

I.

FINAL REPORT ON THE OPERATIONS AT SKARA BRAE.

BY PROFESSOR V. GORDON CHILDE, B.LITT., F.S.A.SCOT.

AREAS SOUTH AND WEST OF THE MARKET PLACE.

The first task for 1930 was to clear up the walls exposed in the area south and west of the market place and passage F in the last campaign. A passage, running westward south of the annex to Hut 8, and thus forming a sort of continuation of the main passage, was first freed from sand. No trace of roofing was observed, and, save for a brown layer of refuse 18 inches above the paved floor, the passage was filled merely with blown sand. Its right wall, the outer wall of the annex to 8, soon curved round to join up with the outer wall of the main hut without being properly bonded into the latter. The annex thus appeared as a semi-elliptical addition to Hut 8. When its west wall was disengaged, it appeared that there had once been a doorway on this side too, opposite the existing entrance opening on the market place. Last year we had noted that the west wall of the annex was very flimsy. It was, we now see, really a rough bit of blocking.

Externally the north jamb of this west entry is missing, but the south jamb, a thick stone on end similar to those flanking the inner hut door, survives (fig. 1). Further examination disclosed a hollow space, choked with sand, immediately behind the outer wall of the annex. Its inner face looks like a later addition. In front of the west door and extending south across the line of the passage was a strip of paving 5 or 6 feet wide. West of it was only a carefully prepared surface of blue clay similar to that under the pavement of the market place, but dipping steeply westward. Immediately in front of the door the top of the paving stands 15.50 feet above our datum. Ten feet to the west the level of the clay surface was 14.40 feet, and in the next 4 feet it had dropped to 13.25 feet. There was no midden at all here apart from a layer of limpet-shells, rapidly thinning out, 6 inches above the blue clay. These facts, combined with the abrupt termination of the passage wall mentioned below, indicated that the limits of the settlement had been reached on this side, and work here was accordingly suspended.

At the same time the west wall of Hut 8 was more fully exposed. It rests on a sort of scarcement of horizontal flagstones, over 1 foot wide and about 8 inches high. The lower course of the wall proper is formed of thick flagstones set on edge, the angles between them being filled



Fig. 1. West side of porch of Hut 8, showing blocked-up entrance and external wall of hut.



Fig. 2. The backs of walls *c* and *b* before the removal of midden covering the cell in *b*, viewed from the market place.

with courses of small stones very cleverly wedged in, a procedure also noted on the outer face of Hut 4 (fig. 1).

The south wall of the passage A', here termed wall *d*, after following the curvature of the annex wall, ended abruptly in a ragged gap on a level with the west door of the annex. A thin layer of brown-stained sand and bones, on a level with that reposing on the wall-top, was traceable here westward of the gap for about 3 feet, and then died out as if wall *d* had really ended at this point. The paving of the passage itself merged into that in front of the west door of annex 8 and did not extend west thereof. But the blue clay bedding extended south of the line of wall *d* and was subsequently found all over the area south thereof.

The space between walls *b* and *d*, wrongly termed Hut 9 last year, was next explored. No inner face came to light behind either wall. On the contrary, a new wall, *c*, with its top at a lower level than *b*, was exposed (fig. 2). None of these walls showed the least inclination to converge; all radiate in divergent directions from the south-east corner of the market place. Nor was any structure found between walls *c* and *d*. The whole area was filled with sand interrupted by layers of brown material (sand mixed with refuse) at the levels of the wall-tops. From the latter several fine pins were recovered, mostly near or on wall *d*. The sand throughout the whole space examined rested on the same prepared surface of blue clay, often 10 inches thick, as we have described under the market place and west of the annex to 8. The same bed extends southward under walls *c* and *b*.

In the area between the last-named there was a layer of midden-like material mixed with stones above the level of the top of wall *c*. Under it came a layer of sand 18 inches to 21 inches thick, covering a flagstone pavement similar to that of passage A. This in turn rests on the blue clay bedding. Both walls *c* and *d* are only one course thick; wall *c* being faced on the south and leaning back northward, while wall *d* is faced on the north only. Both were clearly just retaining walls designed to keep back some accumulation, presumably of sand, banked up between them.

Wall *b* presents a very similar character, being faced again only on the south. It rests upon the layer of midden observed along the top of wall *c*. Beneath this both the sand, noted against *c*, and the underlying pavement continue under *b* to reappear on the south. Presumably, therefore, wall *b* was built to replace *c* when the latter had been broken down and silted up with drifting sand. To this extent it represents a concession to dunes encroaching from the south-west.

Yet there is a series of odd structure built into it. About 16 feet from the corner of passage F dry-walling gives place to orthostatæ, which

form the front walls to small buildings. The first is a semicircular or rectangular chamber, some 6 feet wide. Its front is formed of slabs on edge with a gap of 18 inches between them to serve as a doorway. The side walls are dry-built, standing 8 inches high, but the rear wall had collapsed into the sand over wall *c* (fig. 3). It is uncertain whether the structure had even been roofed. It was filled with midden, from which were recovered a big pin of type A1, several potsherds, and a chert



Fig. 3. Back of cell in wall *b*; passage F in background.

scraper. Similar midden was found all along the top of wall *b* to the south-west, where there are indications of other yet more ruinous chambers of the same type.

The area between wall *a* (the west wall of F) and wall *b* was occupied by sand alternating with layers of light midden. None of the midden here had the compact character of the great deposit east of F. It was brown in colour, sandy in texture, and showed no traces of occupation levels such as are observable further east. Save for rare and very fragmentary sherds, scarcely any relics were collected here except on or in the immediate vicinity of walls. The several strata vary greatly in thickness, and tend to merge into one another. The uppermost midden layer, some 18 inches thick over passage F, had contracted to

9 inches 12 feet further west. It seems to correspond with that lying over the wall-tops of *b* and *d*. The next layer, thin except over wall *a*, seems to be that on which wall *b* rests, and which runs over the top of *c*. The last layer rests upon the pavement below *b* and in front of *c*. It seems likely that walls *a* and *c* were contemporary. Wall *b* is admittedly later than *c*, and probably also than *a*, which it will be remembered was breached at its northern end (*Proceedings*, vol. lxiv. p. 180).

Throughout this area no structures were observed; but below the blue clay outside *b* we found traces of a wall, *K*, running east with a curve southwards. Its eastern end is ruined, but would indicate a former extension below the present line of wall *a*. In its best-preserved section it stood five courses high and showed a good outer face towards the north. It doubtless denotes the ruined base of some structure contemporary with Huts 6' and 9, or at least anterior to passage *F*; but its back face was so rough that further examination was deemed unprofitable, and the whole has been covered over.

THE END OF PASSAGE F.

Last year passage *F* seemed still running on into midden though its pavement ended opposite the cell *F1*. On clearing further we found that the right-hand (west) wall, *a*, terminated about 16 feet from the cell entrance. The left wall, on the other hand, was found to run on as the casing wall of Hut 7 round the south of that building. There were three layers of midden in the sand on this side of wall *a*, but all tended to peter out to the south. The top layer, already only 12 inches thick over the end of wall *a*, was reduced to a streak 2 inches wide; 12 feet to the south-west the middle layer had contracted from 9 inches to 3 inches in thickness; and the bottom one had entirely vanished. The paving of passage *F* had, as stated, come to an end opposite cell *F1*, but a surface of compact midden replaced it and continued sloping down to the south-east right to the back of Hut 7, even after the right-hand wall of the "passage," *a*, had come to an end. This midden deposit was shown by the test-pit (described later) to extend continuously down to virgin clay some 5 feet beneath its surface. The casing wall of Hut 7, which is continuous with the left (north-eastern) wall of passage *F* beyond cell *F1*, rested upon this midden, and was buried by its upper strata to a depth of 1 foot. Its base thus lies 4 or 5 feet above the foundations of the wall of the hut proper.

The casing wall just described runs right round the back of Hut 7 to continue on the east as the west face of the passage *C*. The intrusive cist grave described in a later section abuts on the top courses of this wall and would have blocked the continuation of passage *F* to

join that gallery had such existed, as was expected last year. However, no such junction was traced. On the one hand passage F, as such, ceased to exist with the breaking off of its right wall, *a*, soon after cell F1. On the other hand passage C ends behind the south-east corner of Hut 7 in a wrangle of stones that may be the outer casing of cell 7, 1.

Following the gallery up from passage C we had found last year a gap in the left-hand wall on the south, marked G, at a point where proof of roofing ended. Some 12 feet beyond this gap the paving of the passage ceases and its left-hand (south-eastern) wall begins to turn inwards towards the casing wall of Hut 7. After 2 feet 3 inches the two walls are only 1 foot 7 inches apart. Here the left-hand face is broken, but a large stone, 7 inches thick, projects across the passage-way and leans against its right wall. Above it three other big stones lie across the passage-way, while below it is a midden packing 12 inches deep resting on another slab, that likewise lies across the passage (fig. 4). It is then clear that, if not originally so planned, passage C did actually end in a *cul-de-sac* at this point.

THE MIDDEN EAST OF PASSAGE C AND SOUTH OF HUT 5.

The true exit to the passage C must have been the gap G, where a sort of step led up to a few stones lying on the midden surface. Soundings had been made in this quarter during 1929 in the hopes of finding further buildings, but in fact revealing nothing more promising than a slab on edge at a lower level. In 1930 we returned to the attack, but found, instead of structures contemporary with the gallery, a couple of ruined huts belonging to an earlier epoch. To reach these interesting buildings extensive sections of midden had to be cleared away by successive cuts northward and eastward from a face carved out between Hut 5 and the gap G.

The midden over this area sloped away from a point roughly over cell C2, where its top lay nearly 19 feet above our datum. In an easterly direction the dip was roughly 1 in 11 and to the south-east as much as 1 in 7. In the north-west between C2 and the corner of Hut 5 the midden was very compact and clearly stratified. A clean cut here, 6½ feet deep, revealed six distinct layers, each separated by very thin ribbons of sand only ½ inch to 2 inches thick (fig. 6). Under the sixth layer we eventually reached the wall-tops of Hut 9, to be described below. To the south-east the midden was both absolutely shallower and internally less compact and more sandy. Fourteen feet to the south-east the midden layers, mostly 12 inches thick over C2, had contracted to 7 inches, 4 inches, or less, while the ribbons of inter-

polated sand had broadened out correspondingly to strata from 4 inches to 8 inches deep; and only the top layer retained on the whole a fairly uniform thickness of about 6 inches and also its consistency. The intermediate layers approximated more and more to the mere stained sand noted in the area south-west of passage F.

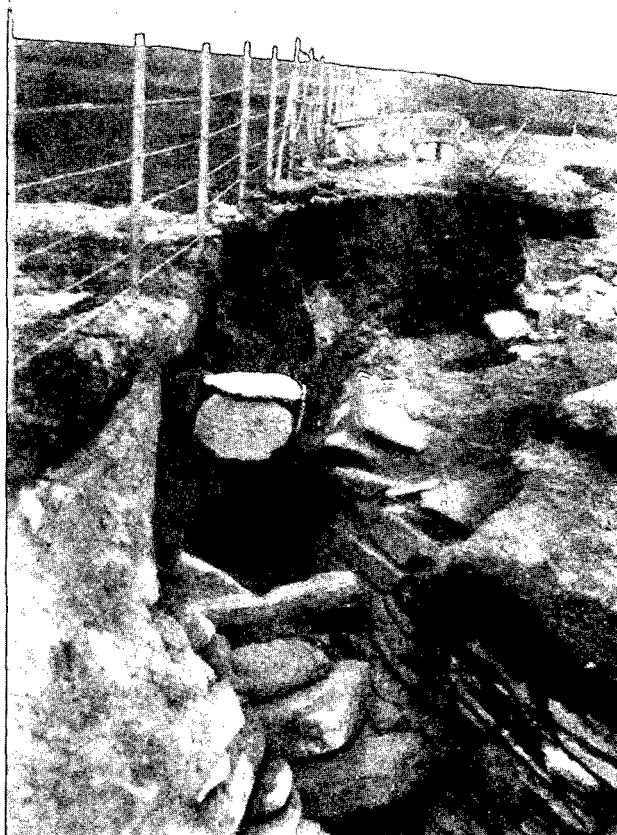


Fig. 4. End of passage C with cist grave behind.

In each successive cut backwards the midden was removed in layers according to the beds defined by the ribbons of sand. We thus found that the top layer was everywhere comparatively dense and rich in pins, beads, and other relics, such as are common in the deposit on the roof of passage A. But even the top midden became thinner and more sandy towards the south-east. Layers 2 to 4 were everywhere poor in relics. Up against Hut 5 they resembled the ash layers noted in test-pits under

Huts 1 and 3, while to the south-east they were more like the sand-mixed-with-bones encountered to the south-west of passage F.

