2 THE EXCAVATION: STRATEGY AND TECHNIQUES

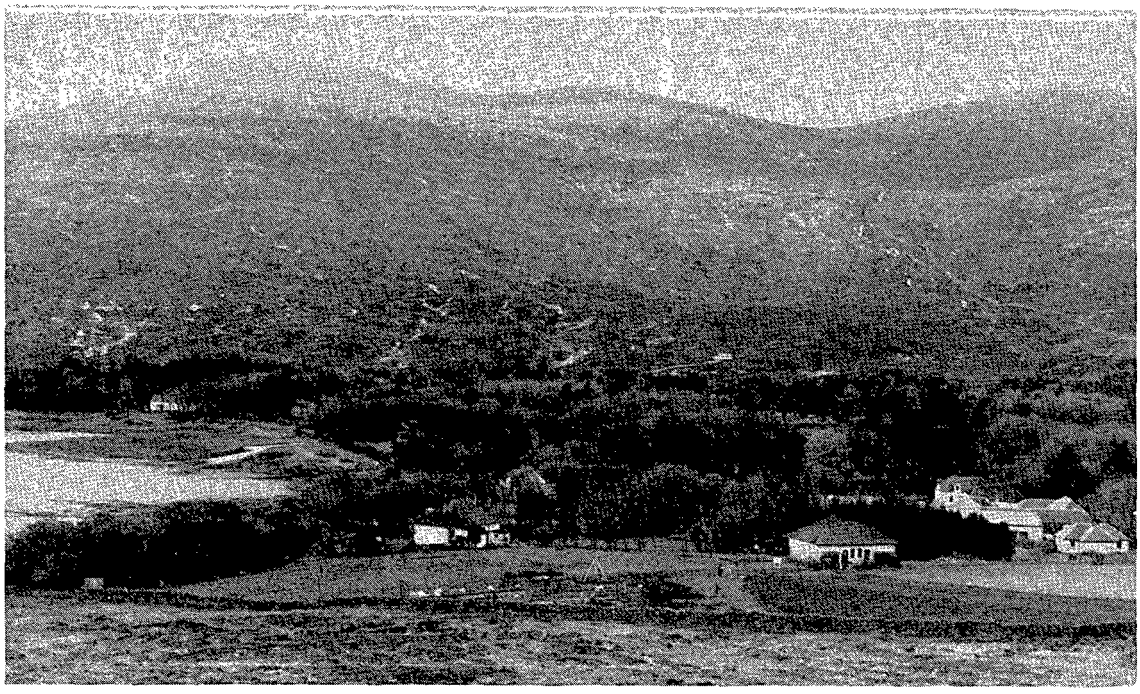
INTRODUCTION

The excavated site of Kinloch is situated on the east coast of Rhum (NM 403 998), at the head of Loch Scresort (Ills 1 and 3). It is preserved in a cultivated field at the eastern end of a band of agricultural land, known as the Farm Fields. It lies between 11–15m above sea level, on a gently sloping terrace of glacial gravels.

Before excavation the site was known only by the surface lithic scatter which indicated the presence of a large assemblage mainly composed of bloodstone, a chalcedonic silica that outcrops on the island. There was no surface indication of structural remains, nor were any cropmarks recorded from the field. A preliminary visit to Rhum and an examination of the extant work on the soils of the area, suggested that conventional methods of surface exploration, such as resistivity survey or field walking, would be impractical and of doubtful value. The site lies on a coarse gravel terrace 12m above sea level. It had presumably been subject to years of cultivation, and when excavation commenced it was covered with a thick layer of abundant growth, predominantly dockens.

Whatever the site, it is a truism that the finds recovered manually during excavation are not the sum total of finds lying within the archaeological contexts. Material is missed for many reasons, not least because artifacts may be small; they may blend into the background matrix, be of a type with which the excavator is not familiar, or be excavated in adverse weather conditions (Bang-Andersen 1985: Clarke 1978). The problems of visibility and partial recovery affect the excavation of lithic assemblages in particular, because large quantities of small artifacts are frequently present, especially where the manufacture of stone tools has taken place. For several years wet sieving has been used to ensure that a better sample of material is collected (Payne 1972; Levitan 1982: Woodman 1982) and, as Kinloch had been identified as primarily a lithic site, it was clear from the outset that a programme of sieving would be necessary.

