

Excavations at Kilmelfort Cave, Argyll

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SUMMARY

The excavation of part of a cave at Kilmelfort, Argyll, revealed remnants of a flint and stone industry of 'Mesolithic' character, but dating evidence was restricted due to the previous destruction of the major part of the site by hydro-electric operations. The importance of the site lies in its suggestion of moderate-altitude occupation in shelters and caves, and in the total masking of the entrance by ancient rockfall; comparable sites may well be undisturbed and await discovery.

In 1956 during work for a power station in the Pass of Kilmelfort, 17 km S of Oban, a tunnel was constructed by the North of Scotland Hydro-Electric Board on the SE face of a hill called An Sithean (Hill of the Fairies) (NGR NM 840 148). The blasting operations exposed a small cave partway up the hill; all of the entrance of the cave was removed and about 6 m of its depth, leaving only the innermost part unaffected (pl 1). A small number of flint flakes was recovered from the cave earth eroding out of the cave, and eventually the remaining deposits were excavated by students from the Department of Archaeology, University of Edinburgh. Several hundred flint and quartz artefacts were recovered from a well-defined grey occupation deposit resting on a hard clay subsurface of insoluble limestone residue of illite, kaolin and chlorite. The deposit also yielded a few scraps of teeth, tentatively identified as red deer, and charcoal fragments too sparse for radiocarbon dating. The tools in the industry include backed blades, round scrapers and knives, and burins; cores, waste flakes and chips make up the remainder. In the absence of any firm dating evidence, it is difficult to comment on the chronology of this occupation, but it is likely to be in the range 6000-4000 BC, representing the debris of a temporary shelter of a hunting and gathering group.

The recovery of this lithic assemblage under such circumstances does not permit any detailed examination or assessment of the occupations in the cave. From the outline of the cave as it was represented on the hillface, and from the slope of the hill, it is estimated that the original cave depth, from entrance to the back wall, was perhaps as much as 10 m. Its height at the entrance may have been 3 or 4 m, and at the back it was barely 1 m. The original width may have been 4 m, narrowing to 2 m near the back. The cave entrance was only c 100 m above sea level, and it would have served well as a shelter for temporary occupation during the seasonal rounds of hunting and gathering groups. After abandonment by the last of these groups, perhaps due to deposit build-up, or local environmental change such as the effects of water or wind, the cave mouth was sealed by rockfall and was totally obscured by scree and later vegetation. These would also have covered the occupation debris at the cave entrance and immediately outside it, where most of the activities would have taken place, butchering, cooking and eating, working of tools

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and equipment, and probably sleeping. The interior of the cave, to judge from both ethnographic and archaeological evidence, would have had far less intensive occupation and might have served only as a store or dump for occasional unwanted debris.

There are not many cave sites in Scotland where well-sealed Mesolithic occupation deposits occur, although the caves and shelters near Oban are important and have been known and investigated for many years. The Kilmelfort cave, sealed by scree, and with apparently no later disturbances, would have been unusual if not unique. However, its existence was unknown to field archaeologists in the area, and to the workmen of the Hydro-Electric Board, before the blasting operations which not only carried away all of the front of the cave and its presumably thick occupation deposits, but also brought down huge quantities of shattered rock which crushed the surviving inner deposits. Rainwater at once began to erode and sort the deposits. In front of the remainder of the cave, a platform was built to hold a blockhouse for the power station pipe, and this must have severely if not totally damaged the external occupation deposits from the cave. All in all, the episode represents an opportunity lost, but little was possible beforehand and in retrospect only the presence of an alert observer, at the precise moments before blasting commenced, could have noted the presence of the cave and perhaps temporarily halted the operations.

The occupation deposits were probably rich in animal bones, in charcoal layers and perhaps hearths, and in lithic material, judged by the various traces recovered in the excavation. A wide band of material had been spread by the blast, landslip and rainfall, and this must represent only a fraction of the original cultural deposits. Flints were found many metres downslope from the site, and many more such artefacts must now be on the hill lower down.

The surviving natural deposits in the back of the cave consisted of a mixture of illite (70%), kaolin (10%), chlorite (10%), haematite (5%) and quartz and felspar (5%), representing the insoluble residues of the original limestone in which the cave was formed (fig 1). Within these

