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Excavations at
**KHARABEH
SHATTANI**

Volume 1



SADDAM HUSSEIN DAM SALVAGE ARCHAEOLOGY PROJECT
EDINBURGH UNIVERSITY ARCHAEOLOGY DEPARTMENT
EXCAVATIONS AT KHARABEH SHATTANI

Volume 1

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by Trevor Watkins.

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by Trevor Watkins.

PART 3: THE HALAF CULTURE POTTERY FROM THE 1983 SEASON

by Stuart Campbell.

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PREFATORY NOTE

This paper is not intended to be a conventional interim report, which is selective and narrative. The second part of the paper is the 'full' and 'final' report on the work of the 1983 season in the field. For that reason it is exhaustive in its description and discussion of all the features observed, investigated and recorded. But it does not engage in broader discussion of the site in relation to our knowledge of the Halaf culture, or any of the wider issues; it is too early to do that, and such considerations will be left until the excavation is completed and a unified, general synthesis can be written.

The first part of the paper is a brief synthesis and summary by Trevor Watkins. The second part was written by Trevor Watkins, assisted in the post-excavation analysis by Douglas Baird MA. The third part of the paper is an analysis of the Halaf culture pottery from the 1983 season of excavations. It is the work of Stuart Campbell and is a revised version of the dissertation presented by him in Edinburgh in March 1984 for his MA degree. The study of the Halaf pottery consists of a stylistic analysis of the material and the pilot study for a neutron activation analysis programme.

Because the aim of fullness makes the text of Parts 2 and 3 highly detailed, a section has been included (Part 1, immediately following this) which simply summarises the results of the 1983 season and the study of the Halaf culture pottery from that season. The second season's report, already in preparation, will include a parallel study of the first millennium pottery from the first two seasons (and reports on the other groups of material). It is the intention of this series of papers that information be disseminated quickly. Inevitably, there will be some points which will need to be reworked or revised once the second season of excavation has been digested, but we have tried to write this report in such a way as to minimise the amount of revision that may be necessary. It seems worthwhile to complete the working up of the excavated material from one season as soon as possible after the excavation itself; and having worked it up, it seems sensible to publish it without waiting for the close of the project.

At the end of the excavation the task of preparing the final, overall publication will be rather different from that which normally faces the excavator. Since all the text is preserved on Edinburgh University computers, it can be revised and re-edited easily. Since all the detailed analysis and synthesis of the excavation record should have been carried out season by season the final synthesis and discussion can be kept brief, and will be published as a learned journal article.

ACKNOWLEDGEMENTS

In the very first place it is essential to record our gratitude to the President of the State Organisation for Antiquities and Heritage, Dr Mu'ayyad Sa'id, who invited the Department of Archaeology of Edinburgh University to participate in the Eski Mosul Dam Salvage Archaeology Project as part of the British Archaeological Expedition in Iraq. And having completed our first season it is a great pleasure to extend our thanks to all the members of the State Organisation for Antiquities and Heritage who so willingly and cheerfully did everything possible to help us in our work and make us feel welcome, from the Director, Dr Mu'ayyad Sa'id, through the Baghdad staff, who helped us through all the necessary formalities, to the Mosul staff, and especially Dr Behnam Abu al-Soof, and to the representative with the British team, Sa'id Mohammed Zekki.

Dr Michael Roaf, Director of the British Archaeological Expedition in Iraq, took the central role in planning our cooperation within the British contribution and in liaising on our behalf with the Iraqi authorities. And when we arrived he and his team made us welcome and at once at home. His thoughtfulness and selflessness were a vital reason for the ease with which we were able to carry out our field-season. To him and all his staff and team it is a great pleasure to pay tribute.

The University of Edinburgh allowed Dr Watkins short-term leave of absence during the summer term in order to undertake the direction of the season's fieldwork. Various funds within the University were made available to enable Dr Watkins, one of the graduates and one of the undergraduates on the team to travel to Iraq. The greater part of the funds for the season were granted by the British Academy, the Carnegie Trust for the Universities of Scotland, and the Munro Bequest, to all of whom Dr Watkins and the Department of Archaeology of the University of Edinburgh express their gratitude. The Department of Archaeology illustrator, Miss Mairi Anna Birkeland, prepared the pottery illustrations from the field drawings. Special thanks are due to Dr A MacKenzie of the Scottish Universities Research Reactor Centre at East Kilbride for all his help and guidance in the programme of neutron activation analyses of Halaf culture pottery. We should also like to thank Mr Peter Parr of the Institute of Archaeology at London University for his assistance in allowing us to take samples from sherds in the Institute's collection, and to the staff of the British Museum, Department of Western Asiatic Antiquities, and the Ashmolean Museum, Oxford, for permission to study Halaf culture material in their collections.

PART ONE: Summary Report

Edinburgh University Archaeology Department's first season of excavation in conjunction with the British Archaeological Expedition Iraq as part of the Eski Mosul Dam Salvage Archaeology Project took place in April and May of 1983. The team of five archaeologists was led by Dr Trevor Watkins, and took on the exploration of two sites, one under the present village of Kharabeh Shattani, and the other in the fields close by, where Dr John Curtis of the British Museum had already undertaken a small sounding (see Maps 1 and 2). Most of the work was concentrated on the site in the fields, but a small sounding was dug at the N end of the modern village. This part of the report offers the reader a summary of the findings on both sites, and a summary of the results of the study of the Halaf culture pottery from the main site, together with a brief general discussion of the results so far achieved. It is designed to be capable of being read independently of the detailed reporting of the two following parts of the report, which relate to the excavations at the site in the fields close to the village and the Halaf culture pottery from that site. For many readers this section will be sufficient in itself, together with the plans and some of the illustrations.

The site below the modern village was rapidly tested with a small sounding of 2 x 2m square dug at the N end of the modern village. The deposit was found to be somewhat less than 2m in depth, and of one period of occupation. No floors or walls were detected in the deposit, though clear boundaries could be recognised among the successive ashy or red-brown strata. A step had been cut into the underlying subsoil, apparently to form some sort of terrace, but this step had filled with amorphous deposit and more strata of wash of different kinds overlay it. Rather little diagnostic material, all of it pottery, was recovered from the sounding. No chronological inconsistency was observed within the pottery, which all seemed to be of one date, probably late in the Sassanian period.

The detailed report of the sounding of the village site, brief though it is, is not yet completed and will be included, together with the illustrations, in a subsequent report. The present village shows no sign of antiquity, and the inhabitants say that the village was formerly sited down by the Tigris, where they still tend fields. So it would appear that the village site has been used twice, on both occasions briefly, and with a considerable period of non-use between the two occupations. Indeed, since the pattern of relatively brief occupation followed by disuse is repeated on the main site close by in the fields, and at Tell Mohammed 'Arab nearby (Roaf 1983, 68-77), and since most of the other sites being investigated by British teams are also single period occupations of relatively short duration, this pattern of settlement history seems likely to be typical for the Eski Mosul area through most of its prehistory and history.

To distinguish the two sites under investigation the site under the modern village is referred to as Kharabeh Village, while the name Kharabeh Shattani is retained to refer to the site of our main efforts in two fields some hundreds of metres SW of the modern village (see Maps 1 and 2, and Plan 1). The first stage of investigation of the latter site was a 2 x 2m sounding dug in March 1983 by Dr John Curtis. The trench was placed in the assumed centre of the site. It revealed a large pit which had cut through archaeological strata of about 1.75m thickness. Most of the pottery from the fill of the pit, and the pottery from the upper part of the stratigraphy dated to the later first millennium BC, but the lower strata belonged to the period of the prehistoric Halaf culture.

The next stage in the investigation was the season of excavation reported here. In April and May of 1983 an area of 10 x 10m was opened and excavated (almost all of it) down to an archaeologically sterile clay. The 1983 excavation was concentrated into one square area in order to maximise the chance of having a whole, or most of a building to investigate. The area was initiated as four 4 x 4m squares with crossed baulks to maintain stratigraphic control. The baulks were later removed to expose almost 100 sq m of the basal Halaf culture surface.

The only features associated with the late first millennium BC occupation were filled pits. No structural remains survived in the uppermost strata of disturbed, cultivated and weathered soil, although the volume of final phase sherds in these levels clearly indicated that the strata had originated at that date. The pits were of various sizes from quite narrow cylindrical pits to very large and amorphous scoops. Some of the pits had penetrated the Halaf occupation below and the sterile clay stratum below that. All of the pits and scoops were full of soil, stones, mudbrick debris and pottery. In a number of cases the fill of pits could be clearly differentiated into two deposits, a lower fill, which was thin and seemed to have accumulated over a period of time, and an upper fill, which was thick and consisted of building debris thrown in all at one time. The pottery consisted of simple, plain, mass-produced wares comprising moderately large jars and bowls of various sizes.

The date of this last occupation of the site is difficult to assess, possibly because it is intriguingly centred in an historical and archaeological dark age for N Iraq. The preliminary indications are that the date is later than the collapse of the neo-Assyrian Empire at the end of the seventh century BC, and before the Hellenistic and Parthian period of the third and later centuries BC.

Material from the earlier Halaf occupation of the site was found in some of the pit-fills mixed with the first millennium BC material, but it became possible as the excavation proceeded to isolate undisturbed deposits deriving from the prehistoric settlement. The Halaf culture strata could be divided into three phases on the basis of associated buildings and other structures. The top of the last of these three phases was mixed with first millennium BC material at the foundation of the last settlement, but most of the final Halaf phase deposit was intact and undisturbed, apart from the intrusive pits. Although remarkably few structural remains were identified, most of the Halaf culture deposit consisted of dissolved mud building material. No brick or tauf constructions were identified except by implication, through the recognition of stone and mud mortar foundation courses or stone support courses at the base of vanished mud walls.

In the final phase of the Halaf settlement there was a domed circular building (ADE) in the NW part of the excavation area (see plans). Beside it was an area of paving (ADR). Some indefinable, decayed mud building debris was also found, together with a small pit (ABZ) and a short length of straight wall (ACD). The circular building was defined by means of two discontinuous arcs of stones apparently set on edge against the outer side of a tauf wall. At one point a late period pit had removed part of the wall, and another segment had been lost through erosion. In places there was a second line of stones laid horizontally around the interior of the tauf wall like a narrow bench. The external diameter of the building was 5.60m and the internal diameter (discounting the bench, which does not seem to have completely encircled the room) was 5.10m. No floor or doorway could be identified. The outer course of stones laid

against the exterior of the tauf wall stood at an angle of 62°, indicating that the building was domed from ground level.

In the middle phase of the Halaf culture settlement the only structural element identified was an enigmatic foundation of stones (ABQ) set in mud and shaped in plan in the form of a letter E. A burnt clay oven-base was also found, and two more oven-bases were located in the earliest Halaf phase. No walls or buildings were found in the lowest stratum, which was thinner than the two later phases and different in texture. Whereas the later phases were red-brown in colour, and presumably derived for the most part from the decay of brick or tauf structures, the earliest phase produced a grey-brown soil with blacker, ashy lenses.

The remains found throughout the three Halaf culture phases were homogeneous and thoroughly Halafian. More than 1000 certain Halafian potsherds were identified. Other artefacts were few, however, consisting of one or two spindlewhorls, some coarse ground-stone equipment (mostly mortars and quern fragments), some chipped stone (almost all obsidian), and two clay sling-bullets. It is too early to assess the general cultural material of the Halaf settlement, since, apart from the pottery, there is too little from the 1983 season alone, but it is worth remarking that the assemblage seems unusually defective, lacking entirely beads or amulets, figurines and stamp seals or bullae.

A study of the Halaf culture pottery assemblage from the 1983 season was concentrated on the 380 sherds which exhibited distinctive and diagnostic features. The first essential was to assess the chronological range of the assemblage relative to the whole Halaf culture. The assemblage was examined for signs of systematic variation between strata which might indicate a long time-span, but none were found. The sample seems to be internally homogeneous within the range of expected statistical variation. Compared against the pottery from Tell Aqab and Tell Arpachiyah, and using the work of Davidson (1976) and Hijara (1981), the assemblage is clearly not Early Halaf in date, nor is it Final Halaf (that is Halaf-Ubaid transitional as at Tell Aqab for example).

On present evidence at least part of the assemblage should be dated to the Late Halaf period, although it is possible that a late Middle Halaf element is present. One of the difficulties arising from this dating of the pottery assemblage is the almost total absence of bichrome or polychrome decoration at Kharabeh Shattani. Only one sherd has been identified which is possibly (but by no means certainly) bichrome (AAE20, Fig 19.3). Whereas at sites such as Tell Arpachiyah, Chagar Bazar or Tell Aqab considerable quantities of bichrome and polychrome decorated ware were found in the Late Halaf period, the one sherd at Kharabeh Shattani amounts to only 0.01% of the sample. Certain motifs and forms seem to be more popular and others less popular at Kharabeh Shattani than elsewhere. Some motifs seem to be not only popular but are treated somewhat differently in the way that they are combined with each other and disposed on the surface of the pottery at Kharabeh Shattani. The possibility arises, as the Kharabeh Shattani pottery assemblage grows, of making detailed inter-site and inter-regional comparisons in order to study the precise degree of homogeneity within the Halaf culture pottery industry. On this very preliminary analysis it appears possible that there may be an interesting component of inter-site variation within the culture, but these conclusions must remain cautious for the present, since they are based on

only one season's sample; they will be tested against the 1984 season's sample in due course.

A small series of 26 sherds from the Halaf culture assemblage was examined by neutron activation analysis. The purpose of the exercise was to test the homogeneity of the group and to see if it was possible to define different groups within the sample, that is groups of pots made from different clays. There were also samples of local clays in the series of samples analysed in order that we might attempt to link one or more groups of sherds to the local clays, and show that some pots were locally made while others were probably made elsewhere from different clays. Two distinct statistical groups emerged, one group of 14 sherds and one group of 11 sherds; these two groups, however, are formally and stylistically indistinguishable. It is not yet clear which, if either, of these two groups should be linked with the local clay samples. With the sample of Kharabeh Shattani pottery were included three samples from sherds from the Late Halaf period at Tell Arpachiyah. The twenty-sixth Kharabeh Shattani sherd (ADJ 4, Fig 30,7), which belonged to neither groups one or two, and which was also a unique sherd in terms of form, fitted very closely indeed in terms of its clay constituency with the little group from Tell Arpachiyah. If further planned analytical work on Arpachiyah sherds confirms the existence of this Arpachiyah group, it would support the dating of the occupation at Kharabeh, which has been made on stylistic grounds, to the Late Halaf period.

On the basis of this pilot study, which must of course be supported by more analyses, there can be two main hypotheses: either two clay sources or production methods were employed at Kharabeh Shattani, or a large proportion of the pottery was imported from another centre. If the latter hypothesis were to prove correct, then the small pilot study would reproduce in microcosm the tripartite division of the Halaf culture pottery industry posited by Davidson (1981), with production at the site, supported by substantial supply from a local centre, and supplemented by a small amount of pottery from specialist centres further away.

A major objective of the excavations at Kharabeh Shattani will be to look for indications of social differentiation and traces of a more structured and organised society, which, according to the theories concerning the evolution towards urbanism and the state, we should expect to accompany an economy like that of the Halaf culture, where goods like pottery were manufactured in a highly specialised and practically industrialised manner and distributed in a very efficient and hierarchical way. The first indications from Kharabeh Shattani in this regard are both good and bad. On the positive side it can be said that buildings survive and can be identified, and that there is a brief but distinct stratigraphy; but on the negative side it must be added that the attribution of cultural remains to particular buildings and their associated open areas is not possible with the 1983 sample. The one building investigated lacked an identifiable floor and no perimeter to its associated open area could be located, so that much of the material found, whether inside or outside the building, would be difficult to link with the particular household who occupied that building. Also it is clear that, in this part of the settlement at any rate, buildings are not closely arranged but rather spaced out; and that presumably means that a considerable area must be excavated in order to accumulate information relating to a number of different households.

It is clear that during the Halaf culture occupation there was, within the at present very limited excavation area, an alternating sequence of construction and decay. The

decay phases are marked by the more or less homogeneous deposits of thoroughly mixed and washed material. On the other hand, at least in the two later phases (too little of the earliest phase has yet been exposed), there survive reconstructable and quite well-preserved structural remains.

There are two alternative explanations for the pattern of construction and decay seen in the 1983 area of excavation, and the 1984 season will show which is correct. If the precise pattern of construction and decay is exactly paralleled over a much larger area than was opened in 1983, it will be necessary to think of the settlement as a whole undergoing phases of building and occupation interleaved with periods of abandonment and decay. If, on the other hand, the stratigraphy is not precisely replicated in adjacent areas it would presumably indicate a continuous occupation and a complex pattern of reconstruction over time, with buildings and other structures being replaced and rebuilt but not in their previous positions. In this latter pattern the stratum of decay and wash in one area would have been produced by the abandonment of one building, which was replaced by another not far away. If the occupation was continuous, and yet there are strata of wash and decayed and eroded structural remains to be observed either over or under the remains of identifiable buildings, it follows that the settlement must have had sufficient open space for replacement to be effected by shifting the site of the replacement building, building the replacement in a new place, and abandoning the former site. Such a village must have been rather dispersed, and distinctly different in form and operation from the strongly nucleated type of village with little open space between the buildings beyond that needed for circulation.

In certain regards Kharabeh Shattani is an unusual Halaf culture settlement, at least according to the assumed norms of the culture. The classic sites of the Halaf culture seem to have been occupied for long periods, and short Halaf occupations on sites which did not support continuous settlement over long periods are as yet a distinct rarity. The assemblage from the Halaf culture levels at Kharabeh seems to be somewhat deficient in certain aspects. To date there are no figurines, and no amulets, beads, pendants or other small objects of personal ornamentation from the excavation. The pottery assemblage is unusual in lacking bichrome or polychrome decoration. And yet, in gross geographical terms, Kharabeh Shattani is not peripheral to the distribution of the Halaf culture. Once again it is not difficult to think of other possible explanations, some of which may ultimately be eliminated by further excavation. Apparently, the Halaf culture community at Kharabeh Shattani (or that portion of it within the area of the excavation) was communicating with the full Halaf culture in a somewhat limited way; and it will be a prime objective of future work to explore this particular question. The first need is to extend the area of the 1983 excavation in order to ensure that we have as broad an exposure as practicable. We need to know a good deal more about the variation in the architecture and the spacing of buildings. We also need to increase the size and reliability of our sample of the material culture. Later perhaps we shall be able to test other areas of the settlement in order to ascertain its approximate extent and the degree of internal cultural homogeneity and intra-site variation.

PART 2: THE 1983 SEASON OF EXCAVATIONS

SECTION 1. Introduction

In November 1981 the Iraqi State Organization for Antiquities and Heritage launched the Eski Mosul Dam Salvage Archaeology Project, inviting international cooperation in the task of attempting to rescue as much information as possible from more than 150 known archaeological sites within the area of the projected lake behind the new Eski Mosul Dam (later named the Saddam Hussein Dam) on the upper Tigris north-west of Mosul. Among those organisations already working in Iraq to whom the invitation was issued was the British Archaeological Expedition in Iraq. The State Organization for Antiquities and Heritage offered considerable assistance in kind to any foreign team cooperating with it in the salvage archaeology project, but in return teams were required to be in the field for as much of the year as possible, and they are expected to publish rapidly.

It was quickly realised that for the British Archaeological Expedition in Iraq to operate in the field the whole year round and to keep up with the task of preparing material for publication would have been an impossibility with its small resident staff. Accordingly smaller scale contributions like the Edinburgh excavation have found a role, taking their place in the field and using the BAEI team of workmen and resources while the BAEI team was undertaking post-excavation work.

The 1983 season of excavations was made possible by the granting of short-term leave of absence to Dr Trevor Watkins by the Senatus of the University of Edinburgh to enable him to direct the fieldwork. The project was generously funded by the British Academy, the Carnegie Trust for the Universities of Scotland, and, within the University of Edinburgh, the Munro Foundation, the Abercromby Fund, the Travel and Research Fund, the Centre of African Studies and the Vacation Grant Fund. To all of these the author is enormously grateful, since they made possible the realisation of a cherished ambition, to have Edinburgh University archaeology students conducting field research in Iraq.

In the field the team consisted of Douglas Baird MA and Carl Phillips MA, assisted by Wendy Knight MA and Stuart Campbell MA (at that time the last two being undergraduates). Their loyalty, hard work and determination brought the season through to a successful conclusion. And Stuart Campbell continued to complete his MA dissertation on the Halaf pottery from the site for submission in early 1984.

SECTION 2. Preliminaries

2.1 Location of the sites

Within the area of land which will form the lake behind the Eski Mosul dam, Kharabeh Shattani lies in the extreme SE angle (Map 1). The modern village of Kharabeh Shattani stands on a rounded ridge between two converging dry wadis about 2 km E of the Tigris and some 50 m higher than the river. To the E of the village is another, lesser ridge which has been used as the cemetery of the modern village, and

to the E again is the broad triangle of land, again bounded by converging dry wadi beds, on which the main archaeological site is set (Map 2). The surrounding landscape is gently rounded and rolling, with a general slope down to the Tigris. Although the wadis are dry for most of the year and only run when there is considerable rainfall, they are often sharply cut into the otherwise undulating countryside, presumably having originated long ago in a wetter phase. The underlying skeleton of the landform is limestone, exposed in the wadi sides and beds. It is overlain by a strong, red-brown soil of clay-like consistency.

Kharabeh Shattani lies close to the boundary of modern arable agriculture. Above the village much of the land remains pasture, but around the village and below it there are ploughed fields and areas of pasture. Much of the cultivated land had the appearance of having only recently been brought into arable use for cereal cultivation. Beside the river most of the land is arable, and some of it is irrigated with the help of diesel-powered pumps. In general, however, agriculture must depend on natural precipitation. We have no direct evidence relating to the environment in the periods represented by the occupations of the sites.

2.2 Survey and preliminary sounding

In the preliminary survey of the area carried out by the State Organisation for Antiquities and Heritage a site was noted under the modern village (here called the Kharabeh village site), and another was found 200m to the SW. The latter site is the focus of the excavations reported here, and it is referred to as Kharabeh Shattani (which is in fact the full name of the modern village). The site of Kharabeh Shattani seemed to extend for about 200m N-S and 100m (the full width of the area between the dry wadis) E-W; painted pottery of the Halaf culture was recognised, together with later pottery.

From March 7th to 9th 1983 Dr John Curtis, of the Department of Western Asiatic Antiquities at the British Museum, dug a small 2x2m sondage approximately in the middle of the Kharabeh Shattani site in order to determine the depth of deposit and to gain a sample of pottery for dating the periods of occupation. The operation was conducted with just two workmen and Dr Curtis was not present on all of the three days of work. The sondage was excavated in four arbitrary spits, whose product we have labelled from top to bottom JC1, JC2, JC3, and JC 4. About three quarters of the sondage was occupied by a large cylindrical pit, but no attempt was made to distinguish between pottery from the pit and pottery from undisturbed contexts. Dr Curtis considered that the pit and the topsoil layer contained material of the first millennium BC, and that the rest of the deposit dated to the Halaf culture period. Our more extensive excavations show that Dr Curtis' conclusions were correct, but it should be remembered that the stratigraphic context of the pottery from Dr Curtis' sondage, which is incorporated in this publication, is insecure. We are very grateful to Dr Curtis for carrying out this preliminary work for our benefit, for sharing his results with us and allowing us to publish the material from his sondage here.

2.3 Excavation strategy and practice

The strategy of the Edinburgh University excavation of 1983, whose duration in the field was only of the order of five or six weeks, was to open a small area 10mx10m and excavate it to virgin soil. The objectives were twofold: the immediate aim was to

obtain as large a sample of material culture remains as the limited time and resources would allow in order to be able to date the two periods of settlement more precisely and confidently, and in particular to obtain a good, stratified sample of Halaf culture pottery on which to conduct a small-scale neutron activation analysis project. The longer term objective was to assess the usefulness of the site for further investigation within the constraints and demands of the Eski Mosul dam salvage archaeology project.

In regard to the latter point, we were hoping that coherent architectural remains would be recovered in the relatively shallow Halaf culture deposits so that it would be possible to plan the investigation of the settlement in terms of a broad area exposure which would show how houses and structures were disposed in relation to one another, and also how they related to the earlier buildings of a previous stratum. The purpose behind this hope was that of defining some aspects of the organisation of the social and economic life of a Halaf culture social group at settlement level. We already know that the Halaf culture in general operated in a fairly complex manner as an economic system at inter-site level, and it would be very informative to know something of the intra-settlement operation of the culture, especially if there were evidence of economic specialisation or social differentiation between households.

A very basic and simple initial tactic of the 1983 season was to open a sequence of four squares leaving crossed baulks within the 10x10m area in order to obtain as much stratigraphic control as possible in the new and unfamiliar conditions (see Fig 4). Until an advanced stage of the excavation therefore, we had four separate squares and the potential for a N-S and an E-W section across the middle of the 10x10m area. The squares were opened in sequence rather than simultaneously in order to minimise the risk of errors due to unfamiliarity with the site to the initial square or two. The baulks were 1m wide. A 1m gap was left down the W side of the 10x10m square to separate it from a hypothetical future square to the W; but a similar 1m baulk along the N side of the square was abandoned when it was decided that it was very unlikely that future excavation would take place to the N. Thus the final area, when the crossed central baulks were removed, was actually 9x10m. As the site plans show, there was actually a small extension of 1m width dug on the W side in order to maximise the amount of paving ADR within the excavation area.

All excavation was carried out with hand-tools. No wet- or dry-sieving was employed. Pottery, chipped stone and animal bone was recovered, and recorded as a lot by context or feature in which it was found. Other artefacts were recorded individually, noting their archaeological context and their absolute position. All artefactual material was washed, sorted and assessed. All pottery with definable features (rim, base, handle, lug, decoration) was drawn, and a selection was photographed. (This first season ideal was not quite achieved; some contexts in one square (ACA) were not fully recorded by the end of the 1983 season, and the pottery drawing for this area was completed at the start of the 1984 season.)

The site signature, used on all records and the objects themselves, was KS for the main site in the field and KV for the Kharabeh village site. To the signature the season date was routinely appended. Thus all finds and records are identified as KS83 or KV83. The recording system used a notional grid across the site by means of which reference could be made to the location of points within the excavation. An arbitrary height datum point of 100m was established at the grid point 200 300, immediately

adjacent to the NE corner of Dr Curtis' sondage and the NW corner of our own excavations. The grid operates like a standard map grid, but in miniature. The origin of the grid (the SW corner) is somewhere beyond the presumed edge of the site, and points are referred to by their eastings and northings in metres from that origin. Excavation squares are normally of a notional 5x5m shape (though having a 1m baulk around their W and N sides), and may be referred to by their own points of origin in the SW corner. Thus the site datum was established at 200 300 (200m E and 300m N of the grid's origin); and the four squares of the 1983 excavation can be referred to as square 200 290, square 205 290, square 200 295, and square 205 295. The grid reference system may also be used to give approximate locations (eg 'Pit XYZ was centred at approximately 208 293'), or the location of a find to the nearest square metre (eg '... was found at 203 297'). If required further precision can be given by giving a grid-location in centimetres within the named square metre (eg 203.65 297.42), though this is rarely done.

Within the excavation each identifiable unit of excavation (whether called unit, feature, or context) is labelled with a three-letter code, and a form similarly labelled is started to act as its record. In these excavations the fundamental unit of excavation is referred to as a context, and the form as a context record. The three-letter codes are attributed to contexts according to a certain logic, which enables the codes to act as mnemonic. The first letter denotes the area of the excavation, and the second letter the particular 5x5m square. All the 1983 excavation was concentrated in one area, which was called area A, so all context codes for 1983 begin with A. The four squares dug took as second letters A, B, C, D as follows:-

200 290	AA
205 290	AB
200 295	AD
205 295	AC

Each five-metre square thus had 26 letters available in the third position to label contexts occurring within that square; and, conveniently, no square produced more than 26. Thus contexts AAA to AAZ would be found in square 200 290, and ACA to ACZ in square 205 295.

Artefacts and samples taken from a context were numbered serially after the context code. Thus AEX23 would be the 23rd item logged from context AEX. This registration is called a field registration number (abbreviated to FRN). As they were taken from the ground, objects and samples were given temporary identifications in the supervisor's notebook until the proper registration could be carried out in the head quarters; the temporary identification consisted of the date (day/month) followed by a serial number for that day (eg 24/6/3 would be the third find listed on the 24th of June). Artefacts going into the collections of the State Organization for Antiquities and Heritage were listed serially in a register copied to the State Organization by the representative. The main form of registration remains the field register number, eg AEX23; and this is the number which was marked on the object or its packaging.

Photographs and drawings are also uniquely identified and registered. Field drawings are listed serially and where necessary are distinguished from other numberings by the prefix D. Thus it is possible to refer uniquely to a drawing as KS83.D47 (field-drawing 47 from the 1983 season at Kharabeh Shattani). Photographs

are identified by the film number followed by the frame number on the film. Colour transparency films may be prefixed by the letter C, while black-and-white negatives may be prefixed B. Thus KS83.C12/24 refers to the colour transparency which is frame 24 on film 12.

SECTION 4 Below the ningsizoo

The section below the ningsizoo is a very important one in the study of the geology of the area. It is a very thick section and is composed of a number of different rock types. The rocks are generally of the same age and are thought to be of the same origin. The section is very important because it shows the relationship between the different rock types and the structure of the area. The rocks are generally of the same age and are thought to be of the same origin. The section is very important because it shows the relationship between the different rock types and the structure of the area.

SECTION 3. The superficial levels.

The site lay in the area of two fields, the northern of which was growing barley in early 1983, and the southern of which had been ploughed but not sown. The four squares were dug at the N edge of the unsown field. The uppermost soil throughout was the broken ploughsoil (AAA, ABA, ACA, ADA). The ploughing had been fairly shallow and the second layer was in effect the same soil as the first, but it had not been ploughed in this latest cultivation. This second layer (AAB, ABB, ACB, ADB) was correspondingly more compact, and it was also moist, having not been broken and exposed to the air. The upper layer was a grey-brown, friable soil, while the lower layer was a darker red-brown soil. The two layers together accounted for about the first 0.30 or 0.40m of deposit. No structural remains were discerned in them and none of the pits which were later identified could be picked up in this thoroughly mixed and cultivated soil.

Much pottery was recovered from these superficial and mixed deposits. Certainly some of it will have come from the upper fills of later pits, and more of it had possibly slipped down from higher strata which had been deflated with the passage of time. The whole constitutes a large and not very significant unit. Although a very few undistinctive Halaf culture sherds could be tentatively identified, the great bulk of the pottery, as one would expect, was from the latest period of occupation. Apart from the pottery there were a few fragmentary ground stone artefacts, rubbers, pestles, polishers and querns.

SECTION 4. Below the ploughsoil

Beneath the well-mixed topsoil in all four squares was a firm, homogeneous level of clayey consistency. It was orange-brown in colour and flecked with cream or off-white. In all four squares this layer (AAC, ABC, ACC, ADC) contained both first millennium BC pottery and Halafian painted sherds in varying proportions in different parts of the excavation area and at different depths. In terms of the soil the layer was generally homogeneous, although in terms of the cultural material in it it was clearly mixed. It is thought that it represents the uppermost deposit of the earlier, Halafian occupation, which had been homogenised by exposure and erosion, and, when the site was reoccupied in the first millennium BC, to intrusion and mixing. A fuller description and discussion of this stratum follows in Field section 7.

Some pits were noted as being cut through this layer but others were only clearly delineated after this stratum had been removed. No coherent structural remains were recovered in the upper part of this stratum (which may be referred to as the C stratum), and the frequency of occurrence of late period pits in this area of the site suggests that it was not used for buildings at that period. However, there were buildings close by for the C stratum was overlain by late period deposits which must have derived from the spread of material from neighbouring structural remains. It would be a mistake to take the excavation observations entirely literally and segregate pits which post-dated the C stratum from pits which were observed only after the C stratum had been removed. In a number of instances it was possible to observe in the sections that pits, which in the course of the excavation had only been recognized

after the C stratum had been removed, had in fact been dug through the C stratum; their edges in the C stratum and the contrast between their fills and the C stratum material had simply not been seen in plan. With a very few exceptions the pits can be treated as an undifferentiated group of deposits belonging to the late period of reoccupation, having been dug and filled from levels which no longer survive or which are incoherent through agriculture and natural agencies. It may be possible once the later period pottery has been studied to discern some internal chronological distinctions among the pits, but at present this is not possible simply on stratigraphical observations.

SECTION 5. The pits

Plans of the tops of the pits are to be found on Plan 1 in Section 5, and sections of pits which occurred on main section-lines follow thereafter. The references to plans and sections in connection with the report on individual pits refer to the field drawings and field sections.

5.1 Pit AAM

Pit AAM was noted in the SE corner of square 200 290 at about 204 291 only when layer AAC (see above) had been removed. The pit was roughly circular in plan and cylindrical in shape. Its main fill was labelled AAF, but the lowest part of the fill was dug as AAL. As recovered the upper deposit AAF was about 0.25m thick and the lower deposit AAL about 0.10m. The diameter of the pit ranged between 0.90m and a little over 1m.

The upper fill AAF was a loose brown soil in which were several large stones, and there were several more large stones at the pit's upper edge. The artefacts in the fill AAF were exclusively potsherds, the majority of them Halafian. There was a small body of first millennium material including some pieces of a handsome cup which is thought to be reminiscent of an Achaemenid form. The Halafian material is clearly derived, and would almost certainly have been redeposited along with the matrix of soil which constitutes the fill. It is of importance to note that two sherds from the fill AAF actually join other Halafian sherds from the immediately adjacent, undisturbed Halafian deposits (AAF2 = AAG13; AAF2.2 = AAK4). The implication is that the material which was dug out to form the pit AAM was later re-used, at least in major part, to refill it.

The lower fill was only 0.10m thick at the base of the pit. It was sandy in texture but compacted. It was veined with white, presumed wherever it was found on this excavation to be the salts deposited where fine plant roots had once existed. In colour the deposit was light brown to dark yellow in colour. This deposit would seem to have been the primary fill at the bottom of the pit, and the white veins of roots would suggest that the pit had lain open for some time with this minimal primary deposit exposed before it was finally filled up with the deposit AAF, the pile of soil which had been dumped alongside when the pit was dug. No rims, bases or decorated sherds were recovered among the few sherds in context AAL, but on the basis of fabric all the pottery seemed wheel-made, highly fired and late. If the observations are correct, it would seem that pit AAM was a late period pit which accumulated a little fill and

debris and was then deliberately backfilled with the same soil as that through which it had been dug.

5.2 Pit AAO

Close to Pit AAM, on the S edge of square 200 290, was another small pit, AAO, whose uniform fill was called AAI. The pit was located only after the layer AAC was removed. In this instance it seems moderately likely that the pit was genuinely sealed below AAC, and it should therefore be of Halafian date. More than half of the pit lay outside the trench and the diameter was about 0.80m. It seemed to be hemispherical in shape and the bottom of the pit lay beyond the excavation.

The fill AAI was a dark brown soil which contained a few sherds and a single piece of obsidian. None of the sherds were rims or bases or decorated sherds, but some at least were hand-made and identifiable as probably undecorated coarse-ware of the Halaf culture.

5.3 Pit AAN

The third pit in this square (200 290) was found below stratum AAC, but it may well be that the upper levels of this pit were missed in that stratum. AAN was centred about 202 294. It was about 1.20m in diameter and its recovered depth was only about 0.20-0.25m. The bottom of the pit had been roughly hemispherical. In the dark brown soil fill AAD were a few recognisably hand-made coarse-ware Halaf sherds and a number of later period sherds also, including one restorable vessel (AAD1 on D67).

5.4 Pit ABX

(Photos 5.16,17 of ABJ in ABX; 11.12,13 of ABR in ABX)

This slightly bell-bottomed, cylindrical pit lay alongside the S edge of the excavation in square 205 290. Part of it was in section, though most of it was dug. It was centred about 208 290 and was about 1.20m in diameter. From the section it was apparent that Pit ABX cut through stratum ABC and was therefore later than it. Its fill was subdivided into a primary (ABR) and a secondary deposit (ABJ).

The primary deposit ABR was 0.76m thick and consisted mostly of a soft, loose soil, light yellow to orange-brown in colour. The bottom of the pit, however, was packed with rubble consisting of quite large stones in a matrix of powdery, white-veined, light grey-green soil, patches of which also occurred higher in ABR. This lower deposit within ABR resembled the primary deposit in other pits in this part of the excavation area. The only cultural material identifiable in this deposit was a few sherds (D143), a stone rubber and a quern fragment. The large stones and rubble in the base of ABR would seem to be debris from some structural demolition.

The upper fill, ABJ, was loose, uncompacted, dark orange-brown soil. The homogeneity and lack of variation within it suggested that it was wash from mudbrick rather than the result of deliberate disposal of mudbrick debris. The wash included a groundstone poulder, a quern fragment (D169) and a little undistinguished pottery.

5.5 Pit ABT

(Field plan 15; Field section 30; Photos 3.1-4; 3.21- 30;5.7-8)

Pit ABT lay on the north side of the square 205 290 centred at 208 295. It was

circular in plan, about 1.40m in diameter, and cylindrical in shape; the total recorded depth was about 1.10m. On the section it was clear that this pit had been cut down through ABC and was therefore later than that stratum.

Once again, as in pit ABX, the fill could be divided readily into two deposits, ABF the upper fill, and ABS the lower. The lower fill was markedly similar to ABR, the lower, primary fill of ABX (see 5.4 above). It was compacted and hard, powdery when broken up, grey-green in colour, with a dense network of white veins. The small amount of pottery was first millennium in date and included part of a small jar.

The upper fill was, by contrast, loose and soft, a mixture of light orange-brown and light grey-green colours in which lumps of much degraded mud-brick debris could be distinguished. Incorporated in this material was a broken clay spindlewhorl and much pottery of the late period (D17-20). It would seem that the secondary fill was the result of a deliberate and fairly rapid deposition of structural and other household debris.

5.6 Pit ABZ

(Photos 5.13-15; Field plan 15)

Immediately to the SW of Pit ABT in square 205 290 was a less well-defined pit, ABZ, whose fill was labelled ABI. Pit ABT cut the fill ABI, showing that pit ABZ was already full when ABT was dug and was thus earlier than ABT, but the point in the stratigraphy from which pit ABZ was cut could not be ascertained with any certainty. The pit was located rather late in the excavation of this area, and it may well have been present undetected at a higher level in what was a rather difficult and complex area.

In plan the pit was suboval, approximately 1.20 x 1.40m. Only about 0.35m of its depth was recognised. The fill ABI was loose and soft, light brown and homogeneous. The pottery included a good deal of redeposited Halaf material together with a large quantity of first millennium sherds, including parts of another semi-fine jar, possibly of Achaemenid type.

5.7 Pit ABY

(Field plan 15; Sections 40 & 41; Photos 2.30-36)

In the SE corner of square 205 290 was found a little less than a quadrant of a pit ABY with a fill ABH. It appeared that Pit ABY cut the fill of Pit ABV and was therefore later than it. The relationship between this pit and the benchmark stratum ABC was not clear, but the pit was probably later than ABC. Pit ABY was a large pit; the radius within the excavation area was 1.40m, though the depth was not great in absolute terms.