The sieving at Kinloch had a second important role: it was used to assist with the excavation of the ploughsoil over the site. Ploughsoil is itself a feature of anthropogenic origin, derived from the mixing of any soil that might have built up over the archaeological remains. If the ploughsoil is not deep then the upper parts of the archaeological features are frequently destroyed and incorporated into the ploughzone together with their artifactual contents. For this reason there exists a relationship between the artifacts within any feature and the artifacts of the ploughsoil above, even when the artifacts within that topsoil have been moved from their point of origin. At Kinloch the ploughsoil was shallow and contained large quantities of artifactual material. In contrast to the original expectations, agriculture over the site had never been intensive, so there was a good possibility that some spatial patterning of the artifacts might have survived in the ploughsoil and that this would relate to the features below. At the same time, however, the disturbed nature of the ploughsoil meant that it did not merit full manual excavation. Instead, a programme of wet sieving the ploughsoil across the site grid was used to recover the artifacts. In this way the survival of archaeological information could be assessed, while allowing the trenches to be opened relatively quickly.



ILL 3: Kinloch from the N; the excavation site lies in the foreground.

THE FIRST SEASON

The strategy of the first season was divided into two. Firstly, the field had to be sampled with the aims of examining the distribution of the lithic scatter, quantifying its contents, and locating possible anthropogenic features. Secondly, there was detailed excavation; with the aims of assessing the survival of stratified features, and obtaining datable material.

SAMPLING THE FIELD

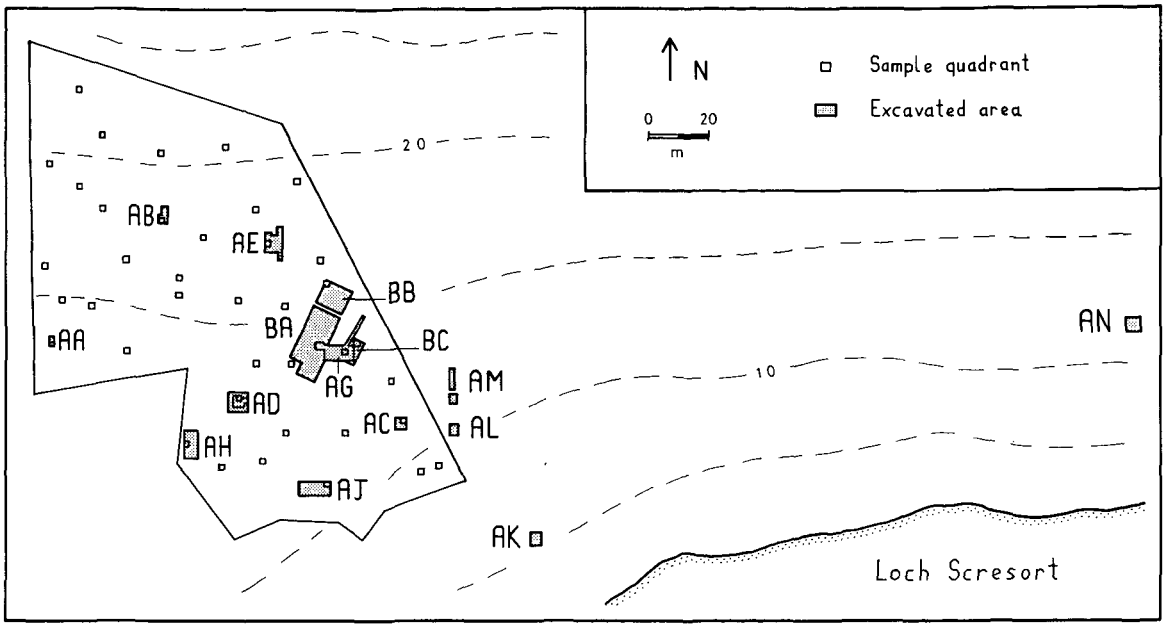
METHODS

A stratified random sample of quadrats was set up across the field (Cherry *et al* 1978, 410) to allow the examination of the ploughsoil over 1% of its area (Ill 4). In all 38 quadrats were created, each of $4m^2$. This system was used to provide as complete a coverage over the field as possible whilst avoiding the biases resulting from the regular grid selection of squares (Blower *et al* 1981, 20). The quadrat size was chosen to enable recognition of any surviving subsoil features. The sample size was minimal, but it was large enough to determine gross patterning across the field.