Over what we later knew as Hut 9 stones were already plentiful in the sixth layer, and the seventh consisted mainly of stones, shown from their positions to have fallen forward from the hut walls, but yet intimately mixed with midden material. To the east, over Hut 10, the position was more complex. A layer of stones of the sort used for building, principally lying in sand, was so regular as to suggest a pavement sloping up to the base of wall Q', and immediately underneath the building stones were broken slates, partly bedded upon the curious green clay usually found in the hut drains; and the deposit was, in fact, thickest below wall Q' in the north corner of Hut 10, directly behind the cell in Hut 4. The green deposit may therefore represent a discharge from that cell, or still more probably from an early form of the drain of 5(B) prior to the construction of the west-to-east drain (C) across Hut 4. The overlying slabs almost certainly represent a sloping pavement, to make room for which the south-eastern walls of Hut 10 had been almost entirely removed. Immediately under wall Q' some of these slabs survived very much in their original horizontal position. Here they lay 13·80 above datum, the dip of the pavement southward being about 1 in 8.

HUTS 9 AND 10.

The two huts, eventually laid bare under the deposits just described, had both been abandoned at an early date; their walls had been partially demolished and their sites levelled up with midden and stones. As comparatively few relics were recovered from their floors, it must be inferred that these huts had been abandoned deliberately in comparison, at least, with Huts 1 to 5 and 7, whose occupants had fled in such haste that they left many valuables behind them.

The better-preserved hut is that on the north-west, termed No. 9. Save on the west, where the walls had been almost entirely pulled down in constructing cell C2, the walls stand at least 2 feet high all round, so that the hut's general outlines are perfectly clear. A section of the southern wall still stands nearly 4 feet high (fig. 5), for its outer face has been incorporated in the gallery in passage C, which outlasted, if it did not entirely postdate, Hut 9. The chamber proper is trapeze-shaped, nearly 12 feet long, 6 feet wide at its western end, and 9 feet at its rear, but two transepts or apses on either side of the hearth bring up the total width at the centre to 14 feet. The doorway was in the southern corner of the west end. A slab projecting edgewise for the check, the bar-hole and the inner facing slab are preserved on the ingoer's right. The lintel,

left-hand cheek, and most of the western wall have been broken down in building cell C2 (fig. 5). The hut had been presumably entered, like Hut 6, from some form of passage C, and the existing cell C2 subsequently substituted for the door.

In the centre of the hut lies the usual square fireplace kerbed with flagstones. Instead of pens or beds, built out from the wall, there are two deep, wide recesses disposed like transepts on either side of the



Fig. 5. Hut 9: former entrance and southern "bed."

hearth, but partitioned off from the body of the hut, like the beds in the more normal dwellings, by large slabs on edge that here continue the lines of the main side walls. The corners of the recesses are rounded, and the courses begin almost from the floor to oversail one another. Each recess would thus have formed a shallow, corbelled apse. There are distinct indications, particularly in the north-west corner, that the two ends of the main chamber were similarly corbelled. In the southern apse, whose wall, as stated, supports a section of passage C, there is a keeping place on the west side that now forms a sort of window through into the gallery. The outer end of the opposite apse is faced with a tall stone on end recalling the "bed-posts" of other huts (fig. 6). In the normal position, the centre of the rear wall, stands the "dresser,"



Fig. 6. Hut 9: northern "bed" with midden section in background.



Fig. 7. Hut 9: southern bed, cell, and dresser.

not built out as in Huts 1 and 7, but recessed into the wall as in Huts 2, 4, and 5. The three uprights that support its lower shelf and the right-hand shelf have been preserved. The left-hand shelf had collapsed, and no back wall could be found behind it (fig. 7). We suspected that there had once been a cell here as in Huts 2 and 5, but were unable to discover positive evidence for such. On the other hand, there is a perfectly good circular cell in the south-western corner (fig. 7). It was floored with slates and roofed on the beehive plan, as the corbelling,



Fig. 8. Hut 10 with later box in foreground and wall Q' on right.

already visible in the few surviving wall courses, demonstrates. No limpet boxes were detected in the hut floor, but near the disturbed north-west corner a thick slab on edge let into the floor may mark the position of a sump or drain.

Hut 10 was in far worse plight than 9. Segments of the southern and western walls, half a beehive cell, and a tiny section of the east wall alone survive. Neither doorway (the gap on the west has no faces) nor hearth can be traced, but the "dresser" is represented by three buttresses, projecting from the western wall and terminating in stones on end (fig. 8). A slab at right angles to this wall near the hut centre and three similar slabs on end parallel thereto may be

remains of beds. Judging by the extant remains the hut may have measured as much as 16 feet by 14 feet. Its walls are well built, about 2 feet thick, and provided with a good outer face resting on slabs on edge as in the case of 4 and 8.

The few relics left at the time of the huts' deliberate desertion were of exceptional interest. In Hut 9 a pick, C1, and several perfectly normal pins of type A1 lay between the southern bed slab and the hearth. On the opposite side of the fireplace, near the bed slab, we found a perforated antler haft for a celt and a grooved ball of volcanic stone (camptonite). An imperfect and rather rough whalebone basin stood against the back wall near the cell door, and under the dresser a fine pick, C1. Nearby we collected a ball of camptonite carved with spikes but badly chipped, several broken pins A1, a worked tine, one incised sherd and another decorated with small applied circles like those found under the floor of Hut 6 in 1929 and under 3 this year.

Hut 10, despite its more ruinous condition, yielded relics of yet greater interest: two celts near the south wall and a third just in front of the dresser; two fine though broken pins, one of type A4 and a large specimen of A1 with polished head, both near the southern bed slab; and several more commonplace tools, including two examples of B3. Scrapers and chips of white or orange flint were found all over the floor as well as many sherds, often very ornate. A big pot adorned with alternating bands of horizontal ribs and knobs stood right under wall Q' against the western wall of Hut 10, impregnated with the greenish substance previously mentioned. Another fine pot decorated with incised wavy lines and circular stamped impressions had stood against the south wall, a third with incised lines near the cell, and in the cell itself a fourth with the same horizontal rib ornament as was observed on a pot on the floor of Hut 7. For the rest, the floors of both huts were littered with broken bones, shells, and stones fractured by heat. At least one complete antler was found in Hut 10.

Evidently Huts 9 and 10 are materially older than those along passage A and belong to the same context as Hut 6'. Hut 9 must have been deserted before cell C2, which blocks its door, was built; Q', the casing wall of Hut 4, actually cuts the wall of Hut 10 as Q does that of 6'. None the less these early huts are of the same type and yielded the same sort of relics as Huts 1 to 5. The only differences are, on the one hand, the absence of limpet-boxes, on the other the more ornate character of the earlier pottery and the apparent absence of beads.

THE EAST END OF PASSAGE A.

A fourth hut of the earlier period eventually came to light directly under the north-east corner of Hut 4 as a result of operations which must now be described.

The east end of the site has long lain in a forlorn condition, cumbered with rank weeds and the remnants of fences. In tidying it up our first guide was a rough wall-face, seemingly continuing the line of the south wall of passage A, that was just visible left of the passage leading to Hut 4. The weed-covered sand-heap over the north side of 4 was accordingly cleared down to the top of the hut walls and the wall-face just noted. The latter was thus shown to be continuous with the wall of the entrance passage and of the hut itself; the area between the walls being packed with midden, comparatively rich in relics, at least near its surface. The northern wall proved to be merely a retaining wall one course thick with no rear face, but merely backed up against this midden. In its original form this casing wall had turned south quite rapidly and joined on to the hut wall at its north-east corner. It thus supported merely a buttress flanking the hut entrance.

Subsequently the retaining wall was raised and carried right round the hut, reappearing behind it on the south as wall Q' already mentioned. The whole space between it and the hut wall was by then filled with stratified midden. The casing wall on the north and east was in poor condition owing to the action both of storms and still more of plant roots. Outside it on the north and east there are traces of a paving 1 foot 6 inches to 3 feet wide extending at least as far to the south-east as the line of the drain of 4 (C). The paving had been damaged by the same causes as the retaining wall, but it certainly constitutes either a simple continuation of passage A or an eastern counterpart to the market place on the west. It rises gradually from 14.50 opposite the entrance to Hut 4 to 15.50 on the line of drain C. Beyond the line of the drain the paving cannot be traced, but judging by the general trend of the midden it may be expected to dip. In fact it seems to have led out on to a descending midden surface at this point. The casing wall, on the contrary, seems to rise rather on the south. Outside the south-east corner of Hut 4 its top lies at 15.90; immediately above the west wall of Hut 10 its top is 16.60 and its base 13.80. Plainly Q' served primarily to support a sort of platform of midden round Hut 4 since there is only sand against the outer face of the wall above its base. In other words, it raised this platform above the surface of the original mound as did the casing wall of 7 on the south. It rests everywhere on a midden deposit, comparatively loose in texture and

poor in relics, that dips to the east and south-east at a rate of 1 in 7 (measured over the line of the drain and from the south-east corner of Hut 4 respectively) and only slightly less to the south across Hut 10. On the other hand, the outer wall of Hut 4 on the east at least is so well built that it must originally have been designed for exposure. Its bottom course is formed of slabs on edge with the intervening corner filled in with small stones laid flat, and the whole surface has been puddled with blue clay over 6 inches thick (fig. 9). None the less



Fig. 9. Outer face of original wall of Hut 4.

its base lies on midden 4 inches above the base of the inner face, so that some midden must have been there before the hut wall was built at all. The older incurving form of the casing wall presumably corresponds to the period when the east wall of 4 proper had been thus exposed.

HUT 4' AND CONNECTED BUILDINGS.

With a view to tracing the line of drain C east of Hut 4, Mr Houston had a pit sunk upon its supposed line between the hut wall and the casing wall Q'. He found a good built face below the base of wall Q' and separated from it by 9 inches of midden and sand. A section of broken pavement outside Q' was accordingly taken up and a wider trench cut, disclosing the outer face of the same wall standing in disturbed sandy midden to a depth of 4 feet 3 inches. This wall-face turned westward

much more rapidly than the remains of Q', which were removed. The lower wall was then followed round, and brought us to a group of slabs on end disposed in the manner of a door. A clearance was accordingly made right in to the outer wall of Hut 4, disclosing between this and the casing wall, and separated from the bottom of the latter by nearly 3 feet of stratified sand and midden, the wall stumps of a hut hereafter called 4'.



Fig. 10. Doorway of Hut 4'.

Its floor was covered with a thin layer of the usual midden. Thereover lay, near the doorway, sand mixed with building stones, and, on the line of the drain, green sewage clay to a depth of 20 inches; further in a packing of yellow clay partly replaced the sand. A midden deposit 1 foot thick rests upon the sand and partially overrode the stumps of the hut wall. It was interrupted by a ribbon of sand 1 inch thick, that runs perfectly continuously from beneath the outer wall of Hut 4 across to the wall stumps of 4' and above them as far as we have cut. Hence the whole deposit was laid down by strata after Hut 4' had been filled in to the level of its wall tops and never subsequently disturbed. The outer wall of Hut 4 rests directly upon the top of this double layer of midden.

Even after sacrificing considerable sections of the ruinous wall Q' only a small corner of Hut 4' could be explored without imperilling its successor, 4. The entry lay on the south, and the whole of its right (eastern) cheek is preserved. The jamb was, as usual, a slab projecting edgewise (fig. 10). Inside, the cheek was faced with another slab on edge at right angles to the jamb, and pierced with a hole for the bar precisely as in the doors of Huts 1 and 7. On the left the cheek and a stump of the outer facing-slab survive, but for the rest the whole

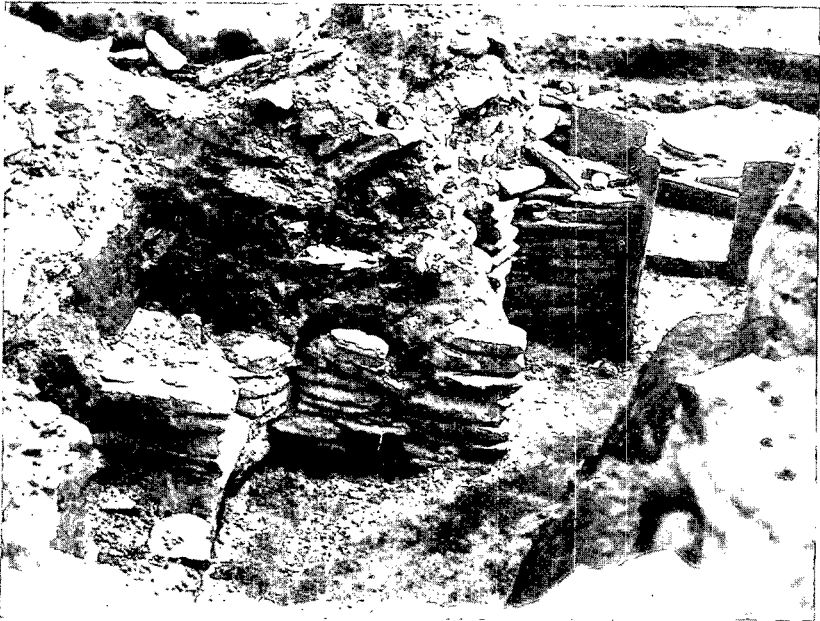


Fig. 11. Hut 4', interior.

wall on this side must have been pulled down to make room for Hut 4. The lintel of the door is missing, but the sill is still in position immediately outside the jambs. It forms a step down to a piece of slate paving immediately inside the doorway (fig. 11). Inside the hut the eastern and north-eastern wall is still traceable. Immediately left of the doorway the wall thickens, perhaps as a result of a secondary buttress built on. In this thick block was a small beehive cell. The floor of this had been employed to carry the channel of the drain C from the later Hut 4 and the entry to the cell then blocked up. Behind the buttress there is a recess in the original wall about 6 inches above the hut floor (fig. 11). It is about 4 feet wide and 1 foot deep, and is divided into two sections by a pier, each section being floored

with a slate. A shallow cup-like hole has been pecked out of the end of the topmost stone in the pier and can be seen in fig. 10. Very probably the pier supported an upper shelf, so that the whole recess would have resembled a recessed dresser like that in Hut 4. Beyond the recess the wall appears to swing round westward to the north-east corner of Hut 4. A rubbed piece of hæmatite, a flint scraper, and a thin slab of sandstone with very coarse serrations, like the teeth of a gigantic saw, carefully chipped out along its edge, were found in the recess. The



Fig. 12. Outer wall of Hut 4 with passage and structures beyond it.

only relic on the hut floor was a finely polished awl, unfortunately broken when found.

