# THE DARTMOOR HUTCIRCLES

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HUTCIRCLES are the walls, or ruins of the walls, of prehistoric buildings, constructed for use as dwellings, possibly in some instances as stores, while it has been suggested that others were cattle-sheds.

There are at least 1,500 hutcircles on Dartmoor; of these two hundred have been examined by excavation since Mr. Robert Burnard led the way in August and September, 1893, at *Broadun* and *Broadun Ring*. The excavations have been conducted by the Dartmoor Exploration Committee, appointed by the Devonshire Association. In respect of one hundred and twenty of the huts the work of excavation may be regarded as satisfactory; the remaining eighty received treatment which was neither thorough nor well ordered.

That there has been great divergence of method may be judged by the following comparison:—at one site it was found necessary to employ labour to the extent of 106 man-days in the excavation of five huts, or at the rate of 21.2 man-days per hut; at another site fifteen huts were excavated with a labour expenditure of but 32 man-days, or at the rate of 2.133 man-days per hut, and even so the committee-man in charge complained that exceptional circumstances caused an undue expenditure of labour. Thus the time given to the excavation of a hut at the first site was to the time given at the second site as ten to one. A dual disability attaches to hasty work; in the first place such objects as may be found are but imperfect evidence since the conditions of their finding are not properly ascertained or noted, in the second place no valid conclusion can be derived from the apparent absence of any particular object or class of objects. The obligation to weigh and assess evidence attaches to all forms of research, not least to archæology.

## DISTRIBUTION OF THE HUTS.

No formal census of the Dartmoor hutcircles has ever been taken, and some writers have been inclined to exaggerate the number. A reasonable approximation is possible; the Ordnance Survey shows most of the known huts, but certainly not all. Other workers and myself have noted and planned huts which do not appear on the Ordnance Survey, and, taken together, these sources indicate a total of 1330. There remain others not accounted for in this enumeration, and I estimate that there may be 1500 in all.

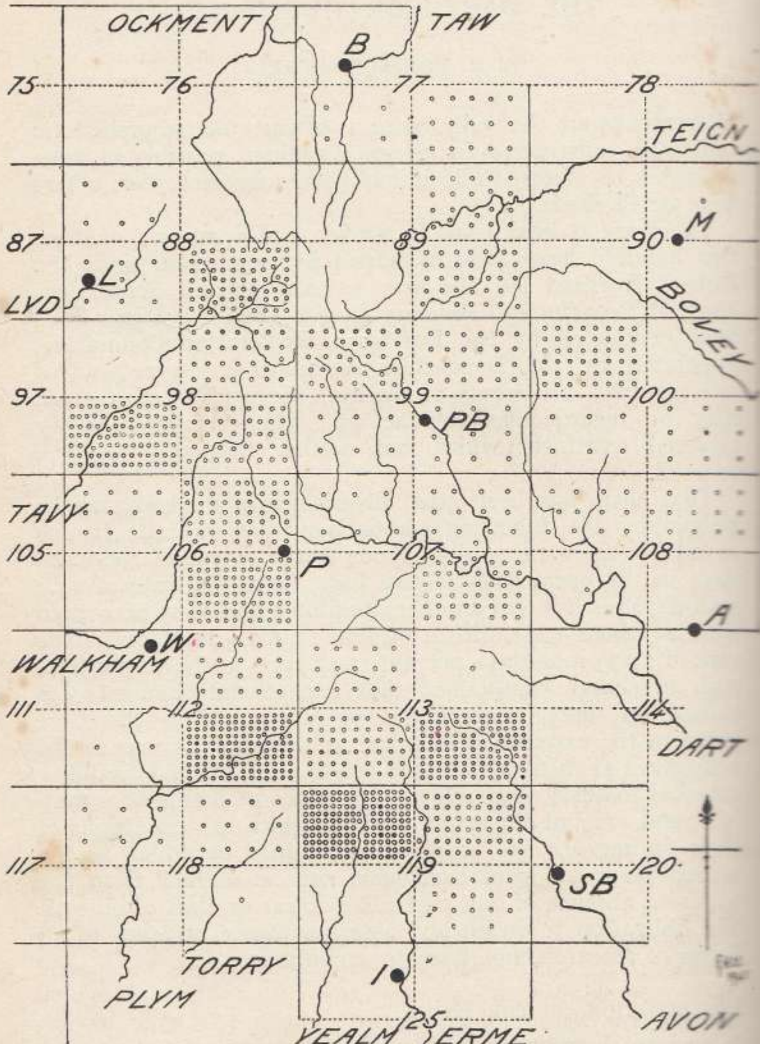



Fig. 1. Distribution of Hutcircles

A, Ashburton; B, Belstones; I, Ivybridge; L, Lydford; M, Moretonhampstead; P, Princetown; PB, Postbridge; SB, South Brent; W, Walkhampton.

Taking the 1330 which are fully ascertained it is possible to indicate their distribution. For this purpose I have worked by areas; no plan on a reasonable scale could give precise individual locations. The unit of area adopted has been the quarter sheet of the six inch survey, each quarter sheet covering six square miles, three miles from east to west, and two miles from north to south.

The greatest density of distribution is found in the area of sheet CXIX, N.W., where there are 161 huts or at the rate of 27 to the square mile. This sheet covers the valley of the Yealm at and above Hawns and Dendles, extending to and including some part of the boggy land toward the source of the river, land on which there are no huts. The unit of area next in density of occupation is covered by sheet CXII, S.E., Trowlesworthy and Ditsworthy Warrens in the Plym Valley; here there are 136 hutcircles, or at the rate of 23 to the square mile. Taking the whole of the 42 quarter sheets which are included in the census, the mean number of huts per quarter sheet is 32, with the extremes of 161 and 0; and the mean number of huts per square mile is a little over 5. In the map (fig. 1) no attempt is made to locate the individual huts, but the total for each quarter sheet is uniformly distributed over its surface.

Certainly there have been losses, huts which have disappeared, leaving no trace. Areas once open moorland have long since been enclosed to form the "ancient tenements"; from such areas the foundations of the hutcircles have been removed as hindrances to agriculture, or in other instances to provide stone for the fences. On the more recent newtakes, which are still largely moorland, the loss has been less complete, since the chief cause has been the use of the stone for fences, and there being little arable land, clearance for agriculture has been slight.

Always, since formal roads have existed, there has been robbery and destruction for the purposes of the highways; this may have been checked somewhat, but it has been active in quite recent years. On Shapley Common near Cullacombe Head there were two prehistoric pounds, of which one contained seven huts and the other contained three, while there was one hut outside the pounds. (See *Second Report of the Dartmoor Exploration Committee*, 1895.) In the years 1924, 1925, a contractor removed the pound walls completely, and all the huts except No. 1, Western Pound, the stones of which were much too large for his purpose. He did not waste labour on breaking them, but took the smaller and left the larger standing.

The stone was used as bottom ballast over trenches formed in the road for telephone cables. In another part of the moor a hut was destroyed to provide material for a rock garden. These are not by any means unaccompanied examples of destruction.

But, when all these sources of attrition have been considered, it remains that in the enumeration which has been made there are included areas which have been unaffected by robbery and are as fully occupied as we can conceive any area to have been; and yet others from which the total absence of huts cannot possibly be attributed to any cause but the unsuitability of the ground. All things considered the estimate of 1,500 surviving hutcircles is not in any way likely to be markedly deficient. And yet BARING-GOULD has written (*Book of Dartmoor*, p. 48) "With regard to the numbers of people who lived on Dartmoor in prehistoric times, it is simply amazing to reflect upon. Tens of thousands of their habitations have been destroyed; their largest and most populous settlements, where are now the 'ancient tenements', have been obliterated, yet tens of thousands remain." He places a population of 2,000 persons in a circular space a mile in diameter (0.795 mile) at Post Bridge. (The population of the whole parish of Lydford, some 80 square miles in area, is at present about 2,300.) He claims that the camp on Whittor served 2,500 people, and he ascribes 21,000 persons as residents in the Erme valley.

When it is said that tens of thousands of huts have been lost the only possible reply is that such loss is improbable; when, on the other hand, it is asserted that tens of thousands still remain a positive denial can be given. And, further, on BARING-GOULD's own estimate, even one unit of ten thousand would involve a population numbering 60,000 men, women and children of a race largely dependent on hunting, possessed of but a rudimentary agriculture but to some extent pastoral. Dartmoor, even the Dartmoor of those days, would be wholly inadequate to their maintenance.

Test BARING-GOULD's accuracy by his reference to the Erme valley; he says (*op. cit.* p, 48), "Take the Erme valley, high up where difficult of access; the number of huts there crowded on the hill slopes is incredible." One may assume that "incredible" is to be taken as involving *beyond all reasonable expectation or experience.* The fact is that "high up" the number of huts is very small; there are few or none. But, taking the whole moorland valley of the Erme, which will include the lower and intermediate slopes where huts are more frequent, there are by count 136 hutcircles, to ensure full measure and meet any possible omissions $12\frac{1}{2}$ per cent may be added, giving a corrected total of 153. The area involved is 9.9 square miles, say 10. There would thus be at the most 15.3 hutcircles to a square mile. The Yealm valley, without the added 12½ per cent., gives 27 hutcircles to the square mile over one area of 6 miles, and the Plym 23 hutcircles per square mile over a similar area. Now 15 huts to the square mile would hardly appear incredible even if this density were not exceeded in adjacent valleys, nor would such a number give rise to crowded hill slopes.

DETAILS OF CONSTRUCTION.

Of 137 huts which have been accurately measured the mean internal diameter, to the nearest foot, was found to be 17 feet. The positional mean occurs at 15½ feet, that is to say, as many huts have diameters in excess of 15½ feet as present less diameters. Fig. 2.

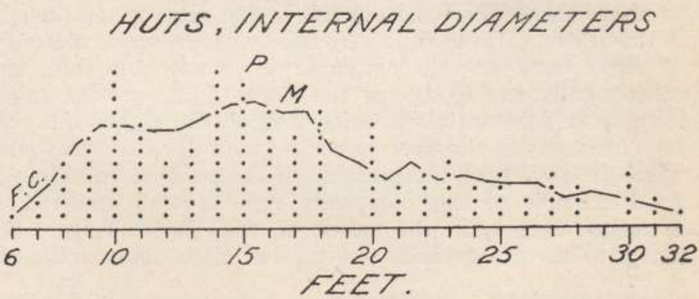



Fig. 2. Internal diameters of Huts.

On excavation the floor of a hut is rarely found at a less depth than eighteen inches below the level of the surrounding country, two steps down being provided at the entrance. These steps are formed in unhewn granite. The actual depth at which the floor lies was determined by the amount of top soil which it was necessary to remove to arrive at the surface of the gravelly subsoil of decomposed granite, or "Growan." Once reached the growan is firm to the tread and in no wise clayey ; but it is soft enough to be readily smoothed and freed from any inequalities by the use of even the most primitive scraping or excavating tools. The wall of the hut is most usually founded on or in a surface similarly freed of all top soil. It would appear that the first step toward the construction of a hut was the removal of turf and top soil over the whole area to be occupied by floor and wall.