For excavation each quadrat was subdivided into four single-metre-squares. Each square was excavated separately by shovelling out the ploughsoil down to the underlying layer, whether natural or otherwise. Excavation of the sample did not involve any work in the layers below. There was no hand collection of artifacts from the ploughsoil, but all of it was sieved: the NW and SE squares of each quadrat were dry sieved, and the NE and SW squares were wet sieved through a 3mm mesh. All of the sieved residues were sorted on site, and the artifactual material was removed and catalogued. In this way it was possible to relay information about the finds promptly into the excavation strategy. Comparison of the two sieving methods showed that wet sieving was more efficient, indeed essential, to recover the microlithic element of the assemblage; this technique was used in all later work.

RESULTS

The lithic scatter was confined to the S third of the field (Ill 5). It contained a number of microliths, suggesting that the site might be dated earlier than previously thought. Across the field a number of features survived below the ploughsoil.



ILL 4: Location of the sample quadrats and of the excavation trenches, [AA–AE, AG–AH, AK–AN, & BA–BC.]

DETAILED EXCAVATION

METHODS

In order to examine a selection of the exposed features, five of the sample quadrats were expanded and subject to conventional excavation. These quadrats were selected for their diverse nature, and they were widely scattered to assess the subsoil. In order to test the association of lithic artifacts with the features and to locate any prehistoric features elsewhere in the field, two of the quadrats (AC & AD), lay within the scatter, whilst three (AA, AB, AE), were situated outside of the scatter (Ill 4).

Within the area of the lithic scatter the ploughsoil was wet sieved in units of $1m^2$; outside the scatter it was discarded without sieving as it was almost barren of lithic finds. Where possible, the stratified artifacts were collected on site and their positions recorded; in addition all contents were wet sieved and any remaining material collected. The larger contexts were subdivided into 0.25m × 0.25m units as research has shown this to be the optimal grid size for the recovery of locational data for artifacts (Fischer 1979: Woodman 1982, 180).

