical sides had been left standing, was scarcely recognisable as a ditch. Thus it was clearly demonstrated for us that the ditches either were open for very short periods indeed, or were protected from the weather and the natural collapse of exposed gravel faces. Certainly in no way it is possible to show that the fill of the ditches was the product of natural exposure to the elements after abandonment. Like a number of souterrains, the ditches at Dalladies 2 were deliberately backfilled. And we may infer surely from the amount of effort and care invested in their construction that the duration of their usefulness was not merely transient, so that we may conclude that the ditches must have been protected from weathering, presumably with roofs and walls.

The process of backfilling was investigated extensively by sections cut through the fills of ditches, a comprehensive selection of which are illustrated here (figs 7–11; key to sections on fig 6). So far as could be discovered backfilling utilised whatever materials were available, in any order, and simply tipped or thrown over the edge. One set of sections, those from f18 (fig 10), is particularly illustrative of the way in which a ditch was filled. Feature 18 was selected for no particular reason to be excavated so as to give us six cross-sections through the fill. It was originally intended that we should dig longitudinal sections also, but this part of the plan had to be abandoned as the ditch was too narrow and the fill unstable. All the transverse sections were drawn by the same pair of workers to ensure comparability. Despite the relatively short distances between one section and another it is easily seen that the sections show considerable variations in the process of backfilling. In three other places longitudinal sections of parts of the fills of ditches were completed (part of one is illustrated in section Y–Z, fig 9), and they each showed quite rapid change along the length of the ditch. Clearly backfilling consisted of tipping or throwing material from one or both edges of the ditch, and much of that material would seem to have been brought to the ditch in small amounts, as it might be in baskets or small cartloads. The sources of this material would seem to have been various. Here and there in the ditch-fills was found almost clean gravel, presumably the product of fresh digging nearby. Otherwise there were mixtures of soil and gravel for which it is difficult to imagine a conclusive explanation, and everywhere much soil. Some of the ashy and charcoal-laden deposits of soil may well have been derived from the clearing out of hearths or furnaces; but the general lack of domestic debris,

animal bones and broken and discarded artefacts, might be taken as evidence that most of the soil found in the ditch-fills was not derived either from the periodic cleaning out of earth-floors of houses or from the opportunistic disposal of domestic midden material.

It would be tedious and unnecessary to describe in detail every single ditch: that pitiless record is deposited with the National Monuments Record for Scotland. Here will be found a description of a selection of ditches which in some way or another add colour or detail to the generalised picture already given; at the same time the opportunity is taken to collect examples of particular observations from different ditches. First we should examine the complex of superimposed and intersecting ditches S and E of post-hole group 2, feature 17. In that complex there were at least eight separately identifiable ditches which cut into and across one another. Since the paving, and thereby the post-hole circle itself, and the pit f2·1 can also be related to the ditch-complex we have a stratigraphically-related sequence whose analysis is rewarding. Feature 2 itself consisted of a very broad, shallow curved, ditch, into whose backfill had been dug two, successive, slightly narrower and deeper ditches. One of these latter projected westwards beyond the pit f2·1 before curving N to its terminal some considerable distance away, while the other, the earlier of the two, curved round to lose itself in a complicated network of intersections to the NE. This sequence and the additional information has been summarised in the diagram (fig 11). Since the paving ran down the shallow side of the earliest of the f2 complex of ditches and was buried in the backfill, and since it links the ditch to the house in post-hole group 2 with which it was also contemporary, we have a valuable foundation to our sequence.

To solve the sequence in the area of complex intersection a triangular trench was cut to give us the three sections R–S, S–T, T–R on fig 8. We thus found that the terminal labelled f4 was the end of the ditch labelled f3; and that the terminal f10 was the end of the ditch elsewhere called f7. The other terminal of this straight and narrow ditch merged with that of the gently-curved ditch called f5. A section was dug (but is not illustrated here) to show the relationship between f5 and f7/10, with the result that we found that f7 had been obliterated by the later f5. The large ditch f12, which will be described below for its interesting internal arrangements, proved a useful key in the solution of the sequence. Where f3 and f12 met it was clear that the soft backfill of f3 was a nuisance and a rough retaining wall of dry-stone construction had been inserted into its mouth, thus demonstrating that f3 was already backfilled when f12 was dug. Feature 7/10, however, postdated f12, for it may be seen in one of the sections across f12 where its narrow profile is distorted by the acute angle at which it enters our section. There are two unnumbered features labelled *x* and *y* in the diagram (fig 12), which represent ditches not recognised from surface indications but only appreciated subsequently. The former is seen in section R–S in fig 8, and the latter was a small, shallow, arc-shaped ditch which appears on no section but may be detected on the plan by parts of either terminal. Throughout almost its entire length it was obliterated by f12 and then by f7/10, but one terminal projects to the S of f7/10's western end while the other appears as an otherwise senseless excrescence at the SW extremity of f12. To our diagram of the schematised stratigraphy we may add the evidence of three C14 dates, which emphasise that while some of the phases in the sequence may be closely spaced in time the total range of time is very large. It is very useful to be able to identify separable units of activity and arrange them in order, but the more crucial questions of the lifespan of individual features and, even more importantly, the length of the gaps between different phases of activity remain not only unsolved but in the light of the radiocarbon dates appear even more dramatic lapses in the standard of our understanding of the site.

Three other examples of the intersection of ditches were noted. One will be discussed below in the account of f309, and the others were simple and are disposed of here. The slightly

curved ditch f27/f312 (dug in two parts in successive seasons under separate feature-numbers) was shown at its intersection with f19/21 to be primary (see section Y–Z, fig 9). It is puzzling that the later ditch should cross the terminal of the earlier ditch so precisely; it might be considered to be mere coincidence were it not that the same relationship exactly existed between f8 and f9.

A number of the ditches showed signs of having had wooden stakes or more substantial posts set in them during their useful lives. Sometimes it was possible to determine that the posts had been withdrawn before the ditch was filled in, and sometimes it was clear that the posts had been left to rot *in situ*. At the SE end of the excavated site, where we began our excavations, it is quite possible that we failed to recover some evidence for timber structures. An isolated post-hole was found in the side of one of the narrow ditches in the f2 complex, and three closely-set stake-holes were noted in the terminal of f5, but failure to anticipate their presence, lack of time to go back over our work when we began to realise, and the limited exposures we made in that first season all may have contributed to the production of a negatively biased record. However, at least 10 and probably 11 ditches gave indications of having contained timber posts or stakes. In addition to the instances already mentioned three post-holes or post-sockets were found in the southern half of f8, and a single post was apparently recessed into the side of the deep, narrow f7/10. This last post may have been one of several and on the analogy of f6 they may have had an obvious symmetry, but very little of the original sides of f7/10 was available to view since it crossed the paths of so many other ditches. Similarly in the case of f27 we might have learned more if we had opened the whole of the ditch; as it was we found two post-sockets only slightly cut into the floor of the ditch but quite clearly recessed into the lower part of its sloping sides. However, where we did almost completely excavate feature 24, only two post-sockets resulted. One conclusion might be that, while many if not all of the ditches contained wooden post-structures, these structures remained undetected except where it was necessary to cut sockets or recesses for the feet of some vertical posts.

Another point to be drawn out of the post-sockets in f27 is that they were sealed by a thin stratum of clean gravel low in the backfilling of the ditch. No apertures for the two posts were observed in the gravel so that we may conclude that in this instance the posts were withdrawn perhaps for re-use elsewhere, before the ditch was backfilled. This evidence for the absence of posts when the ditch was backfilled was repeated in f12 to be discussed shortly, but was contradicted in f307 and f309, where the posts were left to rot in the backfill. Possibly there was a difference in the lives of the ditches, and we may imagine that, where the posts were withdrawn, the posts were fit for re-use and the life of that ditch was brief, while, where the posts were abandoned, that ditch had been in use for such a time that the wooden posts were not worth salvage.

Feature 302 is the last of those with post-sockets which make no sense as a pattern, and it also serves to introduce another feature found in a number of ditches, the use of steeply inclined or indeed vertical slabs at the sides of ditches. There were five post-sockets found in f302 (see fig 17), and tucked between one of them and the side-wall of the ditch was one of the two large slabs used in the ditch. Elswehere in the ditch, here and there but not shown in the plan, were other much smaller, thinner slabs. The use of slabs in ditches was not at all uncommon, though it seems to have been inconsistent. Slabs were found here and there on the floors of ditches, inclined against the walls or lying on the sloping sides, as well as stood vertical or nearly so. We have already seen how the paved area associated with f17, post-hole group 2, ran down the shallow side of the earliest ditch in the f2 complex. Both the later, narrower ditches which succeeded it were here and there lined on their sloping sides by thin slabs. The western terminal

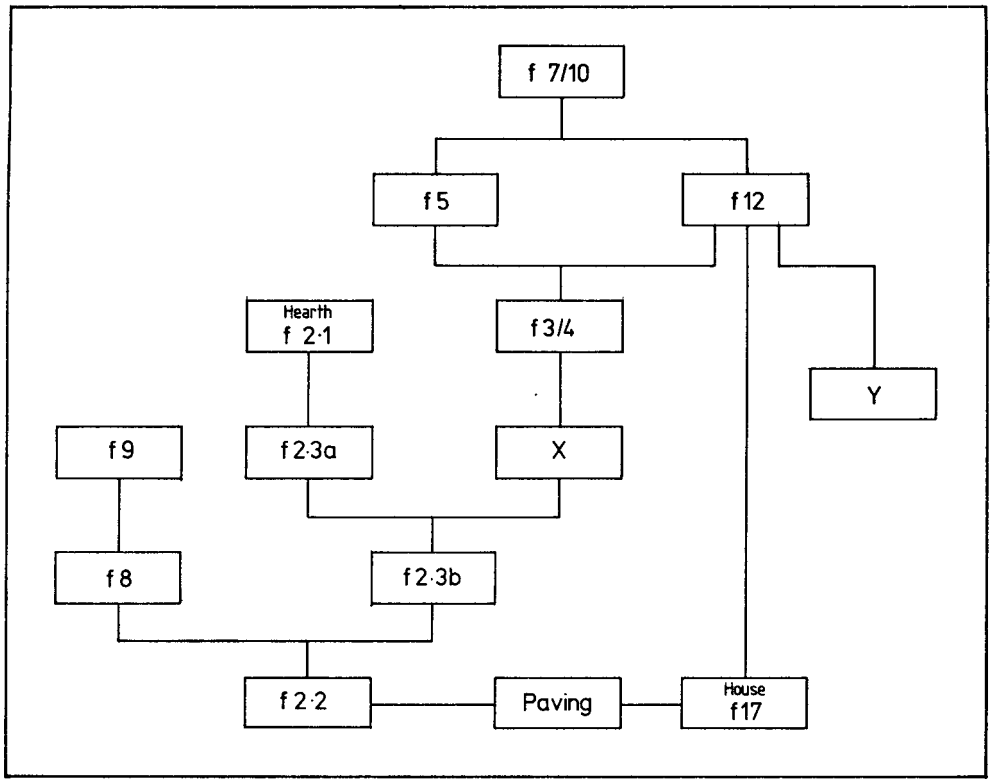

FIG 12 Diagrammatic representation of the structural sequence at the E end of the site

of f7/10 had one or two thin, vertical slabs against its sides, and inclined slabs and vertical slabs occurred at either end of f309. In particular the vertical slabs pose a problem of interpretation, for in some cases, notably the W terminal of f309, they were poised without visible means of support. Such slabs might have been included accidentally with the backfill, but their presence always at the sides or on the bottoms of ditches argues for their belonging to the ditches rather than to the backfill. In the example of f302 the association of the vertical slabs with a wooden structure allows us to suppose that the wooden structure held the slabs in place, but our failure to locate a wooden structure in other instances leaves us in a vacuum unless we suppose that, as has already been suggested, most ditches had wooden structures within them, but that these have been detected only where the posts were bedded in sockets in the floor or niches in the sides of the ditch.