The fill ABH was soft and loose, and very mixed; for the most part it was a greasy, grey and black soil, in which occurred many patches of orange or more compact, orange-brown material (degraded mudbrick?). The pottery from the fill was exclusively of the late period, including one knobbed pithos-base.

Pit ABY seems to have been used for rubbish disposal and not to have contained redeposited material, as did some other pits.

5.8 Pit ABV

(Field plan 15; Field section 41; Photos 8.15-16; 8.24- 25)

Pit ABV was a very large, subcircular pit in the middle of square 205 290. It was at least 2.40m across and had been cut down through stratum ABC and the rest of the strata into natural subsoil. Its fill was subdivided into three deposits, ABU at the bottom, ABK and finally ABE.

The emptied pit can be seen in photos 8.24-25, and with its primary fill ABU in place in photos 8.15-16. The primary deposit ABU in pit ABV was 0.20m in depth and consisted of a very loose, homogeneous, gritty, brown soil with dark and light grey smears and charcoal. In this matrix and not on the bottom of the pit was a single layer of large stones covering about half of the area. No significant pottery or other finds were recorded from this stratum.

Above ABU lay deposit ABK, which was a deep layer of compacted, powdery, light grey-green soil with a dense tangle of fine white veins throughout. Its top had formed a very hard, weathered surface, and it seems that this pit, like ABT in the same square (see above) and ACH in square 205 295 (see below), had lain open and part-filled for some time. On the top of the deposit were found a few traces of bone, including some thin cranium, occurring together in a small patch with some overlying stones. With the bone was found a very small pendant or ear- ring of some white glassy material (small-find 4). If the bones with the pendant were human (and they were not well enough preserved to allow identification), then the burial can have been only a partial one or that of a very small child. It was also not clear whether the deposit had been placed on the fill ABK and covered with ABE, the final deposit which filled the pit, or whether a small pit had been dug into ABE to bury the remains. Again, no significant pottery or other finds were recorded in this stratum.

The final deposit, which filled Pit ABV, was a loose, uncompacted and mixed soil, ABE, consisting of lumps of crumbly orange-brown material (presumed to be decayed mudbrick debris) and fine, soft, light grey-green soil in lenses and patches. In its final phase the pit had been used for the disposal of a good deal of decayed structural debris and other material, and deposit ABE also incorporated two whetstones and much first millennium BC pottery (D31-2).

5.9 Pit ACH

(Plan 28; Field section 41; Photos 9.27-31)

In square 205 295 there was one large pit, ACH, within which, when it was partly filled, a secondary pit, ACQ, had been dug and filled. Pit ACH was defined immediately below the ploughsoil, and it had been cut through ACC. It was subcircular, about 3m by 2m at the top, with sloping sides and a flat base 1.90m down. Its filling was formed of four successive deposits, ACN, ACK, ACJ and ACF in the stratigraphic order of their deposition. The large scale and the precise nature of the sequence of fills closely parallels pit ABV (see above). The secondary pit ACQ had been dug into the fill ACK, and had acquired its own fill ACP.

The primary deposit in the pit was ACN, a compacted brown soil, above which was ACK, a compacted, fine, light grey-green soil full of small white veins. In the section a number of fine silt-lines could be discerned, suggesting that this deposit was

accumulated gradually and naturally; its compaction and the fine white lines, which are again interpreted as fossil rootlets, further suggest that the deposit lay exposed for some time. From ACK came a whetstone (small find 43).

Into the two lower strata in the pit had been dug a secondary intrusion, ACQ, a shallow, circular pit in which fires had repeatedly burned, leaving a lensed, ashy deposit ACP.

This hearth in the exposed deposit ACK was finally buried by the deposition of light yellow to orange-brown soil ACJ, which also became compacted and white-veined. The final deposit ACF was a very loose and soft soil, a mixture of orange-brown and light grey-green soils, which, it may be suggested, represents a wash of eroded building debris. Two stone rubbers (one fragmentary) were found in deposit ACJ.

The pottery from pit ACH includes amounts of first millennium material, confirming its origin in the final period of occupation.

5.10 Pit ADP

Pit ADP was a small cylindrical pit, about 1.20m in diameter and more than 1m deep, centred close to the S side of the square 200 295 at 203 296. It was recognised from the base of the ploughsoil, and had certainly been cut down through stratum ADC, if not through ADB also. Its fill, ADD, was a homogeneous brown soil in which were some few undistinguished late period sherds.

5.11 Pit ADQ

In the NW corner of square 200 295 was a little part of the large, cylindrical pit which had occupied the greater part of Dr Curtis' 2 x 2m sounding. In the small fraction of the pit which was excavated in square ADA, the fill ADG appeared to be a uniform grey-green soil in which a few undistinguished late period sherds were present.

SECTION 6. The Halaf culture levels.

6.1 General

In all four squares the third stratum down (AAC, ABC, ACC and ADC) proved to be more or less transitional between the last, first millennium occupation and an earlier, Halaf culture occupation in the sense that it contained material from both periods. In all four squares the stratum was found to be an orange-red or red-brown soil with light flecks or grits. In some parts, notably 200 295 (the NW square) the C stratum produced almost purely Halaf material, and it would seem best to describe it as the uppermost (degraded and eroded) level of the Halaf culture settlement, into which, when the site was once again occupied in the first millennium BC, a certain amount of late material necessarily intruded. In some places also, the mixture of material attributed to stratum C was no doubt the result of failure on the part of ourselves as excavators to discern the fill or the edges of pits belonging to the late period until after the C stratum had been dug away. For several reasons it is simplest and best to associate other deposits and some structural remains with the C stratum. In some cases parts of the lower portion of the C stratum were dug under other labels for

reasons of archaeological caution; in other areas the C stratum was dug complete under one label. For example in 205 295 (the NE square) ACC was dug as a single unit down to the base of the associated structural remains, and its base in that square was fully 0.85m below the site datum on the present ground surface; and that would seem to be a fair indication of the true depth of the C stratum and its associated contexts over the excavation area.

In the four squares there were three phases of Halaf culture deposit, of which the C stratum, in its liberal interpretation, was the last. The C stratum seems to be the decayed and eroded remains of the final Halaf culture occupation, mixed to some extent when the later reoccupation began with some first millennium material. At the beginning of the third phase there existed in square 200 295 the 'tholos' structure ADE and the associated paving ADR. At about the same time the structure existed to which the stump of wall ACD belonged. The stone-lined pit ABZ probably belonged to the same complex of structures. The wall-structure ABQ, however, stood before the deposits ABG and ABN accumulated. The tholos ADE and the associated structures were founded on the top of deposits cognate with ABG and ABN. So the wall ABQ and the deposits which grew around it constitute an earlier phase, since they were found embedded in deposits which underlay the C stratum and its structures. The earliest phase of Halaf occupation is represented by the stratum of deposits which underlay the wall ABQ, with which the only structural elements identified were several oven-bases.

In parts of the two northern squares (that is, N of the 295 line across the excavation area) the lowest Halaf deposits were not fully excavated down to sterile soil, and the second season has now shown that the lowest Halaf deposit is not the earliest on the site. In this text the strata will be discussed in reverse chronological order, that is in the sequence in which they were excavated, and not in the order in which they were laid down.

There is no other indication of the total duration of the Halaf culture occupation than the general homogeneity of the painted ceramics from the whole deposit (which is discussed in Part 3). The implication of this homogeneity is that, within the general history of change in the long Halaf culture period, the occupation of Kharabeh Shattani was relatively brief.

6.2 The deposits of the last Halaf phase.

Although there were some large stones in the deposit AAC in square 200 290 there were no identifiable structural remains. The deposit AAC was orange-brown in colour with many creamy white flecks of quite large size (for example, the size of a large coin). The ceramics were predominantly late, though this observation was no doubt affected by our failure to detect some large first millennium pits which had penetrated this level; any real mixing of material from the two main periods of occupation was obscured in the mixing which was effected by our excavation. At about 210 293 there was a worn-out mortar formed in a rough boulder.

In view of the large number of pits in square 205 290 there was very little of the deposit ABC which could be relied upon. In the NE corner of the square the lowest part of the deposit belonging to this phase was dug under the label ABL. It was again an orange-brown soil. Besides mostly late ceramic (probably deriving from the still ill-

perceived pitfills) it contained a spherical clay spindlewhorl, a ground stone pounder, and a number of fragments of crude, burnt clay, rough on one side and smooth on the other. These lumps may be interpreted as parts of the lining of a clay oven.

In square 205 295 the same red-brown soil with off-white flecks constituted ACC, whose ceramics have not yet been recorded. As already explained ACC was excavated to a considerable depth, and it almost certainly overlaps in its lower parts contexts below those labelled C in other squares (eg AAC and ABC). It was dug thus because it was homogeneous, and because there were stones in courses in one part of the square (the wall ACD) which encouraged us to continue downwards with confidence until some real difference in the soil or the foot of the stone structure could be seen. From an early stage in its excavation ACC included a number of scattered, large stones, presumably foundation material from some completely destroyed structure or structures. The only coherent pieces of structure were a wall (ACD) and part of a tanour oven (ACO). The wall is described below since it was founded at the base of the deep stratum which we called ACC. The oven-floor ACO floated in the middle of the deposit at about 207 299, attached to no surface or floor. Strangely, it did not appear to be the floor of an oven, but rather part of the tauf-built superstructure (Photos 11.15-17). It was dissociated from its own floor and must somehow have been removed from its original position.

Finally, in square 200 295, the C stratum was dug mainly as ADC, but part of it, an arbitrary strip along the N edge of the square, was dug as ADF. Although they were dug with different labels ADH, which was the soil immediately above the paving ADR, and ADI, which was the corresponding material in the baulk which originally separated square 200 290 from 200 295, also belonged to this third Halaf phase. No structural remains were identified though a number of large, isolated stones were found. When the whole area of the square was being dug as ADC it was noted that most of the pottery was Halaf, and relatively little, if any, seemed to be late. Suspecting that there was less late deposit overlying the Halafian in the N Part of the site, we isolated the N strip of the square and dug it under the label ADF. The ceramics from ADF, effectively the lower portion of ADC at the N side of the square, were exclusively Halafian. In the SW corner of the square the lower part of ADC seemed more compact and it, too, was dug separately under the label ADH. The ceramics were purely Halaf, and it transpired that this more compact red-brown material overlay the paved area ADR immediately outside the tholos. Likewise the ceramics of deposit ADI, the extension of ADH into the baulk to the S, were exclusively Halafian.

It is of interest to note that parts of what appears to be the same Halafian bowl were found in context ADF (the N part of square 200 295) and in parallel context AAC (in square 200 290). More sherds of what also appears to be the same bowl were noted in context AAE immediately below AAC.

6.3 Deposits and structures at the base of the last Halaf stratum

The next body of Halaf material lay at the base of the C stratum, though it was inseparable from it. The group comprised a surface, context AAE, some mud-brick or tauf)* debris, ABD, the stump of a wall, ACD, the stone parts of the foundations of a 'tholos', ADE, and an adjacent area of paving, ADR. The deposit ADL was the soil from within the area of the 'tholos' ADE, though it was not in fact in any way different in nature from the rest of ADC.

In square 200 290 AAE proper was a deposit a little over 0.20m thick, extending over much of the square (except where it had been cut away by pits). Against the S baulk of the square the soft fill of the edge of a large pit was not detected until too late, and it was dug as AAE. It was a rather mixed deposit, being generally a dark brown colour but including black ashy patches, small grey-green and lighter brown patches. There were no structural remains. The ceramics recorded include both Halafian and late material, but there was a recognised problem in this area during excavation, when it was noted that two of the late period pits, the large pit AAO in particular, were defined only later when their fill could be contrasted with the next layer down, AAG. Thus the presence of the late material may well be explicable in terms of the failure to recognise late period pit-fills at an early stage of our excavation. Three of the Halaf sherds from AAE belong to the bowl first recognised in context AAC and labelled AAC65 and 66. This only serves to emphasise what has already been said of this whole deposit, namely that the third phase of Halaf material should be treated as a single phase, in which there was a surface on which various constructions were based, and on which a considerable deposit thereafter accumulated both before and after the abandonment of the site.

In the neighbouring square 205 290 the equivalent context was ABD. ABD was a strip of compact, red-brown soil lying in the middle of the square amongst the surfait of later pits. Here and there within ABD it seemed possible to define large lumps of decayed mudbrick or tauf)* in the form of redder, firmer material. Though there is little hard evidence in the form of plan or photos, we remain of the opinion that the differences in colour and texture in this area should be interpreted as the remains of a collapsed structure or wall which ran roughly SW-NE.

In the SE corner of square 205 295 there protruded a stub of stone-built wall (ACD). It stood about 0.25m high and consisted of up to four courses of flat stone slabs, each about 0.15-0.20m wide, and set side by side in mud mortar as two parallel faces. No stones bonded the two faces to each other, and the narrow gap between the two irregular faces was filled with mud and large pebbles (see photos 8.01 and 8.02). The stub of wall was founded very slightly below the base of deposit ACC in the top of the underlying ACG. It projected a mere 0.60m into the excavation area and abruptly terminated. Though there were a few other similarly sized stones on the same general alignment towards the middle of the square, there were none at the depth of the base-course of the preserved portion of the wall. It would seem likely that all of the wall ACD which once stood in the area of our square has survived, and that the odd stones nearer the centre of the square do not belong to that wall. On the other hand, it is quite clear that far too little of the structure to which ACD belonged has yet been revealed to allow any opinion to be formed as the nature of the structure.

Two arc-shaped stretches of stone construction were labelled ADE in square 200 295. In plan they strongly suggest that they were surviving parts of the one, damaged, circular building, the whole circuit being interrupted in the S by the late pit ADP and over about one third of its perimeter in the N probably by erosion after the building had collapsed and the settlement was abandoned. There were stone parts of an inner and an outer circle, which are here interpreted as an outer and an inner protective facing sandwiching a tauf)* core, which would have been the wall itself. The circle described by the outer arcs of stone had a diameter of 5.6m.

The surviving elements consisted of two arcs of the outer circle, while inside the E

arc of the outer circle was found a small portion of an inner wall in the shape of a concentric arc of stones. Outside the E arc of the outer circle was another arc of smaller stones, laid flat like a kerb around the outer circle. The walls were founded upon a compacted, weathered surface of washed deposits, ACG and ADJ. At one point the stones of the W arc of the outer circle were laid on top of the edge of the stone paving ADR, which therefore must already have been in position (see below). The outer ring consisted of large, flat blocks about 0.60m long and 0.30m wide, set up orthostatically on a long edge. All the blocks inclined inwards. The inclination was measured at two points, once on each preserved arc, at 61.2° and 61.9° . The short arc of inner wall in the E half of the structure was of coursed stone preserved here and there up to three or four courses high. The maximum height of the inner arc was 0.36m. The E arc was sectioned at several points and traces were found of a tauf)* core between the inner and the outer stone arcs. It appears that the stone arcs were the remains of a facing to the inner and outer sides of a thin, tauf)*- built wall, which was preserved only where it had been thus protected. If one supposes that the construction was a tauf)* dome, it is easy to imagine that the outer arcs of stone were designed to protect the base of the wall from erosion. The inner face of coursed stone is more difficult to account for in structural terms, but it may perhaps have acted as a form of internal buttressing or as a narrow bench.

There was no trace of a doorway in the surviving arcs. Careful excavation of the interior failed to locate any surface which might have been the floor of the circular building. The exterior surface when the structure was built included the stone paving immediately adjacent to the W arc of wall, but the building had continued in use while the external level accumulated, for there was found a short arc of stones laid flat like kerb-stones around the outer side of the outer arc of orthostats on the E side only 0.10m or so below the top of the orthostats and more than 0.20m above the base of the wall. It is only to be expected that much of the matrix within which the circular structure was found, particularly the deposit ADL within the building, would have derived from the collapsed and eroded tauf)* superstructure. The soft brown soil which was found seemed well removed from collapsed tauf)* and it must be suspected that the area of the interior of the former structure was disturbed as well as eroded.

It is possible to attempt some reconstruction on the basis of the surviving remains. The thickness of the tauf)* wall was only about 0.25m to judge from the gap between the inner and outer additions of stone. If only a few of the stones had inclined inwards it might have been difficult to assert that the wall itself was constructed with an inwards inclination, but all the stones leant inwards and the angle was constant. Even though it is very easy to jump to the conclusion that the structure was a typical 'tholos' building of the Halaf culture, it is in fact not difficult to reach that conclusion from the observations noted. Since the wall was apparently inclined inwards from the base, and had not simply collapsed into that position here and there as the structure decayed, it is safe to infer that the circular building had a dome which sprang at an angle from floor level.

Ignoring any internal fixtures like the inner stone bench-like arrangement, the total floor area enclosed by the dome would have been 20.5 square metres. If the inner kerb or bench had once been continuous around the whole of the circle except a doorway (which does not seem likely) the floor area would have been a fraction less than 16 square metres. These two figures provide an effective maximum and minimum

floor area for the building. The height of the roof at the centre of the dome can also be calculated on the assumption that the dome was a portion of a sphere. Using the observation of the angle of the wall at its base, one may calculate that the internal height of the roof at its centre was a mere 1.19m. Supposing that the building was intended for human use, such a height is surely impractical (even if it were structurally sound). One must conclude that the dome was not a part of a simple sphere, but was a taller, more conical form.

Immediately adjacent to the W arc of the tholos wall was an area of stone paving, ADR. The stones were selected and of similar size (about 0.30m square), and they were laid flat side by side. They appear to form a linear arrangement of three closely set, parallel rows. The relationship of the paving ADR to the W arc of the tholos wall ADE can be clearly established, for the tholos wall sits upon the edge of paving in one place; the paving was strictly earlier in construction than the stone outer revetment of the tholos wall (though it is quite imaginable that, if the tholos had a first phase of existence when it lacked an outer stone facing to the base of the wall, the unguarded *tauf*)* wall and the paving could have been contemporary). In fact, the precedence of the paving over the stone cladding of the foot of the tholos wall is a fairly insignificant distinction in terms of the functioning of the two constructions, which must have been broadly contemporary in usage if not in the precise date of their building. It is argued that the stones ADR form a paving rather than some sort of heavy wall foundation because no trace of a wall superstructure was found; the deposit above the paving (ADH and ADI) was a red-brown, flecked soil, like ADC above and around it, but a little more compact, which would be consonant with the soil on a trampled path or roadway.

It seems probable that there was a pit (ABZ) cut down from the level of the tholos, the paving and the stump of wall ACD. The pit was not observed in plan, but was first detected when some stones which lined its base were found (ABW). When the nearby section came to be drawn (D30) part of the cut of a pit could be seen in what was the appropriate position, and the two elements, the stone lining of the base and the evidence for a cut in the section, were put together. The pit would have been about 1.5m in diameter and the recovered depth, from the top of stratum ABG to the bottom of the stones ABW would have been about 0.48m. The stones form an almost semi-circular setting of long, narrow slabs laid around the bottom of the side of the pit, which resembled an inverted, truncated cone in shape. The stones were set on end with their long axes reaching up the sides. Since the fill of the pit could not be distinguished from the soft matrix of deposit ABG, into which the pit had been cut, it was not possible to make any observations as to whether there were originally other stones completing a circular setting around the pit's base, or how the pit had ended its use. Because of its shallow size and (possibly incomplete) stone lining it may be suggested that the pit served some function while it was open; certainly the homogeneous fill implies that it was not a rubbish pit, but was filled all at once with surplus soil. The reconstruction is therefore advanced here that the pit was an abandoned storage pit, which had been quickly backfilled in one session when its use was terminated.

6.4 The middle stratum of Halaf deposit.

Below the level of the paving ADR, the tholos wall ADE, and the stump of wall ACD

was a deposit of about 0.30m thickness, ADJ; in the W in square 200 295 it was labelled ADJ and in the E in square 205 295 the same deposit was called ACG. ACG could be seen to continue S into square 205 290, where it was labelled ABN; and in turn ABN was continued W as ABG and then AAG in square 200 290. In some areas the deposit was homogeneous: AAG, for example, was of a hard consistency, a clay-like texture and orange-brown colour with lighter flecks. Besides a good deal of Halaf culture pottery these deposits also yielded a very few other artefacts, namely a broken spindlewhorl (18/5/2 from ACG) and some quern fragments (6/5/1 also from ACG). It was concluded that the whole deposit throughout all four squares represented the decayed and washed remains of mud structures beyond the area of excavation; if the material was derived from mud structures within the excavation area, they had been totally dissolved and were completely unappreciated in the excavation.

The middle deposit was not entirely lacking in structural remains. At the base of the stratum, founded on the underlying stratum ABP and AAH, and built in a slight hollow in the middle of the S half of the excavation area, was a stone structure ABQ (photos 11.19-22). The structure was composed of limestone slabs laid with mud mortar in the form of a wall one stone thick (about 0.40m) and 3.2m long. At either end the wall had a short return, only about 0.5m long; and a third return of the same length was built midway between the other two. The complete construction looked in plan like a capital letter E. The stone construction was built three and four courses high. There was no surviving mud superstructure, and no trace of any stones which had slipped from the top of the wall at its decay; it seems to have been quite complete as it was found. In particular the three short returns gave every appearance of being finished and intact. A small, complete jar was found standing at the foot of the northernmost return just beyond its extremity (see photos 11.23-26). The southernmost prong had subsided and was tilted slightly downwards where it had been constructed over an underlying hollow, whose fill (AAH and AAK) had settled or been somewhat compressed. No opinion can be ventured as to the function of the structure ABQ, and no parallels from other sites spring to mind. The structure was presumably intended either to provide two square areas enclosed on three sides and open on the fourth, or to serve as the base to support some lost superstructure. Despite careful search no further clues could be discovered around the structure.

At the S side of square 205 290 was a portion of burnt clay surface, ABO (photos 6.6-11). As preserved its maximum extent was about 1m, but its thickness was only 2cm. It was orange-brown in colour with an upper surface which had been burnt hard and dark grey. On almost every side the burnt surface had been cut away by late pits and its original extent and shape remains unknown. In terms of the material used and the effects of fire upon it ABO closely resembled ACN and ADM, which were the bases of clay ovens in the lowest stratum of the site, and quite probably ABO was another such oven-base, incomplete and less well-preserved.

6.5 The lowest stratum of Halaf deposit.

The lowest portion of Halaf occupation deposit was represented by the fill of a hollow (AAH and AAK) in the SE part of square 200 290, deposit ABP in square 205 290 below the E-shaped wall-structure ABQ just described, deposit ACI in square 205 295, and deposit ADM in square 200 295. In the N part of the area deposit ADM (with an eroded oven-base ADN at its surface) was revealed in square 200 295 but not

excavated for lack of time, and the parallel deposit in square 205 295, ACI, was partly but not completely excavated for the same reason. Judging from the completely excavated S half of the area, and the remaining stratigraphy in the N half as observed in the sides of pits, very little of the Halaf deposit was left unexcavated in the N part. In square 200 290 deposits AAN and AAK were restricted to the hollow in the SE corner, which ran on across the adjoining square to the east.

Unlike the greater part of the Halaf deposit, the lowest stratum was dark, generally a grey-brown in colour with a good deal of fine, black, ashy material in streaks. To the E in square 205 290 the deposit was dug as ABP, and was found to be progressively less dark and less ashy towards the east, and also to become thinner. Like AAH and AAK at its thickest, ABP was only about 0.20m deep. ABP produced one complete and one incomplete slingbolt bullet (16/5/3 and 16/5/4) besides some Halaf painted pottery. Deposit ACI in square 205 295 was also incompletely excavated. It was brown and hard, and, like its relatives ABP, AAH and AAK, it was much less flecked than the overlying deposits of Halaf culture date. In deposit ACI was found a roughly circular area of burnt, dark grey clay surface, ACM, extending to about 1.6 or 1.7m across and 2 to 4cm thick (see photos 10.08-10; 10.12-13). This would appear to be the surviving base of a free-standing clay oven whose superstructure has entirely disappeared.

Another similar, though less well preserved, oven-base, ADN, was found on the surface of deposit ADM in square 200 295 (see photos 9.24-25). The greatest extent was 1.3m and the thickness was no more than 2cm. The core of the burnt clay was light to dark orange in colour, though the surface was dark grey. Presumably the grey surface was discoloured by smeared ash rather than heat.

SECTION 8: Discussion

Until the study which is being made of the first millennium pottery from the pits is completed it is too early to say to what period that second reoccupation of the site should be dated, or whether any lapse of time can be discerned within the final reoccupation period. Suffice it to say that the pottery does not accord with either neo-Assyrian or Hellenistic material and, because of the echoes of one and the pre-echoes of the other, perhaps a date between the two may be the correct one for his period.

As for the Halaf occupation, it will of course be necessary to review the evidence after the second season, especially with a view to checking that the three-phase stratigraphy used here can be verified. But it is already clear that there was, within the very limited excavation area, an alternating sequence of construction and decay. The decay phases are marked by the more or less homogeneous deposits of thoroughly mixed and washed material. On the other hand, at least in the two later phases (too little of the earliest phase has yet been exposed), there survive reconstructable and quite well-preserved structural remains. If the precise pattern of construction and decay is exactly paralleled over a much larger area than was opened in 1983, it will be necessary to think of the settlement as a whole undergoing phases of building (and use) followed by periods of abandonment and decay.

If, on the other hand, the stratigraphy is not exactly replicated in adjacent areas it would presumably indicate a continuous occupation with a changing pattern of

construction over time, with buildings and other structures being replaced and rebuilt here and there in a shifting, haphazard pattern. In this latter pattern the stratum of decay and wash in one area would be explained by the recovery of abandoned structures nearby, and their living replacements not far away. In either case it would seem to be the case that buildings were not being directly replaced on exactly the same site. If the occupation was continuous, and yet there are strata of wash and decayed and eroded structural remains to be observed either over or under the remains of identifiable buildings, it follows that the settlement must have had sufficient open space for replacement to be effected by shifting the site of the building, building the replacement on a new site, and abandoning the former site. Such a village must have been rather dispersed, and distinctly different in form and operation from the strongly nucleated type of village with little open space between the buildings beyond that needed for access.

Although there are deposits of fairly homogeneous wash it is noticeable and indeed encouraging that there are pottery joins, which indicate that broken pots were not being transported far and were not being widely spread. In these regards Kharabeh Shattani is an unusual Halaf culture settlement, for most known sites of the culture, excavated or not, seem to have been occupied for very long periods. To date there are no figurines, no trace of copper, and no amulets, beads, pendants or other small objects of personal ornamentation from the excavation. But, even with the extra sample from the 1984 season it seems that certain types of artefact are not present at Kharabeh Shattani. This is another aspect of the first season's work which will need to be reviewed carefully after the second season, with the possibility that an up-date on the Halaf culture material may be included in the second report.

PART 3: THE HALAF CULTURE POTTERY FROM THE 1983 SEASON

SECTION 1: Preliminaries

1.1 Introduction

In the first season at Kharabeh Shattani a total of upwards of one thousand Halaf sherds were found. Because the precise characteristics of the Halaf ceramic tradition in this area were not known there was no predefined recording system. To allow such a system to be constructed for future seasons the recording of sherds consisted of drawing and photographing all diagnostic sherds (that is, in the main, rims, bases and decorated sherds) and describing them individually. This system largely overcame the problems raised by the fact that, while the stylistic analysis of the sherds was done in Edinburgh, almost all the pottery was still in Iraq and therefore inaccessible. For most contexts the aim of drawing all diagnostics was achieved. However some contexts which occurred towards the end of the season were not completely recorded; they are ABE, ABI, ABL, ACC, ACK, ADC, ADD and ADJ. In all 380 Halaf sherds were drawn and form the basis of the first part of this report while approximately 75 diagnostic sherds remain to be recorded. A trial programme of neutron activation analysis was successfully carried out on a small selection of sherds and is detailed in section 3.

The method of recording has imposed certain constraints on the range of analyses which can be done. Specifically the concentration on 'diagnostic' sherds has meant that statistics based on the pottery assemblage as a whole are not yet available although for reasons which will be mentioned later this may lead to more meaningful results in instances such as the ratio of painted to unpainted sherds. Generally shape and decoration have been used for categorisation rather than fabric, paint or slip. These problems are more than counterbalanced by the flexibility of analysis and re-analysis permitted by the use of large numbers of drawings. This analysis of the first season's pottery has enabled the construction of a site specific recording system which should be more accurate and efficient than would have otherwise been possible and which should help to provide those details which are currently lacking.

None of the sherds can be said to have been found in an ideally secure context, such as an undisturbed grave would provide, and those of them from the late pits and plough soil can clearly be assigned no original stratigraphic position. However the presence of a number of conjoinable sherds within the Halaf deposits on occasion making up relatively large portions of pots indicates that the stratigraphic relationships, both horizontal and vertical, may not have been destroyed totally. Further the fact that joins exist between sherds from first millennium pits and sherds from intact Halaf deposits suggests that the entire ceramic assemblage comes from approximately the same area of the site. As will be argued in more detail later, there is no evidence that the Halaf pottery from Kharabeh Shattani represents more than a single ceramic phase. Therefore, in the rest of this report, the overall unity of the pottery will not be questioned. This assumption is in part necessitated by, and may indeed be partly caused by, the present small sample size which is large enough to be dealt with as a

whole with some degree of confidence but which would become less reliable if it were to be sub-divided. This point will, of course, be tested again when more material is available after future seasons.

1.2 Notes on the Sites used for Comparisons

As the Kharabeh Shattani pottery appears to be of a single phase and because the sample is small, it is necessary to rely on comparisons with other sites for many aspects of analysis, particularly its relative dating. A large amount of work has been done in recent years on the Halaf culture and there are a growing number of scientifically excavated sites: Yarim Tepe II and III, Tell Aqab, Banahilk, Girikihaciyan, Shams ed-Din, several sites in the Hamrin region, most notably Tell Hassan, some of the sites in the dam areas of Turkey which may be full Halaf and, perhaps most interestingly, Tell Arpachiyah. Several synthetic works have also appeared although none of the most recent are published in full (Davidson 1977; Hijara 1981; Wickede 1981). The most relevant here are the first two, both containing much unpublished material. Davidson's Ph D thesis, importantly, includes a large number of neutron activation analysis results for Halaf sites (see also Davidson and McKerrell 1976; 1980 and Davidson, 1981). It has also been possible to examine material from Tell Arpachiyah, Tell Chagar Bazar and Tell Brak at the British Museum, the Institute of Archaeology in London and the Ashmolean Museum.

The major problem with all these sites is either the standard of excavation and recording or the inadequacy of publication and frequently both. This, together with the necessity of having a well defined sequence, dictates that the two sites which were used for basic comparison are Tell Arpachiyah (Mallowan and Cruikshank Rose 1935; Hijara 1980) and Tell Aqab (Davidson and Watkins 1981). Unfortunately in neither case is the quality of available information ideal.

Detailed analysis of the Tell Aqab sequence is available in Davidson's Ph D thesis, although few of the actual sherds are illustrated which reduces the flexibility with which the data can be used. The latter part of the Halaf sequence is especially well represented with large samples (see Table 1). The Tell Aqab sequence seems to run from the Middle Halaf (in Davidson's terminology) continuously through Late Halaf and Halaf-Ubaid Transitional into the full Ubaid. Although Early Halaf is present, it is not well represented. The area in which it was found was small (3 x 4m) as was the quantity of pottery recovered. Given the length of the Early Halaf Phase now revealed at Tell Arpachiyah, there must be considerable doubt whether the whole of this phase is represented at Tell Aqab; if it is then the available sample appears even poorer.

The 1933 Tell Arpachiyah excavations involved large exposures and large quantities of sherds exist in museums - at least 5000 in the Institute of Archaeology, the British Museum and the Ashmolean Museum, with perhaps 4000 more in Birmingham which have not yet been fully studied. However their stratigraphic position is seldom recorded, making the vast majority almost useless for the formation of a sequence. Nevertheless Davidson was able to construct a tentative sequence, largely compatible with that of Tell Aqab, using a combination of published and unpublished provenanced sherds together with sherds which could, by neutron activation analysis, be assigned to one of the three compositional groups which correspond to his pottery phases. The

presence/absence of the various shapes is recorded in Table 2, adapted from Davidson 1977. Despite this quantification remains impossible and the correlation between the different levels in the centre of the mound and the depth of the deposit at the edge remains shaky. The early Halaf was again poorly defined. The sample was better for the Late Halaf, that is TT6 and probably TT7 and 5 as well; but most of the material came from the TT6 'burnt house' and may well be too atypical to form the basis for generalisation outwith the site itself. There is also reason to think that the sequence was incomplete since the Halaf-Ubaid Transitional Phase does not seem to occur (TT5 is more likely to be Late Halaf with Ubaid material mixed in due to later disturbance). Quite probably the latter part of the Late Phase is not represented either.

The new excavations undertaken by Hijara were designed to overcome these problems. His results are included in his Ph D thesis (Hijara 1981) along with a large number of drawings, and summarised in Hijara 1980. At first sight his proposed sequence is very different from both the Tell Aqab sequence and that suggested from the old Tell Arpachiyah excavations. This is largely due to the fact that Hijara's system is presented differently. Hijara's phases I to III correspond to Davidson's Early Halaf while Hijara's phase IV includes the whole of Middle and Late Halaf. However for several reasons Hijara's terminology has not been used here as it stands. The sample size for several of Hijara's phases is small and, in most cases, the phases are not readily differentiated from each other, so it is not yet possible to apply the scheme generally to the Halaf. Therefore it seems better at present to adopt Davidson's sequence. As almost all the sherds Hijara used are illustrated it has been possible to rework the new data into a form which fits rather more easily with previous work (Table 1). Partly it has been done since it is possible to make it conform more closely with Davidson's system while too little of the raw Tell Aqab data is yet available to allow reworking in the opposite direction. It also seems useful to retain divisions which are the same stylistically and compositionally provided the evidence is not distorted. The combination of many of Hijara's form types into more generalized shapes optimizes comparability with the system used for Kharabeh Shattani rather than anything else. The proposed adaptation of Hijara's data does provide, on the basis of a sequence of shapes at least, a valid interpretation at present.

Essentially only the later part of the sequence has been affected. Hijara's division of the Early Halaf Phase (his Phases I, II and III) has been retained with little modification although they have been renamed Early Phase A-C (by order of excavation). Such a length of the Early Halaf Phase was not unforeseen (Mallowan and Cruikshank Rose, 1935, 19). The most distinctive change within both Hijara's and Davidson's data is the quite sudden decline of straight sided bowls (type 1a) at the end of the Early period and the appearance of a much greater variety of bowl shapes, especially hemispherical bowls (type 2a) (see Fig 37 and Appendix A for the terminology employed for the shapes). This occurs between Hijara's Phase III and IV. Hijara's sample for the latter part of the sequence is poor. Therefore Davidson's division is taken in its totality although it should be noted that the difference between the Middle and Late Halaf periods is not as marked as that between the Early and Middle.

The reliability of the samples from Tell Arpachiyah varies. The samples for the Early Phases A and C and especially for the Late Phase are small. In the latter case this is not surprising since Hijara's trench throughout its length passes through areas where Mallowan had already removed part of the deposit (see Curtis 1982, Fig 19 for the

clearest evidence of this). Therefore the problem of the Late Phase at Arpachiyah remains. There are further reservations necessary. Hijara's trench was narrow and the possibility exists that it may not be sufficient to define the stratigraphy fully. It also means that his results are especially prone to distortion by even relatively localised variation in the distribution of ceramics within the site, whether due to social or functional reasons. This is perhaps a more apparent problem at Tell Arpachiyah than elsewhere since major horizontal variation is demonstrable. For instance the portion of TT6 excavated by Hijara (Layers 1 to 5 in Hijara 1981, 152 although from Hijara 1981, Fig 6 possibly only layer 5) seems to have produced little if any polychrome pottery while the main room of the 'burnt house' only 5 metres away produced large quantities.

The dating of the sites which lack a long stratified sequence follows Davidson rather than, for instance Mellaart (1981), who nowhere specifies his dating criteria, other than to observe that they are based on the work of Hijara. Therefore Yunus (Woolley 1934; Dirvana 1944) is considered Middle to Late Halaf, Turlu (Mellink 1964) Late Halaf to Halaf-Ubaid Transitional, Tell Brak probably Late Halaf at least, and Shams ed-Din Late Halaf. Tepe Gawra is Late Halaf (the soundings) and Transitional (levels XX-XVII). Unfortunately, although both Banahilk and Shams ed-Din have recently been published, the information from these sites was not available when this report was being prepared. In future work this will be rectified although the sources of the main comparisons will probably remain the same.

SECTION 2: The Kharabeh Shattani Pottery

2.1 The Fine Ware Pottery

In technique, most of the pottery from Kharabeh Shattani falls well within the normal range of Halaf ceramics. The clay used for the the majority of the pottery is very fine, generally with no significant inclusions. There were specks of mineral visible but these were almost always few and rarely more than 1mm in diameter. This is typical of other sites where there are usually a few inclusions but not enough to constitute a temper. Since the clay sources in the area contain small pieces of stone, it is likely that some sort of cleaning process took place. A very few sherds seem to have light chaff tempering. This is rare at most Halaf sites although it does occur quite regularly as a minor component; only at Yarim Tepe does it seem to appear more often.

The fabric varies in colour but, although more work needs to be carried out on the sherds, there seem to be three broad divisions; a sort of pink-buff, almost apricot in shade; various browns or orange browns; and a light green. The last of these groups was quite rare. It is probable that the first two groups and probably the third as well are the results of variations in the firing conditions rather than simply different sources (see also Section 3). This can be seen in the sections of some sherds where the core is of one colour, the surface another. Generally this seems to be the result of incomplete oxidization. Most sherds are fully oxidized as can be seen from the homogeneous colour throughout. Thus the variations in the fabric colour are better explained by supposing that on occasions the initial atmosphere in the kiln was reducing, but that when the fuel began to burn fully it became oxidizing, rather than that the exceptions were fired under radically different circumstances. This would mean that if sherds were fired long enough they would completely oxidize but if they were removed slightly too soon they would have a darker core and a slightly different surface colour (Shepard 1965, 213ff).

A few of the vessels have mis-shapen rims, notably ABP1 (Fig 10, 6). These may be from non-circular pots or from pots which, though mis-shapen, were still used, but they are most likely to be wasters resulting from pottery manufacture on the site. Too few examples are present to be sure. A number of sherds have holes pierced in them, often near the rim. From the evidence of Tell Arpachiyah vessels in the British Museum especially, it was a fairly common Halaf practice to repair broken pots by binding the pieces together through the holes. Some of the examples have traces of bitumen where it was used to seal along the line of the repair.

The pottery is usually wet-smoothed or lightly burnished, probably to ensure a good surface for painting rather than for any functional reason. A number of sherds had been more highly burnished to such a degree that the paint appears lustrous. This is not uncommon at other sites, although it probably occurs on a majority of sherds only in the Early Halaf. Many of the sherds had abraded surfaces or surface accretions of mineral deposits which makes it almost impossible to assess the degree and nature of smoothing/burnishing in any quantitative manner. Most of the sherds were recorded as being slipped internally, externally or both. Sometimes it is clear that this is a true slip. However, without thin-section analysis it is impossible to distinguish confidently between a very thin slip, self-slipping and a well-smoothed surface. This is especially

the case since compaction of the clay through smoothing can result in minor colour changes on the surface (Shepard 1965, 192). As with the wares, further work is required on the presence and absence of slips. If a large number of sherds at Kharabeh Shattani prove to have been slipped, this would contrast with Tell Aqab (Davidson 1977, 109) although it would match with Tell Hassan where an orange-brown slip may have been employed (Invernizzi 1980).