RESULTS

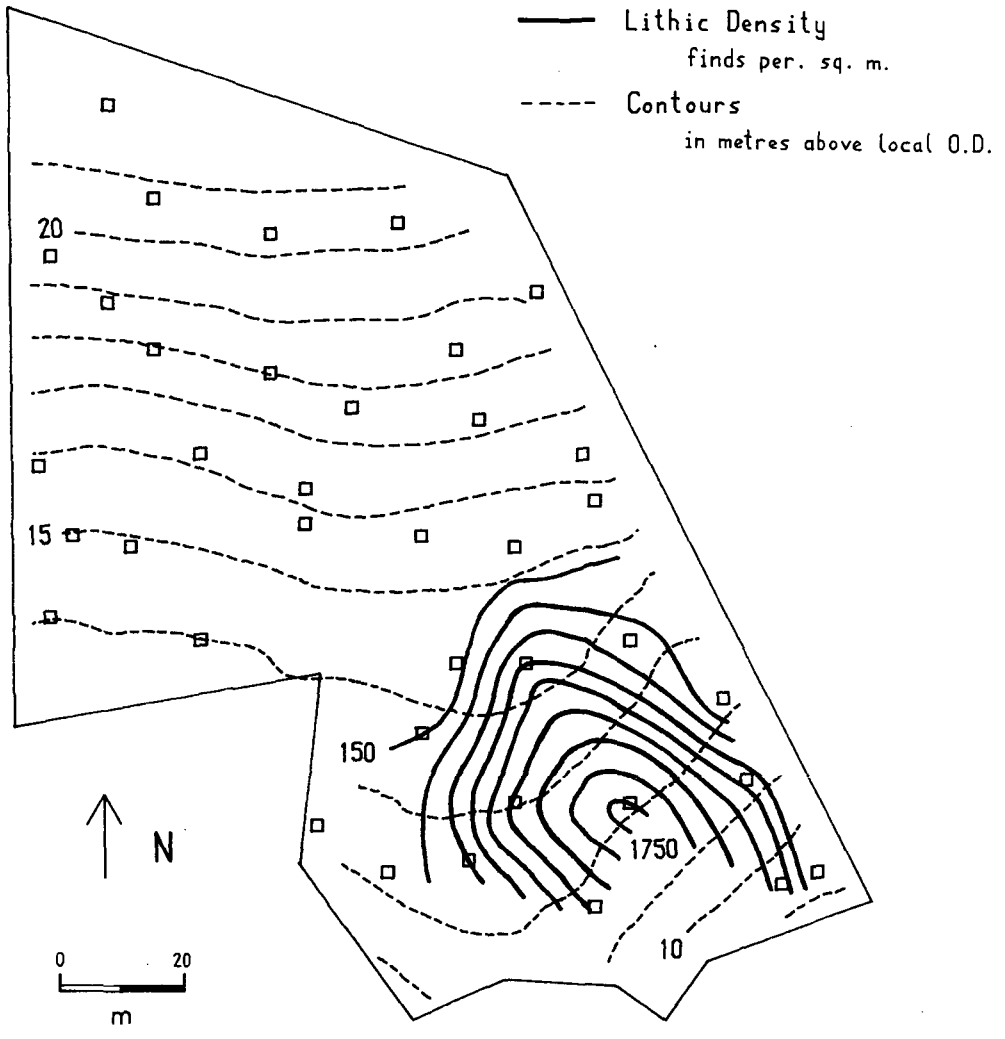
Archaeological features did survive in association with the lithic scatter, and carbonised material sufficient for two radiocarbon determinations was collected from one of them (Pit AD 5). Outside the lithic scatter, all the features examined were either natural or recent. The area of prehistoric remains therefore appeared to be represented on the surface of the field by the lithic scatter. Although no certain edges to the site were located, a minimum area for the remains was calculated to be in the order of $4500m^2$.

THE SECOND SEASON

The strategy of the second season had two aims: the detailed examination of the prehistoric evidence; and the investigation of the survival of archaeological features outwith the present field boundaries, to the E of the site.

METHODS

Four trenches (AD, AG, AH, AJ) were excavated, spread across the area of apparent mesolithic remains (Ill 4). Each was centred on known features or areas of high lithic density. One (AD) expanded a trench opened in the previous season; the other three (AG, AH, AJ) were set out around sample quadrats. In addition, three 2m × 2m test pits (AK, AL, AM) were excavated outside the field wall to the S and E, and one 5m × 5m trench (AN) was



ILL 5: The sampling of the ploughsoil: location of the sample quadrats and lithic density.

opened 300m to the E of the site to test the nature of one of the numerous other lithic scatters along the N shores of Loch Scresort (Ill 4).

Within each trench the ploughsoil was shovelled out in 1m squares. Artifacts were collected manually, and only 25% of the ploughsoil from each square was sieved and sorted. The ploughsoil proved to vary considerably in depth and its base (considered as a 'cleaning layer'), was removed by trowel and sieved in total. Below this all stratified contexts were fully sieved after the artifacts had been recovered manually; large units were first subdivided, as in the previous season. Towards the end of the season Trench AH was opened and, in order to speed up excavation, the manual collection of artifacts from the ploughsoil was stopped, but sieving continued as before.

RESULTS

Mesolithic pits and hollows did survive across the site, and the gully of a former burn was revealed towards the E edge of the field. This gully had been deliberately infilled with rubble (including both pottery and lithic material), suggesting later human activity. The trenches were, however, too small to make sense of the complex of surviving features, and the preservation conditions varied greatly across the site. Only in one area (AG) did a finer subsoil combine with a greater accumulation of ploughsoil to assist in the creation, preservation and recognition of archaeological features. Outside the field, to the E, a concentration of artifacts provided evidence for prehistoric activity, but the test pits revealed considerable truncation and disturbance, and no features survived. Further away, in Trench AN, the deposits were shallow, and unremarkable.

THE THIRD SEASON

The strategy of the third season had three aims: to examine the horizontal patterning of the mesolithic features, to investigate the stratigraphical detail of the fills of some of those features and to examine further the evidence for neolithic activity on site.