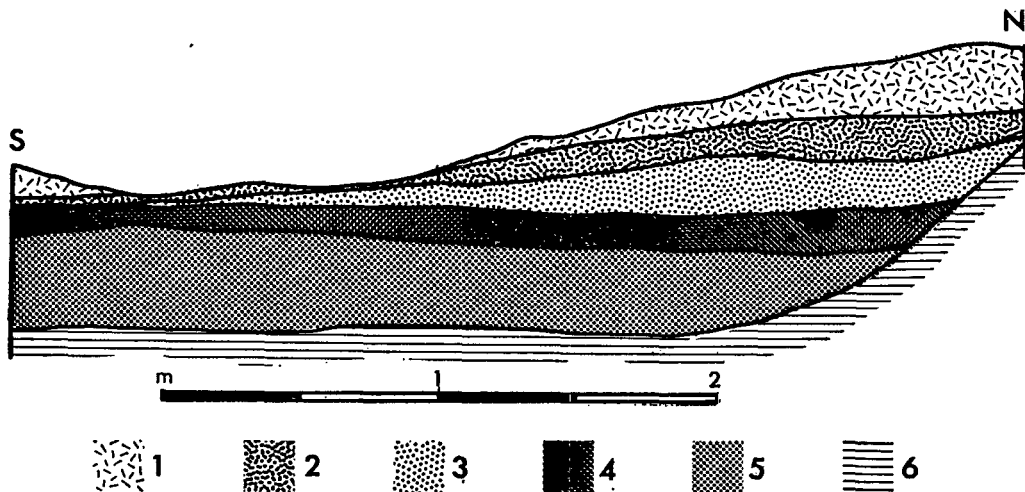


FIG 1 Section drawn near the W wall of the cave at Kilmelfort, showing the well-defined occupation deposits (4) sealed between the cave earth (5) on the cave floor (6), and the upper red-brown earths (3 and 2) with rock fall and scree (1) overlying. A few Mesolithic artefacts were also recovered from the upper part of layer 5 and lowest part of layer 3, the former representing trampling and churning by humans and other animals, and water washing, the latter caused by subsequent reworking by animals. 1, rock fragments; 2, brown cave earth; 3, red-brown cave earth; 4, grey-brown earth with charcoal smears and stone tools; 5, grey-buff cave earth; 6, sterile clays and silts leading into unaltered limestone. The cave entrance was to the south

the evenly bedded occupation deposits covered an area of approximately 2.5 m square, with a narrow extension along the righthand cave wall (viewed from inside.). At base, resting on the clays, silts and decomposed limestone floor of the cave, was a light grey cave earth 30 cm thick, in which were found a few stone artefacts. Above was a darker grey earth, only 10 cm thick, with charcoal flecks and a majority of the stone artefacts. This was sealed by a red earth and then a brown earth deposit sloping down from the back of the cave, almost wholly sterile, partly air-borne in origin and water-washed, and sealed by rock scree at the back. The few artefacts found in the upper cave earths were probably intruded by animal action from lower deposits. The amount of churning by humans, and burrowing by other animals, may have moved some artefacts both vertically and horizontally, but in any event the bulk of the cultural material was concentrated in a relatively narrow band, the darker grey cave earth of 10 cm thickness. No hearths were found, nor were they expected, and only a few charcoal fragments were recovered, too sparse for radiocarbon dating although they have been preserved and may one day yield a date in a small-sample accelerator. Only a few fragments of bone were recovered, none identifiable with certainty but remains of teeth were identified as red deer by A S Clarke. A small red ochre stub was also recovered, perhaps the worn-down remnant of a pencil but the haematite component in the earths may be a natural source. Apart from these sparse objects, only the lithic component remains of the human occupation.

The lithic material consists of c 735 cores, flakes, blades and chips of flint, chert and quartz, all locally available to the groups seeking suitable stone for tool-making. The nearest sources of flint are likely to have been beach pebbles along the western coasts, but less weathered material could have been obtained from Ardnamurchan and Morvern on the mainland, or from Mull only a relatively short distance away by boat (Wickham-Jones & Collins 1978). The few pieces of chert in the Kilmelfort assemblage could have come from Kilchrenan near Loch Awe, or from Morvern or Strontian, but beach deposits may well have yielded the pebbles required for flaking. Quartz is abundantly represented at Kilmelfort and its source is likely to have been in beach deposits near the site; a number of pieces show their origin in water-rolled pebbles, as does the single hammerstone recovered.

The quartz artefacts recovered from the Kilmelfort cave consist of the following groups:

Hammerstone	1
Large flaked cobble	1
Flake-blade cores	5
Large flakes (35–55 mm)	6
Medium flakes (20–35 mm)	82
Small flakes (10–20 mm)	90
Chips (2–10 mm)	146

The flake groups are in fact a continuum but for convenience they have been divided by length. Flaked quartz is notoriously difficult to qualify in terms of technique, identification of platforms and retouch, but at Kilmelfort a clear flake-blade tradition was present. Of the five cores, four yielded long straight flake-blades from cortex or roughly prepared platforms, and within the medium and small flake groups there are about 15 such flake-blades. About 10 of the chips, including at least one burin spall, were detached from these selected cores. The remainder of the flakes, including all the large flakes and most of the chips, were struck from cobbles and from angular lumps of quartz, and they present a wide variety of shapes, often with wide hammer-struck platforms and many bearing traces of cortex. The purpose of these artefacts was twofold. A few were carefully flaked into characteristic tools along the same technological and typological lines as was the flint. Others, however, were selected for natural edge-use, as cutting, drilling, and wedging implements. Some utilization of these edges is clearly apparent, but without further experimental work it is difficult to identify all such traces without considerable uncertainty. One thick quartz flake was retouched into a heavy high-backed steep scraper, and one blade was worked into a backed knife; others have less clear signs of working (fig 2, 15; fig 3, 19; fig 2, 22 respectively).

