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Band 8

Herausgegeben von
Hartmut Kühne, Hans Jörg Nissen
und Johannes Renger

SHIMAL 1985/1986

Excavations of the German Archaeological
Mission in Ras Al-Khaimah, U.A.E.
A Preliminary Report

edited by
Burkhard Vogt and Ute Franke-Vogt



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Seminar für Altorientalische Philologie
und Seminar für Vorderasiatische Altertumskunde
der Freien Universität Berlin,
Fachbereich Altertumswissenschaften

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In close cooperation with the Government of Ras al-Khaimah the University of Göttingen has carried out two campaigns of archaeological research on the pre-Islamic site of Shimal.

We owe very much to the profound interest and the generous support of H.H. Shaikh Saqr Bin Muhammad al-Qasimi, Ruler of Ras al-Khaimah, without which the project would have been impossible. During the first two campaigns we received invaluable organizational and technical help, for which we are very much obliged to H.H. Shaikh Sultan Bin Saqr al-Qasimi, Deputy Ruler and Director of Antiquities, and to H.H. Shaikh Saud Bin Saqr al-Qasimi, Chief of the Ruler's Office.

The participants of the German Mission are equally indebted to Mr. Jayanth Laxman, Assistant to the Director of Antiquities, for his prompt assistance whenever needed, and to Mr. Kenneth Penhallurick, Technical Adviser to the Ruler, and his wife Marianne, for their warm welcome and permanent hospitality.

The basis of the archaeological research project is an agreement on cultural cooperation made between the Government of Ras al-Khaimah and the Ministry of Foreign Affairs of the Federal Republic of Germany.

We should like to express our gratitude especially to H.E. the Ambassador of the Federal Republic of Germany in Abu Dhabi, Mr. Thomas Trömel, for his deep interest in our work and his strong support.

The 1985 season was kindly sponsored by the Government of Ras al-Khaimah and the Ministry of Science and Art of Lower Saxony. The Second Campaign was generously supported again by the Government of Ras al-Khaimah, the Ministry of Foreign Affairs of the Federal Republic of Germany and the Fritz Thyssen Foundation (Cologne).

The participants of the two months campaign in 1985 were Prof. Klaus Schippmann, Prof. Bernd Herrmann, Jutta Häser, Helen Hofbauer, John-Michael Kästner, Holger Schutkowski, Christian Velde, and Burkhard Vogt, all from Göttingen University. The second campaign of three months was carried out from January to March 1986 by Prof. Klaus Schippmann, Prof. Bernd Herrmann, Ahmed Ergün, Ute Franke (Berlin), Jutta Häser, John-Michael Kästner, Sophie Méry (Paris), Kerstin Müller, Nikolai Sahm, Holger Schutkowski, Christian Velde, and Burkhard Vogt. It is our pleasant duty to mention the generous assistance we enjoyed from our volunteers who contributed essentially to the success of these two years of research.

The basic archaeological research was conducted by the Seminar for Near Eastern Archaeology. It was complemented by the anthropological studies of the Institute of Anthropology. First radiocarbon datings were processed by the Lower Saxony ^{14}C - and ^3H -Laboratory in Hannover (Prof. M. Geyh), whereas the faunal remains have been submitted for analysis to the Institute of Palaeo-Zoology in Munich (Prof. J. Boessneck and Prof. A. von den Driesch).

The German Archaeological Mission to Ras al-Khaimah focussed its interest exclusively on the archaeological site of Shimal.

The following operations were carried out in the field:

- in 1985 a very general surface reconnaissance of the site including an emergency sounding in one of the shell-mounds (SM 1) and the discovery of an extensive settlement. Three large overground collective burial structures were investigated (SH 101,102,103).
- intensification of the general survey and excavation of two more tombs (SH 100,99). Large scale soundings were opened in the settlement areas SX and SY (1986).

These activities produced a large quantity of finds and scientific results which are going to enlarge our knowledge of the cultural process in the lower Gulf Area 4000 years ago. The following Interim Report consists of several separate contributions by different authors dealing with different aspects of the research project. The purpose of this report is to present the newly discovered material for the first time more comprehensively and to attempt an evaluation of the findings.

Acknowledgements

We wish to express our sincerest gratitude to the editors of the series "Berliner Beiträge zum Vorderen Orient" Profs. H.J.Nissen, J.Renger, and H.Kühne for their kind offer to publish the present volume in this journal. The publication of this preliminary report would not have been possible within this short time without the organisational help provided by them.

Our special thanks are due to the Ministry of Foreign Affairs for the financial support granted on very short notice and making thus this publication feasible.

To Prof.D.N.MacKenzie, Göttingen, we are very obliged for revising the English manuscripts.

The drawings attached at the end of the report were prepared by several members of the Mission:

Sections and plana of the cemetery were measured and drafted by C.Velde, J.-M.Kästner, J.Häser, B.Vogt, H.Schutkowski, N.Sahm, A.Ergün, and H. Hofbauer, for the settlement by U.Franke, C.Velde, B.Vogt, J. Häser, K. Müller, and A.Ergün.

Responsible for the drawings of the soft-stone artifacts is J.Häser, for those of the beads J.-M.Kästner, while C.Velde drafted the bulk of small finds from the tombs, helped by K.Müller. Both also drafted together with U.Franke the finds from the settlement.

The pottery drawings were mainly prepared by C.Velde, U.Franke, J.Häser, B.Vogt, and A.Ergün.

The photographs were taken by B.Vogt, U.Franke, J.-M.Kästner, K.Penhalurick, and H.Schutkowski.

Our thanks are also due to J.Häser and P.Larsen who helped us during the very last days to finish the lay-out of the figures and proof-reading respectively.

The transliteration of Arabic personal and place names does not follow a specific system, but we adopted the spelling commonly quoted in the literature about this area.

I.1. History of research and the significance of Shimal in the light of the 2nd millennium B.C. archaeology of the Oman Peninsula.

Shimal was the first 2nd millennium B.C. archaeological site discovered on the Oman Peninsula (Fig.1). A decade of archaeological research in the Emirate of Abu Dhabi had brought to light the vestiges of a Bronze Age culture (Umm an-Nar Culture), which was dated to the 3rd millennium B.C. and which displayed affinities to certain cultures in Southeastern Iran and Baluchistan. To corroborate the former existence of cultural relations by means of the distribution of particular pottery wares as the 3rd millennium B.C. black on grey and incised grey wares (de Cardi 1969:214ss) our British colleagues B. de Cardi and B. Doe came to Ras al-Khaimah. Their survey in this area in 1968 marks the beginning of archaeological research in the northern Emirates, but the expected finds of a 3rd millennium B.C. date were not encountered. The most important discovery, however, was the location of the site of Shimal, but those days due to the lack of comparable and stratified material no proper dating of the site could be convincingly suggested (de Cardi and Doe 1971).

In fact the 1968 reconnaissance at Shimal was restricted to a relatively small section in an area at the foot of the medieval fortress Husn al-Shimal, which is better known as the "Palace of the Queen of Sheba". Further structures were located in the same year just south of the town of Rams (ibid.:249). In the course of the next years the British surveys were intensified and extended leading eventually to the discovery of a number of shell-mounds in the vicinity of the above mentioned site near Rams.

The surface pottery collected from these middens was preliminarily dated by stylistic comparisons with stratified finds from sites in the Hili Area to about the middle of the 1st millennium B.C. (de Cardi 1976:220). The dating of the same assemblage was later attributed by G. Weisgerber (1982:81) to the wider context of the late 1st millennium B.C. "Samad Culture", which was detected in the Sharqiyah for the first time. This attribution was again refuted in a later article (Vogt, in press), but left the dating open for further discussion.

The early seventies saw an important archaeological investigation by a Danish Mission in the Oman Mountains.

In the Wadi Suq, one of the tributaries to the Wadi Jizzi near Sohar, the Danes uncovered six subterranean cist graves containing painted pottery, metal finds, beads, and soapstone artifacts completely different from any finds previously published (Frifelt 1975:377ss). Parallels to

such far distant areas as for instance the site of Barbar on Bahrain or the Kuwaiti island of Failaka, however, enabled a first rough attribution to the early 2nd millennium B.C. (ibid.). Because of its then uniqueness the cultural horizon represented by the Danish finds was commonly named "Wadi Suq Horizon" or "Wadi Suq Culture".

Back to Ras al-Khaimah, it was the British archaeologist P. Donaldson, who carried out a first excavation at Shimal in 1976/1977, which was followed by several operations in the Ghalilah area about 20km north of Shimal. He uncovered two overground collective long burials in Shimal, Site 1 and Site 6, but unfortunately his results remained unpublished till 1984 and 1985. In the meantime Captain T. Ash published on behalf of the National Museum of Ras al-Khaimah a small pamphlet (Ash 1979), which was to intensify the discussion on the 2nd millennium B.C. Wadi Suq horizon. Depicting some of the finds and mentioning an Indus stone weight from P. Donaldson's excavation at Shimal he was quoted by S. Cleuziou, the excavator of Wadi Suq related material at Hili-8, who for the first time suggested an early 2nd millennium B.C. date for the site of Shimal in 1981 (Cleuziou 1981:284). Since then the archaeology of the 2nd millennium B.C. Oman has undergone a rapid development. New Wadi Suq finds were reported from Qattarah (al-Noeimi n.d.4), Batin (Cleuziou 1981:285), Samad (Vogt 1981:219ss), Wadi Salh (Vogt 1985a:209), and more recently from Ras al-Junayz (Tosi 1986:106), the Wadi Bahla (J. Orchard, pers. comm.) and the Masirah island (G. Weisgerber, pers. comm.). Stray finds from the same period have also been registered at Baat (Frifelt 1976:Fig.4), the Jabal Hafit (Frifelt 1970:Figs.10,11,14), Qarn Bint Saud (ibid.), Hili-3 (al-Noeimi n.d.1), at Rumeilah (Boucharlat/Lombard 1985:Pl.61:6), Amlah 1 and 3a (de Cardi et al. 1976:Figs.18,20), Dibba (Bibby 1970:336), and Ras al-Hamra (East and West 1982:278).

The list of the above sites points to one of the major problems of the archaeological research in this region: despite the large number of sites the amount of finds collected is relatively small and inconsistent. And secondly the respective finds originate almost exclusively from burials or unsafe contexts. Until recently only two habitation sites were known: these were the structures of Period III at Hili-8 (Cleuziou 1978-9) and the remains of mud brick structures at Tawi Sa'id in the Sharqiyah (de Cardi et al. 1979:84ss). Regrettably their archaeological investigation yielded heavily disturbed contexts which did not allow the establishment of a cultural and material sequence covering the entire 2nd millennium B.C. Thus the dating of the Wadi Suq horizon to about 2000-1700/1600 was the preliminary result of stylistic comparisons with finds from outside the Oman Peninsula and the evaluation of a few radio-

carbon dates. The next cultural horizon to follow is the Omani Iron Age, which is commonly dated to about 1000 B.C.. The chronological gap of 600 to 700 years was interpreted as a period of basic cultural change.

S.Cleuziou has recently argued that "if one agrees that the camel was slowly domesticated during the 3rd millennium B.C...., the conditions of full time nomadism existed then at the beginning of the second millennium. The fact that the Oman Peninsula was culturally more isolated in that period should have eased the process, at a time when even trade relations seem to vanish with the long decline of southern Mesopotamia and the disappearance of the Indus Civilization. We do not know if restricted oasis life continued, but 20 years of archaeological research have failed to locate anything before the second quarter of the 1st millennium B.C., when the introduction of underground water systems from Iran again made oasis life a valuable alternative economic pattern." (Cleuziou 1981:292).

The model of a process of slowly disintegrating settled life at the end of the 3rd and beginning of the 2nd millennium B.C. was basically developed in accordance with archaeological finds from sites in the interior of the Oman Peninsula. It has to withstand the results of research from newly discovered sites, especially at the coast. The merely hypothetical character of the above explanation and the lack of archaeological data concerning 2nd millennium B.C. collective burial customs were the major reasons which stimulated the University of Göttingen to ask permission to carry out further archaeological research at Shimal.

This permission was kindly granted and a first season of fieldwork could be acquitted in 1985, succeeded by the second campaign in 1986. Since then surface reconnaissances have resulted in a new definition of the site and the discovery of a habitation area adjacent to the cemetery a functional, chronological and spatial combination of 2nd millennium B.C. features which is hitherto unique in the entire region, making Shimal the most important site of this period known sofar.

I.2. Definition and location of the site (Figs.1-2)

The archaeological site of Shimal is situated approximately 8km north-east of the city of Ras al-Khaimah (Fig.2). Its name derives from the nearby modern village of Shimal, which itself borrowed its name from the north-west wind "shamal" blowing in wintertime.

The Greater Shimal Area in fact is presently a triangular section of the coastal plain north of Ras al-Khaimah. The northern tip of this triangle is about 2km south of the small town of Rams, where a tidal inlet nar-

rows the coastal stretch to a width of less than 200m. The western leg is formed by the present shoreline extending to Ras al-Khaimah, whilst the eastern side of the triangle is bordered by the foothills of the Ras al-Jabal. The southern border of the area is a line connecting the entrance of the Wadi Bih and the "khor" of Ras al-Khaimah.

The archaeological site of Shimal in its north-south extension is about 3km long, beginning about 4km south of Rams and extending southwards just beyond the Jabal al-Shimal, an abruptly emerging limestone spur, on top of which the late medieval fortress Husn al-Shimal had been constructed, overlooking the entrance to the Wadi Haqil and the coastal plain. The site virtually follows the foothills, being additionally divided by delta-shaped wadi outlets into three sections which we have called Shimal North, Middle and South. The site is laid upon limestone gravel fans accumulated at the foot of the mountains. That zone is nearly 500 to 1000m wide with an average altitude of 10 to 35m a.m.s.l. It is covered by thornscrubs and an acacia vegetation which is particularly dense in Shimal North. To the west the gravel sediments are adjoined by a wider stretch of argillaceous mud and quartz sand. It is an area which today is intensively used for agriculture and horticulture (predominantly date palms, vegetables and cereals).

The next principal sediment unit towards the west is a strip of about 1km width consisting of mixed pellet bioclastic and quartz sands. It is a morphological pattern typical for the entire coast of the U.A.E. generally known as sabkha. Those coastal sabkhas are supra-tidal flats underlain by clay, silt, and sand and sometimes encrusted with salt.

The evolution of the Ras al-Khaimah coast is very roughly known from seven cored holes drilled across the coastal plain (unpublished Shell Research manuscript in: Purser/Evans 1973:228). These drillings revealed a sequence of several sediment units of which the upper one, approx. 10m in thickness, is composed of marine skeletal sands and carbonate muds. This natural layer is probably the result of a relatively recent, i.e. Holocene formative process, which might be due to post-glacial rise in sea-level and partly to tectonic movements of the mountains (ibid.). Holocene sea water transgression in the Gulf started about 7000 years ago and reached its greatest extent between 6000 and 4000 years before the present (cf. al-Sayari and Zötl 1978:57).

Transferring this general information to Shimal we have to assume that the location was originally closer to the sea as it is true for most of the Bronze Age coastal sites (cf. Vogt et al., in press).

At present the distance between the archaeological site and the coastline ranges from a minimum of 3km at Shimal North to about 5km at Shimal South. Just recently B.de Cardi has argued that the long range of arti-

ficial shell-mounds marks a former coast-line in the Shimal Area (de Cardi 1985:176). However, since those shell-mounds are above the 8m contour line¹, we may suppose the ancient coast-line to have been identical with the eastern edge of the sabkha (Fig.2) and the western border of the present-day cultivation and plantation. It is a line which is very roughly marked by the modern carriage-way from Ras al-Khaimah to Rams. Future studies may give evidence for a closer distance between the site and the former coast of 2km in the north and 3.5km in the south.

The formation of four zones corresponds well with the utilization nowadays of the Greater Shimal Area:

1. the coastal stretch with sabkha flats and sand dunes is almost without vegetation. It is rapidly developed with the establishment of light industries and low cost housing. The only archaeological site just on the beach are the foundations of a large town at al-Julan with surface finds of the 15th cent.A.D. and later. The place was convincingly identified with the important Islamic town Julfar (de Cardi and Doe 1971: 248).

2. the zone with argillaceous soils is intensively used for palm plantations and market gardens. It is seasonally drained by run-off water from the mountains supplemented by a high number of modern wells. Along the main tracks modern dwellings have been erected whereas a considerable number of small farmsteads is scattered all over the cultivation area. The only archaeological remains visible are several elevations of different height and size with concentrations of late medieval pottery. Since older remains have not yet been discovered here and natural agents such as erosion and sedimentation seem to be quite remarkable, we do not know if the area was intensively used in pre-Islamic antiquity.

3. the gravel fans along the mountains serve as a pasture-ground for goats and camels. Acacia and scrub vegetation is sufficiently dense to supply the locals with fuel. Being slightly elevated above the coastal plain and exposed to the breeze coming from the sea the area is a favourite habitation for a handful of Bani Shumayli and Shihuh families in Shimal North and Middle, whilst at Shimal South a substantial area is occupied by low cost housing (cf. Dostal 1985). It is only here that a few modern wells have been drilled. Apart from the modern dwellings several medieval and late medieval huts have survived. More important, however, is a dense cluster of pre-Islamic habitation structures, shell middens and the large number of graves, altogether being obviously confined to this particular zone (see II.1).

4. The above sections ends in the east with the abruptly emerging foothills of the Ras al-Jabal. The cretaceous and jurassic limestone moun-

¹All heights are related to the Halcrow datum mark Dubai 3.054m.

tains in this area reach heights of 300-400m. The rock is heavily fissured and almost bare of vegetation. But in some remote areas deserted and stepped fields as well as house ruins demonstrate that agriculture was possible to a certain extent from at least the 15th century A.D. until recently (cf. Dostal 1985:87s). The most prominent ruin, however, is the fortress Husn al-Shimal situated on a spur almost 90m a.m.s.l.. Definite evidence for a pre-medieval occupation in this stronghold is still absent, but some of the natural caves washed into the rock exhibit traces of occupation in medieval times and the 2nd millennium B.C. (cf. de Cardi 1985:178).

I.3. The climate

The climate in the Shimal area is a coastal climate with average summer temperatures of 37.8° to 39.4°C and an extreme humidity of up to 91% in August. Average winter temperature is 20° to 23.3°C combined with occasional rainfall of usually less than 100mm (cf. Dostal 1985:34, Wilkinson 1977:36ss). Since in winter rainfalls in the mountains are considerably higher and recharge the aquifers, the ground water table in the coastal plain is relatively easy to reach by traditional wells.

To sum up, the locality of ancient Shimal combines several factors such as protection through the mountains, proximity to the sea, i.e. an easy access to marine resources, a relatively benign climate and favourable hydrological conditions, a potential of cultivable lands, pasture and hunting grounds as well as an ideal position to share/control potential routes of commerce and cultural exchange.

II. THE ARCHAEOLOGICAL INVESTIGATIONS OF THE GERMAN ARCHAEOLOGICAL MISSION TO RAS AL-KHAIMAH

II.1. Shimal surface reconnaissance

U.FRANKE-VOGT, B.VOGT

Since its discovery in 1968 the site of Shimal has been repeatedly visited by our British colleagues, descriptions of single field monuments and a selection of surface finds have already been published (de Cardi and Doe 1971, de Cardi 1976, 1985, 1986a, Donaldson 1984, 1985). Certain clusters of surface patterns were understood as separate sites. However, through recent studies in the area we have learnt that basically the entire gravel terrace starting from the entrance of the Wadi Shaq in the north and ending immediately south of Husn al-Shimal at the mouth of the Wadi Haqil forms a single coherent site (Fig.2).

Our distinction of three sections - Shimal North, Middle and South - is a purely topographical one and does not reflect different functional areas. It is simply introduced to facilitate the principal orientation and the borders between these units are merely artificial. Apart from the habitation area proper which could be reliably located only in Shimal Middle so far, the other remaining surface features, shell-mounds and graves, are to be encountered all along the site. We therefore discuss these functional categories separately.