METHODS

A trench (BA/BB/BC), of 450 m^2, was stripped; it crossed the area of better preservation and ran across the infilled watercourse to the N of the mesolithic remains (Ill 4). In accordance with the lie of the land and of the archaeological features the orientation of the site grid was changed so that the trench could be set to cover the area of interest, whilst avoiding the coincidental alignment of the modern ploughmarks with the old site grid. For post-excavation analysis concordance of the two grids was facilitated by the use of a computerised site planning and recording system. In order to speed up the opening of the trench, information from the ploughsoil was sacrificed. Although the removal of ploughsoil still took place according to the site grid, only material from the cleaning layer within each metre unit was sieved and sorted. As this cleaning layer was of variable size, a four bucket constant was selected for sieving; this allowed both the absolute and the relative patterning of the lithic assemblage across the trench to be seen. Artifacts observed during the shovelling of the ploughsoil were recovered by hand, and below the ploughsoil excavation of the stratified contexts continued as before.

COMMENT

The removal of the plough layer revealed a considerable number of features and, despite the speeding up of the initial processes, it was still not possible to excavate everything in the time available. Ideally, a further season of excavations should have been undertaken to complete the area opened. As this was not possible, the results presented here, and their attendant interpretation, must rely to some degree upon inference. In any case, a considerable amount of the site, including some of the better preserved area, lies undisturbed should others wish to evaluate the archaeological evidence further.

THE UNDERSEA SURVEY S BUTLER

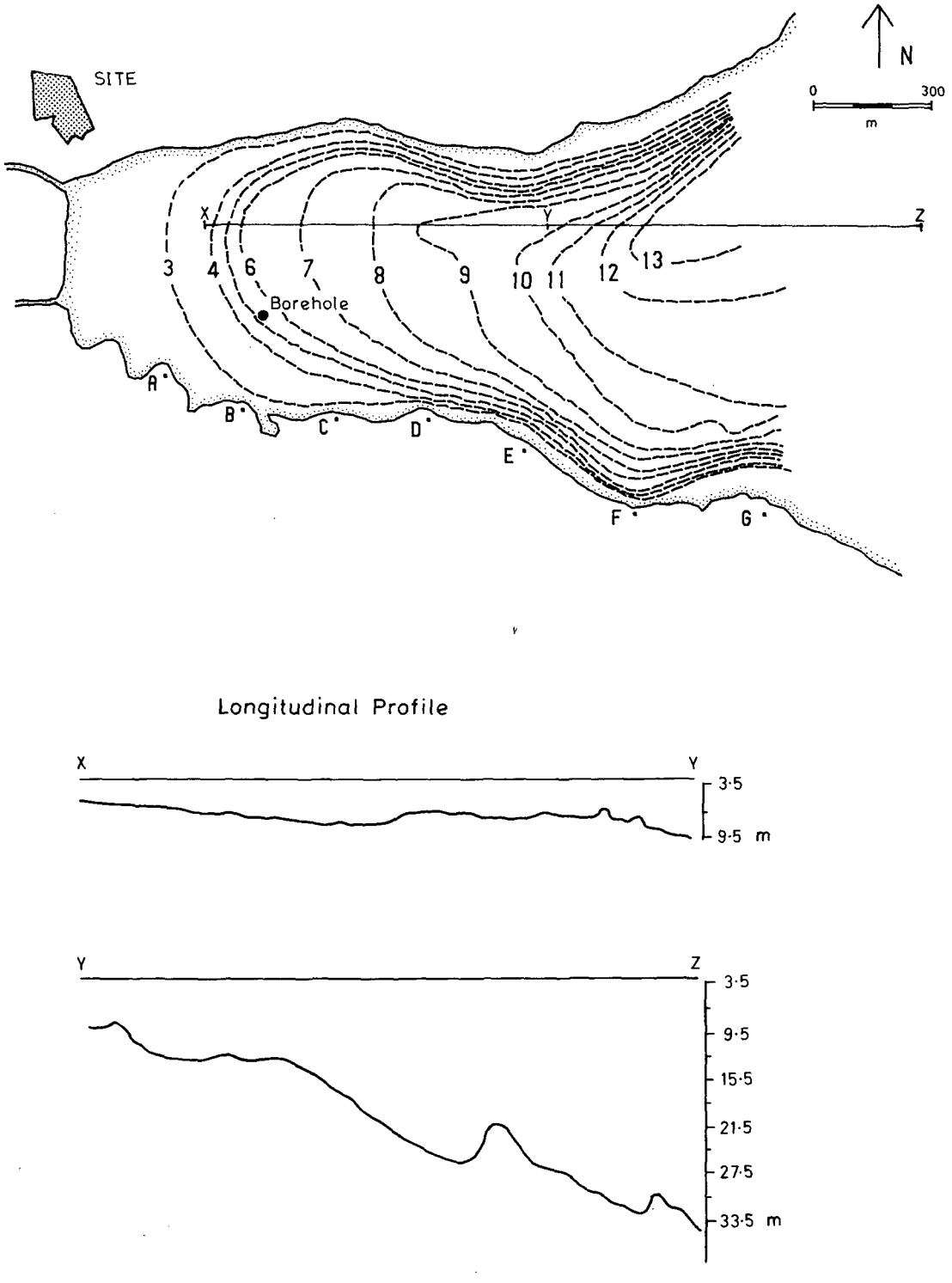
Loch Scresort is fed by a number of freshwater streams and it is open to the sea to the E; consequently its sedimentation consists both of material washed from the surrounding land and of material brought in by seawater. It is therefore possible that the stratified deposits within the loch may contain useful palaeoenvironmental evidence relating to the landscape around the archaeological site at the head of the loch. Furthermore, in view of the postglacial changes in sea level there is the possibility that evidence for lower local shorelines may survive beneath the waters of the loch. Finally, archaeological remains from a period of relatively low sea level may lie submerged below the loch. An underwater project was designed to investigate these possibilities by combining scientific research methods with scuba diving techniques. This work was carried out as a joint project with the Institute of Oceanographic Sciences.