The flint, and a few chert, artefacts recovered from the Kilmelfort cave consist of the following groups:

Flake-blade cores	2
Large flakes (35–55 mm)	11
Medium flakes (20–35 mm)	79
Small flakes (10–20 mm)	75
Chips (2–10 mm)	245

Many of the small flakes and the chips represent a part only of larger pieces, snapped off during use or manufacture; among the chips, for example, are 17 fragments of backed blades. The variable quality of flint must have played a part in these and other breakages. The colour of flint varies from an abundantly represented light grey, patinated white, to darker greys and a few browns and pinks. Cortex is present on some small and medium flakes, on one-third of the small scrapers, and the cores, only two, are heavily reduced by the extraction of many flakes. All this suggests that rather sparse supplies of beach or river flint were being used, and that large nodules of good quality flint were not readily available. The fact that most of the implements capable of being reworked are heavily reduced from their presumed original size also suggests a rather limited supply of good quality flint in large nodules.

The technology employed for the production of primary and secondary flakes was a soft hammer percussion, to judge from the rather few platforms and intact bulbar surfaces (fig 2, 21–23). The initial breaking of nodules and pebbles may well have been hard hammer percussion, but very few of these characteristic platforms and bulbar surfaces survive. The two cores are worked-out. One (fig 2, 25) was probably never more than a small flint pebble, and it was worked down until only two adjacent platforms survived, to yield short but narrow blades; one further alignment of scars indicates a third convergent platform. The other core (fig 2, 26) has no cortex but one facet is heavily polished showing an origin in a rolled flint pebble; three platforms survive on the core which is triangular in cross-section and which yielded flake-blades rather than true punched blades. There is also one clear ridge flake (fig 2, 20) which served to refurbish a (missing) core when it was carefully removed.

Of the 400 pieces of flint and chert, only a small number bear signs of deliberate retouch in the making of specific tool types. Many others show the marks of utilization as edge-tools, with bruising and smoothing of the naturally sharp edges of a fresh flake or blade. From the state of the site, however, it is considered unlikely that examination for wear, through striations and polish, could be conclusively allocated to the Mesolithic group, but this possibility for future research should not be totally excluded. Of the apparently retouched implements, the following rather generalized types may be identified (quartz tool types in brackets):

Scrapers, round/oval	14 (1)
Scrapers, end	6
Scrapers, side	0 (1)
Scrapers, side-end	2
Backed blades	11(1)
Backed blades, broken	21
Tanged point	1
Burin	1
Burin, pseudo	5
Burin spalls	25 (1)
Burin, scraper	3
Denticulate	1
Wedge flakes	2 (2)
Bipolar flakes	7
Retouched, miscellaneous	9 (4)

There is no virtue in devising percentages of either these flint and chert tools, or the quartz implements