It may be noted that many of the smaller burial mounds, where these are cairns, are found to have been heaped upon areas cleared in this same manner.

When the hut lies on a hillside, as is the case with by far the greater number, the surface of the subsoil follows the slope of the hill. Some little additional excavation is common on the uphill side, to partly correct the level of the floor, but a cross fall nearly always remains, involving gradients in the floor at least 1 in 10 in many instances.

As a general rule, in well preserved huts and those which have not been the subject of secondary occupation in later times, it is a feature of the walls that the inner faces are lined with slabs, thus presenting as regular a surface as the material would permit, with a minimum of joints. These liners, for so we may name the slabs, were as truly a surface finish as is the plaster on the walls of a modern room. But they were also at times structural features. When of sufficient area and thickness they formed, firm set in the growan or "calm", the whole inner wall of the hut except for the gaps left between them in consequence of their irregularity of form; or above those which did not rise to the same general height as the others. These gaps were filled with dry stone masonry. At times, however, the available liners were too thin, and consequently too light; or the slope of the ground called for a more substantial retaining wall on the higher side; in such instances the liners were backed with dry stone masonry, which in itself bore the pressure of the bank or hillside. A good example of this composite type of wall occurred at *Metherell*, Hut 1, in the valley of the South Teign. See fig. 3. This also exhibits one type of circle construction, in

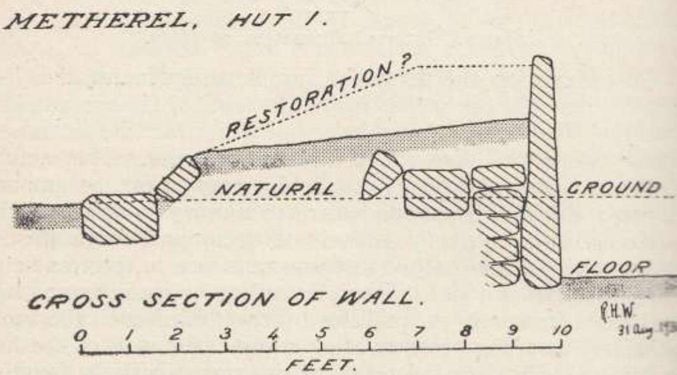



Fig. 3. Structure of Wall, Hut 1, Metherel.

which the inner wall of dry stone masonry and liner was backed by an earth bank, in that instance eight feet six inches wide at the base, including the stone work, and with stones disposed to support the toe. Less frequent is the wall, narrower in construction, with a stone face on either side (thick slabs being most frequently used) and the space between the faces filled with soil and small stone. An example, dissected by fence builders for the sake of the smaller stone, may be seen near *Moorlands* opposite *Prince Hall*; see fig. 4. The interior diameter of this hut is 28 feet, the thickness of the wall 6 feet. In this type of structure a proportion of the stones will usually be found to be post-like rather than slab-like, but always a flat face, even though narrow, is presented to the interior of the hut.

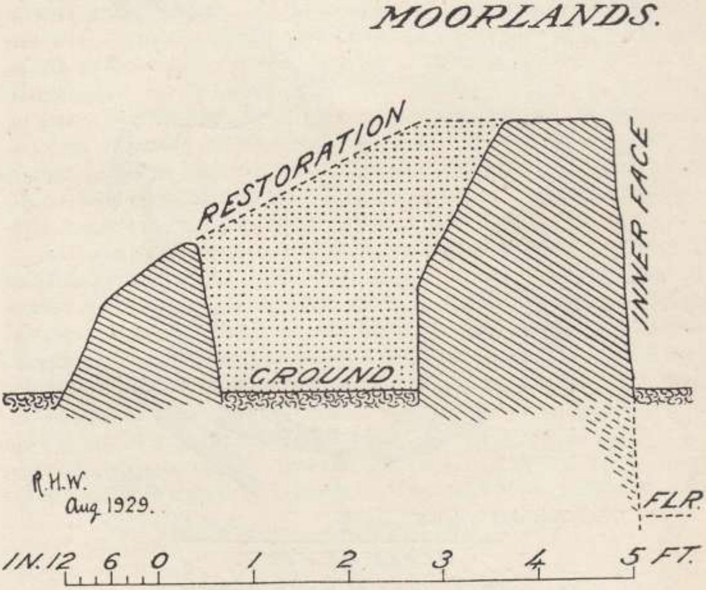



Fig. 4. Structure of Wall, Hut at Moorlands.

The size of the slabs forming the inner lining depended on the material available. A really large stone, otherwise suitable, was a temptation to the builders, although the labour of its transport and erection may have been great. In Hut 2 at *Metherel* there are large slabs; the largest forms a rough triangle, set on its base. The base measures 12 feet 6 inches, the height of the apex above the floor is 6 feet 10 inches, and the mean thickness may be taken as 1 foot 4 inches; this involves a weight of at least $3\frac{1}{2}$ tons, assuming the variations in thickness to have led to an overestimate in that dimension. Somewhat similar dimensions are attained in a hut on *Shapley Common*, in the Western Enclosure, where the largest slab measures 7 feet 3 inches in length at floor level, stands 4 feet 9 inches above the floor, and has an average thickness of 1 foot 1 inch; its least weight would be $1\frac{1}{2}$ tons. This circle proved too much for the road contractor who swept all else from the common, huts and pound walls alike; it was too substantial to be converted to ballast at a profit. See fig. 5 for a plan of Hut 2, *Metherel*, and Plate A, figs. 1 and 2, for views of this circle. On all plans the figures written against the several stones indicate their greatest height above floor level.

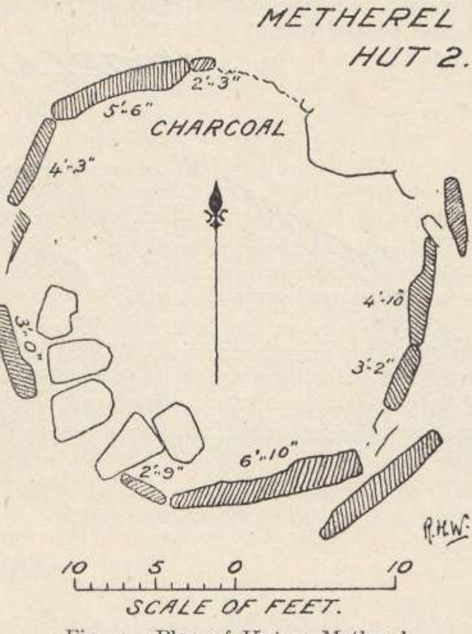



Fig. 5. Plan of Hut 2, Metherel.

The irregular form of the slabs, and the fact that no sort of trimming was attempted, left interspaces, especially near the top of the walls, which were filled in with dry stone walling. There are sites, such as *Shavercombe* and *Riders Rings*, where slabs are not to be found in the immediate neighbourhood; in such places the whole wall of the hut was constructed in dry walling. This form of structure has nowhere proved as permanent, and the walls are now more usually mere mounds of rubble.

In those hutcircles which have been the subject of secondary occupation, of which few have been exhaustively examined, the walls, where they required reconditionlng or rebuilding, have always been restored in dry masonry. In one probable instance of secondary occupation, on *Brown Heath* above *Hook Lake* in the Erme valley, the outer face of the bank forming the wall of the hutcircle has been faced with dry masonry, to an extent not known elsewhere; see plate B.

The entrances are invariably placed facing south to south-west, the builders being evidently of the opinion that even the rains and gales from that quarter were preferable to the storms from the north and nor'-nor'-west which, on Dartmoor, are the greatest enemies of all living things. With walls no more than 4 feet 6 inches in height above floor level, and the floor usually sunk 1 foot 6 inches below ground level, the entrance is of necessity low, three feet in height being rather exceptional. At Hut 2, *Legis Tor*, the clear height is 2 feet 9 inches, and the clear width 1 foot 4 inches, while two steps lead to the floor of the hut, eighteen inches below the threshold. Other examples are, *Metherel* Hut 1, entrance 2 feet 9 inches high by 2 feet 2 inches in width ; *Grimspound* Hut 4, 2 feet 5 inches high by 2 feet 1 inch wide ; Hut 7, 2 feet 6 inches high by 2 feet 1 inch wide ; Hut 12, 3 feet high by 2 feet 9 inches wide. The means of these five examples are, height 2 feet 8 inches, width 2 feet 1 inch.

At *Grimspound* close by, some of the entrances stones were found lying in the turf, from their shape and length they were reasonably identifiable as the lintels of the entrances. Drawings were given in the first report of the Dartmoor Exploration Committee in which these supposed lintels were shewn replaced on the jambs ; it was in each instance made clear in the text that the stone when found was displaced and lying on the ground. But Prof. V. Gordon Childe (*The Bronze Age*, p. 160) has written :—" In some later Huts (Late Bronze Age) on Dartmoor the megalithic jambs and the

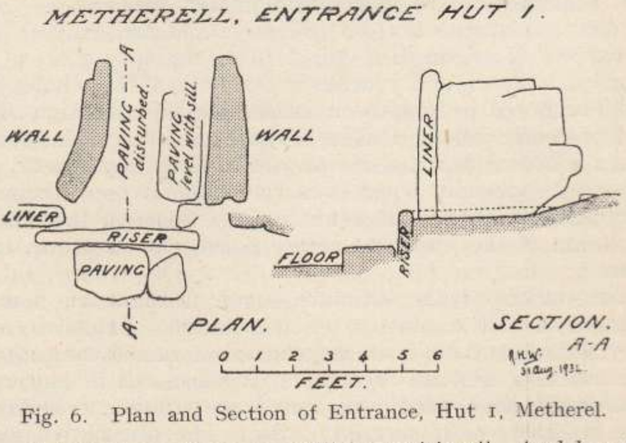



Fig. 6. Plan and Section of Entrance, Hut 1, Metherel.

stone lintel above them are still in position." And he cites the Dartmoor Exploration Committee as authority. The period to which he assigns the huts will be the subject of later remark. The alleged miracle by which these small stones have been sustained precariously balanced on the door jambs must be at once dismissed.

For illustrations see fig. 6, plan and section of entrance to Hut 1 *Metherel*; Plate 7, fig. d, elevation of entrance to Hut 4 *Grimspound* with lintel restored to its original position. Plate 8, fig. 2, view of a robbed hutcircle on *Bagtor Down*, showing the jambs of the entrance, the entrance is rather unusually high, one stone measuring 4 feet 5 inches in height, and 4 feet 6 inches in width. Plate 8, fig. 1, is a view of entrance to Hut 2, *Legis Tor*, looking into the hut.