AIMS

- to evaluate the potential of the sediments of the loch for the recovery of environmental information.
- to look for geomorphological indicators of changes in sea level.
- to look for possible areas of archaeological preservation.

METHODS

A general morphological survey of the sea bed was completed using echo-sounding equipment to collect data along seven transects (A – G) which crossed the loch in a N-S direction at 250m intervals, plus two E-W longitudinal transects (Ill 6). Each transect was surveyed in by theodolite, whilst an electronic tidegauge recorded the height of the sea surface, allowing all measurements to be corrected for tidal changes. The tidegauge datum was levelled into the nearest Ordnance



ILL 6: Loch Scresort: the morphology of the sea bed.
All depths are in m below Rhum L.D. A–G denote transect lines swum across the loch bed.

Survey benchmark in order that all depths could be expressed in metres below Rhum L.D. Diver observation along each transect was used to describe the nature of the loch bed. For this a swimboard was towed just above the loch bed by an inflatable launch to ensure that the diver remained on the transect. An underwater writing pad allowed the diver to note observations together with the time at which they were made and by ensuring that the inflatable maintained a constant speed these times could be used as a rough record of the locations of the observations. For the investigation of the sediments themselves, surface (ie loch bed) samples were collected by scooping the sediment into polythene bags by trowel, and trials were made for retrieving vertical sequences of deposits by manual (diver) use of an Eijkelkamp Gouge Corer.

SUMMARY

No archaeological deposits were observed, but there were geomorphological features that offered information relevant to an understanding of the landscape development. A summary analysis of the material recovered with the corer confirmed that palaeoecological data is preserved in the deep sediments of the loch, and that this should be relevant to the interpretation of the archaeological site, to studies of local shoreline change, and to the environmental history of Rhum. Further work on these deposits would be necessary to realise this potential.

A return trip was planned to obtain further samples and carry out more detailed work, but this area of research was abandoned because of lack of funding.

ARTIFACT ANALYSIS: THE ON-SITE PROGRAMME

A programme of on-site artifact cataloguing was undertaken in order to feed information about the artifacts back into the excavation strategy as work progressed. The on-site catalogue had to provide a basic record of the nature of the assemblage, and the following topics were selected as of particular relevance:

- the different materials utilized.
- the types of artifact present.
- the locations of any burnt material.