Hut 4' seems to have opened on to a passage on the south running there north-east and south-west. Opposite the hut door this is delimited by a slab on edge N, the line of which is continued by a well-faced wall-end 3 feet wide, whereas the northern wall of the passage is the outer wall of Hut 4', which itself turns away rapidly northwards. A slab on end, rising 8 inches above the floor, projects half across the passage from the southern wall. East of this there is a sill stone, and below and beyond it a descending pavement turning apparently to the south (fig. 12). It marks the continuation of

the passage, or perhaps its end, since no further walling can be found in this direction on the north. To the south, however, in a line with the sill stone, a wall-face runs southward with a distinct westerly trend, only to die away completely 8 feet south of the sill. It seems to belong to a casing wall, or perhaps a scarcement like that outside Hut 8.

Behind and within it, wall O, whose faced northern end flanks passage A', is better preserved. The lower courses are slabs on edge (fig. 12), and the whole wall runs at first southward then turns west and disappears in ruins, only to reappear after a break, curving back northward so as to end up on a line with the assumed south wall of the passage. Inside, wall O is faced on the east with a tall thin slab on end at right angles to slab N. Further south the built inner face seems to run westward 3 feet back from N for a distance of $4\frac{1}{2}$ feet and then curve round in an arc to meet the west end of slab N. To this extent wall O encloses a small compartment whose plan and slab fencing is strongly reminiscent of a "bed"; and the faced end of wall O with the slab and sill projecting from it suggests a hut door. More probably we have here the ruins of a porch like that of Hut 8. The extant compartment was floored with the usual stamped midden clay and a slate in one corner, and covered with a light midden from which we recovered a typical pin of type A'1 and a long antler stuck point downwards into the floor.

Cutting across the line of the broken south wall of the supposed porch to Hut 4' is a drain—walled, roofed, and floored with slabs. It seems to run out from beneath wall Q'. To the south and under the layer of midden and sand in which the drain was probably cut, a fragment of pavement was uncovered 12'33 above datum, and only about 2 feet below the surface of the here sandy midden. We expected to find it continuous with the pavement noted over the northern end of Hut 10 under wall Q', but it actually seems to lie throughout at a lower, and consequently earlier, level. In the trench, designed to connect the two pavements, we came upon a shallow square box kerbed with flagstones (fig. 8) exactly like a hearth, but paved with a slate and containing no trace of ash, but only the loose midden material that surrounded and covered it. It may belong to the period of the pavement over Hut 10, but no clue was obtainable as to its function and context.

THE DRAINS.

The drain through Hut 4 (drain C) as well as the branch from the cell in 5 (drain B) has been described in *Proceedings*, vol. vii. p. 204, and vol. lxiii. p. 235. As remarked, its outlet beyond the hut walls has

now been traced. It passed under the hut wall and the double layer of midden under and against its outer face; neither show the least trace of disturbance over the line of the drain. Thence the channel ran through the floor of the cell in 4', whose doorway was blocked up after the drain had been laid but before the deposition of the double midden layers. The eastern outfall of the drain below the outer wall is marked by an upright bone in fig. 12 (bottom right). Hence the drain was dug after Hut 4' had been abandoned, but before the east wall of 4 or the stratified midden outside it were in place. From the direction of drain B at its junction with C and the deposit of sewage over Hut 10 I infer that drain C was an extension and diversion of B, planned at the time when Hut 4 was built up against 5 and dug before the erection of the hut.

A test-pit sunk east of Hut 3 between passage A and the breakwater resulted in the discovery of another and larger drain or conduit. Here below the floor-level of A we cut through two layers of midden separated by a band of blown sand (visible in fig. 13). The upper one, 1 foot 4 inches thick and continuous with a packing outside the north wall of passage A, was of the usual compact type, comparatively rich in relics; the lower stratum, 2 feet thick, was even tougher, but contained no artifacts, resembling rather peat ash. Beneath it we found a series of big lintel slabs, mostly cracked and revealing a void beneath (fig. 13). The broken lintels, the largest of which measured 4 feet 9 inches by 2 feet 6 inches by 4 inches, after being photographed, were carefully taken up. A channel varying in width from 1 foot 4 inches to 3 feet 4 inches at the top was thus disclosed. Its walls are formed partly of slabs on edge and partly of dry building, and vary in height from 12 inches to 20 inches. No floor^o was detected. The walls rest on very tough, black, peaty midden containing many split animal bones, antlers, shells, etc., and exhaling a stench like rotting seaweed. The space between the walls was partly choked with loose material of a similar colour.

Below the solid lintel the channel can be seen running under passage A and turning slightly westward as if it might eventually reach Hut 5. Northward it has been traced as far as the modern paving over the sea-wall. A study of the conduit shows that it sloped down gently seawards. It was therefore indubitably a channel running out to discharge into the bay.

In the light of these observations the character of "passage D" described last year must be reconsidered. In the construction of its lintelled roof, the conformation of its wall, in the absence of floor, and in width D agrees more closely with this undoubted sewer than with any passage, though its walls stand at least 2½ feet high in places.

Moreover, the lintels of D under Hut 6 indicate a steady slope downwards in an easterly direction, *i.e.* towards Hut 5. Passage D should therefore be described in future as drain D. On the other hand, the lowest easternmost lintel of D between wall Q and Hut 5 lies only 10·42 above datum, whereas the highest exposed lintel in the northern drain,



Fig. 13. Lintels of drain E.

E, is still 11·10 above datum just north of passage A. Accordingly drain E cannot be a simple continuation of, or outfall for, drain D. Moreover, it will be remembered that the latter was found to debouch into an irregular and floorless "Chamber 5" under the floor of Hut 5. We must then regard this so-called chamber as in reality a sump or cistern. Quite possibly drain E took the overflow from this sump.

Last year I assigned a very high antiquity to drain D. To what extent must that view be revised? Now we have said that drain E was covered by a double layer of midden separated by a stratum of sand. This band of sand runs right across the drain without the least trace of distortion or disturbance. Hence the midden over it had not been disturbed in cutting drain E. It is practically inconceivable that a tunnel should have been driven, with the aid principally of bone tools, under this thick midden deposit and the superincumbent structures. We must then admit that the midden layers and *a fortiori* the structures, such as Hut 3 and passage A which they support, are posterior to the excavation and roofing of the drain E. For the same reason it must still be held that passage B and Hut 5 are posterior to drain D; under wall Q the blue clay bedding and midden layers, though sagging where lintels had collapsed, ran continuous across the line of drain D. The antiquity of the latter relative to Hut 5 remains therefore unimpaired by any change of view as to its character. Its relation to Hut 6' is, however, still in doubt. But just as the outer wall of Hut 6' rises above and curves away from the roof of drain D, so the outer wall of what is presumably a Hut 3' of the same age as 6' is visible curving away from the west side of drain E with its top at least emerging above the levels of the latter's lintels. The floor of the ruined Hut 3 prevented any exploration of the supposed Hut 3'; but it seems to be filled with sand to its wall tops, and the sand can be traced down for some distance without reaching a floor. It may further be remarked that under the supposed ash layer flush with the roof of the drain are indications of an occupation level from which a decorated sherd (541), a blunt-nosed tool (B3) and other relics were recovered. This level should be related to 3', as are the levels outside and contemporary with Huts 1 to 5 to these later buildings.

THE DEEP MIDDEN.

With a view to the possibility of roofing over the whole complex of buildings at Skara Brae, ten deep shafts were sunk at convenient points to ascertain the depth of solid virgin clay or rock. We have thus reached virgin soil at thirteen points in all, gaining incidentally very valuable information as to the original occupation of the site. In every pit but one we cut through midden deposits of varying thickness, and in several we encountered remains of buildings even older than Huts 4, 6, 9, and 10. Only in pit XIII, sunk just behind the breakwater against our western boundary fence was nothing but pure sand encountered above virgin soil.

The results of the soundings in 1929 and 1930 may be tabulated thus:

PIT I.
Between Passage A and Breakwater east
of Hut 3.

Period and Layer.	Top of Deposit.	Deposit.	Thick- ness.	
			ft.	in.
IV. { 1	14'90	Floor of A . . .	2	2
	...	Red midden . . .	0	5
III. { 2	12'70	Sand . . .	1	2
	12'30	Ash midden . . .	1	0
II. { 3	11'10-10'33	Lintels of drain . . .	1	0
	...	Loose filling . . .	2	0
I. { 4	9'10	Black midden . . .	1	4
	7'10	Brown midden . . .	2	0
I. { 5	5'80	Sand . . .	2	0
	3'80	Clay . . .	...	...

PIT II.
Under Floor of Hut 1, north of Hearth.

Period and Layer.	Top of Deposit.	Deposit.	Thick- ness.	
			ft.	in.
IV. { 1	12'80	Floor of 1 . . .	1	0
	...	Floor midden . . .	5	9
III. { 2	11'80	Ash midden . . .	2	4
	6'10	Sand . . .	...	...
II. { 3	4'00	Clay . . .	...	...

PIT III.¹
Between Huts 2, 8, and Breakwater.

IV. { 1	17'15	Modern turf . . .	2	0
	15'15	Disturbed soil . . .	2	1
III. { 2	13'05	Brown midden . . .	0	6
	12'75	Sand . . .	0	6
II. { 3	12'25	Brown midden . . .	0	6
	11'75	Blue clay . . .	2	0
I. { 4	10'45	Sand . . .	3	2
	9'75	Built wall standing in the sand. . .	2	6
I. { 5	6'45	Brown midden . . .	2	6
	3'95	Sand . . .	...	...

PIT IV.¹
East of Hut 4 on Line of Drain.

IV. { 1	14'40	Midden surface . . .	0	10
	13'50	Loose midden . . .	0	3
III. { 2	13'20	Sand . . .	0	4
	12'90	Midden . . .	0	9
II. { 3	12'20	Sand . . .	2	2
	9'90	Midden . . .	0	8
I. { 4	8'60	Blue clay . . .	2	4
	6'30	Black midden . . .	0	6
I. { 5	5'80	Brown midden . . .	1	3
	4'60	Sand . . .	...	...

PIT V.
Hut 5.

II. { 1	11'80	Hearth . . .	0	6
	11'30	Hearth ash . . .	3	0
I. { 2	9'80	Midden clay and stones. . .	0	10
	8'30	Wall in midden . . .	1	8
I. { 3	7'50	Loose midden . . .	...	...
	5'80	Sand . . .	...	...

PIT VI.
Market Place.

III. { 1	14'60	Paving slates . . .	0	7
	14'05	Slabs and blue clay . . .	0	6
II. { 2	13'55	Sand . . .	0	9
	12'80	Brown midden . . .	0	3
I. { 3	12'55	Sand . . .	1	6
	11'05	Brown midden . . .	1	0
I. { 4	10'05	Black midden . . .	3	3
	6'80	Brown midden . . .	0	5
I. { 5	6'20	Sand . . .	...	...
	...	Clay . . .	...	...

PIT VII.
Floor of Hut 10, east end.

II. { 1	11'60	Floor . . .	2	2
	9'40	Brown midden . . .	2	5
I. { 2	7'00	Sand . . .	...	...
	...	Clay . . .	...	...

PIT VIII.
Hut 6'.

II. { 1	10'10	Hut floor . . .	1	2
	8'90	Blue clay . . .	1	4
I. { 2	7'60	Midden . . .	1	2
	6'40	Sand . . .	...	...
I. { 3	...	Clay . . .	...	...

¹ In pits III and IV the strata showed an easily measurable dip to the north and east respectively; see scaled sections in pls. ii. 2 and iii. 3.