The structure of the roof is a matter for conjecture. The fact that the interior of the hutcircle is always unencumbered by stone, except such as has fallen from the wall, is sufficient proof that the roof was not a stone structure of the beehive type. The probable inference is that its framework consisted of poles set as rafters, radiating from the apex and resting on the centre of the wall, thus forming a cone. The lower end of the rafters would thus be further apart than would be convenient for any form of thatching, and it is probable that some form of interlaced or wattle work would there be used; unless, which is unlikely, short lengths of pole were set horizontally across the rafters, as purlins, and secured by lashing. It has been thought that flat stones set in the centre of the floor may have formed bases for vertical poles, supporting the rafters at the centre; some few hutcircles have been found with stones so placed. In one instance a hole was found sunk in the calm at the centre of the floor; this hole was 8 inches deep, 4 inches in diameter, and had a "gob" of charcoal at the bottom (*Shapley Common*, Hut 1). On *Langstone Moor*, in Hut 10, a hole, similarly placed, was 8 inches in depth and 3 inches in diameter. These holes have been supposed to have been formed for the reception of the feet of centre poles. But so few are the central flat stones, and the holes, that it seems unwise to draw any general conclusion; especially when it is remembered how frequently the hearth occupies the centre of the floor, to the obvious exclusion of the idea that centre poles were in use in those huts.

The nature of the ultimate cover of the roof, however framed, is also a matter for speculation. Skins stretched over the frame have been suggested, but skins were probably too much in demand for other purposes, and in any event would not have been well suited to permanent buildings, such as these huts certainly were. The alternative would seem to be thatch of some sort, turves, heather or rushes, all readily available and all well suited to provide a weather-proof roof. Amid all the uncertainties this much may be accepted as assured:—the huts were not roofed with stone in the manner of the beehive huts of the Early Iron Age. The walls are not suited to such form of structure, and the large amount of stone necessary to roof even a small hutcircle must, on the collapse of the roof, have left the floor heavily cumbered with rubble. With the larger circles of, say, 30 feet in diameter, this consideration becomes even more obvious. No such rubble is found.

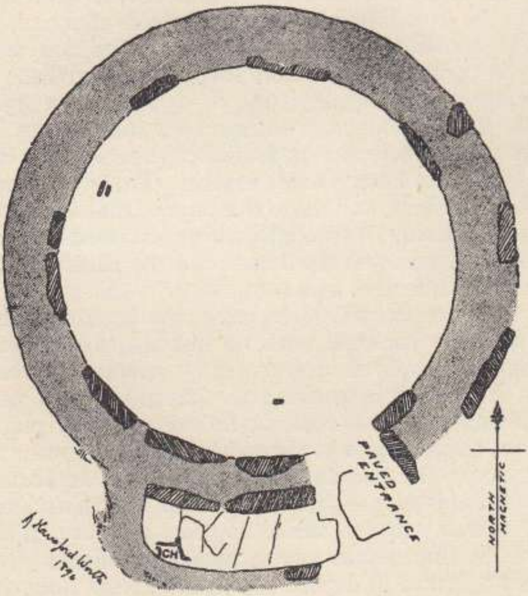
A coned roof, discharging the rain which it received on to the earth and stone centre of the wall, may seem an improbable and objectionable expedient ; but it may be recalled that the "black houses" of Lewis discharged the rainfall from their roofs on the peat-filled centre of a wall faced with rubble masonry within and without ; and what would seem the necessarily damp conditions were endured well into the days of living memory by a race more advanced in civilisation than the Dartmoor people of the Early Bronze Age. BARING-GOULD in his *Book of Dartmoor*, 1900, writes :—" Occasionally round stones, flat on one side and convex on the other, have been disinterred in the huts. They served to protect the apex of the roof, where the poles were drawn together, from the action of the rain, which would rot them, as well as to prevent the rain from entering at this point. An example of a stone of the same character may be seen in actual use on the thatched circular pounding house on Berry Down, near Throwleigh " (p. 70). This passage is an instance of too facile interpretation, comparable with Major HAMILTON SMITH'S identification of an infinished edge runner for an apple mill as the circular capstone of a fallen cromlech, at *Merrivale*. It is the more surprising in view of the fact that no form of dressed or shaped stone has yet been found as part of the structure of any hut.

These circular stones are also referred to in the third report of the Dartmoor Exploration Committee (*Trans. Dev. Assoc.*, vol. xxviii, p. 180, 1896), wherein it is stated that four have been found, at *Whitten Ridge* (2), *Kings Oven* (1) and *Buttern Down* (1). Three of these stones have diameters of 24 inches, 19 inches and 17 inches respectively, and are from 2 to 3 inches thick ; the fourth, found at *Buttern Down*, is 3 feet 6 inches in diameter, and 6 inches thick. I may add that there are other such circular stones lying about on the moors wholly apart from hutcircles, and in especial there are several lying singly and together on *Belstone Common*. The smaller are the capstones of rick staddles, the larger are millstones, in various stages of manufacture. It is not surprising that they are at times found in hutcircles, which were regularly used as quarries by the stonemasons. The idea of a circular stone, whether two feet or three feet six inches diameter, and whether three or six inches in thickness, poised insecurely on the apex of the cone formed by the light and irregular branches which made the structure of the roof, and closing the aperture which must have been left for the escape of the smoke from wood and peat fires suggests conditions of anxiety and discomfort in which the danger attaching to this prehistoric substitute for the sword of Damocles was aggravated by the certainty of ultimate asphyxiation.

The Early Iron Age buildings of west Cornwall are found to have been provided with drains which took away from their floors such water as seeped through the ground or found access through defective walls and roofs. No such provision was made on Dartmoor, nor, apparently, was it necessary. The substantial bank, at least six to eight feet in width, which formed the walls, and the growan or calm of the floors could not exclude the possibility of damp, but were efficient against the access of as much water as would form pools upon the floor or need a drain for its removal. The only water I have ever seen in a hut after or during excavation has been such as has arisen from heavy rain falling directly on the surface of the newly bared floor.

The entrances were sometimes provided with shelter walls forming a manner of porch. This feature is local and by no means common; it is found in some huts at *Grimspound*, *Shapley Common* and *Whitten Ridge*. The shelter wall is always on the righthand side of the entrance, looking out from the hut; and hence is so placed as to afford partial protection from the north-west wind. The best developed of such walls is to be found at Hut 3, *Grimspound*, see Plate 7, fig. a. Here the wall curves round and completely shelters the entrance from the south-west. On the other hand, Hut 12, in the same pound, has a shelter wall which extends radially in a straight line, see Plate 7, fig. b.

At *Foales Arrishes* there is a large hutcircle (30 feet in inside diameter) which is now involved in a number of rectangular fields of later date; parallel to the outer face of the wall, and 4 feet 3 inches from it, is a wall which partly encloses a space 13 feet in length by 4 feet 3 inches in width, open at the east end and closed at the west. This has all the appearance of a shelter wall such as has been described; but, although it closely adjoins the entrance it does not shelter it or extend across it. The space so marked out is in part paved, and may formerly have been wholly paved. The intent of this adjunct to the circle is unknown. BARING-GOULD, on faith of the charcoal found on the floor, says that it was a kitchen. He also says the hut "had a seat carried round part at least of the interior, made of branches that were held from spreading by sharp stones planted upright in the floor." (*op. cit.* p. 178.) There are but three stones which can be called in evidence as being possibly planted in the floor. One is near the entrance and measures 9 inches by 3 inches on plan. The other two form a pair, placed 22 feet away from the single stone as measured parallel to the circumference. One of this pair is 9 inches by about 3 inches on plan, the other 15 inches by about 4 inches. The first stone stands 4 feet away from the inner circumference of the hut, the centre line between the pair is 2 feet 5 inches from the inner circumference. Kitchen and seat are alike guesswork.




FOALES ARRISHES. *HUT No 1*

Fig. 7. Hut 1, Foales Arrishes.

Fig. 7 affords a plan of the hut known as No. 1 *Foales Arrishes*, the wall of which is narrower than is usual, being from 5 feet to 4 feet in thickness.

FITTINGS.

The hearth is commonly held to be the first essential of a British home, and on Dartmoor the accepted view can certainly be approved. The formal hearth of the Dartmoor hutcircle was a slab of fine-grained granite, set in the floor with its surface slightly above floor level. Somewhat rarely the slab is set below the general level of the floor and edged with stones pitched to form a surround at the floor level.

The position of the hearth is varied; in about half the examples it is at or near the centre of the hut, but in others it is found against the wall, either opposite the entrance or not far within the entrance, on either the right or left side. No complete records have been kept, but in some groups the left side seems to have been preferred. A formal hearth is by no means a necessity, and there are many huts which show ample evidence of human occupation, and yield charcoal in considerable quantity, but have no hearth-stones; the bare floor served. At *Legis Tor*, of 10 huts excavated two returned no charcoal, the remaining eight all showed charcoal, cooking holes and cooking stones (as to both of which see later). But only in two of the eight were there stone hearths. Hearth-stones vary in size, for example :— 53 inches x 33 inches; 36 inches x 24 inches; 32 inches x 24 inches; 25 inches x 22 inches and 24 inches x 17 inches. They vary in condition with material and length of service. There are few which are not fire cracked, and more than a few that appear to need immediate renewal. Although granite was used for the hearth of Bronze Age man and the furnace of the Elizabethan tinner it is not really effective as a refractory.

With the hearth was associated the cooking hole; man desired not only personal warmth, but also a hot meal. The cooking holes have been interpreted by reference to the known methods employed in cooking by later, but still primitive, races. Essentially the cooking hole is a small pit sunk in the floor of the hut, and at times bordered with stone set level with the floor. In size and shape it varies. In Hut 2, *Legis Tor*, it is kidney-shaped, about 2 feet in length and 10 inches in breadth, and 7 to 8 inches in depth. In Hut 7 in the same enclosure the dimensions are 14 inches in length, 7 inches in width and 8 inches in depth. In Hut 8, *Rifle Range, Princetown*, 1 foot long, 9 inches wide and 10 inches deep. Some of the holes are circular, as at Hut 1, *Rifle Range, Princetown*, 16 inches in diameter and 12 inches deep, and Hut 4 in the same group where a hole 18 inches in diameter and 12 inches in depth was found. Hut 12 in this group had a cooking hole entirely lined with stone; after the stone lining had been removed the hole measured 3 feet 6 inches in diameter and 1 foot 2 inches in depth. Allowance being made for the stone lining this hole must originally have been a little less than 2 feet 6 inches in diameter, and 11 inches in depth. It contained about a wheelbarrow load and a half of charcoal. Other huts have yielded cooking holes lined with stone, for instance Hut 8, *Legis Tor*, where the hole was completely stone-lined.

It does not appear that the cooking holes were in general of sufficient size to take any but small joints.

The above data may serve for the description of one form of cooking hole; there was another type, markedly different in construction and almost certainly different in use; this may properly be described as the "cooking-pot hole." It may be briefly but fully described as a cooking-pot of rough earthenware set in the floor of the hut in such manner that none but a small height of the rim stood above floor level. It is curious that this has not been formally recognised as a separate type. There are indications that it was in common use, and two very perfect examples have been recorded.