We should like to premise that different natural and human agents have severely encroached upon the appearance of the site. Run-off water has created minor wadi branches which in some places - as for instance in the habitation area or close to tomb SH 102 - have produced substantial damage. Generally the surface of the area is characterized by fallen rocks of considerable size and medium to fine gravel. Peculiar is the dense appearance of a rich variety of splinters from the local rocks consisting of quartz and limestone varieties. Although the geomorphology of the area is not yet studied thoroughly it appears that at least the higher sections of the site have been successively covered by sediments, which have been washed down from the mountains behind. From our and also from Donaldson's excavation of Sites 1 and 6 we have learnt that the accumulation of gravel may run up to 0.5m. Therefore the locating of tombs and other structures can be very difficult in places.

Beside wind and water erosion medieval to recent stone huts built with prehistoric spoliated material and the roots of the acacia vegetation, of which sometimes only burnt down roots survived, form the major disturbance of the surface. On the other hand the huts mentioned above, some of which were constructed only a generation ago, do quite reliably point to the existence of earlier buildings. This applies for example to tombs SH 102 and SH 103.

More recently, in the mid-seventies, the northernmost part of the site was almost completely destroyed. In 1976 B.de Cardi recorded several shell-mounds in this particular area, which were then removed by large gravel excavations. A minor mound was studied by the German Mission in spring 1985 (s.below), but a year later it was already bulldozed. Since mollusc remains are known as a good fertilizer we cannot rule out that some of the mounds were removed for this purpose. However, the large deep pit left behind exhibits nice sections through the gravel fan at Shimal North, yielding clear evidence of a ditch or a drain approx. 1m below the present surface. The bottom of the ditch is filled with shells and a handful of potsherds of a 2nd millennium B.C.date.

Further damage was done when a deep trench was dug along the main track from Shimal to Rams. However, since the site has been fenced in it seems well protected against future damage.

II.2. The shell-mounds (Pls.1-2.Fig.3)

B.VOGT

Shell-mounds are a well known archaeological feature along the U.A.E. coast from Umm an-Nar in the west (Gebel 1982) to Ras al-Khaimah in the northeast (de Cardi 1976). They have been located at almost regular intervals in the Emirates of Sharjah and Umm al-Qaiwain (cf. Boucharlat et al. 1985) and at Shimal.

On the territory of Ras al-Khaimah two major areas have been recorded, viz. the Jazirat al-Hamra area with mounds of possibly 5th or 4th millennium B.C. date (cf. al-Tikriti 1985:18, note 15) and at Shimal.

In January 1976 B. de Cardi (1976:216) discovered a first shell-mound in Shimal North which had been partially bulldozed and has entirely disappeared since. This very area was recently published as site 40b as well as further mounds and a "settlement area marked by plentiful surface sherds" east of the work enclosure of the Ras al-Khaimah Steel Corporation (de Cardi 1985:176). Revisiting the area in 1985 and 1986 we were not able to get evidence for the above settlement although the area is still unbulldozed but very badly littered. However, the shell-mounds mentioned as site 40c (ibid.:177), can reliably be relocated in Shimal Middle.

Described as being cut through by a drainage gully at its northern slope and with a small grave sunk into the shell deposits of 60cm it appears identical with an island-like shell accumulation between two wadi branches in the middle of the Shimal Middle settlement area (SW) which was then unrecognized as such. The wadi sections display deposits of varying thickness with strata of shells and pottery separated by intervening bands of river pebbles.

It was in Shimal Middle that we discovered the largest concentration of shell-mounds ranging from small low patches to real mounds of heights up to 2.5m and a length of more than 30m in places (Pl.1). They cluster close to and even inside the settlement area. It is particularly worth mentioning and of a high chronological significance that even several 2nd millennium B.C. tombs immediately north and south of the settlement are overlain by such mounds. The flat easternmost shell-mound is piled against the ruined perimeter wall of area SY. Because of their location we should like to ascribe these mounds to activities connected with the settlement occupation, but more precise evidence has to be collected in order to prove a contemporaneity of the mounds and the settlement.

Further low shell-mounding was also noted in the vicinity of tombs in Shimal South (de Cardi 1985:178. Site 40d).

As to the composition of the mounds B. de Cardi recorded by random sampling the occurrence of auger, cockle, murex, and pearl-oyster (de Cardi 1976:216), but we cannot confirm the predominance of pearl-oysters. The

most frequent species we generally noted were valves of common oysters. The occurrence of species like *Terebralia* and oysters presupposes the coexistence of at least two exploitable biotopes: rocks or reefs for the oysters and a brackish swamp-water system for the *Terebralia*. Suitable mud-flat environments, as at present the khors near Rams or al-Nakheel, probably permitted the necessary growth of mangroves, which makes a population of *Terebralia p.* increase considerably in extension and number (cf. Durante 1979:320).

There is little doubt that the shells were discarded after the consumption of the shellfish. Further components of these middens are lenses of loose ash and earth, a few stones, a certain amount of fishbones and, most importantly, a high quantity of potsherds.

The pottery from the shell-mound in Shimal North, which was published in 1976 for the first time and re-studied later, originated from a modern disturbance (de Cardi 1985:197). This unstratified and mixed material is constituted of two main groups, a painted pottery and a coarse ware (de Cardi 1976:216). With the present knowledge from our excavations in the cemetery and the settlement of Shimal it is most likely that the pottery assemblage from the above midden is less homogeneous than previously suggested. Stylistic parallels drawn to finds from Ghalilah or other sites in the interior are indisputable but do not help sufficiently to date the entire material as a single find unit.

Before discussing the chronological background of this mixed assemblage we should like to present some preliminary results of a rescue sounding carried out in one of the shell-mounds (SM 1) in Shimal North in 1985.

The mound SM I was situated directly on the cliff of the gravel pit in Shimal North (Pl.2). A larger part of it was already destroyed by bulldozers, which had created a neat artificial section through the centre of the deposits. It was decided to dig a 1m by 1m trench from the very summit down to virgin soil. The depth of the deposits was about 1.8m. Since the sounding was done very quickly - the mound was completely destroyed later - only a very crude sequence of 9 cultural layers could be registered. All of these contained a very high percentage of shells, ashes, earth, sand and fishbones as well as a relatively small collection of potsherds.

As far as the pottery from SM I is concerned mainly body sherds were encountered. Those few more diagnostic potsherds are depicted on Fig.3. Although painted pottery was collected from the surface the sounding did not produce a single specimen, instead there was a homogeneous sample of sherds belonging to a very coarse, grit-tempered handmade ware with a sooted surface and sometimes a grey core. The same ware was recorded by B.de Cardi (1985:nos.52,54,56) from one of the Shimal shell-mounds, but

stratified parallels are well known from Period I and II at Rumeilah (Boucharlat/Lombard 1985:54,57), where it makes up 41.7% of the total. Not only the ware but also the shapes and handmade technique correspond well with the Rumeilah finds. Of special interest is a body fragment of so-called Rumeilah incised grey ware, which was found in SM I layer 5. With its decoration of herring-bone patterns and arcades (not depicted) it strongly recalls similar finds from Rumeilah, where they seem to be restricted to Period I (ibid.:55.Pl.50:8,9).

For Period I in Rumeilah two charcoal samples were processed for radiocarbon dating, whereas from SM I we submitted three samples. Our samples RAK 1 (shell) and RAK 2 (charcoal) were taken 1.8m b.s. from the bottom layer 9 of the mound, whilst sample RAK 3 (shell) was collected from layer 2 (second from top) in order to avoid possible surface contaminations.

The dates processed are as follows:

sample	Lab.No.	date B.P. before 1950	95%confidence	corr. date B.C. MASCA(2sigma)
RAK 1 layer 9	Hv-13640	3175 ± 65	1865 - 1350	1510-1540 ± 75
RAK 2 layer 9	Hv-13641	2725 ± 145	1250 - 600	930 ± 155
RAK 3 layer 2	Hv-13642	3195 ± 65	1875 - 1375	1520-1560 ± 75

Rumeilah 1				
	Ly-3076	3100 ± 170	1895 - 920	1460 ± 180
	Ly-3078	2860 ± 150	1400 - 790	1110-1140 ± 160

The years B.P. are based on Libby's half-life of 5568-years which is to be applied for the 95% confidence correction (Klein et al.1982), whereas the MASCA correction is based on 5730 years half-life with 68% confidence (Ralph et al.1973). All dates are dendro-chronologically calibrated. The charcoal sample RAK 2 was too small for an ordinary processing and was therefore counted in a small counter. The SM I samples were submitted simultaneously, but the shell samples were counted before the charcoal sample. It was predicted that the ¹⁴C-dates of the shell-samples were nearly 400 to 600 years older than the actual calendar (dendro-) dates. This was then theoretically related to the hard water effect, which is to be subtracted in order to arrange the dates in the terrestrial ¹⁴C-scale. Thus the date of the RAK 1 sample is basically the same as the one from the charcoal sample RAK 2, which is from the same stratigraphic context. Consequently there is a 95% confidence that the real calendar dates of the samples RAK 1 and 2 are somewhere between the 13th/12th and the 10th century B.C. plus the standard statistical error. The chronological implications of the two Rumeilah samples do support a

slightly later date for Period I at Rumeilah vs. the SM I shell-mound: the ^{14}C -dates of these charcoal samples are as high as the ones from the SM I shell samples, but the standard derivation is much larger (± 150 and ± 170), thus giving a wider range for the confidence of the real dates. On the basis of stylistical parallels with objects from a safe chronological context and the above radiocarbon dates our French colleagues dated Period I at Rumeilah to the 10th - 9th/8th century B.C. (Boucharlat/Lombard 1985:51).

Of particular interest is the ^{14}C -date of sample RAK 3 collected approx. 1.5m from above samples RAK 1 and 2. The dates from SM I are practically congruent and easily compatible as soon as we suggest a very short term accumulation of the shell deposits. This assumption is somehow confirmed by the homogenous consistency of the associated pottery assemblage and does not necessarily contradict B. de Cardi's conjecture of a longer lasting accumulative process of shell-mounding (de Cardi 1985:199). An general attribution to the mid-1st millennium B.C. and later certainly applies to a part of the pottery whereas others are rather distinctive, as we suggest, for the first half of the 1st millennium B.C. and even earlier (see below).

The other shell-middens in Shimal have not yet been systematically surveyed but random sampling on the mounds just south of the settlement has produced 2nd millennium B.C. coarse ware pottery. In those cases the pottery and shells were piled up on top of 2nd millennium B.C. tombs, which here and there emerge from below the mounds. Without excavation the more precise chronological relationship between the mounds and the antecedent tombs cannot be established. Other mounds in Shimal Middle northwest of the settlement again superimpose older tombs but the surface pottery is exclusively of an early 1st millennium B.C. date. At the moment it is a purely subjective impression that the 1st millennium B.C. mounds differ from the 2nd millennium B.C. ones also by non-artifact deposits, i.e. by means of a more obvious preference of certain shell species as oysters vs. *Terebralia palustris*. Malacological studies which are scheduled for the 1987 campaign will hopefully provide a better understanding of the malaco-fauna exploited by the ancient Shimalians and of the palaeo-environment.

II.3. The cemetery

II.3.1. Introduction (Figs.4,5)

B.VOGT

The site of Shimal is generally well-famed for a number of tombs of so far unknown architectural types. Previously three larger concentrations were registered at Shimal North, Middle and South. They were published as sites 40c, 40d, and 40e (de Cardi 1885:177ss, de Cardi and Doe 1971: 243ss). A total of about 29 tombs was mentioned, but after two seasons of excavation we dare say that the number of field monuments will probably amount up to 150 to 200 structures which by means of architectural criteria (see below), dispersed and fragmented funerary inventories and human bone splinters may be recognized as burial monuments. Since only the central part of the site was jointly surveyed and mapped by the Ras al-Khaimah Municipality Lands Department and the German Mission, more detailed information is available for Shimal Middle. Notwithstanding it must be emphasized that the above number of structures is only a tentative estimate and further tombs might well be buried under the top gravel sediments.

The tombs form a single coherent cemetery area extending all along the preserved site. Due to the fact that older aerial photographs could not yet be evaluated it remains obscure if the northern end of the graveyard has given way to the modern quarry and the gravel pit in Shimal North. There are indications, however, that tombs must have existed in that area, because large, roughly hewn boulders which are typical for the tombs, have been re-used in the gardens nearby. Secondly the southern edge of the present gravel pit has partly destroyed two or three tombs along the gravel slope¹. The remains of further tombs are at present still visible in the lanes and on the fringes of the low cost housing area at Shimal South. The southernmost burial structures are situated in Shimal South at the southern foot of the Husn al-Shimal, but it is just an isolated group of three or four tombs.

Indispensable for an appreciation of the macro-surface of the burial ground is the fact that to our present knowledge all tombs have been conceived as overground monuments. But due to the surface condition we cannot in principle rule out the existence of subterranean and/or combined subterranean/overground graves (see below).

For the time being we distinguish at least six different types of gra-

¹Although doubtful it should be mentioned that during the 1986 campaign we were addressed by a U.A.E. national of Jordanian origin who was trying to sell a Hellenistic statue, which he pretended to have found 15 years ago in the area of the present gravel excavation. Since the authenticity of the statue could neither be proved nor refuted without analytical techniques the provenience of the pretended find would have exclusively to be based on confidence.

ves, each of them with very distinctive architectural features. These have been introduced to scientific discussion as the single-chambered **Shimal tombs**, the double-chambered **Ghalilah tombs**, the ring-chambered **Khatt tombs**, the horseshoe-shaped tombs, circular tombs and a group of graves with an unknown plan, structure and age (Vogt 1985a:183ss). Except for the last group and the horseshoe-shaped tombs, examples of each type have been excavated and will be described in detail below. Apart from the above grave types further singular (burial?) structures could be registered particularly in Shimal North recalling subterranean single graves in the Wadi Suq and at Samad, but also overground stone cists previously investigated in Ghalilah (Donaldson 1985:Fig.1) or at the Jabal Hafit (al-Noeimi n.d.3). Secondary burials are virtually known only from the excavations, where clear evidence for a later re-use of tombs for burial purposes was obtained (i.e. from tombs SH 102,100). There is also little doubt that the caves relatively high up the mountains might have been used as burial sites: one of the caves yielded surface finds such as pottery, bone splinters, and a large spherical carnelian bead.

Although only in the centre part the cemetery has been systematically surveyed there are indications of a general organization of the burial ground. This is expressed both by the graduated occurrence and the spatial distribution of the different grave types (Fig.4).

Following the tradition of calling grave types after the site of their first discovery, the type of single chambered long burials has been denominated as **Shimal tombs**. This type - for instance SH 101, 102 and Donaldson's Site 1 and 6 makes up the bulk of tombs in the graveyard. They are spread all over the cemetery, some of them being constructed even in the remotest corner of the site. The longitudinal axes of the tombs are usually oriented from N to S or from NE to SW, but there are also some with diverging orientation (de Cardi and Doe 1971:243, Fig.1). The entrance, if still recognizable, is facing towards the W, NW or N, but the rules of the bearings are far from being clear: it has still to be confirmed if any entrance faces towards the eastern mountains. Two long burials with an approx. N-S orientation, but the doorstep on the southern narrow side, were noted in Shimal North. They remain unique, but their lay-out might have been planned to be successively enlarged to tombs of the **Khatt** type.

The first example of a **Ghalilah tomb** was uncovered by P.Donaldson on the site of Ghalilah about 20km north of Shimal (Site 2, cf.Donaldson 1984). These are double-chambered structures which are also present at Shimal North with at least two examples, at Shimal Middle with 7, and at Shimal South with two more specimens. For unknown reasons they are all located in front of the small delta-shaped valleys, particularly west and south-

west of the Shimal settlement area. With the exception of one tomb (not excavated, west of SH 99) their longitudinal axis is directed from N to S. The entrance is either on the long side facing to the west or on the northern narrow side.

The **Khatt tombs** which have been labeled according to the best preserved, but yet unexcavated example of this type in the southern cemetery of al-Khatt are represented in Shimal only by two specimens. One is tomb SH 99 in Shimal Middle of which one half was excavated by us in spring 1986 and the second is the monumental structure mentioned by de Cardi and Doe (1971:249) as the "central feature" of Site 6g. Tomb SH 99 is oriented from N to S with the entrance on the northern narrow side, whereas the tomb in Shimal North is roughly aligned from E to W, but due to its relatively poor state of preservation the doorstep is not identifiable. However, at its south-eastern end a semi-circular annex of random stones encloses a large concentration of human bones. The three Khatt tombs are certainly the most spectacular structures of an almost monumental size and without parallel in the Lower Gulf Area. Their singularity on account of their architectural dimensions and their number may point to an outstanding significance among the tombs, the nature of which will be cleared through further excavation it is hoped.

Judging from the present surface situation the **circular tombs** are few in number and apparently confined to the periphery of the burial ground. This applies to our tomb SH 100 in the eastern part of the Shimal Middle cemetery area as well as to a few circular structures scattered at the fringes of the Shimal North cemetery area. The position of the entrance is known from tomb SH 100 where it faces NE. Thus, the entrance is facing the mountains as it was also registered from Site 5 at Ghalilah (Donaldson 1985:Fig.3).

Horseshoe-shaped tombs have only been noted in Shimal Middle so far. They cluster in an area just south of the SY settlement section. Further isolated specimens are situated on the southern bench of the main wadi branch. The orientation of their longitudinal axis is from N to S with the open end commonly in the north. No horseshoe-shaped tomb has been excavated till now.

The excavations carried out at Shimal have sufficiently proved that the tombs contained **collective burials**. If we suppose that the bulk of tombs was indeed constructed during the 2nd millennium B.C. then quite a substantial prehistoric population is to be assumed. Its societal structure could well have been reflected by such an extensive necropolis. Certainly much organizational effort and labour were invested to create and to maintain tombs of that monumental size.

The entire area was sporadically utilized during later periods. Medieval

houses were erected sometimes on top of the tombs or nearby. Building material was taken especially from the roof constructions of the tombs. This sporadic re-occupation of the site left behind a large amount of domestic pottery of the Julfar type (cf. de Cardi and Doe 1971: Figs. 15, 16), but also fragments of 2nd millennium B.C. Wadi Suq pottery can be collected almost from every tomb. Much easier to find are fragments of the soft-stone vessels (ibid.: Fig. 52) which were obviously of little interest for the grave robbers. Surface finds of soft-stone vessels from the cemetery area Shimal Middle are depicted on Fig. 5.

The following chapters will present separately the different excavations conducted by the German Mission. Different grave types will be introduced, supplemented by anthropological studies. Eventually a first tentative interpretation of the data will be suggested.

Tombs SH 101 and SH 102 are typical Shimal tombs. This type is defined as an overground monument with a rectangular plan and rounded corners. They share the same architectural features as Donaldson's Site 1 and 6 (Donaldson 1984:196ss). Shimal tombs vary in size from about 9m to 29m in length and 3m to 5m in width (cf. de Cardi and Doe 1971:246). An even more monumental Shimal tomb of nearly 35m length may be buried below the gravel sediments just outside the site-fence in Shimal Middle.

SH 101 and SH 102 are situated on a gravel terrace in the eastern part of Shimal Middle (Figs.3,4). SH 101 is the architecturally better preserved example of these single-chambered long burials. Tomb SH 102 was heavily damaged and signalled on the surface only by the occurrence of bone splinters, a few beads and pottery.