FINAL REPORT ON THE OPERATIONS AT SKARA BRAE. 49

PIT IX.

Floor of Hut 7, east end.

Period and Layer.	Top of Deposit.	Deposit.	Thick-ness.	
			ft.	in.
1	8'80	Floor of hut		
	...	Floor deposit and clay.	0	10
2	8'00	Sand	0	6
	7'50	Clay . . . . .	...

PIT X.

South of Hut 7, outside west corner.

Period and Layer.	Top of Deposit.	Deposit.	Thick-ness.	
			ft.	in.
1	13'25	Base of casing wall		
	...	Midden	4	7
	8'65	Clay (A thin band of blue clay at 12'85.)	...	

PIT XI.

In front of Wall K, south-west of Passage F.

III. {	1	15'00	Top of wall K	0	3
	2	14'75	Blue clay	1	0
II. {	3	13'75	Midden against K	0	11
	3	...	Base of wall K	0	11
I. {	4	12'90	Sandy midden, and blue clay.	3	10
	5	9'0	Midden	0	1
	...	9'0	Sand	0	11½
	7'90	Midden	0	0½	
		7'90	Sand	0	0½
			Clay . . . . .	...

PIT XII.

Between Walls c and d, south of annex to 8.

III. {	1	15'30	Blue clay surface	0	10
	2	14'50	Blue clay	0	9
II. {	3	13'70	Midden and stones	1	6
	4	12'20	Sand	3	0
I. {	5	9'20	Black midden	2	0
		7'20	Brown midden . . . . .	...
			Clay . . . . .	...

PIT XIII.

North-west Corner of our Land 90 feet west of pit III.

11'75	Modern paving over breakwater.	...
...	Blown sand	7 10
3'95	Clay . . . . .	...

The virgin soil was everywhere an olive-coloured clay, mixed with yellow stone and not free from vegetable material. It presumably represents an old land surface. This old surface lay practically level at about 4 feet above our datum, or 17½ O.D. along the line through pits I, II, and III, more or less parallel to the sea-wall. From this base it must have sloped up inland most markedly to the south-west. The highest point actually reached was 8'60 behind Hut 7, 77 feet from the base line. But the figures for pits VI and XI suggest a ridge running obliquely to the base line rather west of Hut 7, with dips both east and west of it.

Before occupation of the site began the irregularities of the original land surface had been partly counterbalanced—but accentuated on the south-east—by accumulations of sand on the lower parts of the slope. Along the base line pure sand to a depth of from 2 feet (pit I) to 2 feet 4 inches (pit III) separated the land surface from the lowest humanly created deposit, so that the base of the latter lies already

between 5 feet 10 inches and 6 feet 3 inches above datum. On the line of section through 5, 6', and 7 the sand deposit is seen to thin out gradually so as to bring the surface originally available for occupation up to an almost level plane (7:50, 7:20, and 7:90 feet above datum). Over the high ground south-west of F in pits X, XI, and XII no appreciable sand layers were encountered, midden and (in pit XII) structures reposing directly upon the virgin clay. On the other hand, to the south-east under 10, though the land surface was already 7 feet above datum, it was covered by nearly 2 feet 6 inches pure sand before man began to make deposits there. Does this indicate a late extension of settlement to this area or premature accumulations of sand on the slope sheltered from the south-west gales?

No further uniformities are observable in the deposits encountered in the test-pits. Stratification has been partly deformed by buildings of various dates. The corner of a typical fireplace was disclosed on virgin clay at the bottom of pit XII (fig. 14). On the east, in pit IV, a well-built wall of three courses and standing nearly 2 feet high reposed on the lowest midden layer and on the pure sand below. Both constructions must belong to a period anterior even to huts of the series 4, 6', 9, and 10. In pit III there was a wall of three courses about 10 inches high standing in the thick sand layer immediately over the lowest midden deposit. The sand layer of nearly 3 feet interpolated between the midden strata here must be the accumulation sheltered by or in the building to which the wall belongs, for elsewhere we find thick deposits of sand only between hut or passage walls, as, for instance, in Hut 6'. The deep layer of sand over the black midden in pit XII and the thinner layers in VI may be due to proximity to the edge of the settlement where, as the later history of the same area shows, deposition of rubbish was less intensive and slower relatively to the formation of sand drifts than near the centres of life.

Turning to the artificial deposits, the blue clay layers denote either occupation surfaces, such as that still exposed west of Hut 8, or foundations for buildings, as under Hut 6'. The varieties in the so-called midden are really very puzzling. The black midden has either been formed entirely under water or has been continuously saturated, for it contains wood, plant roots, and mosses which can only be conserved under such conditions. At the same time split animal bones, limpet-shells, and even artifacts are quite common in this midden. The retention of the water needed for its qualification may be due to the impervious nature of the underlying stratum of brown midden. It is also significant that this deposit was found under the lines of drains

B and E in pits I and IV. Under the floor of Hut 1 the main accumulation, 5½ feet deep, shows no stratification, and contains very few bones or shells, and no artifacts whatsoever. It is red in colour, and looks like peat ash, yet it is as tough as clay. It is obviously of the same



Fig. 14. Corner of hearth built on virgin soil at the bottom of test-pit XII.

kind as the 2 feet immediately overlying drain E. In other pits considerable layers of midden were sterile as far as relics were concerned, but were brown in colour and included abundant broken bone, thus resembling the "sand with bones" found south-west of passage F save for their greater toughness.

Partly owing to the presence of such sterile layers relics from the deep midden are rare. The following are the most important in order of relative depth:—

619. Blunt-nosed tool, B3, pit IV, layer 8, level 6'00.
 615. Typical pin A1, pit IV, layer 7, level 7'00.
 616-8. Flint flakes, including a point trimmed on both edges from same level.
 123. Sherd of usual pottery with applied rib ornament, pit VI, layer 7, level 7'00.
 516. Coarse sherd with rib ornament, pit III, layer 7, level 7'25.
 614. Small tumbler with ribbed rim behind wall in pit IV, layer 7, level 8'50.
 118. Sherd of usual pottery, pit VI, layer 7, level 8'75.
 117. Pin, type A1, but with the head articulation rubbed smooth, pit VI, layer 7, level 9'15.
 318. Normal Skail knives, pit XII, layer 4, level 11'00.
 1532-4. Pot base, Skail knife, and shovel C2, pit I, top of layer 5, level 9'10.
 1541-2. Sherd with chevron pattern in relief and tool B3, pit I, layer 4, level 10'10.
 1124-5. Normal pot base and incised sherd, filling of drain D, level 8'10.
 347. Awl B2, pit XI, layer 4, level 11'00.
 345-6. Pot lid and normal sherd, same deposit, level 12'00.
 511-2. Pot base and tool B3, pit III, layer 4, level 12'50.
 574. Skail knife, pit X, layer 1, level 11'10.
 573. Sherd with applied ridges slashed, same deposit, level 11'25.

These sparse relics suffice to place beyond all possibility of doubt the essential continuity and homogeneity of the culture current at Skara Brae from the first occupation of the site till the latest encampment on passage roofs. They thus accord with the evidence of the typical fireplace exposed on virgin clay at the base of pit XII. Within this continuity we have already noted, in discussing the relics from 9 and 10, indications of evolution or degeneration. But the degenerative changes in the ornamentation of the pottery denote no sort of break in the single ceramic tradition just as the distinctive features of the later huts are foreshadowed specifically in 4' and 9'.

THE CONFORMATION OF THE VILLAGE AT VARIOUS PERIODS.

The test-pits, by disclosing the original condition of the site prior to human occupation and the structure of the earlier man-made layers, help us to reconstruct the history of the village and its appearance at various epochs with far greater accuracy than was possible last year.

¹ The deposits in which these objects occur are not undisturbed or stratigraphically sealed.

We must, however, first consider the dip of the strata and the absolute thickness of the deposits resulting from human occupation. Only in pits III and IV did the width of the trench and other conditions allow of even an approximate estimation of the inclination of the various strata. Pit III, lying north-west of Hut 2, disclosed a slope seaward and northward of $\cdot70$ in $7\cdot20$ (1 in $10\cdot3$) in the case of the top midden (2), while the surface of the bottom midden dipped as much as $1\cdot70$ in $5\cdot00$ in the same direction. The undisturbed sand beneath was virtually level over the $2\cdot50$ feet exposed. In pit IV on the east, the top surface, represented on the west by the pavement continuing passage A, seems to slope eastward about $1\cdot20$ in $6\cdot50$, and the lower black midden rather less.

The evidence of a rapid northward slope revealed in pit III is important as indicating that there had never been a very large extension of the settlement towards areas denuded by recent erosion. In pits III and IV, and still more obviously in pits VII and X, we are therefore probably nearing the limits of even the earliest settlement, which we had already transcended in pit XIII.

A consideration of the total depth of deposit supplements the indications of the test-pits. In estimating the total human accumulations it must be remembered that most pits were sunk either under the floors of buildings of period III (Huts 1, 5, and 7, and the market place), or else in areas denuded by erosion (pits I and III), or by deliberate excavation (VII, VIII, XI, and XIII). In the first case some addition for the height of the enclosing walls must be added, but the exact figure is incalculable. The loss due to denudation on the coastal side of the site cannot be estimated, and in the case of the very loose and sandy deposits above the mouths of pits XI and XII, and to some extent in IV, it is difficult to obtain a fair term of comparison with the compact deposits over Hut 6'. In the latter case we have to add to the figures (given on p. 48) $2\frac{1}{2}$ feet sand between the walls of Hut 6' and $6\frac{1}{2}$ feet compact midden and clay above this, making the total artificial deposit above the virgin sand $11\frac{1}{2}$ feet thick, by far the deepest and most solid accumulation actually cut through. But, of course, along A the midden top was actually 1 foot or 2 feet higher and the virgin soil probably slightly lower. Pits XI and XII were dug down from a blue clay surface, regarded as contemporary with passage A in its final form. But above this were layers of loose midden-like material, interlarded with cleaner sand, amounting to as much as 3 feet over pit XI. Clearly this very loose deposit, supported by retaining walls, cannot be simply compared with the tough compact layers over Hut 6'. It should perhaps be reduced to 1 foot or 18 inches, the equivalent of the deposit over the

roof of passage A. Some similar reduction might perhaps be justified also in the case of the rather sandy material 3 feet deep over the floor of Hut 10 (pit VII), and for the top layers in pit IV. The following table gives adjusted estimates of the thickness of the deposits:—

Pit.	Position.	Base of Deposit.	Observed Top of Deposit.	Balanced Depth.
VIII	Hut 6'	7'55	18'75	11'50
VI	Market place	6'20	14'60	9'00
XII	Area <i>cd</i>	7'20	15'35	9'00
XI	North of wall K	7'90	18'50 (15'00)	8'00 (10'50)
IV	East of 4'	5'80	14'40	8'60
X	South of Hut 7	8'65	14'00	5'75
VII	East side of Hut 10	9'40	14'60	5'20

Glancing at these figures, the reader will be at once struck by the marked unconformity between the slope of the midden mound and that of the original clay of sand surface supporting it. The midden is lowest over the highest point of the old land surface exposed in any pit and thinnest over the topmost point of pre-midden sand dune; and it was absolutely thickest and highest over the comparatively low sand which may be assumed under passage A. The latter region was therefore the centre of village life during the period denoted by the passage. At the same time, the comparatively deep deposits over the high ground south-west of passage F may well indicate an earlier era of quite intensive occupation in that direction. An extension of exploration here beyond our present boundaries might therefore have interesting results.

In the light of these data and the observations on the more superficial midden layers detailed on pp. 32 f. let us next attempt to reconstruct the appearance of the site at the several periods of its occupation, beginning near the end when passage A was already built and in use.

By this time the virgin soil had become covered with a gigantic midden heap. The now determinable portions thereof—for nothing can be said of the storm-eroded section to the north—may be compared to a triangle whose base and crest ran along the line of passage A. From this basal ridge, at least 15 feet above virgin soil,¹ the mound sloped away gently to the south and rather more steeply to the east, while on the west its edges were bounded by passages E and F. Beyond these were open spaces with Hut 8 standing free on the north. The main mound was being covered with a mantle of occupation midden, as the villagers lived and cooked upon its surface in fine weather. Passages A, B, C, and perhaps a section of F, were all covered with this deposit. It

¹ Petrie describes the mound as 15 or 16 feet high in 1850, *Proceedings*, vol. vii. p. 201.

was totally absent over Huts 1 to 5 and 7 alone.¹ Why were these areas then unoccupied? Plainly because roofs and walls projecting above the general level precluded occupation on the surface. We must then imagine six erections of undeterminable form projecting from our mound. Incidentally the absence of the A midden (that found over passage A) above Huts 1 to 5 and 7 shows that all existed contemporaneously in what we may term period IV. The regions south of F were at the same period open spaces, already partly blocked by retaining walls, against which sand was banked up.