Throughout the discussion of timber structures in ditches there has been a careful distinction between the post-holes such as were found on the gravel surface of the site and the post-sockets found in the ditches. Evidence showed that the post-holes had contained posts considerably smaller in diameter than the hole itself; the post had been held upright in the post-hole by a packing. The post-sockets were quite different however; they were very much smaller than post-holes in diameter in general, and much shallower. And in particular, where the post had decayed *in situ*, it was apparent that the post had completely filled the socket and that there had not been a packing. A nice contrast between post-hole and post-socket is to be seen in the photograph of f20 (pl 9a), whose terminal was excavated and found to contain a socket on the axis of the ditch, mirrored by a post-hole set immediately beyond the terminal. It is obvious that, even

though vertical posts stood in the sockets, the sockets were not such as to be capable of holding a post vertical, firm and otherwise unsupported. This is the opportunity to digress for a moment and mention that the presence of a post-hole at the terminal of a ditch was a recurrent phenomenon. At the western end of f7/10 there was a close-set cluster of post-holes which did not have anything to contribute to the post-hole circle in post-hole group 2, and which may equally well be thought to belong with the terminal of the ditch. Similarly there was a concentrated little group of post-holes at the terminal of f19, isolated from other post-holes and perhaps to be associated once again with the terminal of the ditch. A single post-hole is set in line with the axis of the ditch close to the terminal of f307. Interpretation of the phenomenon is impossible, but, since it will be suggested that some of the ditches at least were roofed, it is at least consistent to suggest that roofed ditches may have had roofed entrances, and that the post-holes set at the terminals of ditches may represent porch or entrance arrangements at ground level. In this context it may be noted that a number of ditches had one of their terminals shallower than the other (eg f18, one of the f2 complex of ditches, f19, f20, f21, f24, f302, f307, f309); and, were we to suppose that the shallower terminal marked the entrance, there is a frequent coincidence between shallower terminal and associated post-hole or post-holes.

Two ditches preserved more complete plans of the timber structures they once contained. The first of them can be dealt with quickly. Feature 6 was found to be quite shallow and narrow. Along its sides were pairs of post-sockets, shallow, saucer-like depressions in the floor of the ditch, but deeply recessed into the sides. This ditch serves to tell us that it was not only the larger ditches which had structures; and we may also learn that the posts were not simply a mechanism for holding, for example, planking to retain the gravel sides of the ditch. In f6 the uprights were recessed into the walls and would thus have been the 'wrong' side of the retaining planking. Even if the posts served to support retaining walls in some way, it would seem that they were designed to serve some other purpose also.

Feature 12 (see fig 13), the last ditch-feature to warrant description because of the post-structure it contained, was part of the complex of features incorporating f2, other ditches and the post-hole group 2, f17. Stratigraphically, f12 lies neither at the beginning or the end of the sequence, and a C14 date of ad 16 ± 50 was obtained from carbonised young twigs from the backfill of the ditch. In shape f12 was far from typical. It consisted of two parts, a ramp to the N almost as large as the rectangular chamber into which it led. The chamber had straight sides, rounded corners, vertical walls and flat floor. In the floor, around its edges, were found several post-sockets of different depths and diameters. They do not quite form a regular plan, though they are all set close to the walls. Their various sizes and depths would seem to indicate that they were made to suit individual timbers; in particular their different depths suggest that the timbers, already on the site and of slightly different lengths, were required to be level-topped. The gravel floor of the chamber had accumulated no appreciable floor-deposit, but on the other hand a hard iron-pan had formed upon it at the base of the backfill. The presence of such an iron-pan would suggest that the gravel, normally infinitely capable of absorbing water, had been rendered less permeable than the fill above so that iron leached through the backfill had precipitated at that level; trampling of the gravel and the addition of a small amount of trodden soil might produce just such an effect, and we may be justified in inferring that the iron-pan indicates the existence of a trodden floor even though no recognisable build-up of trodden earth was to be seen. At the edges of the floor it was noted that in some places there was a very slight runnel running along the foot of the wall. Even where there was no runnel it was clear that the iron-pan did not reach to the sides. One may infer, perhaps, that there was a horizontal member at either side of the chamber at floor level; these could have been either horizontal members joining the

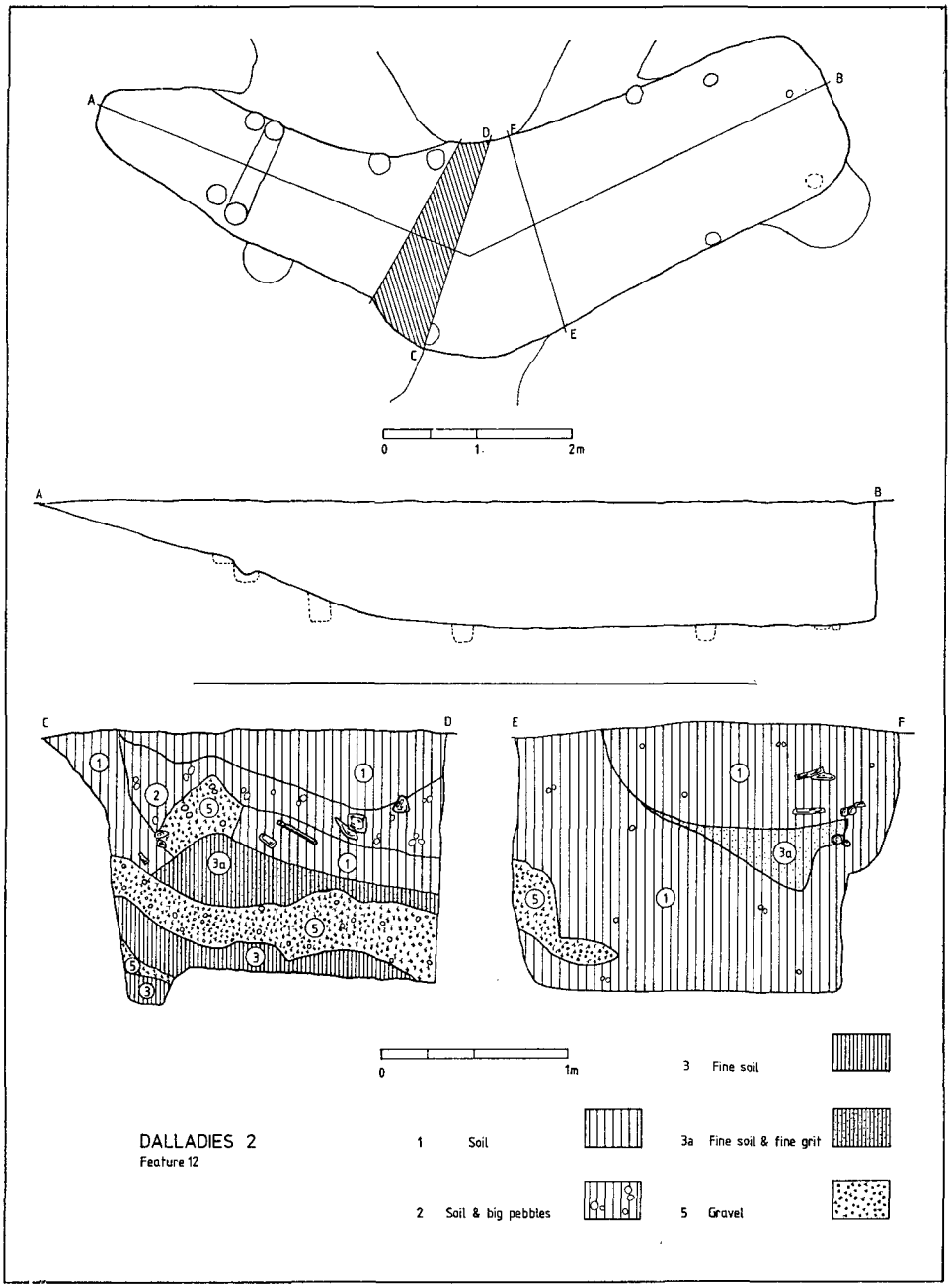

FIG 13 Feature 12. Plan and sections

vertical posts which stood in the sockets, or some sort of planking serving to retain the vertically cut gravel sides.

The ramp was set at an angle to the chamber for reasons which are far from apparent. The ramp was scarcely narrower than the chamber; its sides were likewise vertical, and the slope of the floor quite gentle. The post-sockets continued around the angle and were found in the ramp in neat pairs, one to either side. Close beside the uppermost pair was another pair, linked across the ramp by a slight, round-bottomed depression. Replacing vertical posts in the post-sockets in the mind's eye, one is led to place a horizontal cross-member at floor-level in the groove, and think in terms of a door-frame with sill-beam. And if it was worth putting a door on a subterranean or semi-subterranean structure then it was presumably roofed, the roof conveniently resting upon the carefully matched vertical posts with their level tops.

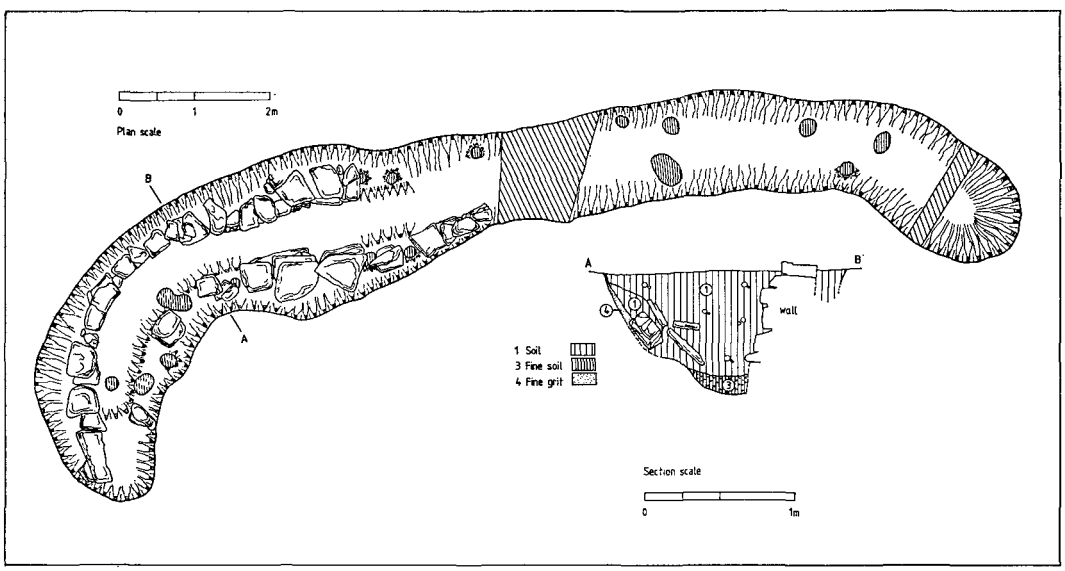

FIG 14 Feature 307. Plan and section

Both the features which remain to be described had stone walls as well as post-structures. Feature 307 (fig 14; pl 9b) proved to be the other end of f23, begun under that number in 1972 at the northern edge of the then excavation area, and completed as f307 in 1973. As it turned out it would appear that we excavated the feature in reverse, as it were, for the terminal excavated as f23 proved to be unusually deep (1·30 m) while the NW terminal, excavated in the following year, proved to be very shallow, and had an axially-set post-socket matched by a post-hole aligned on the axis of the terminal immediately adjacent to it; in other words it would seem that f307's terminal was the entrance and the f23 terminal was the inner and of a passage-like chamber.