II.3.2.1. The architecture

The external length of tomb SH 101 is about 12.5m by 3.7m. The dimensions of the rectangular chamber are 10.35m by 1.75-2.0m. The orientation of the longitudinal axis is from NE to SW. The only entrance to the chamber is midway along the northwestern long side. The unpaved chamber floor corresponds with the surface of the gravel terrace. The tomb is built of large random stones, wadi boulders, and less frequently roughly hewn stones, which were probably quarried closeby. The walls are about 1m thick, consisting of two skins of vertically set boulders with a core of gravel, sand, and smaller stones. This is a technique which to our knowledge did not appear on the Oman Peninsula before the early 2nd millennium B.C. as e.g. in the Maysar-1 settlement (Weisgerber 1981:Abb.14). Judging from safely dated 2nd millennium B.C. structures on the other archaeological sites a masonry of two or multiple stone skins is highly significant for the Wadi Suq domestic architecture, as in Hili-8 (Cleuziou 1981:Fig.2) and the Shimal settlement (see II.5.), but also for all above quoted grave types in the Ras al-Khaimah cemeteries of Ghalilah, Dhayah, Shimal, and al-Khatt. An even more outstanding feature is the stone roof construction, which in the case of SH 101 is preserved only in its lowest course (Pl.3): large oblong boulders are transversally inserted into the core of the wall. Being strongly tilted they overhang the inner facing to narrow the internal space of the chamber down to 1.15m minimum width (Pl.4). In certain cases as e.g. in Shimal South a second overlying course of similarly installed boulders is still preserved in situ. Previously this kind of roofing has been reconstructed as a saddleback or gable roof (e.g. Donaldson 1984:Fig.15) but referring to better preserved tombs namely in Dhayah and al-Khatt we are reluctant to accept this assumption. We provisionally suggest that the transversal

boulders were to support a ceiling of horizontal slabs. Smaller stones were discovered to be wedged underneath the bottom end of the inner facing in order, as we feel, to statically cushion the load of the superimposed roof construction.

It must be emphasized that this sort of roof construction is distinctive for all the grave types in Shimal. But neither here nor at Ghalilah, Dhayah and al-Khatt mounds were discovered which could have protected this statically not very stable construction (vs. Donaldson 1984:219). We agree with Donaldson (ibid.) on the fact that the tombs were dry-masoned and, although the existence of mortar cannot be evidenced, mud or the like could have sealed the irregular external surface of the buildings. It is interesting to note the absence of rodent bones inside the tombs, which could be expected from a permeable masonry.

Whatever the original roof construction was, it can hardly be surmised that the chamber was high enough for going upright. Generally, the entrance to the tomb is set in the middle of a long side. Since SH 101 is aligned from NE to SW on the longitudinal axis its entrance faces to NW. As a matter of fact it is hardly more than an opening of 0.45m to 0.50m width. Door openings are commonly constructed of a large, mostly single, horizontal slab forming the doorstep and two large vertical slabs situated at a right angle to the wall, thus acting as door jambs. The lintel of SH 101 (apparently originally another horizontal slab) is missing but the former height was approx. 0.60m. Consequently the opening was just big enough for a human corpse to be drawn into the chamber. The circular tombs SH 100 and Ghalilah Site 5 (Donaldson 1985:Fig.3) which possess the same kind of door construction do demonstrate that they were blocked with a single large stone (see below) when the funeral was over.

The interior of tomb SH 101 consists of a single rectangular chamber. The filling was composed of larger boulders in the lower section and a mixture of medium sized random stones, gravel, and shells on the top. Unlike other Shimal tombs (cf. Site 1) the floor was unpaved. Careful excavation and sieving produced just a single artifact of archaeological interest, a brownish dot-in-circle decorated soft-stone lid (Fig.5.7). It came from the upper chamber debris and therefore the exact relationship to the structure remains obscure. Because of the complete lack of further grave goods as well as skeletal remains it may be assumed that the building was erected in advance but never used for unknown reasons. A complete disintegration of the skeletal material can be excluded because soil chemisms in the nearby tomb SH 102 are comparable. Even from the outside of SH 101 no pre-medieval artifacts or bone fragments could be collected. If we take into account the remarkable inclination of the slope (ca.6%) and although the building is partly damaged at its north-eastern and southwestern end, the destructions are rather external.

Therefore it can be ruled out with some certainty that the contents of the burial chamber were washed away by run-off water.

A dating of tomb SH 101 into the 2nd millennium B.C. is based only on architectural criteria. The above lid is also of a 2nd millennium B.C. date but its provenience remains unclear.

II.3.3. Shimal tomb SH 102
(Pls.5-6.Figs.7-21)

B.VOGT, J.-M.KASTNER

II.3.3.1. The architecture

Tomb SH 102 was investigated during the 1985 and the 1986 campaign. It is situated about 20m north of SH 101. Its existence was signalled by a number of surface finds such as potsherds, beads, and bone fragments. On the top of it the remains of a single-roomed stone hut were recorded and roughly dated by scattered Julfar pottery to the late medieval period. Structural contours were vaguely indicated by two parallel alignments of stones imperceptibly emerging from the surface. A first trial trench between them could not clarify the actual appearance of the monument. Extending the sounding eventually exposed the heavily disturbed foundations of a Shimal tomb. Its basic architectural features are similar to those of tomb SH 101 although its execution is less skilful and its dimensions are larger.

The maximum preserved length is ca. 16.5m, the average width is 5m. The northern end of the tomb has been completely washed away by the wadi closeby. The axis of the burial chamber is oriented from NNW to SSE. Through the position of the doorstep in the western long side the original length can be reconstructed as up to 21m or 22m. Due to the erosion and human impact the entire superstructure is missing. Of the entrance area only three large boulders have survived forming the doorstep.

The collapse or destruction of tomb SH 102 is easily understandable, because the faces of the double-skinned wall are built of surprisingly modest boulders, while the roof was obviously made of those monstrous stones presently dispersed over the slope below the tomb.

SH 102 was still partly furnished with the remains of a pavement of medium sized wadi boulders and pebbles, but elsewhere the chamber produced vestiges of heavy looting, quarrying and secondary use. It was here and even inside the core of the wall that masses of minutely fragmented human bones as well as a large number of artifacts were found. The latter include typical Wadi Suq pottery, soft-stone vessels, and personal ornaments, but also some isolated Iron Age potsherds, the crossbar of a late pre-Islamic iron-dagger, and a number of medieval and recent potsherds. On this particular level the precise distinction of find units was not

possible.

Our main interest focussed on the central section of the tomb in an area where the first trial trench (Fig.7.1) had yielded a number of bones and small objects far below the bottom end of the grave wall and the level of the pavement. It was therefore decided to concentrate on the northern 5m of the tomb by taking out the filling of the double-skinned wall and to enlarge the incipient sounding both in the extension (E-W) and depth (Fig.7.2). Wherever possible the chamber was dug down in between the patches of pavement. The latter was intentionally left untouched until the 1986 campaign to have areas with a clear stratigraphic separation of an upper and lower horizon. In 1986 the entire wall was successively emptied and the chamber pavement removed. The maximum depth reached in the northern section was approx. 1.5m below surface. Finally at the end of the SH 102 excavation the tomb was totally disarticulated giving the impression of an architectural skeleton consisting only of the two skins of the grave wall. After the termination of the study the trenches were systematically refilled in order to re-establish the general impression before deep sounding.

Let us first turn to the E-W section which was excavated in 1985 1.5m north of the door step. The drawing on Fig.8 shows three major stratigraphic units: at the bottom a sequence of gently sloping alternating layers of fine compact sand or gravel of different grain size. A handful of animal and human bones were discovered 0.25m-0.40m below the level of the pavement in a context which is otherwise sterile.¹ For this reason one may conclude that the bones were intruded through animal agency or the like (layer I). The subsequent layer II is composed of a compact mixture of fine sand, fine gravel, and small sized stone splinters. It is the context of quite a remarkable number of bones and artifacts, although it is still below the pavement. Layer III is the topmost one, being associated with the occupation and the final destruction of the tomb. Because of the heavy looting and re-use a more exact sub-division of this stratum cannot be presented. It seems that the skins of the SH 102 grave wall have been set or even slightly deepened into the layer II deposits. Before the paving of the burial chamber was installed on top of layer II the latter was apparently disturbed by a shallow pit (Fig. 8.1) which was filled with gravel, sand, some fishbones and human bones, and a few potsherds (Fig.12.18). It might be even possible that this pit and other shallow depressions with a similar filling in the trench south of the section are chronologically connected with two other major stratigraphic anomalies: one was observed east of the tomb, the other underneath the western grave wall.

¹It is to be stressed that the stratigraphic sequence of SH 102 is the only one giving evidence of very clear sterile sand layers which probably are aeolian sediments nowhere else encountered in Shimal so far.

The former filling of the grave walls consisting of sand, gravel, and medium sized stones, as it is known from other Shimal tombs, is replaced by a heterogeneous packing of different soils which lack any systematic arrangement. The section underneath the western grave wall displays a clear U-shaped depression (Fig.8.3) which was filled with fine sand and medium sized stones and also contained a number of human bones. It is certainly not a disturbance of SH 102 but a stratigraphic feature antedating the construction of the tomb. Its actual context is a natural or artificial ditch prior to the tomb which can be better detected in the N-S sections. On the other hand it is still obscure if a similar depression right next to the eastern grave wall (Fig.8.2) is part of the same pre-tomb structure.

Regarding the N-S sections (Figs.9,10) we can observe the same basic sequence of a disturbed burial layer overlying a stratum of mixed sand, stones, gravel, human bones, and artifacts again covering sterile natural sediments of sand and gravel. And here again we obtain very clear evidence for the above mentioned ditch which is running from E to W, and which is slightly flexed (cf. Fig.7). Below the burial chamber of SH 102 the ditch is from 0.45m to 0.50m deep, but further uphill (eastwards) its depth decreases. Under the burial chamber the filling of the ditch consisted of two stratigraphical phases, i.e. a layer of sand mixed with fine gravel superimposed by a deposit of sand and medium coarse gravel. Both of those contain isolated human and animal bones and a few artifacts. On the other hand the upper filling was composed of sand, gravel, stones of different size, human and animal bones, and a number of artifacts. Since, however, the upper filling cannot reliably be separated from the above mentioned layer II underlying the central part of the tomb, we cannot exclude that they were from the same stage of the stratigraphic formation.

To summarize tentatively the accumulative process of cultural deposits in this area it is evident from the sections that it was (sporadically?) used for a longer period of time. The area is marked by a sequence of natural layers extending more or less horizontal from N to S but gently sloping from E to W. At present it is not clear if the above ditch was created through natural agents or if it was deliberately dug by men. We give priority to the latter interpretation because of its regularity, which might be explained by the possible function of a foundation trench of an older structure. Whatever the meaning of the ditch was, it is beyond doubt that its filling is related to some human activity.

The bottom layer contained several human bones and some interesting objects, such as a complete beehive-shaped soft-stone beaker (Fig.15.8), a soft-stone pendant (Fig.18.6), and a bi-conical gold bead (Fig.17.14). The western segment of the ditch is directly superimposed by the western

grave wall (Fig.10). Here the upper filling consisted predominantly of stones and fine sand mixed with a few bones. Further eastwards the composition of the filling is changing into a layer with a lower amount of stones, but a dense occurrence of predominantly human bones and artifacts (Fig.9). It is stratigraphically to be attributed to the pre-tomb cultural layer II which consequently may reflect the remains of a former multiple burial here or nearby (SH 101 ?). Obviously this material was used to fill the ditch and to level this particular area immediately before the construction of the tomb SH 102. The upper filling of the ditch and the associated layer II can be traced in a limited area on either side of the ditch, especially under the SH 102 chamber pavement and the adjacent eastern grave wall (Fig.7). Due to heavy disturbances the real extension of this layer cannot be elucidated but it is worth mentioning that most of the decorated arrow-heads (Figs.19-20) come from that context. The remaining ones originate from areas where a stratigraphic distinction of the pre-tomb occupation and the disturbed burials is no more possible.

Just south of the ditch the already mentioned shallow pits under the pavement could have been related very generally to the ditch. The area produced further human bones, a bronze or copper bracelet (Fig.18.9), and some pottery, as for example a festoon decorated beaker (Fig.12.18). Two more contexts can possibly be ascribed to the same pre-tomb assemblage. One is an isolated pit underneath the northern end of the western grave wall which contained only a few animal remains including the be-headed, but otherwise well articulated skeleton of a fish (Fig.10.1). The second finding were two complete socketed spear-heads made of copper or bronze which were found deliberately driven into the ground east of the tomb (Figs.7,21.5-6,Pl.6). They come from a layer with a composition identical to the above layer II.

As far as the tomb itself is concerned we have already intimated that looting and/or later re-use have badly affected its preservation. For this very reason no in-situ burials could be encountered but the amount of skeletal remains and grave goods is quite remarkable.

In tomb SH 102 at least 140 individual could be identified, about 30% of them are children under 1 year of age. Among the adult individuals whose sex could be determined women are slightly prevailing (cf.II.4.).

II.3.3.2. The finds and the dating of SH 102

Owing to the above find circumstances a clear distinction of find units is rather exceptional. Of course, a number of bones and artifacts can be ascribed to the lower horizon. As to the upper horizon, we found a mixture of artifacts which through stylistic comparisons can clearly be

attributed to different periods. The finds include pottery, soft-stone artifacts, personal ornaments, and metal objects.

The pottery (Figs.11-13)

Compared to the large number of individuals recorded in SH 102 the ceramic inventory is rather small. Although the study has not yet been finished we would like to present a first rough pottery classification which simplifies the categories suggested by P.Donaldson (1984:199-206).

Macroscopically we distinguish three major groups of wares, the coarse, the medium, and the fine wares (cf.II.6). Among the coarse wares we may select a small collection of sherds (Figs.11.1-8) which through their appearance are fairly distinctive. They belong to a handmade ware of a mainly brick-red colour and a fabric of grit and black mineral temper. They originate all from the upper layer III and can be easily matched by their texture with the ceramic finds from the shell-mound SM I in Shimal North (see II.2). But also the few reconstructable shapes such as the miniature basins (Figs.11.1-2) or a jar with a bridged spout (Fig.11.8) obviously point to an early Iron Age date. The latter vessel can be convincingly paralleled with jars from the Iron Age settlement of Rumeilah (Boucharlat/Lombard 1985:Pl.51.3,4). This kind of spout is very significant for the early 1st millennium B.C., but has not yet been recorded from a clearly stratified 2nd millennium B.C. Wadi Suq context.

In connection with other finds from SH 102 which also suggest a 1st millennium B.C. date those few fragments may indicate a sporadic use of the SH 102 structure also during that period.

Of an older date are certainly those coarse ware potsherds depicted on Fig.11.9-15. Their fabric is similar to wares diagnostic for the settlement area which are both hand- and wheelmade and tempered with mineral grits, chaff, and a minor amount of whitish specks. Their general appearance is marked by an almost soapy, easily effacable surface which is usually undecorated. Open bowls (Figs.11.10,13) have been noted in SX and SY quite frequently (cf.Figs.41.1-8) but also from a subterranean single burial cist in the Wadi Sunaysl (Frifelt 1975:Fig.27f). The same applies to the bottle-shaped vessels (Fig.11.9) of which the shape is fairly common in the Shimal settlement (cf.Fig.41.15) and which has also been registered from Site 2 in Ghalilah (Donaldson 1984:Figs.21.62-63). Better parallels are known from period III at Hili-8 (Cleuziou 1981: Fig.5.4,6.1 painted). Equally typical for 2nd millennium B.C. find assemblages are bottom fragments of pedestal beakers like Fig.11.14, which occur as normal sized and miniature vessels in the settlement (Figs.43.1-12), in Ghalilah (Donaldson 1984:Fig.22.131) and the site of Maysar-1 (Weisgerber 1981:Abb.17.4). The fragments from SH 102 often display traces of string-cutting which is a technique rarely recorded from the 3rd

millennium B.C. but very frequently from 2nd millennium B.C. pottery (Cleuziou 1981:282).

The bulk of SH 102 pottery belongs to the medium and the fine wares. Larger vessels with walls of 5-10mm thickness are made in medium ware and are usually wheelthrown. Some of them exhibit traces of black painting like the spouted vessel no.10 on Fig.13. Through comparison with other burial pottery assemblages from Shimal as e.g. SH 103 we feel that the fragments nos.7 and 9 on Fig.13. also belong to the group of spouted vessels often decorated with multiple vertical zig-zag lines or simple horizontal lines, but less frequently with a vertical herring-bone pattern. The latter is a motif which also appears from time to time on some soft-stone vessels or on the burial pottery from the Wadi Suq and Wadi Sunaysl (Frifelt 1975:Figs.23f,26a). Most of the vessels are made of a relatively fine orange-tan paste sometimes without any significant temper, but more frequently with a temper of minutely chopped chaff and white specks. The surface is sometimes covered with a cream or light reddish-brown slip, as e.g. the open bowl on Fig.13.4, painted with a multiple chevron design between horizontal lines. It shows similarities to vessels from the period III layers at Hili-8 (Cleuziou 1981:Figs.4.6-7). But generally vessels of larger capacity are rather exceptional. This applies also to globular fine ware vessels like nos. 5 and 6 on Fig.13. Of particular interest is a globular vessel of an orange-cream paste with a temper of chaff, mica, and white specks (Fig.13.11). Most remarkable are (originally four) unpierced knobs, a slightly everted rim, and a painting of two black wavy lines below the rim. Together with a similar vessel (furnished with four horizontal lugs, cf. de Cardi, in press, Fig.3.58) and two specimens from Hili (Lombard 1979:Pls.31.10,11) it clearly imitates the shape and function of those globular chlorite suspension vessels which are extremely significant for the early 2nd millennium B.C. (Vogt 1985a:232). But this very shape seems also already to anticipate the small sized ceramic suspension vessels of the Omani Iron Age as the ones from Ghalilah (Donaldson 1984:Fig.22.119) for instance. Since the SH 102 fragment is from an unsafe and mixed context (disturbed core of the eastern grave wall) its chronological implications are less instructive.

The most typical pottery shape, not only from tomb SH 102, but basically from all burials at Shimal, is that of beakers which show only little variations in shape and decoration. The main type is a miniature beaker with a slightly everted, simply rounded rim, concave walls and an accentuated bottom (sometimes with marks of string-cutting, Figs.12.1-4,6). The second type is characterized by straight walls, an even or sometimes slightly concave base, and generally a larger capacity (Figs.12.7-18). Both groups are most frequently decorated with simple horizontal lines,

wavy lines, zig-zag lines, and herring-bone designs. Although vessels of identical shape, size and decoration have been noted from stratified contexts, their chronological significance is not very strong because of the lack of a more precise 2nd millennium B.C. pottery sequence. From the present evidence it is clear, however, that unlike at Hili-8 (cf. Cleuziou 1981:Fig.4.9-20) the Shimal settlement has produced only a few vessels of this shape.

Among the beakers we have to draw attention to fragments of three more elaborately painted ones, made of an orange paste with little temper of mica and white specks (Figs.12.16-18). Two of these derive from unsafe findings whereas the third (Fig.12.18) was collected from underneath the pavement just east of the SH 102 entrance. The decoration consists of panels of opposed semi-circles separated through triglyphs and framed by simple horizontal lines. A bowl with an identical design from one of the single graves in the Wadi Suq was recently compared by K.Frifelt (1975: 379, Fig.22b) to a find from the third Barbar Temple on Bahrain which is believed to have lasted from the Isin-Larsa Period to the Kassite Period (Hojlund 1986:224). Unfortunately this parallel does not help to date reliably tomb SH 102 or its preceding occupation layer. The stylistic affinities with finds from Hili-8 and the cist burials in the Oman Mountains permit only a very rough attribution to the pottery of the Wadi Suq horizon. Therefore we have to refer to other objects than pottery.

The soft-stone vessels (Figs.14-15)

An important group of artifacts from tomb SH 102 are fragments of at least 30 soft-stone or chlorite vessels. All except one of these can be attributed to the upper layer of SH 102. The exception is the only complete vessel, an almost conical beaker (Fig.15.8) which was found in the bottom layer of the ditch. Its upper third is decorated with a frieze of cross-hatching followed by a single row of incised dotted circles. The lower part is ornamented with two horizontally opposed herring-bone patterns. It recalls a similar vessel from al-Qusais, but due to the unsafe context this parallel does not help in dating although the occurrence of 2nd millennium B.C. material is sufficiently proved at al-Qusais (cf. Vogt 1985a). More interesting is a bi-conical chlorite vessel from the younger layers at Rumeilah which bears a very similar geometric design (Boucharlat/Lombard 1985:Pl.60.6) and which may indicate a chronological proximity to the Iron Age horizon or at least the persistence of particular designs even into the 1st millennium B.C.