Extensive reconstructions must have been undertaken during this period. The market place and passage F clearly belong to an early phase within it; but before it closed, the roof of passage F had fallen in and the old retaining wall *c* had been replaced by *b*. Near the centre the shed LM had replaced Hut 6 and had in its turn fallen into ruins. Perhaps, too, some of the casing walls on the east and south were only added to the respective huts during period IV. The east wall of Hut 4, puddled as it was with blue clay, looks as if it had once been intended for exposure. Perhaps, then, the casing wall Q' (apart from the small buttress of the north) was only built over 2½ feet of midden accumulated in an earlier period (p. 39) whether gradually or in two acts of deposition. The same may be true of the casing wall of 7 on the south-west. The casing wall of 5 must, however, be earlier (just as the hut itself is earlier than 4), since Q had to be partially demolished to make room for Hut 6.

There was, however, a period when Huts 1, 4, 5, and 7, at least (and possibly also 2 and 6), and a form of passage A already existed, but the floor-level of the latter stood some 2 feet lower than at present so as to join on easily to that of passage B. This may be termed period III.

It is less easy to work back further and visualize the condition of the site before the erection of Huts 1, 4, and 5. All rest upon thick accumulations of refuse; to make room for them the walls of the earlier huts from which presumably these accumulations in part proceeded had been broken down and the chambers levelled over, for the walls of 4 and 5 overlie the wall stumps of 4' and 6' respectively. We are thus brought to an earlier epoch of building, which may be termed period II. Huts 4 and 5, presumably also 1, 2, and 3, and passage A rest upon debris from this period. To it belong Huts 3', 4', 6', 9, and 10. Some form of passage C must already have

¹ We noted that over the area of Hut 6, in the corner between Hut 5 and passage A, the midden was thin; in fact it resembled the "sand mixed with bones" with which we have since become familiar.

existed, though it outlived the period. Walls of the same age are also incorporated in passage B, though that in its final form is later.

But what of Hut 7? It lasts into period IV, though its floor-level is that of period II. It rests on virgin soil, yet an accumulation of refuse, varying in depth from $5\frac{1}{2}$ feet on the south to 11 feet on the north, surrounds it externally. Is Hut 7 a survival from period II? Has it, that is, got buried by accumulations from that and subsequent occupations? or were its foundations sunk into a deposit of earlier date (II) during period III? Or, thirdly, was the area south of the present Hut 7 still clear of midden at the end of phase II so that the hut could then be built on the open and buried in deposits of subsequent periods. The last possibility seems to be excluded by the character of the sherd collected in the midden 2 feet below the southern casing wall; it agrees better with the pottery of period II than with that of later ages. Yet it is not impossible that refuse from period II should have been collected elsewhere and banked up outside the hut's walls. Against the second alternative is the absence of proof that any huts had been actually sunk into a midden or soil to a depth of anything like 5 feet, whereas we do know that Hut 8, and very likely Hut 4, bear witness to the possibility of free-standing huts.

If Hut 7 were a survival from period II, the accumulation of midden between passages C and A and the existence of A as a walled passage would become puzzling. Not only Hut 5 itself but also its outer casing wall, Q, seem to have been built immediately after Hut 6' had been demolished and filled up to the 12:50 level. The presence of a casing wall would suggest an open space above this level west of 5 and extending south from the line of A to passage C. At the west end of the latter the outer wall of Hut 6' turning northward would form the east wall of a rudimentary passage B for a short distance. The west wall of B would seem to have been the outer wall of a Hut X of period II still lying unexplored under the deep midden left *in situ* between passages A, B, and F. A segment of the same hut wall seems incorporated in passage A a little west of the mouth of passage B. But Hut 6, a small chamber which for a short time only occupied the space between B, A, and Hut 5, was apparently only built when that area had been filled up to a level of 14:00 feet or more. As part of the casing wall of 5 (Q) had to be removed to make room for this hut, it must have been built some time after Hut 5, and the accumulation of the extra 18 inches or 2 feet of deposit between A and C must have occupied this time (about 1 foot of wall Q was left standing under the floor of 6). Without Hut 6 in position it is hard to visualize either the nature or function of the walls of A and B in this corner. But some sort of walls

were probably already there, since at the junction the south wall of A was traceable below the present level of the passage floor for 2 feet to level 12'65, the present floor-level of B at this end. This section of the south wall of A and east wall of B must therefore have been constructed about the same time as Hut 5 when 6' was levelled down and filled in. Their exact nature before Hut 6 was backed up against them cannot be determined without operations that would be anything but preservative in result. We must then probably imagine a levelled surface formed of the ruins of, and refuse from, huts of period II, upon which 1 and 5 and passage A were erected, sections of the outer walls of 6' and X being conserved and joined up with the newly-built south wall of A to form the passage B that links 7 to the newer structures.

How do the sewers fit into this scheme? We have already seen that they must in all probability have been cut before the erection of Huts 5, 4, and 3 and passages B and A. Sewers D and E would thereby seem to be assigned to period II; but their tops are too near the floor-levels of Huts 6' and 3' respectively for the sewers to be much use in draining these dwellings. They must rather have been designed to carry away rain-water and soakage from outside the hut walls, and so keep the interiors dry.

The huts of period II rested, as we saw, upon deposits of a still earlier period, I. In the south-east the blue clay bed, layer 6 in pit IV, lying at 9'90 represents a period II surface laid upon the deposits of period I, which include the wall in layer 7. On the north-east the blue clay that slopes from 12'25 to 11'45 in pit III may equally represent a period II surface, so that the wall below it would likewise belong to period I. If wall K belongs to the period II complex, the 4½ feet midden beneath its foundations in pit XI might again belong to period I. To that period must in any case be assigned the fireplace on virgin clay in pit XII, and probably the bottom midden in pit VI. On the other hand, the deposits actually found immediately underlying certain period II floors in Huts 6' and 10 were only 1 foot 2 inches and 2 feet 2 inches thick respectively. On the whole it would seem that the period I occupation was as extensive and as intensive as that of later epochs.

To the long series of years denoted by these four successive and complex phases of settlement may be added something for a "re-occupation period" subsequent to the catastrophe that caused the hasty desertion of the period IV huts and initiated their silting up with sand. The relics, particularly the beads, abandoned on the floor of Hut 7 at the moment of its hasty evacuation are so similar to those lost under like circumstances in 1, 2, 4, and 5 that I incline to abandon my view of an earlier desertion of Hut 7 and to envisage only one catastrophe

which wrecked the whole village. I would accordingly assign to the "re-occupation period" the temporary hearths and structures in 7, as well as the skeleton discovered by Mr Watt 3 feet above the fireplace of Hut 1 (*Proceedings*, vol. vii. p. 210) and the thin layer of limpet-shells beyond the market place. The topmost midden in the south-west may likewise date from the same period, and indicates encampments of impoverished refugees who had taken refuge on this higher ground.



Fig. 15. Intrusive cist grave south of Hut 7 before removal of cap-stones.

INTRUSIVE BURIALS SOUTH OF HUT 7.

To a still later date and a different people must be assigned two graves found in the superficial sand right beneath the line of the Department's fence south of Hut 7. The cover-stones of the one grave were encountered only 18 inches beneath the surface of the turf 17·50 above our datum (fig. 4). They proved to belong to a cist grave extending somewhat beyond our boundaries, which by the courtesy of Mr W. Scarth I was allowed to explore fully. The cist (fig. 15), was entirely formed of thin slabs, three on edge at either side and one at each end forming

the walls, and three lying flat, the cap-stones. The cist which lay north and south was 5 feet 7 inches long externally and 5 feet internally, 1 foot wide inside and about 1 foot 3 inches deep. The cap-stones varied in width from 1 foot 7 inches to 2 feet 10 inches. There was no floor, and the middle cap-stone was broken. On removing the cap-stones we found a complete skeleton, evidently belonging to a female of low stature, lying extended (fig. 16). The head lay in the north end with



Fig. 16. Skeleton in cist grave.

the face turned to the west. The body had probably been laid slightly on its right side against the left wall, but so that the left arm came eventually to lie along the wall. The skeleton was in excellent preservation, with traces of flesh still adhering to the bones. No offering was found within the grave, though a piece of deer's antler projected into it from the underlying sand beneath the headstone and a pebble used as a hammer-stone was found in loose sand near the supposed base of the grave.

A second grave must have existed in the sand at the same level 2 feet to the west of the first; but it had been disturbed, probably

in building the fence, and only a couple of slabs broken and in complete disorder marked its former position. Yet from loose sand in the vicinity we collected the lower jaw, arm, shoulder-blade, and digits of another skeleton. Minute search for further remains only yielded a small fragment of skull; of the long bones of the legs there was not a trace. These remains belonged to an individual, probably masculine, of much more robust build and a different physical type to the young woman. Professor Robinson has kindly examined the bones and given the appended report. This naturally throws no light on their age. The orientation of the intact skeleton is, however, in favour of a pre-Christian date, for it agrees with that prevailing in Viking graves both in this country and in Norway.¹

RELICS FOUND IN 1930.

Celts.—Four were found in 1930, three in the early Hut 10 and one just under the turf on the top of the north wall of passage A east of Hut 3. The last-named, an unmistakable axe of camptonite, is

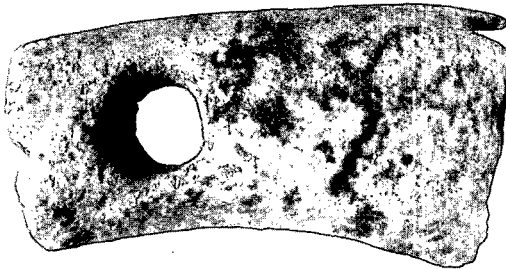


Fig. 17. Antler mount for celt. ($\frac{3}{4}$.)

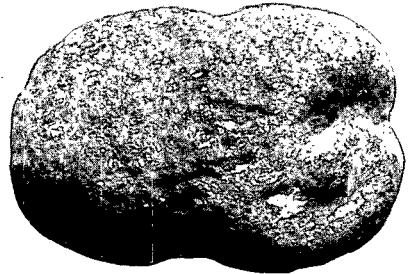


Fig. 18. Grooved hammer-stone. ($\frac{3}{4}$.)

only roughly smoothed, and is battered on the sides and on one face near the butt. Its length is 2.70 inches. The celts from Hut 10 are more finely polished but smaller, the only complete specimen measuring 1.90 inch in length. They must have been mounted in stag's horn hafts like that found in Hut 9. In all the small sides have been squared, giving a rectangular cross-section; two have been reground near the edges but not repolished, so that coarse striæ are visible. Though the two faces are not absolutely symmetrical about the major axis, all could be used as axes or as adzes.

Mounts.—The stag's horn haft shown in fig. 17 was found in Hut 9. It is made from a segment of antler sawn off at either end. The spongy interior has been hollowed out from the wider end for a distance of $1\frac{1}{2}$ inch to make a socket for the stone celt, and a hole, .60 inch in diameter,

¹ Brøgger, *Den norske Bopsetningen på Shetland-Orknøylene*, p. 246.

has been pierced $\frac{3}{4}$ inch further up to make room for the shaft. The socket is 1.15 inch wide in the direction of the shaft hole and 1.75 inch long at right angles thereto, so that a celt hafted in it would be an adze not an axe. One side of the haft has been rubbed smooth. This type of haft must be distinguished both from the unperforated stag's horn hafts so common in the Swiss lake-dwellings and from the perforated type in which the base of the antler is retained. Our type is comparatively rare. There are indeed numerous specimens from Maglemose stations in Zealand, where they seem to have been used exclusively for

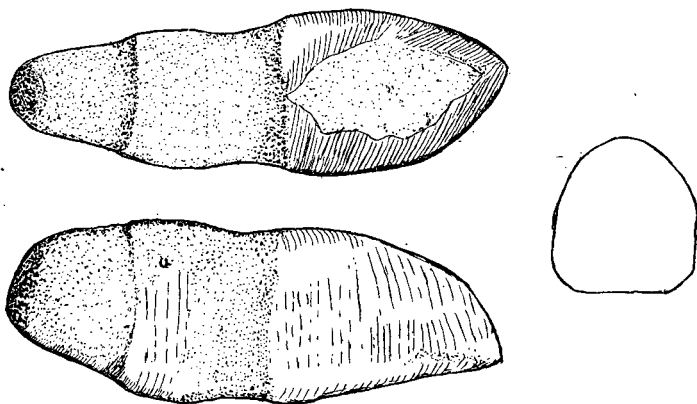


Fig. 19. Beaked tool with hafting groove. ($\frac{1}{3}$.)

mounting adzes.¹ In the Neolithic cultures of Denmark the type is unrepresented, but it persisted into the New Stone Age in the "flint culture" of Belgium and North France,² where also crescentic ornaments of boar's tusk, like that found at Skara Brae in 1928, abound.