As at other sites, the paint appears to be iron oxide based and can range in colour from orange, through red and brown, to black. This variety of colours is probably in part due to slightly different firing temperatures and different thicknesses of application. Only one, rather poor, example of true bichrome painting occurs (Fig 19,3). There is infrequent and not necessarily deliberate use of what has been termed polytone decoration, where the same pigment is applied in varying thicknesses which, on firing, produce different shades of the same basic colour or where different parts of the pot were subjected to different firing conditions.

If an Halaf pot is decorated, one part of the decoration almost always occurs on the interior or exterior rim and this is often the only area of decoration. Therefore to estimate the actual ratio of painted to unpainted vessels, it is probably best to base it on rim counts alone since an undecorated base or body sherd may come from a decorated pot. At Kharabeh Shattani 71% of rims were decorated, 13% were unpainted but of fine ware and 16% were coarse ware. It is hard to compare these figures with those of other sites where measurements have only been made in terms of unselected sherd numbers or weights, although Davidson notes that very few rims at Tell Aqab were undecorated (Davidson 1977, 108). Undifferentiated sherd counts have not yet been made accurately for Kharabeh Shattani but a rough count on the material from context ABP, a relatively large context but still a very small sample, indicated that about 40% of all the sherds were painted. This matches the evidence from other sites fairly well. Tell Aqab had 40% of its sherds painted, counting by number, and 47%, counting by weight (Davidson 1977, 108), the 1976 excavations at Tell Arpachiyah produced 48.5% painted sherds (Hijara 1981, 187), at Yarim Tepe 2 undecorated sherds slightly exceeded decorated sherds in number (Merpert, Munchaev and Bader 1978, 42) and Banahilk had about 60% decorated (Braidwood and Howe 1960, 34). Girikihaciyon had only about 13% painted pottery (LeBlanc 1971, 65) but the site is at the edge of the Halaf zone. The old excavations at Tell Arpachiyah produced more unusual results with about 90% of the pottery being decorated (Mallowan and Cruikshank Rose 1935, 172). Mallowan notes that special care was taken with the unpainted pottery and, although the result may be slightly distorted by the burnt house of TT6 which contained virtually only painted pottery, this probably does indicate that the quantities of painted pottery varied in different parts of the site. At Tepe Gawra, too, almost all the vessels were painted, although on what sample this is based is unclear (Tobler 1950, 127).

2.2 Detailed Analysis and Comparisons

The first step in the analysis was to break the sample down into different form categories. Shape was chosen as the basic criterion rather than decoration because the sheer number of different motifs and combinations of motifs makes comprehensive analysis of them difficult without initial sub-division. Furthermore the frequency of

encrustation on the surfaces of the sherds reduces the sample considerably. The shape categories chosen are quite generalized. This is desirable because the majority of sherds are too small to assign to very specific shapes and because some degree of generalisation improves the inter-site comparability of the analysis, a necessity given the short sequence. After this initial step, the data was largely dealt with within these categories.

A detailed description of the pot forms is given in Appendix A and is illustrated in Fig 37, but a summary of the principles employed is appropriate here. Most of the sherds which give information on form are rim and base sherds. Without complete profiles it is virtually impossible to correlate base forms to rim forms with any confidence. Therefore the form categories were designed to maximise the use of the available evidence. The forms chosen were largely taken from other sites and although Fig 37 shows complete profiles it is not suggested that they should be taken as being the exact reconstructions of the range of vessels from Kharabeh Shattani. The numerical part of the designation gives the general group of shapes. The alphabetic part gives the precise form within that group. While it is quite possible that some rim sherds are assigned to forms to which they did not originally belong, there are unlikely to be many sherds which belong to another group of shapes entirely. Sherds which could not be definitely assigned to a category but which were clearly part of a particular group are placed by default in the 'a' category of that group. Since in some cases this 'a' form is also a specific vessel type it is possible that the frequency of these types is slightly exaggerated but this is not thought likely to cause a problem, since no statistical analysis is undertaken within the major groups.

For all pot forms the basic comparisons are made with Tell Arpachiyah and Tell Aqab. Where other sites provide additional information, they are mentioned. In general references are only cited when they are fairly specific; it is usually clear whence more general facts are obtained. Many of the comparisons depend on Davidson's examination of unpublished material and therefore where I have been unable to check this directly, some distortions may exist in the correlation between his form categories and those employed here. These are not likely to be very significant in most cases but they do exist and potential instances are detailed in Appendix A. The general pot forms illustrated in Fig 37 are complemented by a key to the categorisation of painted motifs in Fig 38.

2.2.1 *Type 1a* (Fig 1; Fig 2,1-4; Fig 15,1-5; Fig 30,2)

An open bowl with concave or straight sides. At Kharabeh Shattani only 7% of painted sherds belong to this form. The motifs employed are usually relatively simple. In the majority of cases simple bands (motif 1 in Fig 38) occur on the exterior; in one case (Fig 15,3) there is what may be the remains of horizontal bucrania (motif 36) which may once have been part of more extensive decoration. There is no firm evidence for extensively decorated interiors, although the size of many of the sherds makes it hard to be sure. One example which may have had decoration over most of the interior is AAG7 (Fig 2,4), which also has an unusual profile; there is one very close parallel to this shape at Tell Brak (Mallowan 1947, Plate 74,4). Although they do vary widely, these vessels tend to be quite thick walled and above average diameters.

This is the most common vessel form in the early Halaf; at Tell Arpachiyah it accounts for 74%, 67% and 60% in the three pre-TT10 phases while at Tell Aqab it

makes up 70% of the pots recovered from the earliest phase. Its popularity declines markedly at the start of the Middle Halaf (see Table 1) at both these sites. The Early Halaf examples tend to have all-over decoration, thick paint and heavy burnishing, in marked contrast to the Kharabeh Shattani sherds. Otherwise this form does not alter much between the Middle, Late and Transitional Phases. The examples of these phases from Tell Aqab are generally plain with motif 1 the typical rim motif; some of the Late Phase examples do have more complex exteriors. At Tell Arpachiyah this form is present in both Late and Middle Phases although the relative quantities vary. The main difference from Kharabeh Shattani is that, in common with all forms, motif 18 is much more common as a rim motif at Tell Arpachiyah while motif 1 is most common at Kharabeh Shattani. In contrast to Kharabeh Shattani, western Halaf sites such as Yunus and Turlu, tend to have no interior decoration at all.

2.2.2 *Type 1b* (Fig 2,5-6)

Like type 1a, this is an open form with curved or straight sides. However, the sides meet the base at a much more acute angle so that, if 1a is considered a bowl, this is a plate. There are only two occurrences of this type at Kharabeh Shattani. One, a base, is undecorated; the other has only a simple rim band (motif 1) on the interior but has extensive decoration on the exterior. The type occurs in small quantities at Tell Aqab (1% and 2% in Middle and Late Phases respectively) and at Chagar Bazar in late contexts. It only appears in the Mosul region at Tepe Gawra in the Transitional Phase. Davidson suggests that in the Late Phase at Tell Aqab it was equivalent to the elaborate Tell Arpachiyah plates, since four out of seven examples were polychrome and all except one had extensive interior decoration. Therefore it is most probable that the sherds in this category at Kharabeh Shattani should be treated as more related to the sherds of form 1a than to the occurrences in the Khabur. The rim sherd especially would fit in 1a and, since the base is fairly thick and of a fabric coarser than most painted pots, it may be something different in any case.

2.2.3 *Type 1c* (Fig 3, 1, 2, 4)

An open form with a complex profile in which there are at least two sub-types. With more material in the sample it may become necessary to subdivide this category. This type is hard to distinguish from type 1d in some instances. ABI6 (Fig 3, 1), in particular, falls close to the borderline but is included here.

There are four examples of this type; two bases and two rim sherds. They are of a fine ware and seem to have small diameters, 140mm and 120mm for the two rims. One of the rims is simply decorated (Fig 3,1) with motif 1 on the interior and exterior, in one case there being two bands. The body sherd too is simply decorated with an exterior band at the point of change in the profile. The other rim sherd (Fig 3,2) and one base sherd are extensively decorated on the interior. In both cases the decoration runs down to the angle in the profile, apparently leaving the centre of the base free of decoration. The rim sherd has multiple exterior bands, the base a single band along the change in angle.

This is the form which, at Tell Arpachiyah, includes the plate with the structural peculiarity which Mallowan interpreted as being based on a metal prototype (Mallowan and Cruikshank Rose 1935, Frontispiece). It also includes another plate (Mallowan and Cruikshank Rose 1935, Fig 54,4). Both of these plates come from TT6. The latter is

similar to the elaborate Kharabeh Shattani examples and also has an undecorated centre. Interestingly both the base sherds seem to have the same sort of structural oddity as the Tell Arpachiyah example although being nothing like it in terms of decoration. As this does not seem to have been found at other sites, it may constitute a link between the two sites in one aspect of potting technique. AAH15 (Fig 3,2) also has an interesting profile where the intention again seems to be to alter one's perspective on the bowl, in this case by making the interior and exterior profiles appear different from each other. It cannot be stated in the case of Kharabeh Shattani if this was for purely aesthetic rather than functional reasons, as Mallowan argued, but it is possible. The profile of AAH15 is comparable to that of examples of stone bowls from Tell Arpachiyah (Mallowan and Cruikshank Rose 1935, Fig 44, nos.8,9,10,17,18) and may indicate imitation in pottery of a technique used in another medium. The exterior decoration used on this type at the two sites is not dissimilar, consisting of single or multiple bands (motif 1).

This form occurs at Tell Arpachiyah in the Middle Period as well the Late Period. In both these periods at Tell Arpachiyah the forms are similar, rims being square and having rim ticks, features which do not appear at Kharabeh Shattani.

At Tell Aqab there are a few late examples. They seem generally to parallel the Kharabeh Shattani examples but there do not seem to be any as fine as the two elaborate vessels from Kharabeh Shattani.

2.2.4 *Type 1d* (Fig 3,3; Fig 4; Fig 15,6)

An open form with a complex profile. The angle of the rim is less vertical than is the case with 1c. The nature of the change in the profile seems more consistent than with 1c. As noted before, this group is hard to distinguish from some examples of 1c. Diameters in two cases seem surprisingly large, 340mm and 410mm, but are just within the extreme range of values from other sites and, unless the vessels to which they belong were not circular, are likely to be accurate. The other diameters are 200mm and 240mm. One sherd (Fig 4,1) is simply decorated with interior and exterior bands (motif 1) and another sherd (Fig 15,6) is only a little more elaborately decorated. The others have elaborate decoration on the interior from rim down to the break in profile but neither is preserved below this point. Exterior decoration consists of simple bands at rim and at the change in profile.

Similar sherds appear in the Middle Phase at Tell Aqab where the decoration is also confined to the area below the interior rim, although the motifs employed differ. Davidson suggests that this was a western Halaf form and in general this seems to be true although a number of these vessels were found in the 1976 excavations at Tell Arpachiyah. A few also exist unprovenanced from the 1933 excavations (e.g. Fig 36,1). At some sites further west (Turlu, Yunus and Shams ed-Din) this form is very common; at Turlu it is second only to type 2a in frequency. At all these sites the sherds are decorated very similarly to those from Kharabeh Shattani.

It is unfortunate that the Kharabeh Shattani sherds do not provide a complete profile since the lower part of the vessel in two cases seems to be almost vertical, something not paralleled at other sites.

2.2.5 *Type 1e* (Fig 3,5)

There is one possible example of the 'champagne vase' at Kharabeh Shattani. It is an undecorated pedestal base made in Halaf fabric. In the Khabur region it occurs in Middle Halaf contexts only but it occurs in both Middle and Late contexts at Tell Arpachiyah; from the new excavations at Tell Arpachiyah there is one example which may have come from the latter part of the Early Phase. On these sites the pedestal is usually completely covered with decoration on the exterior although some Chagar Bazar examples have plain bases. The form of the base from Kharabeh Shattani seems closer to the Chagar Bazar examples (Mallowan 1936, Fig 24,4-5) than the Tell Arpachiyah ones (Mallowan and Cruikshank Rose 1935, Fig 65,4). It is hard to make any judgement when there are so few examples both here and at other sites.

2.2.6 *Type 2a*

(Figs 5-9; Fig 10,1-3,5,6; Fig 11; Fig 16; Fig 31,1-3,5,6)

This is an open hemispherical bowl whose rim angle is less than vertical but not as acute as those of 2b and 2c. The base can be flat or rounded and there are examples from other sites of disc bases. This is the most common type at Kharabeh Shattani with 50 occurrences (32.5%). Most examples are simply decorated. The only recurrent motifs involve quite simple interior and exterior bands, motifs 19, 18 and 1. However, in eleven cases the exterior is more elaborately decorated while only three interiors are so treated. The motifs used for these more complex pots are very varied. Only motifs 1, 18 and 4 are relatively common although motifs 19 and 8 occur more than once. Square rims are frequent; 20 vessels have them, 9 of these having rim ticks (motif 13). Diameters range very widely with most between 140 and 280mm. The thickness of the sherds also varies but generally they seem to be narrower than those of type 1a as they cluster around 6mm. One miniature example occurs (Fig 6,4).

The most obvious single difference between Early and Middle Halaf is the ratio of bowl form 1a to form 2a. Form 1a is the most common in the Early Phase and decreases sharply in the Middle Phase when 2a becomes the prevalent form – at Tell Aqab it makes up 54% of all vessels. This change carries on into the Late Phase. The Middle Phase examples from Tell Arpachiyah also have a simple interior decoration although motif 19 is most common in this position. As at Kharabeh Shattani, there is a sizable number with overall exterior decoration. Cable motifs are the most common at Tell Arpachiyah, especially motif 36. At Kharabeh Shattani motif 36 occurs only once as does 30, another cable motif. Chequerboard patterns appear for the first time at Tell Arpachiyah about this time and there are also two instances at Kharabeh Shattani. Of the provenanced examples from Tell Arpachiyah, 38% have square rims, all with rim ticks (motif 13). Only one example from Mallowan's excavations is provenanced to the Late phase at Tell Arpachiyah but many more seem to occur there in Hijara's material and, in general, these are similar to the Kharabeh Shattani specimens.

The pots of Tell Aqab Middle Phase have even more simple decoration than the Kharabeh Shattani examples. In the earlier part of the phase the ratio of simple band to complex decoration was 2:1, but in the latter part it is 6:1. However, unlike Tell Arpachiyah, the band motifs occurred in the same order of popularity, namely 1, 18, 19. At Tell Aqab elaborately decorated examples do also occur. In general, Late Tell Aqab comparisons are similar although polychrome painting appears on 12 of the 113 examples. Motif 19 never appears at Tell Aqab in this period and the most common motif there, after 1 and 18, is 2 which never appears at Kharabeh Shattani. One

miniature example of this type was found at Tell Aqab. As with Tell Arpachiyah, Tell Aqab has few motifs in common with Kharabeh Shattani other than the most simple but given the range of Halaf motifs this is not perhaps surprising. In Tepe Gawra levels 20 to 17, these bowls were common but they differ in having disc bases: such bases have not been found at Kharabeh Shattani.

2.2.7 *Type 2b* (Fig 12,1-3)

An open plate with convex sides. It is rather arbitrarily divided from 2c by the rim diameter being over 200mm for examples of 2b. There were four examples of this type. In three of the cases the vessels were of fine ware and less than 4.5mm thick. The main area of decoration is the interior, but, as is often the case, the sherds are too small to be sure and one of the interiors is too abraded to discern the design.

This contrasts with the examples of the Late Period at Tell Arpachiyah, the famous polychrome plates of the TT6 burnt house, where, although the interior of the vessels was the main area of decoration, both the interior and exterior decoration is much more extensive and elaborate than at Kharabeh Shattani. On these plates neither the concept of solid painting with varied motifs within a large area nor the balance achieved between these motifs is seen at Kharabeh Shattani. Although the form occurs in Hijara's excavations in small quantities, none of the illustrated examples have the same decorative style as those from the burnt room.

At Tell Aqab it is a very rare form in both Middle and Late Periods. Generally the Tell Aqab examples seem to have more in common with type 2c vessels than with the type specimens at Tell Arpachiyah. The base ADJ46 from Kharabeh Shattani has decoration similar in style to Type 2c vessels. Similarly at other sites, such as Turlu, this form is not always extensively decorated. Therefore it is probable that this class should be restricted to a very specific decorative style rather than just a shape of vessel. This decorative style may be restricted to one region or even one site.

2.2.8 *Type 2c* (Fig 12,4-5; Fig 13-14)

This is an open bowl with convex sides and an acute rim angle. Its diameter is 200mm or less. The type is quite common at Kharabeh Shattani with twelve examples. Since the range of diameters starts with a concentration just below 200mm it again seems likely that the division from type 2b is a false one. Thicknesses vary widely but although the mean is relatively high, about 5.5mm, examples with elaborate decoration tend to be quite thin-walled (never above 6mm and often as low as 4mm). Decoration is predominantly on the interior; on the exterior, rim bands (motif 1) are the normal decoration. Two examples are undecorated and one has multiple bands (motif 4). There are also two sherds with extensive exterior decoration: one has the fairly common motif combination 1 with 8 (Fig 14,2), the other an unusual pattern (ADL2). The style of the motifs on this second sherd has few parallels at other sites but, unfortunately, it is impossible to reconstruct the design.

Some of the interiors are quite plain with only motifs 1 or 19 or, in two cases, nothing. Six have complex designs on the interior although they are hard to reconstruct in most cases. Multiple rows of motifs are fairly characteristic (Fig 14,3; Fig 12,4). This style of decoration is one of the main ones on this form at Tell Arpachiyah although the most common motif there is 26 together with either 45 or 38. The typical exterior decoration at Tell Arpachiyah with bands of motifs (especially rows of motifs

50, 49 and 47 (Fig 36,3-5)) does not occur at Kharabeh Shattani; nor does the most common interior pattern which has various forms of chequered design at the rim (Fig 36,3-5), with the exception of ADK3 (Fig 14,1), which also has a negative curve very similar to some of the Tell Arpachiyah examples (Mallowan and Cruikshank Rose 1935, Pl XIII, XVII,b, Fig 55). However one sherd (Fig 29,1), which has not been assigned to this category since its shape is uncertain owing to the very short length of rim, has an interior decoration which is very like that of some examples of this vessel form from Tell Arpachiyah.

In the old Tell Arpachiyah excavations this type is mostly confined to the Late Phase and seems to be very common, especially notable since the same basic design is replicated on many examples, something which occurs with no other form. Hijara's excavations indicate roughly equal quantities in both TT10-8 and TT7-6; chequerboarding on the interior only occurs in TT6 while rows of dots similar to AAG6 (Fig 12,4) do not occur after TT8. The distinctive design seen in the 1933 sherds does not exactly recur in the recent excavations, once again reinforcing the earlier suspicion about intro-site variation at that period at Tell Arpachiyah. As at Kharabeh Shattani these vessels are thin-walled and of fine fabric.

The form also occurs at Tell Aqab where it comes from the latter part of the Middle Period and the Late Period. There are also some transitional examples. The exteriors are similar to Kharabeh Shattani in having largely plain bands - especially in the Late Period when motif 1 is common. Decoration again concentrates on the interior but the motifs are different.

2.2.9 Type 3b (Fig 18)

Form 3b is distinguished by a rim angle which is usually relatively vertical and, especially by a corner point in the profile; at times a corner point is postulated when enough of the sherd exists to indicate that its presence would be almost inevitable. As well as the sherds definitely assigned to this group, many of the members of group 3a (Fig 17; Fig 30,3) might well have been assigned to this form if their profiles were better known; a few of this type, for instance Fig 18,6, may also be misclassified in groups 1a and 2a. Therefore the class may be under-represented in the frequency Table. Decoration is mainly exterior with simple rim bands (motif 1) on most interiors. The only exception to this is ADM9 (Fig 18,4). Exteriors are extensively decorated in three of the examples, two with cross-hatching (motif 8). In type 3a all the fine-ware sherds have extensively decorated exteriors, in three cases with cross-hatching. Diameters are generally small in 3b as they are also in 3a. As with the rest of the categories in group 3, thicknesses tend to be less than those of bowls of types 1a and 2a.

This type occurs in considerable quantities in the Late Period of the old Tell Arpachiyah excavations and Hijara's evidence confirms this and also suggests that it occurred in earlier periods as well. The Late Period examples are like those of Kharabeh Shattani in most respects. Interior decoration is confined to a rim band although, as usual, this is mainly motif 18 at Tell Arpachiyah. Exterior decoration is often extensive and as at Kharabeh Shattani it extends from the rim to around the change in angle of the profile. Motifs differ from Kharabeh Shattani with quatrefoils common. At Kharabeh Shattani this is generally a rare type of motif.

The later Middle, Late and Transitional Phases at Tell Aqab have this type and again decoration is similar, with internal rim bands and often extensive exterior decoration. The Middle Period Tell Aqab decoration is mostly composed of bands of motifs while the Kharabeh Shattani examples tend to have motifs, such as motif 8, which fill large vertical as well as horizontal areas on their own. The decoration also extends to just above the angle change rather than continuing below it as it seems to do at Kharabeh Shattani.

2.2.10 Type 3c (Fig 19–21; Fig 22,1–3; Fig 23,1; Fig 30,1,4–6)

This is a bowl which has a closed form. Unlike type 3d, it is genuinely hole-mouthed. The base, in some cases at least, may be rounded. This is a common form at Kharabeh Shattani with sixteen fine ware examples. The decorative technique is fairly standard for bowls with frequent instances of complex exteriors and plain interiors. At most, interiors have a simple rim band (motif 1). Thirteen of the examples seem to have had extensive exterior decoration, often of a high standard. In general, this type seems finer than the main bowl type, 2a. On the few large sherds the decoration seems to continue to just below the in-turn to the base. One of the few cases of vertical panelling from Kharabeh Shattani occurs on this form (Fig 19,2) where three rows of dots (motif 47) combine with an unidentifiable motif. The most common motif for covering large areas, motif 8, occurs on three sherds; motif 21 occurs on two. The decoration of AAE20 (Fig 19,3) is especially noteworthy since it is the only example of bichrome to have come from Kharabeh Shattani as yet. Even so it is hardly a fine example, possibly little more than skilful use of the polytone effect. The style of the pattern of quatrefoils is unusual for Kharabeh Shattani although it is common at other sites, including Tell Arpachiyah. The diameters of the pots tend to be quite small, few being over 200mm and the mean being 167mm, but this does not imply the volumes were any less than those of other bowls when the shape is taken into account. The walls are generally quite thin, around 5mm, which is probably indicative of the general fineness of this form.

Examination of the material from the old Tell Arpachiyah excavations reveals very few examples of this form, possibly reflective of the true frequency of occurrence since the Kharabeh Shattani examples imply that this form was quite fine, which one would expect to be one of the criteria for retention. Therefore, although Hijara's results show 9.5% of the TT7–6 pots are of this form, it should be remembered that his sample may not be representative of Tell Arpachiyah as a whole. The decoration of the illustrated examples from the recent excavations is elaborate and, as at Kharabeh Shattani, extends to just below the in-turn to the base. This is typical of examples from other sites as well. Examples from Tell Brak (Mallowan 1947, Pl 80,15) and Chagar Bazar (Mallowan 1936, Fig 22,5,7) have motifs similar to some of the Kharabeh Shattani sherds. Yunus has several examples (Woolley 1934, Pl 19,a; Dirvana 1944, Pl 67,2, Pl 68,2,4). Banahilk has produced a considerable number of painted, hole-mouthed vessels although they were absent at Girikihaciyan (Watson and LeBlanc 1973,130–131); at Banahilk this category, together with that of 2a, accounted for 80% of all vessels (LeBlanc 1971, 136). Except for Chagar Bazar all these occurrences are Late Halaf. It is hard to know how many there were of this form at Tell Aqab since there is no directly analogous category amongst Davidson's forms (see Appendix A), but the fact that such a category was absent makes it likely that few examples of this shape were present.

2.2.11 *Type 3d* (Fig 10,4; Fig 22,4-6; Fig 23,2-8; Fig 31,4)

This is a bowl with a restricted rim. Although the rim is in-turned initially, it reverses a little way down the profile so that this is not a true closed form. This is a common form having twelve examples including two miniature vessels (Fig 23,7-8). Both rim diameters and thicknesses vary widely. Three examples are undecorated, including the miniatures. Interiors are simple; if there is anything it is almost always motif 1 at the rim. Only in one case is there anything more and it is too fragmentary to reconstruct. Six exteriors have band based decoration as well; motif 1 occurs four times, 19 twice and 18 once, although 19 in both cases covers a relatively large area. Three more vessels have elaborate decoration. The combinations of motifs 1 interior and exterior, and 1 interior, 19 exterior occur three and two times respectively.

At Tell Arpachiyah this shape is rare occurring in the Late Period in the old excavations and in Hijara's excavations in TT10-8. The Tell Arpachiyah examples illustrated have decoration restricted to the area just below the rim while, in contrast, some of the Kharabeh Shattani examples seem to have more extensive decoration.

It occurs in Late and Transitional Periods at Tell Aqab in small quantities. There the decoration is of single or multiple horizontal lines (motif 1) occurring at the rim either internally or externally or else motif 18 in the same places. This again contrasts strongly with some of the Kharabeh Shattani examples. At Chagar Bazar it occurs in levels 11-9 (Mallowan 1936, Fig 22, 2; Fig 23,1).

2.2.12 *Type 4a* (Fig 24,1)

This form is essentially distinguished by being a bowl with low sides and, most importantly, decoration on the base. Most examples are likely to have been lids. There is one example of this type from Kharabeh Shattani. It has a cross-hatched base. No examples occur at Tell Aqab but it occurred in the Late Period in the old excavations at Tell Arpachiyah and in the new ones in the Middle and Late Periods. A considerable number also come from Tell Halaf.

2.2.13 *Type 5a and Type 5b* (Fig 24,2-8; Fig 25; Fig 26,1,2)

Type 5a includes all body sherds of jars, regardless of exact form, although a large variety of cylindrical, globular and piriform bodies are likely to be included in this type. Most of the sherds would have originally fitted into type 5b but a few may have come from other jar forms. Type 5b includes all jar rims. These categories are treated together since they represent the basic jar forms. Both the old and especially the new excavations at Tell Arpachiyah and the evidence from other sites indicate that a useful breakdown of types can be achieved. When more data is available these categories should be re-examined. At present all that can be done is to give a general account of the form.

Dimensions vary widely although, on the whole, the sherds tend to be thicker than those of most other forms. The rims (type 5b) are almost all simply decorated with band motifs on the exterior; in one case there is an interior band as well. There is one sherd with extensive decoration from the rim down. There is one square rim and one with rim ticks. There is also one miniature example of this type (Fig 25,1). The body sherds are in five out of six cases extensively decorated. The decoration seems to start in general with a broad band at the top of the shoulder and to have rows of motifs below it.

The style of the decoration is fairly typical of jars elsewhere with Middle and Late Phase examples being particularly similar. The motifs employed, however, are different at the various sites. At Chagar Bazar there is a miniature jar which, although different in being decorated, has a distinctive profile very similar to that of the Kharabeh Shattani example (Mallowan 1936, PI II, no.5). It is from levels 7-6 and therefore Late Phase Halaf.

2.2.14 *Type 5c* (Fig 26,3-4; Fig 27,1-5)

This is a jar type with a short, vertical neck and often a sharply out-turned shoulder. Four fine ware examples of this type appear at Kharabeh Shattani. All are known only from rim sherds which continue as far as the start of the shoulder of the vessel. Three have very similar characteristics; diameters of 110mm, 110mm and 90mm with thicknesses of 6.5mm, 7.5mm and 6.5mm respectively. The first of these has an area of painting running down to the shoulder, the second only has rim ticks (motif 13) and the third has only a rim band (motif 1). The other sherd has the interior of the neck decorated and multiple bands on the exterior.

This seems to be a rare type at other sites. Two occur in Middle Period Tell Aqab but the decoration is different, for there the necks are plain and there is panelled decoration round the shoulders. One example occurred there in the Late Period, but with unreconstructable decoration.

Two miniatures of this form came from the 1933 excavations at Tell Arpachiyah (Mallowan 1934, Fig 42, 11-12). Hijara found four in TT10-8. One example at least was found at Yunus (Dirvana 1944, PI 72.)

2.2.15 *Type 5d* (Fig 27,6)

This is the bow-rimmed jar, distinguished by the form of its neck. There was only one sherd of this type at Kharabeh Shattani although only the rim area has survived. It has chequerboarding on the exterior rim.

This is the form known generally as the bow-rim jar. Most occurrences are in the Northern 'Ubaid. However, the Kharabeh Shattani sherd is in Halaf fabric. Two examples, also in Halaf fabric, were found in the Halaf-Ubaid Transitional Period at Tell Aqab. They both have solid exterior decoration which is not necessarily the case with the Kharabeh Shattani example. There is also a single sherd in the Tell Arpachiyah collection of the Institute of Archaeology which is of this type (Fig 36,2). It has no stratigraphical position on it but the fact that it is burnt and the close similarity of its decoration of dotted circles (motif 45) with those on the plate in Plate 15 of Mallowan's report may indicate that it comes from the TT6 burnt house. Burning of sherds is quite rare in the Tell Arpachiyah material from contexts other than this. At Turlu there were small numbers of this type, apparently from level four. The necks of these vessels were painted with a single broad horizontal band. At Shams ed-Din, although no examples were found in stratified contexts, some sherds of this type were found on the surface (Davidson 1977, 223). The last two contexts cited are either Late or Transitional Halaf.

It is worth noting that although the Kharabeh Shattani example came from the sounding carried out by Curtis its context is one of the few which seems to have been largely undisturbed by later activity and so is unlikely to be intrusive.

2.2.16 Type 5e (Fig 28,1,3)

This is a jar type with an over-turned, rounded rim. The diameter can vary widely as may the shape of the body but, for practical purposes, it is considered a unified category. There were two examples of this type from Kharabeh Shattani although they are very different in size. Some of the sherds in type 5a may have originally come from this category as well. One of the examples of this type was the only complete pot from the excavation. It is also one of the rare examples with the greenish fabric. Such fabric is not typical of Halaf sites but it does occur at times; for example, it seems to be quite common amongst the undecorated sherds at Yarim Tepe 2 (Merpert and Munchaev and Bader 1977,93). The general form of this type is abundantly paralleled at other sites but it is not specific to any one phase of the Halaf. The form of the complete vessel is not exactly repeated elsewhere, the body being more globular and the orifice being narrower than normal.

2.2.17 Type 5f (Fig 30,7)

This is a jar type with an angular over-turned rim and often an angular shoulder. Only one example was found at Kharabeh Shattani and consisted solely of the rim. It is a relatively rare type elsewhere, occurring in Middle and Late Aqab and Late Tell Arpachiyah. Neutron activation analysis of this sherd shows that its composition is virtually identical with sherds from Tell Arpachiyah so there is a distinct possibility that it is an import from that site.

2.2.18 Miscellaneous

There is a number of sherds which are in some way noteworthy but do not fit into a specific category. There is an example of what appears to be some sort of nipple base (Fig 29,2). This is very unusual for the Halaf and it is possible, although unlikely, that it could be a form of lug. It may alternatively have come from an irregularly shaped pot of which there are regular occurrences at other sites. There are several spouts in fine wares but they cannot be related to any specific vessel shape. Spouts occur at other sites, although again not frequently.

2.3 Decorative Motifs at Kharabeh Shattani

The range of motifs is typical of the Halaf culture and is therefore very large with the result that it is cumbersome to handle. A summary of the frequency of the occurrences of motifs and combinations of motifs is included in Appendix B, but it has no ready meaning in relation to other sites beyond the simple statistics. The type of motif comparison which has generally been carried out (notably LeBlanc and Watson 1973) is unlikely to yield decisive results, since most of the common types of motif occur in one form or another at most sites and it seems quite likely that specific variations on these types will be equally probable at any site, their appearance in the archaeological record being largely a function of chance and sample size. It may be more useful to broaden the focus on to more general *classes* of motifs, for instance cable patterns, chequerboarding, cross-hatching, rather than to concentrate on individual variations within these categories. The appearance of designs not based on simple motifs or of combinations of motifs which are unlikely to be independently devised at several sites may prove to be another useful direction. An approach of the

sort suggested by von Wickede, which considers the symmetry of the complete design, may also be profitable since it looks at how motifs are employed rather than at the motifs themselves (Wickede 1981); the disadvantage, of course, is that the sample size is very restricted when only restorable vessels can be used. However, the breadth of such a study puts it out of the scope of this work at this stage and, essentially due to a lack of options, a scheme based on that of LeBlanc and Watson is employed for the more frequently repeated motifs. It is summarised in Fig 38.

As is usually the case, band motifs are the most common at Kharabeh Shattani, especially at the rim, their relative frequencies being noted in the previous section and being notably different from Tell Arpachiyah and similar to Tell Aqab. After them, motif 8, cross-hatching, is most common, as is the case at other sites. There are few of the examples of the quite thick paint-work used with this motif in the manner seen at Tell Arpachiyah. Motifs 67 and 68 are also common as elsewhere but motif 67 occurs relatively more often than at other sites, in the Mosul region at least. The same basic motif is used in multiple rows of motif 67 at Kharabeh Shattani more frequently than other variations (for instance Fig 18,3 and Fig 20,1). This contrasts with Tell Arpachiyah, where this use of motif 67 is very rare while motif 68 is common, often as the principal design element. Although chequerboarding (motifs 26, 27 and their variants) does occur at Kharabeh Shattani, it is not used in combination with other motifs in the way in which it is employed at other sites, especially in the Late Phase. The motif used in combination on many examples is the quatrefoil (motif 64), which is common at most other sites. At Kharabeh Shattani there is only one example of this motif, and that on a sherd which is unique at the site in that it is the only bichrome sherd. The most marked contrast between the sites studied is in the use of different sorts of rim band. In this regard regular and distinct differences can be perceived, and perhaps this is another promising approach, namely to deal very specifically with variation within a particular category of motif.

There are also some motifs which appear to be unique to Kharabeh Shattani but on the example of other Halaf sites this is not unexpected. Some of them appear to cover a fairly large part of the surface without the customary repetition. However the totality of such designs is unclear owing to the small size of the sherds. There do not appear to be any large scale designs of the sort seen at some sites (e.g. Merpert and Munchaev 1971, Pl 12; Invernizzi 1981, Fig 88) but this could just be the result of the small sample. There is one naturalistic motif, a duck within an oval of dots if the poorly preserved design has been reconstructed correctly, and there are some stylized bucrania. There is one instance of what may be the tip of a vertical bucrania but this is conjectural. There are also a few sherds with incised or impressed decoration but none come from secure Halaf contexts. Such sherds seem to occur infrequently but regularly on most Halaf sites and on the present evidence their significance is unknown.

In general the period indicated by the range of motifs is Late or later Middle Halaf when the variety of motifs seems to have increased from the range present in the Early Phase. A comparison with the Tell Aqab motifs of these periods (Davidson 1977, Table 5) shows that the examples which are in common with Kharabeh Shattani are roughly evenly split between the two.

2.4 The Coarse Ware Pottery

Unlike the fine ware, the coarse ware could not reliably be separated from the first millennium material and only securely stratified material could be considered. Owing to the small amount of such pottery very little can be said about it at this stage. The forms used to classify it are the same as those used for the painted ware but they may have to be adjusted in the future. The number of occurrences of each type is shown on Table 3. Generally the fabric is dark grey or brown with quite large amounts of grit or vegetable temper or both. From the colours, the kiln atmosphere must have been reducing. The vessels were often burnished on the exterior and sometimes on the interior as well; presumably this was to decrease porosity and thus purely functional, unlike the burnishing on the painted ware. Ledge handles appear to be common (Fig 28,6). Some at least occurred just below the rim but most are found as sherds with no indication of their original position. ADM10 (Fig 29,5) is an unusual shape, having a disc base which seems to develop to almost a platter form. Too little is known from other sites to attempt to place the Kharabeh Shattani examples in a more secure context. However the coarse ware elsewhere seems very similar in its general characteristics. A more comprehensive study of the Kharabeh Shattani coarse ware may become possible with a larger sample.

2.5 Assessment of the Kharabeh Shattani Pottery

In the preceding sections various mentions have been made of the phase of the Halaf into which Kharabeh Shattani might fall. However, the question must first be asked whether there is more than one phase represented at Kharabeh Shattani. Three main stratigraphical phases have been isolated in the area of excavation but the latest of these is not represented by a very reliable sample. The frequency of forms from the earlier two phases is contrasted on Table 4. There does not seem to be any difference which could be considered of great significance at this stage. Some forms occur in greater quantity in one phase than the other, but the total number of examples is so small that this is most likely to be statistical accident. The only types which may have real differences seem to be type 3c and possibly type 3d. However, whether this is due to coincidence, to chronological development or to a change in the function of the area is not clear. This is one point which will certainly have to be re-examined when more data is available.

If, for the present, the pottery is dealt with as a unified whole, certain phases of the Halaf are clearly not compatible with it. The ratio of types 1a and 2a, the general absence of lustrous paint and the wide range of motifs all indicate that the pottery is not Early Halaf. The range of forms compared with other sites strongly supports this conclusion (Table 1 and Table 2). There is no certain Ubaid pottery; the occasional sherds of greenish fabric are of a ware which, in detail, is no more characteristic of the Ubaid than of the Halaf. The range of forms and motifs is very different from that of Tepe Gawra XX-XVII and, to a lesser extent, from those of the Tell Aqab Halaf-Ubaid Transitional phase.

The presence of types 1b, 1d, 3b, 3c, 3d and 5c indicates a date, on the evidence of Tell Aqab, later than the early part of the Middle Phase, when the range of forms was

not much greater than in the Early Halaf. Unfortunately the latter part of the Middle and the Late Phases are not well differentiated; at both Tell Aqab and Tell Arpachiyah the change between the two is relatively gradual. Hijara's evidence from Tell Arpachiyah tends to indicate that the major break within the Halaf sequence may be between the Early and Middle Phases and, from the evidence of Tell Aqab especially, it seems likely that the break in tradition may be as significant between the earlier and later parts of the Middle Phase as between the Middle and Late Phases. Essentially, larger samples from long-lived sites are needed. However, at Kharabeh Shattani the presence of the bow-rimmed jar, type 5d, should imply the Late Phase since, although there are relatively few examples known, it has never been found in an earlier context elsewhere. This conclusion is supported by the number of type 3c vessels which only occur at Tell Arpachiyah in such large numbers in TT7-6. The possible increase in this type with time at Kharabeh Shattani may be an indication that the site straddles the change from the latter part of the Middle to the Late Halaf. Once again more evidence is required from both Kharabeh Shattani and from other sites. All that can be said with a reasonable degree of certainty from the stylistic analysis is that at least part of the occupation at Kharabeh Shattani is Late Halaf. This is confirmed by the neutron activation analysis.