Regarding the other chlorite fragments we have to mention a number of suspension vessels, simple and spouted bowls, and funnel-shaped beakers. They are all over incised with geometric designs as simple horizontal lines, dotted circles, ladder patterns, and multiple chevrons as well as

saw-tooth motifs (Figs.14-15). It is probably a subjective impression that in comparison to other Wadi Suq related chlorite collections the execution of the engraving is fairly low and rather faint. Furthermore it can be noted that the arrangement of the decorative elements is sometimes rather hastily done. At least two artifacts, a globular suspension vessel (Fig.15.1) and the fragment of a lid (Fig.14.14), exhibit clear traces of a secondary re-shaping, a fact which was never registered from any other chlorite assemblage of this period.

Omani chlorite productions throughout the periods are well known but it is the Wadi Suq horizon which has produced the largest comprehensive collection. It has been demonstrated elsewhere that the corpus of soft-stone vessels during the 2nd millennium B.C. is rather homogeneous belonging to two major categories, i.e. a transitional group during the earliest 2nd millennium B.C. and the classical production starting at about 1800 B.C. (cf.Vogt 1985a:238ss). Basic affinities exist between the latter and the SH 102 collection, but as a matter of fact different shapes and decorations can equally be recorded. For instance the funnel-shaped beakers with their flat base and slightly concave walls bear an incised decoration of horizontal lines, dotted single and double circles, and saw-tooth patterns (Figs.14.3-4). The latter is an ornament regarded hitherto as a typical Iron Age motif (Weisgerber 1981:216), but this particular combination of funnel shape and decoration has never been discovered in a clear Iron Age context. At least for the shape we got close parallels from the tombs on top of the outcrop of Qarn Bint Saud near al-Ain (unpublished). The saw-tooth pattern also occurs on bowl fragments in tomb SH 102 which are otherwise unknown from Iron Age chlorite productions (Figs.14.7,11).

Concerning the most frequent type of Wadi Suq chlorite vessels it is striking that in tomb SH 102 the globular suspension vessels are absent with exception of one example with traces of wear (Fig.15.1) but nevertheless this type is represented by a more barrel-shaped variant (Figs. 15.5,7).

The typological evolution of shapes and designs has been outlined elsewhere (Vogt 1985a) and we are confident that the 2nd millennium B.C. soft-stone vessels will prove as a relatively reliable chronological marker. A general attribution of the SH 102 chlorite to the wider context of the Wadi Suq horizon is nevertheless probable. The presence of artifacts of clear Iron Age date such as the pottery quoted above made us expect chlorite artifacts of the same period which by comparison to other sites are easily distinguishable. But not a single object of this kind was discovered during the excavation of SH 102.

Personal ornaments (Figs.16-18.6)

Among the tombs investigated in Shimal tomb SH 102 yielded the largest number of personal ornaments, such as pendants, beads, and so-called belt buckles.

The collection of beads, altogether 906, adds only a few new types to those already published by P.Donaldson from Site 1 at Shimal and Site 2 at Ghalilah, but the variety of materials used is more comprehensive, i.e. they are made of at least 20 different materials.

The bulk of beads is made of chalcedony, a semi-precious stone which is quite hard and appears in different colours ranging from the dark red carnelian to the bi-chrome agate and others.¹

In SH 102 as well as in the other tombs six main types of chalcedony beads could be distinguished:

- a) bi-conical beads (Figs.16.6,8)
- b) barrel-shaped beads (Figs.16.4,7)
- c) oblong beads (Figs.16.1-3)
- d) disc-shaped
- e) spherical beads (Figs.16.12,13)
- f) beads with lozenge-like section (Figs.16.9-11)
- g) miscellaneous (e.g.Fig.16.5)

Most examples belong to the types a) to e) whereas type f) was represented only scarcely.

The second largest group are beads made of shells which were abundantly available and easy to work (Figs.16.14-25). The favourite raw material were certainly gastropods, of which the apex could simply be pierced (Fig.16.23) and polished. Another technique was to cut off the point of the shell and to saw it into slices of decreasing size which needed only little further treatment.

The production of bone beads was equally easy. Especially fish vertebrae were used and just pierced in the centre (Figs.16.26,27). Made of other

¹The wide spectrum of colours is caused by the uneven content of iron oxide impurities. Since the mineralogical distinction of carnelian and agate is rather difficult we use the term chalcedony. The material itself is widely distributed in the Near East occurring in small pieces in gravel beds. Larger quantities were found in Saudi Arabia, on the Bushir peninsula (Whitehouse 1975:129), and in the Yemen, but the by far richest deposits are known from India. For the time being we do not know if the material is regionally available or if it was imported from outside the area.

The production of chalcedony beads is fairly complicated and tedious. Chalcedony pieces are to be crushed before they are roughly shaped with lithic tools and eventually polished by grinding on a harder material. The drilling which is carried out in the end is the most difficult production step, because the impurities and the structure of the stone do not allow a drilling along the thin-banded layers of the material. According to the Moh's scale chalcedony possesses a degree of hardness of 6.5. Drilling such a hard material needs harder drill-heads or emerald powder. Suitable for this purpose and often used is jasper of which samples could be collected south of Shimal and of which two flakes were discovered in SH 102. It can be learnt from bead manufacture in India which has survived until now that the beads get their final polish by being emiered in a leather bag containing a mixture of quartzite and water, a process which was told to last about 10 to 12 days (cf. Allichin 1979:103).

bone disc-shaped beads were the most common type (Figs.16.28,17.1-2). Among the remaining beads there are several unique ones of which the material is rather exceptional, although the shapes are already known. This includes two barrel-shaped beads made of rock crystal (Fig.17.4), that is to say of a material which is even harder than chalcedony. Other unique artifacts are a bead of glassy flux (Fig.17.3) and a single fayence bead (Fig.17.8). Beads of the latter type usually served as a chronological marker, which, however, is of little use here because fayence occurs on the Oman Peninsula as early as the 3rd millennium B.C. (de Cardi et al.1979:80).

Red coral beads (determination uncertain) also occur. They are always very tiny and of a type depicted on Fig.17.7. Relatively soft material is represented by chlorite or serpentinite beads with shapes imitating some chalcedony types (Figs.17.6,9) as well as a bead manufactured of clay (Fig.17.5).

Some of the beads are still undetermined as one example possibly made of sandstone (Fig.17.11), or as another example of a pinkish-grey stone (Fig.17.10) and one manufactured of black stone (Fig.17.12). A greyish stone has been used for 12 beads of a crude, flat, almost circular shape rather resembling natural gravel than a man-made object (Fig.17.13).

The collection of beads from SH 102 also contains a few specimens of metal beads. Two have been made of copper or bronze, both of them virtually being a bent sheet of metal (Figs.17.17,18). The flat disc-shaped silver bead was obviously cast (Fig.17.19) as were also a few bi-conical and barrel-shaped gold beads, of which one was found in the bottom filling of the ditch under the tomb (Figs.17.14,15). The gold artifact depicted on Fig.17.16 is actually not a bead but a mounting hammered from a gold sheet in order to receive a bead of probably spherical shape.

Although the SH 102 beads show resemblances to grave finds from Qattarah and al-Qusais (al-Athar 1975:39,55) they cannot be regarded as chronologically relevant. Unfortunately, this is also the case with a number of "belt buckles" made of shell with a central perforation or loop-hole on the back and an incised decoration of concentric circles (Figs.18.3,4). Similar finds from an uncertain context in Dibba and Qarn Bint Saud have been compared by K.Frifelt (1970:378, Fig.11) to finds from Nimrud dated to the 9th-8th century B.C. In the light of new discoveries, however, it seems obvious that the collection of chance finds from Dibba (cf. Bibby 1965:151) is virtually a 2nd millennium B.C. assemblage mixed with artifacts from the 1st millennium B.C. This interpretation is indirectly corroborated by the furnishing of the long-burials at al-Qusais which also contained decorated shell-buttons, Wadi Suq chlorite and pottery as well as artifacts from later periods. Tomb SH 102 e.g. has produced a miniature hilt of shell (Fig.18.5) which again recalls a comparable find

from al-Qusais (on display in the Dubai Museum) and another one from a late 1st millennium B.C. single grave in the Samad cemetery which was apparently used in connection with a ropemaker's pulley (Vogt 1984:274). The last personal ornament to mention here is a small pendant carved of a grey chlorite collected from the filling of the ditch (Fig.18.6). Formerly it was probably triangular in shape with a single perforation. It is decorated on either side with an irregular mesh pattern but neither shape nor decoration - both are too common - permit a convincing stylistic comparison to better dated finds from outside the area.

Metal objects (Figs.18.7-21)

Our excavations in SH 102 brought to light an interesting collection of metal artifacts. For the sake of completeness only we have to note the occurrence of an iron pin (Fig.18.7) and an iron fragment which could have been part of a dagger furnished with an accentuated crossbar (Fig. 18.8). These two fragments have to be explained as stray finds or relics of secondary use of the structure because (despite the chronologically misleading term "Iron Age") iron started to come into use in large quantities at about the middle of the 1st millennium B.C. (Weisgerber 1981: 232). With the exception of the above objects all metal artifacts are made of copper or bronze.

A number of rings (Figs.18.10-12) could have served as personal ornaments supplementing some shell rings of similar size which have survived only in fragments. But the rings could also be connected to grave goods which were furnished with rivets made of the same metal (Fig.18.14). Rather enigmatic is the original function of three thin objects, two of them resembling an armour scale (Figs.18.15-16) whilst the third one is spatula-shaped (Fig.18.17). Objects of this kind are commonly termed razor-blades.

A particular symbolic meaning might be indicated by two socketed spear-heads (Figs.21.5-6). They were found together being almost vertically driven into the ground just east of the tomb (Pl.6). This very position reminds of a custom which survived for a long time even in Islamic religious practices reflecting pre-Islamic rudiments (Lüling 1985:34s).

Closely related socketed spear-heads with one or two rivet-holes have been exclusively documented from Wadi Suq related assemblages, as e.g. from Khudr (on display in the Qurm Museum), al-Batin and the Jabal Hafit (Cleuziou 1981:Fig.11), from the Samad cemetery (Vogt 1981:Abb.57), and from Qattarah (on display in the al-Ain Museum) as well as from the Wadi Bahla (pers.comm.J.Orchard), Ghanadhah (al-Tikriti 1985:Pl.16J), and Ghalilah (Donaldson 1984:Fig.28.10). The best typological parallel is recorded from the unstratified al-Wasit hoard find (al-Shanfari/Weisgerber, in press, Pl.9).

Another copper or bronze object of interest is a small bolt (Fig.21.1) with two points with circular sections and a square sectioned central part. It is a type of weapon which was previously recorded from an early Iron Age burial in Maysar-27 (Kroll 1981:Abb.62) but the latter example is made of iron. Another bolt made of copper or bronze was recently published from Ghanadhah (al-Tikriti 1985:Pl.16B).

The bulk of metal artifacts from SH 102 consists of copper or bronze arrow-heads, of which in all 24 have been collected. Most of these were recovered from the cultural layer and the ditch underneath the tomb. The others were found in the disturbed upper layers of the tomb.

Different forms of arrow-heads can be distinguished. These are lanceolate (e.g.Fig.20.5), leaf-shaped (e.g.Figs.19.1-2), oblate (Fig.20.9), and rhomboid (Fig.21.3). All shapes possess short tangs which are square or rectangular in section, except a rhomboid arrow-head which is marked also by a rhomboid section. The tang is the continuation of a flattened mid-rib, but two arrow-heads are different. One is the already mentioned rhomboid specimen with an accentuated mid-rib and the second is an isolated, almost oblanceolate arrow-head (Fig.21.2). The latter piece is characterized by a blade with two parallel edges and a lozenge-shaped cross-section. We will return to this arrow-head later since it is a unique object from the stylistic point of view. The rhomboid and the oblate arrow-heads are equally solitary but nevertheless connected with the lanceolate and leaf-shaped type either by stratigraphic context or by a special kind of incised decoration.

The most outstanding feature of these artifacts is the incised decoration always engraved into the mid-rib. The motifs include triangles, simple strokes, crosses, and star patterns. Although the cleaning of the arrow-heads has not yet been completed it appears that the repertoire of decorative elements is rather limited and that the signs on either side of the blade were rarely absolutely identical. This observation and the wide geographical distribution of arrowheads with an equal engraving makes us presume that the signs were neither tribal marks nor personal names but rather simple ornaments.

Since the radiocarbon datings of bone samples from Sh 102 are still pending the above arrow-heads are the main instrument to date the whole assemblage. The bulk of decorated arrow-heads from the Oman Peninsula originates from chance finds, hoard finds, and other unsafe contexts. They have been commonly dated to the 1st millennium B.C. (Lombard 1985: 207). From this point of view the discovery of decorated arrow-heads in a stratigraphic context antedating the construction of a Wadi Suq tomb was completely unexpected.

The Iron Age settlement of Rumeillah produced just a single decorated arrow-head from the surface which was correctly compared to early 1st

millennium B.C. counterparts from Luristan (ibid.). From the earlier layers of Rumeilah a number of leaf-shaped arrow-heads was collected which are not too different from our no.10 on Fig.20. The latter was found under the tomb and stylistic comparisons with Iranian material also permit a dating in the latest 2nd millennium B.C. (Moorey 1971: Figs.17.69-70). The arrow-head with almost parallel edges matches well with finds from the period II layers at Rumeilah (Boucharlat/Lombard 1985:Pl.62.7) and a date in the second quarter of the 1st millennium B.C. is consequently suggested but this specimen was found in the disturbed layer of SH 102.

Concerning the remaining arrow-heads an Iron Age date can be ruled out. A re-assessment of the finding circumstances of decorated arrow-heads on the Oman Peninsula clearly demonstrates that they are always associated with artifacts related to the Wadi Suq horizon. That applies for instance to Ghalilah, Baat, al-Qusais, Dibba, and many other places, too (Vogt 1985a:255ss). On the other hand it is evident that they never occur in tombs which can be dated with some certainty to the earlier centuries of the 2nd millennium B.C. as for example at Qattarah or the single burials in the Samad cemetery. Differences in the grave furnishings are definitely not only due to chronological reasons but are also the result of other factors expressing some sort of deliberate differentiation. Nevertheless we feel that the SH 102 arrow-heads are later than the previously known Wadi Suq assemblages but still antedate the Omani Iron Age horizon.

Concerning parallels from outside the Oman Peninsula we have to refer to decorated arrow-heads from Palestine, where some examples with simple, but different geometric incisions have been recorded e.g. at Tell al-'Ajjul. For these finds a mid-2nd millennium B.C. date (i.e. Late Bronze Age I) was proposed but even a Middle Bronze Age IIB date cannot be entirely excluded (Tubb 1977:193). In respect of a typological chart of Near Eastern arrow-heads compiled by J.N.Medvedskaya (1982:Fig.14) it is apparent that the lanceolate type (which is predominant in the SH 102 collection) is widely spread throughout the Near East during the third quarter of the 2nd millennium B.C. According to her studies this type is replaced by different ones at about 1200 B.C. with exception of Iran where the typological evolution is slightly retarded. The best parallel so far is an arrow-head with very similar geometric engravings found inside a dolmen in the necropolis of Hassan Zamini in the Persian Talysh (de Morgan 1905:Fig.543). It was associated with two so-called Kirkuk seals for which C. Schaeffer-Forrer (1983:77) has convincingly suggested a date of about 1500-1350 B.C., whereas J.N.Medvedskaya (1982:76) considers an Iranian Iron Age I date as equally possible.

For the time being one may regard the metal finds from the long-burial

in Qattarah (al-Noeimi n.d.4) as a rich and representative collection of the classical Wadi Suq period. Although triangular dagger-blades and socketed spear-heads are numerous it is striking that arrow-heads are absent. Therefore, we feel that the presence of decorated arrow-heads in the clear context of SH 102 is a strong chronological indicator. At present we suggest a provisional dating of the SH 102 arrow-heads and thus all the remaining objects from the ditch to the second half of the 2nd millennium B.C. On principle a comparison of this particular inventory with other Wadi Suq grave furnishings reflects a different stage of a typological and cultural evolution, which in some aspects, as outlined above, anticipates certain features of the Omani Iron Age. Consequently the tomb SH 102 proper still belongs to the same cultural context though it is stratigraphically later than the ditch. Its dating to the second half of the 2nd millennium B.C. represents for the first time a Wadi Suq context later than any previously documented assemblage of this horizon. It extends the duration of the Wadi Suq period considerably which might explain the high number of burials in the Shimal graveyard and is somehow confirmed by a most recent discovery of late 2nd millennium B.C. material from Nizwa (al-Shanfari/Weisgerber, in press).

II.3.4.1. The architecture

Tomb SH 103 is situated in the centre of the gravel fan of Shimal Middle approx. 200m south of the settlement area (cf.Fig.4). The surface indicator was the top of a stone wall divided by a gap into two equal parts. This wall appeared to be enclosed by a double line of stones partially overlain by larger boulders. On the western side the remains of a recent stone-hut were built against this perimeter wall. A concentration of ashes, shells, and coarse handmade potsherds was clearly connected with this later occupation. The only pre-modern surface find was the body fragment of an Iron Age chlorite vessel (Fig.28a.4).

The structure is rectangular in plan with rounded ends (Fig.22). When it was entirely exposed major damage could be noted at the northern and southern end of the tomb. In spite of these disturbances the layout is clear enough to identify the internal length as about 8.8m and the width by 3.8m. Adding an average thickness of the walls of 1m the external dimensions must have been approx. 11m by 6m. Plan and size are basically very close to Site 2 excavated by P.Donaldson in Ghalilah (1984:Fig.16). The interior is partitioned by the above wall into two chambers of equal size. They are connected by three passages, one at each end of the central wall and a third passage half way along the longitudinal axis. The latter is aligned on the same axis as the entrance of the tomb which is situated in the centre of the western grave wall. The partition wall is slightly wider than the perimeter wall which was probably due to static necessities. As already noted from SH 102, the walls consist of two facings of upright random boulders with a core of earth, gravel, and smaller stones. They are about 0.4m high, forming the sub-structure for the stone roof, of which only a small section could be studied in situ. As in tomb SH 101 large irregular blocks are transversally inserted into the wall packing overhanging the internal skin of the perimeter wall. The lower course of the roof construction is preserved only on top of the eastern grave wall but it is to be assumed that the division wall was formerly constructed in the same way.

The entrance in the western grave wall is marked by a large horizontal slab of 1m by 0.7m size which represents the threshold. In the north it is flanked by a vertical slab, while the southern jamb is missing as well as the original capstone lintel.

Compared to Site 2 at Ghalilah this tomb SH 103 displays some minor variations. The most remarkable difference is the position of the entrance and the central passage interrupting the partition wall. Furthermore, unlike Ghalilah an external platform could not be detected (Donaldson

1984:Tav.22b). It is worth mentioning, however, that the masonry techniques are identical with those of the Shimal tombs, a fact which might give first clues of a rough dating of the structures.

The excavation started with a small trial trench in the eastern chamber. Since the burial layer appeared immediately below the surface it was decided to unearth the interior in trenches of 1m width. This proceeding was later subtilized by an excavation of squares of 0.5m lateral length in order to guarantee a better precision for the documentation of the skeletal material and the grave goods. Unfortunately the anthropological analysis could not trace in-situ contexts. Despite this disappointing finding the content of the two chambers was registered accordingly.

The bone layer was heavily disturbed and irregularly spread in the two chambers, the passages and the entrance area (Pl.8). Human bones were also found outside the tomb, but only in small quantities. They were sometimes strongly fragmented but also a large number of complete long bones and skulls has survived. Disturbances are obviously due to human impact, probably shortly after the abandonment of the tomb. Secondary burials could not be traced and recent disturbances affected only the surface. For the time being it remains unclear whether concentrations of human skulls in the eastern chamber reflect the last surviving indications of a systematic and deliberate exposure of burials or if they are the result of plundering. The latter assumption is more likely since the bones are mixed with artifacts and small flat stones which may belong to a former pavement (Pl.9), as it was noted also in Ghalilah. The grave goods, especially the pottery, were smashed and scattered all over the tomb and even outside.