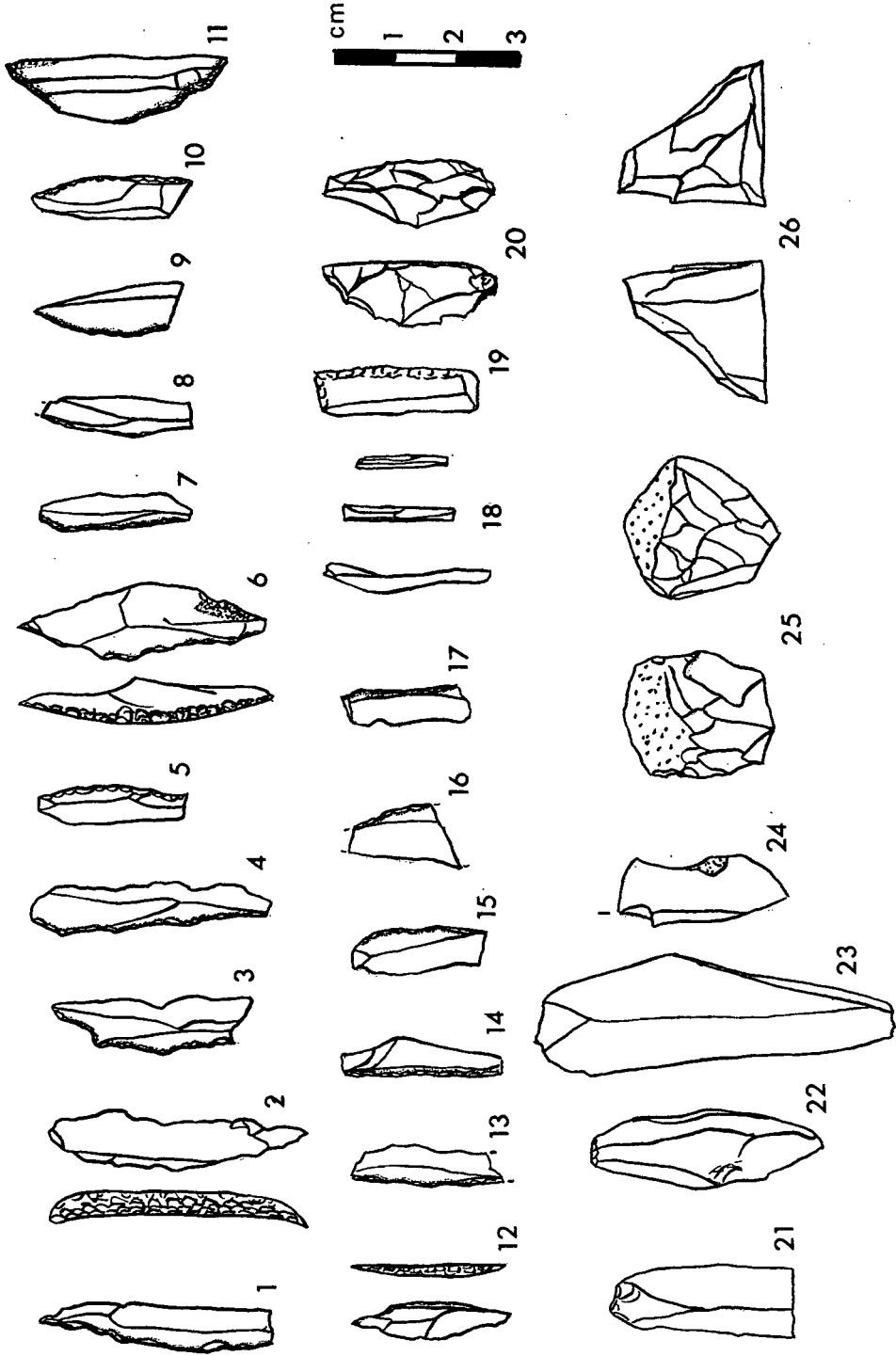


FIG 2 Flint and quartz (19) implements from Kilmelfort cave. Backed blades, 1-5, 7-17, 19; tanged point, 6; spalls, 18; ridge flake, 20; flake-blades, 21-23; burin, 24; cores, 25-26

given the wholly artificial procedures in and around the site, but a few observations may be made concerning the character of the tool classes.

The scrapers, so-called, consist in part of small round or oval flakes, few with any sign of platform or bulb on the ventral surface, and thus representing worked-out tools now at the limit of their usefulness (fig 3, 1-5, 7, 8, 10, 12, 15, 16, 18-20). The widths range from 13 to 18 mm, and lengths of complete pieces from 15 to 20 mm, with most falling into the button-scraper category. They bear retouch often extending 5 mm or more up on to the ventral surface, and half are high-backed while the others are flatter; the single quartz example (fig 3, 15) is larger, 26 mm wide and 22 mm long, with a high back carefully retouched in absolutely characteristic fashion except that two of the flake scars have been extended up and across the top of the ventral surface, a particularly skilful example of stone-working.

The end-scrapers are more varied (fig 3, 6, 9, 21, 23-25), with several barely different from the round scrapers except in the more restricted area of retouch. The others are more traditional, and none is complete, having broken across the end; this may indicate the manner of hafting or use, and perhaps some of the unretouched broken flakes would fit on to the surviving ends. There are three implements with retouch comparable to the above, but applied to the side (fig 3, 22) or the side and end of the flake (fig 3, 11, 13). Three others have similar retouch but the tools also bear burin facets (fig 3, 4).

The burins are rather feeble specimens apart from one typical thick flake with a clear spall removal (fig 2, 24). However, there are 26 absolutely characteristic spalls (fig 2, 18), in lengths from 13 to 23 mm, and these clearly indicate the former presence of burin-retouch. It will be remembered that considerable uncertainty now exists about the function of the burin as a tool, but none the less the technique of detachment of long spalls existed here.

Of the other retouched pieces, the group of bipolar artefacts represent a mixture, from bar-like artefacts flaked at both ends (fig 3, 26), to a flat piece used more or less as a core (fig 3, 27), but the effect of most of the group is rather like that of the wedge-flakes (fig 3, 17, 28), where a flake shape has been produced to retain ascending scar surfaces from the base of the core and from the sides as well; the effect is a wedge with a natural sharp edge at base, and both flint and quartz were used in this way. The remainder of the retouched pieces, apart from the backed blades, are rather nondescript and a number of the quartz flakes also bear one or more retouching scars, difficult to discern and characterize.

The flint, and one quartz, blades are extremely interesting as they exhibit several features which allow some comparisons to be drawn with other industries in western Scotland. Had the Kilmelfort site been written up when it should have been, such comparisons could not have been made, but more on this will be mentioned later. There are 13 more or less complete backed pieces, and 21 fragments. Most are true punched blades with characteristic minute platform and diffuse bulb, narrow and with more or less parallel sides. Retouch was applied from the ventral surface usually, but one heavy specimen was blunted along one edge from both faces (fig 2, 2); the normal retouch was designed to blunt the edge and followed the line of the blade edge, removing the thin and sharp intersection of dorsal and ventral faces, thinning the blade, and in this way some control over the final overall shape of the tool could be imposed. This is important to recall when certain specimens are noted.