This attribution of the pottery raises the problem of why certain varieties of decoration present at other sites are missing here. There is only one piece of polychrome from Kharabeh Shattani and none of the incised and decorated ware which appeared at Tell Arpachiyah in TT7-6. In general the very finest types of pottery are not present. This contrasts not just with Tell Arpachiyah but with most other sites as well. Banahilk is one of the few sites with a similarly small amount of polychrome; out of 3,238 sherds only seven or eight had red and black decoration and one had white paint as well (Braidwood and Howe 1960, 33). However, the phase to which Banahilk belongs is not clear without the full publication of the site and one may suspect that the site may be peripheral to the main Halaf culture distribution. Such an explanation cannot be accepted for Kharabeh Shattani without a major reappraisal of our concepts of the unity of the Halaf culture.

There is a number of other possible explanations. Polychrome decoration was probably not just the result of the concept of using two or more colours; a development in firing technology would probably have been necessary to ensure that the colours turned out distinct and even (Davidson 1977,39). Therefore it is possible that the potters at Kharabeh Shattani did not have the technical ability to produce polychrome decoration; it is unfortunate that the one bichrome sherd has not yet been examined by neutron activation analysis to see if it was locally made. If it was not, it might imply differential access to certain aspects of the Halaf culture on an inter-site basis. Certainly some sites seem to have relied on imports for certain forms of pottery; Gawra obtained types 2b and 2c from Tell Arpachiyah (Davidson and McKerrell 1980,163), and Tell Aqab may have obtained type 1b plates from Chagar Bazar (Davidson 1981,75). Both these cases involved the import of fine wares, but both sites also produced polychrome ware locally.

An alternative hypothesis is that the lack of polychrome pottery in the area of Kharabeh Shattani excavated is an example of intra-site differentiation. It is possible that this type of pottery was a prestige item with availability restricted to or concentrated amongst certain members of the community. At Tell Arpachiyah there

was the unparalleled concentration of extremely fine pottery in the TT6 burnt house. Hijara's excavations included part of the level corresponding to TT6 at a short distance from this building, and yet in his report Hijara (1981) makes very little mention even of bichrome pottery, and the illustrations in his thesis (Hijara 1981), some of which are in colour, seem to confirm this view. Thus there is clearly differential distribution of the finest pottery at Tell Arpachiyah. Both these hypotheses assume social or functional differentiation within Halaf culture communities, but they differ on the level on which differentiation manifests itself.

Since Perkins' (1957) survey of the evidence, it has often been considered that the Halaf Culture divides into regions, notably with one in the east and one in the west. Davidson found evidence to support this and suggested further regionalisation may have existed with areas like the Balikh valley being distinct from the Khabur headwaters region. Hijara has supported such a conclusion. Kharabeh Shattani can be clearly distinguished from some sites, like Turlu and Yunus, on the basis of the frequency of occurrence of certain forms. However, if sites are internally differentiated as suggested above, some of the variation which has been perceived may simply be a result of the small areas of the sites excavated. It remains highly likely that there were regional differences, especially considering the distances involved, but their exact nature and the composition of the regions involved have yet to be defined. Kharabeh Shattani does have some specific links with sites in the Mosul region, such as the 1c parallel forms with Tell Arpachiyah, but it also has marked differences, like the frequency of different rim motifs, in which it is more similar to western sites like Tell Aqab. It is quite conceivable, at the moment, that the lack of such things as polychrome decoration may be traits of another Halaf 'region' in the Eski Mosul area.

SECTION 3: Neutron Activation analysis

3.1 Methods

The method used for the neutron activation analysis programme is fairly standard and the broad theory behind it is now conventional (see especially Perlman and Asaro 1969). Therefore only the details specific to this programme of analysis will be given.

The sherds were sampled by drilling 0.1 g of fine powder using a diamond burr drill. Before the sample was taken, the surface of the sherd had been removed by drilling in order to avoid contamination. The powder was put in a high purity polythene phial, again taking care to avoid contamination, and the phial was heat sealed. The clay samples were prepared differently. First they were fired to 900 degrees celsius for approximately one hour and then ground with a ceramic pestle and mortar until the grain size was comparable to that of the drilled pottery samples. The process of activation was carried out at the Scottish Universities Research and Reactor Centre (S U R R C) in East Kilbride. The samples were irradiated in the centre of the reactor for six hours in a neutron flux of around 3.6×10^{12} per cm^2 per second. Approximately four days after irradiation, the samples were counted for 20 minutes each to detect elements with a short half-life and a week to a fortnight after that they were counted again for one hour to detect elements with a longer half-life. In the first count Na, K, La and Sm were detected and in the second Th, Cr, Hf, Cs, Sc, Fe, Co, Eu, Rb, Ce, Tb, Lu and Ta. As Ta only showed up in a few of the analyses it was not subsequently used. The counting was done using a 25 cc Ge(Li) detector and processed on an Ortec multichannel analyser using 4096 channels. The standard used to correct the counting was the Edinburgh Clay Standard. The I A E A standard SL-1 was also included as a test on accuracy and to make it easier for others to use the results. The final results were produced in the form of parts per million for each element (see Appendix C).

There is a number of potential drawbacks in this process which should be dealt with here. The sample size could be claimed to be too small since if some inclusion was accidentally incorporated in a sample it would distort the result. Attempts have been made to eliminate this problem by taking a large sample initially, homogenising it and selecting a smaller sample from this. In the case of Halaf pottery this seems unnecessary as there are very few significant inclusions and the fabric is fairly regular. This has been tested by Hancock with four sherds from Tell Aqab which were analysed with samples of 1g, 0.3g and 0.1g for each sherd. No significant difference between the results for the different sample sizes was detectable (Hancock 1983). It is likely that there is some contamination from the drill head and it is necessary to assume that it is roughly constant. Again this has been tested, this time on Chinese porcelain and stoneware (Carriveau 1980). Only cobalt and antimony were shown to be affected by the contamination and they are not vital elements for the results produced here.

The choice of which elements to detect is obviously important. One approach commonly used is to test for as many as possible (for instance Perlman and Asaro 1969) and for initial studies at least this is sensible when it is not known which elements will be most significant. However it does take considerably more time and Davidson's work had already shown that it was possible to define groups with as few as eight elements when dealing with Halaf pottery. Those chosen for detection in this

analysis programme were the ones normally used for pottery at the S U R R C. These include all the elements measured by Davidson, the extra ones provide greater reliability and, potentially, accuracy.

The statistical techniques used to interpret the results are based on the methods of numerical taxonomy used in the Brookhaven National Laboratory (Bieber, Brooks, Harbottle and Sayre 1976). The statistics presented here are really the minimum necessary to enable a provisional interpretation; additional validation checks will be made on the larger sample which will be available after the completion of the analytical programme.

The groups were formed by cluster analysis using the Clustan 1C package (Wishart 1978) on the Edinburgh Regional Computing Centre's dual ICL 2976 mainframe computer. The variables (i.e. the concentrations of elements in each sample) were standardised but not logged as it does not appear certain that all elements are log-normally distributed as has been suggested (Pollard 1983, 58). The two main clustering methods employed, which provide a useful crosscheck on each other, were Ward's Method and Average-linkage. The first method produces spherical clusters with the minimum variance and in many ways is the most satisfactory method, although, in cases where the data is not well spread in multidimensional space, it may produce unacceptable divisions (Sneath and Sokal 1973, 204). The second method again produces spherical clusters but is less prone to cumulative inaccuracies. It is, however, less effective in finding groups in large bodies of data (Pollard 1983, 60). Another method used was centroid sorting but it did not produce any significant improvement.

There is a problem in deciding when clusters become statistically significant. For methods like average-linkage or centroid sorting, using standardized, independent, normal variables the expected squared distance between two points is two (Wishart 1978, 114). Therefore if the squared distance between two clusters is greater than two, it is likely that the clusters are 'naturally' distinct; if the squared distance is less than two they 'naturally' merge. However, in most instances the assumptions of independence of variables and normality are violated to some extent so that this can only form a rough guide. Ward's method is not as straightforward. If the increase in the error sum of squares is plotted against the cluster number (conventionally this is the sequence of fusions in inverse order), a natural breakpoint in the curve of the graph can be sought which should correspond to a sharp increase in the error sum of squares when two natural clusters are artificially fused together (Pollard 1983, 60).

To check the coherency of the groups produced by cluster analysis and to provide confirmation of it the k-means procedure was used. Normally this attempts to minimise the error sum of squares in each cluster, the same criteria as Ward's method, but it provides a useful check on all clustering methods since the criteria can be varied. As well as ensuring tight clusters this procedure maximises the distances between the centroids of different clusters, thus fulfilling two of the criteria for good classification; internal homogeneity and external isolation of the groups produced. It was used starting both with clusters derived by the clustering methods and with initial random clusters.

Another method for testing how tight clusters are is discriminant analysis based on Mahalanobis distance (Marriot 1974). This is available on the SPSS package. Essentially it is an ALGORITHM which assesses the probability of each case belonging to a

predefined group. In some cases it can be very useful to confirm the results of cluster analysis but it has the drawback that it requires the basic group to have a number of members that exceeds the number of variables by at least one, and preferably considerably more (Bieber et al 1976, 67). This means it is hard to use when the groups are small as in this case.

The main characteristic of the results of neutron activation for pottery, which current statistical methods cannot fully handle, is that the concentrations of elements are not independent. In many cases, the elements co-vary (Bishop 1982, 296) which potentially could distort the results. Some elements, notably manganese, are not evenly distributed within clays and can therefore produce a wide variety of concentrations. As far as possible such elements were not used.

In the counting procedure, as in other radiometric counts there is a counting error. In most cases, this is so small that it is considerably less than the variance of the clusters and is therefore ignored to avoid complicating the statistics. Some elements, however, have a much larger counting error than others and conceivably could distort the result through random variations. The elements concerned are K, Eu, Rb and Tb and they ought to be treated with caution. Some elements are occasionally missing in the results. This is due to either a slightly faulty calibration of the measuring device or the existence of a counting error over a pre-defined limit. Missing variables are awkward to handle since substituting the mean for that variable from other cases could quite easily distort the result. Therefore a series of runs was made through the statistical procedures with different data sets using different variables and cases. The results of the runs were compared to see where a missing value might be affecting the grouping of a case. In practice this has not shown any problems.

One thing which should always be remembered, when neutron activation analysis results are presented, is that the groups formed are dependent on the range of the sample. Where a source of sherds is not represented by enough samples to identify it as a distinct cluster, individual sherds from that source may be mistakenly assigned to other groups. This can be illustrated with sample KS20 in the following section. Equally the probabilities produced by discriminant analysis only apply with reference to the groups represented in that analysis and, unless all potential sources are represented, they cannot be treated as absolute on statistical criteria alone. Despite these reservations, a sufficiently tight cluster can usually be taken to be composed of samples from a single source with a reasonable degree of confidence.

3.2 Integration With Earlier Work

Obviously it is very desirable to integrate the Kharabeh Shattani results with those previously obtained by Davidson for a large number of other Halaf sites. However, since he used a different process and standard for neutron activation, this is not a straightforward process and has proved to be impossible on the data so far available.

As Davidson analysed the Edinburgh clay standard under the same process as his pottery samples, it is possible to use the values he obtained for it (Davidson pers. comm.) to convert his results to what, ideally, would have been their absolute value if he had followed the processes used at the S U R R C. Three sherds from the Institute of Archaeology in London were sampled; one provenanced as being from TT7 at Tell

Arpachiyah and the other two from between TT10 and TT6 at the same site. These samples were then tested by discriminant analysis to see if they would fit either the pottery from the Middle or from the Late Period groups of Tell Arpachiyah as established from Davidson's data. They did not. Clearly there is some bias in one of the series of analyses; this is a problem often encountered in neutron activation analysis when comparing data between different laboratories. One possible way to overcome this is to work with the ratios between the amounts of each element rather than with the absolute quantities; this is less prone to distortions equally affecting all of the elements. A program was written to transform the data to ratio form and discriminant analysis applied with equally poor results.

There are several reasons why this may occur. One of the major ones is that the preparation of the samples which Davidson used was very different from the one used at the S U R R C. Davidson heated his samples to 1000 degrees celsius to remove moisture. At first sight, it might be thought that this would drive off quantities of the more volatile elements but work in Toronto on Halaf sherds indicates that none of the elements included in either series of analyses was significantly affected (Franklin and Hancock 1979). It may, however, have introduced small inconsistencies only important in combination with other factors. The samples were also irradiated in different forms, Davidson making his into pellets. However, since the standard was prepared in the same way as the samples in each series, this should not have altered the result to a great extent. The other major sources of difference are the efficiency and calibration of the counters employed and the laboratory methods generally. The slight differences of results inherent in different methods must have aggregated to a sufficient degree to make comparison impossible until more duplicate samples have been analysed.

3.3 Neutron Activation Analysis Results for Kharabeh Shattani

The Kharabeh Shattani data was first analysed using Ward's method with all samples, not using the elements which were in some cases absent. Various checks were then run using different clustering methods and using different parts of the data, especially all samples with all elements present and as many cases as possible using only low error elements. The groupings remained consistent throughout, even in detail. The dendrogram for all the samples, together with the Tell Arpachiyah samples, is illustrated in Fig 39. Clearly there is a split into two main groups. In general, the various tests confirmed this picture although k-means relocation showed that KS13 may belong in the first group rather than the second. The grouping of KS14 varied depending on which elements were used in the analysis. Since the analyses using all elements and using low-error elements both place it in the second group, it is highly likely that this is where it belongs. Such ambiguities over a few cases is common in neutron activation analysis and does not alter the overall picture of two large, well defined groups. This is confirmed by discriminant analysis. However it should still be remembered that it is possible that these grouping are simply the result of complex chaining; this appears to be unlikely but will need to be checked when a larger sample is available.

Since each group is almost equal in size (fourteen cases in group one and eleven in group two, with one ambiguous), it is not obvious which is the locally manufactured group, or indeed whether neither or both are local. A number of soil samples was

taken from near the site, of which three were analysed; one was from the natural subsoil at Kharabeh Shattani itself and the other two from the wadi beds which ran down either side of the site. In an attempt to duplicate the state of the pottery samples, the clay samples were fired before analysis. To see what effect this actually had, one sample, from the Kharabeh Shattani natural, was analysed in both a fired and an unfired condition. It is always hard to match clay samples with local pottery even when considerable effort is made (for instance Fillieres, Harbottle and Sayre 1983,60-62). At Tell Aqab, Davidson was only able to do so with a few of the clay samples despite a large number of them having been tested. When the clay samples were checked against the pottery groups by discriminant analysis, they were clearly not of the same absolute composition as either of the pottery groups. Probably this is due either to the processing which the clay seems to have undergone before use or to the limited number of clay samples. As the clay samples are relatively similar, although not coming from close to each other, it seems less likely that heterogeneity in the local soil composition is the cause. Again, one way to reduce this problem is to deal with ratios rather than absolute quantities. When the data is in this form the clay samples are somewhat closer to group one in composition although by no means identical. Therefore although the evidence is ambiguous, it is perhaps more likely that group one is locally made than group two, if one of the groups is not local. A point in support of group one, at least, being local is that ABP1, a possible waster, is one of its members. Until further analyses have been made, two main interpretations are possible: either that two clay sources or two methods of production were used locally, or that a large quantity of pottery was being imported to Kharabeh Shattani.

The three sherds from Tell Arpachiyah which were analysed do not form a large enough group to be dealt with by discriminant analysis, so they were run together with the Kharabeh Shattani samples using Ward's method of cluster analysis (Fig 39). They seem to form a discrete group which is closer to group two in composition but, if this part of the clustering is considered in isolation (as illustrated by the graph of coefficient to fusion sequence in Fig 40), they are clearly distinct from it. However, one sherd, KS20, which had never fitted very well in group two, clusters very tightly with the Tell Arpachiyah samples. Therefore there is quite a high probability that KS20 comes from Tell Arpachiyah although this needs further testing to be certain. The close grouping of the Tell Arpachiyah samples indicates they may all have been made of the same clay, that is, of the distinctive clay used in TT7-6 (Davidson and McKerrell 1980) since one of the sherds is known to have come from there. If this proves to be correct, the presence of a Late Phase Tell Arpachiyah sherd in the latest of the three broad strata at Kharabeh Shattani confirms what has been argued typologically; that part, at least, of the occupation at Kharabeh Shattani was in this phase.

Because of the small sample, it is impossible to estimate any exact figure for how much pottery belongs to the main groups but they are likely to be of fairly even size. The sherds were selected for analysis with a slight, deliberate bias towards the finer sherds in an attempt to ensure that imported sherds were represented, but this is unlikely to have caused any significant distortion of the picture. So far no correlation can be made between a particular ware, form or decoration with the compositional groups. It may be possible to see one if more sherds are analysed. There are representatives of slightly coarser wares in group one but so few of this type were sampled that this may have no relevance. Certainly, the finest category of pottery so

far found at Kharabeh Shattani occurs in both main groups. The possible dependence of Kharabeh Shattani on another site for large amounts of pottery would fit with Davidson's findings for other areas. The closest parallel would be with Tepe Gawra where 30-40% of the excavated pottery was probably imported. The Khabur region also seems to exhibit signs of extensive pottery trading, but none of the sites tested by Davidson appears to have quite such large amounts of non-local pottery.

PART 4: APPENDICES

APPENDIX A: Vessel forms

A.1 Form Categories

When dividing the pottery into forms, several considerations had to be kept in mind. Obviously each category must be as discrete as possible while being sufficiently generalized to a situation where each category contained more than a few examples. Since the Kharabeh Shattani material was going to be compared with material from other sites some sort of equation with previous categorisations had to be possible, especially with Davidson's. Most of the sherds from Kharabeh Shattani were small and it was generally impossible to reconstruct complete profiles, so it was very desirable to maximise the number which could be used while minimising the possibility of ambiguous or misleading classification and also to provide a system flexible enough to be used in the field in the next season.

This was done by division into major groups, denoted by the numerical part of the type designation, largely based on the profile at and immediately below the rim. Further sub-division was done where possible but in a few cases sherds were assigned by default to the first category in the major group, 1a, 2a and so on. Therefore the first category of a group, which is also a specific form in its own right, may be slightly over-represented. However, this is not likely to be a major distortion of the relative frequencies, and it can be checked after the second season's excavation with a larger sample.

The profiles in Fig 37 are almost all based on examples from other sites and include a few which were not actually found in 1983 at Kharabeh Shattani. It should be emphasized both that the shapes illustrated are examples only from the generalized categories and that the categories were formulated largely on the basis of rim characteristics not body shapes. Thus the illustrated profiles are to a certain extent conjectural although broadly justifiable on existing complete pots from other sites. Furthermore it should be recognised that this recording system is fairly site-specific; although it was intended to be compatible to some degree with systems used for other sites, in its present form it is not intended to be an all-inclusive typology for the Halaf culture as a whole.

The types are described individually so that examples where there is possible misclassification may be noted by the reader.

A.2 Type 1a

This is an open bowl with concave or straight sides. Other sherds in the '1' group are placed in this category if there is no reason to place them in a specific form.

A.3 Type 1b

Like type 1a, this is an open form with curved or straight sides. However, the sides meet the base at a much more acute angle so that, if 1a is considered a bowl, this is a plate.

A.4 Type 1c

This is an open form with a complex profile. There are at least two sub-types within it and, if more examples appear, it may be necessary to split up this category. Unlike most categories this type is recognised by the body profile rather than just the rim.

A.5 Type 1d

This is also an open form with a complex profile. The angle of the rim is less vertical than is the case with 1c. The nature of the change in the profile seems more consistent than with 1c.

A.6 Type 1e

This is a general category for pedestal vessels of the 'champagne glass' type. It includes several rather different forms; compare Mallowan and Cruikshank Rose 1935 Fig 65 with Mallowan 1936 Fig 24,4-5. It is useful to have a general category since it is often only the pedestal part which survives.

A.7 Type 1f

This is the 'cream bowl' form. No examples have been found at Kharabeh Shattani.

A.8 Type 2a

This is an open hemispherical bowl whose rim angle is less than vertical but not as acute as those of 2b and 2c. The base can be flat or rounded and there are examples from other sites of disc bases. Davidson's equivalent type, form 3, also includes some examples where the rim is vertical or slightly in-turned; such examples are classified in the '3' group here.

A.9 Type 2b

This is an open plate with convex sides. It is rather arbitrarily divided from 2c by the rim diameter being over 200mm for examples of 2b. This division follows Davidson in dividing the Arpachiyah type 'plates' from 'saucers'. However for most sites there seems little justification for this and it may well be that the Tell Arpachiyah examples should be considered as a specific variation within a general category. In this case the two categories should be

merged.

A.10 Type 2c

This is a shallow open bowl with convex sides and an more acute rim angle than type 2a. Its diameter is 200mm or less.

A.11 Type 3a

This category is comprised of sherds whose rim is vertical or slightly inclined but where nothing further can be said of the profile. It is likely that most of the examples of this type were of type 3b originally but they are segregated since they may also represent borderline cases of 2a or 3c.

A.12 Type 3b

This form is distinguished by a rim angle which is usually relatively vertical and, especially by a corner point in the profile; at times a corner point is postulated when enough of the sherd exists to indicate that its presence would be almost inevitable.

A.13 Type 3c

This is a bowl which has a closed form. Unlike type 3d, it is genuinely hole-mouthed. The base, in some cases at least, may be rounded. Davidson has no category for this type and seems to have included it in his forms 3 and 11, which are in general equivalent to types 2a and 3b respectively. Therefore there may be some distortion in the numbers of these types in Fig 37 but it seems more likely that there were simply not enough examples at Tell Aqab to merit a separate group.

A.14 Type 3d

This is a type of bowl with a slightly in-turned rim. Although the rim is in-turned initially, it reverses a little way down the profile so that this is not a true closed form.

A.15 Type 4a

This is essentially distinguished by being a bowl form with low sides and, most importantly, decoration on the base. Most examples are likely to have been lids. It is recognised that this is a differentiation on decorative and presumed functional grounds rather than on the basis of shape. Therefore undecorated lids may be misclassified into one of the '2' categories and type 2 bowls with basal decoration may be misclassified into this group. However it does seem valid to retain this category at the expense of absolute consistency as its characteristic seem well defined and thus a potentially useful sub-

division.

A.16 Type 5a

This includes all body sherds of jars, regardless of exact form. Not enough large sherds have been found to allow a detailed reconstruction of forms, but from the evidence of other sites, Tell Arpachiyah especially, a large variety of cylindrical, globular and piriform bodies are likely to be included in this type. When more examples are available this class might be usefully sub-divided for Kharabeh Shattani. However the small size of many sherds will mean that this general grouping will almost certainly remain the major one. Most of the sherds would have originally fitted into type 5b but a some may have come from other jar forms.

A.17 Type 5b

This category includes all jar rims. It was kept separate from type 5a to allow comparisons of frequencies of occurrences to be made purely on the basis of rim fragments, although this may tend to under-represent jar forms. As with type 5a a variety of forms is known to exist elsewhere but it is currently impossible to sub-divide the majority of the Kharabeh Shattani sherds. It does seem likely that at least a distinction will be made between jars with small openings and jars with diameters so large that, in use, they may have had more in common with bowls than 'true' jars.

A.18 Type 5c

This is a jar form with a short, vertical rim. From the evidence from other sites, this usually has lugs on its shoulders but these are not illustrated since the form they can take varies widely (Mallowan 1936, Fig 33; Oppenheim 1943, Fig 13,2,3,5,9). Moreover no profiles of the Kharabeh Shattani examples were complete enough to see if this is characteristic of the form at this site.

A.19 Type 5d

This is the bow-rimmed jar, distinguished by the form its neck takes, having a marked restriction above the main body of the vessel. It is only by this area of the profile that sherds of this type can be distinguished.

A.20 Type 5e

This is jar type with an over-turned rounded rim. The diameter can vary widely as may the shape of the body but, for practical purposes, it is considered a unified category and will continue to be so regarded unless a lot of examples are found.

A.21 Type 5f

This is a jar type with an angular over-turned rim and, usually, an angular shoulder although its exact shape can vary.

APPENDIX B: Motif Frequencies

B.1 Combinations of motifs that occur more than once

Motifs interior exterior

1/4	1	6
1/6		2
1/8	1	5
1/10	2	1
1/18	1	4
1/19	1	3
1/21	1	1
1/36	2	2
1/47	2	
1/52		2
1/55		2
1/57		3
30/11	2	1

B.2 number of occurrences of individual motifs

Motif	Number	Motif	Number	Motif	Number	Motif	Number
1	233	23	1	43	2	64	2
2	14	24	6	44	1	65	1
4	85	26	3	45	1	67	16
5	1	27	5	47	6	68	2
6	7	29	2	49	1	70	4
8	24	30	16	51	6	71	4
9	1	31	2	52	4	72	1
10	4	32	1	53	4	75	1
11	1	33	1	54	1	82	4
12	2	34	1	55	4	83	1
13	46	35	2	56	1	?	27
14	5	36	5	58	1		
17	1	37	3	59	1		
18	27	38	1	60	1		
19	14	40	1	61	2		
21	10	42	1	62	2		

APPENDIX C: Neutron activation analysis results

C.1 Neutron Activation Samples

Sample	Source	Figure No.	Sample	Source	Figure No.
KS1	ABP1	10,6	KS21	ADJ5	19,2
KS2	ABP2	32,8	KS22	ADJ6	30,5
KS3	ABP3	33,5	KS23	ADJ7	
KS4	ABP4	18,3	KS24	ADJ8	
KS5	ABP5	34,2	KS25	ADJ10	
KS6	AAH2		KS26	ADJ104	
KS7	AAH4		S1	Wadi bed next to Kharabeh	
KS8	AAH5	35,10	S2	Kharabeh natural(fired)	
KS9	AAH8	32,9	S3	Kharabeh natural(unfired)	
KS10	AAH10	12,4	S4	Wadi bed next to Kharabeh	
KS11	AAH21		TA1	?/230	36,3
KS12	AAH27	35,3	TA2	53/178	36,5
KS13	ABN/ACG2	19,2	TA3	TT7	36,6
KS14	ABN/ACG3	34,5			
KS15	ABN/ACG4				
KS16	ABN/ACG5				
KS17	ADJ1				
KS18	ADJ2	31,3			
KS19	ADJ3	31,5			
KS20	ADJ4	30,7			
KS21	ADJ5	19,2			
KS22	ADJ6	30,5			
KS23	ADJ7				
KS24	ADJ8				
KS25	ADJ9				
KS26	ADJ104				
S1	Wadi bed next to Kharabeh Shattani				
S2	Kharabeh Shattani natural (fired)				
S3	Kharabeh Shattani natural (unfired)				
S4	Wadi bed next to Kharabeh Shattani				
TA1	?/230	36,3			
TA2	53/178	36,5			
TA3	TT7	36,6			

C.2 NAA Results

	Na	K	La	Sm	Th	Cr	Hf	Cs	Sc
KS1	4485.0	15450.0	21.68	3.845	8.891	387.3	3.816	6.213	21.97
KS2	2634.0	13200.0	18.99	3.492	7.430	374.0	2.713	3.499	18.0
KS3	5109.0	15600.0	19.60	3.814	8.356	468.1	3.466	5.795	23.95
KS4	3951.0	12990.0	17.89	3.326	7.164	484.1	2.765	5.226	21.02
KS5	4907.0	14900.0	20.68	3.873	8.437	392.1	3.222	6.347	21.06
KS6	5055.0	20550.0	21.82	4.162	9.135	577.1	4.554	5.952	22.04
KS7	4442.0	17830.0	21.09	3.905		438.2	4.285	4.490	22.47
KS8	1443.0	11140.0	17.54	3.237	7.194	283.0	3.627	3.700	16.92
KS9	3954.0	14290.0	17.96	3.264	7.645	451.3	2.496	3.303	16.80
KS10	4101.0	18260.0	19.08	3.618	7.500	593.1	3.441	4.734	19.37
KS11	6144.0	14050.0	20.65	4.184	7.436	443.6	4.529	4.630	18.19
KS12	4979.0	20040.0	22.55	4.226	8.378	513.9	3.373	4.858	20.73
KS13	3529.0	10180.0	19.52	3.800	7.997	449.9	2.441		18.16
KS14	4269.0	11790.0	19.56	3.943	7.253	1368.0	3.653	3.904	23.01
KS15	3422.0	11230.0	20.20	4.030	8.352	525.0	3.317	2.902	20.61
KS16	6121.0	12310.0	19.56	3.975	8.960	596.2	3.920		22.47
KS17	5315.0	12760.0	21.86	4.410	8.037	527.2	4.208	4.183	21.02
KS18	4668.0	13370.0	21.83	4.101	8.891	547.3	3.347	5.431	25.72
KS19	5016.0	11700.0	22.79	4.727	10.160	641.3	3.694		26.30
KS20	2455.0	15150.0	14.91	2.931	7.897	430.8	3.340	3.662	19.75
KS21	2513.0	13730.0	22.46	4.479	9.727	418.2	5.016	5.506	22.80
KS22	3039.0	9255.0	21.49	4.570	9.897	492.5	4.278		25.62
KS23	5189.0	15520.0	22.82	4.655	8.264	421.5	3.543	2.674	21.37
KS24	2566.0	6747.0	18.23	3.657	6.379	495.5	2.607		20.47
KS25	1691.0	7058.0	18.72	3.747	7.635	355.8	2.686	3.407	18.94
KS26	5001.0	9470.0	15.96	2.566	7.796	371.1	3.483	6.325	17.19
SI	3090.0	17100.0	21.10	3.672	8.153	351.6	3.866	3.969	16.53
S2	5195.0	19120.0	25.35	4.246	10.030	448.7	5.542	4.518	16.05
S3	3772.0	16910.0	18.09	3.046	7.554	337.3	4.873	3.928	12.07
S4	3479.0	17880.0	22.77	3.789	9.986	382.6	4.222	4.043	17.93
TA1	2841.0	22480.0	15.94	2.886	9.443	457.0	4.148	4.148	22.63
TA2	2943.0	22060.0	15.28	2.541	7.166	492.6	2.746	4.168	20.27
TA3	4834.0	22930.0	15.49	2.663	7.650	475.2	2.851	3.404	22.45

	Fe	Co	Eu	Rb	Ce	Tb	Lu
KS1	62490.0	39.11	1.2360	100.30	46.41	1.233	0.4167
KS2	50060.0	30.30	1.2660	85.72	40.09	2.679	0.3638
KS3	64970.0	43.57	1.2960	89.64	41.82	2.037	0.3720
KS4	58760.0	38.48	1.2880	46.67	37.41	1.267	0.3108
KS5	58290.0	36.91	1.1780	89.35	43.67	2.552	0.3842
KS6	59620.0	29.96	1.6020	75.36	46.50	2.185	0.3842
KS7	64340.0	34.48	1.3660	50.35	39.90	3.751	0.3985
KS8	46760.0	23.66	1.0760	86.18	40.34	2.943	0.3725
KS9	45230.0	27.10	0.8685	62.81	37.97	1.850	0.3109
KS10	51990.0	31.06	1.2440	112.00	39.59	1.933	0.3562
KS11	47980.0	25.55	1.5750	58.49	45.89	2.190	0.3733
KS12	55000.0	29.26	1.2140	90.67	44.41	2.001	0.3964
KS13	53060.0	30.30	1.2800	56.11	41.63	1.257	0.3441
KS14	61560.0	43.94	1.1680	48.96	38.61	1.998	0.3497
KS15	55580.0	32.54	1.1540	30.32	44.06	2.515	0.3568
KS16	65690.0	34.24	1.1920	50.15	49.86	2.050	0.3769
KS17	59340.0	30.93	1.1700	68.94	43.10	2.039	0.4431
KS18	70070.0	38.03	1.0580	65.35	41.59	1.042	0.3674
KS19	75540.0	38.07	1.2060	58.31	55.33	1.869	0.4084
KS20	52240.0	25.67	0.5451		28.57	1.102	
KS21	66510.0	30.28	1.3030	59.95	49.69	2.744	0.4536
KS22	72600.0	35.90	1.0070	56.19	52.07	2.394	0.5121
KS23	57950.0	28.07	1.0970	69.80	43.35	1.801	0.4003
KS24	56090.0	37.29	0.9011	28.81	37.47	1.608	0.3033
KS25	56550.0	23.94	0.9132	30.96	39.68	1.808	0.3720
KS26	44080.0	23.18	1.2330		30.27	0.9251	0.2873
S1	43730.0	21.33	1.0630	56.30	36.43		0.3729
S2	43770.0	20.58	0.6941	83.71	51.55		0.3922
S3	31490.0	15.04	0.7487	92.88	36.40		0.3770
S4	47630.0	22.16	1.0060	125.80	48.07		0.6393
TA1	60050.0	29.87	0.7062	123.40	31.39		0.3420
TA2	50520.0	28.60	0.8170	114.40	28.56		0.2891
TA3	62670.0	28.11	0.7296	85.64	35.61		0.3231

APPENDIX D: Tables

TABLE 1

KHARABEH SHATTANI		TELL AQAB(%AGES)				TELL ARPACHIYAH(%AGES)				
NOS.	%AGE	EARLY	MID.	LATE	TRANS.	TT7-6	TT8-10	PRE-TT10A	B	
1A	11	7	70	11	10	5	2	20.5	60	67
1B	2	1.5		1	2	1				
1C	4	2.5			1			1	2.5	1.5
1D	4	2.5		7			5.5	7.5		
1E	1	0.5		1			2	1.5	1	
1F			15				4	1.5	6	3.5
1G										
2A	50	32.5	7.5	54	59	54	43.5	27.5	3.5	1.5
2B	4	2.5		1	0.5		5.5	0.5		
2C	12	8		4	6.5	3	9.5	4.5		
3A	6	4								
3B	6	4		7	3	6		0.5		
3C	16	10.5					9.5	1.5		
3D	12	8				4.5		2.5		
4A	1	0.5					4	0.5		
5A	8	5								
5B	8	5	7.5	11	7	7.5	13.5	23.5	27	25
5C	4	2.5		1	0.5	1		2		
5D	1	0.5				2				
5E	2	1.5						0.5		1.5
5F	1	0.5		3	1		2			
Total										
Sample	153		40	331	317	?	53	202	86	235

The Tell Arpachiyah figures are from Hijara's excavations.

The total number

of sherds Hijara used in his recording of form by level varies in the different sections of his thesis (presumably depending on how much of them was preserved for examination of motifs etc) but seems at maximum to be 672 sherds with reconstructable forms. Some of these have been discarded in this analysis where it is not possible to be sure that Hijara's example can be transferred to this table without risk of misrepresentation; 619 sherds have qualified under these conditions. The sherds not included here are unlikely to seriously affect the figures although they might have made differences of one or two percent.