In May, 1896, in Hut 7, *Legis Tor,* I found a cooking-pot hole, the first which had been observed in approximately perfect condition. "On the western side of the hut, a crock, or cooking pot, of unornamented pottery, was found set in the 'calm', below the level of the floor. The pot was badly cracked, but was temporarily held together by the contained earth and ashes. Its outer surface was in actual contact with the calm and no ash whatever was found outside it. This crock was successfully lifted and examined, before the cohesion of its contents failed, and left fragments only, which cannot, unfortunately, be properly restored. In diameter it measured, at its widest point, ten inches. Its total depth, including the rim, which was found inside it when it fell to pieces, was a little over 12 inches. Two cooking stones were found in it. Curiously enough, the bottom of this pot which had been cracked while in use, had been mended *in situ* with white china clay, a mass of clay having been pressed into the bottom, to fill up cracks and cement together the broken fragments. This crock had a hemispherical bottom, and could not have been stood on a plane surface." From my log I may add that there was no fillet at the base of the neck.

This was the contribution to our knowledge yielded by the Plym valley. MR. ROBERT BURNARD was at the same time excavating in the adjoining valley of the Meavy, at *Raddick,* and within less than twenty-four hours he happened upon a parallel find, in Hut 5 of that settlement, "nearly opposite the supposed entrance was the hearth, slightly raised, against a large stone in the wall. To the right of this, the cooking hole, under a large slab that had fallen forward out of the wall. This slab, in falling, had protected from destruction a fine vessel of rude hand-made pottery, occupying the cooking hole, and fairly intact. It had (except for the rounded base) the peculiar shape of the Cornish urns used for burials in the time of incineration, with a rib running as a hoop round it, 2½ inches from the lip, and the portion above this was ornamented by zigzags. The bottom of the bowl was rounded. This was distinctly seen when it was *in situ*; but when taken out, the bottom, which was very broken, went to pieces. In order to extract the vessel, it was necessary to destroy the cooking hole. The vessel measures 10½ inches in height, and is 10 inches in diameter at the top. The rib is 1 inch thick." The quoted descriptions are from the Third Report of the Dartmoor Exploration Committee, 1896, and were written while all the circumstances were fresh in the minds of the excavators. Figs. 8a and 8b are from drawings of these two pots.

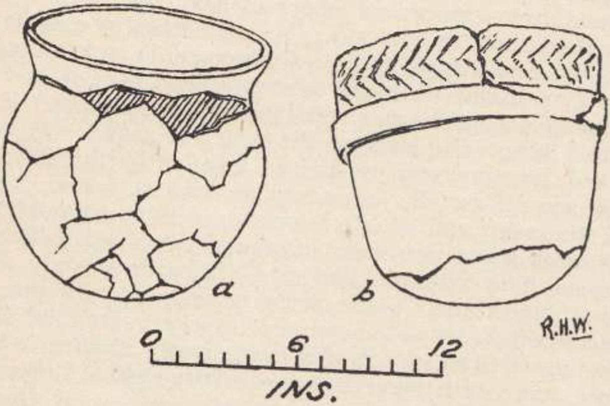



Fig. 8. a Cooking Pot, Legis Tor, Hut 7.
b Cooking Pot, Raddick, Hut 5.

Comparing the descriptions it will be seen that both had a greatest diameter of ten inches, that the depth of one was a little over twelve inches, and of the other the depth was ten and a half inches. The recovery of each involved the destruction of the cooking hole, so tightly were they set in the calm. The base of each was spherical, and that base much cracked.

The material from which each had been formed was thick, coarse and hand-made ; but in finish they varied. No ornament of any kind was found on the *Legis Tor* pot, nor any strengthening fillet ; the *Raddick* pot had a strengthening fillet at the base of the neck, and the neck bore chevron ornament.

Judging from the manner of their setting, these pots were probably never intended to be lifted. They may have held water which was heated by the simple expedient of dropping in heated cooking stones. The material of the pots was certainly not fireproof, and water could not have been boiled in them over the fire. But set in the calm and closely packed around, if cracked they would still be held together, and would be approximately leak proof. Cracked they would be, by heat, and by the fall of the cooking stones on to the bottom of the pot. It will be noted that two cooking stones were found in the pot at *Legis Tor*.

The suggested interpretation reasonably fits the evidence, but necessarily admits neither proof nor disproof. If it is correct, then the cooking holes without pots may be taken to have provided the baking facilities for the hut dwellers, while the cooking holes with pots served as the saucepans. Roasting over the open fire would probably be practised also, the meat being held on a wooden skewer, or with larger joints impaled on a wooden spit. Fires were needed, not for cooking only, but also for heating the huts. Certainly the same hearth or fireplace might serve both purposes. A fire could be lit with safety anywhere on the levelled subsoil which formed the floor of the hut, although unpaved ; and, indeed, many of the huts, even where quantities of charcoal were found, appear to be devoid of stone hearths. The probability is that where stone hearths were found the fire, for all purposes, was confined to them. There is one example of a fireplace which seems to indicate the work of an original mind. This was found in Hut 2, *Riders Rings*, in the Avon valley. The fire was placed some 4 feet within the entrance of the hut, and in the direct line of the entrance. There was no stone hearth, but the fire was shielded from the draft of the entrance

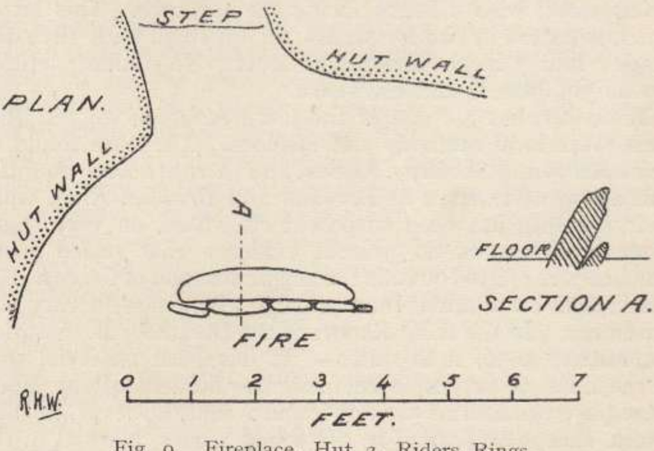



Fig. 9. Fireplace, Hut 2, Riders Rings.

by a flat stone set in the floor, 2 feet 9 inches wide at floor level, and standing 13 inches above the floor, leaning slightly away from the entrance. On the inner side toward which it leant the stone was trigged or wedged with a number of small, thin stones, to resist the tendency to fall which might follow its leaning position. At the inner foot of this stone was a shallow pit in the floor, filled with charcoal and ashes.

In position and construction this fireplace would seem to have been unusually well designed. See fig. 9.

A feature in many huts is the "dais", a paved area adjoining the wall and raised somewhat above floor level. The edge forms a chord of the inner circle of the walls, and the area of the dais is thus a segment of a circle. At times the line of the circumference is slightly deformed to give the dais greater depth and area.

The term "dais" was rather an unfortunate selection. It implies a place of especial honour, a division of society into the aristocratic sheep and the plebeian goats. We know nothing of the social distinctions which may have afflicted society in the Bronze Age, we are not even entitled to assume their existence; but the obvious purpose of the so-called dais was that of a seat or reclining place by day, and a bed by night. It would be much better to call it a bench. The bench is always, so far as it has yet been found, in one of two positions, either on the right hand on entry, that is to say on the east side; or facing the entrance and somewhat inclined to the east. Rarely, if ever, is the bench more than from 6 to 8 inches above the floor.

Plate 7, fig. a is a plan showing a right hand bench in Hut 3, *Grimspound*, and Plate 7, fig. c a plan of Hut 16, *Grimspound*, with a bench facing the entrance. This latter bench is parted in two by stones set on edge, with their top edges 1 foot 7 inches above floor level. No similar partition has as yet been found elsewhere.

These benches are one of the features which suggest that there were local methods and fashions. They are found at *Grimspound* and *Shapley Common*, and there are some doubtful indications of benches at *Broadun* and *Broadun Ring*, while their presence has been suspected elsewhere, on very slight grounds. There is no present evidence that raised paved benches ever existed outside the neighbourhood of *Grimspound*, but further excavations may possibly give cause to vary this statement. In the third Report of the Dartmoor Exploration Committee, 1896, it is said :—"It has been observed that in the huts as yet explored, near the borders of the Moor, these paved platforms are not found; that, however, in their places, except at *Legis Tor*, are found stones, planted in the floor at intervals, standing some nine inches above it in line; and it is thought probable that in such cases, wood being easily procurable, the bed-seats were made of logs, and that these peg-like stones were used to hold the logs in place". I have seen nothing which I could so interpret. The hut at *Foales Arrishes* has already been referred to, see page 237, and fig. 7.

It seems probable that some bed place, with or without a stone bench as a foundation, was practically universal. The stones can hardly have been acceptable as a couch without some covering of heather or other padding. It is possible that in some instances, as at *Legis Tor*, the area used as a bench was paved, not with raised paving, but at floor level. It is not probable, hardly possible, that at *Legis Tor* it should have been the unpaved area of the hut on which the seat or bench was placed. This use was suggested in the Third Report of the Dartmoor Exploration Committee, 1896, but, on the one hand, it places the bench on the left of the entrance in place of on the right, and on the other it would inextricably mix up the bench or bed and the cooking hole and fireplace, an improbable and certainly inconvenient combination.

Of paving in general it may be said, that probably in all huts there were at least a stone threshold and steps down into the hut. Sometimes there was a small paved area outside the entrance. Where there was a bench, certain stones were selected and set to make the boundary between the bench and the floor a fair approximation to a straight line. And where there was a bench the greater part of the floor has always been found to be unpaved. No floor has been found completely paved, but many have been found completely unpaved. The paving stones are always thin natural slabs, random in shape and size, unwrought and unshapen.

The extent of the paving would appear to have been largely influenced by the presence or absence in the immediate neighbourhood of a supply of suitable stone. Perhaps also by the quality of the subsoil, whether more or less resistant to damp. The builders were not so bound by custom as to fail in special methods where special needs had to be met. Hut 4, *Legis Tor*, affords an instance. The entrance is well defined, and paved. Elsewhere the whole of the meat earth had been removed, and the subsoil exposed as usual. But subsequently the floor against the entrance had been raised by filling the excavation with loose rubble stone, almost to the level of the outer ground; and the work completed by paving over this loose rubble, the thickness of the paving completing the raising of the floor to the outside level; so that here there was the almost unique feature that there were no steps down into the hut. There can be no certainty, but the probable explanation is that the floor near the entrance, where it would be at its lowest, proved leaky, and water was liable to lodge there; on the discovery of which the floor was deliberately raised to a drier level, on porous filling. The whole of the southern or lower part of this hut, where it is lowest, was paved. Very possibly the intent of benches in general was, in part at least, to raise the seat or bed higher above possible damp.

It is not known how the difficulty was met which must have arisen where the fire was placed against the wall of the hut. It must have been dangerously near the thatch, or other roof covering.

Possibly the under side, or ceiling, of the roof was coated with clay daub over and near the fire. This would have been an efficient protection. Wattle and daub chimneys were in use many centuries later, in the early English houses. The Bronze Age may, however, have had other methods, which we have no means of tracing.