Tomb SH 103 contained the skeletal remains of at least 50 individuals. The preservation of the bones allowed reasonable sexing. The sex ratio of the adult individuals is nearly balanced with slightly more females inhumed than males. 34% of the individuals were identified as children under one year of age. Together with the skeletal remains of children belonging to the remaining infant age groups (up to 12 years of age) a total of 40-50% infant mortality is reached (cf.II.4).

II.3.4.2. The finds and the dating of SH 103

Tomb SH 103 yielded an inventory of pottery, personal ornaments, and soft-stone vessels which appears fairly homogeneous and relatively easy to date.

The pottery (Figs.23-24)

Fragments of about 40 vessels could be collected and re-assembled in part. The three major groups are represented, the coarse, the medium, and the fine wares as well as a number of rather solitary vessel which,

however, are chronologically relevant. Differences within the groups are mainly restricted to the percentually different amount of temper. The paste displays a wide range of colour depending not only on firing temperatures but also on secondary burning after fracturing. Nearly all vessels are painted. The painted decoration is confined to the upper part of the vessels, i.e. the upper half or above the maximum diameter. Among the coarse ware vessels fragments of two large handmade beakers are rather uncommon for a burial context (Fig.23.22). They are marked by a cylindrical body, a simple rounded rim, and a fabric strongly tempered with large black grits and quartzite (i.e. fabric 2). The same shape and ware is well known from period III at Hili-8 and from Hili North (Vogt, in press). It was also found in the Shimal settlement.

Medium ware occurs as open bowls (Fig.23.23), painted beakers (Fig.23.17), and even as spouted vessels which are all wheel-made. The bulk of vessels is produced in fine ware fabrics (mainly fabric 4, cf.II.6) with beakers and goblets as the most frequently recorded shapes but also as spouted jars and miniature vessels. The beakers from tomb SH 103 correspond well with those already known from other burials in Ras al-Khaimah. There are several variations both in shape and size, incl. a sub-type with a flat, sometimes string-cut base, straight walls, and slightly everted rim (Figs.23.9-12) or the more common shape of beakers with convex walls and everted rims (Figs.23.13-15). The funnel-shaped beaker (Fig.23.17) is the only one of its kind but unlike the others it is made in medium ware. Generally, painted decoration is limited. The basic motifs are horizontal and wavy lines and herring-bone patterns, whereas the loops preserved on a bottom fragment (Fig.23.18) are an element never noted before. Although beakers of the above described execution have been documented from period III at Hili-8 they do not serve as a save chronological indicator since similar vessels have also been found in tomb SH 102. This fact might be an indication for the persistence of this particular type throughout a longer period. Judging from the findings it is likely that these beakers were predominantly manufactured for burial purposes, as is well manifested by the large collection from Site 6 in Shimal (de Cardi, in press,Figs.1-2).

Among the small sized fine ware pots the miniature vessels are the only handmade ones (Fig.23.1-4). They are made of a buff clay with a temper of minute white specks and chaff, the external surface is flaking. It is a group of vessels which was not recorded in SH 102 but in Site 1 (Donaldson 1984:Figs.6.48-50) and Site 6 (de Cardi, in press,Figs.3.51-53). Their shapes recall miniature vessels from Tomb A at Hili North, which date to the last centuries of the 3rd millennium B.C. (cf. Vogt 1985b). It is also likely, however, that they imitate the larger bottle-necked vessels of which no evidence is yet available from a 2nd millennium B.C.

context. One particular miniature vessel has to be mentioned here: it is a rim fragment made of fine red paste tempered with minute white specks (Fig.23.5). The surface is laminated with a thin cream slip. Decoration is not painted but incised, consisting of two pairs of horizontal lines with traces of multiple chevron design in between. Obviously the vessel is produced in the tradition of the Umm an-Nar incised grey ware though the shape is not attested. Nevertheless two interesting parallels can be quoted from Tomb A at Hili North. One is a tronconical beaker with a convex base and an everted rim made of a red paste with a cream slip and a carelessly executed design of opposed hatched triangles (Vogt 1985a: Tf.60.5). The other one is even more interesting being made of an ochre paste and a grey slip covering the incised decorations of pending hatched triangles and multiple chevrons (ibid.:Tf.60.6). Its shape is that of a beaker as they are typical for Wadi Suq funeral pottery, attested for instance in tomb SH 103 (Fig.23.8), but otherwise unparalleled in the 3rd millennium B.C. ceramic sequence. The two incised grey ware imitations from Hili North are dated by context to the latest phases of the 3rd millennium B.C. (Vogt 1985a:181). For the SH 103 fragment we therefore suggest a still indefinite chronological proximity to the latest Umm an-Nar material.

As to the larger vessels, we should like to refer to a rim fragment of buff paste tempered with black and white grits, chaff and a small amount of mica (Fig.23.20). Although it shows some similarity to the late 3rd/early 2nd millennium B.C. burial pottery from Bahrain, we are reluctant to establish such a stylistic correlation, because a large, but unfortunately not joining sherd of the same pot (similar to the vessel depicted on Fig.23.19) rather suggests a globular body with a slightly rounded bottom.

With the spouted vessels from SH 103 we feel on much safer ground. Six of these and fragments of possibly two more could be collected, some of them showing details hitherto unknown from the Wadi Suq pottery sequence. It is broadly accepted that they figure as the most characteristic shape of the then ceramic production. At a meeting with B.de Cardi in Ras al-Khaimah we have agreed on a descriptive terminology in order to take into account the considerable variety mainly of the spout applications. Their catalogue comprises channel-, bridged-, rim-, and shoulder spouts. Of those the last two categories are represented in SH 103. The actual shape of the spout is usually beak-shaped but there is also evidence for conical/cylindrical spouts.

Regarding the present corpus of spouted vessels from Shimal and other contemporary sites there is to a certain extent a standardization of the shapes. They are frequently made of a fine ware, but their paste may also contain a higher percentage of chaff temper. In this respect two

jars from SH 103 are rather uncommon since they are manufactured of a porous, sandy buff paste which is virtually significant for the late 3rd millennium B.C. domestic pottery from the inland sites as Hili North and Hili-8 (Vogt 1985a:150ss). Otherwise, however, their shapes and decorations (Figs.24.4,7) represent the most popular type of spouted vessel. This type is marked by a squat, bulgy body, a flat concave or rounded base, and a thickened rolled or triangular rim section. The painted decoration is applied to the shoulder zone and comprehends mainly simple geometric designs such as vertical zig-zag, horizontal and wavy lines, cross hatching, and panels of opposed semi-circles (cf. de Cardi, in press, Figs.4-5). Jars of this type always possess beak-shaped rim spouts. Among the spouted vessels from SH 103 there are three jars which deserve special mention (Figs.24.3-5). They are all shoulder-spouted and display a base which is considerably larger than the orifice. Even more outstanding is the execution of the rim section which congruently shows a thick projecting lip. This remarkable combination of the different criteria is also documented on two spouted vessels from Site 6 (de Cardi, in press, Fig.4.56, Fig.6) which were attributed to the early 2nd millennium B.C.. Of the SH 103 jars one is decorated on the shoulder with a frieze of wavy lines between two pairs of horizontal lines (Fig.24.4). The original painting of the second jar (Fig.24.5) has completely disappeared whilst the third spouted jar (Fig.24.3) is richly decorated with opposed hatched triangles which also reminds of a globular (spouted ?) pot from the same tomb (Fig.24.2). Outside the Oman Peninsula this motif has been recorded from an early 2nd millennium B.C. burial context on Bahrain (Frifelt 1986:133, Fig.33). The unfamiliar rim section is also known from Bahrain from a stratigraphic context related to the second temple of Barbar (Larsen 1983:Fig.531) which is dated to about 2000 B.C. Summarizing the above observation it can be provisionally stated that the SH 103 pottery shows to a certain degree stylistic and technological affinities to the productions of the preceding Umm an-Nar Period.

Personal ornaments (Fig.28b)

As in tomb SH 102 the majority of the beads found in SH 103 is made of chalcedony and shells. Within the group of chalcedony beads which are also basically of the types already known there are two unusual ones. Chalcedony beads of more than 10mm diameter like no.6 (Fig.28b) have not been encountered in Shimal before. The second bead is a honeycomb-shaped one and made of carnelian (Fig.28b.7). This type is exclusively known from late 3rd millennium B.C. Umm an-Nar burials (cf. Vogt 1985a:Tf.73.12-13).

A quartzite bead (Fig.28b.5) stands out for several reasons its size, its perfect spherical shape, and the strange way of drilling which could

have resulted from the structure of the raw material. Among the shell-beads (Figs.28b.1-4) no uncommon forms could be registered, but it is apparent that the most frequent type in SH 102, the disc-bead, is not represented at all. Unlike SH 102, tomb SH 103 did not yield a single gold or electron bead. The only precious metal beads are made of silver. These cast silver beads occur in bi-conical shape (Fig.28b.8) but there are also some specimens partly faceted (Fig.28b.9). Another bead (Fig. 28b.10) was solidly cast of lead and afterwards drilled from both ends. SH 103 has also produced a small number of copper or bronze beads (Fig. 28b.11-12) which consist of a rolled metal sheet.

Chlorite vessels (Figs.25-28a)

Without exception all vessels and lids originating from tomb SH 103 are carved of a soft-stone ranging in colour from green to brownish grey. The artifacts, both complete and fragmentary, are decorated all over with incised geometric designs. The engraved motifs comprehend dotted single and double circles, horizontal lines, herring-bone patterns, and multiple chevrons. Dotted circles are the favourite motif for lids and the upper part of the vessels, whilst multiple chevrons and vertical fishbone patterns are always confined to the lowermost section.

The assemblage comprises a number of so-called suspension vessels, a remarkable number of lids, two simple bowls, two spouted bowls, and the fragment of a bi-conical beaker. The latter was found on the surface and can be selected as an Iron Age artifact (Fig.28a.4).

To start our presentation of the SH 103 chlorite we should like to refer first to those two bowls, which display a decoration of dot-in-circles and multiple chevrons (Figs.25.1-2). One bowl (Fig.25.2) with a single row of circles has a close counterpart from the cemetery in the Wadi Suq (grave 1122). The latter was associated with pottery vessels which were related by the excavator to the wider chronological context of the third Barbar temple (Frifelt 1986:133) thus excluding a date before 1900/1800 B.C. The second, deeper bowl with two rows of circles (Fig.25.1) has a very close parallel in an Old Babylonian context on the island of Failaka (Calvet et al.1985:Fig.3.7). The two spouted chlorite bowls (Figs. 25.3-4) are certainly high quality products but unfortunately without precise parallels, although a dotted double circle bowl with spout was recorded from an Old Babylonian context in Ur (cf. Woolley and Mallowan 1976:100.6).

The most spectacular group of vessels are suspension vessels. A first attempt has been made elsewhere to establish a typological evolution of this particular shape (Vogt 1985a:245ss). The variations in shape are very evident but the ones from SH 103 belong to the globular sub-type (Fig.25.5) and the conical sub-type with a convex base (Figs.25.7,9).

Their maximum diameter is accentuated through 4 or 3 knobs (Fig.25.10) which are only rudiments of pierced suspension lugs. Only for vessel no.5 (Fig.25) stratified and dated parallels can be quoted. K.Frifelt refers to a suspension vessel from the Old Babylonian layers on Failaka (1975:379s) whereas a second parallel was reported from Bandar Bushir from a context somehow associated to the Iranian Kaftari pottery (Pedzard 1914:Fig.VIII). S.Cleuziou has elsewhere proposed an exclusive 2nd millennium B.C. date, while J.Nickerson (1983:196) has recently advocated a date somewhere between 2200 and 1700 B.C.

It is beyond doubt that the lids (Figs.26-28a), of which 20 were discovered in SH 103, were originally meant to cover the above suspension vessels. Except one (Fig.28a.3) they are all profusely decorated with incised dotted circles, diagonal strokes at the rim or multiple chevrons. The large star-like decorated lid shown on Fig.27.6 is so far unparalleled. The knobs are also ornamented with single dotted circles and strokes or less frequently with a single herring-bone pattern (Fig.26.10,28a.1). At present it is only a vague impression that the design of the lids is of some chronological relevance. Lid no.2 on Fig.28a has an almost identical counterpart in the early 2nd millennium B.C. long burial in Qattarah (Cleuziou 1981:Fig.10). Finally we have to point to an observation concerning the base of the lids. It is salient that the lower side of the lids is usually flat. The only exception is lid no.7 on Fig.26 which exhibits a concave base and thus resembles similar examples from the chlorite production of Maysar-1 (Weisgerber 1981: Abb.46.7-8) which is to be dated at about 2000 B.C. or slightly later.

The date of tomb SH 103

The above discussion of the finds and their respective comparative finds from dated archaeological contexts outside the Shimal area has yielded a cluster of chronological ascriptions to the early 2nd millennium B.C. Although the chronological frame has to be corroborated through further studies we advocate a dating of SH 103 somewhere about 1800 B.C. It is to be assumed that collective tombs were in use for some time but from the present state of knowledge it is absolutely clear that the SH 103 inventory is associated with a classical Wadi Suq period of which far more elements are represented than from the preceding formative phase (cf. Vogt 1985a:263).

II.3.5.1. The architecture

The excavation of tomb SH 100 which is situated in the easternmost part of the Shimal Middle cemetery (Fig.4) was carried out in January 1986. Under two large acacia trees the outlines of an almost complete stone-circle were visible on the surface. The western segment of the circle was represented only by a line of bright shallow depressions originating from modern stone robbery. From the top and the immediate surrounding a few fragments of late medieval and recent pottery were collected ranging from the coarse kitchen wares to the red on buff and red on grey/black Julfar wares and an isolated sherd of celadon. The stone foundations were encircled by a trench of 7m by 7m subdivided by four squares of 3.5m lateral length. Since the interior was badly disturbed a lay-out of even smaller sized squares as in SH 99 and SH 103 was not envisaged. In the end, only a basic distinction of an interior and exterior find unit was possible. Removing the different layers of coarse and medium coarse gravel mixed with fine sand, it became obvious that major damages were caused by manifold roots of the acacia trees and, to an even larger extent, by human impact. One of these disturbances was a small heap of shells, mainly *Terebralia palustris* which was deposited on top of the northwestern segment of the perimeter wall. Further disturbances were evidenced through a number of artifacts of different date which could be collected from the interior.

Tomb SH 100 is circular in plan (Fig.29). The external diameter is ca. 4.3m to 4.5m, the internal chamber measures about 2.6m across. Interior partition walls could not be traced thus raising a question about the roof construction. The perimeter wall is built of two skins of random stones which are preserved only in the lowermost course. The gap in between the two skins was filled up with small stones and gravel thereby generally recalling the construction technique of the other grave types in the cemetery. It should be emphasized that the outer circle is constructed predominantly of concentrically set stones whereas the mostly smaller sized stones of the inner skin were arranged radially with the narrow sites pointing to the centre of the chamber. This technique, commonly termed headers and stretchers, is basically evident also from Site 5 at Ghalilah (cf. Donaldson 1985: Fig.3) but is highly significant for circular tombs of the 3rd millennium B.C. Hafit type (Vogt 1985a: 65). The entrance of the tomb SH 100 is oriented towards NE thus facing the mountains. Like the tombs of Shimal and Ghalilah type it consists of two upright slabs forming the door jambs. The minimum width is only 0.4m and just big enough to push in a human body. Unlike the other tombs investi-

gated by us the two slabs do not rest on a doorstep but directly on top of the gravel terrace. The boulder between these slabs (Fig.29.1) is too large to function as a threshold but more probably as a door blocking. The same entrance construction is clearly visible on Site 5 in Ghalilah (Donaldson 1985:Fig.3) where the entrance faces to the SE. Another interesting feature of tomb SH 100 is the short alignment of stones immediately in front of the entrance (Fig.29.2) which could be interpreted as part of a plinth or - more probably - as a wall which was to seal additionally or even camouflage the entrance blocking. Such a screening is again very typical of the 3rd millennium B.C. Hafit and Beehive type (Vogt 1985a:79ss).

Like the other tombs studied in the Greater Shimal Area tomb SH 100 is constructed as an overground monument. It is erected directly on the surface of the gravel terrace. The chamber is built on the same level. A clear evidence for a pavement could not be gained.

The content of the chamber was heavily mixed up. A small area just west of the entrance including a disturbance in the eastern wall segment can be associated with a secondary burial which was obviously carried out when the superstructure of the tomb was already destroyed (Fig.29). The northwestern half of the chamber was almost bare of skeletal remains and artifacts whereas the southeastern half produced a handful of objects and the fragments and scattered bones of several individuals.

The skeletal remains

From the skeletal material in SH 100 the remains of at least nine individuals could be identified. These are five children and four adults of which two women and one man could be reliably sexed. The anthropological study (cf.II.4) makes us presume that the bone material does not really differ from the other burials already studied by us. This is certainly in contradiction to the opinion of C. Wells (in Donaldson 1985:90ss) who tentatively noted some morphometric differences compared to the material known from Sites 1, 2, and 6. This was later quoted by P.Donaldson (ibid.:94) as a possible argument for the attribution of Site 5 to a different culture.

II.3.5.2. The finds and the dating of SH 100 (Fig.30)

The number of objects coming from SH 100 is small. It comprises a few potsherds, personal ornaments, metal artifacts, and a stamp seal.

The pottery

Most of the pottery was collected from the surface. The sherds are mainly of a medieval and more recent date. Inside the tomb only a few sherds came to light of a maximum size of 1cm by 1cm. Next to these late wares,

there were a few fragments of vessels showing an external and internal bright bluish glaze with an incipient iridescence. It can easily be distinguished from the local green glazed Islamic wares, but recalls very strongly pottery from the Partho-Sasanian site of Jazirat al-Hulaylah nearly 5km north of Shimal. Unfortunately only bodysherds were found thus preventing us from corroborating this dating additionally. Furthermore, a handful of potsherds were discovered originating from several vessels. Their ware and some faint traces of multiple chevron painting clearly establish a connection to the common Wadi Suq pottery. These fragments, all again bodysherds, may belong to the type of funeral beakers and other small-sized vessels.

Metal objects¹ and personal ornaments

During the excavation, four metal objects were discovered. Two rings (Figs.30.2,4) are made of copper or bronze. Since a number of finger bones was found nearby at least one of these could have been used as a fingerring. Similar rings have already been recorded from tomb SH 102 (cf.Figs.18.10-11) but they are also known from later contexts. The half of an iron bracelet (Fig.30.1) was found in an area ascribed to the secondary burial where most of the finds were made. The bracelet might suggest a relatively late date although precise parallels have not been documented in the area.

The fourth item to mention here is a silver coin discovered on the floor of the burial chamber close to the western disturbance of the perimeter wall. Since its surface is badly corroded a determination is difficult. Judging from the few recognizable features a very general affinity to Islamic silver coins from a 11th century A.D. coin hoard in the Wadi al-Qawr is not unlikely (cf.Lowick 1985:89ss).

From the same context as the above rings and the bracelet are five beads of which three are pierced marine snails (Figs.30.5-7). The fourth is a cowri-shell (Fig.30.8), whereas the fifth is a squat bi-conical chalcedony bead (Fig.30.9). Similar chalcedony beads are known from the other tombs in Shimal.

The last and most attractive find from SH 100 to be presented here is a spherical stamp seal made of a dark green stone (Fig.30.10). The lower part is flattened forming a sealing surface of 1.2cm maximum diameter. Above it the seal was drilled from both sides right through the centre. That permitted the seal to be attached to a necklace or the like. The engraving on the surface is well preserved. It shows a symmetric symbol consisting of a short straight base line which separates the central crescent-motif and two opposed horns from the lower depictions of a sty-

¹The iron bracelet and the coin have been taken with other important metal finds for restauration to Germany.

lized heart-motif and two garlands.

Although this object is hitherto unparalleled in the area, a general dating to the Sasanian period is beyond doubt. The affinity to comparative finds from Iran is too large to rule out the possibility that the seal was even imported. It is very clear that the engraving depicts a monogram or a tanga with the meaning of "Abq" (cf. Fig. 30 bottom).

Despite the fact that many almost identical parallels are available (cf. Figs. 30.11-12) a more precise dating is difficult, since almost all of those are not coming from ordinary excavations but from the fine art trade. But fortunately some examples as no. 12 (Fig. 30) from a private collection bear short inscriptions in Pahlavi which are datable through epigraphic criteria to the 3rd to 5th century A.D. (D.N. MacKenzie, pers. comm.).