Hafting grooves, formed by pecking on the sides of the implement, are illustrated by an adze found at Skara Brae in 1929. The device is quite widespread, but is particularly common in the forest cultures of Northern Europe.³ It was applied to two other implements found in the 1930 operations. One, an ellipsoid hammer of camptonite found in Hut 9, is encircled with a very distinct groove. A second groove, meeting the first at right angles but not crossing it, runs round the butt along the implement's major axis (fig. 18). Here we clearly have a variant of the grooved hammer-stones associated with the earliest metal-using

¹ *Mem. Soc. Ant. Nord.*, 1919, p. 290.

² Loé, *Belgique ancienne* (Musées du cinquantenaire), figs. 50, 68, 85; de Baye, *L'Archéologie préhistorique*, fig. 3 (?); Dechelette, *Manuel*, i. fig. 191 (?). In Switzerland the type is exceptional; a specimen is figured by Schenk, *La suisse préhistorique*, Pl. vii, 2.

³ *E.g.* Montelius, *Minnen*, pp. 244-250.

cultures in Europe and Hither Asia,¹ but also common in a purely Neolithic context in Northern Europe.²

The same method of hafting has been adopted on the beaked tool shown in fig. 19, found in the thin midden deposit, lying on sand flush with the top of wall *d* between that and wall *c*. It has been shaped by battering and grinding at the point. The hæmatite implement (fig. 20) possesses much the same peculiar shape, but lacks the shaft-

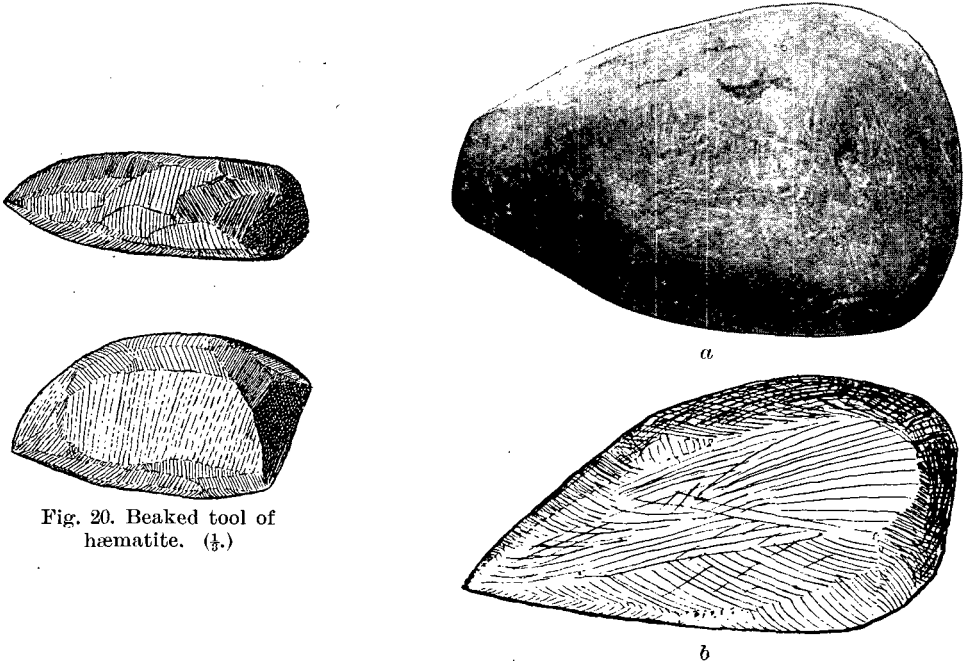


Fig. 20. Beaked tool of hæmatite. ($\frac{1}{3}$.)

Fig. 21. Pear-shaped implement of flagstone. ($\frac{1}{3}$.)

grooves. It shows the striæ and faceting seen on the nodules of the iron ore found elsewhere in the midden, but is the only example of a definite implement shaped out of this material.

To the same family as the foregoing belongs the pear-shaped implement, roughly ground at its thinner end to form a narrow edge, found against the core-face of wall *c* near its junction with *b*. The tool (fig. 21) may have been originally a beach-pebble, but has been ground all over, even at the butt. The edge is abraded as if by use. All these implements belong to the same relatively late phase as those

¹ Childe, *Danube in Prehistory*, p. 240.

² Sophus Müller, *Ordning*, fig. 190; Montelius, *Minnen*, fig. 251; Gjessing, *Rogalands Stenålder*, fig. 147.

found in 1929 in what was then erroneously termed "the entry to Hut 9." All may really have been lying on the top of wall *d* and fallen in thence. Perhaps a workshop once existed upon the sand in this region comparable to that in Hut 8. In any case, we secured from it further the roughly shaped club (fig. 22). One face and the top edge are smooth, perhaps natural surfaces, while the shaping has been done by chipping. No doubt the tool was to have been a hatchet like that shown in fig. 25, 3, of the 1929 report.

A spiked object reminiscent of the famous carved stone balls was found this year on the floor of Hut 9, and is thereby dated to our period II. It was not, however, a true ball, though its exact shape is uncertain. One side, which we may call the base, is smooth and flat;

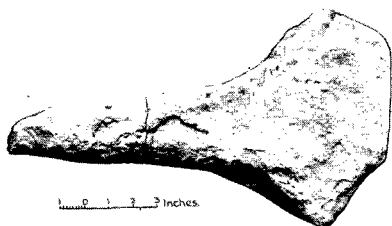


Fig. 22. Flagstone club.

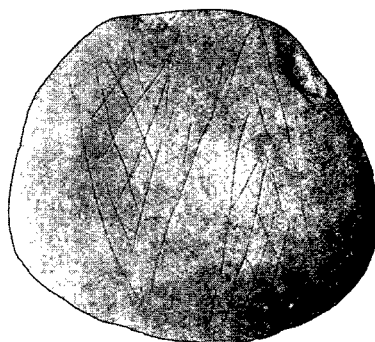


Fig. 23. Flake knife with ground edge. ($\frac{2}{3}$.)

on top there were two prominent spikes, and two smaller ones stood out on either side. There may have been one or two less prominent projections behind the topmost pair of spikes. The projections have been formed by pecking out the intervening spaces. In shape the object approximates to one found in the bed of Hut 2 during 1929.

On the floor-level of Hut 10, but just outside the assumed line of its walls, was found the remarkable polished knife shown in fig. 23. The wide edge, which is continued a short distance along the two sides, has been sharpened by grinding, while the narrow butt has been slightly flattened by rubbing. One side bears, as shown in the illustration, a scratched geometrical pattern similar to those observed on many stones. A comparison with the "Picts' knives" of Shetland is obvious, but in shape and size our implement really resembles the polished flint knives of the Early Bronze Age far more closely.¹

¹ On these, see G. Clark in *Proc. Prehist. Soc. East Anglia*, vol. vi. pp. 41 ff.

Finally, the extraordinary object shown in fig. 24 was found in Hut 4. It is a roughly triangular slab of sandy flagstone with a serrated edge.

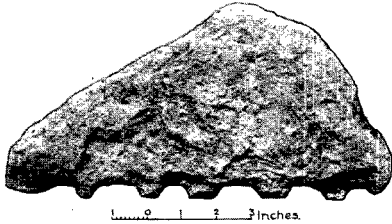


Fig. 24. Slab of flagstone with serrated edge.

At its thickest the slab is 90 inches (185 mm.) thick, but towards the apex of the triangle and along one side a substantial layer has scaled off the face not shown in the photograph. Still, even the "teeth" are in two cases over 50 inches thick, so that the implement cannot have been a saw. It may have been originally roughed out by chipping, but the teeth have been pecked out.

Bone Implements.—Of bone tools of types already described we collected the following in 1930:—

A1 . . .	118	B6b . . .	2
A2 . . .	9	C1 . . .	9
B3 . . .	11	C2 . . .	8

Of type A1 no less than nine examples were of the large form made from the metapodials of deer or small ox. Two quite typical specimens made from ovid metapodials showed a small eyelet bored through the head, which was, as usual, the posterior articulation. In the lower midden and huts of period II we found four or five stout implements, varying in length from 3¾ inches to 5¼ inches, made, like A1, from large marrow-bones split longitudinally and rubbed to taper to a point, in which the articulating surface had been rubbed away altogether. They are so finely polished as to resemble ivory, but that the concavity, representing the marrow cavity, is visible.

Only one specimen of A2 conformed to the normal form made from an ovid metapodial; five seem to be made from radii of the same beast.

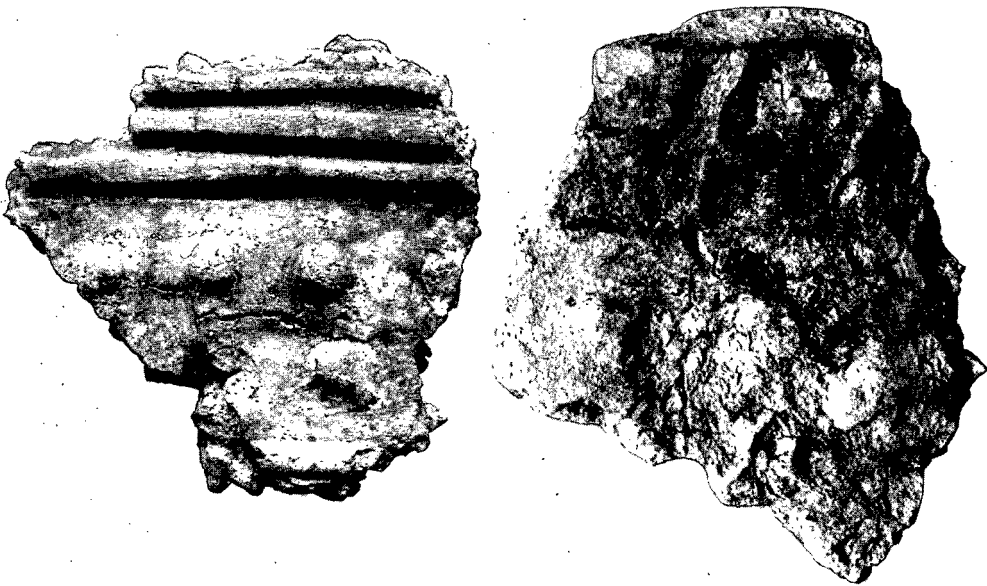
One large pin with a flat paddle-shaped head, perforated, was found on the disturbed midden surface east of Hut 3. It approximates in form to the well-known specimens in the Skail collection (*Proceedings*, vol. vii. Pl. xlii. 16), and seems to belong to the same stratigraphical context.

Several imperfect examples of type A4 were found this year, two from the floor of Hut 10 and one from 9, one just over the floor-level of Hut 9, and a fourth in the second layer of midden from the top against wall Q. In only one is the bulb pierced. The specimens with unpierced bulb remind one still more strongly of the well-known implement

from the chambered cairn of Quoyness, but even these have a more definite conical head. The material in all cases seems to have been some sort of "ivory," perhaps narwhal tusk.

C3 is a new type of heavy tool, a chisel made from the proximal end of the metapodial of a small bovid, cut off obliquely as in type C1 but unperforated. It was found in the midden packing behind wall Q.

Flint and Chert.—Small cores, rough flakes, and disc-scrapers of flint or chert were again comparatively common, particularly on the floor



1

Fig. 25. Pot sherds of class A. ($\frac{3}{4}$)

2

of Hut 10. From the black midden in pit IV came a short knife trimmed on one face along both edges.

Pottery.—It is now possible to distinguish three classes of pottery according to the decorative techniques employed. From the point of view of manufacture, however, all classes exhibit the peculiarities already noticed in previous reports:—presence of large pieces of grit in the paste, building up in rings, and poor firing.

In class A the ornament is formed exclusively of applied strips or pellets of clay, somewhat finer in texture than that used for the body of the pot. The edges of the applied pieces have been smoothed down

while wet, so that the finer clay has been spread over the vase surface in their immediate vicinity. The pot as a whole, however, is not covered with a slip, though it has been sufficiently smoothed to remove from the immediate surface most gritty projections. This fabric is common to all periods.

A sub-class (A2) may be distinguished by the fact that the finer clay is spread over a large part of the decorated vase surface as a slip. It



Fig. 26. Sherd of class B2 found in midden south of Hut 7. (3ca.)

is confined to period II (and probably I). The big pot from Hut 10, shown in fig. 25, 1, is a good example.

In sub-group A 1*b* (or A 2*b*) the applied pellets have been embellished by pressure from the finger so as to produce a round dimple in each (as in the Report for 1929, fig. 28, 2). That sherd belongs to period III, but an exact parallel was found on the floor of Hut 9 of period II.

Class B.—Here the main decorative element is still constituted by applied strips as in class A; but the strips are now embellished by incisions or impressions. This procedure is not traceable later than period II. Three cases may be distinguished: (1) A shallow groove is

drawn along the surface of the strips bisecting them longitudinally (fig. 27, 1). In some cases one might think one was dealing with two distinct strips, until one observes that the groove does not reach the



3 Fig. 27. Sherds of classes B and C. (3.) 4

bottom of the strip. (2) Incisions are also made at right angles to the bisecting groove (fig. 26). (3) The strip is relieved by dots or dashes (fig. 27, 1).