TABLE 2: PRESENCE OF FORMS AT DIFFERENT SITES (TAKEN FROM DAVIDSON 1976)

Kharabeh	Old Arpachiyah			Chagar Bazar			Gawra		
	TT7-6	TT10-8	Pre-TT10	Early	Middle	Late	Late	Tran	
1A	X	X	X						
1B	X						X	X	
1C	X	X	X				X	X	
1D	X			X			X		
1E	X	X	X			X		X	
1F			X	X		X			
1G									
2A	X	X	X	X		X	X	X	
2B	X	X							
2C	X	X	X				X	X	
3B	X	X				X	X	X	
3C	X						X		
3D	X	X					X		
4A	X	X							
5B	X	X	X	X		X	X	X	
5C	X	X					X	X	
5D	X	X							
5E	X							X	
5F		X	X			X	X	X	

TABLE 3: COARSE WARE FREQUENCY

TYPE	NUMBER
1A	3
2A	2
3A	1
3C	4
3D	1
5C	3
?	3

TABLE 4: Forms by Phase at Kharabeh Shattani

	EARLY		LATE	
	NUMBER	%AGE	NUMBER	%AGE
1A	3	9.5	3	5.5
1B	1	3	1	2
1C	1	3	1	2
1D	1	3		
2A	8	26	10	18.5
2B			2	4
2C	3	9.5	6	11
3A	1	3	2	4
3B	2	6.5	1	2
3C	1	3	10	18.5
3D	4	13	4	7.5
4A	1	3		
5A	1	3		
5B	1	3	4	7.5
5C			1	2
5D	2	6.5		
5E			2	4
?	1	3	3	5.5

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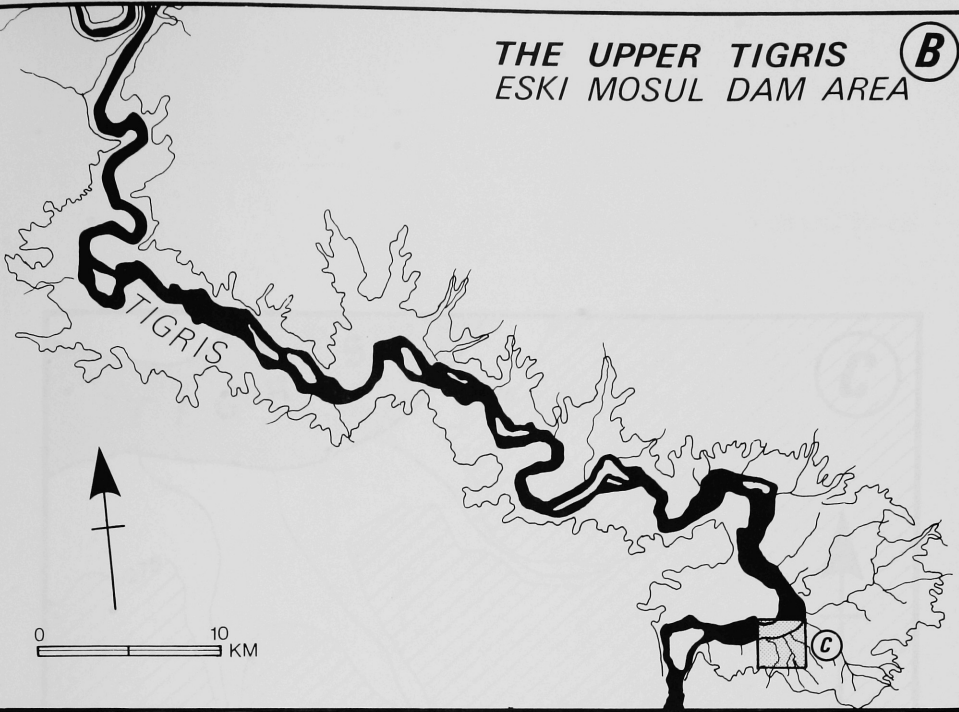
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THE UPPER TIGRIS
ESKI MOSUL DAM AREA

(B)

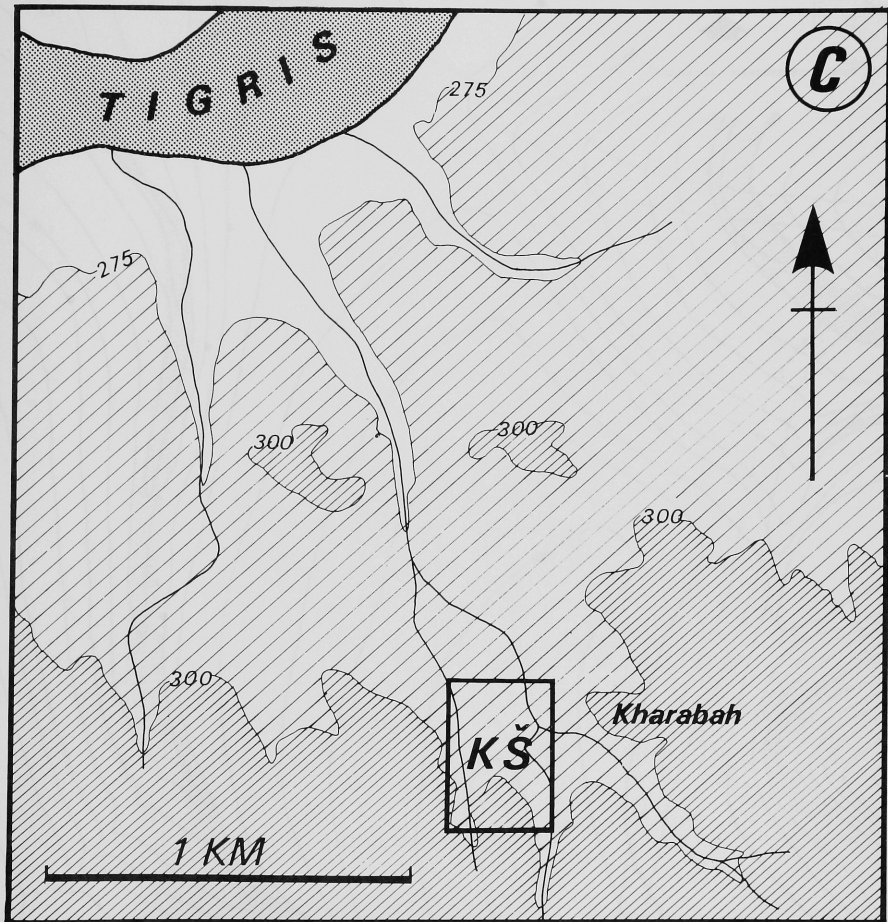


THE TIGRIS-
EUPHRATES
BASIN

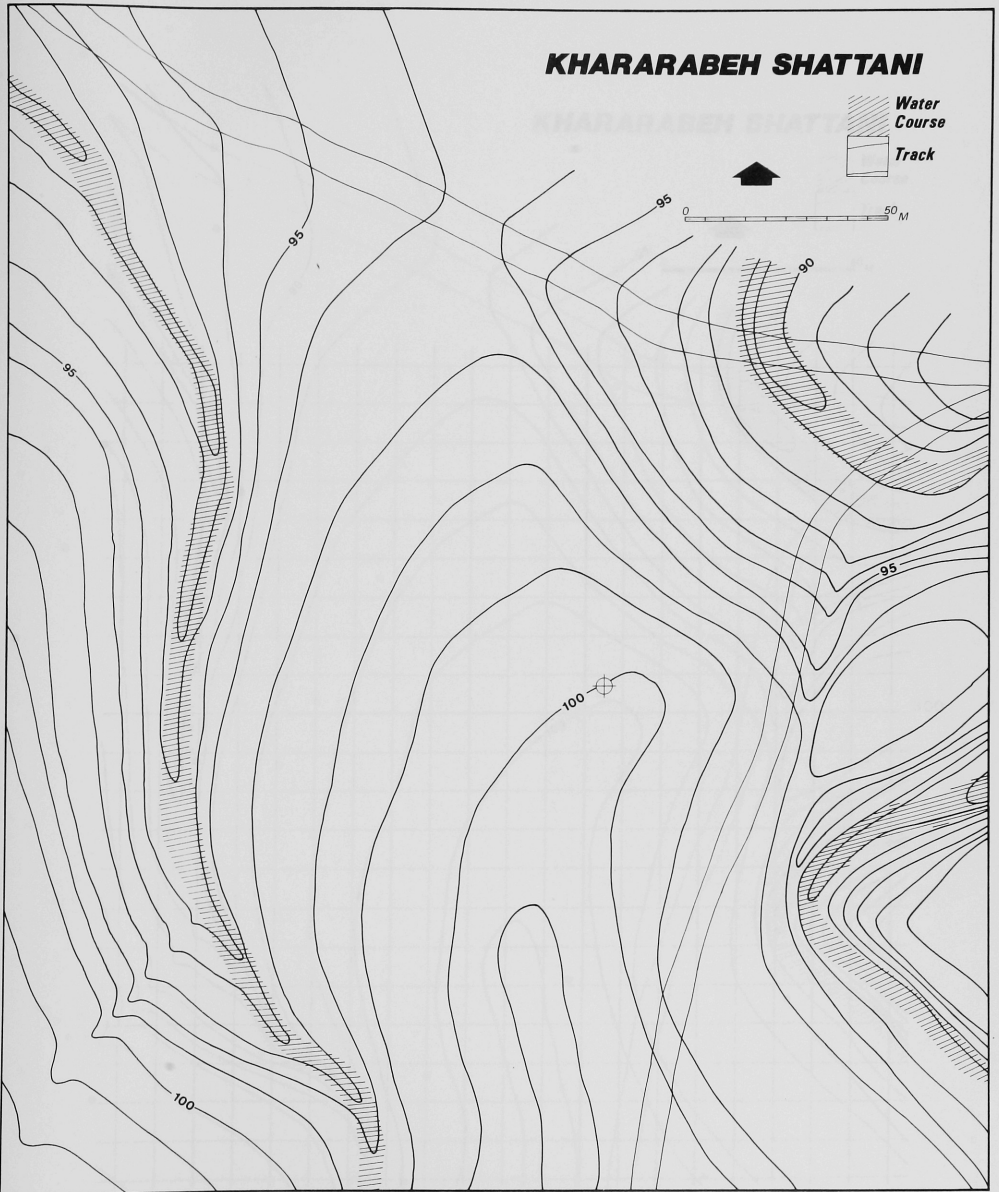
(A)



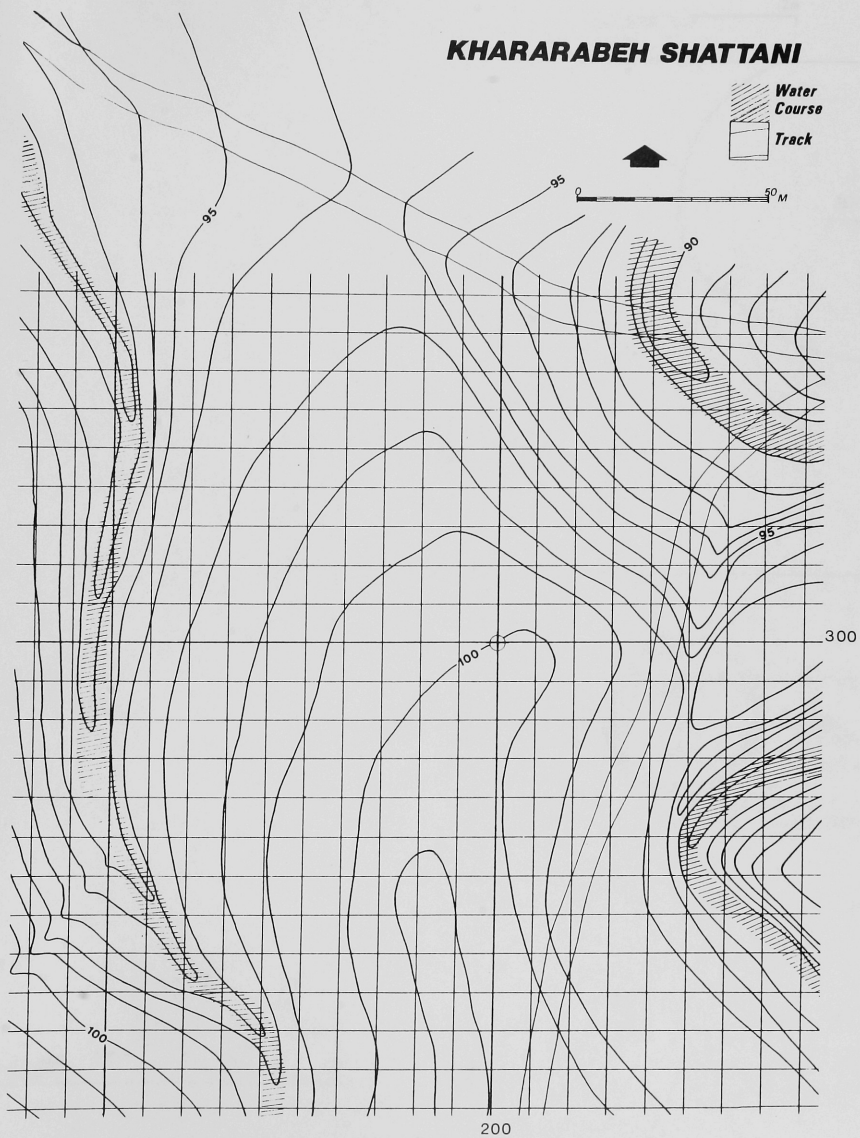
Map 1 Location of Eski Mosul dam area in Iraq



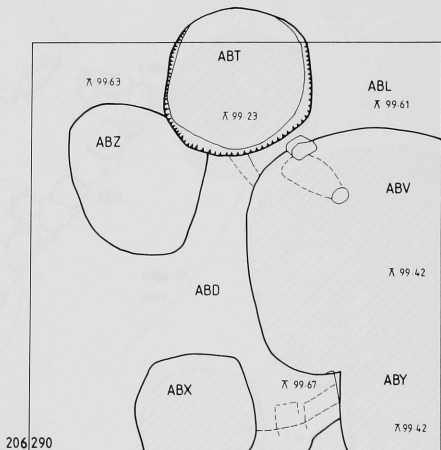
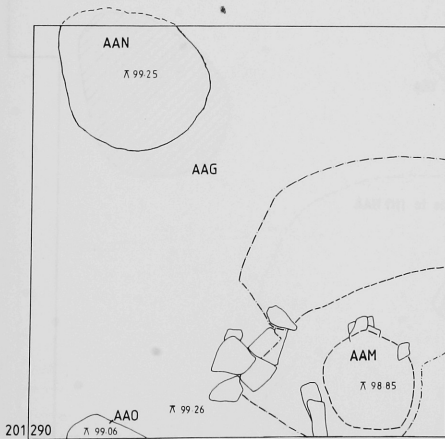
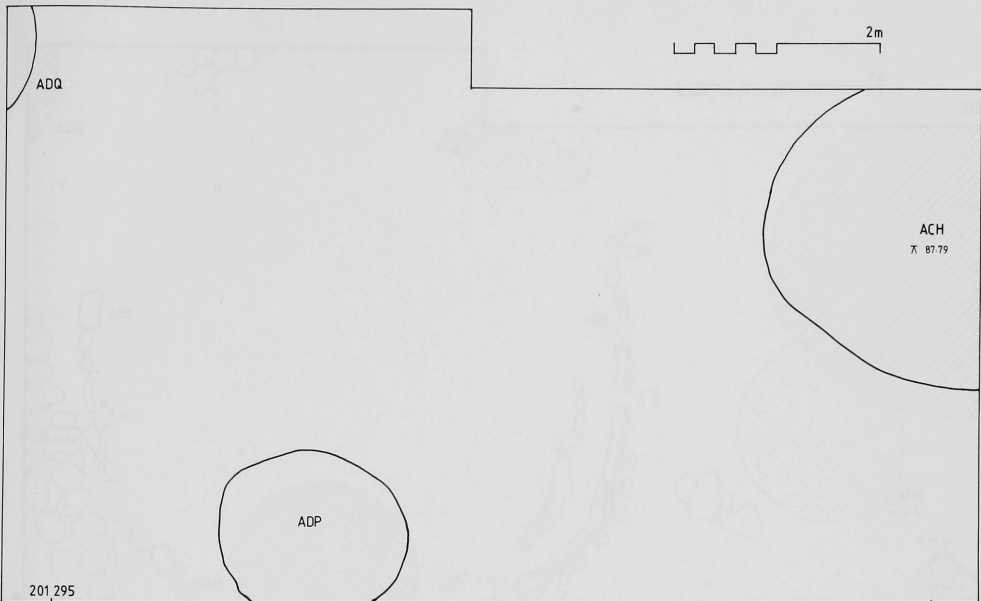
Map 2 Site location



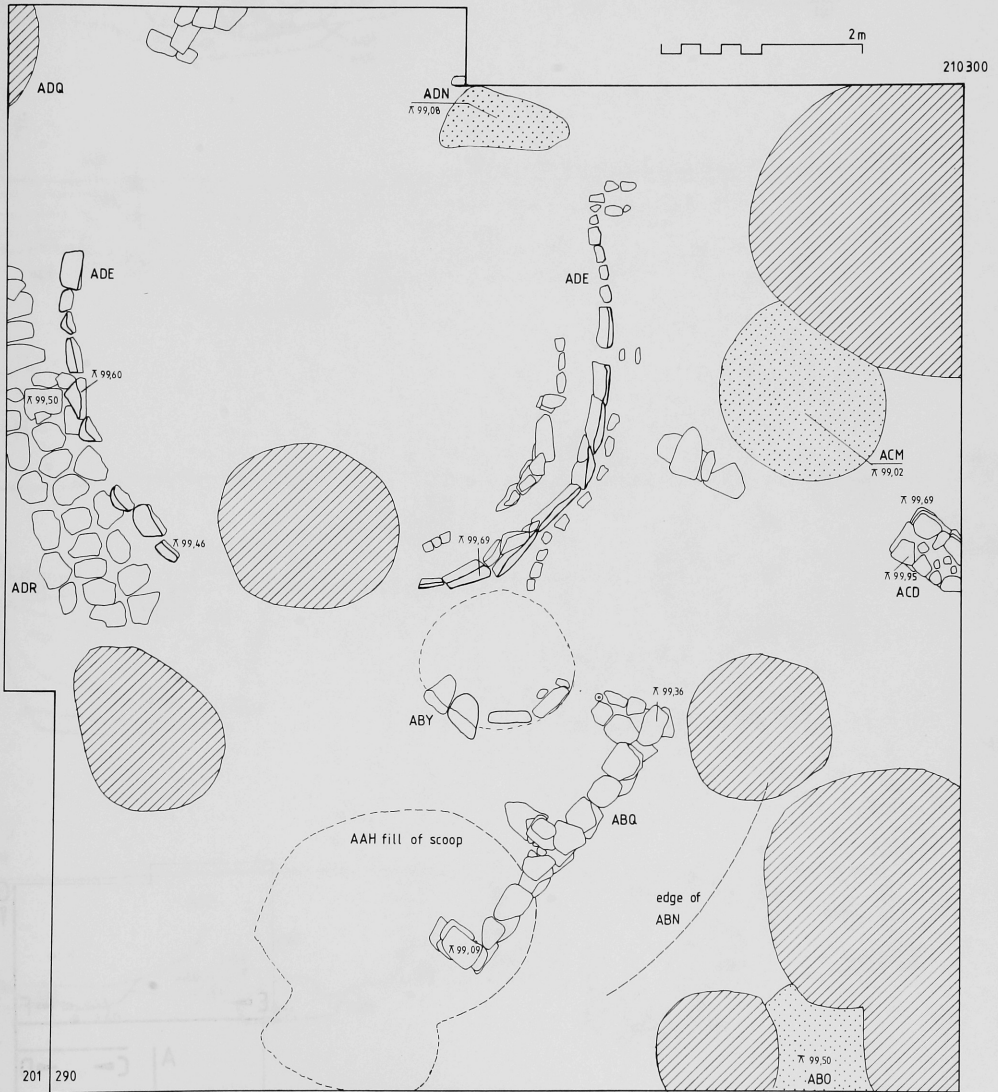
Map 3 Contour plan of site



Map 4 Plan of site with survey grid



Plan 1 Pits

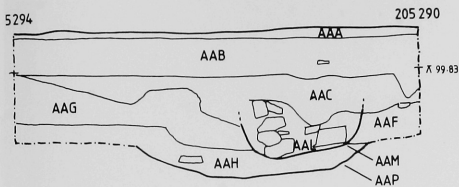


Plan 2 Halaf culture period remains

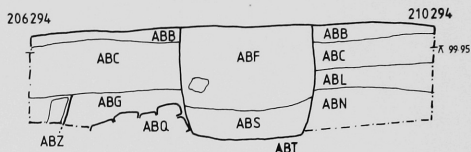


Plan 3 Key to sections

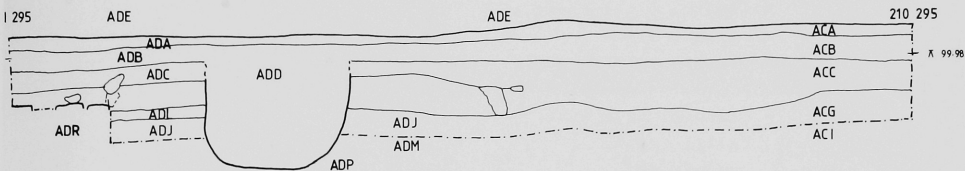
A-B



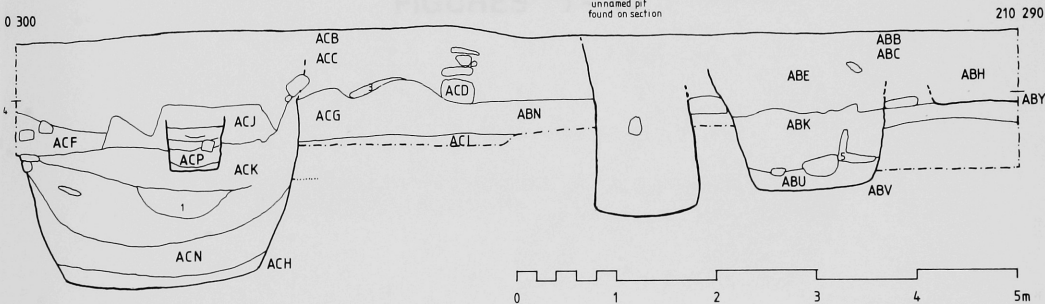
C-D



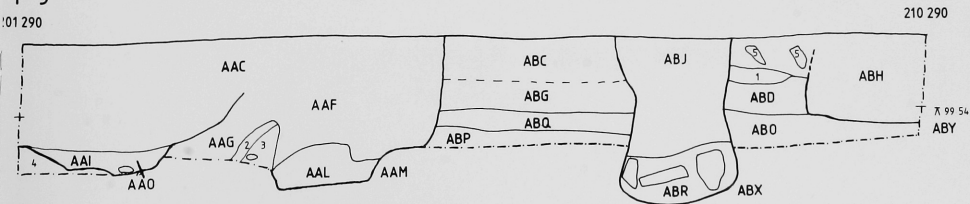
E-F



G-H



I-J



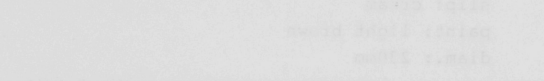
Plan 4 Sections

Fig. 1 No. 1 is

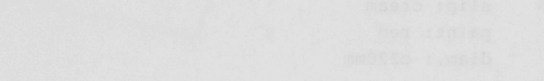
No. 1 AASIS
Label: pink-stands
color



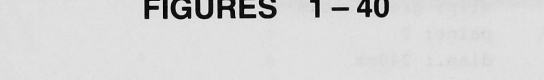
No. 2 AASIS
Label: full with grey ball core
light cream



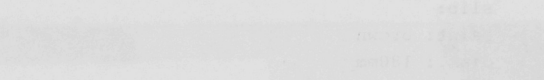
No. 3 AASIS
Label: dark pink
light cream



No. 4 AASIS
Label: light pink-soft
color



No. 5 AASIS
Label: light pink-soft
color



FIGURES 1 - 40

Fig. 1 Bowls la

- No.1 AAA38 form: la
fabric: pink-orange
slip:
paint: red
diam.: c190mm
- No.2 ADF20 form: la
fabric: buff with grey buff core
slip: cream
paint: light brown
diam.: 230mm
- No.3 AAJ19 form: la
fabric: dark pink
slip: cream
paint: red
diam.: c220mm
- No.4 AAK10 form: la
fabric: light brown
slip: green cream
paint: ?
diam.: 240mm
- No.5 ABD2 form: la
fabric: light pink-buff
slip:
paint: brown
diam.: 180mm

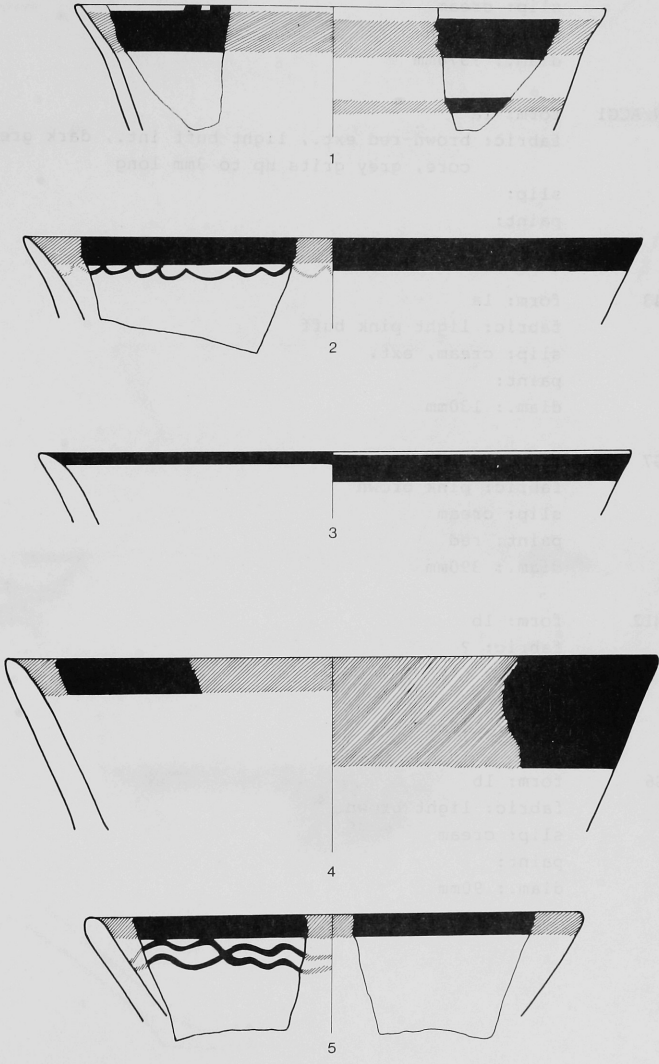


Figure 1 Bowls 1a

Scale 1:2

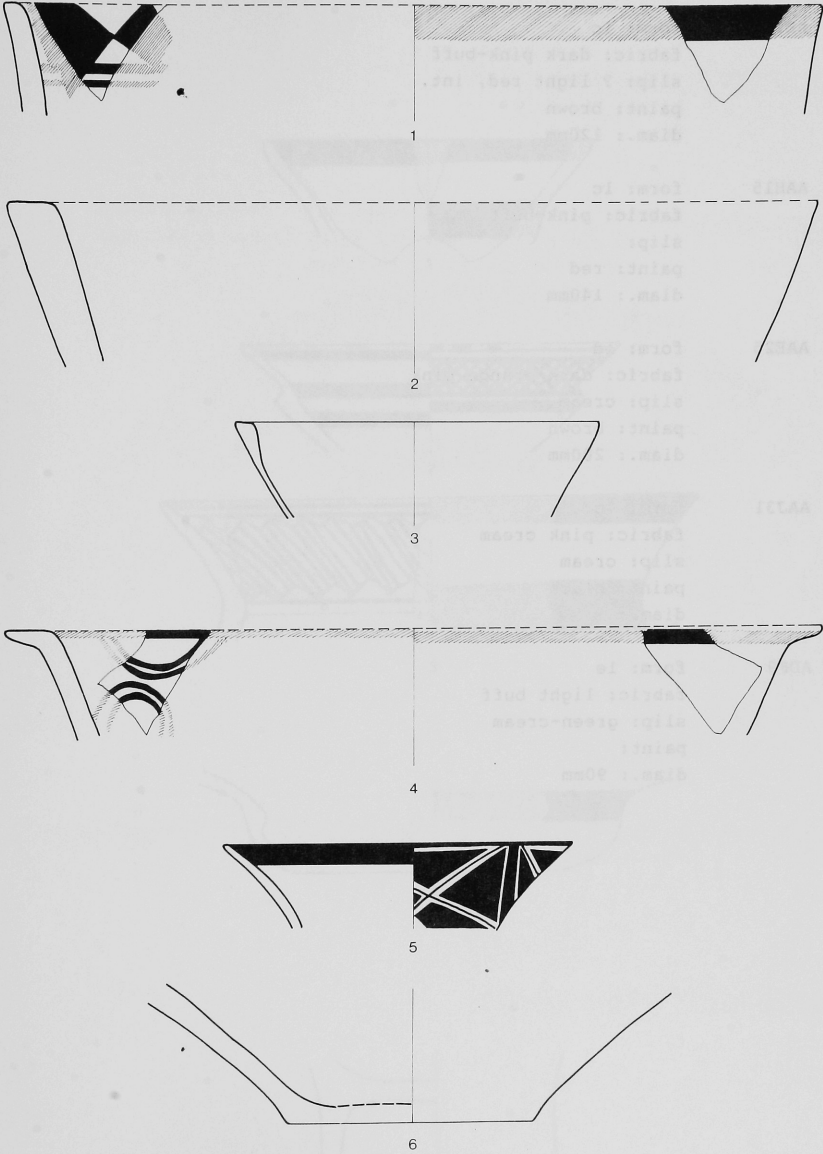


Figure 2 Bowls 1a and 1b Scale 1:2

Fig. 3 Bowls lc, ld and le

- No.1 ABI6 form: lc
fabric: dark pink-buff
slip: ? light red, int.
paint: brown
diam.: 120mm
- No.2 AAH15 form: lc
fabric: pink-buff
slip:
paint: red
diam.: 140mm
- No.3 AAE25 form: ld
fabric: dark orange pink
slip: cream
paint: brown
diam.: 200mm
- No.4 AAJ31 form: lc
fabric: pink cream
slip: cream
paint: black
diam.: ?
- No.5 ADF9 form: le
fabric: light buff
slip: green-cream
paint:
diam.: 90mm

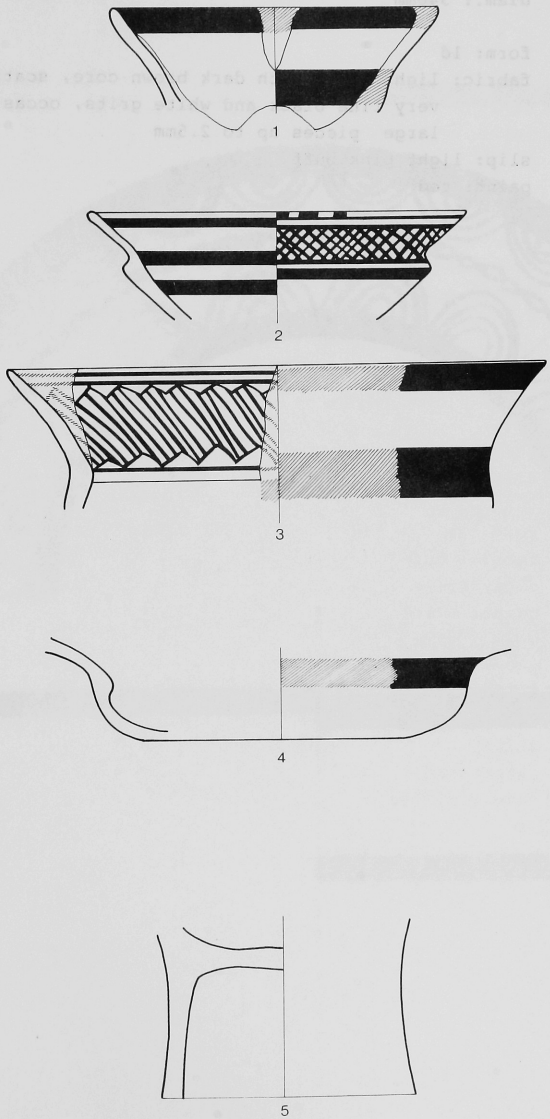


Figure 3 Bowls 1c, 1d and 1e Scale 1:2

Fig. 4 Bowls 1d

No.1 AAH34

form: 1d
 fabric: dark buff
 slip: cream
 paint: brown-red
 diam.: 340mm

No.2 AAJ2

form: 1d
 fabric: light brown with dark brown core, scattered
 very fine black and white grits, occasional
 large pieces up to 2.5mm
 slip: light pink buff
 paint: red

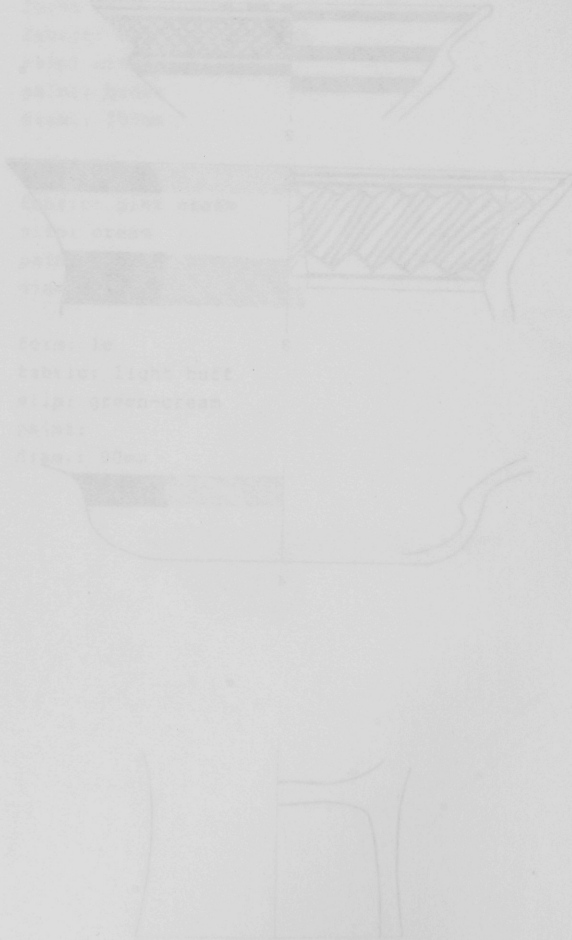
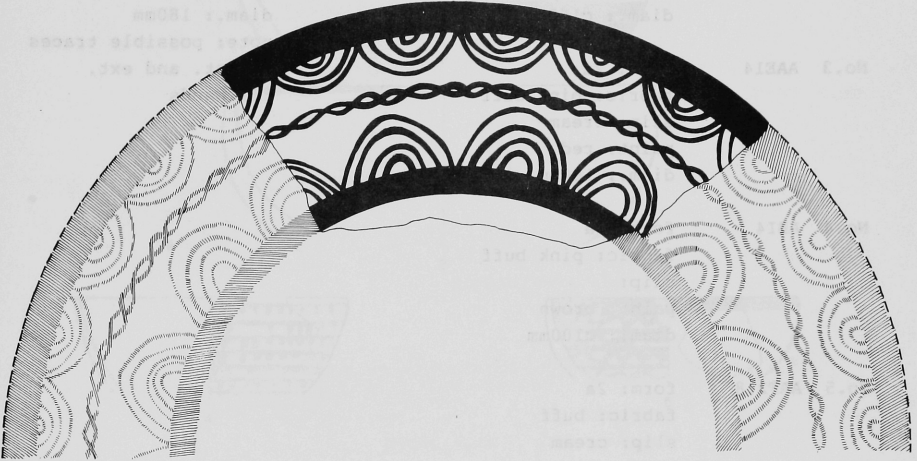
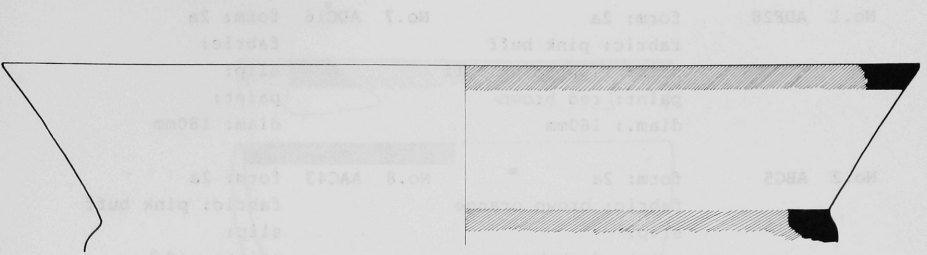
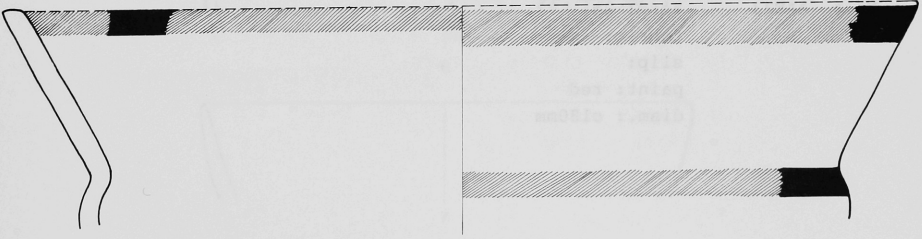


Fig. 3 Bows 2a



1



2

Figure 4 Bows 1d Scale 1:2

Fig. 5 Bowls 2a

No.1	ADF28	form: 2a fabric: pink buff slip: light pink buff paint: red brown diam.: 160mm	No.7	ADC16	form: 2a fabric: slip: paint: diam.: 180mm
No.2	ABG5	form: 2a fabric: brown orange slip: paint: dark brown diam.: c160mm	No.8	AAC43	form: 2a fabric: pink buff slip: paint: red diam.: 180mm note: possible traces of int. and ext. rim bands
No.3	AAE14	form: 2a fabric: pink buff slip: cream paint: red diam.: 160mm			
No.4	ABI4	form: 2a fabric: pink buff slip: paint: brown diam.: c100mm			
No.5	AAF2.8	form: 2a fabric: buff slip: cream paint: black diam.: 90mm			
No.6	AAE23	form: 2a fabric: slip: paint: red diam.: c180mm			

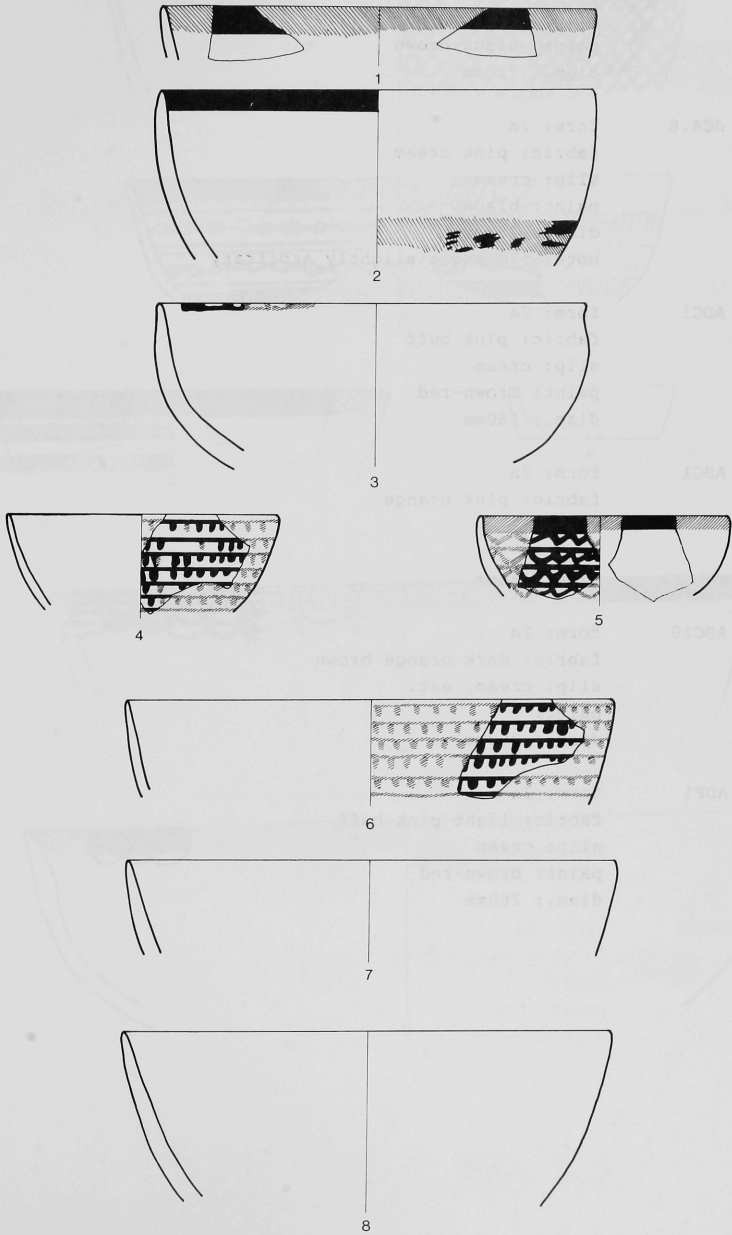


Figure 5 Bowls 2a

Scale 1:2

Fig. 6 Bowls 2a

- No.1 ABG22 form: 2a
fabric: pink buff
slip: cream
paint: black-brown
diam.: 210mm
- No.2 JC4.6 form: 2a
fabric: pink cream
slip: cream
paint: black
diam.: 200mm
note: rim angle slightly arbitrary
- No.3 ADC1 form: 2a
fabric: pink buff
slip: cream
paint: brown-red
diam.: 160mm
- No.4 ABG1 form: 2a
fabric: pink orange
slip:
paint
diam.: 60mm
- No.5 ABC10 form: 2a
fabric: dark orange brown
slip: cream, ext.
paint: ?
diam.: 260mm
- No.6 ADF1 form: 2a
fabric: light pink buff
slip: cream
paint: brown-red
diam.: 280mm