The dating of SH 100

SH 100 is one of the rare examples of circular tombs in Shimal, but a larger number is known from the cemeteries in Ghalilah and al-Khatt. Most frequently, they are associated with 2nd millennium B.C. surface pottery. It was already demonstrated that Site 5 at Ghalilah is of the same architectural type. P. Donaldson suggested a dating to the 1st century B.C. or slightly later which could theoretically be confirmed by the finds from SH 100. However, there are reasons to consider most of the SH 100 objects as grave goods belonging to a Sasanian secondary burial, whereas of the original occupation only a handful of Wadi Suq potsherds has survived.

The architecture certainly provides several indications for an early dating. This is mainly the double-skin masonry and the execution of the entrance both in SH 100 and Site 5. Furthermore we have to relate to another unexcavated tomb in Shimal North which exhibits not only the same architectural features as described above, but also the remains of the roof construction (not depicted). The latter is identical with the roofs already known from the 2nd millennium B.C. Shimal and Ghalilah tombs. Circular tombs of the above type have been also registered in the Sharqiyah and on the island of Masirah (Vogt 1985a:206ss). Their furnishing is of a 2nd millennium B.C. date which may also apply to SH 100 and Site 5.

II.3.6. The ring-chambered tomb SH 99
(Pls.10-12, Figs.31-36)

J.-M.KASTNER, B.VOGT

Tomb SH 99 is situated in the western part of the Shimal Middle cemetery area approx. 100m west of the settlement area SX (Fig.4). The contours of the monument were partly emerging from the surface representing a huge rectangular structure with rounded narrow sides. Its inner plan was not recognizable then. Despite the exceptional dimensions it was concluded that the tomb was similar to the Ghalilah tombs. A small, recently abandoned stone hut was partly deepened into the southern part of the tomb whilst two more single-roomed huts nearby were likewise constructed of stones taken from SH 99. It was because of a dense layer of pebbles and large gravels that the density of surface finds appeared quite unimportant. But later when the wider area around SH 99 was systematically cleaned the mass of finds was really outstanding: 30 buckets full of molluscs were collected from the surface as well as 15 buckets with pottery. A provisional study of the ceramics enabled a distinction of two buckets of Wadi Suq pottery. Such a high concentration was never before noticed from any other tomb in the Shimal graveyard.

After the cleaning of the surface and the removal of superficial ash lenses and pits a trench of 12m by 9m was laid out. Since the entire length of the visible structure is about 16m by ca. 11m the trench could cover just one half of the tomb, the other one will be eventually excavated in the 1987 season. The grid system consisted of 3m by 3m squares which were later abolished when also the inner plan of the tomb started to appear. It was then replaced by a system of 0.5m by 0.5m squares laid on top of the burial chambers. The E-W baulks which were provisionally left between the three rows of squares were finally removed because the sections (except the southern one) did not show features of any stratigraphic interest.

Owing to the fact that the excavation of tomb SH 99 has not yet been finished it is to be stressed that the following information on the findings and their tentative explanation is only of a preliminary nature.

II.3.6.1. The architecture (Pl.10, Fig.31)

As already stated above tomb SH 99 is rectangular in plan with rounded narrow sides. The dimensions are nearly 16m by 11m. The extension of the uncovered northern half is approx. 8m by 11m. The longitudinal axis is almost precisely oriented from N to S. It is the tomb with the most monumental plan in the cemetery. A first glance demonstrates well that the tomb belongs to a type which was hitherto unknown. It is marked by two burial chambers, i.e. a rectangular central chamber and another ring-

shaped chamber which was built around it¹. So far only one entrance to the tomb was discovered: it is situated midway the northern narrow side (at the northern end of the longitudinal axis). The two vertical jambs are missing but the threshold still exists. It is simultaneously the entrance to the ring-chamber whilst the entrance to the central chamber is on the same axis another 2m to the south. That doorstep is formed by two large horizontal slabs, one of the vertical jambs is still preserved in situ.

As usual the walls are consisting of two faces of vertical boulders with a core of gravel, sand, and medium sized stones. The walls stand one course high. The unexcavated southern half of the tomb and the uncovered northern central chamber still possess a layer of tilted boulders which are the in-situ remains of the transversal corbelling as it is described above.

Despite some minor damages of the western facing of SH 99 the outer wall of the ring-chamber is approx. 1m wide. Compared to the inner walls it is relatively modest. The inner walls possess a width of up to 2m which at a first sight seems to be quite exaggerated. But in fact studying the preserved masonry, a very interesting joint in the middle of the central chamber wall becomes obvious. It clearly demonstrates that the central chamber is not surrounded by a single wall but by two walls directly built against each other. Theoretically dismantling the tomb yields two phases of construction. The first phase was a long-chambered Shimal tomb possessing its entrance at the northern narrowside. It forms the nucleus of the later tomb SH 99. Whatever the reasons were, in a later period it was enclosed by a spacious ring-chamber, the inner wall of which was built directly in front of the former facing of the nucleus tomb. Walls of double width were necessary in order to gain a sufficient static support for the roof construction of the ring-chamber which was executed in the common deck roof manner. The encircled Shimal tomb in the centre, now being the central chamber, was obviously still accessible: the newly built inner wall of the ring-chamber did not seal off the central chamber entrance but left an opening just in front of it. This part of the enlarged passage area is badly preserved but it is clear that a stone doorstep never existed. The jambs of which only the eastern one is still in situ is directly set on the gravel surface of the wadi fan. In a certain way this kind of construction recalls the entrance area of tomb SH 100 where the doorjambs were likewise erected directly on the gravel surface.

¹The term ring-chambered tomb has already been given by P. Donaldson (1984) to Site 2 in Ghallilah. We have notwithstanding labeled that kind of tomb as Ghallilah type as e.g. Ghallilah tomb SH 103. We feel that P. Donaldson's terminology is rather misleading because it implies a typological evolution which cannot be demonstrated convincingly in case of Site 2 but on a better architectural basis in case of SH 99. The more comprehensive typological evolution has been outlined elsewhere (Vogt 1985a).

It was additionally noted that for the construction of the western ring-wall larger boulders were used probably to level the construction area which is sloping from E to W. As already noted in SH 101 smaller stones were wedged underneath the bottom of the walls possible to re-inforce the stability of the lower dry-masonry.

We are well aware of the relevance of the two phase construction of tomb SH 99 in respect of the evolution of the Wadi Suq collective burial architecture. The SH 99 findings confirm indirectly the typological interdependence postulated for the types of the Shimal and Ghalilah tombs (cf. Vogt 1985a). But a more precise re-assessment of the architectural evidence cannot be conducted before the end of the SH 99 excavation.

For the time being we do not know the chronological implications of the two construction phases. Unfortunately there is little hope to get a more exact picture because the content of either chamber turned out to be fairly disturbed. The skeletal material was intermingled with a large amount of grave goods and, as far as the central chamber is concerned, with small slabs coming from a former pavement. For example different sherds of the same vessels were collected from both chambers. The human bones were found regularly scattered in the central chamber but unevenly dispersed in the ring-chamber. Here, three major concentrations of human bones could be documented, two in the eastern section including a heap of almost complete skulls along the inner wall and another one in the western segment of the ring-chamber displaying traces of combustion if not even cremation (cf. II.4). We have already mentioned several post-Wadi Suq disturbances but they all seem to be more or less superficial; intrusive objects could not yet be recognized with certainty.

The skeletal remains

The northern half of SH 99 contained the bones of at least 40 individuals including, as repeatedly noticed, one third of children below the age of one year. As previously recorded from the other tombs the number of males and females is more or less balanced.

One particular finding, however, has to be especially mentioned. The western section of the ring-chamber contained a number of bones affected by high temperatures. From the anthropological point of view several long bones suggest that they were still covered with soft tissue, thus pointing to a possibly intentional cremation of two adult individuals, a man and a woman. To our knowledge the custom of cremation has not been recorded from any Wadi Suq burial context.

II.3.6.2. The finds and the dating of SH 99 (Figs.32-36)

The northern half of tomb SH 99 was very richly furnished with pottery, chlorite artifacts, personal ornaments, and miscellaneous finds.

The pottery (Fig.32)

The pottery makes up the bulk of grave goods. Thousands of potsherds were found in the chambers. Due to the fact that so far only half of the tomb has been excavated and that mending is a tedious process we can give only a very general outline on the ceramics.

Most of the found potsherds belong to the group of painted fine ware beakers as they are typical for all burials in Shimal (Figs.32.1-5). The miniature beakers with concave walls are less frequently represented but more often the funnel-shaped ones with a more accentuated base (Figs.32.3-6). Among the latter one beaker is rather exceptional (Fig.32.6): it is unpainted but all over decorated with incised horizontal lines.

Similar finds are unknown in the area.

Spouted vessels do also occur including miniaturized variations. They are characterized by a globular body, an accentuated neck, a beak-shaped spout, and a painting of multiple vertical zig-zag lines. In general, fine ware vessels of larger capacity were less frequently registered. On the other hand, however, large volumed vessels occur in a ware which is rather common in the settlement area (medium ware fabric 3).

A good specimen is an unparalleled large wheel-made globular jar with a short accentuated neck and a clearly everted triangular rim. The brownish/black painting consists of panels of opposed hatched triangles (butterfly motif) between horizontal lines and pendant dot motifs resembling grapes. But there is also a number of sherds belonging to the group of large coil-made pithoi as they are known from SX and SY. It is unclear, however, if they are intrusive or if storage vessels like those have been likewise used as burial pottery. Furthermore, some fragments of singular pots came to light, made in fabrics yet unknown from any contemporary ceramic assemblage as for instance a large hand-made vase of a red paste with a dark red geometric painting (not depicted).

Some relation to the settlement pottery is furthermore established by a number of plain wheel-made vessels made of a light reddish brown paste tempered with a high amount of chaff and a few mineral grits (fabric 3) as for example a bowl, a small beaker or a miniature bottle (Figs.32.7-9). Compared to the other funeral inventories from Shimal it is the percentage of medium ware which underlines the outstanding nature of the whole SH 99 pottery assemblage. Better data will hopefully be available with the results of the 1987 ceramic studies.

The soft-stone vessels (Figs.33-35.4)

The collection of soft-stone vessels from SH 99 is fairly comprehensive including a number of simple and spouted bowls, suspension vessels, and lids all of these bearing incised decorations of the already known kind. Again as in the case of SH 103 - we realize that the lids clearly outnumber the originally associated number of suspension vessels. It can only be assumed that the vessels were preferably re-used whereas the lids were obviously of little further need.

Since the collection is not yet complete it can just be stated that the technical execution both of the decoration and the carving of the shapes is not very consistent. High quality products as the vessels on Figs.33.4 and 6 can be quoted as well as less skillfully finished products such as for instance vessel no.5, Fig.33. But it is also worth mentioning that the SH 99 collection introduces new variations of the suspension vessels as e.g. nos.7 and 8 on Fig.33. The former is a rather extraordinary vessel since the four unpierced knobs are extremely stunted being almost invisible.

Secondary use or re-shaping is manifested by two objects, one being a lid (Fig.34.9) and the other one a shallow plain bowl which distantly recalls the plain bowls from the Umm an-Nar Period (cf. Tomb A at Hill North, unpublished).

For the time being we cannot refer to the chlorite collection from SH 99 as a reliable chronological marker but compared to the collections from SH 102 and SH 103 it has much in common with either assemblage.

Metal objects (Figs.36.1-3)

During the excavation of SH 99 only few metal finds have been made.

Besides the beads which will be discussed later, a few copper or bronze fragments of unknown function, and the fragment of a copper or bronze ring (Fig.36.3) we have to refer to a thin ring made of silver (Fig.36.2) which was probably used as an earring.

The most important metal find of the 1986 campaign is the almost complete blade of a copper or bronze knife (Fig.36.1). The length of the blade is ca. 14cm. The short flat tang is furnished with a rivet-hole for the attachment of a hilt of presumably perishable material. Also the blade is marked through a flat cross-section. The edges of the blade are not straight. One edge shows a slight concave, the other one a more convex curving. Since the point of the blade is missing the original shape cannot be reconstructed with certainty but the curving of the edges may point to similarities with knives from archaeological sites in the Indus Valley as Mohenjo Daro (cf. Mackay 1937:Pl.CXX.1) or Harappa (Vats 1940:Pl.CXXIV.45). If this comparison proves to be correct, it may rather point to an earlier 2nd millennium B.C. date of the knife.

The beads (Figs.36.8-15)

Although tomb SH 99 is not as much disturbed and damaged as the tombs SH 102 and SH 103 only approx. 130 beads were found so far. Compared to the number of individuals buried here it is an unusually small quantity.

The majority of them has been produced of chalcedony. The types correspond to those already known from the other tombs unearthed in Shimal so far (Figs.36.8-11). Apart from chalcedony beads also shell beads were registered (Figs.36.12-13). Only two metal beads were discovered so far: one is a barrel-shaped silver bead (Fig.36.14) and the other one is a tiny gold mounting which is identical to those collected from tomb SH 102 (cf.Fig.17.16).

Further personal ornaments were several rings made of shell (Figs.36.5-7) as they were recorded from all the other tombs in Shimal.

Miscellaneous finds

Among the miscellaneous finds we may refer to the fragment of a spherical limestone object with a wide central perforation (Fig.35.5) which might have been used as a mace-head. A more probable explanation is that of a loom-weight because the perforation shows a wider diameter at both ends which might have resulted from a permanent wear. Another item was a polished bone (ivory?) fragment of unknown function which still displays traces of diagonal lines (Fig.36.4).

Finally we have to mention the remains of an bone (?) comb (Fig.36.16) which were instantaneously to be consolidated after their discovery and which are presently under restoration. The shape of the comb is trapezoid. The only decoration consists of an incised horizontal line above the teeth.

The dating of tomb SH 99

Mindful of the fact that only half of SH 99 has been uncovered yet it is almost impossible to give a precise dating. Only the copper or bronze knife may point to a date somewhere in the early 2nd millennium B.C. but admittedly the evidence is extremely meager. Chlorite and ceramics are clearly to be attributed to the Wadi Suq cultural horizon. At present, we favour a stronger chronological affinity to the furnishing of the Ghalilah tomb SH 103 than to the relatively late inventory of the Shimal tomb SH 102. It can only be hoped that the 1987 season of excavation will enable us to define its date more precisely.

II.4. Anthropological report on human remains from the cemetery at Shimal
H.SCHUTKOWSKI, B.HERRMANN

II.4.1. Introduction

With regard to the anthropological data of its prehistoric populations the Arabian Peninsula can be referred to as "terra incognita" (McClure 1971). This is especially true for the northeastern part of the region. Though during the last years a slight increment of knowledge concerning the timespan between the 4th and 1st millennium B.C. can be recognized, still considerable deficiencies must be stated (Fröhlich 1983).

Some studies which were focussed on the investigation of dental traits suggested the prevalence of different subsistence patterns throughout the times. K.Hojgaard (1980a,b) found dental morphology and attrition of 4th millennium populations to be more characteristic of gathering and fishing than of farming. Kunter (1983) associated different frequencies of dental caries in Bronze and Iron Age populations with the introduction of dates as a new crop.

Human skeletal material from the Oman Peninsula was for the first time published by Kunter (1981). Some of his result point to social stratification, a typologic classification is given and pathologic affections are described.

The most recently issued publication was presented by Wells (1984,1985) dealing with the human bones from the excavations carried out by Donaldson between 1976 and 1977 on several collective tombs in Ras al-Khaimah. The graves contained inhumations of both sexes and all age groups. Corresponding to previous studies Wells also reports on high frequencies of dental affections, particularly in terms of ante mortem tooth loss. Furthermore, pathological and constitutional features of the people are mentioned.

The data given by Wells allow first direct comparative interpretations with the findings from the cemetery in Shimal Middle since they refer to neighbouring local populations, i.e. populations inhabiting more or less limited areas within a restricted period of time.

The following report discusses first results from the anthropologic investigation of tomb SH 103, where aspects of the methods applied to the material will be considered in particular. After that the activities of the last excavation campaign are presented with special findings pointed out in some detail.

II.4.2. Excavation of the bones and further treatment of the anthropological data

II.4.2.1. Preparation on site

In the course of the inhumation period the bony substance is usually affected to a much greater extent by soil factors and decomposition phenomena than e.g. ceramic or stone artifacts. Therefore, an elaborated and often time consuming preparation is the prerequisite for saving the material as undamaged as possible.

First the gravel layer is removed and scattered bone fragments are collected according to a square system that has been laid over the actual excavation (Pl.11). When the bone layer is reached, specific problems of sample preparation occur that arise from an in-situ aspect typical for many collective tombs: a regular anatomical context of skeletons is no longer preserved, the single bones are commingled, partly destroyed and most of them fragmented. Since on one hand the predictability of the position of a certain skeletal element in terms of skeletal anatomy is hardly possible, but on the other hand the preservation of bones in a partial anatomical context can be expected (cf. II.4.2.9), particularly careful preparation of the material is necessary in order to save not only the anthropologic data but those information as well which are important for the functional interpretation of the site in terms of spatial distribution of the finds.

With small scrapers and brushes each bone is freed from the sediments. Especially in arid soils like at the site of Shimal the possibilities of restoring fragments of a bone once broken to a complete skeletal element are quite restricted by the general state of preservation of the single pieces. Most of the bones are quite brittle and fragile. Therefore they have to be consolidated by treating them with a hardening liquid (dissolved polyvenyle glue). This procedure ensures a satisfying preservation.

Each chamber is excavated continuously according to the squares. The situations are documented by photographs (Pl.9) and sketches, followed by an in-situ determination of any single bone accompanied by specific measurements when necessary. Each skeletal element is labelled with a square and specimen number so that the spatial distribution of the finds can be traced back exactly.

In order to save also small fragments of diagnostic value it proved useful to sieve all sediment removed from the tomb.

After the recovery of the bones the in-situ determinations are checked and completed.

II.4.2.2. Determination of age

Determination of individual age in human skeletons contributes to one of the major features of palaeodemography, i.e. the mortality patterns of prehistoric populations. As far as immature individuals are concerned, a set of morphologic traits can be used to determine the age at death with comparatively high accuracy. Among the criteria that proved valid are the eruption sequence and general stage of maturity of the deciduous and permanent dentition. Another possibility is based on the age-dependent fusion of certain skeletal structures, like e.g. of the epiphyses with the shafts of long bones. All these traits, including general size and shape of skeletal elements are connected with growth and maturation. Once an individual has finished its skeletal growth, the possibilities of macroscopic age determination are decreasing. Only few traits remain that vary with age also in the adult period. These are mainly the fusion of cranial sutures and alterations of the pubic symphysis. But also general characters like an increase of muscular attachment are useful for gross classification. In some cases degenerative alterations can be indicative of a developed individual age.

Patterns of tooth wear, sometimes recommended for age estimation, should be handled with reserve. Because these traits are tightly connected with feeding habits they are first of all characteristic of the analysed reference population and should not be generally transferred.

Especially for individuals of the adultus and matusus age group a useful diagnostic tool can be applied in terms of histologic age determination. Here, the characteristic age dependant variation of the bone microstructure is studied, using thin ground sections of compact bone. Due to considerable diagenetic influences on the bone structure the results gained with conventional histologic methods are sub-optimal for the Shimal sample (Pl.13). They can be significantly improved by the application of microradiographic technique (Pl.14). All structural elements are clearly visible and information about their respective degree of mineralization, size and shape is accessible.

II.4.2.3. Determination of sex

As important as information about age structures is the access to the sex ratio of skeletal populations.

The possibilities of sexing immature skeletons are still in its beginnings. It can be shown, however, that there is basically no lack of sex different structures but a deficiency of criteria with effective discriminative value (Schutkowski 1986). The few investigations available at present mostly deal with tooth measurements, but their application is hampered by methodological problems.

By the onset of puberty sexual differences become more pronounced and

from this age on the criteria that have been developed guarantee a reliable treatment.