The backed pieces can be classed into two groups by size alone; six pieces are larger than the others, with lengths from 32 to 40 mm (fig 2, 1, 2, 3, 4, 6, 11), compared with the others which group in the 23-27 mm range (fig 2, 5, 7-10, 12-17, 19). The normal retouch on this smaller-sized group produced straight backed blades, some blunted on the left edge, others on the right (when all bulbar surfaces are orientated in the same way). At least four of these were only partly blunted along one edge, and one of these may have been a slender tanged point but this is not certain.

The six longer and larger blades form a varied group (fig 2, 1-4, 6, 11). One (4) has a straight blunted edge (39 mm long), one (1) has slightly curved backing (27 mm), and a third (2) is distinctly curved and backed from base to tip (41 mm). The fourth piece (3) probably broke at a fault in the flint, thus completing what is now a trapeziform blade (32 mm), possibly intentionally; the fault is so large that the blade was probably never more than it is at present. One of the remaining two pieces (11) also appears to be a trapeze although it could be classed as a tanged point. It bears blunting retouch for 21 mm along the left edge from the base (bulbar end), with a 13 mm gap of a natural edge before the constriction to a sturdy point was achieved by steep retouch over 11 mm; the piece is 35 mm long and its thickness (5 mm) may argue against classification as a trapeze rather than as a relatively heavy tanged point. The other piece (6) is 40 mm long with blunting retouch along its entire left edge, constricted to the point and narrowed to the base, and less blunted retouch for 15 mm at the base of the right edge, thus forming what appears to be a definite constriction or tang. It is certainly in the tanged point group.

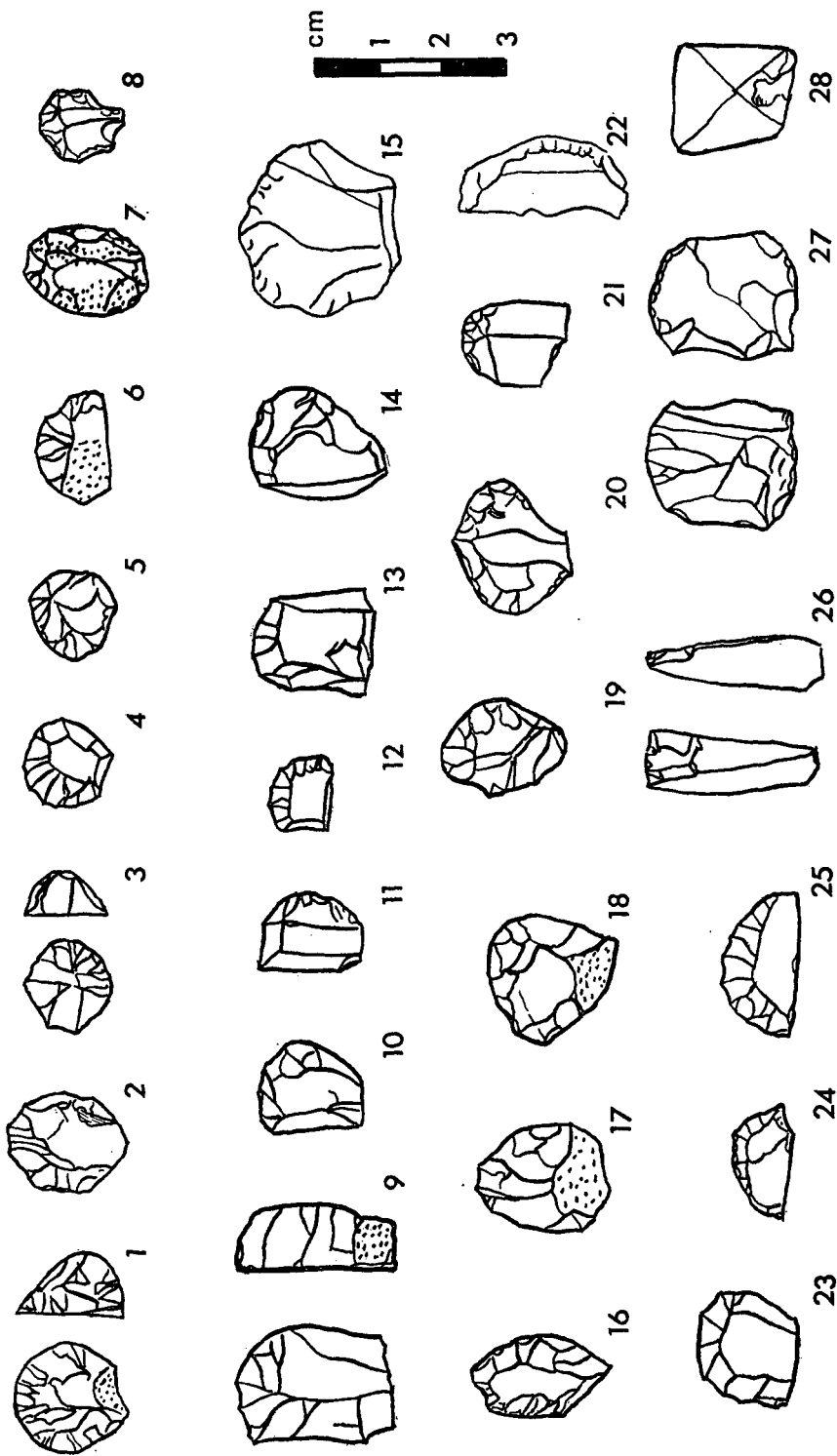


FIG 3 Flint and quartz (15, 22) implements from Kilmelfort cave. Round/oval button scrapers, 1-5, 7, 8, 10, 12, 15, 16, 18-20; end scrapers, 6, 9, 21, 23-25; side scraper, 22; side-end scrapers, 11, 13; burin-scraper, 14; wedge flake, 17, 28; bipolar flakes, steep 26, flat 27