Class C. Incised Ware.—The decorated surface is covered with a thick slip of fine clay. The relatively shallow incisions are made in this slip

and do not cut into the underlying coarser body-clay. Tests have shown that the incisions could be made with the larger sizes of bone tools of class A1, and the dots and dashes, which are combined with the incisions, can be produced by jabbing a similar implement vertically or obliquely into the slip. In 1929 one sherd of this ware was found on the sand filling Hut 6' (fig. 27, 3); the examples collected in 1930 came exclusively from the levels of period II. It is therefore characteristic of that and presumably the preceding periods.

Patterns.—The designs on the later wares of class A are already familiar. I may remark that a sherd decorated with horizontal ribs, though recovered from the floor-level of Hut 10, is identical with one seen in 1928 on the floor of Hut 7. A big pot, a fragment of which is shown in fig. 25, 1, was lying on the floor of Hut 10. It was decorated with zones of bosses alternating with raised ribs very much in the style of the encrusted urn shown in Abercromby, *Bronze Age Pottery*, vol. ii. No. 554. The exact resemblance is best seen when the actual sherds are set side by side with the urn. The small bowl to which the sherd of fig. 27, 1, belongs was adorned with festoons of pitted ridges alternating with equally curved grooved ridges. Finally, a great vessel, found beneath the floor of Hut 10, was covered with strips and blobs combined to form some elaborate curvilinear pattern. From the scanty material available it looks as if the more elaborate patterns belonged mainly to period II and were going out of fashion in period III.

The incised patterns, on the other hand, are in general simpler; but the sherd shown in fig. 27, 2, is the most ornate found at the site. It was discovered just outside the cell of Hut 10 on the level of the hut floor in a deposit indubitably belonging to period II. Enough survives to demonstrate beyond all possibility of doubt that the pattern included a true spiral. It is the only instance of a genuine spiral, incised on pottery, from the British Isles, or indeed from north-western Europe as a whole; the scroll patterns of the La Tène pottery of the Glastonbury type¹ and on corresponding Continental vases² are really quite different. True spirals are, of course, common on the Neolithic pottery of south-eastern and central Europe, and, in a debased form, spread as far north as the provinces of Liège in Belgium and Nord Brabant in Holland³ in company with the "Danubian peasants." Connections in this direction do not, however, seem at all likely. On the other hand, the motive was being freely used by the sculptor in the British Isles, and even Scotland itself, both in the Bronze Age and in Early Christian

¹ Bulleid and Gray, *The Glastonbury Lake Village*, vol. ii. p. 510.

² E.g. *B.M. Iron Age Guide*, Pl. vi.

³ Childe, *Danube in Prehistory*, p. 58.

times.¹ The question is whether our example should be connected with the Bronze Age series, best illustrated at New Grange in Ireland, or with the art of the stone crosses and illuminated manuscripts.² Neither group offers any exact parallel to our pattern in which the spirals are employed to fill two opposing quadrants of some geometrical figure and alternate with a dotted lozenge or triangle. The use of the motive on carved stone balls from eastern Scotland is more analogous, but this only confirms the connection of such relics with the Skara Brae culture, and throws no direct light on the latter's age.³

Forms.—As before, it was impossible to reconstruct any vessel. The small beaker-like pot (fig. 28) is the most perfect vase collected at the site. It was found near the top of a wall of period I and well below the floor-level of Hut 4' (period II) in test-pit IV. The clay is unusually fine, and fired to a reddish-orange colour. The marked splay of the base (as in other vessels from the site) is due to the spreading of the flat clay disk that formed the original pot bottom as the rings forming the walls were being added. The feature is noticeable on food-vessels and cinerary urns of the Bronze Age as well as on Iron Age vases.



Fig. 28. Small pot from black midden in pit IV. ($\frac{3}{4}$.)

The rim, on the other hand, is never everted or splayed out, as on Iron Age pottery, but, as in Bronze Age food-vessels and cinerary urns, is often bevelled or stepped on the inside, perhaps to provide a ledge for the slate lid. If the sections given in fig. 29 be compared with the rims of cinerary urns in the Society's collections, the agreement will be seen to be striking. Crinkled rims were noted in 1928, and are illustrated by a new specimen found this year in a late deposit south-east of passage A. From the same region came an odd variant on the plan—stumpy strips of clay have been stuck on obliquely astride the rim, fitting into one another like mortice and tenon joints.

Ornaments.—No beads were found in the huts of period II, but some nine in all were collected from the top midden between passages

¹ Romilly Allen, *Early Christian Monuments*, pp. 334 ff.

² *Ibid.*, pp. 335 ff.

³ Cf., however, *Proc. Roy. Soc. Edin.* (1929-30), vol. L, p. 73.

A and F and south of Hut 5. A long bead corresponding to Beck's type IV D 1b with a hole through one flat face at right angles to the main axial perforation is the only form calling for special mention. It might be compared with the late Bronze Age type, found with cinerary urns in Old Kilpatrick parish, Dumbartonshire.¹

Idol.—The slate object shown in fig. 30 is perhaps best regarded as a very summary representation of a human figure with the arms and legs

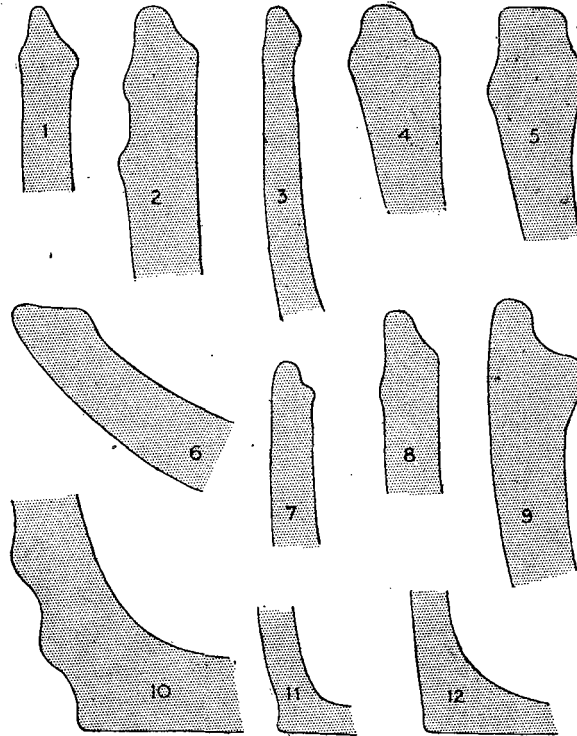


Fig. 20. Sections of rims and bases. (3.)

spread out. Mr Callander has identified the fragment of a similar object among the relics from the site formerly preserved at Skail House.

Wood.—The discovery of pieces of wood (apparently unworked) and other vegetable matter in the damp, black, peaty layer in pit IV was one of the surprises of the season. By the courtesy of the Regius Keeper the material was examined by Mr M. Y. Orr of the Royal Botanic Garden, Edinburgh. He has identified three specimens as belonging to the alder (*Alnus glutinosa*) and two to hazel (*Coryllus avellana*).

¹ *Proceedings*, vol. lvii. p. 156, fig. 15, 11.

With these were remains of a moss, a species of *Hylocomium*. A small piece of wood, identified by Mr Orr as birch (*Betula alba*), was found in the slush on the impervious clay floor of Hut 9 close to its door.

Finally, a piece of wood, looking fresher than the others, was found in the sand right on the basal clay at the bottom of pit I. It turns out on examination to be spruce (*Picea excelsis*), a tree which does not, and probably never did, grow wild nearer than Norway. The fresh appearance of the specimen raises doubts as to its antiquity. Yet the deposit covering it was quite certainly intact. On the other hand, the pit was

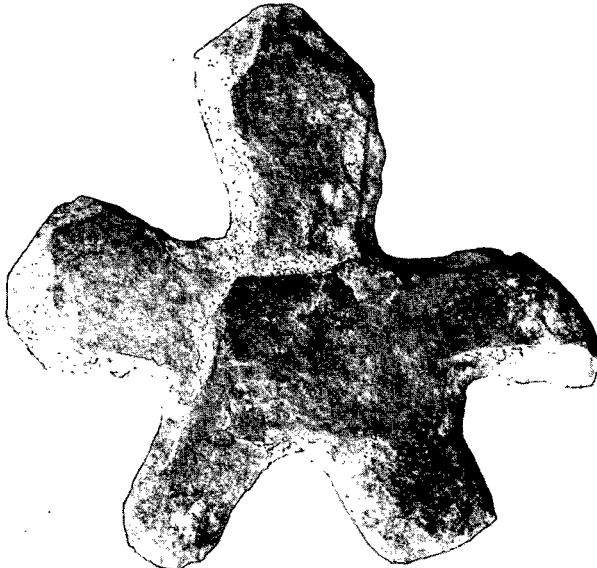


Fig. 30. Slate object. (3.)

sunk only 16 feet from the face of the modern sea-wall, and it is possible that the specimen worked in laterally through the sand in which it was embedded. Otherwise it must be regarded as a piece of drift-wood or a fragment of a boat or its fittings that reached this corner of the Bay of Skail before the foundation of the village.

Age of the Site.—Beyond establishing the cultural homogeneity of all levels at Skara Brae the operations of 1930 failed to yield any fresh or conclusive evidence of its age. The discovery of an antler celt-haft of a specialised type, confined to Neolithic levels on the Continent, combined with the increased number of well-polished stone celts, reinforces the case for a high dating advanced in my paper to the Royal Society of Edinburgh in 1929. On the other hand, Mr Callander (*infra*, pp. 103 ff.)

has adduced several points of agreement between the cultures of Skara Brae and of Scottish Iron Age sites in addition to those already noted by me in the aforesaid paper (it should be remarked that two of the traits stressed by him, pot-lids and polished lumps of hæmatite, are traceable already in Skara Brae II.). It remains true that our culture is, as a whole, different from that of the brochs and earth-houses, and preserves archaic traditions, notably in the pottery, that did not survive in them.

The agreements may accordingly mean either that the Iron Age culture took over certain elements from an earlier one, exemplified at Skara Brae, or that the builders of Skara Brae borrowed from the broch people.

In presenting this final Report I should like once again to express to His Majesty's Commissioners of Works my thanks for permitting me to be present during their conservation work as the representative of the Society. We have not only to congratulate the Office of Works upon the success of their operations on this as on other sites, but in particular to record the debt that archæology owes to the contractor, Mr J. Firth, and his staff for the manner in which they have carried out the difficult work on the site. To my colleague, Mr J. Houston of the Office of Works, the Society is indebted for the admirable plans that illustrate this as former reports, and I personally for an immense amount of assistance in the field.

It may at the same time be of interest to inform Fellows of the Society of the actual condition in which the site was when I left it, and of the arrangements made or suggested for its arrangement, though neither I nor the Society have any responsibility nor claim to credit therefor.

In the final laying out of the site the ideal would be to reproduce as closely as possible its appearance at that period in its history at which the best-preserved structures, Huts 1-5 and 7-8, the connecting passages, and the Market Place, were alike in use (*i.e.* period IV). But for the conservation of passages B and C and for the exposure of the period II huts a large slice of the midden mound which then sloped up to the walls of 4 and 5 and filled the space between passages A and C had to be removed. The exposure of the early huts undoubtedly renders the site more instructive, so that the filling in of the sections cannot be thought of. But in picturing the site the visitor must fill them in with the mind's eye. To facilitate this the whole block of original midden between 7, B, A, and F has been left intact as well as that south of Huts 9 and 10. To emphasise the secondary nature of the gaps intervening between these original surfaces and Huts 4 and 5 and passage A the turf facings of the cuts have been kept as steep as possible. Mr Houston has made the happy suggestion of leaving narrow windows

of talc in these banks to reveal the stratification of the midden deposit in clean-cut sections. To render drain D accessible to visitors and students while preserving its original character Mr Paterson, in 1929, designed a concrete hatch with rungs in its walls. The plan has worked admirably, and access to this interesting feature is much appreciated by visitors. It is proposed to apply the same idea to the newly found sewer E, relaying its lintels (which were numbered and photographed before removal) beneath concrete rafts.

Turf having been adopted as a substitute and preservative for the original midden surface over passages A, B, and C, and the intervening areas, some different treatment was needed for the more or less open spaces south-west of passage F. Here sea-gravel has successfully been used in place of turf, emphasising the distinct nature of this area at our period. Since the huts with some sort of roof originally projected above the midden surface, no objection could be taken on historical grounds to some sort of roof emerging from the turf that replaces the midden. The village being unique in the British Isles, and indeed north of the Alps, quite exceptional measures should be taken to preserve it in perpetuity. Having regard to the bad weathering qualities of the Caithness flagstones of which the village is built, Mr Richardson suggested, even in 1929, roofing the site in, a plan which also suggested itself to the First Commissioner on his visit in the same year. Reluctant though I should be to see the site disfigured in any way, observation of the walls of Hut 7 through three successive years has convinced me that a roof for this building, the most perfect prehistoric structure of a purely domestic character in Europe, is essential.