Viewed from the entrance, if it may be called that, the passage sloped down gently and curved to the right, acquiring dry-stone walls to either side. Around the curve the passage straightened out for most of the length of the feature, though the walls stopped some way along. Finally the passage curved once more to the right at the further terminal. After the initial slope down into the passage at the entrance the floor deepened only very slightly and unappreciably. The profile of the ditch showed a slight shelf on either side of the central passageway, and on these shelves sat the walls. The left wall began as a single course of large stones, but as the passage

deepened and the corner curved to the right the wall became steadily more substantial with the larger slabs set in the lower courses and the upper courses composed of lighter, smaller slabs. There was a certain lack of care to avoid straight joints in the masonry such as is commonly noted in souterrain architecture. It seems likely that the height of the wall as found was the original height; the top of the wall as found was undisturbed by the mechanical removal of topsoil, no stones were noted in the topsoil removed from this area, and no quantity of stones were found in the fill of the feature which could be attributed to the collapse of the left wall. Having run what was conceived to be its course the wall stopped short and straight at a post-socket, beyond which and only a short distance from it was a second, almost identical socket. Both the sockets were shallow and were matched by shallow recesses in the gravel side of the ditch. Between them stood a vertically set schist slab. The soil in the sockets was quite different from the surrounding soil; it was fine, soft and dark and would seem to be the replacement soil for the posts which had been left to rot *in situ*. Above the western of the two sockets and between where the post would have risen and the wall of the ditch was noted some fine, clay-like sand of an orange colour, supposedly sandwiched once between the post and the side; if the post had been removed it is difficult to see how the sand-mass could have remained without falling. The eastern of the pair of posts had been packed in its socket by a tiny quantity of soil and gravel. Beyond the pair of post-sockets there was no further walling on the left side of the ditch, but close to the limit of our 1973 excavations another softly-filled, recessed post-socket was located. Description of the further part of the feature, excavated in 1972, will be withheld until the opposite side of the first part of the feature is described.

The inner, right-hand wall was quite different in character from the wall described above. It began a little further back from the terminal, and was set on a more pronounced shelf. On this side of the ditch there were more frequent post-sockets, however, and they began close to the terminal; thus the right wall had been more in the nature of a series of dry-stone panels set between wooden posts. Indeed, some of the panels were no more than a pile of slabs set one upon another, and much of the right wall was found in any case collapsed into the backfill. Exactly opposite the pair of post-sockets at the end of the left wall there was a matching pair in the right wall, the same in every essential detail. Between the pair of sockets in the right wall, however, there was a further panel of dry-stone, no more than a column of balanced stones, which had fallen out neatly across the floor of the passage and been buried in the backfill. The right wall continued beyond the pair of post-sockets almost to the limit of our 1973 excavations. At its end, which was a carefully made vertical stop, was yet another post-socket, which formed a pair with the last socket on the opposite side of the ditch.

Beyond the baulk, in the deeper, further end of the ditch, there was also a number of post-sockets, cut shallowly into the bottom of the ditch and recessed as necessary into the sides. Strangely in view of the near-symmetry of the walled part of the ditch no pattern could be made of the sockets, which were not only irregular in their layout but also in size. The round terminal at the southern end, as already remarked, was unusually deep; and the sides at the terminal itself were actually undercut slightly. Were it not for the fact that the walled part of the feature had a floor-deposit which showed that the structure had been used before being filled in, it would be tempting to think that the feature had not been completed and that it had been filled in before the walls were finished and after the S end of the ditch had only just been cut. While it is puzzling that the relatively orderly N half of the feature should be matched by such an haphazard S end, it should be remembered that other ditches existed on the site as irregular as the S end of f23/307 and the same difficulty of comprehension and interpretation will be encountered when we move on to f309.

It is difficult to imagine that the roof of this structure rested on the top of the very low walls, which should presumably be viewed as a retaining device to hold the gravel sides. Since the passage seems to have acquired a floor-deposit it follows that it was used, and it would have been possible only to crawl along it if it were roofed at the level of the tops of the walls. We must think rather of a roof supported on the wooden structure and allowing a person to walk upright or nearly so. The walled passage would still have been narrow, but at least it would have been wide enough for someone walking rather than crawling, and, above the tops of the walls, there would have been rather a lot of space. The lowest part of the fill of f307 was a dark, wet and dirty soil with a certain amount of grit and small gravel in it. About the middle of the passageway, close to the unexcavated baulk, there had been some attempt to provide a little flooring in the shape of some roughly-laid, thin, red sandstone slabs. Away from the the NW terminal and entrance the slight shelf on which the left wall was based disappeared, and it is obvious from the plan that the wall was built well clear of the side-wall of the ditch. The bottom of the floor-deposit went in under the lowest course of the wall, though, since the wall was not dismantled, we were not able to observe whether this was because some floor-deposit had already accumulated before the wall was begun or whether it was simply the result of the floor deposit being compressed into the available crevices. In the soil of the floor was found only one artefact, a nondescript fragment of worked bone: and from a sample of charcoal from the floor a radiocarbon date of 197 ± 60 bc was obtained.

Feature 309 (see fig 15) was more complex than f307 just described. It may be subdivided into four parts. The first part is the terminal at the SW end, beyond which there is the area of the junction with f313, the second part. The third part consists of the curving passage lined with dry-stone walls, and for convenience this is divided from the fourth part by the narrow baulk which was left in excavation to provide us with the section. The fourth section saw the ends of the walls and also contained a set of post-sockets as well as some large slabs. The fourth section of f309 was separated from the neighbouring f314 by a narrow spine of gravel, though they merged in plan and doubtless f309, f314 and f311, as well as f313, should be considered as a single complex. In plan it would appear that f309, f314 and f311 were conceived as segments related to one another.

Each of the four parts of f309 was different from the others, and they will be described in turn. The terminal area was lined with thin, flat slabs. Around the curved end of the terminal area the slabs were tilted at an angle of about 40° and behind the slabs was a fine, gritty soil, notably different from the blacker and damper backfill material and the greasy floor-deposit. Along the side-walls of the terminal were more slabs, particularly on the left side; these slabs were set vertically in soil almost touching the gravel sides, not even resting their bottom edges on the floor and quite without visible means of support. It was anticipated that some post-sockets would be found in the floor to represent the timber structure which was presumed to have pinned back these slabs as a means of retaining the gravel sides of the ditch, but no sockets were found. Perhaps the timber structure, which it is surely necessary to assume existed, stood on the floor of the ditch without sockets, as has already been suggested above for other structures; it has been argued that the purpose of the sockets was probably to steady the legs of the structure, and horizontal cross-members set low down on the legs would have served equally well to prevent lateral movement of the feet of the posts. The lower part of the fill was an almost greasy soil, part dark brown, part grey-black, which contained many small chips of charcoal together with a small amount of grit and gravel, It seems plausible to interpret this as a floor deposit, while the upper fill was mostly of soil of the usual, uncompacted backfill type.

At the mouth of the terminal there was a quantity of stones in the fill of the ditch lying in

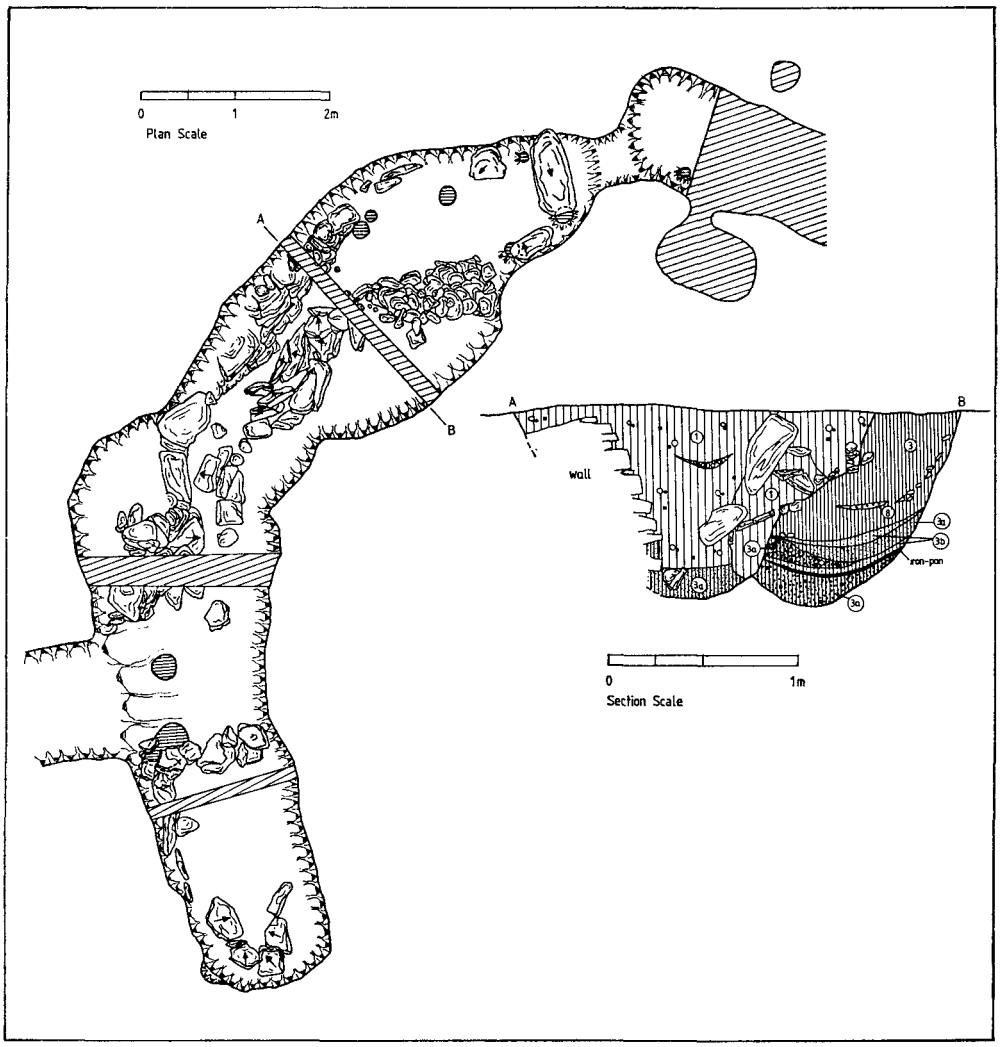

FIG 15 Feature 309. Plan and section

such a way that at first it was thought to be a blocking cross-wall. However, the 'wall' proved to be very flimsy, with soil between the courses, sagging sadly in the centre, and not reaching down to the bottom of the fill. It was therefore to be understood as a feature which was built into the backfill of the ditch, constructed after the floor had accumulated and probably only once the backfilling itself had commenced. The interpretation seems to be that, after the terminal had been used for some time, part of the ditch was backfilled while another part was kept open, and the flimsy cross-wall was intended to be a retaining wall holding back the fill in the backfilled portion. To judge from the batter of the face of the wall, such as it was, the main part of the ditch had remained open while the terminal was blocked off and backfilled. It is natural to link with this wall the outline of House 3 of post-hole group 7, which had one of its perimeter posts set with its foot in the bottom of the ditch. The coincidence of the wall and the circuit of House 3 is very close, and the retaining wall would have held the backfill of the terminal off the