These pieces have been described in some detail in order to allow comparisons to be drawn with the well-dated industrial features of some of the assemblages from the island of Jura. In the absence of dating evidence from Kilmelfort, it may be debated whether such an academic exercise is worth it, but one or two suggestions will none the less be made. The recent summary of the Jura material (Morrison 1980, 162–4) and further comments (Mercer 1980), with original descriptions (Mercer 1968; 1970) allow at least a superficial comparison between Kilmelfort and the earliest industries of Lussa Bay and Lussa Wood I, the intermediate industries of Lealt Bay and North Carn, and the later industries of Lussa River. The general character of the Kilmelfort assemblage seems to rule out affinities with Lussa River in the latter's content of small geometric microliths and narrow rods, the former's large blade tradition and well-characterized scrapers. The Lealt Bay industry also contains microlithic geometric forms and rods not present at Kilmelfort although larger single-backed blades occur at both sites. The Lussa Bay assemblage, believed to be the general contemporary of Lussa Wood I, contains larger blades, well-defined end scrapers on flakes and blades, button scrapers, few scrapers on heavy primary flakes, smaller varieties of backed blades, and points, and heavier trapeziform and curved backed pieces; in all of these aspects the Kilmelfort assemblage is comparable. Symmetrical points and isosceles triangles are lacking from Kilmelfort, however. The tanged point fragments from both Lussa Wood I and Lussa Bay have been the subject of a special study by Mercer (1980) and here the Kilmelfort piece may find close and significant analogies. If so, it suggests that the Kilmelfort assemblage may belong to an earlier phase of the settlement of Scotland rather than a later one. But the argument is typological, and dangerous to advance other than as a suggestion subject to withdrawal in the light of any new and firmer evidence.

OTHER SURVEYS AND EXCAVATIONS

During and following the work at Kilmelfort a small programme of field survey was devised in an attempt to locate further cave and shelter sites of the Mesolithic in the region of Loch Melfort. Eventually this survey, financed by the Crowther-Beynon Fund of the University Museum of Archaeology and Anthropology, Cambridge, was brought to an end due in part to the long distances required to get into the field, and to the development of other areas of interest. By then, several possible sites had been located and superficially examined; preliminary notes appeared in *Discovery and Excavation in Scotland* 1958, 2; 1961, 10; 1963, 9.

One of these sites lay on the small island of Shuna, N of Lismore; on the western coast of this island a series of small rock shelters was discovered and two were sampled. The larger, at NM 915 497, consisted of a shelter 9 m wide, 3 m deep, set in the 30 m high escarpment which backs the 8–10 m raised beach in this area. The shelter contained a basal beach deposit, and a shell midden approximately 60 cm thick with abundant remains of limpet, periwinkle, whelk and mussel, and several charcoal spreads, overlain by 50 cm of waterlaid silt, decomposed limestone and fallen stones. The shelter dipped into the cliff and therefore collected vast quantities of run-off water. An adjacent small shelter, merely a 1.5 m overhang of the cliff face, also contained a shallow midden deposit with limpets and sheep bones of a small breed of Soay or Turbary type. One flint flake was found in the side shelter, and several abraded pebbles ('limpet-hammers') from the main shelter midden; the few battered quartz and slate fragments from the main shelter are nondescript, not necessarily of human workmanship, and certainly not of diagnostic Mesolithic character, but the shelter was at some time in the past certainly occupied, and could repay further investigation.

Inland and to the N of Kilmelfort, the high point of land called the Crag of the Caves

at NM 822 175 was surveyed and several shallow rock shelters noted. These lie at over 200 m OD and are exposed to wind and weather. From one shelter, 4 m wide and only 1.5 m deep, a small cache of flint and quartz artefacts was recovered from an area partly exposed by animal action, and between outcrops of living rock and rock falls. The artefacts consist of flakes and flake-blades, with some utilization and miscellaneous retouch. The recovery of such isolated artefacts from shallow shelters has been noted on other occasions by M Campbell (1962, 6-8).