In the sixties Mr Watt undertook a good deal of doubtless necessary reconstruction in the areas excavated by him. In particular, he rebuilt almost completely and with substantial divergences from its original plan the north wall of Hut 1. The modern sections are, however, now quite indistinguishable from the original work, and cause considerable confusion to students visiting the site. A trifling amount of rebuilding has also been necessary to consolidate walls cleared by the Department, and I have frequently been asked whether a given bit of walling were original or not. Mr Paterson suggested marking off such modern work with metal tape. The idea, having been approved by Mr Richardson, has been very successfully adopted. Thanks to the water-colour by Mr Cairns, engraved as Plate xxix. in *Proceedings*, vol. vii., it has been even possible to give a rough indication of the extent of reconstruction in Hut 1. Some details in Huts 4 and 5 will, however, always remain uncertain. Lead tape is also being effectively employed to mark the lines of structures now filled in, such as the sump under Hut 5, called 5' last year.

REPORT ON SELECTED ANIMAL BONES.

By Professor D. M. S. WATSON, F.R.S., Professor of Zoology in
University College, London.

The bones from Skara Brae sent to me are almost exclusively the remains of animals which have been used for food. The most abundant are those of oxen; sheep are very common, pig rare, and red deer is represented by very few bones but by several incomplete antlers. There are three bird bones and several of rabbit, but the latter are fresh-looking and probably intrusive.

The numerous horn-cores and fragmentary skulls of cattle fall into three groups: one, well-defined, clearly bulls, the others cows, and probably bullocks.

The great mass of these bones are of young animals; of fourteen reasonably complete lower jaws, twelve still retained the last milk molars and some were of quite young calves. This is an exaggeration of a condition commonly found in prehistoric sites, and depends on the habit of slaughtering a considerable proportion of a herd at the beginning of winter because of the difficulty of storing sufficient food to maintain them until the new growth in the spring.

All the skull fragments, which are sufficiently complete to give evidence, show a great hole in the middle of the forehead, and many of them retain fragments of the outer table driven inward around the hole. It therefore appears that cattle were slaughtered by a very heavy blow on the forehead.

All the cattle bones may well have belonged to animals of one breed; they are large, with massive bones presenting a small range in size only.

The most remarkable feature of the cattle is the presence among them of what there is good reason to regard as castrated males. I do not remember any similar occurrence among prehistoric peoples. The animals belong to a long-horned race differing from all English Neolithic, Early Iron Age, and Roman cattle I know. They are of course clearly domesticated.

The sheep skulls possess heavy horn-cores, widely diverging and much curved. It is impossible to say whether both sexes were horned or not. The limb bones are very long and slender.

Pig is best represented by a young skull, completely of the wild type of *Sus scrofa*. It is, however, quite impossible to say whether it was actually wild or domesticated.

FINAL REPORT ON THE OPERATIONS AT SKARA BRAE. 75

Red deer is represented by four shed antlers, and two which have been broken from skulls. No horn is unusually large; the biggest, though they would be regarded as good heads in the West Highlands, might well be paralleled there to-day.

It is impossible for me to give any idea of the age of these animals from their characteristics. Certain features, the abundance of sheep and the presence of castrated oxen, suggest a period later than Bronze Age times, but it is impossible to show that some of them may not depend on local peculiarities.

REPORT ON HUMAN REMAINS. By Professor A. ROBINSON, M.D., F.R.C.S.

SPECIMEN No. 1.—FACTS.

(1) The bones are complete with the exception of the xiphoid process of the sternum and the upper two lumbar vertebræ, of which only portions remain; and the right fibula, of which only part remains.

(2) The bones are all female in type. There are presacral sulci in the ilia. The muscular impressions are slight, with the exception of those attributable to the glutæus maximus on each side; the strength of that muscle is indicated by a very marked gluteal tuberosity on the femur and a correspondingly strongly marked glutæus maximus area on the ilium. The anterior intertrochanteric lines of the femora are very indefinite. There are no marks of antemortem injury or disease on the bones.

(3) The bones of the hands and feet are small, and the metacarpals, metatarsals and phalanges are slender.

(4) Measurements of the main limb bones :—

Clavicle, length—R. 129·3 mm. ; L. 126·2 mm.

Scapula, length, 143·5 mm. ; breadth, 93·0 mm.

Humerus, length—R. 297 mm. ; L. 291 mm.

Radius, length—R. 217 mm. ; L. 215·5 mm.

Ulna, length—R. 241 mm. ; L. 237 mm.

Pelvis, ischio-iliac height 193 mm ; inter-iliac breadth 257 mm.

Pelvic brim, sagittal diameter, 119 mm. ; transverse diameter, 127 mm.

Femur, length—R. 415 mm. ; L. 411 mm.

Tibia, length—R. 317 mm. ; L. 316 mm.

Fibula, length—L. 315 mm.

Indices of limb bones :—

Right humero-radial, 73·0.

Left humero-radial, 74·0.

Right humero-femoral, 71·5.

Left humero-femoral, 70·8.

Right femoro-tibial, 76·3.
 Left femoro-tibial, 76·8.
 Right inter-membral, 83·8.
 Right upper platymeric, 75·5.
 Right platyknic, 76·0.
 Pelvic, 75·1.
 Pelvic brim, 93·7.

Stature, calculated from long bones, 5 feet 3 inches to 5 feet 4 inches.

Skull.

(5) The skull is phænozygous, due to the relatively small transverse frontal measurement, for the bizygomatic width is not great; but although the transverse frontal width is not great, there is marked relative prominence on each side immediately anterior to the pterion, that is, the region of the speech area.

Sutural Bones.

There are a large sutural bone in the right half of the lambdoid suture, a small left asterion bone, and a large right epipterice bone.

The posterior end of the sagittal suture is closed externally.

Measurements.

- (6) The capacity of the cranium, measured with shot, is 1260 c.c.
 (7) Basi-nasal length, 177·3 mm. } Length-breadth index, 74·7, that
 Greatest interparietal breadth, 132 mm. } is dolichocephalic.
 Basi-vertex height, at right angles to eye-ear plane, 125 mm. Height-length index, 70·5.
 Upper facial length (nasion to prosthion), 68·4 mm.
 Bizygomatic breadth, 125 mm. Upper facial index, 54·7.
 Whole facial length (nasion to gnathion), 109 mm.
 Whole facial index, 87·2.
 Palato-maxillary breadth, 36·2 mm. } Palato-maxillary index 79·1.
 Palato-maxillary length, 44·5 mm. }
 Basi-nasal length, 93 mm. } Gnathic index, 100.
 Basi-alveolar length, 93 mm. }
 Naso-alveolar facial angle, 85·5°.
 Dental-arch length (maxillary), 51 mm.
 Dental-arch length (mandible), 46·8 mm.

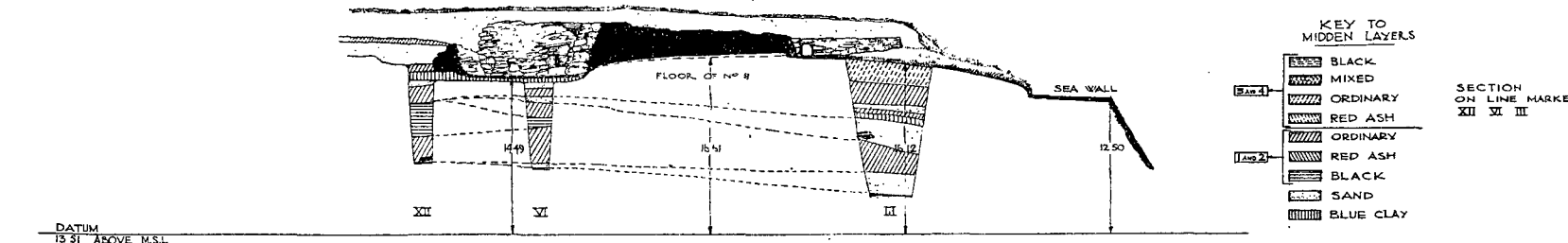
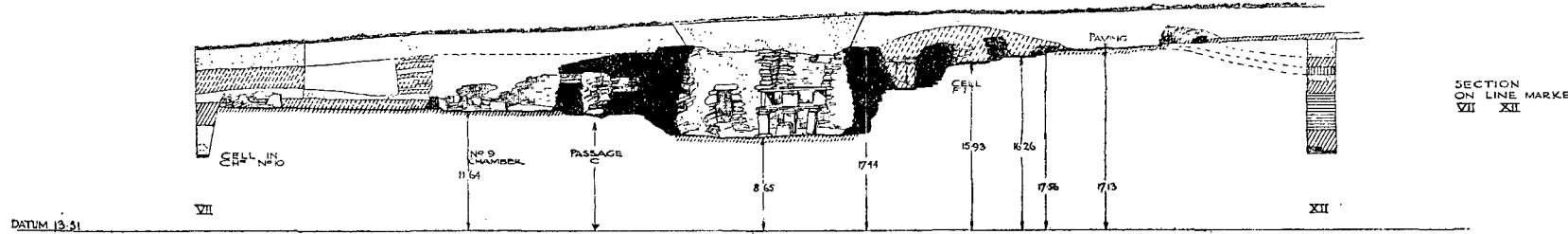
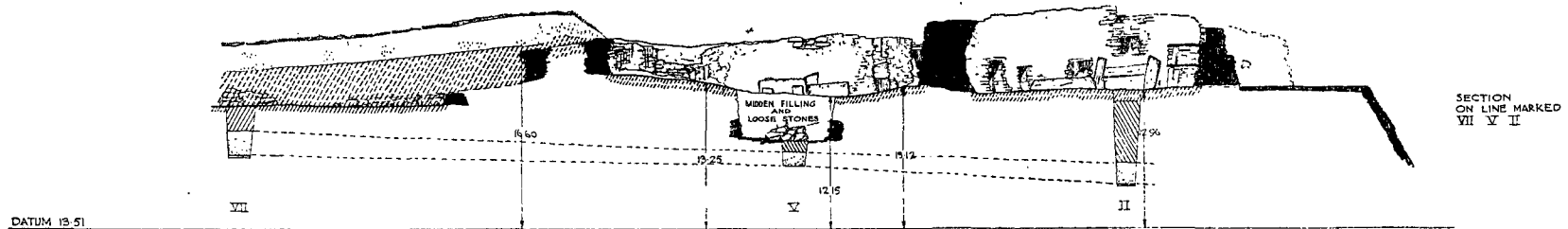
(8) All the teeth are present, but the 3rd right maxillary molar is very small, much smaller than the mandibular molars, and the 3rd left maxillary molar is a mere peg-shaped rudiment.

(9) The opposed surfaces of the molars of the maxilla and mandible are slightly more worn than those of the same teeth of present-day skulls.

The biting edges of the incisors are much more worn than the biting surfaces of the molars, in spite of the fact that the length of the dental arch of the

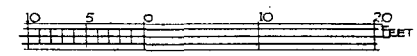
SECTIONS THROUGH VILLAGE

SHEET N^o 2



KEY TO MIDDEN LAYERS

[Symbol]	BLACK
[Symbol]	MIXED
[Symbol]	ORDINARY
[Symbol]	RED ASH
[Symbol]	ORDINARY
[Symbol]	RED ASH
[Symbol]	BLACK
[Symbol]	SAND
[Symbol]	BLUE CLAY



J. Houston Del
 H.M. OFFICE OF WORKS
 ANCIENT MONUMENT DEPT
 122 GEORGE STREET
 EDINBURGH 1930.

FINAL REPORT ON THE OPERATIONS AT SKARA BRAE. 77

mandible is more than 3 mm. shorter than the dental arch of the maxilla; therefore the mandible must have been frequently protruded and the edges of the mandibular incisors ground against those of the maxillæ.

INFERENCES FROM FACTS.

The bones are those of a woman about 30-35 years old, of medium height (4) and of graceful form; she had delicate hands and feet. She was probably slightly embonpoint when she stood erect, which was not her usual position (2). She did little or no muscular work and took little physical exercise (2). She was probably right-handed (4).

Her food was not very coarse (9).

She was probably loquacious (5), accustomed to giving orders, and to seeing that they were obeyed (9).

Her skeleton gives no indication of the cause of her death.

SPECIMEN No. 2.

Parts of skeleton, probably male, not old, for the xiphoid process had not fused with the body of the sternum.

Piece of flat bone of cranium, probably parietal, very thick and mineralised.

Mandible, which had lost before death all teeth except the incisors, canines, 1st right premolar, 1st and 2nd left molars. The teeth still in the mandible are much worn, but not carious.

Atlas, axis, 6th cervical vertebra. An upper thoracic vertebra, probably the 5th.

One lumbar vertebra showing marked osteo-arthritis.

Manubrium and body of sternum.

Ribs, 2 right from middle of series, part of a right rib, middle series, with indications of osteo-arthritis, an 11th left rib.

A left 4th metacarpal bone.

A right scapula, with indications of osteo-arthritis.

A right radius, 228 mm.

A right ulna, 248 mm.

Calculated stature, 5 feet 8 inches.