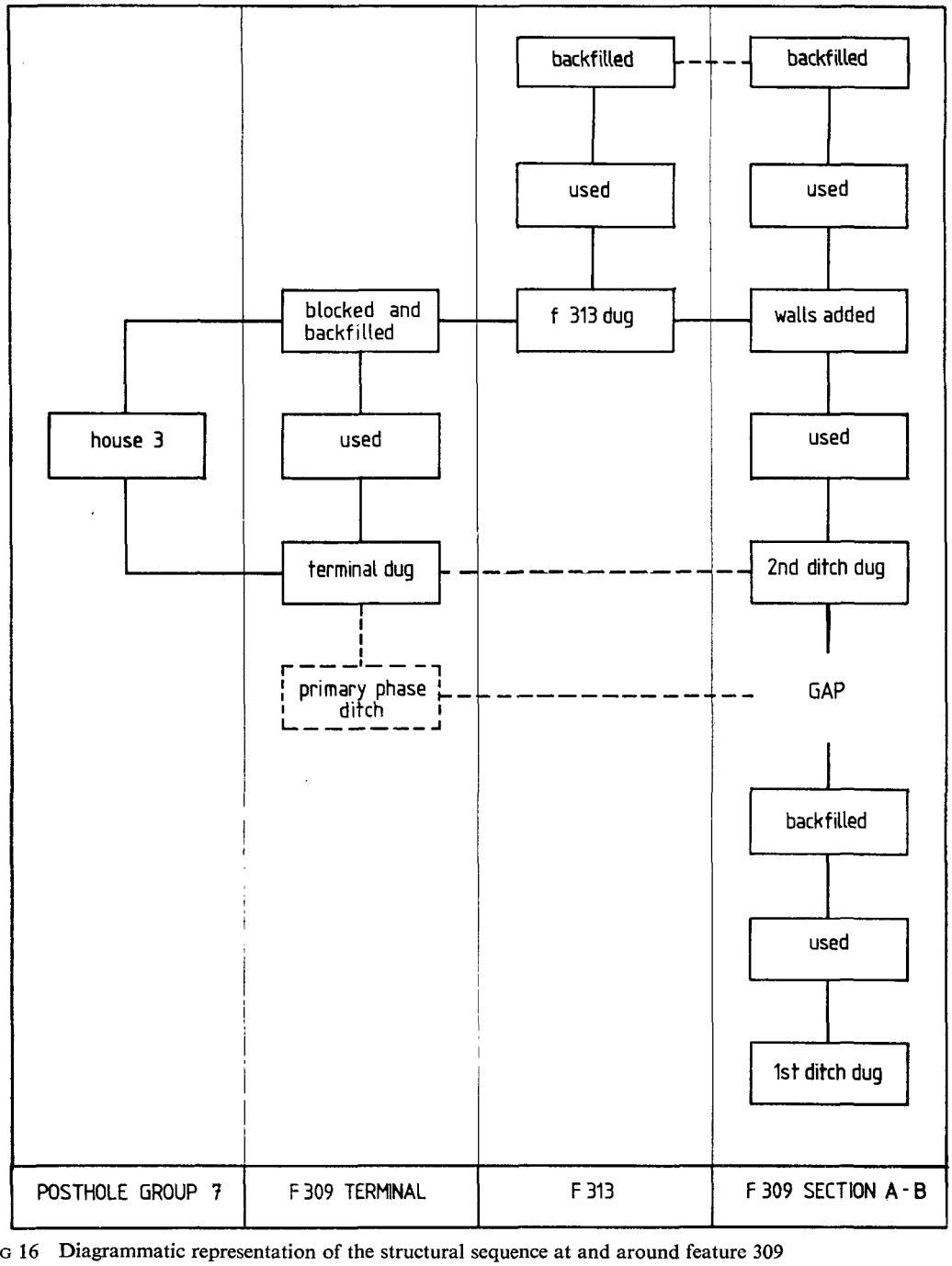

FIG 16 Diagrammatic representation of the structural sequence at and around feature 309

circuit-wall of the house. It would seem, therefore, that when the terminal of the ditch was dug House 3 was built as part of the same design, and the terminal lay open inside the house. The terminal led out under the wall of the house (presumably through a small doorway) into the main part of the ditch, roofed and walled as we shall see. This arrangement was modified by the filling in of the terminal, but only after the terminal had accumulated the same kind of floor-deposit as the house above. By contrast, while a floor-deposit continued through the rest of the ditch-feature, it was of a different nature, grittier and never greasy. Unfortunately, there was no longitudinal section dug from the terminal into the adjoining sector, so that there is no section through the wall comparing the fill on either side of it.

The second segment of f309 is the junction where f313 enters f309 at right angles from the left. At the junction there was a substantial post-socket in addition to the post-hole already referred to adjacent to the cross-wall at the mouth of the terminal. This post-socket was found in a position which makes it comparable with those in the terminals of f20 and f307, that is set axially rather than at the side of the ditch. No function can be attributed to this socket and its post other than that of supporting a roof structure at a point where it was difficult to support it entirely on the sides of the ditch. We may infer from excavated evidence that f313 was open at the same time as f309 for they would appear to have been filled in at the same time, as indicated by a section cut across f309 and along the axis of f313. Feature 313 was not extensively explored but such of it as was excavated seemed to be of the simplest kind of ditch; there was no sign of internal structure of wood or stone, and the fill was homogeneous and undistinctive. A second indication of the contemporaneity of f313 with f309 is the conformation of the walls that line the third segment of f309 with the junction of f313. In particular the left-hand wall, which was better preserved and immediately adjoined the junction, was clearly built with a vertical end just short of the angle between the sides of f309 and f313; there could be no conclusion other than that the wall was designed and executed as one with the junction. A final observation concerning the junction should be introduced here before we pass on to the next segment of the feature. The bottom of the ditch f313 was a little higher than the bottom of f309 where they met; but on the other hand the base of f313 was more or less level with the top of the floor deposit in f309, which, apart from in the terminal, was a rather shallow stratum. Thus it would seem from several indications that f309 already existed before f313 was dug to fit with it, possibly at the time when the terminal of f309 was filled in and blocked off.

The third segment of f309 was, at least in its last phase, lined with dry-stone walls. The left-hand wall (viewed from the terminal, that is) survived more or less intact and came to its other end in the fourth segment. The right-hand wall had collapsed actually at the time of the backfilling of the feature, but it had likewise extended from the junction with f313 into the fourth segment. The section across the far end of the third segment (fig 15) proved very informative. It was suspected once the edges of the ditch were defined in plan and the top of the extant wall was found that the obvious misfit between them was significant of some complexity in the construction of the ditch. A disconformity between the soil in the middle of the ditch and that close to either edge, noticeable from an early stage in the excavation of this area, proved, at least in the case of the soil at the right edge, to be more than just the fill behind the wall. The section clearly shows that an earlier ditch existed to the south (right in the section) of the later ditch. The earlier ditch was used and backfilled before the later ditch partly cut into it. This earlier ditch had a lower fill which had acquired an ironpan on its upper surface. In an iron-rich soil such as this site possessed it probably requires very little stimulus for an ironpan to begin to precipitate; and in this instance it may have been no more than the treading of the accumulated floor deposit which made the underlying material that little less permeable than the uncompacted

backfill. The backfill above the ironpan was of the usual type for the site. The second ditch was dug at this point so that a slight ridge existed between the bottom of the previous, backfilled ditch and the later one. And the second ditch also had acquired a floor-deposit, a thin stratum of dark, humic, soil, grit and fine gravel such as was found in the junction section and the fourth segment of the same ditch beyond the baulk. The footings of both walls (and this is clearly seen in the case of the right wall in the section drawing) stood on, not in, this stratum, showing us that the second ditch had acquired a floor deposit before the walls were built. Thus the second ditch itself had two phases in it before it was finally filled in like all the others. It is unfortunate that the surviving wall was not dismantled for lack of time, for it would have been valuable to have known what lay behind that wall and the side of the ditch.

The collapsed wall may be seen with some of the tumble removed in the plan-drawing (fig 15) and in a photograph (pl 9c), where it is probably easier to distinguish the *in situ* base-course of the wall from the fallen upper courses. The two walls of the last phase of our sequence are obviously parallel, but it is interesting to note that the distance between them at foundation level was a mere 0·25 m. The general appearance of the construction of the surviving wall was similar to the surviving wall in f307, but the f309 wall had a more pronounced batter.

The fourth segment of f309 is that part beyond the baulk left to give us the section. In that most mysterious way of excavations the character of the feature changed in the baulk, narrow as it was. The collapsed wall emerged in the fourth segment as a standing wall, and the surviving wall changed its form quite radically. Both walls ceased to be built of slabs but were instead put together of small and often round stones; the batter of the face of the walls correspondingly increased; and both walls curved rapidly back to the sides of the ditch and abruptly terminated. The line of the left wall was continued desultorily by two almost vertical slabs propped against the side of the ditch. The remainder of the segment was provided with a few more sizeable slabs and some post-sockets. The backfill was almost uniformly dark, humic, soft soil with some pebbles, but even in its general softness several 'soft spots' were remarked during excavation, and these proved to correspond exactly with post-sockets in the gravel walls and floor when the backfill and floor deposit were completely removed. Again the bottom of the ditch was filled with a darker, damper soil mixed with grit, the same sort of thin deposit which has been taken elsewhere in f309 to be an accumulation of dirt on the floor.

The observation of the 'soft spots' in the backfill is enough to tell us that the wooden posts which stood in the post-sockets were left in place when the ditch was abandoned and backfilled. The post-sockets do not form any clear pattern and seem to be irregularly set around the edges of the bottom of the ditch. Although it is not possible to reconstruct the wooden structure which the sockets represent, we may note in passing on that, as in f307, the wooden structure seems to have been an extension of the stone structure, and that the upright posts which stood in the sockets cannot have been free-standing but must have formed only a part of a more complex construction of horizontal and vertical members.

One of the stones of the surviving wall in f309 was a broken bedstone of a rotary quern, but that was the only artefact found. No artefact or even animal bone was found either in the floor deposits or in the backfill of f309.