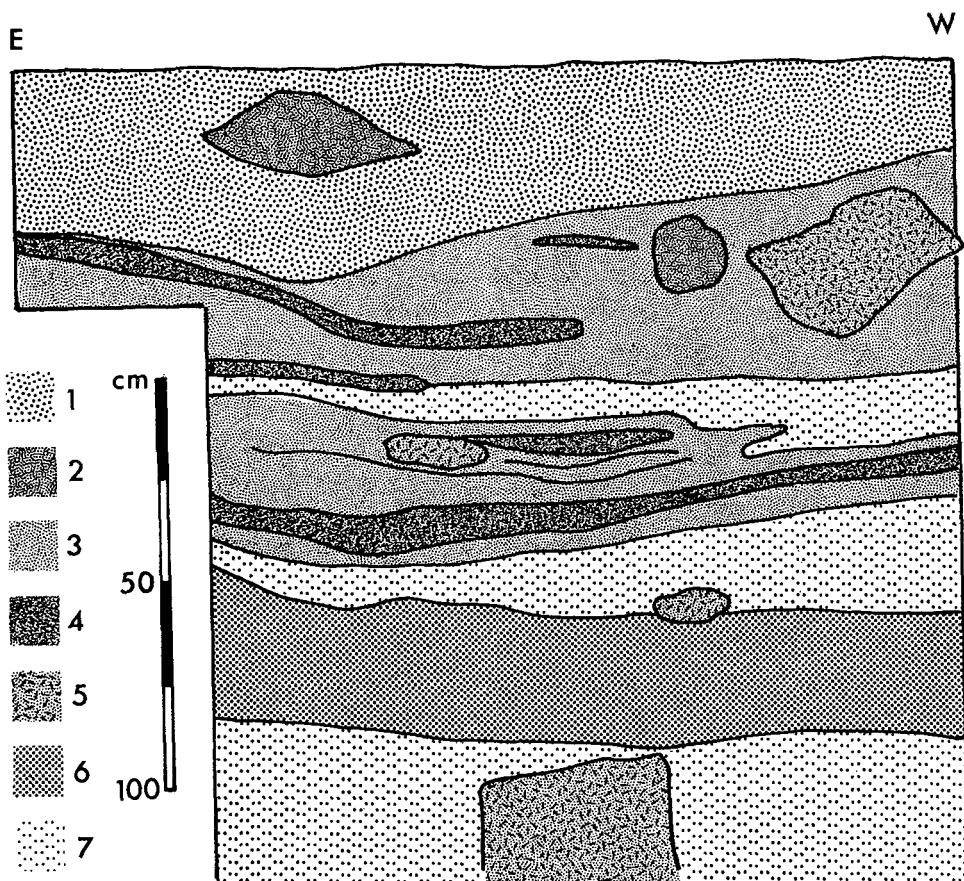


FIG 4 Section in the main trench of the cave at Tiretigan, showing the well-defined occupation deposit (6) resting upon the beach sands (7) and rock base, and covered by later wind-blown sands (also shown as 7) and occupation levels with charcoal lenses (3 and 4), with cave earth (1) and stones (5) overlying. Quartz artefacts and animal bones were recovered from the lowest occupation deposit, with further bones and quartz fragments from the upper deposits. There were numerous animal burrows and tunnels (2) in the upper series of deposits

Stratigraphical evidence was obtained from the final site to be noted here. This site, to the S near Kilberry, was located by M Campbell who gave valuable advice and assistance on this and on other occasions during the survey. The cave, at Tiretigan (NR 719 608), extends into the cliff which rises from the raised beach of c 8 m OD. The base of the cave consists of beach cobbles and sand with shells. The cave is 12 m long, and 5-6 m wide at its S-facing mouth; this width continues for about 6 m, where the cave constricts abruptly to a width of barely 2 m. The cave floor as

found sloped up 1 m at the rear, and there was a small mound of fallen rock and downwash earth at the entrance to the S. The floor inside had been trenched in part at an earlier time. Two small areas were examined along the W wall, one in the outer and wider part of the cave, the other in the narrower inner part. The section (fig 4) is the S face of the outer trench. The cave base was not conclusively seen but the large rock at base probably represents a part of this complex which would consist of beach cobbles, sand and the rocky cave floor. Sterile sands were encountered at 2 m depth, and immediately above was a dark occupation layer of sand, earth, charcoal, shell, bone and quartz fragments, sealed in part by wind-blown sands. Above these was a well-developed cave earth with charcoal lenses and animal bone and shell, and a few quartz fragments. This was separated from an upper and more recent cave earth by further yellow sands and from observations in the other trench it seems likely that this whole upper complex of two cave earths separated by a thin lens of sand represents one single episode of occupation. Modern soil, hearths, rocks and animal burrows lay over the whole sequence. The early occupation did not yield charcoal in suitable condition for radiocarbon dating, due to percolation of water from the cliff face and cave walls, and to burrows of animals. Stratification above the raised beach deposits suggests a period not before the fourth millennium BC, and the likelihood is that this lowest occupation may be of the third or second millennium BC; it could indeed be even later.

The stone assemblage from the occupation consisted of several hundred pieces of quartz and one flint chip. Many of the quartz objects were shattered lumps and chips, and bruising of edges was taken to be naturally caused by wave action and rockfall. The difficulties of examination of a rough quartz assemblage are obvious, and experimentation has only partly clarified the problems. A small number of flakes exhibit reworking of a character likely to be deliberately produced rather than naturally caused. About 20 pieces, in size from 25 to 50 mm long, showed signs of utilization, generally along an edge where two faces met at a steep angle. Ten other pieces carry retouch, directed from the bulbar surface, along all or part of one side of the flake; this retouch is steep and may be caused by heavy utilization. Seven small flakes, 15–25 mm long, were retouched into round or nosed scrapers, most of them rather feeble (fig 5, 1–3). Five flakes with burin facets were noted (fig 5, 4), three awl-like pieces (fig 5, 7), and one wedge flake (fig 5, 8). A probable microburin exists in the assemblage, and a number of flake-blades, with typical dorsal scars, and a worked-out core, show that some controlled flaking was practised. All in all, this is a very undistinguished assemblage. What are required are more data on the flaking of quartz, and more direct comparisons with naturally flaked quartz.