### Objects and Materials found in Hutcircles.

*Charcoal* and *ashes* should perhaps take first place among the products of excavation. They are clear evidence of human occupation. At times ashes and charcoal are found distributed over the whole area of the hut; more usually they are chiefly concentrated around the hearth or fireplace and in the cooking holes. The wood burnt was small, little more than twigs, nothing which could not be gathered by hand, without the need of tools to cut or chop. Nowhere has anything in the nature of even a small log been found. The Dartmoor Exploration Committee's Reports state that :—"The charcoal from the interior of the Moor shows that the wood was oak and alder, and that it was small. But at the confines of the Moor large pieces of charred wood have been found." (Third Report, 1896.) It would, perhaps, have been better to have written "*larger* pieces of charred wood." As to the identification of oak and alder, it must be admitted that alder is not likely to have formed any considerable part of the fuel, except on the borders of the Moor, and that the various willows and the furze bushes probably contributed not a little to the fuel. The charcoal requires more detailed examination. It is certain that peat was also burned in considerable quantity, large quantities of peat ashes having been found in some huts.

*Cooking Stones* are found in distinctly varying number; some at least occur in the great majority of huts. As a rule no attempt has been made to make a precise count, and in some huts it is to be feared that they were missed by, or in consequence of, the undue haste of the excavators. At *Legis Tor*, Hut 2 yielded 30 cooking stones, and in Hut 7 between 30 and 40 were found; on the other hand, at the *Rifle Range, Princetown*, five cooking stones were found in Hut 3, and 6 in Hut 6.

The cooking stones, or pot boilers, are rounded pebbles from the rivers, or from river gravels. Since they have been water-worn they represent the harder and finer-grained varieties of the granite and elvans, and include some pebbles of quartz-schorl rock from the veins in the granite. As to size, about 5 inches by $3\frac{1}{2}$ inches, and 1 to $1\frac{1}{2}$ inches in thickness would be an approximate average. Very many are fire-cracked; some of the coarse granite pebbles have been rendered very friable; and, on the whole, the need for renewal must have been frequent.

It is believed that the cooking holes, with or without pots, and the cooking stones, were the kitchen utensils of their day; and this belief has the sanction of the recorded habits of later primitive races, and of the circumstances and conditions in which both holes and stones have been found on Dartmoor. Baking could be accomplished by placing a number of well heated cooking stones in the bottom of a cooking hole, putting the meat on these stones, packing other heated stones around and over the meat, and possibly drawing and spreading over the whole hot embers from the hearth. This method would foreshadow the baking on the hearth which many of us have seen, and of which I myself have often heartily enjoyed the product. In which baking a circular iron plate was first heated and bedded on the hearth in ashes, the dough was placed on the plate, an iron crock inverted over the dough, and ashes and embers heaped over and around the crock. As a finishing touch, to brown the crust, a small bundle of furze was placed over and around the crock, in place of the ashes, and lit.

And the small ovens in the chimney corner, as well as the much larger ovens of the baker in later years, shared one feature with the cooking hole. The direct heat of a fire did not accomplish the baking; but first the oven was heated until its structure of stone, earthenware or brick had taken up and become a store of the heat; the matter to be cooked was then placed in the oven and the entrance closed. By the borrowed heat of the oven-lining the cooking was accomplished (and still is in some places). The cooking stones were merely an earlier device for heat storage.

In the matter of boiling the transfer of the heat of the fire to the water was, we believe, accomplished in a similar manner by the intermediary of cooking stones. The coarse earthenware of the day was certainly not fireproof, and could not with safety be placed over a fire. The pot, partly filled with water, was accordingly placed in a hole formed in the floor of the hut; and then hot stones were rolled or lifted into it from the hearth. The speed and efficiency of this method of heating water would be governed by the specific heats of the stone and the water respectively. The strain on the first of the stones to be dropped into the cold water must have been considerable; and it is small wonder that they are so often cracked and fretted, while the soup must have partaken of the nature of stone broth, with sand and gravel as solid constituents. The teeth of prehistoric man are often found much worn on the crowns ; it has been supposed that grinding or crushing cereals with stone made his bread gritty, but his soup may have had its part in the wear.

Seeking a recent parallel for this method of transferring heat to a liquid, I recall that I have seen ale warmed in a village inn by the agency of a poker heated in the fire and then plunged in the glass or pot, a method which could at one time be regarded as standard.

THE DOMESTIC POTTERY found in the huts, while varying somewhat in material and finish, may all be fairly described as coarse, thick and under-burnt. None which has as yet been found has been thrown on the wheel. The body of the ware usually consists of from 40 to 45 per cent. of sand, and 60 to 55 per cent. of clay substance. The clay contains sufficient iron to burn to a distinct red superficially, even with the light firing which the ware has received. This at once suggests that the clay used was not derived from the granite area ; China clay with 1.50 per cent. of ferric oxide burns to no more than a deep ivory shade, while blue ball clay from the Bovey Beds, containing 3.30 per cent. $Fe_2O_3$, is used in white and cream pottery. Clay from the hutcircle pottery contains from 5 to 12 per cent. of ferric oxide (the last figure is unusually high).

China clays from the granite area, which on casual observation appear to have more than the usual content of iron, have yielded no greater than 2.36 to 3.10 per cent. of ferric oxide, and cannot have supplied the material used by the Bronze Age potter. It appears, therefore, that the source was not strictly local. But it need not have been distant ; there are patches of clay, not far outside the border of the granite, which would make up into such ware as is found in the huts. Physical considerations support the chemical evidence. China clay lacks the necessary plasticity and cohesion for the manufacture of objects as large as the cooking pots, of such a thickness, and painfully made by hand moulding. It would neither dry nor fire without deformation and heavy losses by cracking. The far more plastic clays from the metamorphic and sedimentary areas would certainly demand skill in handling by primitive methods, but would so far respond to that skill as to prove practicable material.

The proportion of sand found in the ware is little, if any, greater than that naturally occurring in the clays as raised from the pit. It obviously affords another possible line of enquiry. Its nature varies with the locality from which the shards are taken, which indicates variety of origin for the clay. Comparatively rarely some sand would appear to have been added, the addition being such as could have been derived from the beds of streams in the granite area. In what is believed to be the natural sand of the clay the recognisable rock fragments include quartz-schorl rock, altered slate which may have come from the metamorphic aureole of Dartmoor, and, in a few instances, fragments of hornblendic rock probably from epidiorites such as are found on Cox Tor, Whittor, Horndon and at other points on the Dartmoor border.

The pottery was probably made on Dartmoor, certainly in the immediate neighbourhood, and the clay derived from the nearest known deposits of sufficiently plastic material.

It has been said that some of the ware is washed with clay-slip, to afford a better surface finish. This must be doubted; the mere moulding of the pot by hand would bring to the surface some part of the water used in tempering the clay, and the potters' hands would also be kept moist to avoid adhesion by the clay; from these two causes there would be sufficient superficial water to produce a surface of true clay substance, thus giving the appearance of a slip wash. I have seen nothing for which this explanation would not suffice.

The thickness of the normal cooking pottery of the hutcircles ranges approximately between seven and twelve millimetres; but at times fragments of other vessels are found of from 4 mm. to 7 mm. in thickness, which, in this respect as well as in the quality of the ware closely resemble the food vessel pottery found in the kistvaens; the resemblance may, in fact, be reasonably interpreted as identity. With this thinner ware a finer clay was used, containing much less sand, but apparently derived from the same sources. No change was made in the workmanship or the type of ornament. The word *beaker* has sometimes been used as descriptive of these food vessels; but, if the ordinary acceptance of the word is regarded, it is an unfortunate selection. To most, it may be presumed, a beaker is a drinking vessel; the particular objects here referred to have capacities of approximately 5 to 6 pints apiece, when filled to within $\frac{1}{4}$ inch of the rim; which seems excessive in a drinking vessel.

One feature is common to all the pottery, the outside surfaces are red (rarely brown), the inside is black, excepting in some few examples where it is slightly reddened near the rim. The thickness of the ware is also black after the first 2 millimetres from the outside, sometimes after the first millimetre.

These conditions arise from the method of firing. The ware was not fired in an oven or kiln, but in the open. The pot was stood, either on its base or mouth down, and a fire maintained around it. The mouth down position would be the more efficient, and must have been adopted for those pots which had approximately hemispherical bases. We may believe that the advantages of the inverted position were soon discovered. Fired in this manner the exterior of the pot received the greater heat, in an oxydising atmosphere ; and the inside attained a less temperature in an atmosphere deficient in oxygen. The result of these conditions would be just that distribution of colour which is found in the ware.

It has been suggested that the black inner surface, and the dark, frequently black, shade in the thickness of the ware have arisen from carbonised food stuff. But these colour conditions affect all the pottery, except a few of the thinnest pieces ; they are present in cooking pots and food vessels alike ; and, rather remarkably, the cooking stones have not been found stained, although they shared contact with food during its preparation. It is true that from one specimen of pottery it was found possible to recover a trace of grease, the last remnant of a prehistoric stew. It is obvious that recoverable grease can not have been carbonised, and can not have contributed to the black shade of the pottery.

There is one known exception to the statement that china-clay was not in use. The cooking pot which was found in the cooking hole of Hut 7, *Legis Tor*, had been mended *in situ* with china clay, by the simple expedient of taking a kneaded mass of that material and pressing it into the bottom of the pot as it stood in the hole. The broken bottom was supported by the ground in which the pot had been sunk, and thus the leaks could be staunched by this internal application of puddle. The mend was made with raw clay, and there was nothing in the operation which partook of the nature of pottery manufacture. It is interesting as showing that the hut-dwellers were acquainted with china clay, and their failure to use it in the manufacture of pottery was thus a matter of deliberate choice.

As to the shape and size of the vessels our knowledge is necessarily limited by the fragmentary condition of much which has been found, the decay of the broken edges of the fragments, consequent on the rough nature of the ware, and its incomplete firing. By good luck two of the cooking pots were found under such conditions that their dimensions and form could be observed at the time of their discovery. The *Legis Tor* example had a greatest diameter of 10 inches and a height of 12 inches ; that from *Raddick Hill* was equal in diameter, but 10½ inches in height. As far as can be judged from fragments found in other huts these were fair examples of the usual size. On the other hand, although both pots had rounded bases, they differed in other respects. The body of the pot from *Legis Tor* was approximately globular, the neck somewhat constricted, with an outward flare to the rim. The *Raddick* vessel was bucket-shaped, banded at about $2\frac{1}{2}$ inches from the rim, and with no constriction at the neck. At *Legis Tor* the pot was wholly without ornament ; in the other instance the space between the band and the rim was covered with a chevron pattern. It was a coincidence that both these pots had rounded bases ; from what has been found elsewhere on Dartmoor it is a fair conclusion that some, at least, of the cooking pots had flat bases.

Pottery actually found in the cooking holes may safely be identified as cooking-pots ; but most huts yield from the floor surface fragments of a similar type of ware, and these may be classed as the remains of storage vessels. There are local variations in the details of such vessels, both as to structure and ornament ; and these variations are strongly suggestive of local manufacture, tastes and prejudices. We have already seen that the provision of shelter walls at the entrance to the hut was a habit rather narrowly localised. To come to much later days, I was surprised some years ago to learn, at an edge-tool mill on the Teign, that it was still necessary to keep separate templates for the manufacture of hedge-hooks and such like tools, to meet the tastes and needs of the different small districts supplied, each of which has its own traditional curve and balance of the blade, and will content itself with none other. In face of this modern instance one may readily accept that parochialism as a mental habit long preceded and will probably outlast the parish as a unit ; parochialism is and has been a partial antidote to over-centralised standardisation.