Very well suited for sexual determination are shape characters of the bony pelvis, because they are the result of an adaptation to different functions in the sexes. The sciatic notch, e.g. in many cases was well enough represented in the Shimal material to allow a classification.

Also the skull displays a set of traits that distinguish the sexes. The male skull is generally larger. It shows a more pronounced supraorbital region and areas for muscular attachment.

For fragmented material like in the Shimal tombs sex determination by means of discriminant function at the petrous portion of the temporal bone can be applied successfully (Schutkowski and Herrmann 1983). The degree of robustness of the long bones and other skeletal elements is a helpful criterion, too.

II.4.2.4. Number of individuals

In tomb SH 103 no entire skeleton was preserved in its anatomical context. The number of individuals buried therefore has to be determined by counting the number of alike bones or certain parts of the skeletal elements.

Both complete bones and identifiable sections were counted:

<u>Skeletal element</u>	<u>minimal</u>	<u>maximal number</u>
Pars petrosa left		32
right		27
Os ilium (sciatic notch) left		26
right		25
Mandibula	29	37
Humerus left	23	31
right	24	26
Radius left	19	27
right	15	25
Femur left	35	37
right	27	29
Tibia left	27	28
right	24	25

The results are placed within the range of minimum and maximum values for long bones and the mandible, depending on if each section of these skeletal elements is regarded to represent a single individual or not. The sciatic notch and the petrous bone give the number of any piece detected.

However, the different skeletal elements represent different age classes

by varying proportions. About one third of the petrous bones e.g. belongs to neonates and children under one year of age. These could not be detected in long bones or mandibles whereas remains of older children were found. This means, we have to combine the figures revealed for the different skeletal elements. Considering the represented age classes the final number of inhumated individuals used for further investigations therefore has to be regarded as the minimum number that could be unequivocally determined.

II.4.2.5. Demographic patterns

By applying the treatments described above the basic anthropological data can be revealed to reconstruct population structures.

In tomb SH 103 50 individuals could definitely be identified.

Table 1 shows the distribution of age and sex within the population. The different age classes are defined by the following time spans:

Infans 1	0 - 6 years	Infans 2	7 - 12 years
Juvenis	13 - 18 years		
Early Adultus	19 - 25 years	Middle Adultus	26 - 32 years
Late Adultus	33 - 40 years	Early Maturus	41 - 47 years
Middle Maturus	48 - 54 years	Late Maturus	55 - 62 years

Sometimes the individual age cannot be adequately described by one age class only. Therefore, in Table 1 also non-integral numbers may occur.

Table 1: Distribution of age and sex in the population of SH 103.

	females	males	nd	total
Infans 1			14.0	14.0
Infans 2			3.0	3.0
Juvenis	8.5	1.5	2.0	12.0
Early Adultus	1.0	1.5	1.0	3.5
Middle Adultus	4.0	2.5	1.0	7.5
Late Adultus	2.0	1.0	-	3.0
Early Maturus	0.5	1.5	-	2.0
Middle Maturus		4.0	0.5	4.5
Late Maturus	-	-	0.5	0.5
Total	16.0	12.0	22.0	50.0

Out of 28 individuals that could be sexed 16 are females and 12 males. The mortality pattern is shown on Pl.18 in a graphic display.

The sections of the population most affected by mortality is the Infans 1 age class, of which particularly the young ones are endangered by weaning stress, change of nutrition and infectious diseases. Once a child has survived this period of time it runs a very reduced risk of death, as revealed by the figure of infans 1 age class. The adultus and maurus age groups are characterized by a slight increase of mortality in the midparts, where the mortality in the adultus age class is twice as high as in the maurus period. The most striking feature, however, is the high amount of juveniles in the mortality structure, the majority of them being females.

Adolescence is characterized as a period of maturation both by a change of physiological/humoral parameters and a change of social roles. The first may have an impact on increased susceptibility to diseases, the latter is, especially for girls, connected with the beginning of contributing to the demographic events of a population by pregnancy and childbirth. At the same time the tasks of daily life in a society organized by division of labour maintain and become consolidated. Therefore, young females would be exposed to a higher risk of mortality by an increase of stress factors.

The population suffers from high infant mortality (34%). Every third child born dies, most of them do not survive their first year of life. Since the mean age of mortality is 30.6 years for the women their reproductive period is limited. A corresponding figure is given by life expectancy (e^{15x}) of the juveniles (cf. Table 2). Assuming that the mean span of fertility for women is 30 years they have a mathematical probability of experiencing only one half of their propagative period which certainly has an impact on the population's duration.

The mean age of mortality for the total population is 19.8 years which is a result of the high mortality rate in the immature individuals.

Among the adult population sex depending mortality patterns are found. Beside the high mortality rate for juveniles females show a second peak in the mid-adultus age class (Pl.18). Males have an increased mortality only in the mature age group as a result of an extended life expectancy. The elderly population is almost completely composed by males.

It has to be stressed that the statements given above are first of all restricted to the population of SH 103 which in itself is only a small section of the total population inhabiting the region during the 2nd millennium. Moreover we have to assume that the individuals buried in the tomb form a natural population, meaning that its structure is not the result of arbitrary or selective inhumations of people.

As long as only tentative conclusions can be drawn about the internal arrangement and functionality of the cemetery and its single tombs this assumption is a necessary prerequisite for a demographic analysis.

Table 2: Abbreviated mortality table for the population from SH 103, based on the values given in Table 1.

a : Timespan of age classes
d'x : Number of individuals died per age class
dx : % of individuals died per age class
lx : % of individuals surviving per age class
qx : Probability of mortality per age class
Lx : Number of individuals living referred to the theoretical initial population between the intervals x and x + 1
ex : life expectancy

	a	d'x	dx	lx	qx	Lx	ex
Inf1	6	14.0	280	1000	280.0	860	19.8
Inf2	6	3.0	60	720	83.4	690	20.3
Juv	6	12.0	240	660	363.6	540	15.9
Ead	7	3.5	70	420	166.7	385	17.2
Mad	7	7.5	150	350	428.6	275	13.0
Lad	8	3.0	60	200	300.0	170	13.1
Emat	7	2.0	40	140	285.7	120	9.0
Mmat	7	4.5	90	100	900.0	55	4.2
Lmat	8	0.5	10	10	1000.0	5	4.0

II.4.2.6. Body height and physical appearance

Body height in skeletal remains can be estimated from dimensions of the long bones. With fragmented material also parts of long bones can be measured like e.g. the femoral head. There is a defined relation between the radius of curvature of the caput femoris and the length of the femur which itself again is related to the total body height of the individual (Kraul:1963). By applying the formula of Bach (1965), Breitingner (1936), and Pearson (1899) body heights could be estimated for five female and nine male specimens.

A marked sexual difference is found with mean of 157.4cm for females and 167.7cm for males. The skeletal remains reveal a generally homogeneous slender appearance of the people with well developed sex different characters.

II.4.2.7. Pathological features

Dental affections are by far the most frequently feasible pathologic alterations among the population of tomb SH 103, characterized by a high

amount of ante mortem tooth loss (Pl.15). The intensity (number of ante mortem tooth losses related to the number of observed alveoli) was 21.9% and thus similar to findings from different authors (Kunter 1983, Wells 1984). Mainly molars and premolars were affected. Few isolated molars also showed caries at different stages.

Since dental calculus was rare to absent in the remaining dentition, tooth loss can be deduced to profound caries. This may have well been caused by a nutrition with a considerable proportion of carbohydrates like provided by dates. Also the slight to moderate tooth wear points to a kind of food that puts little stress to the masticatory apparatus. This would correspond with the huge shell middens and fish bones found on the site.

A different kind of pathologic traits is represented by degenerative alterations. Spondylosis was observed in seven thoracic and three lumbar vertebrae which is likely to be the result of wrong - or overloading of the vertebrae column. One proximal epiphysis of a radius showed signs of an arthrotic affection.

Cribr orbitalia, a porotic hyperostosis at the orbital roof, was found in one male specimen. It is one possible result of enlargement of haemopoietic system thus pointing to anaemic conditions.

It should be mentioned that the last named cases should not be regarded as representative for the population. Their spurious occurrence is dependent on different conditions of the bones. Especially vertebrae or epiphysis, consisting of spongy bone, are more endangered by damage than e.g. long bone shafts. Due to this reason further conclusions should not be drawn.

II.4.2.8. Analytical investigations

Stable isotopes

Bony tissue is capable of incorporating many chemical elements provided by the daily nutrition. If the spectrum of food shows preferences or a characteristic composition over a longer period of time, e.g. given by the natural resources, this can be detected via the intake of specific elements into the bone metabolism.

By determining the ratio of stable isotopes of carbon (^{13}C) and nitrogen (^{15}N) from the extracted collagen fraction or the dry bone substance by mass-spectrometric treatment prevalence of plant or meat and of marine or terrestrial food can be stated (cf. Grupe 1986).

As the bones from Shimal suffered from severe diagenetic alterations during the inhumation period several experiments were necessary to adapt methods and technical equipment to the material. Therefore, the sample as well as recent goat bones and shells from the middens taken for comparative purposes are still under investigation.

Bone decomposition

The bones from SH 103 show a moderate to heavy secondary mineralization but are at the same time characterized by a loss of mechanical hardness and their elastic properties. This fact points to considerable decomposition of the bone collagen caused by the inhumation conditions.

Although secondarily mineralized the bones are generally brittle and highly endangered by further fragmentation. Furthermore, the material is markedly hygroscopic.

In order to investigate a possible influence on these phenomena by soil-inhabiting microorganisms bone and soil samples were taken and incubated on agar plates. Several fungi could be cultivated and were transferred to sterilized fresh bone as new nutritional media (cf. Piepenbrink 1984). Four species could be identified up to now: *Penicillium expansum*, *Penicillium brevi-compactum*, *Cladosporium herbarum*, and *Cladosporium spec.*. Two further fungi specimens have not yet begun with the formation of spores and thus cannot yet be determined.

The four identified species represent ubiquitous fungi and do not occur exclusively in arid soils. The specific decomposition phenomena exhibited by the Shimal bones may therefore be explained by the influence of abiotic factors.

II.4.2.9. The finds in situ and questions after use and function of the tomb

The situation in SH 103 was considerably disturbed. No entire skeleton could be recovered and the bones were completely intermingled. Moreover, the material was fragmented and damaged by tumbled stones of the grave architecture. However, in both chambers (sections B3, B11, and B17) few skeletal elements were found in their natural anatomical context. These were parts of the vertebral column (thoracic and lumbar vertebrae) and thoracic vertebrae and ribs. The fact that these findings only refer to the vertebral column is in concordance with neolithic collective graves in Europe (Grupe 1984). Of all skeletal elements found in an anatomical context in situ, vertebrae were most frequent. So, if all other bones have already disarticulated there is still a good chance of finding combined vertebrae.

None of the bones exhibited gnawing or biting traces caused by animals as it can be observed again in neolithic collective graves from the continent (Eickhoff/Herrmann 1985). Therefore, it may be assumed that the disturbances within the tombs were not caused by natural decomposition phenomena in a broader sense but that they are the result of anthropogenic manipulation in terms of secondary burials and grave robbery in particular.

The almost complete dislocation of skeletal elements makes it more dif-

difficult to investigate problems of funeral rites. The average breadth of the chambers suggest that the people have been inhumated in a flexed position perpendicular to the long axis of the tomb. This may be supported by the observation that skulls were normally found lying close to the walls of the chambers. However, the actual in-situ preservation is opposed to a more differentiated look at present.

II.4.3. Activities during the 1986 campaign

II.4.3.1 Tomb SH 99

The excavation of grave 99 was restricted to the northern half this season. The state of preservation of the human remains is directly comparable to the situation described for SH 103.

The location of skulls alongside the chamber walls, however, is most pronounced in SH 99 with a striking concentration of eight crania in the northeastern section of the outer chamber (find unit D 54, cf. Pl.12).

A first anthropologic survey revealed a minimum number of 40 individuals until now. About one third of them are children below one year of age, identified mainly by the petrous portion of the temporal bone. This skeletal element owns a rather solid internal structure that increases its probability of survival during the inhumation period, especially of very young individuals of which other skeletal parts are scarce generally.

Of particular interest is a disturbance in the midparts of the western chamber (find unit D 27). It covers an area of about one m². The fragments of human bone found there exhibit all stages of colour display characteristic for high temperature influence. Many fragments still show a high amount of residual carbon due to incomplete burning, while others are completely incinerated. Some long bone fragments make evident that the bones have not just been burnt by accident (Pl.17). They exhibit cracking patterns that typically appear when bones are burnt while still covered with soft tissue. They resemble isoclinic lines thus indicating that their origin was caused by stress under the incineration process (cf. Herrmann, in press) thereby proving intentional cremation.

At least two individuals, a male and a female, can be identified from the burnt bones. Bones exposed to fire have also been reported by Wells (1984) from Site 1 excavated by Donaldson. However, no valid proof of intentional cremation was found.

II.4.3.2. Tomb SH 100

This grave was the first circular structure to be excavated in Shimal. Skeletal remains of at least nine individuals are represented. These are five children (perinatal, 2, 3-4, 4-6, and 8 years of age), one adoles-

cent and three adult individuals, two of which were females, one a male. Three cases of ante mortem tooth loss were found, four cases of caries and two of enamel hypoplasia, the latter pointing to nutritional or infectious stress during the time of dental development.

Among the remnants also a spherical concretion was found (Pl.16). It is 8.7mm in diameter and of a light brown colour. Macroscopic inspection revealed a composition of distinct layers. By means of x-ray diffraction measurements the specimen was found to consist of apatite (Pl.19) which corresponds to the anorganic material of the bony tissue. At the same time apatite is among the most common constituents of urinary calculi (Boyce et al.1958) which is in good diagnostic agreement with the general appearance and composition of the concretion.

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II.5. The Settlement

II.5.1. Introduction

U.FRANKE-VOGT

While the Shimal cemetery was known since long (de Cardi 1976:31ss) and excavations were first conducted there already in 1976 (Donaldson:1984, 1985), the Shimal settlement was discovered by the German Mission to Ras al-Khaimah only in 1985 (Vogt et.al.n.d.1:2). Despite of two decades of intensified research our knowledge concerning other sites than cemeteries dated to the Wadi Suq Period is very restricted since most of the published objects were collected during surveys.¹ Evidence for such a cultural horizon, which was different from the earlier Umm an-Nar Period² but with resemblances to the Wadi Suq assemblage, is provided e.g. from sites like Abayah (de Cardi 1977:Fig.1), Amlah 3a-c,12 (de Cardi et al. 1976:129ss,Figs.19-21), Site BB 6 (Hastings et al.1975: Figs.9,10 A-Q), Site BB 22 (ibid.:Fig.12 A,B). Cleuziou (1984: 388) would like to add Site BB 21, reported by Hastings (et al. 1975: Fig.7), through architectural comparisons with Hili-8, Period IIIa,b (i.e.the former Phase H) to this list as no pottery was found in BB 21. The remains of Hili-8 Period III seemed to be most significant, but unfortunately they were badly eroded. Cleuziou (1978-9:35) remarked that "the remains are very poorly preserved, but they are the only settlement known for that period." Anyhow, in the first comprehensive article on the early 2nd millennium B.C. he described the Wadi Suq Phase as "the last known sedentary culture before the transition of Eastern Arabia to full time nomadism" thus surmising the existence of other settlements (1981:279). This, and the later statement that "not only the pottery but the graves and the settlement types are different" (1981:291. I.e.in the Umm an-Nar and Wadi Suq Period - U.F.-V.) were then quite hypothetical. Nevertheless, the modell of desintegrating "urban Umm an-Nar life" and the transition to camel-nomadism during this period was developed (ibid.). It is indeed significant that some of the settlements dated to the earlier Umm an-Nar Period, i.e. Hili-8, poss. Hili-3 and 4 (Cleuziou 1978-9:39), Hili-1 (Frifelt 1975:368, Fig.3), Baat (Frifelt 1976:Fig.3), Amlah 3a (de Cardi et al.1976:101), and BB 21 (Hastings et al. 1975:9ss) e.g. consist of round towers, some provided with wells and remains of rectangular mudbrick buildings in between. Contemporary to the above sites is an

¹The reason why the settlements escape the eye may be due to the means of construction - barastis neither create tells nor do they leave other suspicious remains - as well as to an increasing speed of destruction (cf. e.g. de Cardi 1976:216ss, 1985:164ss, above II.2). The absence of tells in these areas has already been regretted (de Cardi 1978:4) and to our knowledge the mound in al-Khatt is the only one.

²The duration of the Umm an-Nar Period and the need of a regional differentiation between inland and coastal Umm an-Nar sites is under discussion (Cleuziou 1984:382, Vogt 1985a:180,218).

other type of habitation site with rectangular dwellings as for instance at Maysar-1, Umm an-Nar, Tawi Sa'id¹. Other sites might be considered as possibly seasonal and/or industrial on the basis of the structural remains (e.g. Ghanadha 1,3).

We may summarize that settlements dated to the Wadi Suq Period consist of the disturbed upper layers of Hili-8, Period IIIa-b (Cleuziou 1978-9, 1981:280), to Hili 3 (Saeed ar-Rahman 1975:42-45, al Noeimi n.d.3), to the trenches at Tawi Sa'id (de Cardi et al. 1979:84ss), and the promising site of Ras al-Junayz where excavations have also started in 1985 (East & West 1981:196ss, Cleuziou et al. 1986). With our knowledge about the early 2nd millennium B.C. cultural horizon - both from settlements and graveyards - increasing a reconsideration of the dating of some sites will be necessary. It seems possible that some settlements dated to the Umm an-Nar Period, as e.g. Ghanadha 1 and 3 (al-Tikriti 1985:9ss), and Amlah 3, may "shift" to a transitional phase yet to be defined or to the Wadi Suq horizon itself. But on the other hand, the duration of this period and the beginning of the subsequent Omani Iron Age is also pending and has to be defined.

At present the archaeological data of the early 2nd millennium B.C. seem to be too scanty to allow a definition of reliable differences in the archaeological assemblages of the Umm an-Nar vs. the Wadi Suq horizon. Further investigations will show if the above concept of explaining this "cultural vacuum" by a model of thoroughly changing subsistence patterns is feasible or if more "missing links" can be discovered.

The Site (Pls. 20-23, Fig. 37)

After the existence of a stressed-skin constructed wall connecting the two mountain-ridges was noted north of the cemetery in 1985, pottery was collected from the enclosure. While the bulk was uncommon some sherds were dated to the 1st and late 2nd millennium B.C. by comparison with artifacts mainly deriving from the shell-mounds (cf. II.2) which are dated to the Iron Age mostly (de Cardi 1976:216ss, 1985:175ss). Anyhow, for some sherds affinities with the Wadi Suq material were proposed².

As the occurrence of Wadi Suq pottery in a context definitely different from a cemetery and associated with a largely unknown ware is of great importance with regard to the present state of knowledge, it was decided

¹Unfortunately the trenches excavated in Tawi Sa'id did not provide any objects from the building itself, which therefore remained undated. The potsherds were collected from the outside (de Cardi et al. 1979:88).

²This is also proposed for Site 40c in an article just published by de Cardi (1985:177, 192s, 199s) "... while most of the sherds... can probably be ascribed to the 1st millennium B.C. several rims were of a type not previously encountered. (Figs. 11.93-94)... Their superficial resemblance in shape to some of the pottery from the Suq/Sunayz graves (Friefelt 1975, Figs. 22a, 27a and c) is mentioned because the proximity of a cemetery containing tombs of Site 1 type must indicate a settlement in the area."

to investigate this area more closely.

Extension of the Settlement

The settlement of Shimal Middle is situated on a gravel-fan extending along ledges of the mountain, which together with the opening of the deeply cut main wadi beds and their minor branches constitute the main topographic characteristic. Though the results of the geomorphological investigations scheduled for the coming season have to be awaited to be sure about the dating of the topographical and geophysical features the main lay-out seems to be of prehistoric date. This is indicated by the orientation of the walls, which making use of the limestone ridges-ence the space in between them in neat alignment with the present wadi beds.

Smaller north-south projections of the ridges extend down to the wadi-beds forming a natural shelter in between them. One of the most significant is the pyramidal, 71m high western mountain (Pl.20), around which the settlement area as far as defined at present clusters in a southern (SX,SY) and a northern part (SW.Fig.37)¹.