The relationship between the final segment of f309 and the adjoining ditch f311 is unclear. A small part of the terminal of f311 was excavated, first in longitudinal section to try to establish the relationship between f309 and f311, and then in its entirety to reveal a virtually blank cross-section of soil and one post-socket in the floor. The placing of the two segments end-to-end would seem to have been deliberate but the ridge of gravel which separated them reached up close to the surface of the gravel and there was no distinction to be seen in the backfill above it;

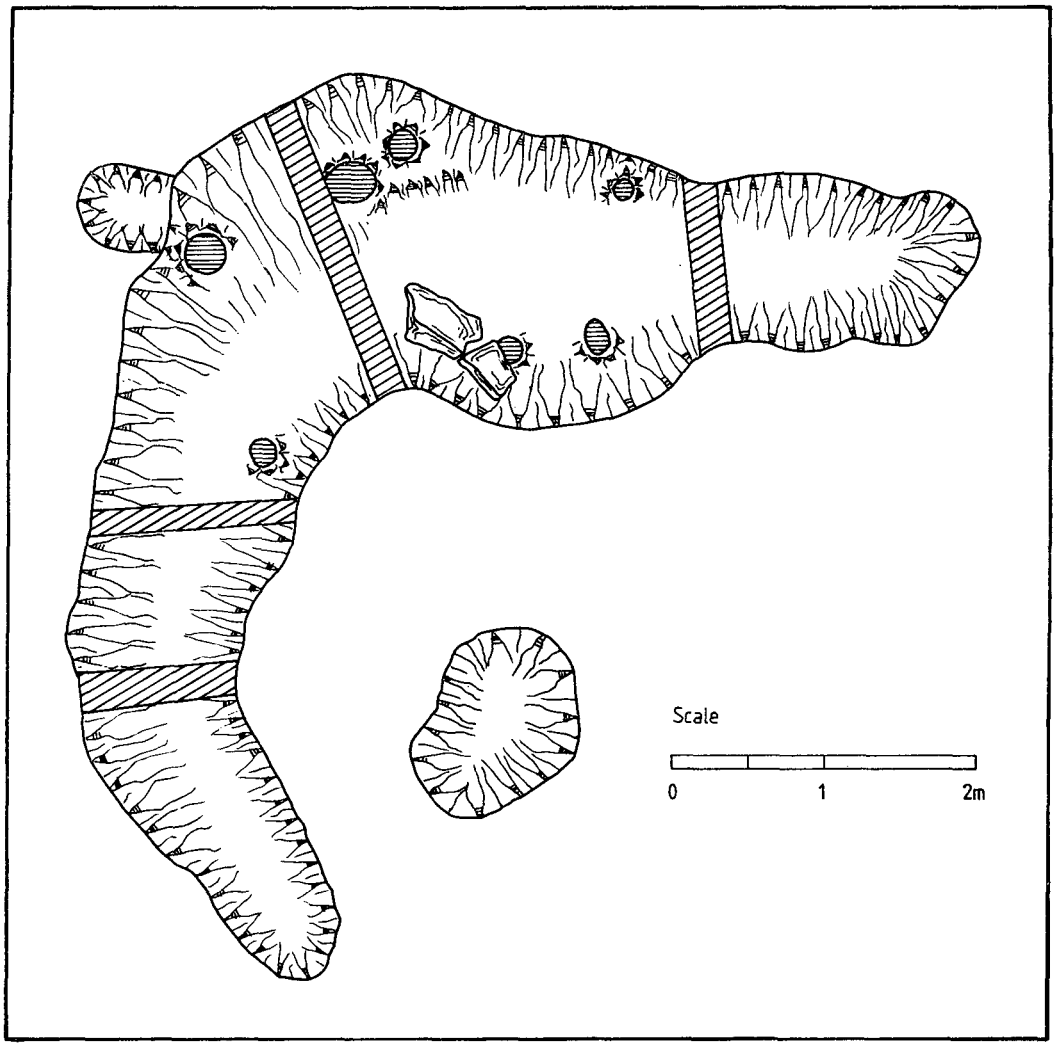

FIG 17 Feature 302. Plan

in short there was no evidence to show that the two ditches were not simultaneously backfilled and thus simultaneously open. It is perhaps worth remarking in this connection that the ridge of gravel separating f309 from f311 was flat-topped as if it had been exposed as a ridge, and not sharp as might have been expected if it were the ridge separating two non-contemporary ditches which happened to transgress the one upon the other. Similarly f314 may have once been part of the same contemporary complex, but without extensive investigation, for which there was no opportunity, it is impossible to say. In this context it is worth mentioning that one other ditch on the site, f18, was found to be segmented, dug in two parts separated from each other by a ridge of gravel which rose to within 0·4 m of the surface of the subsoil. Again, there was no way of telling whether the feature was constructed all at once or as two segments the one added to the other; but the backfill seemed to have been put in as one, indicating that the two segments were at least in part contemporary.

Together with the partly unravelled history of successive houses comprising post-hole group 7 it should be possible to combine the constructional sequence of f309, f313 and probably f311 and f314 as well, in order to achieve a comprehensive view of the sequence of house-building, replacement, ditch-digging and modification in this particular corner of the excavation. However, it has not proved possible to arrange the house-plans in clear order, although it is possible to link the post-hole group and the ditch-sequence together at one point. The picture is shown as a diagram in fig 16. There were at least three, and probably four, phases of building and rebuilding of ditches and internal structures. In the central, walled segment of f309 we can discern the three certain phases: first came the construction, use and destruction of the primary ditch seen on the right of the section, fig 15, which was followed by a gap; then followed the construction and primary use of the secondary ditch, which was subsequently modified by the addition of walls before it too, in the end, was destroyed. The walls which appear in the section-drawing serve to link this sequence to another part of the story, for we have already seen that the wall was built consonant with the junction of f309 with f313; thus the construction of f313 and its use and destruction would appear to run parallel to the last stage of the use of f309. It has been argued that the blocking of the terminal happened when f313 was dug and f309 was lined with walls, and therefore the construction of the terminal would appear to belong with the construction of the secondary ditch. The construction of the terminal and the building of House 3 in post-hole group 7 would seem to have been undertaken as parts of a single plan because of the placing of one of the main vertical timbers of the house in the floor of the terminal; and the blocking of the terminal when it was backfilled, it has been suggested, occurred while House 3 was still in existence. Thus House 3 would appear to have had a life which bridged the last two phases of the sequence of ditch-construction and modification.

It is difficult to reconstruct the plan of the primary ditch which clearly existed some time before f309 as we have envisaged it; and it unsatisfactory not to know why there was a gap in the sequence, at least in the area where the critical section was cut. There is one further anomaly in the plan to which no reference has yet been made. In response to the first of the problems just listed, it is hard to avoid concluding that the primary ditch must have been no more than a short segment of ditch almost totally obliterated by later activity in the area. The latter two problems can be solved with a single explanation, for which positive evidence, it must be admitted, is lacking. The anomaly in the plan referred to above is the bulge in the outline of the third segment of f309 N of the extant wall. Bearing in mind that there were several segments of ditches dug separately in this area (f311 and f314 being two obvious examples, and the primary ditch in this sequence probably being another) it seems possible to explain this bulge as part of the terminal of an older segmental ditch. If one looks at the plan it is possible to imagine that a segment of ditch very much on the lines of the f309 terminal and junction might have had its other terminal at that point; on the other hand that bulge is clearly anomalous as far as the final and penultimate phases of f309 are concerned, and it is by no means easy to see how the elusive primary ditch could be shaped to make use of it. It is perhaps excessive to imagine a ditch into existence merely to explain an inconvenient bulge in a plan, but the existence of a ditch prior to the terminal as we see it but postdating the primary ditch of the sequence could be placed neatly alongside the puzzling gap in the series of buildings and modifications as portrayed in the important section. This hypothetical ditch has been shown suitably sketchily in the diagram, where it and the gap in the story told by the section constitute a shadowy second phase in the sequence.

In summary, then, it is suggested that the sequence began with a short segment of ditch, which was duly replaced by another segment dug alongside. In a third stage a much longer ditch was made which practically obliterated most of the two earlier stages. In this third stage one of

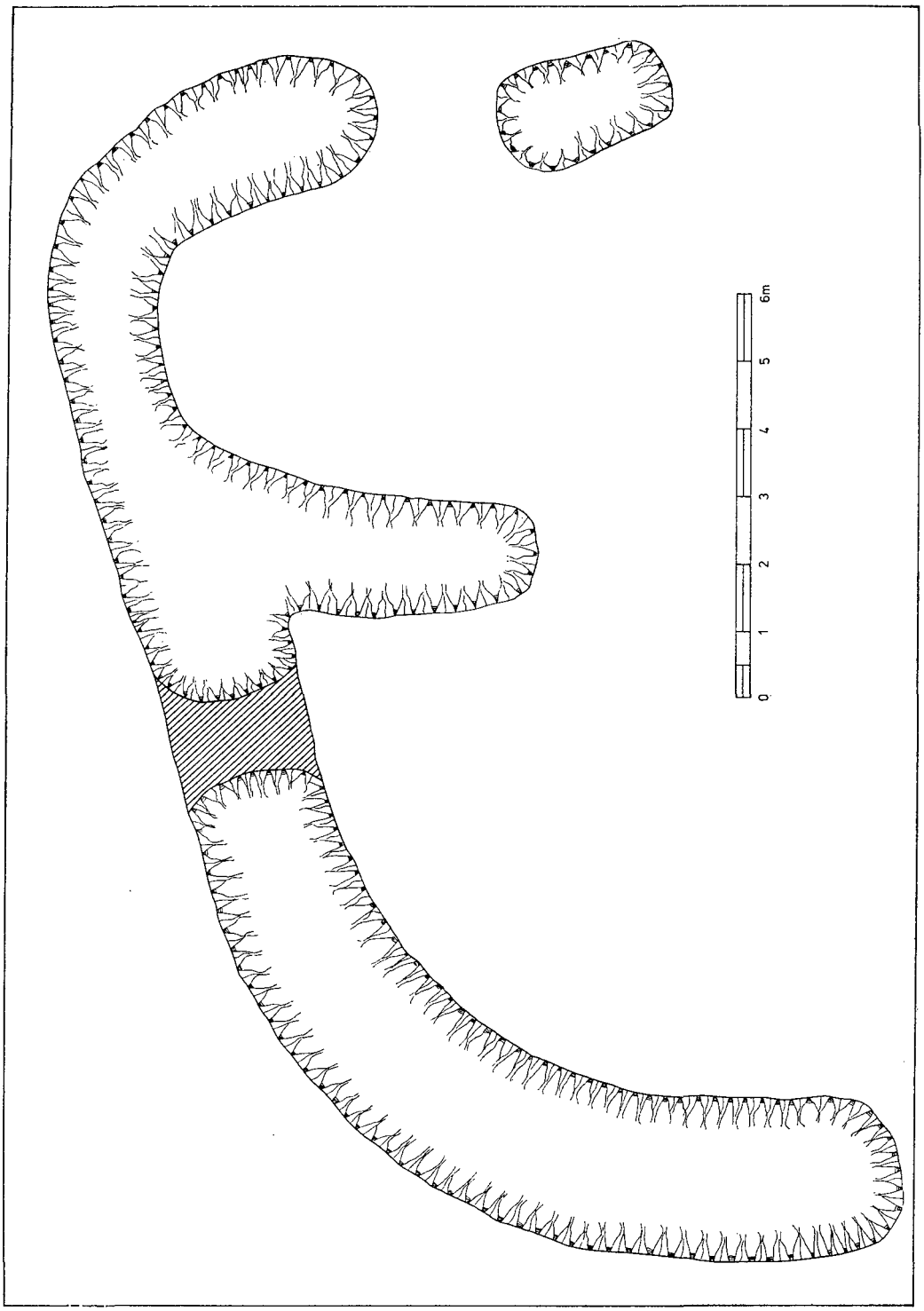

FIG 18 Plan of nearby feature, emptied by machine before being noted by Arbroath Antiquary Club members. Redrawn with metric scale