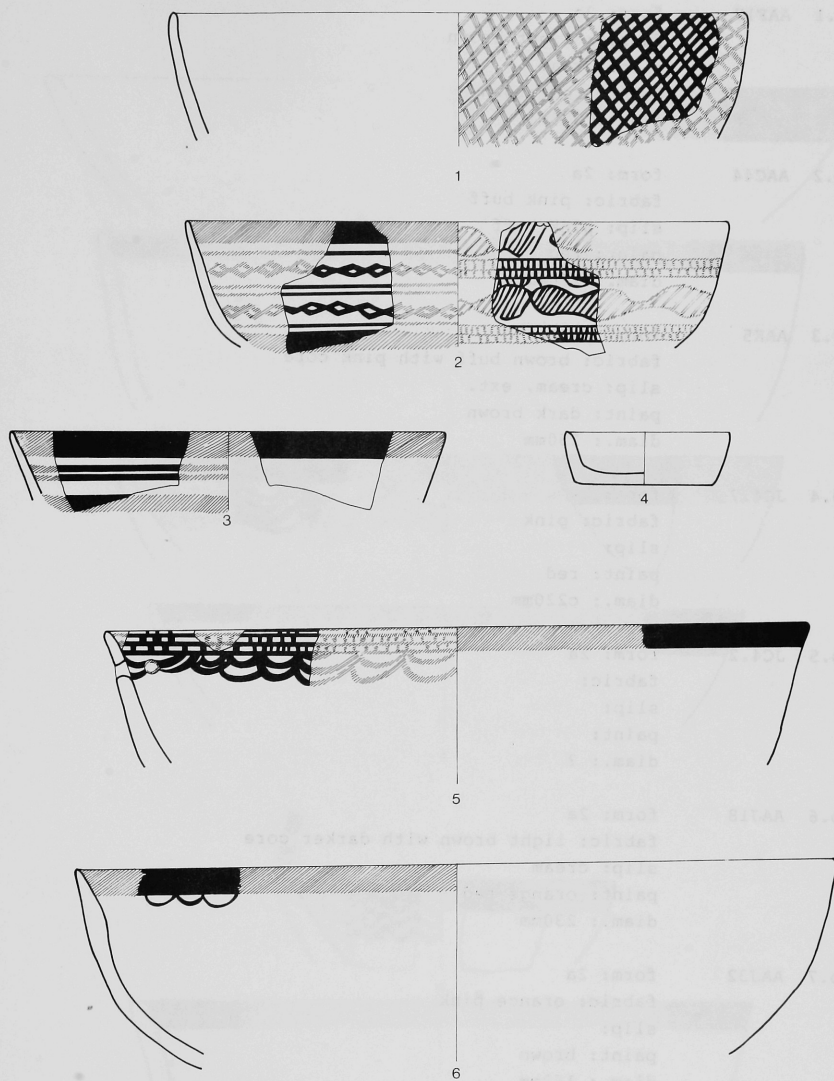


Figure 6 Bowls 2a

Scale 1:2

Fig. 7 Bowls 2a

- No.1 AAF17 form: 2a
fabric: light brown
slip: cream
paint: red-brown
diam.: 370mm
- No.2 AAC44 form: 2a
fabric: pink buff
slip: pink buff
paint: red
diam.: 260mm
- No.3 AAK5 form: 2a
fabric: brown buff with pink core
slip: cream, ext.
paint: dark brown
diam.: 250mm
- No.4 JC4.7 form: 2a
fabric: pink
slip:
paint: red
diam.: c220mm
- No.5 JC4.2 form: 2a
fabric:
slip:
paint:
diam.: ?
- No.6 AAJ18 form: 2a
fabric: light brown with darker core
slip: cream
paint: orange red
diam.: 230mm
- No.7 AAJ32 form: 2a
fabric: orange pink
slip:
paint: brown
diam.: 160mm

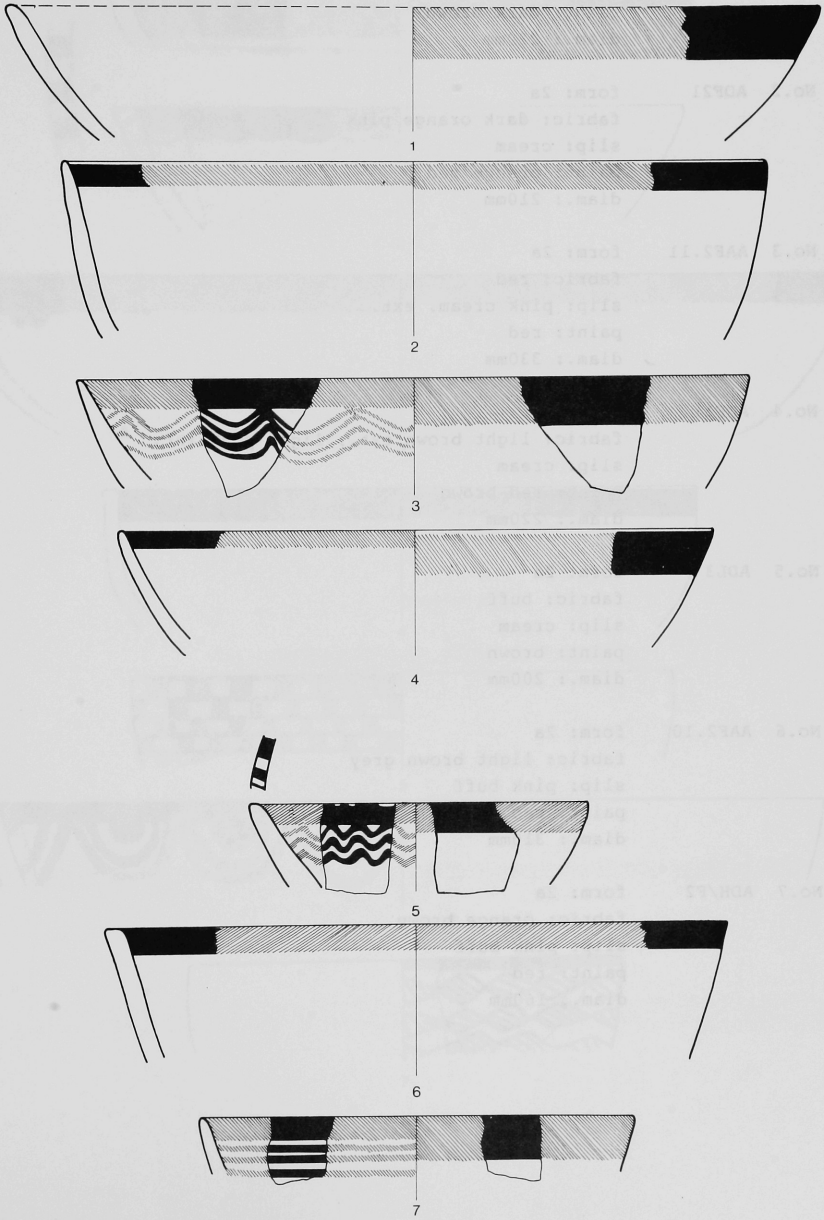


Figure 7 Bowls 2a

Scale 1:2

Fig.8 Bowls 2a

- No.1 ABI23 form: 2a
fabric:
slip: pink buff
paint: dark brown
diam.: 220mm
- No.2 ADF21 form: 2a
fabric: dark orange pink
slip: cream
paint: orange red
diam.: 210mm
- No.3 AAF2.11 form: 2a
fabric: red
slip: pink cream, ext.
paint: red
diam.: 330mm
- No.4 ADF11 form: 2a
fabric: light brown ext., light pink int.
slip: cream
paint: red brown
diam.: 220mm
- No.5 ADL3 form: 2a
fabric: buff
slip: cream
paint: brown
diam.: 200mm
- No.6 AAF2.10 form: 2a
fabric: light brown grey
slip: pink buff
paint: red
diam.: 310mm
- No.7 ADH/F2 form: 2a
fabric: orange brown
slip: pink buff
paint: red
diam.: 160mm

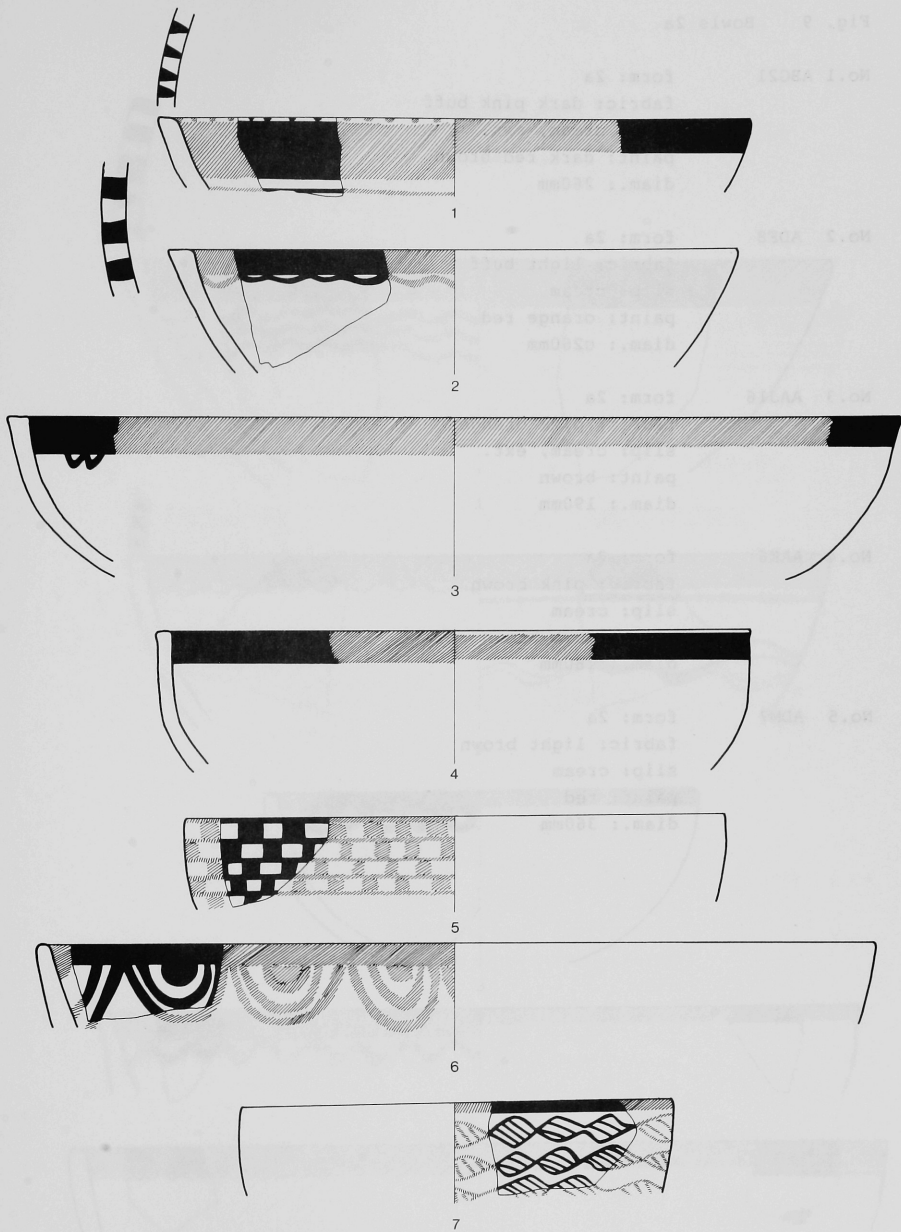


Figure 8 Bowls 2a

Scale 1:2

Fig. 9 Bowls 2a

- No.1 ABG21 form: 2a
fabric: dark pink buff
slip: cream, ext.
paint: dark red brown
diam.: 260mm
- No.2 ADF8 form: 2a
fabric: light buff
slip: cream
paint: orange red
diam.: c260mm
- No.3 AAJ16 form: 2a
fabric: pink orange
slip: cream, ext.
paint: brown
diam.: 190mm
- No.4 AAK6 form: 2a
fabric: pink brown
slip: cream
paint: dark brown
diam.: 280mm
- No.5 ADM7 form: 2a
fabric: light brown
slip: cream
paint: red
diam.: 360mm

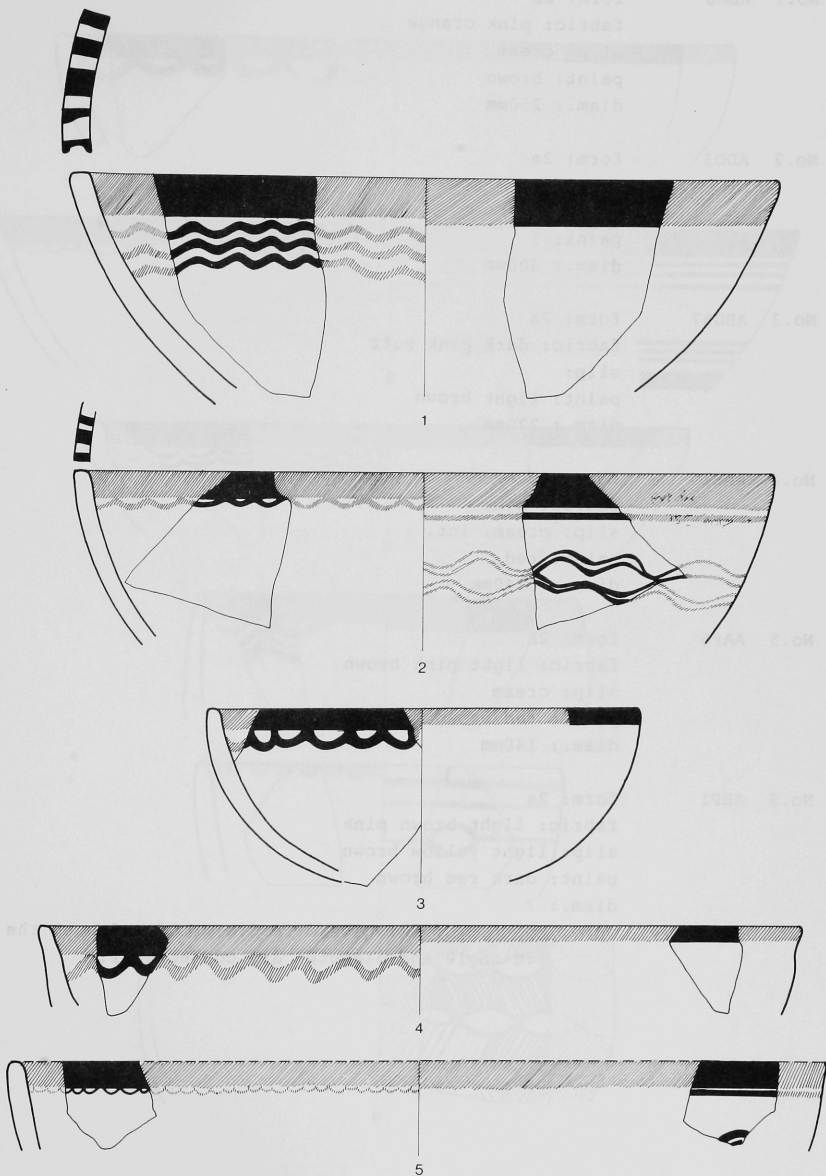


Figure 9 Bowls 2a

Scale 1:2

Fig. 10 Bowls 2a and 3d

- No.1 ADM8 form: 2a
fabric: pink orange
slip: cream
paint: brown
diam.: 250mm
- No.2 ADD3 form: 2a
fabric: ?
slip: ?
paint: ?
diam.: 300mm
- No.3 ABG57 form: 2a
fabric: dark pink buff
slip:
paint: light brown
diam.: 220mm
- No.4 AAH1 form: 3d
fabric: pink
slip: cream, int.
paint: red
diam.: c140mm
- No.5 AAF5 form: 2a
fabric: light pink brown
slip: cream
paint: red brown
diam.: 140mm
- No.6 ABP1 form: 2a
fabric: light brown pink
slip: light yellow brown
paint: dark red brown
diam.: ?
note: the rim of this sherd is distorted and both the rim angle and diameter are conjectural.

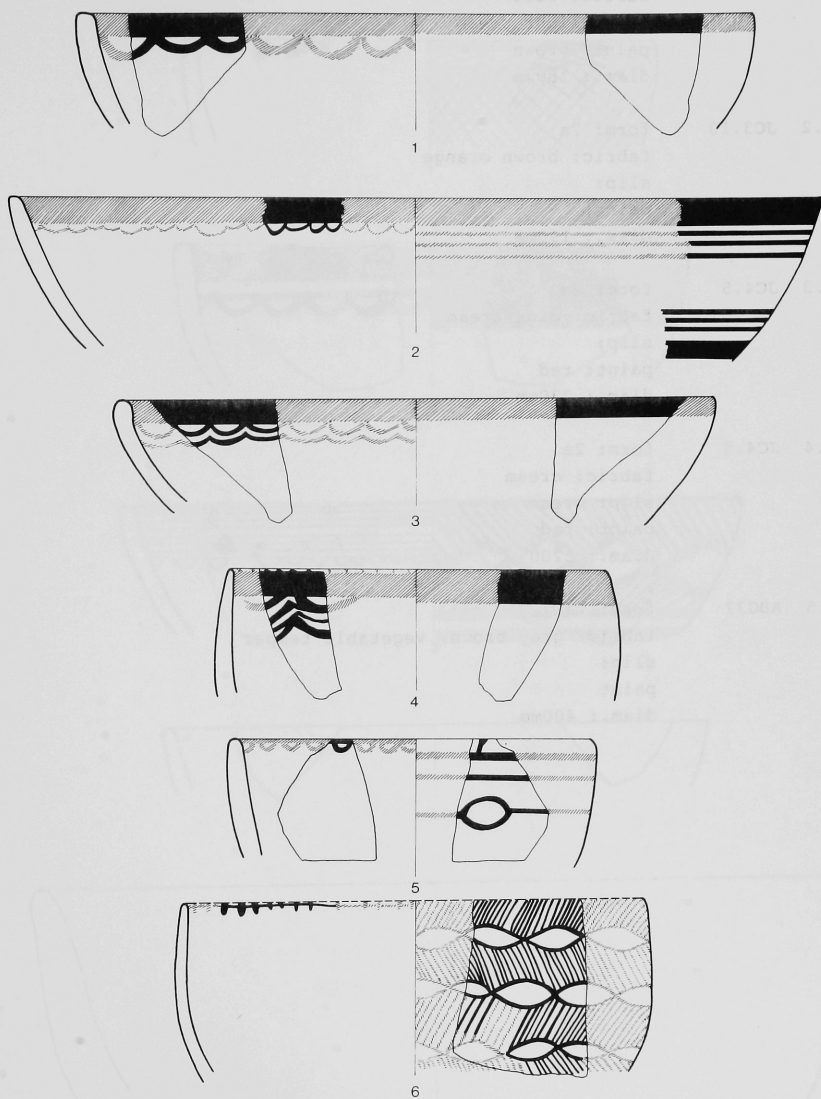


Figure 10 Bowls 2a and 3d Scale 1:2

Fig. 11 Bowls 2a

- No.1 AAF4 form: 2a
 fabric: buff
 slip: light cream
 paint: brown
 diam.: 180mm
- No.2 JC3.10 form: 2a
 fabric: brown orange
 slip:
 paint:
 diam.: 190mm
- No.3 JC4.5 form: 2a
 fabric: pink cream
 slip:
 paint: red
 diam.: 230mm
- No.4 JC4.8 form: 2a
 fabric: cream
 slip: cream
 paint: red
 diam.: c200
- No.5 ABG37 form: 2a
 fabric: grey brown, vegetable temper
 slip:
 paint:
 diam.: 400mm

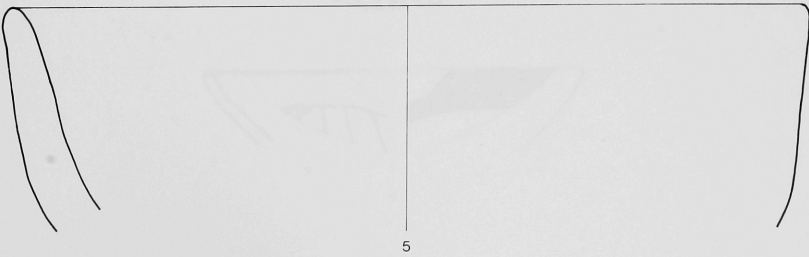
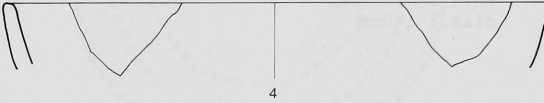
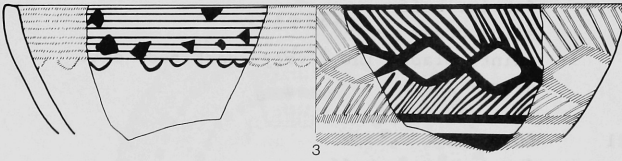
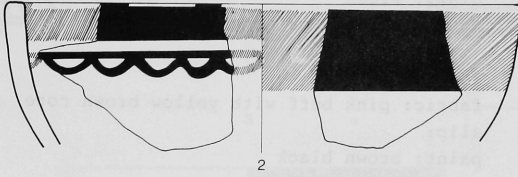
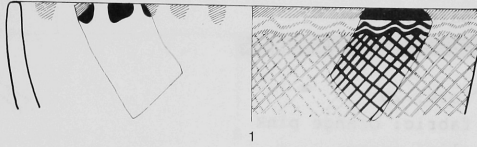
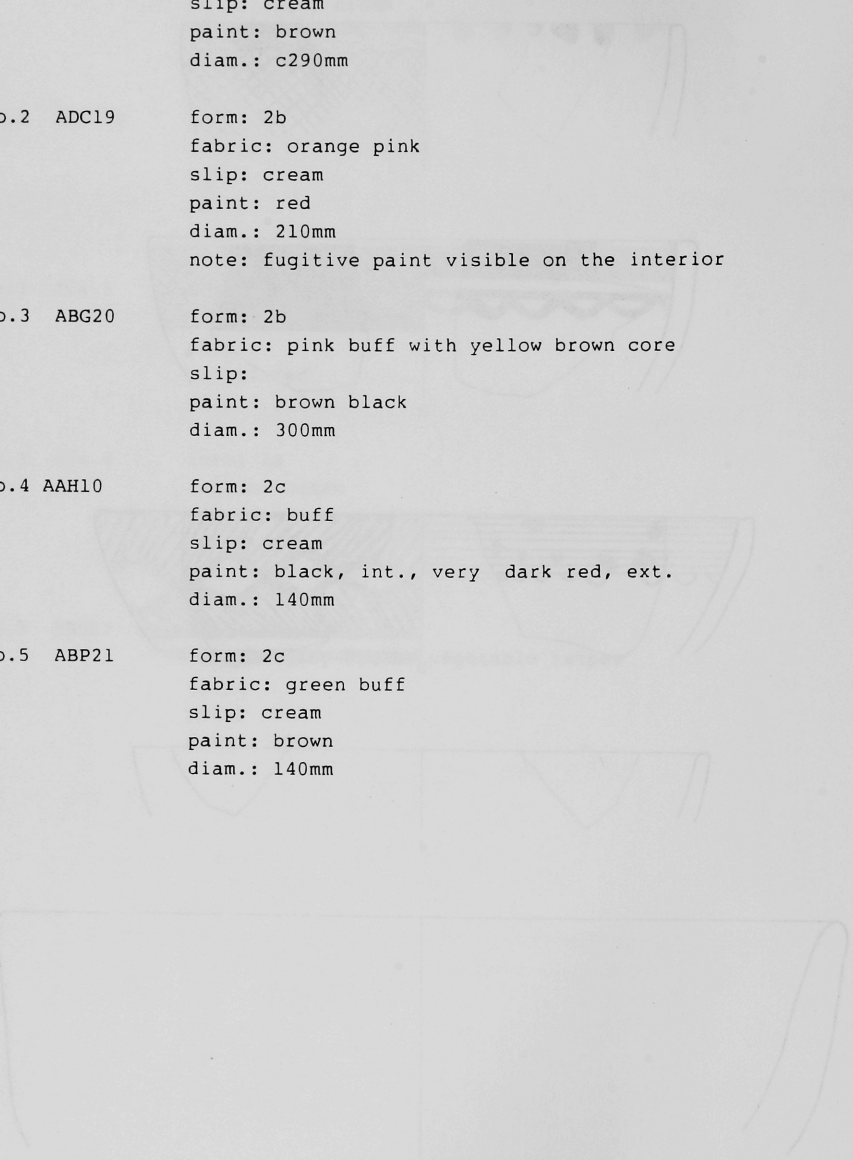


Figure 11 Bowls 2a

Scale 1:2

Fig. 12 Bowls 2b and 2c

- No.1 AAJ17 form: 2b
 fabric: light orange buff
 slip: cream
 paint: brown
 diam.: c290mm
- No.2 ADC19 form: 2b
 fabric: orange pink
 slip: cream
 paint: red
 diam.: 210mm
 note: fugitive paint visible on the interior
- No.3 ABG20 form: 2b
 fabric: pink buff with yellow brown core
 slip:
 paint: brown black
 diam.: 300mm
- No.4 AAH10 form: 2c
 fabric: buff
 slip: cream
 paint: black, int., very dark red, ext.
 diam.: 140mm
- No.5 ABP21 form: 2c
 fabric: green buff
 slip: cream
 paint: brown
 diam.: 140mm
- 

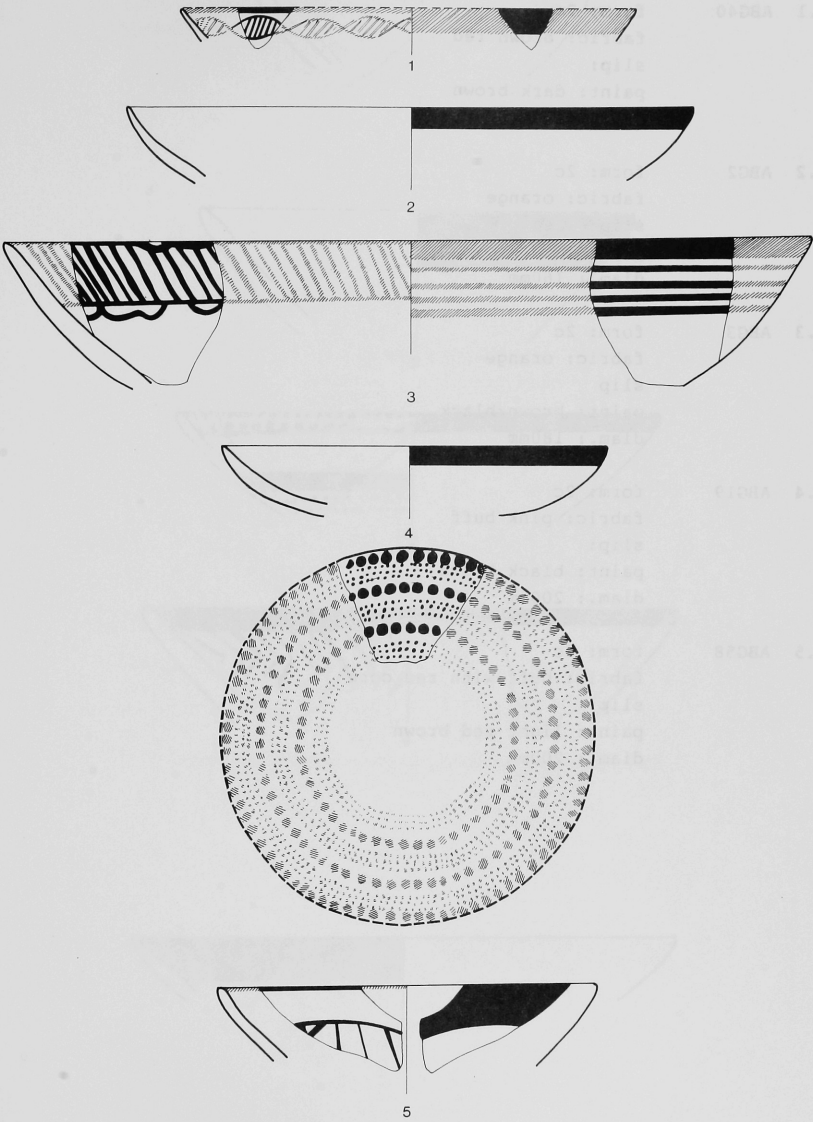


Figure 12 Bowls 2b and 2c Scale 1:2

Fig.13 Bowls 2c

- No.1 ABG40 form: 2c
fabric: brown red
slip:
paint: dark brown
diam.: 120mm
- No.2 ABG2 form: 2c
fabric: orange
slip:
paint: red brown
diam.: 160mm
- No.3 ABG3 form: 2c
fabric: orange
slip
paint: brown/black
diam.: 180mm
- No.4 ABG19 form: 2c
fabric: pink buff
slip:
paint: black brown
diam.: 200mm
- No.5 ABG58 form: 2c
fabric: buff with red core
slip:
paint: light red brown
diam.: 200mm

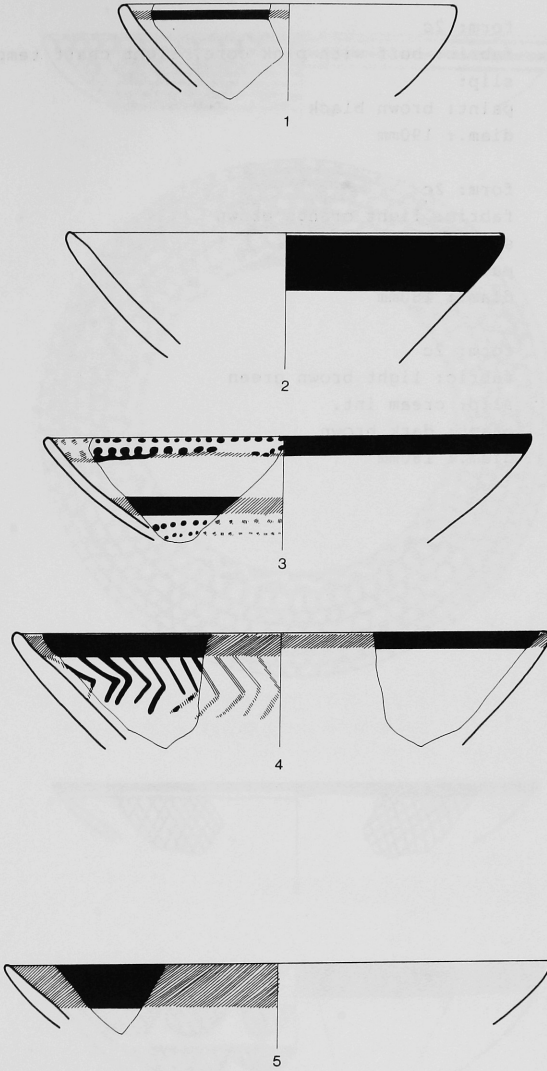


Figure 13 Bowls 2c

Scale 1:2

Fig. 14 Bowls 2c

- No.1 ADK3 form: 2c
fabric: buff with pink core, light chaff temper
slip:
paint: brown black
diam.: 190mm
- No.2 ADC35 form: 2c
fabric: light orange brown
slip:
paint: ?
diam.: 180mm
- No.3 ABP24 form: 2c
fabric: light brown green
slip: cream int.
paint: dark brown
diam.: 180mm
- 

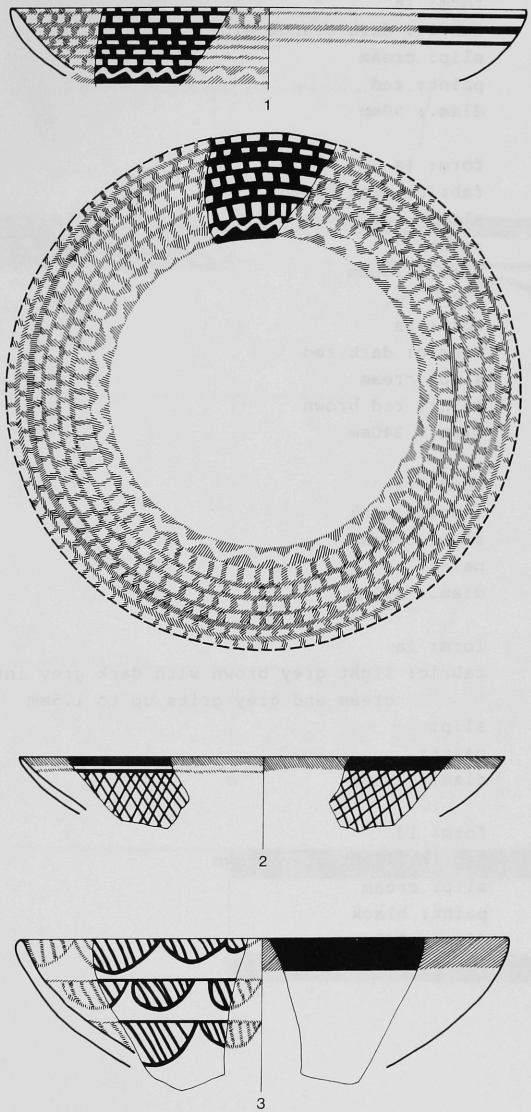


Figure 14 Bowls 2c

Scale 1:2

Fig. 15 Bowls la

- No.1 AAC45 form: la
fabric: dark orange pink
slip: cream
paint: red
diam.: 90mm
- No.2 AAG15 form: la
fabric: pink brown
slip:
paint:
diam.: 150mm
- No.3 ABP22 form: la
fabric: dark red
slip: cream
paint: red brown
diam.: 240mm
- No.4 AAK12 form: la
fabric: pink
slip: cream
paint:
diam.: 300mm
- No.5 AAG16 form: la
fabric: light grey brown with dark grey int.,
cream and grey grits up to 1.5mm
slip:
paint:
diam.: 350mm
- No.6 ADC20 form: ld
fabric: light grey brown
slip: cream
paint: black
diam.: 240mm

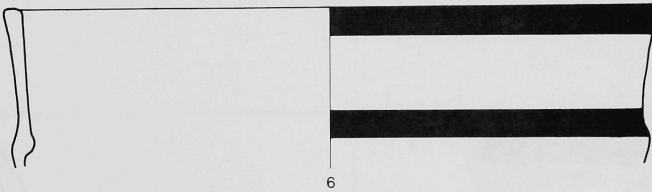
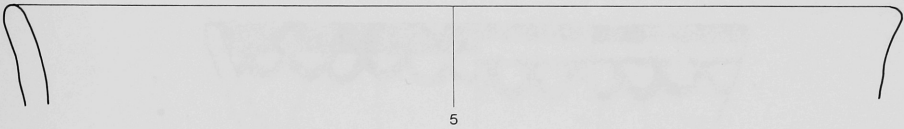
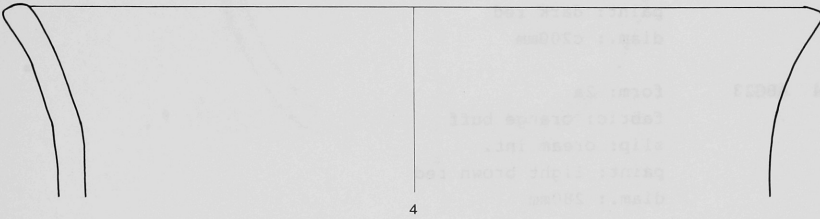
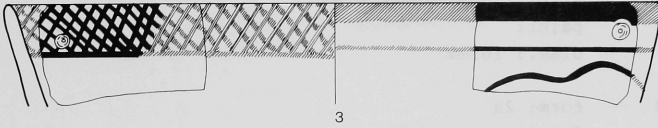
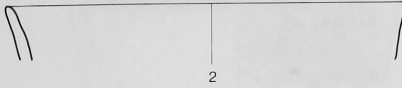
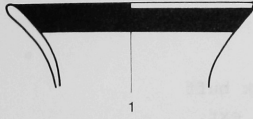
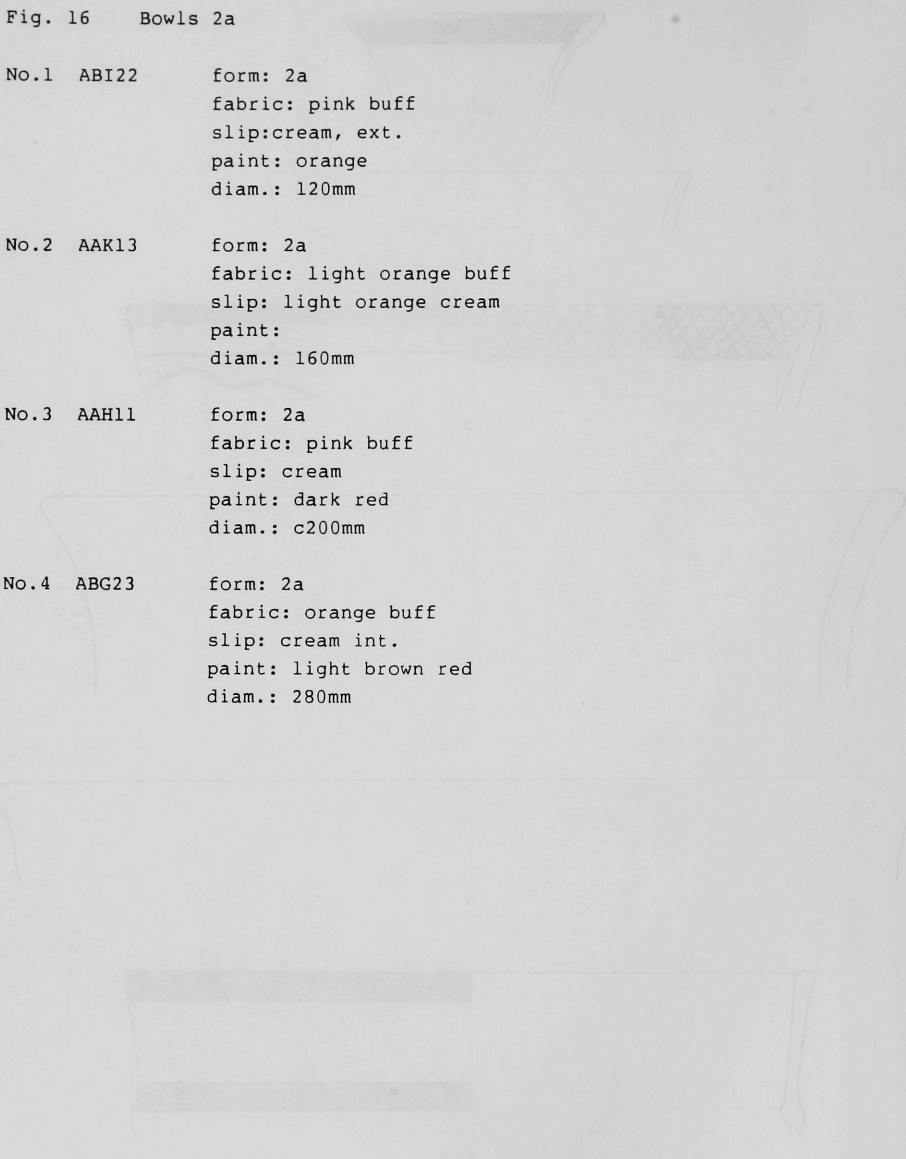
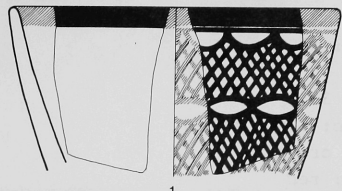


Figure 15 Bowls 1a

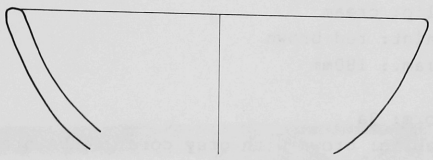
Scale 1:2

Fig. 16 Bowls 2a

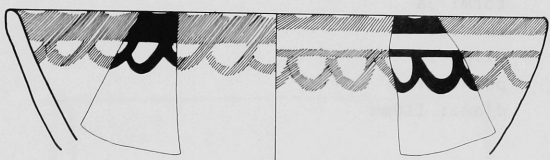
- 
- No.1 ABI22 form: 2a
fabric: pink buff
slip: cream, ext.
paint: orange
diam.: 120mm
- No.2 AAK13 form: 2a
fabric: light orange buff
slip: light orange cream
paint:
diam.: 160mm
- No.3 AAH11 form: 2a
fabric: pink buff
slip: cream
paint: dark red
diam.: c200mm
- No.4 ABG23 form: 2a
fabric: orange buff
slip: cream int.
paint: light brown red
diam.: 280mm