At *Legis Tor*, in the Plym Valley, nine out of ten of the huts in and near the pound yielded fragments of pottery of the "storage" pot type. These were fully illustrated in the third report of the Dartmoor Exploration Committee (*Trans. Devon. Assoc.*, vol. xxviii, pp. 10–13). Two features were apparently constant, a thickened band or belt encircling the greatest diameter of the pot, and lifting lugs arising on either side of the belt. In the matter of ornament, this was found below the rims, between the rims and the belt. There was considerable variety. Indentations made with the thumb or finger nail were in frequent use, the simplest form being a series of such indents on the outer circumference of the rim. In one instance the nail marks are set below the rim, which itself bears crossed, incised lines ; the nail mark is also found associated with dotted line, the dots being impressions of a square, hollow point, possibly a bird's bone. This same type of dot is also used in chevrons, associated with incised horizontal lines. And chevrons in continuous incised lines are also found. See plate 10 for some types of ornament.

Bands, as being thicker and stronger than the body of the ware, and lugs, which are solid lumps measuring on the average one and threequarters of an inch along the length of the band, one and a quarter inches in depth across the band, and one inch in total thickness, are both, like the rims of the pots, apt to survive where the rest of the ware has perished. It should, therefore, be of some significance that, except at *Legis Tor*, bands are relatively rare, and lugs almost unknown on Dartmoor. It may be that an undue importance attached to mere ornament has led some at least of the excavators to neglect the significance of structural details ; but, none the less, this is an instance in which negative evidence has a higher value than usual.

A comparison may be made with the pottery found in the huts near *Smallacombe Rocks*, in the Leighon (Beckabrook) Valley, 1300 yards north (approximately) from Hey Tor. In this ware the line constituting the pattern was produced by pressing a twisted cord or thong into the wet clay, thus obtaining a sunken cable-pattern. Plate 10, fig. A reproduces the pattern impressed on the rim of a pot from this site. The ornament consists solely of straight lines, and, in type if not in detail, agrees well with much which has been found in Devon and Cornwall. The fragments of a pot from another hut at *Smallacombe Rocks* are, on the other hand, unusual in form and decoration, but not in material. The body of the pot is usually thick, but it is the rim in which this thickness is carried to an extreme. This rim forms a heavy cornice, below which are shallow mouldings. The principal feature of the decoration is a band of festoons encircling the pot below the rim, and forned by the impression of a twisted cord. Up to the present this design has not been met elsewhere on Dartmoor. (See Plate 10, fig. B.)

The enclosures known as *Foales Arrishes* lie 330 yards east of Pil Tor, at the head of the Blackslade Water. The enclosures are relatively recent, but in and around them are hutcircles. From this site, which is distant from *Smallacombe Rocks* some one and threequarter miles, came a fragment of pottery which may be cited as a further example of the types prevalent on the eastern side of the Moor. This specimen has the use of the finger nail as a link with the pottery from *Legis Tor*, while, in common with the pottery from *Smallacombe Rocks*, it shows lines formed by the impress of a twisted cord. But, while it shared these features of technique, the pattern of the ornament is in no way related to the other cited examples ; unless, indeed, the arrangement of the nail marks may be supposed to be influenced by the chevron motif, as might be claimed. On the other hand it might well be argued that the nail marks are an early example of design founded on natural forms, and their arrangement suggested by the growth of leaves on a trailing stem. Argument would be unprofitable, and it is sufficient to recognise that the pattern was held to be a pleasing expedient for breaking the monotony of a surface. It remains that in southern Dartmoor nothing in the style of *Smallacombe B* or *Foales Arrishes C* has been found. (See Plate 10, fig C, for a drawing of the pottery from *Foales Arrishes*.)

Pottery without ornament occurs in all districts, and it may be mere chance that the excavations at *Metherel* on the South

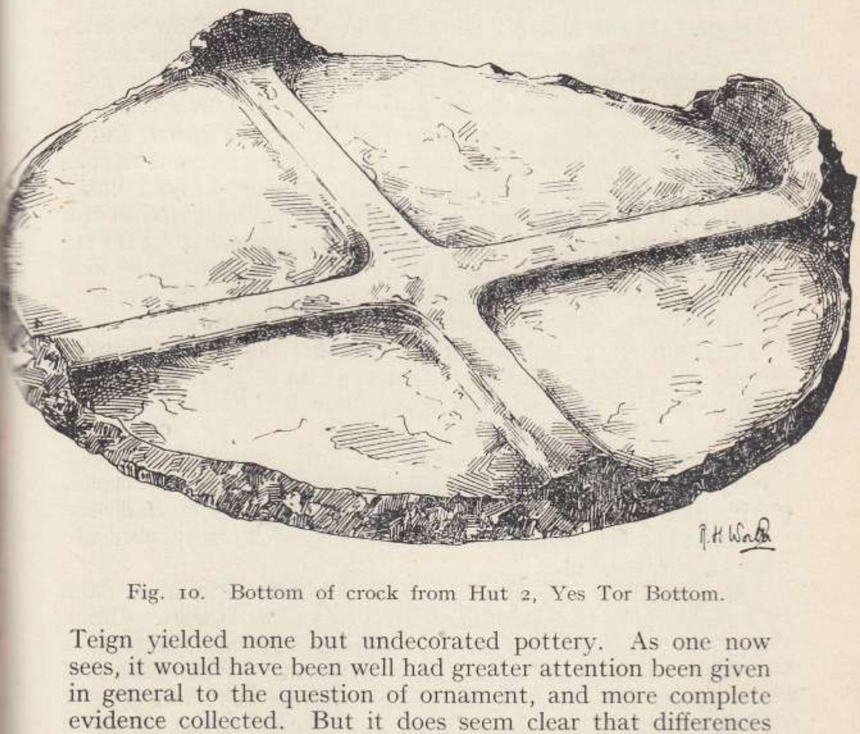


Fig. 10. Bottom of crock from Hut 2, Yes Tor Bottom.

Teign yielded none but undecorated pottery. As one now sees, it would have been well had greater attention been given in general to the question of ornament, and more complete evidence collected. But it does seem clear that differences in taste and method were not merely individual, but also local. I can find no evidence to justify an assumption that these divergencies were associated with difference in period or date.

Flat bottomed vessels, when of large diameter, presented a problem; the strength of the pottery was not suited to this form of construction. Hut 2 at *Yes Tor Bottom*, Walkham valley, yielded the remains of a pot which was 11 inches in diameter at the base. This had been strengthened by the formation of a cross in relief on the inner side of the base (see fig. 10). The method adopted in reinforcing the relatively large plane surface has been noted elsewhere, but this is the one example so far discovered on Dartmoor.

STONE IMPLEMENTS.

Flint chips have been found in most huts which have been excavated with reasonable care. It is probable that many chips which have no secondary working were of real use in practice, and, indeed, may show signs of wear, and obviously have been in use.

There are also implements which EVANS very discreetly suggests may be called "worked flakes"; these show secondary chipping and were obviously shaped for defined purposes; but what those purposes may have been can only be conjectured. Such implements have been found in a number of huts; a good example came from Hut 2, *Metherel*, and is illustrated on plate 11, figs. a and b, a similar implement was found in the open, near *Yar Tor*. Another worked flake, from Hut 4, *Smallacombe*, is described and illustrated in the fifth report of the Dartmoor Exploration committee (plate II, fig. 3, in the report). It is there described as a knife, but could equally well, or better, be called a duck-bill scraper; one is grateful for the noncommittal phrase *worked flake*.

Undoubted scrapers are not infrequently found in the huts; these are chiefly of the horse-shoe type, as at Hut 1, *Whittor*; while in Hut 7, *Foales Arrishes*, there was found a hollow scraper, with two hollows.

Arrow-heads are very rare in the huts; one only has been recorded, from *West Dart Head*. It was barbed and tanged, with one barb lost by breakage. It is possible that one worked triangular flake from Hut 5, *Legis Tor*, had found use as an arrow-head.

On the floor of Hut 4, at *Legis Tor*, I found a flake of flint which had been struck by one blow from a pebble, and had received no secondary chipping. An unusual feature is that a straight edge has been sharpened by grinding and polishing. The grinding is confined to one face, and gives a cutting edge with much the angle of a chisel. (Plate 11, figs. c and d.) Such a tool may with certainty be identified as a knife. I have called it *unusual*; an understatement since, in my experience and, as far as I know, in the experience of others, it is unique, on Dartmoor; but EVANS (*op. cit.* p. 290), describing British flakes with ground edges as by no means common, mentions, but does not illustrate, a number of examples, some of which may in many respects resemble the *Legis Tor* implement.

Whetstones have been rather frequently found in such excavations as I, personally, have conducted. The material is most usually a micaceous grit, often red-brown in colour, sometimes grey. Some of these stones have evidently been shapen. Two good examples are—a whetstone from Hut 2, *Riders Rings*, in the Avon valley. This stone is $3\frac{3}{4}$ inches in length, $1\frac{1}{2}$ inches in width at one end, and $1\frac{1}{4}$ inches at the other end; its average thickness is $\frac{3}{8}$ inch. Its surface bears full evidence of use. (Plate 12.) The second example referred to came from Hut 8, *Legis Tor*, in the Plym valley. Interest attaches to it in that more work had been expended on its shaping, and that work had never been completed. It lay upon a slab of stone upon which it had evidently been ground to shape; and it had been intended to perforate it for suspension, but the drilling, for which a sand-drill was used, had never been completed. The hole, started from each side, had fallen short of meeting in the centre, by a bare film of stone, at the time that the worker laid down his task, to which he never returned; one wonders why. The length is $5\frac{1}{4}$ inches; the width at the end toward the perforation is just under 2 inches; at the other end, or rather a little away from it, the width is $\frac{5}{8}$ inch. The mean thickness is 9/16ths of an inch. (Plate 12.) Most of these stones, however, have had little work expended in shaping them; for instance, a broken, flat pebble, from Hut 2, *Metherell*, in the valley of the South Teign. The shaping of this stone had been confined to grinding the broken edge to remove its asperities. Its dimensions are $5\frac{1}{8}$ inches by $3\frac{3}{4}$ inches, with a greatest thickness of $1\frac{1}{4}$ inches. The natural edges of the pebble have been battered, and there are slight striæ on one face adjacent to the battered edge, and two close-set grooves on the other. Both faces have been smoothed by friction, but one face more markedly. Similar grooves are not infrequent on these stones, and may have been caused by their use for bringing to a point such objects as bone or bronze needles. The face which is shewn in plate 12 is that which bears the grooves referred to.