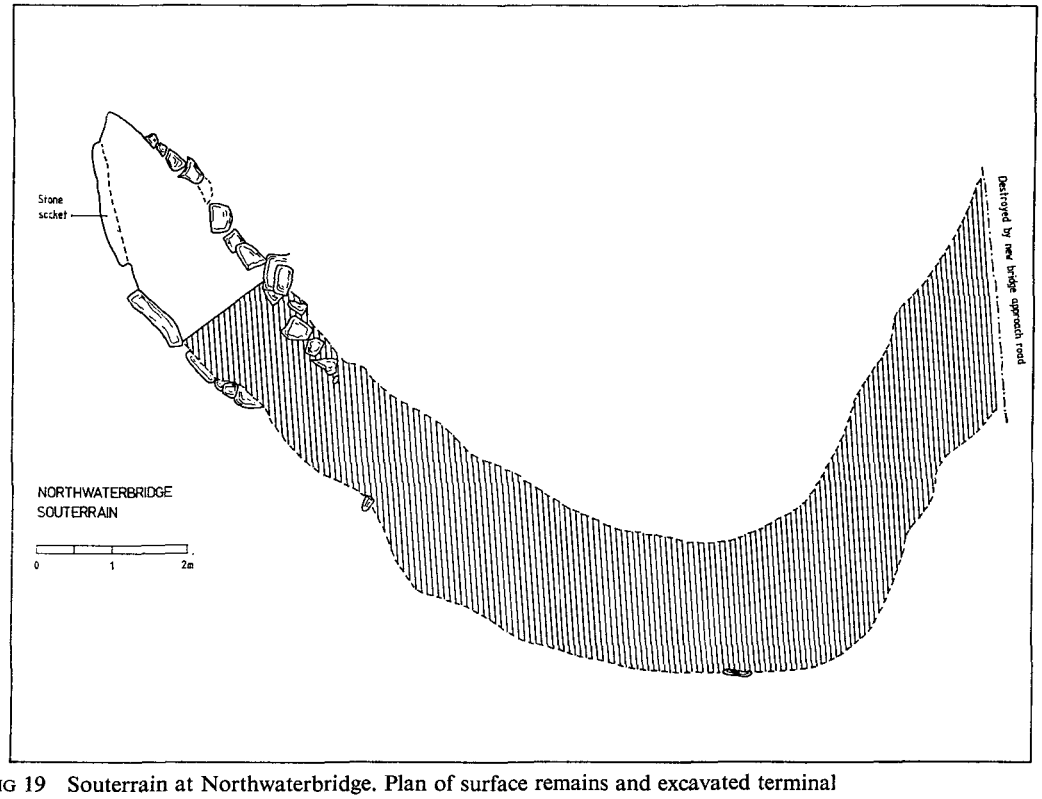

FIG 19 Souterrain at Northwaterbridge. Plan of surface remains and excavated terminal

the adjacent houses was built to accord with the subterranean constructions, and this house lasted into the fourth stage, when the subterranean construction was heavily remodelled.

FINDS

The finds of portable artefacts from Dalladies 2 were scarce. In almost every case they were found in contexts which cannot be considered primary; though some of them tell us something about the date of the site, collectively they contribute remarkably little to our understanding of the way of life of its inhabitants.

One piece of pottery, of which the inner surface has disintegrated, represents the entire surviving output of the native potters of the culture. The fabric is coarse and gritty, unevenly smoothed on its outer surface and fired so that the core remained black while the outer surface varied from donkey brown to black. The piece is hand-made, but is undecorated and comes from neither the rim nor the base. It was found in the backfill of a ditch, so that not even its context is particularly helpful. Apart from one tiny piece of medieval green-glaze ware from an ambivalent context at the bottom of the ploughsoil and the top of a ditch-fill, the reminder of the pottery found on the site seems to be of Roman origin. One piece of easily recognisable samian ware was found in the upper fill of the terminal of f20 (fig 20 h). It is Curle's form 11 and is dated to the latter half of the 1st-century and the first half of the 2nd-century AD. I am indebted to Mr G D Thomas for this identification.

Another very small sherd, which has lost its outer surface, may also be a Romano-British coarse-ware fragment. The fabric is well-levigated, wheel-made, and fired to a uniform deep

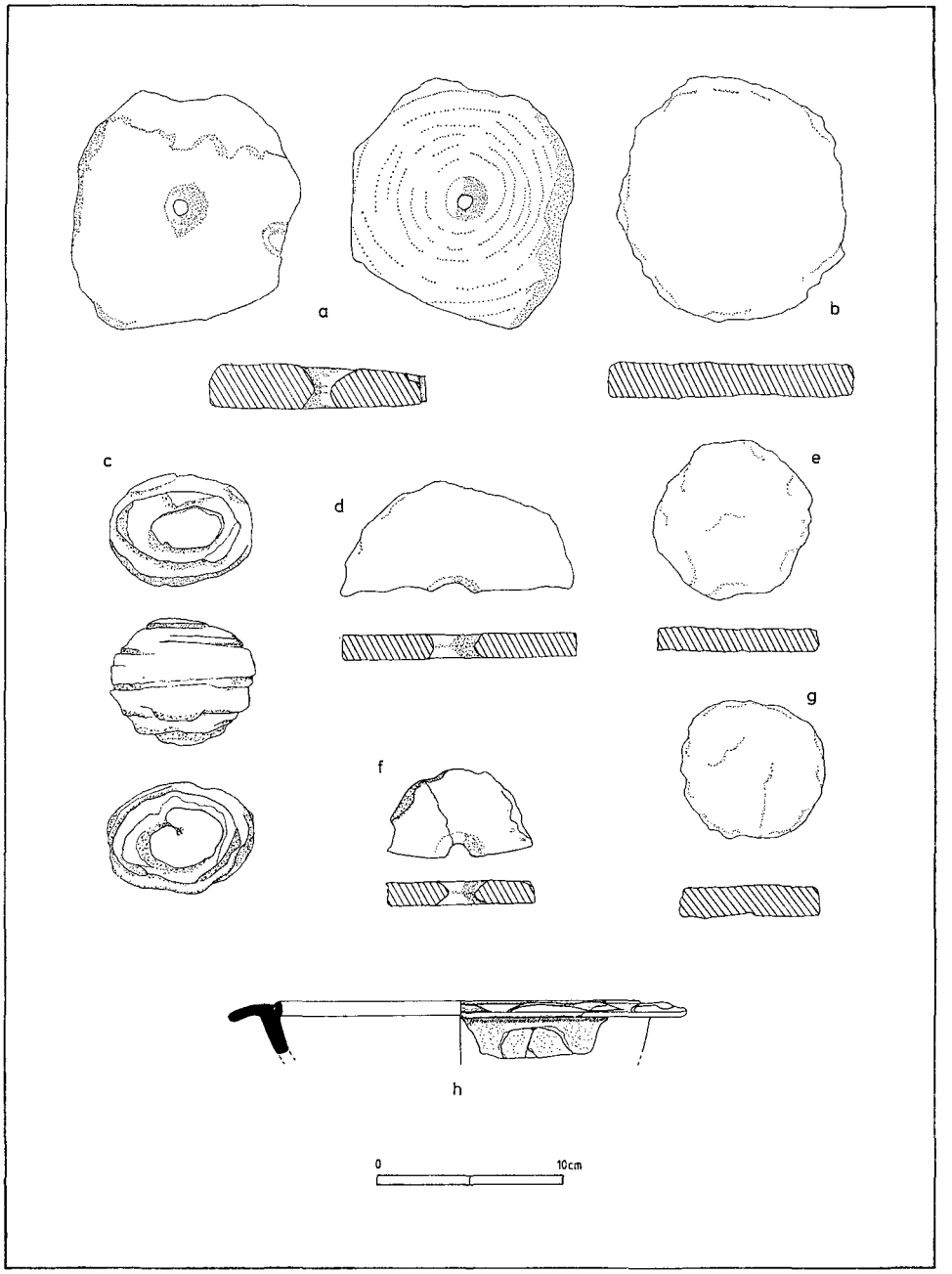

FIG 20 Small stone finds and a fragment of samian ware

orange-red, but the piece is too small and too ill-preserved to be confidently attributed. A number of pieces, probably of the same pot, totalling perhaps something like 50 mm square, was found in the backfill of f24. The fabric is a pale biscuit-coloured, well-levigated and evenly-fired clay, and the pot from which the pieces came is probably to be ascribed to the common type of single-handled flagon known from so many military and civil sites of Roman Britain. All the pieces are featureless body-sherds so that it is impossible to place the vessel in any close chronological context. Also possibly, though not demonstrably, Roman in origin is a length of lead rod, about 3 mm in diameter and 283 mm long, found in the terminal of f20, whence the samian rim-sherd also came. From the shallow entrance-terminal of f18 came a thick, flat fragment of glass which seems likely to have been part of a square Roman bottle. If the tentative identification of these finds as Roman is accepted it would appear that a disproportionate quantity of the finds from Dalladies 2 came from Roman, or Romanised, sources. While it is sometimes suggested that the odd Roman sherd found on a native site may represent no more than a mere curiosity picked up from some deserted Roman fort (and in this connection the proximity of Stracathro is of course suggestive), it may seem strange that the inhabitants of Dalladies 2 managed to glean such a diverse group of materials. It is surely more satisfactory to attempt to explain the presence of various wares of pottery, glass and lead in terms of some Roman-native contact, direct or indirect, whereby products of the Roman world, or at least of Romanised southern Britain, were obtained, used and finally thrown away broken on the native site to be accidentally incorporated in the backfills of ditches. It is important to stress that all the Roman finds came from ditch-fills, and that there was no evidence that the material from which the ditch-fills were drawn was concentrated midden and rubbish: indeed, the Roman pieces should be viewed as but an accidentally preserved sample of what was once used by the inhabitants.

A number of objects made from stone were recovered, either in the backfill of ditches or unstratified. There were three roughly shaped, approximately circular discs of schist (fig 20 b, e, g), all from stratified contexts, and three perforated stone discs (fig 20 a, d, f), again all from stratified contexts. The functions of these objects, perforated and unperforated, is a subject only for speculation. The perforations were biconical, and one of the perforated discs (fig 20 a) shows signs of striated wear-marks on one face as if it had been used for rotary grinding. Half of a larger and heavier biconically-perforated sandstone disc (disc is perhaps too fine a word for these roughly shaped slabs) had already been found, it will be remembered, in a pit beside the southern tip of the façade of the long barrow; the pit appears to have been one of the shallow, circular type found on Dalladies 2 for it resembled it not only in shape but in its contents of much charcoal in large chunks and tiny amounts of burnt bone. The Arbroath Antiquary Club's investigations also recovered another broken example of a sandstone slab, roughly shaped and biconically perforated.