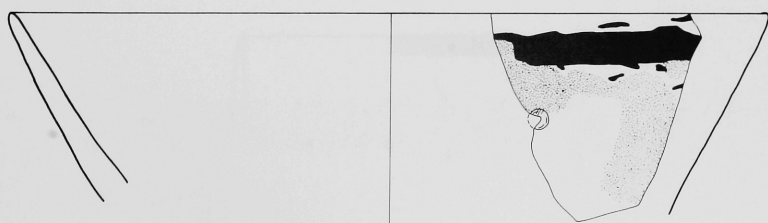
1



2



3



4

Figure 16 Bowls 2a

Scale 1:2

Fig. 17 Bowls 3a

- No.1 AAE24 form: 3a
fabric: pink
slip: cream
paint: ?
diam.: 120mm
- No.2 ADM6 form: 3a
fabric: light brown
slip: cream
paint: red
diam.: 160mm
- No.3 ADF15 form: 3a
fabric: buff
slip: cream
paint: red brown
diam.: 180mm
- No.4 AAG17 form: 3a
fabric: brown with grey core, dense grey grits,
burnished exterior
slip:
paint
diam.: 160mm
- No.5 AAF2.9 form: 3a
fabric: ?
slip: ?
paint: ?
diam.: 110mm

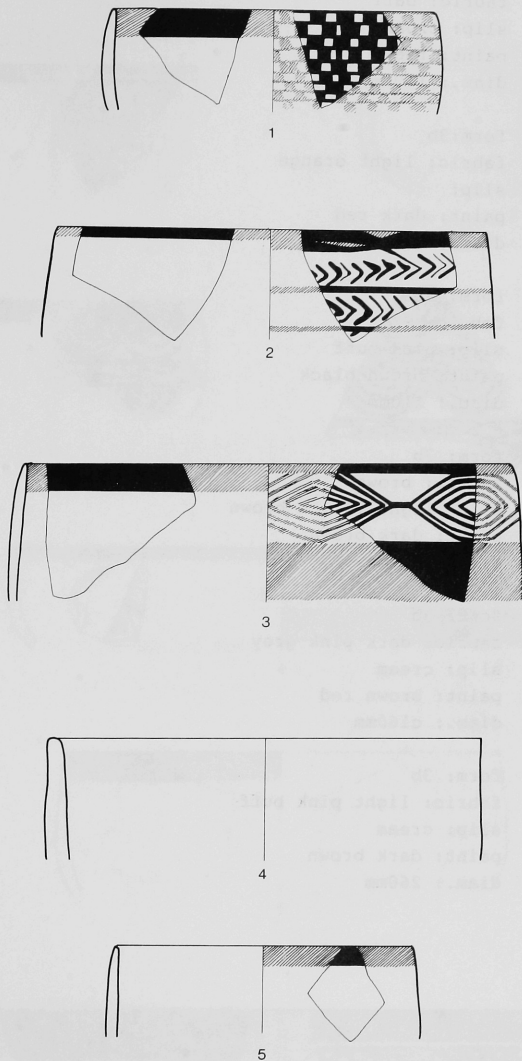
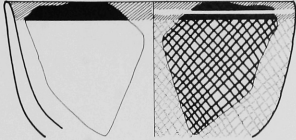


Figure 17 Bowls 3a

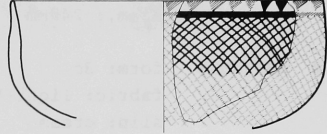
Scale 1:2

Fig.18 Bowls 3b

- No.1 ADB16 form: 3b
 fabric: buff
 slip: cream
 paint: red
 diam.: 110mm
- No.2 AAA39 form:3b
 fabric: light orange
 slip:
 paint: dark red
 diam.: 115mm
- No.3 ABP4+ form: 3b
 ADC5+ fabric: ?
 ADC9 slip: pink buff
 paint: brown black
 diam.: 110mm
- No.4 ADM9 form: 3b
 fabric: brown
 slip: light yellow brown
 paint: dark brown
 diam.: 200mm
- No.5 ADC2 form: 3b
 fabric: dark pink grey
 slip: cream
 paint: brown red
 diam.: c160mm
- No.6 AAE12 form: 3b
 fabric: light pink buff
 slip: cream
 paint: dark brown
 diam.: 260mm



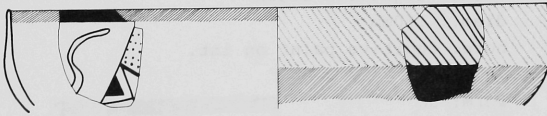
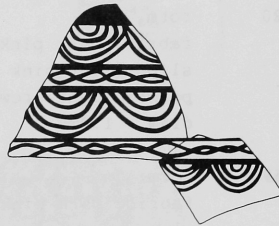
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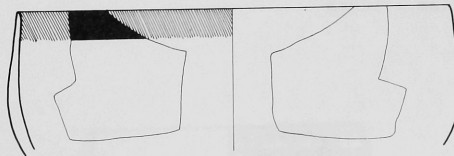
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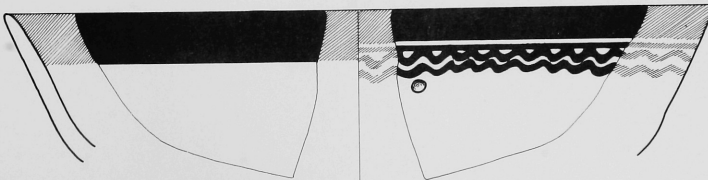
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4



5



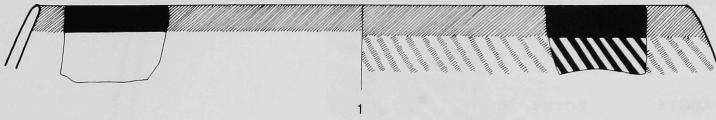
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Figure 18 Bowls 3b

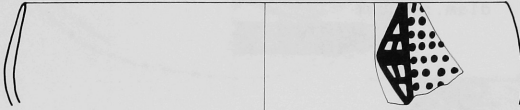
Scale 1:2

Fig. 19 Bowls 3c

- No.1 ADJ5 form: 3c
 fabric: ?
 slip: ?
 paint: ?
 diam.: 240mm
- No.2 ABN/ACG2 form: 3c
 fabric: light buff
 slip: cream
 paint: light brown
 diam.: 180mm
- No.3 AAE20 form: 3c
 fabric: dark pink
 slip: light pink buff
 paint: light brown cross-hatching, dark brown ground
 diam.: 150mm
- No.4 ABG59 form: 3c
 fabric: dark pink buff
 slip: cream
 paint: light red brown
 diam.: 160mm
 note: fugitive paint on int.
- No.5 AAE21 form: 3c
 fabric: pink orange
 slip: cream
 paint: red
 diam.: 100mm



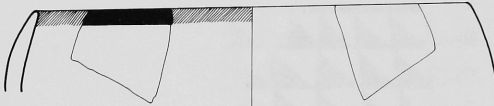
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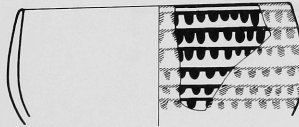
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3



4



5

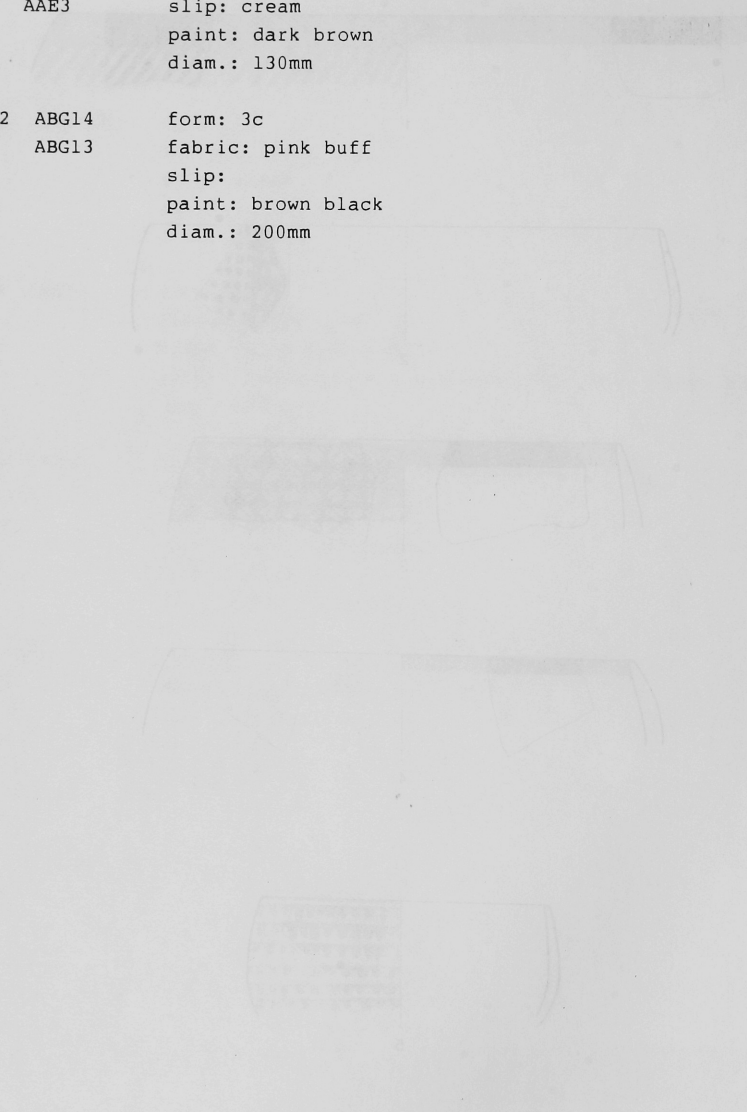
Figure 19 Bowls 3c

Scale 1:2

Fig. 20 Bowls 3c

No.1 AAE1 form: 3c
AAE2 fabric: orange
AAE3 slip: cream
paint: dark brown
diam.: 130mm

No.2 ABG14 form: 3c
ABG13 fabric: pink buff
slip:
paint: brown black
diam.: 200mm



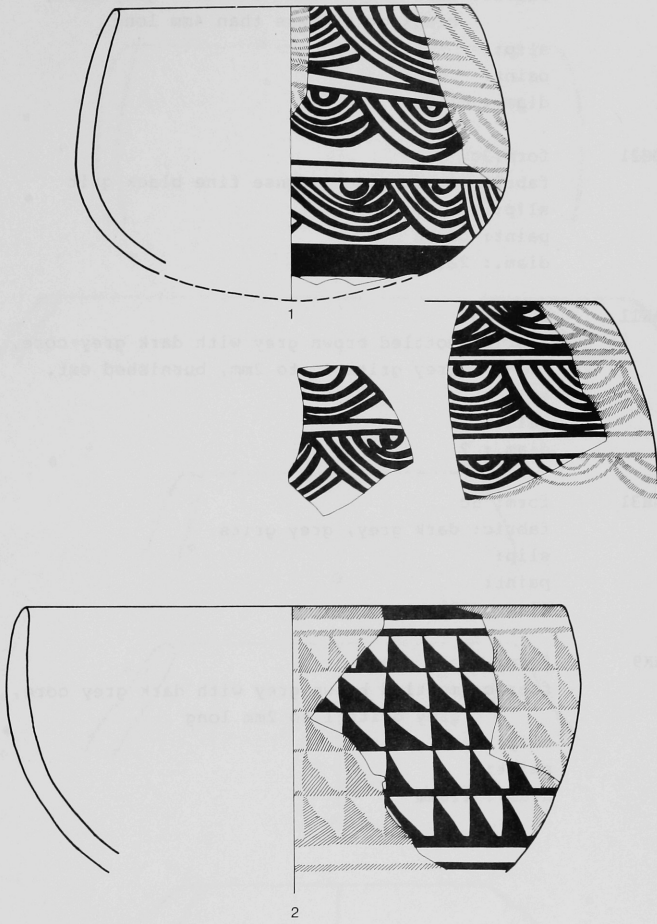


Figure 20 Bowls 3c

Scale 1:2

Fig. 21 Bowls 3c

- No.1 ADJ36 form:3c
fabric: dark grey brown with dark grey core,
black grits less than 4mm long
slip:
paint:
diam.: 160mm
- No.2 ADC21 form:3c
fabric: cream green, dense fine black grit
slip:
paint: brown
diam.: 220mm
- No.3 AAK11 form: 3c
fabric: mottled brown grey with dark grey core,
grey grits 1 to 2mm, burnished ext.
slip:
paint:
diam.: ?
- No.4 AAH31 form: 3c
fabric: dark grey, grey grits
slip:
paint:
diam.: 130mm
- No.5 AAK9 form: 3c
fabric: mottled brown grey with dark grey core,
grey grits 1 to 2mm long
slip:
paint:
diam.: 110mm

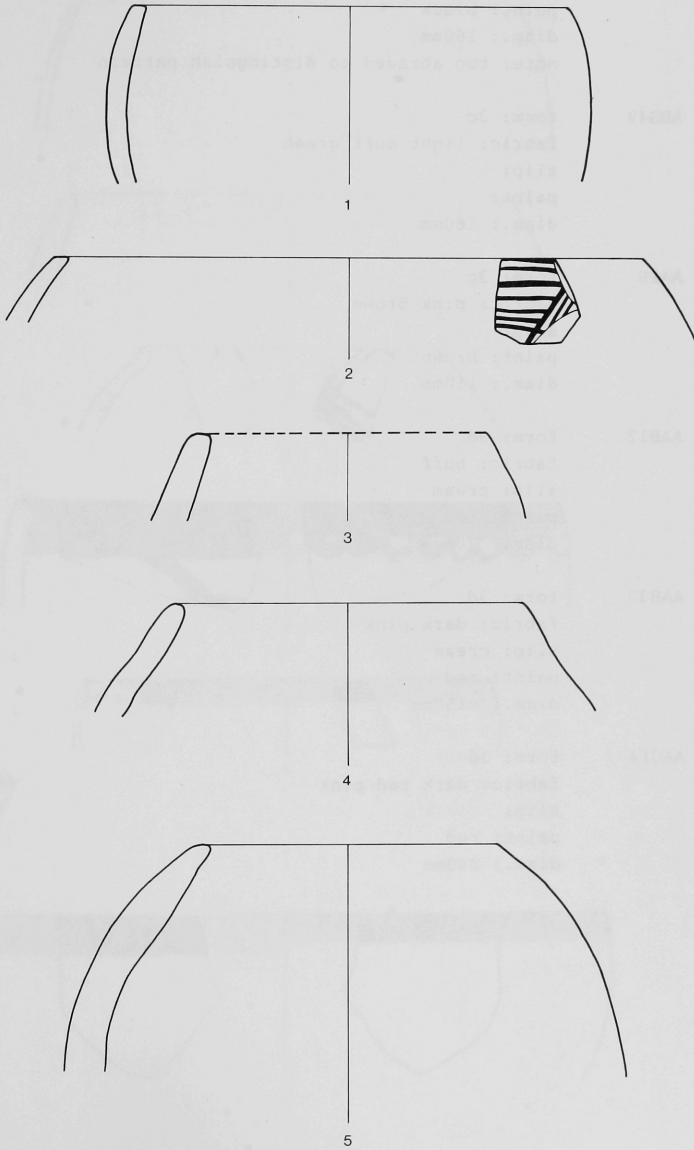


Figure 21 Bowls 3c

Scale 1:2

Fig. 22 Bowls 3c and 3d

- No.1 ABG24 form: 3c
 fabric: yellow green
 slip:
 paint: black
 diam.: 160mm
 note: too abraded to distinguish pattern
- No.2 ABG49 form: 3c
 fabric: light buff green
 slip:
 paint:
 diam.: 160mm
- No.3 AAF6 form: 3c
 fabric: pink brown
 slip:
 paint: brown
 diam.: 110mm
- No.4 AAH12 form: 3d
 fabric: buff
 slip: cream
 paint: red
 diam.: 200mm
- No.5 AAH30 form: 3d
 fabric: dark pink
 slip: cream
 paint: red
 diam.: 150mm
- No.6 AAG14 form: 3d
 fabric: dark red pink
 slip:
 paint: red
 diam.: 240mm

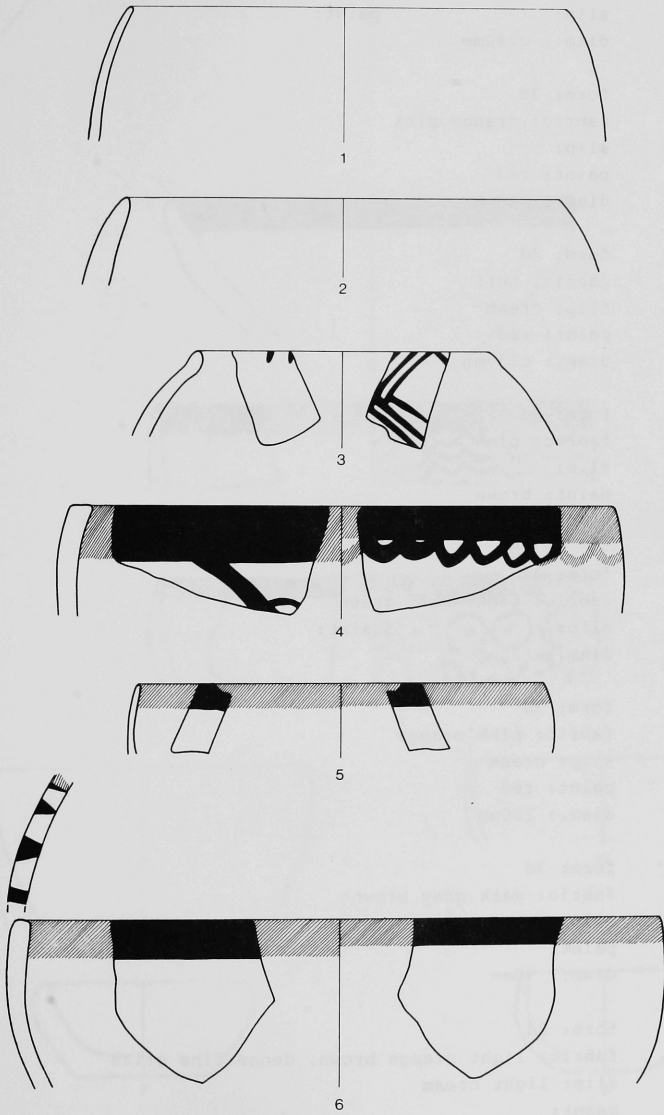


Figure 22 Bowls 3c and 3d Scale 1:2

Fig. 23 Bowls 3c and 3d

- No.1 ADJ35 form: 3c
fabric: mottled light grey brown with dark
grey core, grits 1 to 2mm long
slip: paint:
diam.: c240mm
- No.2 AAE13 form: 3d
fabric: orange pink
slip:
paint: red
diam.: 260mm
- No.3 AAH7 form: 3d
fabric: buff
slip: cream
paint: red
diam.: c130mm
- No.4 ABI21 form: 3d
fabric: pink buff
slip:
paint: brown
diam.: 160mm
- No.5 ABG47 form: 3d
fabric: light buff green
slip: paint:
diam.: 120mm
- No.6 AAF7 form: 3d
fabric: pink orange
slip: cream
paint: red
diam.: 100mm
- No.7 ABG50 form: 3d
fabric: dark grey brown
slip:
paint:
diam.: 50mm
- No.8 ADJ39 form: 3d
fabric: light orange brown, dense fine grits
slip: light cream
paint:
diam.: 60mm

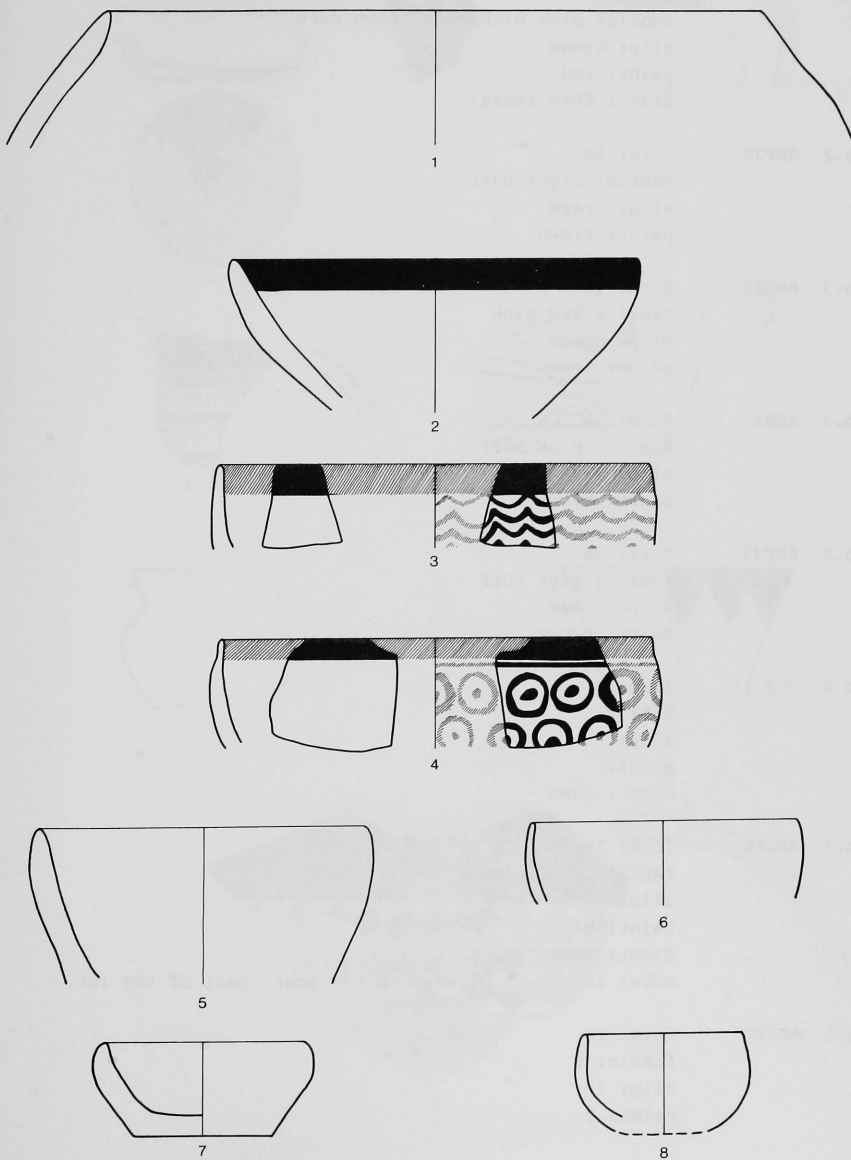


Figure 23 Bowls 3c and 3d Scale 1:2

Fig. 24 Jars 4a, 5a and 5b

- No.1 AAH33 form: 4a
fabric: pink with dark brown core
slip: cream
paint: red
diam.: 60mm (base)
- No.2 ADF30 form: 5a
fabric: light buff
slip: cream
paint: brown
- No.3 ABG25 form: 5a
fabric: red pink
slip: cream
paint: brown
- No.4 ADM4 form: 5a
fabric: pink buff
slip: cream
paint: brown
- No.5 ADF35 form: 5a
fabric: pink buff
slip: cream
paint: brown
- No.6 JC3.11 form:5b
fabric:
slip:
paint:
diam.: 58mm
- No.7 ABG16 form: 5b
fabric: yellow buff
slip:
paint: black
diam.: 90mm
note: traces of bitumen on the lower part of the int.
- No.8 ADJ47 form: 5b
fabric: ?
slip: ?
paint: ?

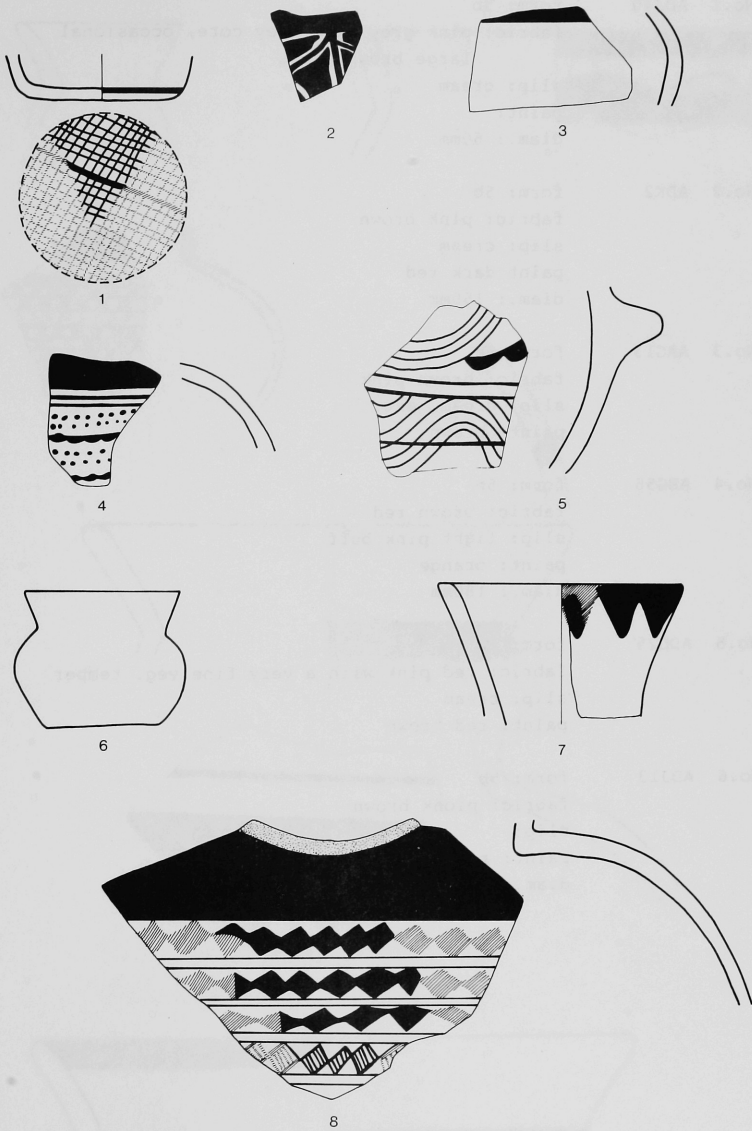


Figure 24 Jars 4a, 5a and 5b Scale 1:2

Fig. 25 Jars 5a and 5b

- No.1 ADJ40 form: 5b
fabric: pink grey with grey core, occasional
large brown grits
slip: cream
paint:
diam.: 60mm
- No.2 ADK2 form: 5b
fabric: pink brown
slip: cream
paint dark red
diam.: 150mm
- No.3 AAG13 form: 5a
fabric: brown pink
slip: cream, ext.
paint: brown
- No.4 ABG55 form: 5b
fabric: brown red
slip: light pink buff
paint: orange
diam.: 180mm
- No.5 ADC25 form: 5a
fabric: red pink with a very fine veg. temper
slip: cream
paint: red brown
- No.6 ADJ13 form: 5b
fabric: pink brown
slip:
paint: red brown
diam.: 220mm

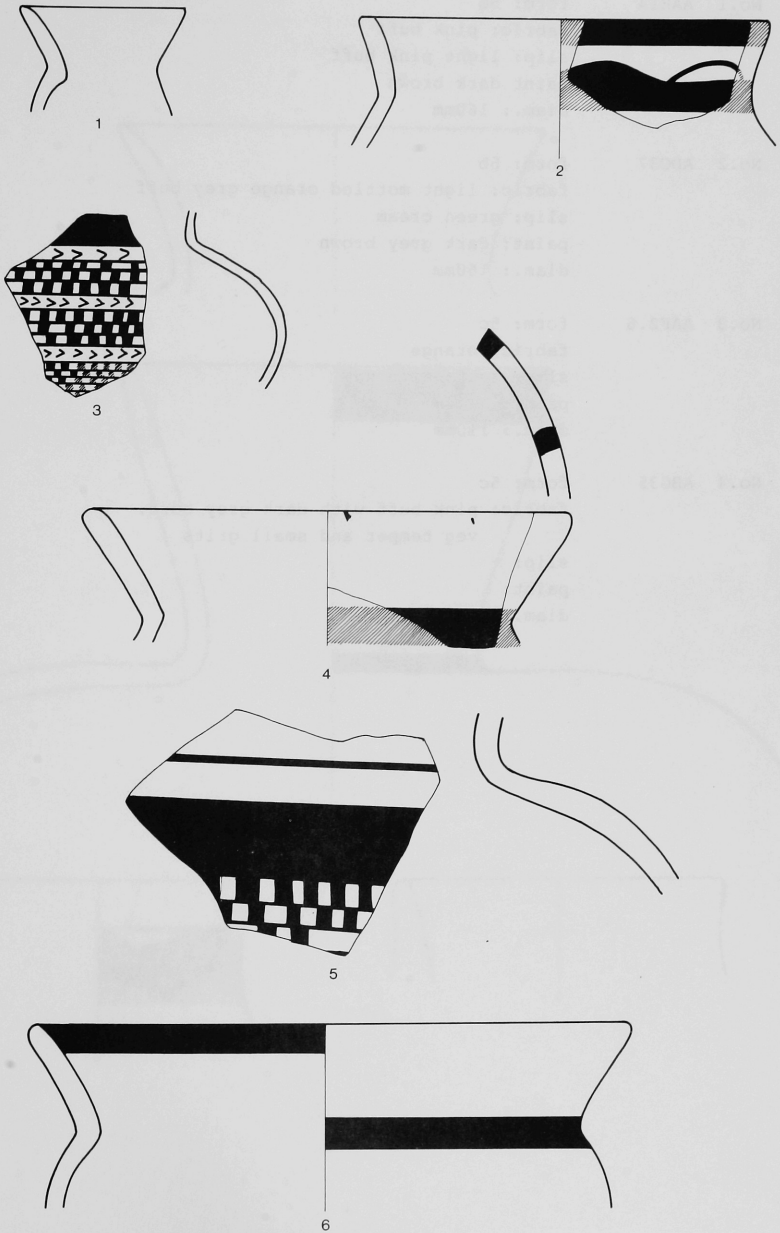


Figure 25 Jars 5a and 5b Scale 1:2

Fig. 26 Jars 5b

No.1 AAH14

form: 5b
 fabric: pink buff
 slip: light pink buff
 paint dark brown
 diam.: 160mm

No.2 ADC37

form: 5b
 fabric: light mottled orange grey buff
 slip: green cream
 paint: dark grey brown
 diam.: 160mm

No.3 AAF2.6

form: 5c
 fabric: orange
 slip: self- slipped
 paint: black
 diam.: 110mm

No.4 ABG35

form: 5c
 fabric: pink buff with dark grey core,
 veg temper and small grits
 slip:
 paint:
 diam.: 120mm

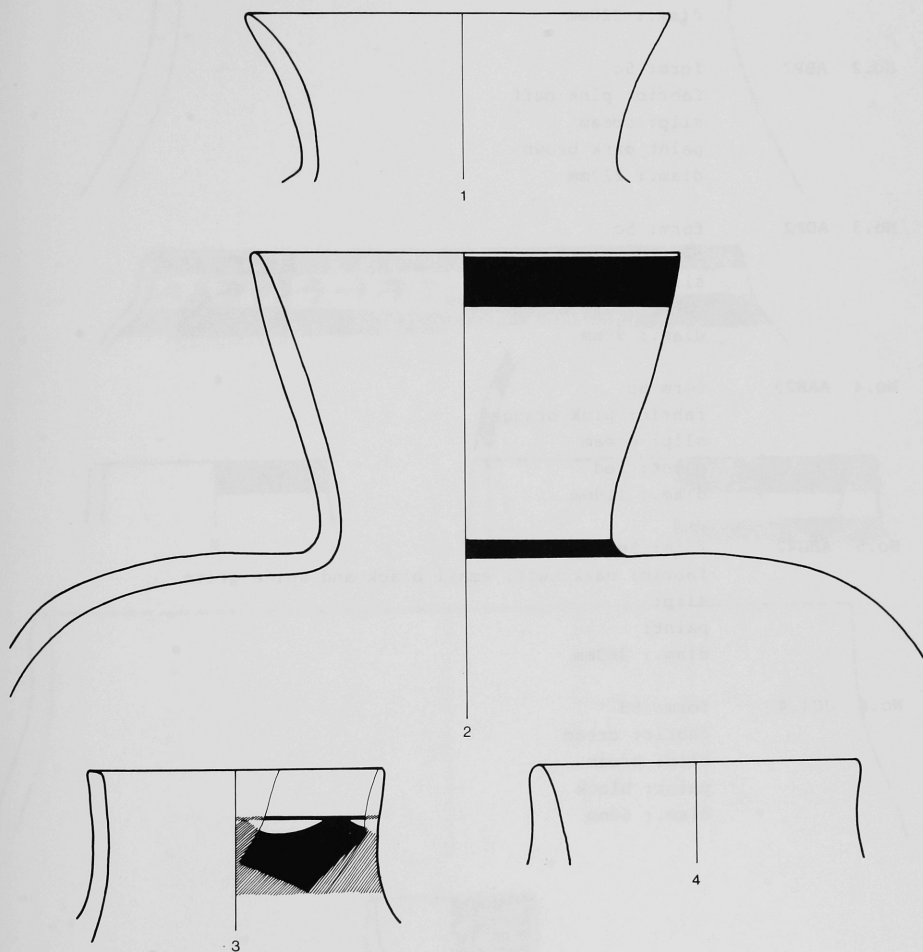


Figure 26 Jars 5b

Scale 1:2

Fig. 27 Jars 5c and 5d

- No.1 ABG45 form: 5c
fabric: dark red-brown, veg. temper and
small black grits
slip:
paint:
diam.: 220mm
- No.2 ABP7 form: 5c
fabric: pink buff
slip: cream
paint dark brown
diam.: 220mm
- No.3 ADF2 form: 5c
fabric: pink
slip: light pink buff
paint: dark brown
diam.: 90mm
- No.4 AAH29 form 5c
fabric: pink orange
slip: cream
paint: red
diam.: 110mm
- No.5 ABG42 form: 5c
fabric: dark buff, small black and white grits
slip:
paint:
diam.: 360mm
- No.6 JC4.4 form: 5d
fabric: cream
slip: cream
paint: black
diam.: 60mm
-

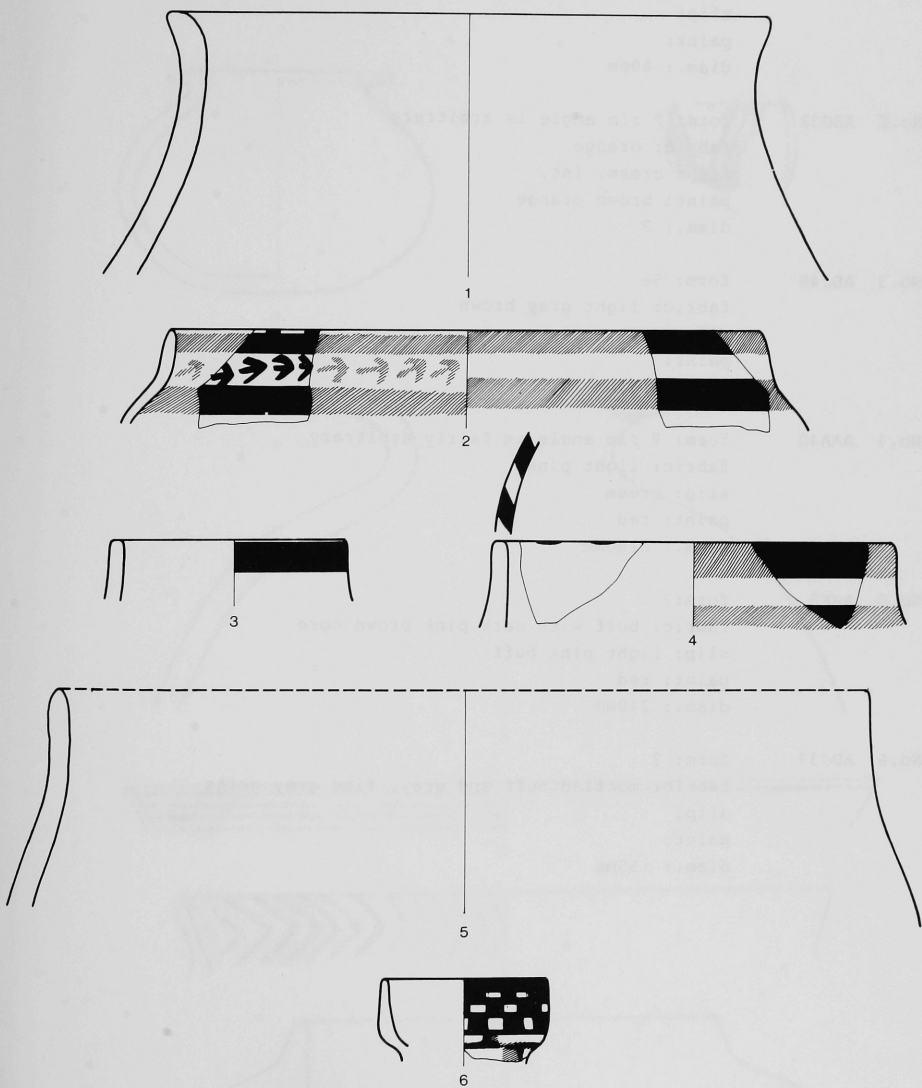


Figure 27 Jars 5c and 5d Scale 1:2

Fig. 28 Jars 5c and miscellaneous

- No.1 ABG60 form: 5e
fabric: light green, very fine white and black grits
slip:
paint:
diam.: 60mm
- No.2 ABG32 form: ? rim angle is arbitrary
fabric: orange
slip: cream, int.
paint: brown orange
diam.: ?
- No.3 ADJ48 form: 5e
fabric: light grey brown
slip: cream
paint:
diam.: 130mm int. rim
- No.4 AAA40 form: ? rim angle is fairly arbitrary
fabric: light pink
slip: cream
paint: red
diam.: c180mm
- No.5 AAK8 form: ?
fabric: buff with dark pink brown core
slip: light pink buff
paint: red
diam.: 240mm
- No.6 ADJ33 form: ?
fabric: mottled buff and grey, fine grey grits
slip:
paint:
diam.: 155mm