Mullers have been found in some of the huts, their material in most instances being the same class of grits as was used for the hones. These mullers may have been used for crushing grain, and possibly roots, among which may have been the roots of bracken; EVANS remarks that fern roots are still in use as articles of diet by some races. A muller found in Hut 11, *Legis Tor*, is illustrated on plate IX, Third Report of the Dartmoor Exploration Committee, *Trans. Devon. Assoc.*, vol. xxviii, 1896. It is $6\frac{1}{2}$ inches in present length, oval in section with a greatest diameter of $2\frac{3}{4}$ inches; broken at one end, and at the other worn to plane facets. Except for these mullers no form of grinding implement has been found, not even a saddle-quern.

Slick-stones were the early equivalent of the flat-iron, and lingered in use long after prehistoric days. They have been found in fair number and, for the more part, consist of suitable pieces of altered slate from the metamorphic aureole of the granite. This material, while hard enough to be efficient in such matters as rubbing down seams in sewn skins or coarse fabrics, is soft enough to carry light scores as the result of friction on the material dealt with, and on the thread used in the stitching.

If it is correct to assume that some at least of the pottery which has been found was once in use as storage vessels, then it might be expected that some form of cover was once in use for the protection of the contents. In several huts pieces of slate of a rudely circular form have been found. In one, Hut 12, *Raddick*, "on the left of the entrance was found a rudely circular, thin slab of micaceous slate, unhappily broken by the pick, measuring 9 inches in diameter and ¾ inch thick; and under it were the fragments of a crushed shallow vessel of pottery; part of the lip was found; the mouth would be 7 inches to 8 inches in diameter."

With one possible exception no spindle-whorl has been found. That possible exception is a small broken object from a joint between the paving stones of Hut 2, *Legis Tor*; see fig. 11 a, b, c. This I described as a spindle-whorl, without the expression of doubt, and without qualification. It had features in which it varied from any spindle-whorl known to me, but I had never seen one made in earthenware, and was willing to accept some deviation in type in the unusual material. Last year, however, I had submitted to me a similar object in stone, found by Mr. Egerton Godwin at *Clovelly*, North Devon, fig. 11, f and g. The normal type of spindle-whorl is a short drum, perforated along the axis of the cylinder with a hole which has practically equal diameter throughout its length. There may be a very slight constriction at the centre of the length, the hole having been drilled from either end, and subsequently broached; see fig. 11, d and e, drawn from an example found in the *Lyd Valley* by the late Mr. John Cowling.

The *Clovelly* specimen is illustrated in fig. 11, f and g. It will be seen that neither this nor the object from *Legis Tor* are cylindrical but in each case the vertical section is an oval. In each the perforation lessens in diameter from end to end; in each the perforation expands into a countersink beyond its greatest diameter.

The oval cross-section makes for inefficiency in an object which has to function as a flywheel, and, while prehistoric man did not think in terms of moments of inertia, there is ample evidence that he readily learnt by experience the most favourable disposition of material in his implements. It was not without reason that the common pattern of spindle-whorl was a cylinder. When one finds this type of object which we are considering, in practically identical form at

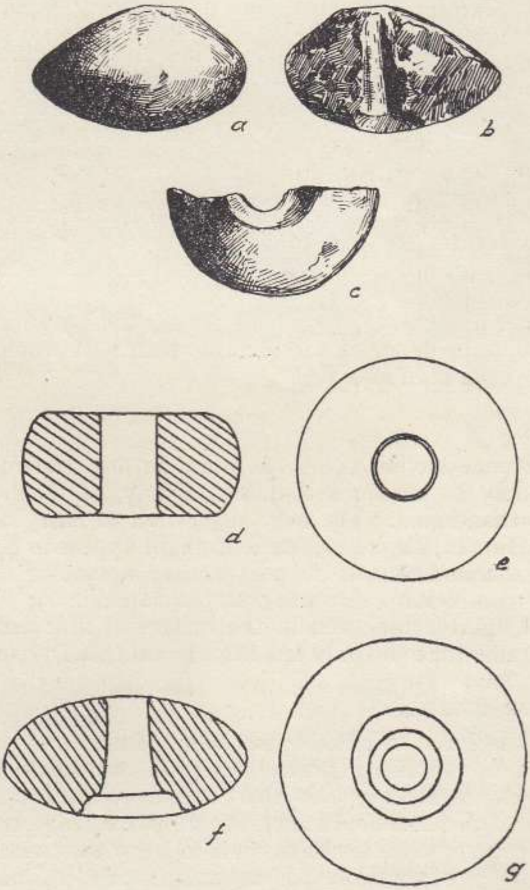



Fig. 11. a, b, c, Spindle Whorl ? from Legis Tor.
d, e, Spindle Whorl from Lyd Valley.
f, g, Spindle Whorl ? from Hartland.

places so far removed as South Dartmoor and the north coast of Devon we may reasonably assume that the type was devised to meet a defined need, and that a common need. Probably its purpose was that of a weight or plummet, and the countersink was formed to house the knot which held the weight on its suspending cord.

Baring-Gould (*op. cit.* p. 47) writes :—" That the occupants of the moor loved to play at games is shewn by the numbers of little round pebbles, carefully selected, some for their bright colours, that have been found on the floors of the huts. That they used divination by the crystal is shewn by clear quartz prisms having been discovered tolerably frequently." This in error ; the number of " little round pebbles " which have been found is quite insignificant, and the proportion of those found which were " brightly coloured " is trivial, possibly three such coloured pebbles have been found. As to quartz crystals, no more have occurred than can be fully accounted for by those naturally present in the Dartmoor soil.

In some huts ruddle (red iron oxide) has occurred, and it may have been brought to them for use as a pigment ; but there are places, *Metherel* for example, where ruddle is native to the soil.

One small quartz crystal was found, the pyramid end of which bore evidence of considerable wear. It would appear to have been used as a drill.

## Bronze.

No bronze has as yet been found in any Dartmoor hut which may be evidence that few, if any, of the huts were hastily abandoned. The only suggestion of hasty departure was at Hut. 11, *Legis Tor*, where it might appear to be implied by the abandonment of the part-worked whetstone at a stage so near completion. Bronze was too valuable for its loss to be held lightly, and even in the matter of flint arrowheads it is notable that one only has been found in a Dartmoor hut.

## Date or Period.

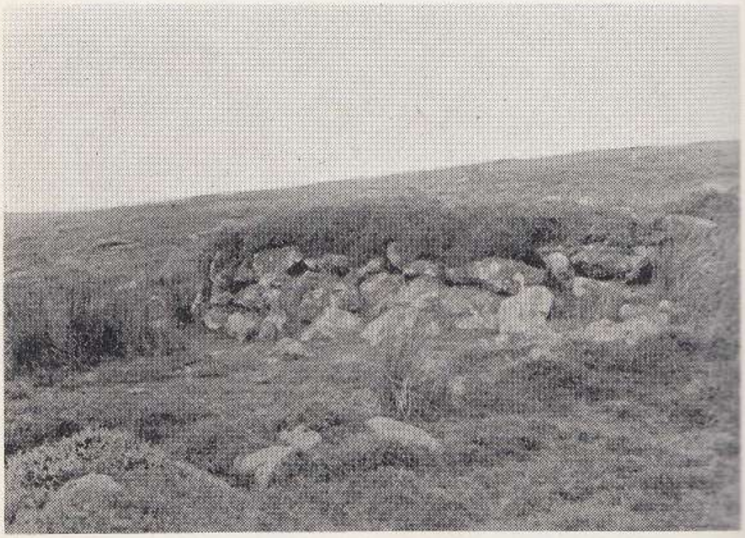
The hutcircles and their associated pounds may be safely assigned to the Early Bronze Age. It can hardly be that the greater number of the huts were ever in occupation at one time ; the land could not have supported the population. On the other hand it is not possible to know the causes which, from time to time led to the abandonment of certain of the huts, and the construction of others. It is curious that what may be called the intensive occupation of Dartmoor appears to have been confined wholly to one stage of culture.

1

2

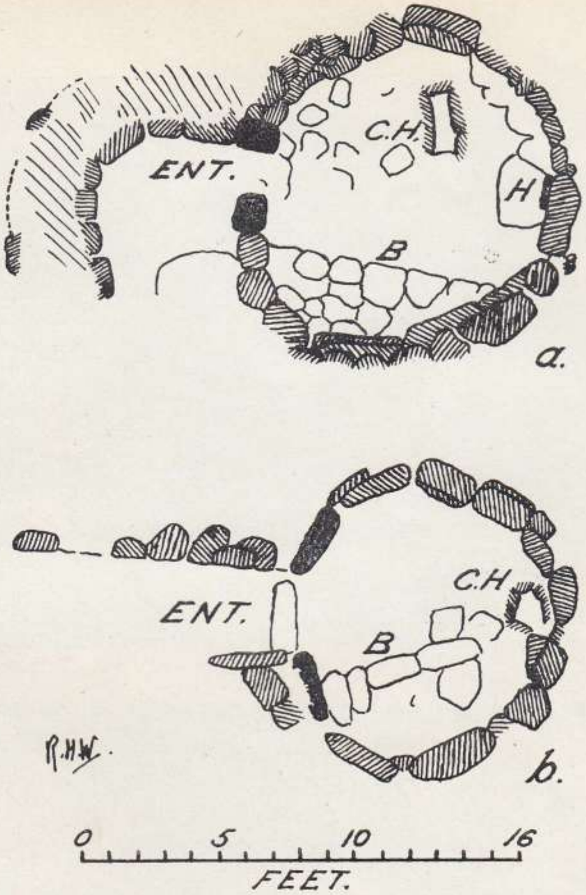
Fig. 1. View of Hut 2, Metherel, looking S.E.
Fig. 2. View of Hut 2, Metherel, looking N.
(Wall from inside Hut.)

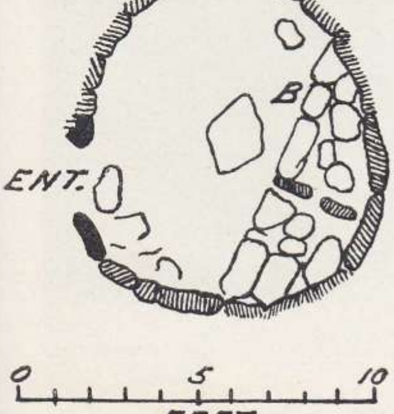
PLATE 6



Hutcircle on Brown Heath, Erme.