The animal remains from the site were identified by Dr G N Bailey (Cambridge). Bones of cattle and pig were recovered through the deposits, including the following from the lowest occupation:

Cattle *Calcaneum* leftside adult
 Pig *Ulna* rightside juvenile
 Pig 2nd phalange
 Cattle lower incisor left adult

One piece of bone was heavily notched, as if it had been used as an anvil.

The finds from all these sites have been deposited in the National Museum of Antiquities of Scotland.

CONCLUSIONS

As Morrison has said, the Mesolithic of Scotland has had relatively little detailed and persistent work carried out in recent years (1980, 154). Notable exceptions in western Scotland are the work of Mercer on Jura, noted above, and continuing research on Oronsay by Mellars. The sites described here do little to fill the gaps posed by only sporadic survey and discovery,

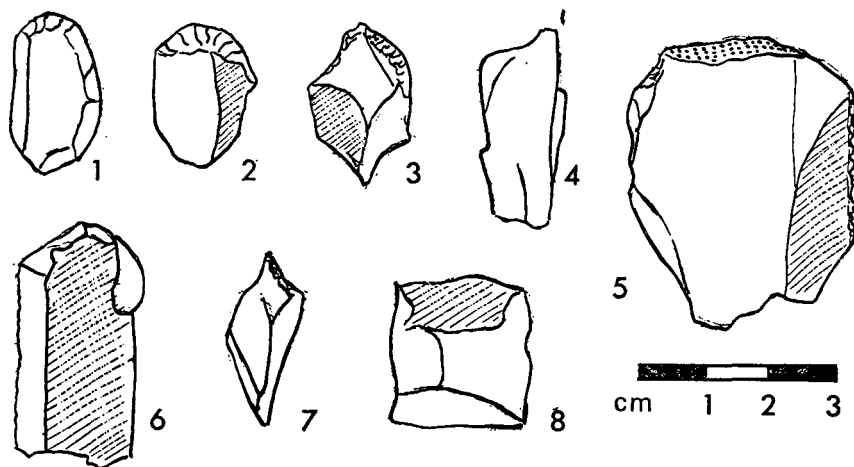


FIG 5 Quartz implements from Tiretigan cave. Round or nosed scrapers, 1-3; pseudo-burin, 4; large utilized flake, 5; linear fracture flake, 6; awl, 7; wedge flake, 8. The original cortex or primary fracture plane is shaded

by few modern excavations, by a scarcity of environmental studies, and by inadequate geological and geophysical dating programmes. None the less, the Kilmelfort cave demonstrates that excellent opportunities may exist for the identification of stratified and sealed cave deposits, with opportunities for preservation of bone and other materials. A well-defined research design and persistent surveys are required. There are other high-level caves such as Kilmelfort, and the Tiretigan cave is only one of hundreds of caves and shelters at the back of the recent transgression beaches along the western coast. Investigation of a sample of such a great series of sites would repay archaeology with information about man's presence along the coast from 4000 BC to the recent past.

REFERENCES

- Campbell, M 1962 'Mid-Argyll: an archaeological survey', *Proc Soc Antiq Scot*, 95 (1961-2), 1-125.
 Mercer, J 1968 'Stone tools from a washing-limit deposit of the high post-glacial transgression, Lealt Bay, Isle of Jura', *Proc Soc Antiq Scot*, 100 (1967-8), 1-46.
 Mercer, J 1970 'Flint tools from the present tidal zone, Lussa Bay, Isle of Jura, Argyll', *Proc Soc Antiq Scot*, 102 (1969-70), 1-30.
 Mercer, J 1971 'A regression-time stoneworkers' camp, 33 ft. O.D., Lussa River, Isle of Jura', *Proc Soc Antiq Scot*, 103 (1970-1), 1-32.
 Mercer, J 1980 'Lussa Wood I: the late-glacial and early post-glacial occupation of Jura', *Proc Soc Antiq Scot*, 110 (1978-80), 1-32.
 Morrison, A 1980 *Early man in Britain and Ireland*. London.
 Wickham-Jones, C R & Collins, G H 1978 'The sources of flint and chert in northern Britain,' *Proc Soc Antiq Scot*, 109 (1977-8), 7-21.

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An Sithean, Kilmelfort, Argyll. The destruction to the hillface and downslopes by blasting operations is evident. The remains of the Kilmelfort cave lie at the head of the pipe



Rescue excavations below the cave. The eroding cave deposits lie within the innermost part of the cave, as well as in front. The blockhouse is in the left foreground. The scale is 6 ft