METHODS

After washing, artifacts were sorted according to the seven different fields:

1 Type
2 Sub-type
3 Classification
4 Material
5 Condition
6 Recovery method
7 Location

and the information was encoded and recorded (mf 1:C8–C9). Three-dimensionally recorded finds were treated individually; finds recovered from the sieved residues were batched by type and context. An experienced lithic specialist was present throughout the excavation in order to keep up with the large quantity of lithic artifacts recovered. The basic catalogue was simple and speedy to apply; the relevant codes were quickly learnt and on average 2000 pieces could be catalogued in any one day. Other artifactual material was scant (Chapter 9) but information relating to the different types of artifact was all treated in the same way. The recording and rapid field analysis of

this information was assisted by the use of hand-held computers and portable personal computers (Sharp PC–1500As and Sharp PC–5000s) and programs were supplied by D Powlesland from the Heslerton Parish Project.

BENEFITS

Information about the basic composition of the assemblage was provided throughout excavation. Broad spatial differences in both the types of artifact present and the different materials in use were identified, and concentrations of burnt or abraded material were revealed. Using this information a preliminary report of the assemblage was drawn up on completion of each field season for the interim reports of the project. The basic structure of the assemblage was then used for more detailed analysis.

By the end of excavation the assemblage was organised by context into groups of like artifacts. No specific detail about the nature of the assemblage was recorded: spatial variation could be identified but not explained, and the manufacturing techniques and possible functions of the different parts of the assemblage were unknown. The overall size of the lithic assemblage was large but the on-site catalogue provided information about the parent population from which a strategy of post-excavation sampling could be devised.

ARTIFACT ANALYSIS: THE POST-EXCAVATION PROGRAMME

In line with the overall research strategy, the post-excavation analysis was designed to examine specific aspects of the assemblage:

- the variation of raw materials used
- the manufacturing techniques in use
- the types of artifact produced
- the spatial variation in the deposition of the assemblage
- possible cultural connections of the assemblage

METHODS

The flaked lithic assemblage was sampled, and different samples were analysed in detail for a range of information using the Extract Catalogue described below. Other material assemblages were examined in their entirety according to the fields of information appropriate to the aims outlined above.

THE EXTRACT CATALOGUE

Before any further analysis of the flaked lithic assemblage was undertaken, a detailed catalogue was drawn up so that all relevant information could be recorded. This covered a total of 50 different fields (mf 1:D1–D7). Information was recorded on to pre-printed forms, and then stored and sorted on computer (Sharp MZ–5600 compatible with the smaller project computers) using a program, known as ROCKS, devised for the project by D Powlesland.

Given the size of the artifact assemblage (c. 140,000 pieces), it was not feasible to examine all pieces individually. Thus, samples relevant to the different areas of interest were selected with reference to the information contained in the on-site catalogue. These pieces alone were subject to detailed examination. By using separate samples for each area of interest a variety of specialists

could work on the different aspects of the assemblage at any one time. This both speeded up the analysis and increased the range of expertise in use.

When the sampling involved the splitting of the contents of a context, the pieces were divided with the help of a random numbers table. The two catalogues were designed to link into each other so that the collective object records from the on-site catalogue could be split and an individual record number assigned to each piece. The information from the on-site catalogue was automatically duplicated to link it to the more detailed information contained in the extract file. In this way the only pieces assigned individual extract numbers were those that were used for detailed analysis.

COMMENT

The work carried out upon the flaked lithic assemblage did not include any use-wear analysis. Brief examinations of both the raw materials (Ms J Taffinder, Uppsala University), and of a small sample of blades from the site (Dr C Sussman, University of California), suggested that microwear polishes would develop on some pieces. The analysis of these polishes and of associated wear is extremely time consuming and expensive, however. Although much work has been done upon the formation, survival and interpretation of use-wear, there is great variability in wear traces on the different types of raw material utilised in prehistory and most work has been done on flint. Meaningful use-wear analysis on the Kinloch assemblage would involve extensive experimental work, on both the local flint and the bloodstone, before the technique could be applied to the archaeological artifacts. The constraints of time and money in operation for the project meant that such analysis was not possible, although it would have added to the interpretation of the site.