Fragments of quern stones of rotary type were found in some number. Both topstones and bedstones were represented, one or two of the latter occurring unstratified. The topstones illustrated here (fig 21) are all those which are greater than a small fragment. Except for one (fig 21b), which was found on the floor of the terminal of f309, they were all found at the bottom of the backfill of f24 together with several small fragments of other querns not illustrated here. Other small fragments of querns, recognisable only by the worn working surface, occurred very occasionally in the backfill of a ditch. The re-use of a bedstone as part of the wall of f309 has already been mentioned. The circular stone had either broken in an arc across one edge or had been shaped so in order to fit into the wall-face. The material of the topstones was mica schist, in some cases of a garnetiferous variety. The bedstones were of coarse-grained igneous rock. There are two patterns of topstone. One is a simple, flat, bun-shaped stone with hopper

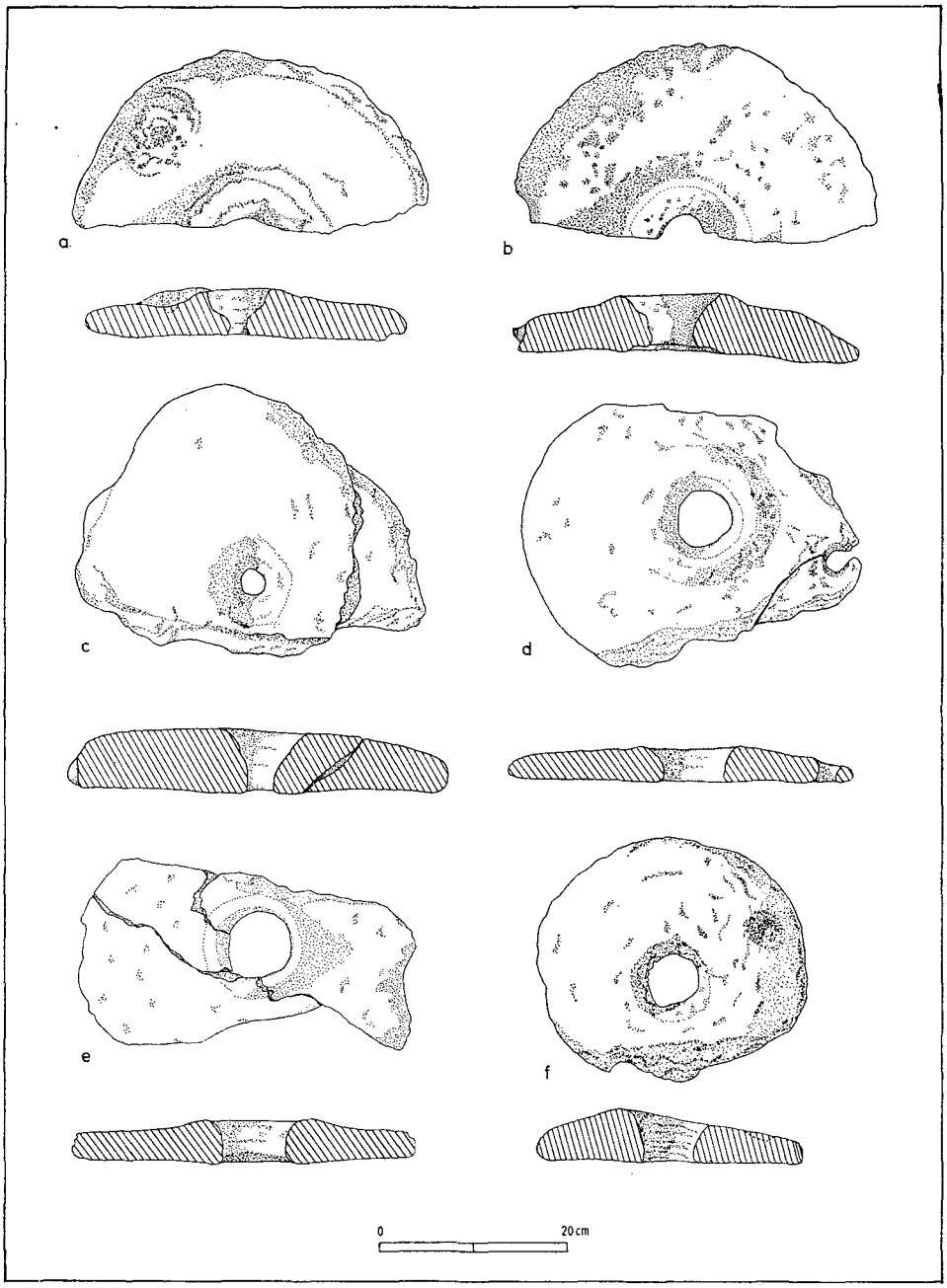

FIG 21 Rotary quern topstones

and a depression to engage the turning-handle. The other is very thin and of greater diameter. Around the hopper it has a raised collar, as also around the stick-hole. It would seem that one of the topstones (fig 20 f) had two stick-holes; perhaps one of them had broken away at the thin edge of the quern and so was replaced by a second hole. Within the broad bracket of time during which the site was occupied the only querns which are at all closely dateable are those from f24. These querns, already damaged or broken, had been thrown into the ditch where some of them had shattered on impact as they fell on to a roughly paved floor which stretched from beside the ditch, down its gently sloping side to its shallow bottom. Once the quern stones had been thrown in together with other stones the rest of the ditch was filled in with soil in the usual manner; and it was in this soil that the several fragments of the single-handled flagon were found. No more precise date than the first three or four centuries AD can be inferred for such a context.

As to the illustration of the way of life of the settlement we have a clear indication that querns, apparently made from stones obtainable in exposures in the Angus glens, were extensively used. Together with the excavated find of carbonised barley and the two noted, but unexcavated, occurrences of similarly carbonised cereals the querns form solid evidence that arable farming was a substantial contributor to the subsistence economy of the settlement.

One certain and another uncertain piece of worked bone were found, but neither fragment is identifiable as a recognisable tool-type. One other artefact deserves mention, a carved stone ball (fig 20 c) found in the backfill of the isolated, extreme NW terminal of the f2 complex. The ball is not at all spherical, nor is it made from the hard stones associated with Neolithic carved stone balls. It is in fact a schist pebble in origin, and its decoration was roughly executed to form what was intended to be two spirals centred on the opposing faces of the pebble.

Animal bone was preserved in the soil matrices of the ditch backfills, even if it was difficult to handle because of its softness. In view of its survival and remembering that the ditches were backfilled with large quantities of material it is surprising to remark how little bone was recovered; clearly the need to backfill unwanted ditches was not used as the opportunity to dispose of accumulations of domestic refuse, perhaps because, unlike southern British Iron Age storage pits re-used as rubbish pits, these ditches were filled in in a single phase of activity and domestic refuse could not be allowed to accumulate that long. In other words, perhaps the contrast with the southern British habit of slowly filling a no longer wanted storage pit with refuse tells us something about the Dalladies ditches: where storage pits were in use there would always be a pit or two abandoned for refuse-disposal, while at Dalladies it was rare for a ditch to be abandoned (if we suppose that the lives of ditches were long in comparison with storage pits), and other forms of refuse-disposal were practised. The identifications of the species to which the animal bone belonged is given in Appendix 1, whose brevity illustrates the extreme lack of butchered animal bone about the site. It is to be noted that a highly disproportionate quantity of the animal remains is of cranium, mandible or simply teeth: the shortage of post-cranial bone is remarkable. Only four fragments of post-cranial bone were identified, a horse's foot-bone and a radius, a tibia and a scapula of ox. About half of the bone was of ox, a quarter was unidentifiable, and the remaining quarter was mostly sheep, with a little horse and a part of a pig's jaw.

Bone occurred in burnt form, however, almost universally throughout the soil backfills if in minute amounts. Sometimes tiny flecks of quite unrecognisable origin, human or animal, were recovered almost as frequently as charcoal, which was present in prolific quantities in many ditches. It is tempting to link the large amounts of charcoal, too great to be considered as merely the ashes from domestic fire-places, with the persistent traces of thoroughly burnt bone, associated as they are not only by their find-contexts but also in their both being by-products of burning. Perhaps they form the tangible traces of some industrial process; and perhaps that process was

carried on in the shallow pits which gave evidence of having contained fierce fires. There were also found here and there small pieces of iron-working waste-products, so that it is at least economical of hypothesis to suggest that all these phenomena are signs of iron-working on the site, the burnt bone having been employed as a flux in the process. A few unrecognisable lumps of corroded iron and the odd, just recognisable nail of iron tell us nothing of their functions nor of their place of manufacture.

CHRONOLOGY

In two parts of the site it proved possible to observe some sort of stratigraphical sequence giving an internal relative chronology to those parts of the site if to no other features. There is no way other than through radiocarbon dating of assessing the general length of the sequences, and for one of the two that is possible. In the case of the f2 complex and its associated features (p 140 *supra*; fig 12) we have three radiocarbon dates which show that on the one hand the sequence of activity began in or before the 1st-century BC and on the other hand one branch in the sequence came to an end somewhere about the 6th-century AD. But it is impossible without further extensive radiocarbon assays to date the ends of the other branches in the sequence, and it appears profligate to attempt to separate the individual steps in the sequence by such expensive means when the chances of succeeding seem slim, particularly as the sample material would have to be charcoal found in the ditch-fills but derived from unknown sources. All we can say of this sequence is that it spanned in total many centuries, but we do not know either the duration of the useful life of any feature in the sequence or the length of any of the gaps between the backfilling of one feature and the construction of the next. Similarly with the second important sequence, that centred on post-hole group 7 and f309 (pp 127 and 147 *supra*; fig 16), it is impossible to achieve any precise and generally useful conclusions in spite of the fact that we know a good deal of detail. In this latter instance one may perhaps assume that one house succeeded another in the sequence without a break, and that modifications and reconstructions within the ditch-sequence likewise followed one another consecutively and without a break, but, since we have no information on the duration of any stage in either sequence, we lack the means to make any meaningful chronological statement beyond the establishment of the relative sequence itself.

The five radiocarbon dates and the dateable finds provide our evidence as to the general date of the site and the duration of its use. The five radiocarbon dates are listed in Appendix 2. Corrected through either the MASCA tables or the 50-year averaging tables devised by McKerrell (for both see Watkins 1976) these radiocarbon dates range in calendar years from the 3rd-century BC to the beginning of the 7th-century AD at one standard deviation. Between those extremes lie three other dates, one in the 2nd or earlier 1st century BC, a second in the late 1st-century BC or the early 1st-century AD, and the third in the 1st-century AD. To this series of radiocarbon dates the piece of samian ware adds another useful piece of chronological information. Its date of manufacture, late in the 1st or early in the 2nd century AD, provides us with a rather loose *terminus post quem* (recalling that the context of the find was not primary). However long after its manufacture the piece of samian ware found its way into the backfill of f20 (provided that it was less than half a millennium), it conveniently lies in the rather large gap in the radiocarbon dating sequence covering the 2nd to the 5th centuries AD.

SUMMARY AND CONCLUSIONS

What has been described is that part of a late prehistoric and early historic settlement which was excavated. We presumably have to imagine a settlement which existed for at least three-

FIG 22 Site plan

quarters of a millennium, and which extended a good deal beyond the excavated area as a straggle of buildings and associated constructions stretching along the edge of a terrace of fast-draining fluvio-glacial gravels above the flood-plain of the River North Esk. The houses were timber-framed and circular in plan. In dimensions they were variable and quite modest, and they were built to a variety of techniques and with no great regard for rigid geometry or regular spacing of the main timbers. In only one house did the hearth survive in the earth floor, and in one other house-site part of a floor deposit was excavated. Two houses had partially paved floors, in both cases stretching beyond the walls into the ground outside the house. While some house-sites were used only once, other sites were repeatedly built upon. Besides the identified houses or suggested identifications there were groups of post-holes which cannot be identified as buildings of any shape; this may be the result in part of the heavy stripping of soil by machine and in part of excavational failure to locate post-holes in 'difficult' areas.

There were a few pits, notable amongst which were several in which very hot fires or furnaces had burned. It is suggested that primary iron-working took place on the site using these pits as some sort of bowl-furnaces. The most intriguing and obvious category of feature on the site was what have here been called ditches. Within this class there was great variety of size, shape and profile, though in almost every case the sections through the backfills of the ditches reveal that the ditches were uniformly filled in as a deliberate policy. In two places within the excavated area of the settlement it was demonstrable that ditches replaced one another or were modified during their 'lives' in what were certainly complex and possibly long-term processes of development. A number of ditches certainly contained timber uprights, which, it has been argued, were not free-standing posts but the upright members of wooden frame-structures. These structures, which may have been present also in ditches where no post-sockets were found, are of unknown purpose, though one may suppose that they supported roofs and provided supports for some sort of structure to retain the gravel sides of ditches. One ditch was approached by a ramp and preserved traces of having possessed a doorway in the ramp; other ditches had paving sloping down a shallow side or one terminal notably shallow to indicate the point of access. Two excavated ditches (and one or two more seen in 1974 but not excavated) contained dry-stone walls lining parts of the sides of the ditch while the rest of the same ditches were equipped with post-structures.