*On back of Plate 5*



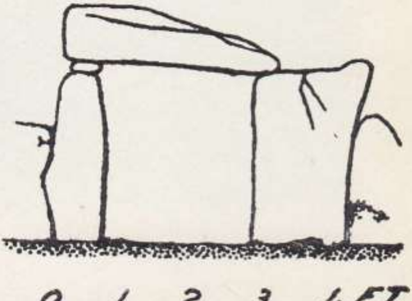
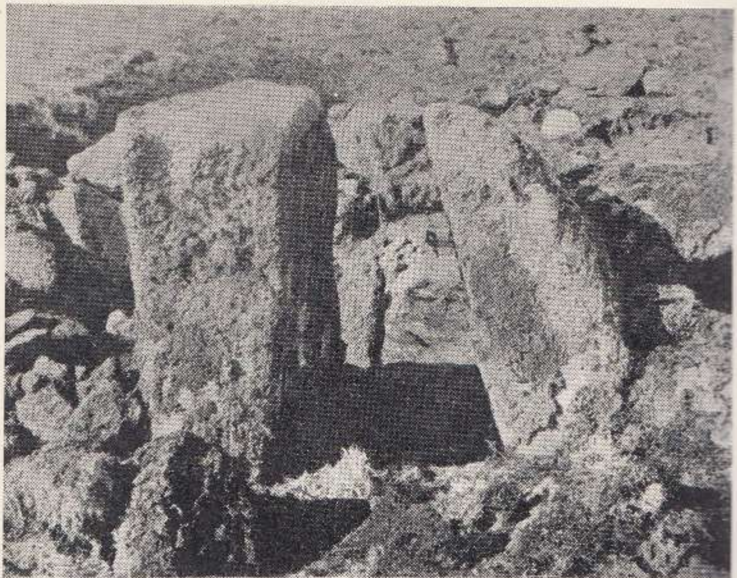




Fig. a. Hut 3, Grimspound. Fig. b. Hut 12, Grimspound.
Fig. c. Hut 16, Grimspound. Fig. d. Entrance Hut 4, Grimspound.

*To face Plate* 6.

PLATE 8

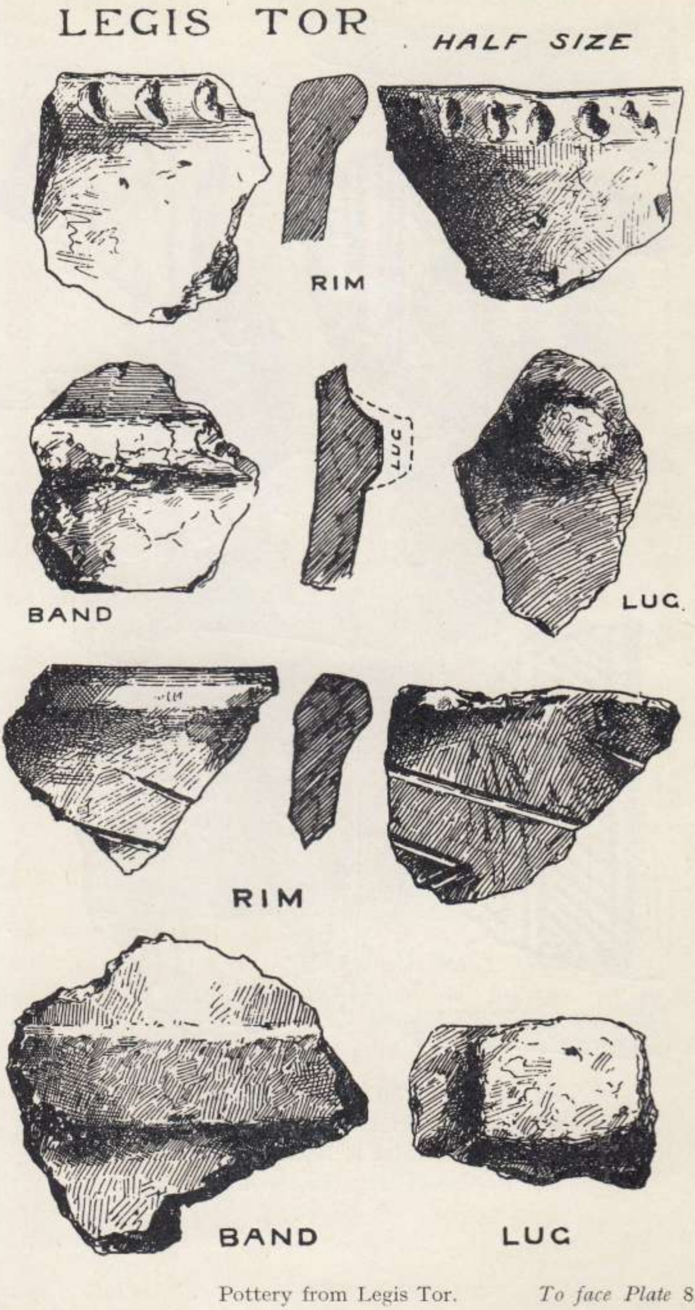


1.

2.

Fig. 1. Entrance Hut 4, Legis Tor.
Fig. 2. Entrance, ruined Hut, Bagtor Down.

*On back of Plate 7.*




Pottery from Legis Tor. *To face Plate* 8.

PLATE 10

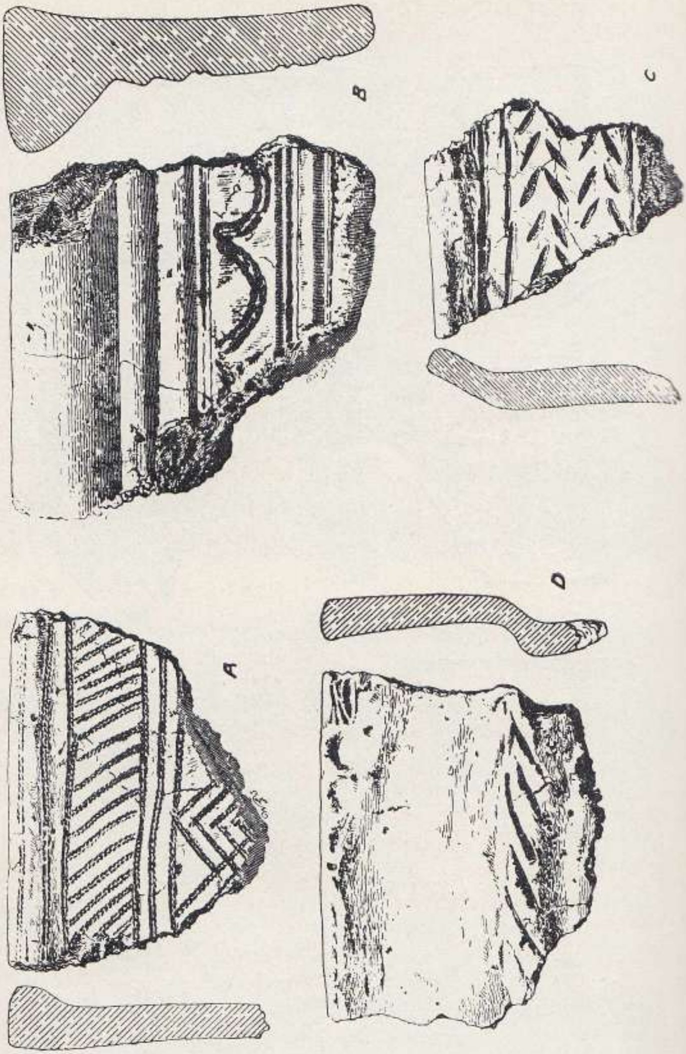
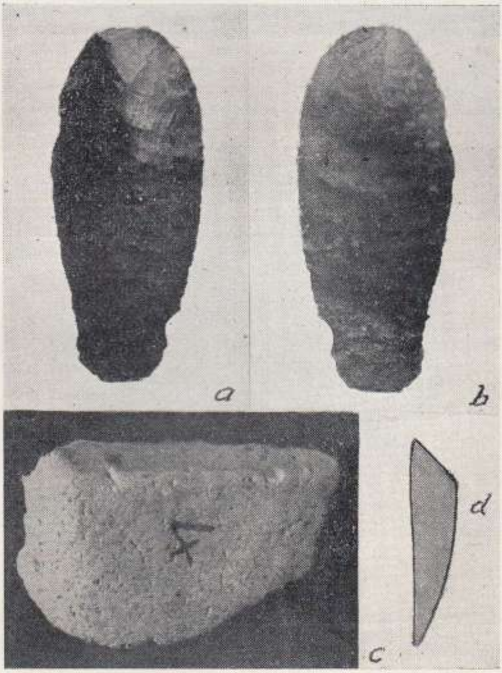


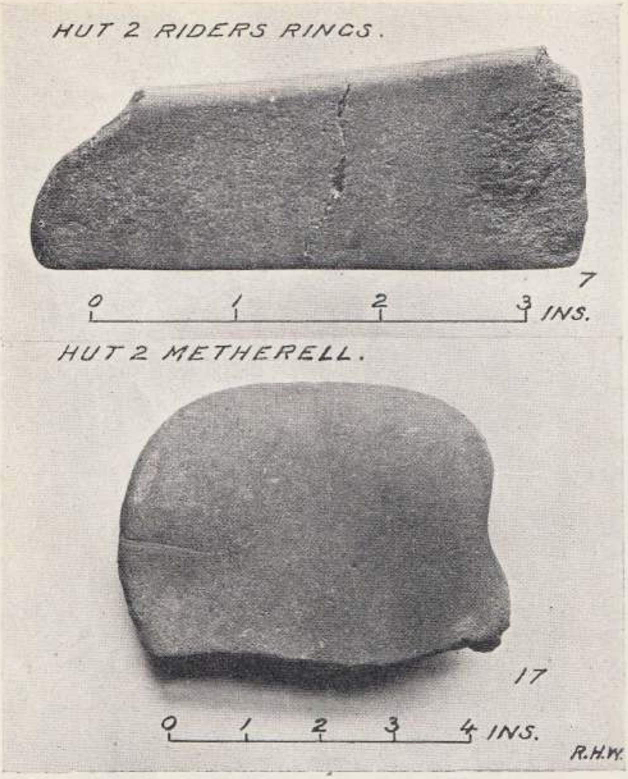

Fig. A. from Hut 4, Smallacombe Rocks x $\frac{1}{3}$.
Fig. B. from Hut 1, Smallacombe Rocks x $\frac{2}{3}$.
Fig. C. from Hut 8, Foales Arrishes x $\frac{1}{3}$.
Fig. D. from Hut 2, Foales Arrishes x $\frac{1}{3}$.

*On back of Plate 9.*

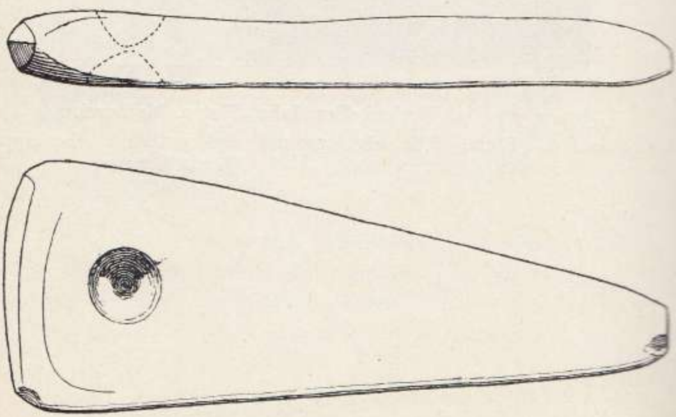



Figs. a and b. Worked flint flake, Hut 2, Metherel.
Figs. c and d. Flake with edge ground and polished (the upper edge shewn in figure), Hut 4, Legis Tor.

*To face Plate* 10.




Hut 8. Legis Tor x $\frac{2}{3}$.



Whetstones from Metherel and Legis Tor.

*On back of Plate 11.*