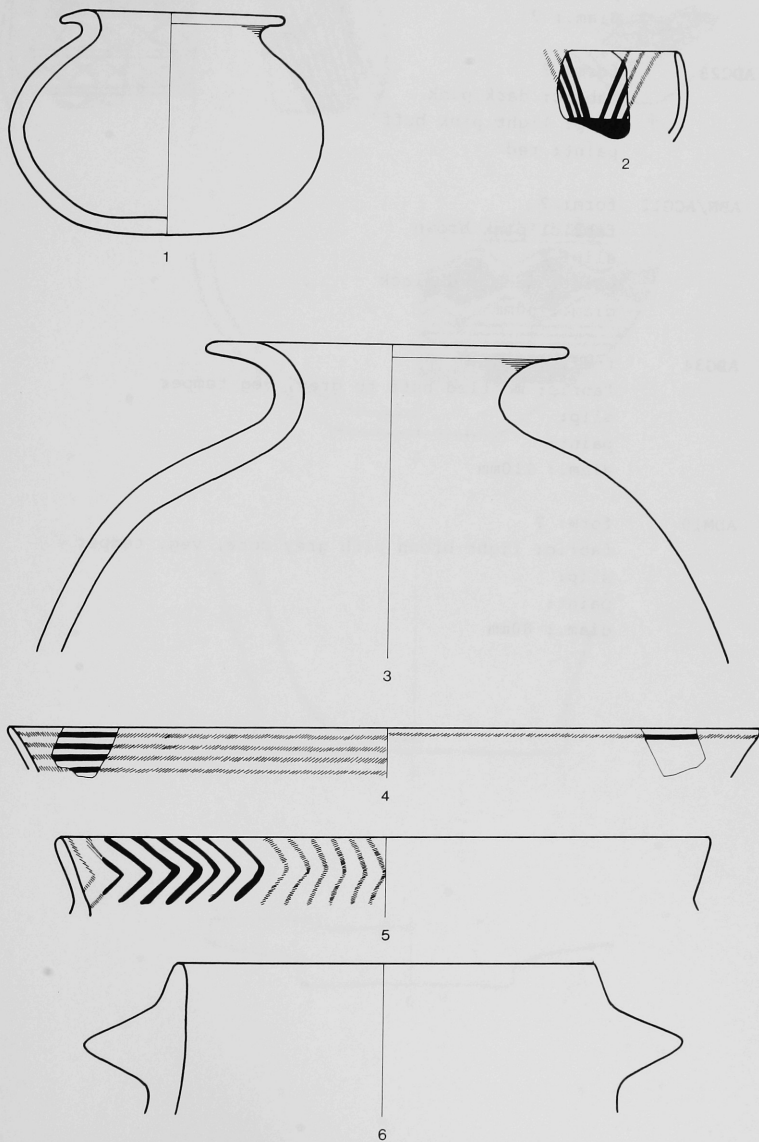
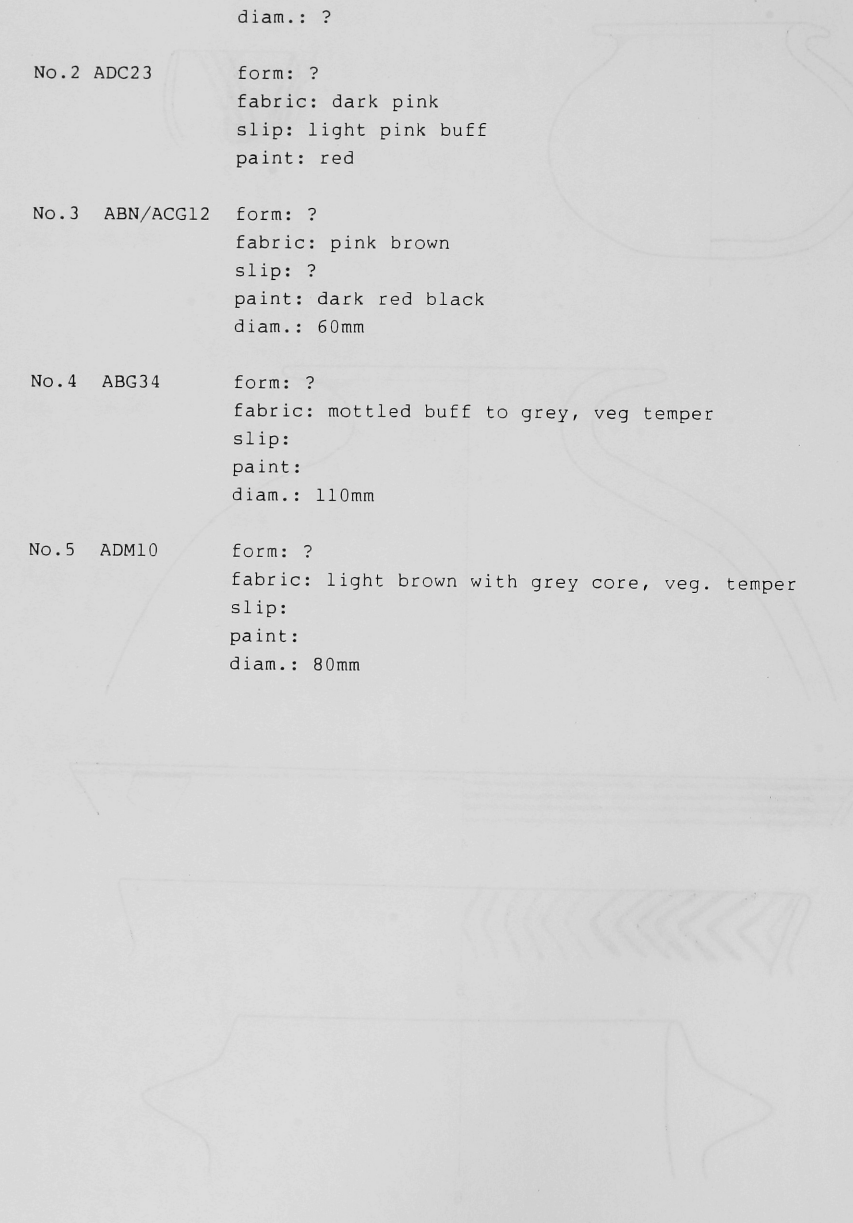


Figure 28 Jars 5c and miscellaneous, Scale 1:2

Fig. 29 Various

- No.1 AAG6 form: ? rim angle is not exact
fabric: buff with dark pink core
slip: light pink buff
paint: brown
diam.: ?
- No.2 ADC23 form: ?
fabric: dark pink
slip: light pink buff
paint: red
- No.3 ABN/ACG12 form: ?
fabric: pink brown
slip: ?
paint: dark red black
diam.: 60mm
- No.4 ABG34 form: ?
fabric: mottled buff to grey, veg temper
slip:
paint:
diam.: 110mm
- No.5 ADM10 form: ?
fabric: light brown with grey core, veg. temper
slip:
paint:
diam.: 80mm
- 

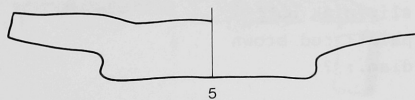
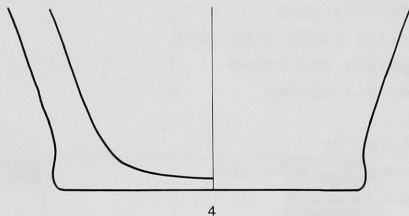
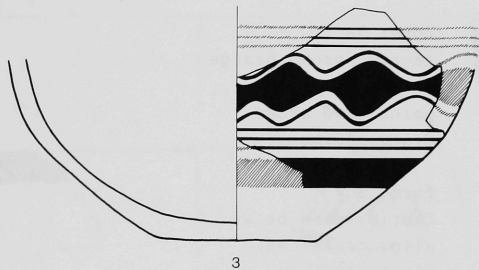
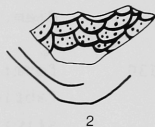
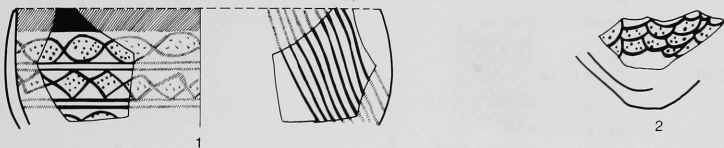


Figure 29 Vessels of uncertain form, Scale 1:2

Fig. 30 Bowls 1a, 3a, 3c and 5f

- No.1 ADJ31 form: 3c
fabric: light brown
slip: orange cream
paint: orange brown
diam.: 80mm
- No.2 ADJ30 form: 1a
fabric: pink
slip: cream
paint: orange red
diam.: 160mm
- No.3 ADJ32 form: 3a
fabric: brown orange
slip: cream, ext.
paint: red brown
diam.: 280mm
- No.4 ADJ29 form: 3c
fabric: pink brown
slip: cream, ext.
paint: red
diam.: c180mm
- No.5 ADJ6 form: 3c
fabric: pink
slip: light pink buff
paint: red brown
diam.: c280mm
- No.6 ADJ27 form: 3c
fabric: brown pink
slip: cream
paint: red
diam.: 190mm
- No.7 ADJ4 form: 5f
fabric: orange
slip: pink buff
paint: red brown
diam.: ?

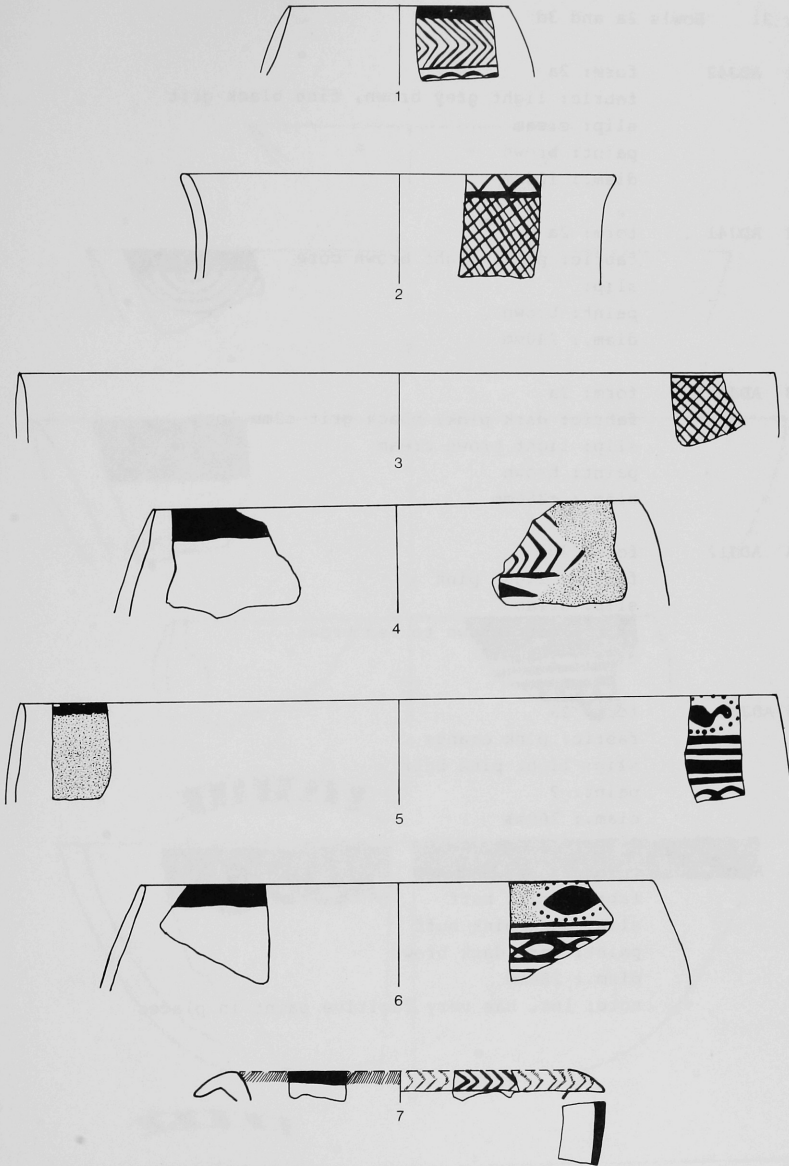


Figure 30 Bowls 1a, 3a, 3c and 5f, Scale 1:2

Fig. 31 Bowls 2a and 3d

- No.1 ADJ42 form: 2a
fabric: light grey brown, fine black grit
slip: cream
paint: brown
diam.: 120mm
- No.2 ADJ41 form: 2a
fabric: pink, light brown core
slip:
paint: brown
diam.: 240mm
- No.3 ADJ2 form: 2a
fabric: dark pink, black grit c2mm long
slip: light brown cream
paint: brown
diam.: c280mm
- No.4 ADJ12 form: 3d
fabric: light pink
slip: cream
paint: dark brown to red brown
diam.: 180mm
- No.5 ADJ3 form: 2a
fabric: pink orange
slip: light pink buff
paint: ?
diam.: 260mm
- No.6 ADJ26 form: 2a
fabric: pink buff
slip: dark pink buff
paint: very dark brown
diam.: 280mm
note: int. has very fugitive paint in places

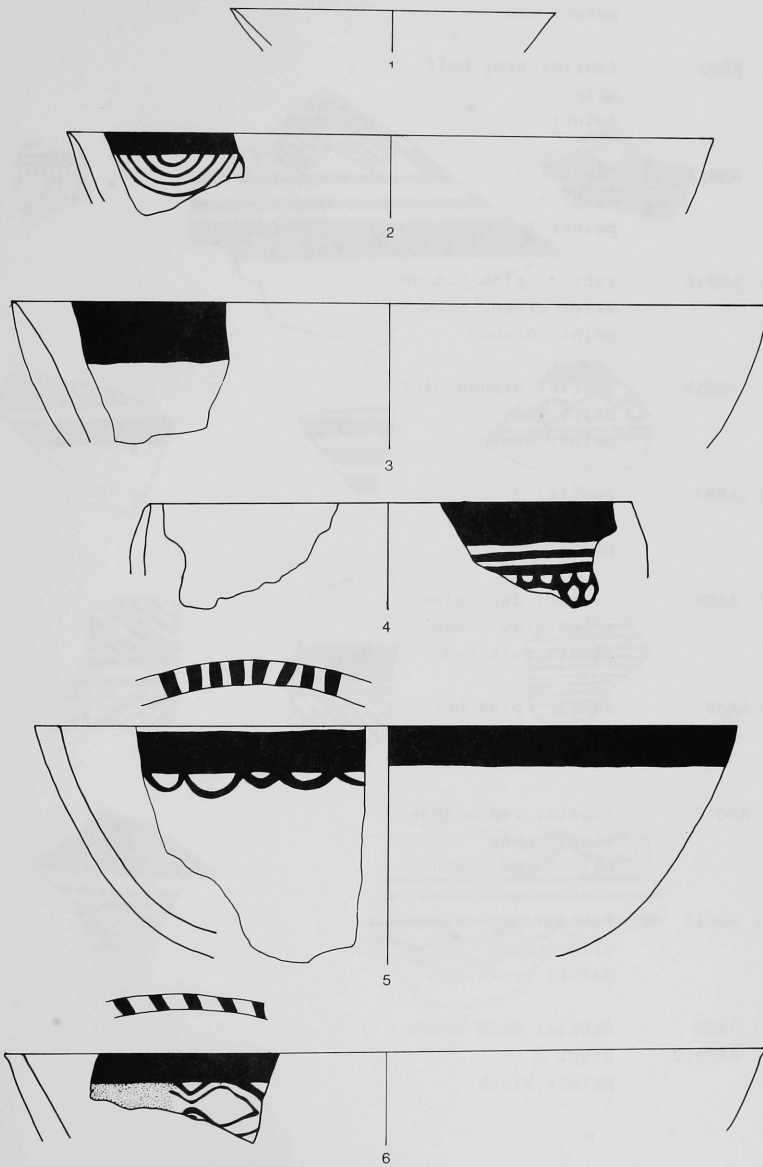


Figure 31 Bowls 2a and 3d Scale 1:2

Fig.32 Body sherds

No.1	AAE27	fabric: pink orange slip: cream paint: red
No.2	ADD2	fabric: grey buff slip: paint:
No.3	ABN/ACG11	fabric: ? slip: ? paint: ?
No.4	ABP16	fabric: pink orange slip: cream, ext. paint: orange
No.5	ADC12	fabric: orange pink slip: • paint: brown
No.6	ABP2	fabric: ? slip: ? paint: ?
No.7	AAH8	fabric: dark pink slip: grey cream paint: dark red
No.8	AAJ9	fabric: pink buff slip: cream paint: red
No.9	ABG12	fabric: red orange slip: cream paint: red brown
No.10	ADC11	fabric: dark pink slip: cream paint: brown red
No.11	AAC4 AAF2.2	fabric: dark brown slip: ? paint: black

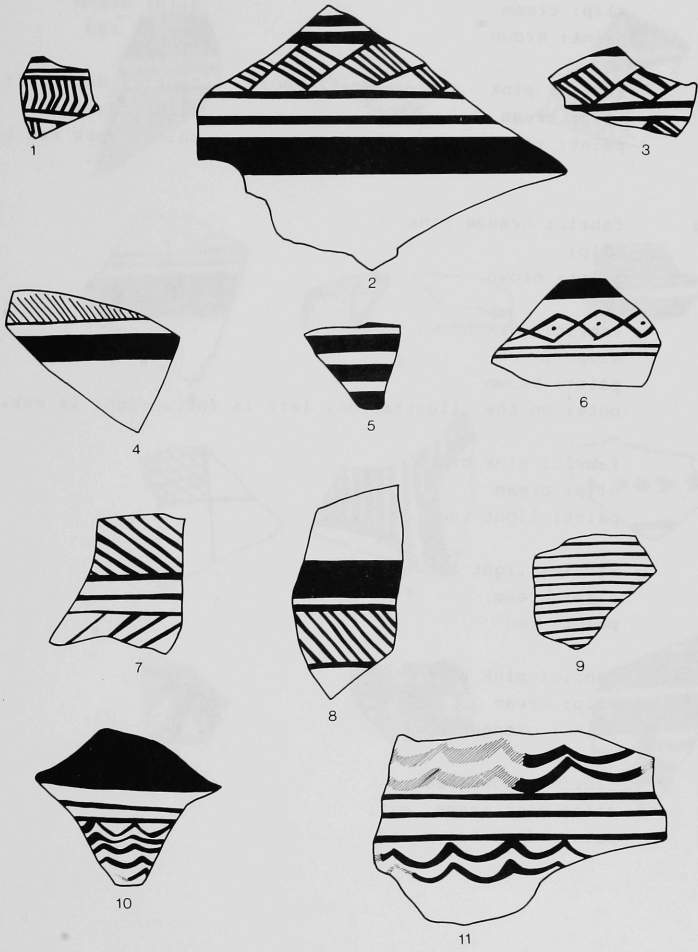


Figure 32 Body sherds

Scale 1:2

Fig. 33 Body sherds

No.1	ADD1	fabric: ? slip: ? paint: ?	No.10	AAD113	fabric: ? slip: ? paint: ?
No.2	AAJ8	fabric: orange buff slip: cream paint: brown	No.11	AAC35	fabric: orange pink slip: cream paint: red
No.3	ADC6	fabric: pink slip: cream paint: red	No.12	ABG10	fabric: dark buff slip: cream ext. paint: dark red brown
No.4	ADC14	fabric: orange pink slip: paint: brown			
No.5	ABP3	fabric: dark brown slip: ? paint: brown note: on the illustration, left is int., right is ext.			
No.6	AAA37	fabric: pink brown slip: cream paint: light red			
No.7	AAK2	fabric: light brown slip: cream paint: red			
No.8	ABG11	fabric: pink buff slip: cream paint: orange red			
No.9	ABD3	fabric: brown red slip: pink cream, ext. paint: dark brown red			

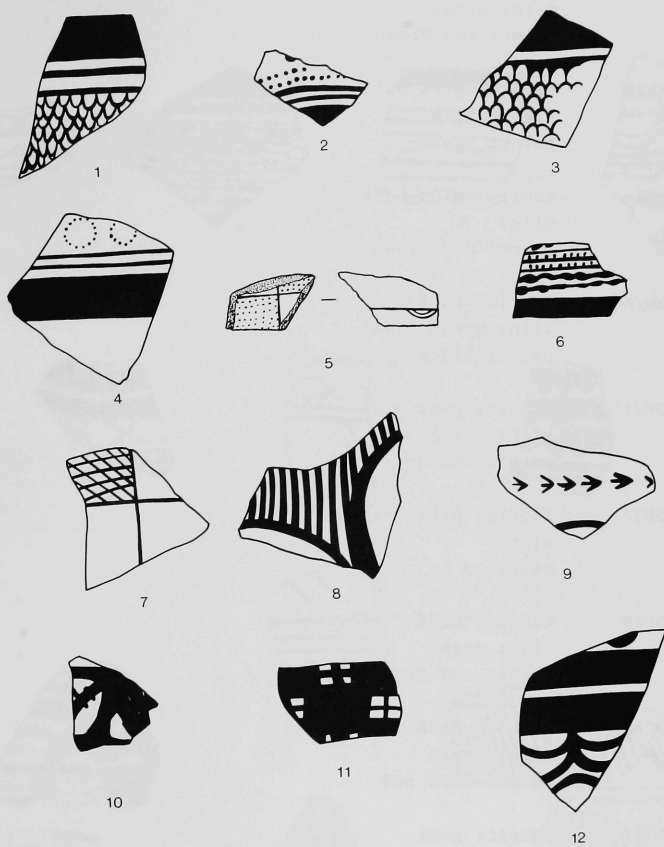


Figure 33 Body sherds

Scale 1:2

Fig.34 Body sherds

No.1	ABP13	fabric: pink buff slip: paint: red brown
No.2	ABP5	fabric: light brown slip: cream paint: red brown
No.3	AMP20	fabric: pink buff slip: cream paint: brown
No.4	ABG8	fabric: pink buff slip: paint: red brown
No.5	ABN/ACG3	fabric: buff slip: green cream paint: black
No.6	ADH/F1	fabric: pink buff slip: cream paint: orange red
No.7	ADF32	fabric: pink orange slip: paint: ?
No.8	ADF18	fabric: buff slip: cream paint: red brown
No.9	ADC8	fabric: dark pink slip: cream paint: dark red
No.10	AAC37	fabric: pink slip: cream paint: ?
No.11	AAJ37	fabric: light brown slip: cream, ext. paint: red brown



Figure 34 Body sherds

Scale 1:2

Fig. 35 Body sherds

- No.1 AAC40 fabric: pink orange
slip: cream, ext.
paint: dark brown
note: the illustration is of the int., the ext.
has a single band
- No.2 ADF17 fabric: dark pink
slip: cream, ext.
paint: red
- No.3 AAH27 fabric: orange buff
slip: green cream, ext.
paint: dark brown
- No.4 AAJ11 fabric: dark pink
slip: cream
paint: brown
- No.5 ABG9 fabric: orange
slip: ?
paint: black brown
- No.6 ADC10 fabric: pink
slip: orange cream
paint: brown
- No.7 ADC15 fabric: orange pink
slip: orange cream
paint: dark brown
- No.8 ABI8 fabric: brown grey
slip: cream
paint: dark brown
- No.9 AAC39 fabric: pink buff
slip: cream
paint: red
- No.10 AAH5 fabric: orange with grey core
slip: pink orange
paint: red
- No.11 AAH28 fabric: orange with
grey core
slip: cream
paint: red
- No.12 ABG17 fabric: pink brown
slip:
paint: dark red brow
- No.13 ADL4 fabric: dark brown
slip: cream
paint: dark brown



Figure 35 Body sherds

Scale 1:2

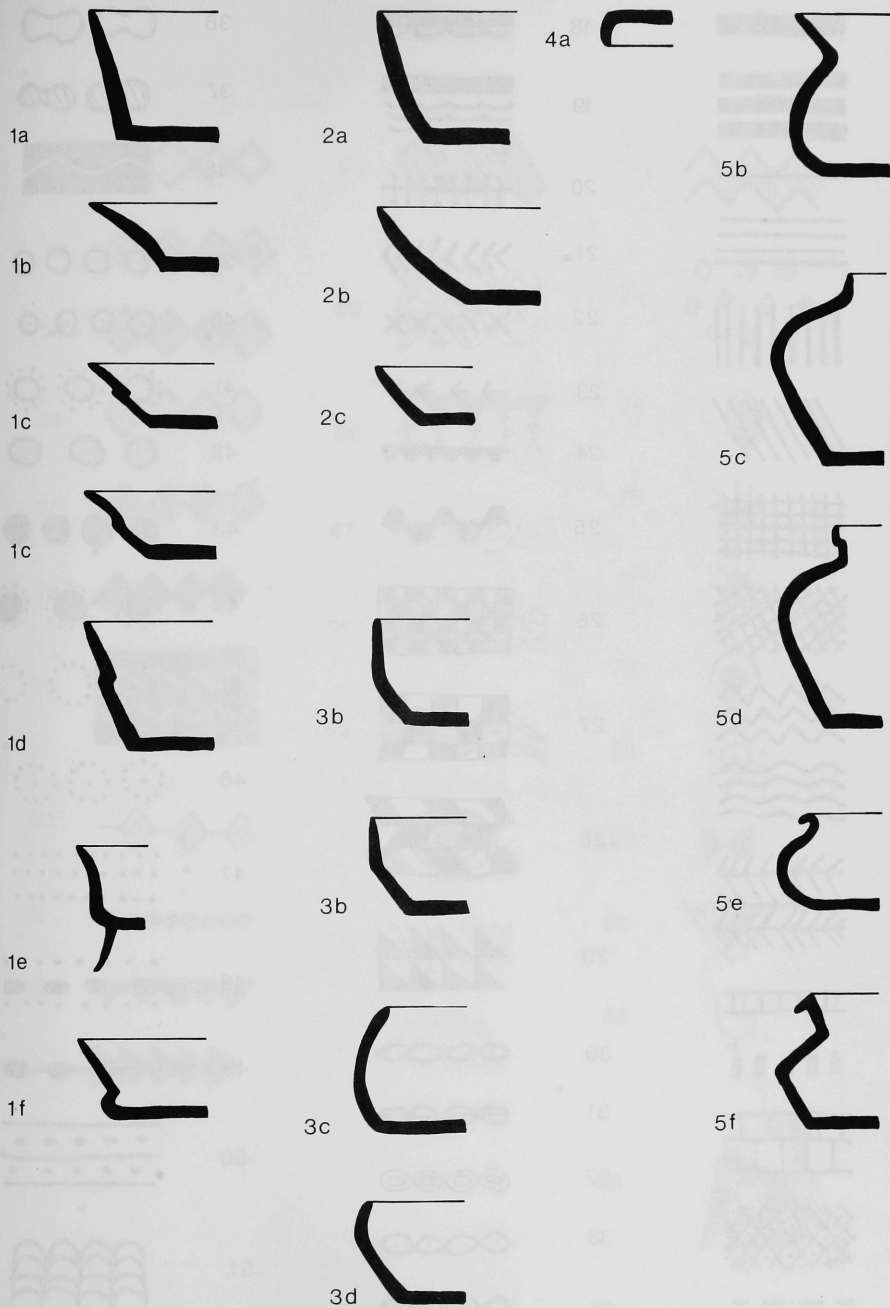


Figure 36 Chart of Halaf culture pot forms

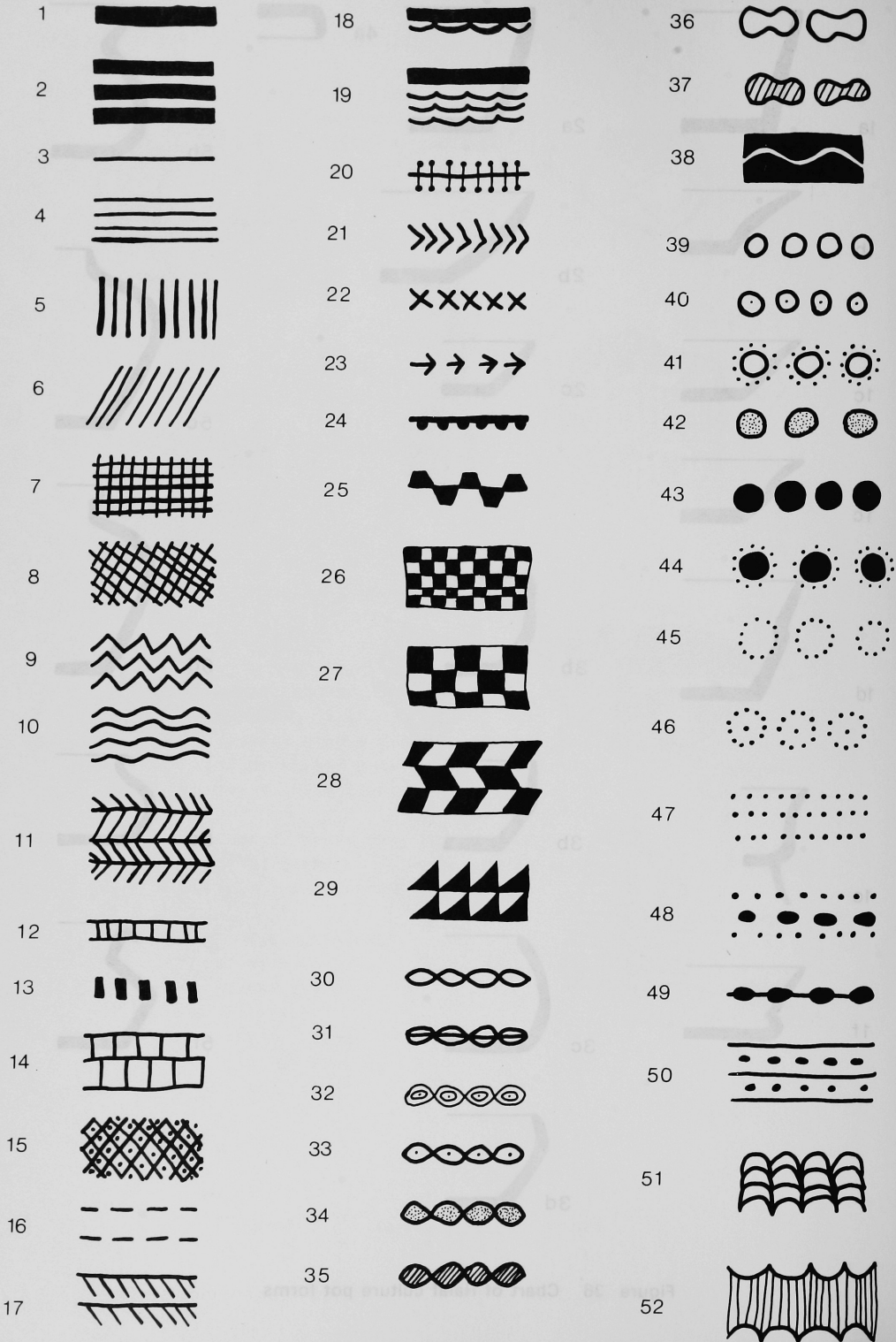


Figure 37 Chart of Halaf culture painted pottery motifs

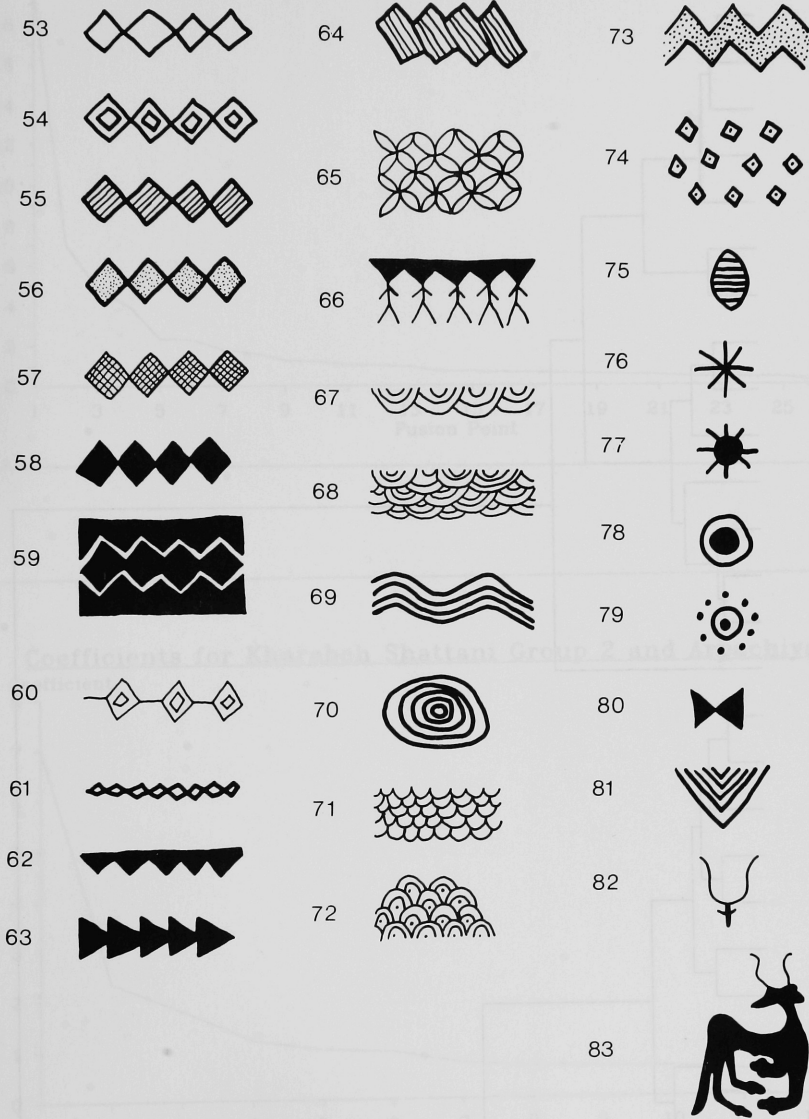


Figure 38 Chart of Halaf culture painted pottery motifs

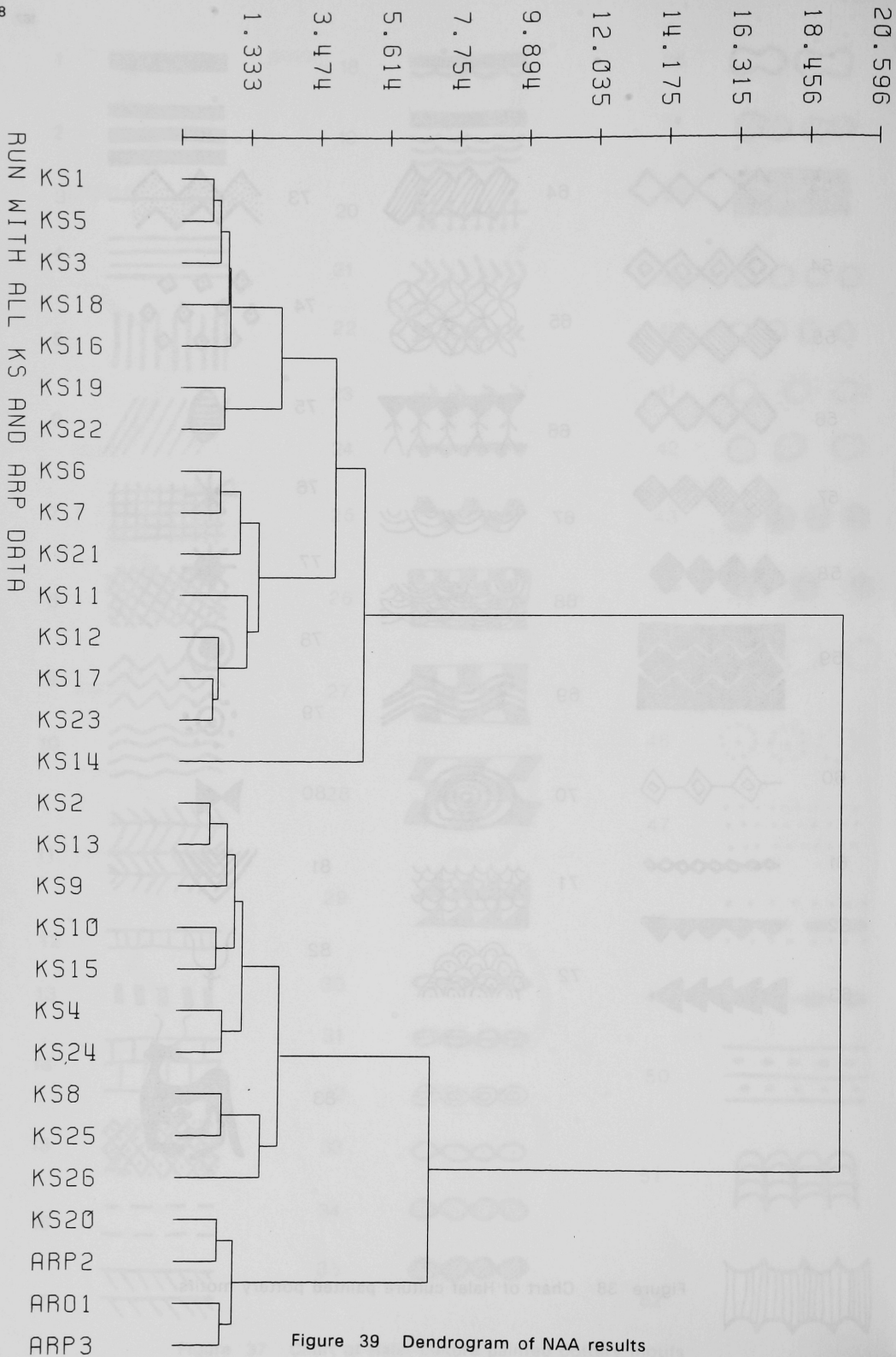
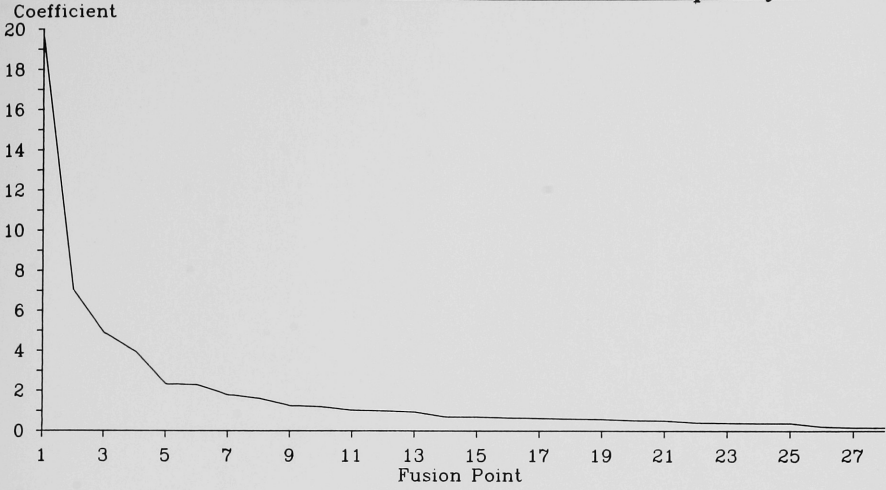


Figure 39 Dendrogram of NAA results

Coefficients for Kharabeh Shattani and Tell Arpachiyah



Coefficients for Kharabeh Shattani Group 2 and Arpachiyah

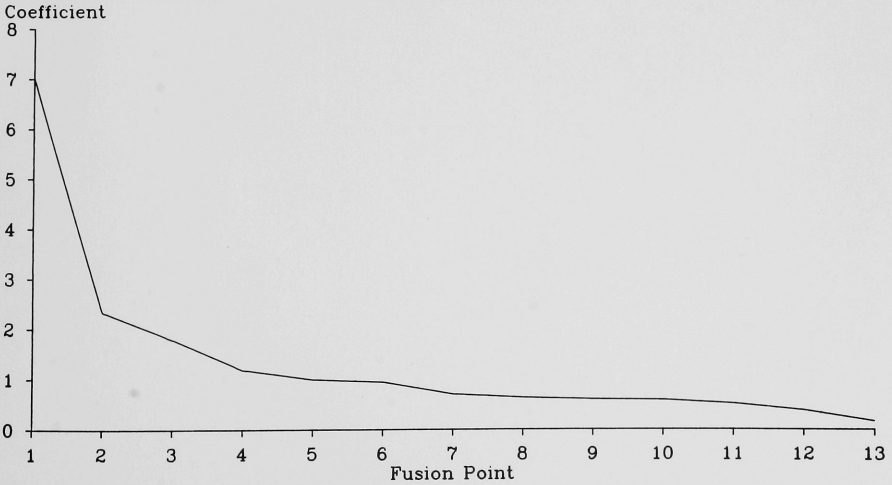


Figure 40 Graphs: coefficient to fusion sequence

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