No function for the ditches can be inferred from the evidence available, which is minimal and mostly negative. In view of the recognition of above-ground houses of a well-known British cultural tradition it seems impossible to consider the ditch-features as living-places, not to mention the difficulty of imagining that most of them were large enough to accommodate people. In any case there were no hearths or traces of regular fires in the floor-deposits. While the excavations proceeded many suggestions were put forward both from among the excavators and from helpful visitors, but the hypotheses either failed simple tests or were quite untestable in that no evidence, positive or negative, bore on them either way.

In this as in other respects there are resemblances between the Dalladies 2 ditch-features and that class of monuments we call souterrains or earth-houses. The Dalladies ditches do not form a notably homogeneous group from which it is possible to formulate a generalised description of their typical features, but they possess characteristics of plan, size, construction, backfill and date which they share with certain souterrains, themselves a fairly diverse group. Dalladies lies between two of the recognised regional groups of souterrains. To the S is Wainwright's 'southern Pictland' group (Wainwright 1963), distributed through southern Angus and adjacent Perthshire, while to the N, centred on the Dee and Don valleys, lies another less well-known group. (Since this is not the place to enter a discussion of the difficult problems of Scottish souterrains or

souterrains in general, it will serve our present purpose simply to relate the Dalladies ditch-features to their nearest neighbours.) While there are general relationships in terms of shape and in the observation that souterrains were sometimes found to have been deliberately filled in, Wainwright's 'southern Pictland' group consists by and large of such massive souterrains that any comparison of plans at the same scale makes the Dalladies ditch-features seem ridiculously small. However, within the broader context of Scottish souterrains the size of the Dalladies ditches compares well; indeed, it might be said that the 'southern Pictland' group rather than being the norm is eccentric for its enormous souterrains. No souterrain in the Aberdeenshire group has been investigated, it seems, since Abercromby dug at a site called Dinnet at the beginning of this century; and the earlier reports are on the whole not highly informative and do not include plans. Thus it is not possible to speak with authority on the characteristics of the Aberdeenshire souterrains. However, it would appear that they are on the whole simple in plan, small, narrow, passage-like chambers which characteristically curve. They may or may not have a paved floor, and in one case, Dinnet A, it is recorded that the construction was not walled with dry-stone (Abercromby 1904, 118, 120). The same site is one of the very few where the excavator has noted the relationship between the above ground buildings and the souterrains. At Dinnet Abercromby explored two large hut-circles, from one of which the souterrain he excavated was entered. Alongside the second hut a souterrain was found to exist also, but it was not excavated beyond putting down a sounding to verify its existence. Other hut-circles were noted in the settlement, and Abercromby also remarked the presence of walls or boundary-features among the huts. Dinnet forms an important parallel for Dalladies, therefore, in that similar souterrains were shown to exist there in the plural as parts of a single settlement which comprised a scatter of circular huts. Within the 'southern Pictland' group's territory there is also one unspecific and unverified example of multiple souterrains on one site, at a place called Mudhall, Perthshire (Wainwright 1963, 198–9).

If it is accepted that the Dalladies ditch-features are some sort of souterrain-related structures, then it follows that they to some extent fill the gap on the distribution map between the 'southern Pictland' group and the Aberdeenshire group. It is not at all satisfactory to have only one site to put forward for that purpose, and so I draw attention to a second site, where an isolated, damaged souterrain was hastily investigated before it was totally destroyed by road-building. The site was at Northwaterbridge on the north side of the River North Esk on the A94, and was found and somewhat damaged during road improvement work and the building of a new bridge in 1971. Professor Piggott and the present writer with several of the student volunteers from the long barrow excavations spent two days clearing the surface of the souterrain, making the plan (fig 19) and digging a section at the stone-lined end. The work was taken over and completed by Mr Alan Small (Small *et al.* 1975). This souterrain was like the Dalladies souterrains in size, shape, and in that it appeared to have been deliberately refilled; it also was roughly walled at one end but not apparently at the other, though no timber post-sockets or post-holes were remarked by Mr Small. Thus the Dalladies site is not quite unique, and we can now say that some sort of souterrain-like structures exist between the S Angus and adjacent Perthshire on the one hand and Aberdeenshire on the other.

It does not take our understanding of the Dalladies 2 site very far even if we do recognise that the ditch-features described here are a local form of souterrain, for we know so little of souterrains, particularly as concerns their functions and their range in time. Some souterrains have yielded finds of Roman origins, and none has given positive and indisputable evidence concerning its use. Far from learning more about Dalladies 2 by recognising the ditch-features as souterrains, both in their context as part of a settlement and in their radiocarbon-dated

contexts the Dalladies 2 ditches contribute to our understanding of souterrains. The radiocarbon date from the floor deposit of the stone-walled f307, adjusted to a true calendar age through the MASCA tables or any other calibration device, takes the history of souterrains in the E of Scotland back into the 3rd-century BC, while the other dates from ditch-backfills fall into the last century BC and the 1st-century AD. The Roman finds compare with the Roman finds from other souterrains, but the last radiocarbon date, late in the 6th or early in the 7th-century AD, again adds to our knowledge by extending the known period of souterrain use at least by implication.

The oft-repeated view that souterrains were underground houses, or, if not that, houses occupied in winter, cannot be supported by any evidence from Dalladies 2. No evidence of their use as resorts against winter's cold can be adduced from the ditch-features of Dalladies 2, and, as has been argued already, the presence of quite regular circular houses on the surface makes it unnecessary, and indeed redundant, to suggest that the ditches were the homes of families (quite apart from the physical difficulties of life in such a narrow passage). Again, it has already been noted that, as at Dalladies 2, souterrains are known to exist associated with an open settlement at Dinnet in Aberdeenshire. At Newmill, near Bankfoot in Perthshire, the present author excavated in 1977 the surviving part of a settlement site with which was associated a massive souterrain (see below p 165). And outside eastern Scotland the association of souterrains with open settlements or enclosed settlements is documented in the N of Scotland, the Northern and Western Isles, Ireland, Cornwall and Brittany, thus in all the main areas of souterrain distribution.

In fact none of the suggested functions of souterrains fit the Dalladies 2 evidence, with the exception of the idea that souterrains were store-houses, in particular granaries. I am indebted to Professor Stuart Piggott for drawing to my attention Bersu's footnoted speculation (Bersu 1948, 260) 'that the souterrains . . . are an equivalent for the souterrain silos of southern England'. This is not the occasion to develop that theme. It may simply be remarked that the identification of the Dalladies 2 ditch-features as souterrains and thus as granaries would on the one hand provide us with an explanation of these ditches by linking them with the finds of carbonised barley and rotary quern stones, and on the other hand save us from the embarrassment of having clear evidence of substantial arable farming but no storage facilities for the harvest.

In conclusion it must be admitted that the excavations at Dalladies 2, carried out piecemeal on very limited resources on a site which was accidentally discovered and never thoroughly understood, were inadequate. That the excavations raised more questions than they answered is, however, only as it should be. And if this report suggests that there are probably many such sites in the fertile agricultural lands of eastern Scotland which others may find and excavate better, then it will have served its purpose. Such sites hold out the fascinating prospect of exploring the millennial continuity of culture which leads back from the rural population of the historical Picts, through the period of intermittent Roman activity, to the pure prehistory of the pre-Roman Iron Age.

APPENDIX 1

Animal bones

Miss L P D Barnetson.

The animal bones were so few in number and so fragmentary that it is possible to do no more than identify the species represented as far as possible. About one-quarter of the fragments were not identifiable and they have been omitted from the table on next page.

Species	Teeth	Mandible	Cranium	Post-cranial	Totals
Bos	14	1	3	3	21
Equus	2			1	3
Ovis	5				5
Sus	1				1
Totals	22	1	3	4	30

NOTES

1 Under 'Teeth' are entered both loose teeth and teeth in portions of mandible.
2 The counts are not of individual teeth etc, but of find-groups.
3 The post-cranial *Bos* bones were fragments of a scapula, a radius and a tibia. The post-cranial *Equus* bone was a second phalanx.

APPENDIX 2

Radiocarbon dates

Code	Nature of sample	Provenance	BP	bc/ad
SRR–286	charcoal	Feature 18	1987 ± 36	73 bc
SRR–287	carbonised barley	f2.1 hearth	1449 ± 65	ad 501
SRR–288	charcoal	Feature 12	1934 ± 50	ad 16
SRR–526	charcoal	f2.2	1974 ± 40	24 bc
SRR–527	charcoal	f307	2147 ± 60	197 bc

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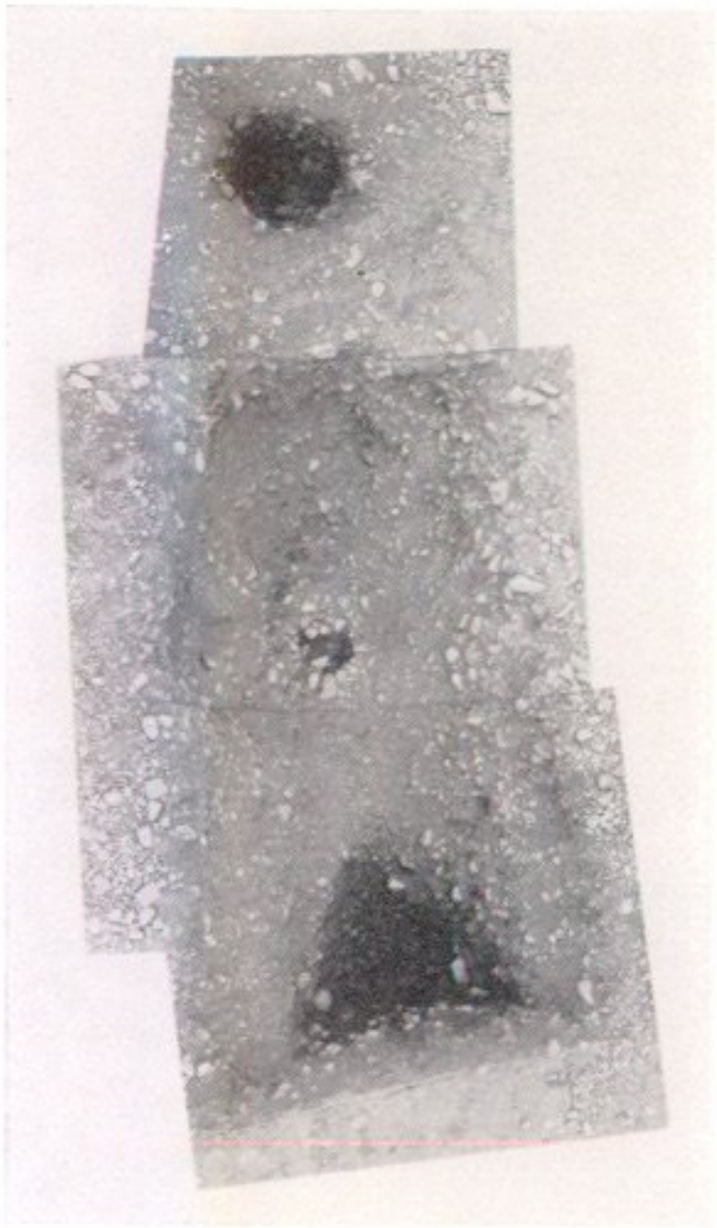

a Feature 20. Composite photograph of southern terminal, post-socket and post-hole

b Feature 307. Southwestern terminal

c Feature 309, looking towards the terminal. The collapsed stones of the left-hand wall are removed to reveal the *in situ* base course