The surface of the site on the terraces along the slopes is characterized by rocks and concentrations of medium to fine gravel deposited on fine sedimentation of aeolian silt and disintegrated rocks and by gullies transporting the waters from the mountains to the wadis (Pls.21,23). Peculiar are dense clusters of different varieties of stone splinters occurring here and there and prevailing on the macro-surface in places distant from shell-middens.

Though fragmentary shell and snail remains are frequently distributed all over the surface they dominate and variate in composition close to the middens.

Potsherds from different periods with a slight predominance of medieval Julfar and later pottery as well as imported Chinese and SE-Asian porcelains against prehistoric sherds constitute the third main factor of the surface appearance. The recent habitation, and in part also the subsequent cultivation and herding as well as erosion in this area are the major reasons for the heavy destruction of the prehistoric structures and the archaeological surface. Therefore, the information about extension and nature of the site to be gained directly from the surface is scanty. This is also true for minor artifacts which, according to the condition and coarse texture of the surface, are not evident without a closer view.

Brief surface reconnaissance in Area SW and aerial photography resulted in the location of some stone walls enclosing an area of approx. 7200m²

¹The southern wadi has been surveyed this year, whereas the northern parts, which are still inhabited could be visited only briefly and will be investigated in 1987.

(Pl.20, Fig.37). Remains of a few rectangular stone structures indicate at least partial use for habitation purposes. The chronological correlation with the excavated southern settlement areas SX and SY is safely indicated by some surface finds as a soap-stone vessel (Fig.47a.1) and pottery. To all appearances this part of the Shimal settlement seems to be the most important one. Making use of the ridges and the wadi-bed as natural defences SW is at least four times larger than SX.

The area extending 60m x 30m south of the ridge (SX) is delimited by a terraced stone wall parts of which were excavated in 1986 (cf. II.5.2).

To the north (SW) and east (SY) of SX shallow mountain ridges form natural barriers between the settlement areas. Anyhow, access across the ridges is possible on small paths. The most significant one leads up to the pyramidal mountain, where it branches, with one way leading to SX, while the other enters a narrow tunnel widening to a cave before giving way to SY. Like other caves higher up the mountains pottery and remains of a narrow wall indicate human use. Further circular or semi-circular openings of canal-like appearance raise functional questions, as does a deep, rounded pit hewn into the stone above SX.

The easternmost settlement area SY is more difficult to define. Though the southern limitation is ascertained by the small wadi and scanty remains of a stone wall resembling the walls attested in SX, the enclosure of 3200m² does not provide evidence for extensive habitation use.

Anyhow, stepped walls encroaching the steeper northern slopes (Fig.37) and surface finds datable to the 3rd/2nd millennium B.C. (Pl.26, Fig.46.3) confirm the contemporaneity with the other areas.

On surface investigations of the area extending eastwards until the path ascends towards the deserted medieval village no further indications for pre-Islamic habitation were found in the re-entrants along the northern border of the wadi - an evidence which coincides well with the eastern limitations of the cemetery (Fig.4).

The Excavations

Two objectives were proposed to be pursued in a subsequent excavation:

- the definition of the chronological frame with special respect to the relation graveyard settlement
- the determination of the function and investigation of poss. functional variations between the different settlement areas

With regard to the points outlined above it was decided to lay out trial trenches in areas SX and SY to explore the condition of the structural remains, to check the nature of the cultural deposits and to approach a stratigraphy.

The trenches were laid out in the adjacent areas described above as SX and SY. Oriented northwards the former was designed to cover the space

between the mountain and the stone circle attached to the outer wall, while the second trench in SY was opened close to the wadi and the medieval hut in an area where the outer wall was supposed to run.

To be on safer grounds regarding the nature of structures the trenches were opened in 4m x 5m squares, which were labeled according to a provisional grid divided into 7 squares numbered with latin capitals along the x-and with numerals along the y-axis, counted separately for each area from west and north resp.. Since the nature, sequence and depth of the deposits were unknown, the methodological proceeding of excavation was rather slow. The entire dump was sifted with a sieve of 2mm mesh to be able to collect a maximum of artifacts as well as faunal and botanical remains.

The area designated "SX" is an almost rectangular enclosure of approx. 1800m² naturally limited by a slope of the pyramidal mountain at its northern and eastern side and by an artificial wall of ca. 1m thickness to the west and south (Pl.21, Fig.37). At the southern limits the wall extends along the gradient of the gravel terrace and the course of the adjacent wadi. Thus the site is enclosed from all sides, taking advantage of the natural shelter against the predominant northern winds and the seasonal waters carried down the wadi.

In the middle of the southern wall an entrance is indicated by flat-laid stones. Significantly, a semi-circular stone wall runs towards a huge rock situated opposite the entrance (Pl.23). Further east, close to the ridge, the wall branches into 5 terraced walls. Another entrance opens into the western section, where a huge upright slab is set vertically to the enclosure wall, which widens here. Possibly a threshold is laid here horizontally. The wall follows the slope to the northern mountain-ridge, where it passes through a gap and continues to SW.

To the west of the enclosure further walls are indicated, but they are in too bad a condition to provide any structural evidence. At the foot of the ridge a deep hole is cut into the rock and separated by a small N-S wall from the surrounding area. Another rectangular cutting is to be found 20m west of the trench, filled with earth and shells. The distribution of shells is dense, but clusters were noted in the northern parts along the ridge. The nature of shallow depressions occurring especially in the western half of the area is not identified yet. To the east the surface rises towards the mountain. Huge rocks and gravel are densely scattered on the surface and the erosion prevents the decision as to whether they indicate a buried structure or are just debris. The walls unearthed in the two upper squares (K 1,2) seem to continue eastwards towards an area which will be further investigated in 1987.

II.5.2.1. Trench K

Trench K extends from the northern ledge to the southern wall and was laid out to cover the semi-circle and the entrance area described above (Pl.22, Fig.37). The trench measured 35m x 5m; baulks of 1m width were kept to study the sections.

Though the depth of the accumulated deposits turned out to be fairly thin occupation levels or virgin soil were reached only in four of the seven squares (K 1,2,4 and in the sounding in K 6).

Before giving brief descriptions of the squares investigated we want to emphasize that for the time being we can neither establish a general plan of structures nor a comprehensive stratigraphic sequence. Mainly

because of the limited extensions of the trench the stone foundations uncovered cannot be definitely interrelated in the sense of functional units. Mindful of the above restrictions some stratigraphic observations could be deduced from certain findings in squares K 1, 2 and K 4.

Our excavations have basically confirmed the surface features noticed during the mapping of the area, but also added some further remains of walls in K 2 and K 4 (Fig.37).

At present it is evident that in the upper part of the trench the walls follow closely the contour-lines of the slope, as is even better demonstrated by several walls in the eastern part of SX.

We preliminarily suggest that those walls are meant to be some sort of terracing of the steeper areas. On the other hand, the two walls traced in K 4 show a different orientation from the other walls, i.e. more or less from N to S, which might be due to the more even surface appearance in the central and lower sections of SX.

Without intending to exercise our imagination too much it seems possible to conceive a general arrangement of structures very akin to the layout of those traditional settlements which have survived in the area till now (cf. Dostal 1985:Abb.2).

K 1 (Fig.38a)

This square is limited by the ridge to the north, which diminishes its extension. From this ridge on a small protrusion divides the square into two parts, where curved stone-settings are observed. Between these walls and the natural rock a high concentration of shells, charcoal, and bones mixed with ashy soil and coarse gravel was excavated as well as some pottery. The western row of massive, upright standing boulders rests on two more layers of a similar composition. Two shell samples from the latter layer were submitted for ¹⁴C-dating. Along the northern foot of the wall a narrow strip of medium to fine compact gravel was uncovered. Obviously this area was used as a dump - like the shell-middens around and later retained by a wall, probably using the rocks fallen down from the pyramidal mountain. The uppermost layer in the west might have been intended as foundation or leveling layer.

K 2 (Pl.24, Fig.40)

In the NW-corner of this square irregularly shaped stones were found, laid in a line and parallel to the stones in K 1 although on a deeper level. Both of them seem to continue into the unexcavated neighbouring squares. This applies also to another line of stones which runs immediately alongside the former one. The stones are of flat shape, roughly rectangular and in the middle of the square preserved a second course high. This row of stones is partly founded on a natural step of heavily

fissured bedrock covered with compact reddish soil. Embedded in this thin layer and overlain by the bottom of the wall two minor patches of combustion were noted, both of them containing a number of carbonized dates and datestones. It is to be hoped that these samples will provide us with an approximate terminus post quem for the construction of the lower alignment.

Covering the southern half and running against the northern wall a hard, light-red pisé floor was excavated, showing some circular holes filled with darker soil, ashy spots and the impression of what appears to be a camel's hoof. This floor was covered with ashy soil washed down from the upper parts and fine silts. On the floor layer lumps of mud and slightly burnt mud with reed-impressions were discovered (Pl.32), giving rise to the assumption that stone was used only for the foundations and lower parts of the buildings. These were separated from the rock by a thin, ashy layer nearly devoid of shell.

Upon this a coarse gravel layer (E 15) was found with a large amount of shells and in between a small soft-stone seal. From the silt upon the pisé floor (E 24) further carbonized dates were recovered.

Taking into account the structural evidence obtained from K 1, there are consequently three stepped parallel alignments of stones of which the lower two (in K 2) may represent the skins of a double-faced wall, which was possibly erected to retain the dump from K 1 and to form a terrace-like platform for the upper alignments in K 1.

K 3 (Figs. 39a, 40)

The uppermost layer consisted of the usual fine silt with many shells, bones, pottery and fragments of some soft-stone vessels (E 17). It was succeeded by a fine to medium gravel layer (E 28/29) with only a few objects. Close to the southern section a big rock is situated in the middle of the square, to the east of which stones could indicate a wall resting on fine silt mixed with compact gravel.

Another semi-circular stone-setting with a diameter of approx. 2m was found below E 28/29 at the northern section into which it disappears. To the NW brownish-yellow fine gravel substitutes the southern coarse gravel with ashy spots. This layer continues to K 4 (E 38). For further evidence the excavation has to be extended both in width and depth, as no virgin soil has been reached yet.

K 4 (Fig. 39b)

This square is the most interesting one excavated so far. Two walls are visible, the western one consisting of a single row of huge boulders, the eastern one of smaller, upright standing slabs in one and smaller stones neatly aligned parallel in another row at a distance of ca. 30cm

and preserved at least three courses high. Both walls are running in N-S direction, but at different angles. The eastern wall does not continue until the northern section, but disappears into the eastern section at its southern edge. The western wall turns eastwards providing us with a corner. This area is excavated down to an uneven pisé floor mixed with fine gravel and ashes in parts. It is cut by deep ash-pits measuring up to 1.50m in width and 1m in depth. The filling consisted of medium to coarse gravel mixed with ashes, many fish bones and shells, but only a few potsherds were found. Evidence is provided that the eastern wall is contemporary, while the western one is younger as it clearly rests above the floor. Between these walls, scattered on the floor, a deposit of 1800 sherds, stones, shells and ashes was excavated (E 48). The sherds belong for the larger part to storage jars of the medium fabric (Pl.29, Fig.42). There is no indication that the collapse of the wall could have caused the damage of the pots. Several sherds and also the eastern wall, against which they were piled, display traces of secondary burning which caused either to flake. On the other side of the western alignment of large boulders the evidence is quite different as there a large shallow ash-pit (E 40,37,55) appeared, which contained an unusual high amount of fine ware potsherds, shells and fish-bones. Beneath this smaller pits with more or less the same content were found surrounded by red-burnt clay.

K 5

This square is largely dominated by the huge rock opposite the entrance. Up to now only the upper gravel and fine soil layers have been removed, below which two deep pits filled with ashes, gravel, and shells were found close to the northern section.

K 6

After the removal of the upper layers consisting of fine silt between gravel layers, a test trench was opened along the eastern section in 1.5m width to investigate the depth of the cultural layers.

Under two layers of washed in debris a substantial cultural layer was exposed about 35 to 40cm below the surface. It contained a high percentage of medium ware pottery and shells, these surprisingly belonging predominantly to the oyster species. Further investigations here will demonstrate if a specific functional explanation in relation to the stone circle is possible.

K 7 (Pl.22:foreground, Fig.38b)

In this square a part of the outer wall extending westwards from the entrance, which is indicated by an upright standing slab, was excavated.

The wall is constructed of huge boulders along the inner and outer face, while the filling consists of smaller stones deposited on earth mixed with coarse gravel and a high amount of complete *Terebralia palustris* and oysters. The inner face is preserved only for a few stones, but the outer face along the wadi-bed is in a better condition. Here and further west a second row of stones is built in front of the main wall, both of them resting on compact gravel containing a lot of shells. As the wall could only here be cleared down to the lower edge further excavations have to be awaited to reveal the structural relation between these two settings and the inner face. The northern half of the square was disturbed by roots and covered with the debris of the wall above a compact silt-layer mixed with fine gravel.

II.5.2.2. The pottery

U.FRANKE-VOGT, C.VELDE

During the first season of excavation 8624 potsherds, exclusive Islamic potteries, of 1.5cm minimum size were recorded from 75 complexes in SX. As mentioned above, this is the largest amount of early 2nd millennium B.C. wares excavated so far. On account of the preliminary nature of this report no definite conclusions can be offered, but with regard to the importance of the material it seemed useful to publish a part of the collection despite its provisional character.

The following general remarks concern the material recovered from SX and SY where another 1640 sherds were recovered (cf.II.5.3.2). At the moment we cannot yet be sure if a differentiation in the consistency of the two collections can be defined when they are investigated more sophisticated but there is no doubt about a corresponding date. Comparisons with pottery collected from other sites are restricted not only by the limited number of sites but also by incongruent descriptions of the pottery felt especially when looking for comparable fabrics.

The shapes found in Shimal are mostly not very significant: many resemblances can be drawn to late 3rd/early 2nd millennium B.C. pottery published from the various explorations and excavations in Oman and the Emirates.

However, parallels can also be found at Rumailah I (Boucharlat/Lombard 1985:Pl.46:5,6.50), al-Qusais (Lombard 1979:Pl.XLII,140-142), and Lizq-1 (Kroll 1981:Abb.69,70) as far as shapes only are concerned.

The development of a comprehensive typology facilitating comparisons by a more standardized terminology is one of the major aims of our research during the next season.

An initial determination of fabrics can be presented, which in future will be refined by petrographical and mineralogical studies carried out by S.Méry, who reports on her studies below (cf.II.6). The provisional

classification comprises 13 fabrics, 9 are described in her paper¹ and need not to be repeated here, while fabrics 10 to 13 are briefly introduced below.

Fabric 10 is the fine grey ware. It is hard fired, temper is hardly visible and in one case traces of black paint remained (cf. Figs. 45.11-13).

Fabric 11 is a red to orange ware with a grey core and very small mineral inclusions (0.2mm). It is a fine, very well fired ware with a beige or red slip on the outside and a soapy touch. Though mica occurs the appearance is different from fabric 7 (the so-called Peninsular Harappan). The thickness of the sherds ranges between 0.6-7cm and 1cm. The ridged potsherds shown in Figs. 46.1-4 belong to this category.

Fabric 12 is a variety of 7 and 11. The few sherds recorded are coarser with less mica, but bear a dark slip on the red, hard fired ware.

The relation of fabrics 7, 11 and 12 has to be analysed.

Fabric 13 is light-buff to yellow, the frequent inclusions of about 1mm size are reddish, orange, and grey. Typical is the sandy texture. Only 5 sherds of this ware, which is referred to as "Coastal Umm an-Nar", from different vessels were found.

The coarse and medium wares: fabrics 1-3 (Pls. 28-30, Figs. 41-43)

The most common shapes are bowls, vases and jars, while beakers are rare compared with the tombs, instead the footed goblet is frequent.

The shapes are in general relatively simple with little variations.

Bowls (Figs. 41.1-11)

The large shallow bowls (Figs. 41.1-8) often have a straight or slightly incurved body with a flat, rounded or tapering rim.

Deep bowls are also frequent, but pointed or slightly outcurved rims prevail. They appear to be more frequently made of fabric 1 (Figs. 41.9-11) than the shallow type. Similar rims were found by B. de Cardi in Shimal Site 40c (1985: Figs. 11.103-104).

Vases and small jars (Figs. 41.12-22)

Very common are S-shaped short-necked vases measuring about 6-12cm in diameter. The everted rim is rounded or beaded; one exceptional piece is constricted (Fig. 41.19).

Comparable sherds are reported from the Wadi Suq/Sunaysl graves (Frifelt 1975: Figs. 22a, 27a), from Shimal Site 1 (Donaldson 1984: Figs. 10.66-67) and from Hili-8, Period III (Cleuziou (1978-9: Figs. 37, 4-5).

In tomb SH 103 two similar rims were found and the shapes of the minia-

¹In the final version of that paper S. Méry eliminated the fine ware fabric 6. As it reached us just before submitting the mss. to the printer the according references in the other articles on pottery could not be changed. Therefore, to avoid discrepancies we decided to leave no. 6 vacant, thus nos. 7 to 13 remain unchanged.

ture vases are reminiscent to them as well (cf. Figs. 23.3-4). The small jars are characterized by a short neck with a rounded rim (Fig. 41.22).

Large jars and storage vessels (Pl. 29, Figs. 41.23-24, 42)

Most of the storage jars were found in a dump layer in K 4 (E 48). Very frequent are short necks and everted, rounded rims. Some of the sherds bear string impressed decorations and scratchings on the shoulder. The jars are coiled. One of the big pots (Figs. 42.6, 10-14), which are also made of fabric 3, is of a peculiar shape (Fig. 42.10), but due to low firing very fragile.

Footed goblets and beakers (Figs. 43.1-10)

Beakers are rare and - in contrast to the cemetery - always plain. More common are the footed goblets, which were also found in the cemetery. Two different sizes are present, the smaller one seems to prevail only in the tombs. The vessels are constricted above the bases and either rounded or sharp edged and varying considerably in thickness. Up to now only the bases, which are often string-cut, were found, but one complete goblet from al-Qusais (unknown context, Lombard 1979: Pls. XLII, 140-142) is on display in the Dubai Museum. Further specimens are reported from Site 2 (Donaldson 1984: Fig. 22.131), Site 6 (de Cardi, in press, nos. 43-44) and from the settlement in Maysar-1 (Weisgerber 1981: Abb. 17.4). Further sherds were collected during surveys in the Wadi Far I (Hastings et al. 1975: Fig. 10 ss), the Wadi Andam (ibid.: Fig. 15 oo), Wadi Ithli 4 (ibid.: Fig. 20 cc) and again also from Shimal Site 40c (de Cardi 1985: 234, Fig. 11.101).

Various other bases are flat (Figs. 43.11-18), two are trimmed (Figs. 43.13, 17), others pedestalled (Figs. 43.19-22). Counterparts can be found at most sites cited above for the goblets but also at Ghanadha 1 (al-Tikriti 1985, Pl. 15J-K and 15D-H resp.).

Many sherds are perforated, some probably for reparation (Pl. 30), while others definitely demonstrate intended re-shaping into a rounded disc. In cases unfinished drillings could be noted.

Significant is the rare occurrence of spouted jars which are frequently attested in the graves (cf. II.3.3), while only eight fragments of spouts were found in the settlement (6 from SY, 2 from SX).

"Domestic" fine wares: fabrics 4-6 (Pl. 31, Fig. 44)

This ware is mainly represented by decorated bowls but a few specimens of other vessels are also present (Figs. 44.1-3, 15).

The decoration of the bowls consists almost exclusively of short, thick vertical lines painted along the outer rim in maroon or brown on a beige slip (Figs. 44.4-5, 7-11, 13-14). A slight variation is provided by two

sherds: one decorated with small loops (Fig.44.6) and the other with hatched loops (Fig.44.12).

The shapes of the decorated bowls are the same as those attested for the undecorated ones. Comparisons regarding the shapes can be drawn to some pieces from tomb SH 102, Hili-8 (Cleuziou 1981:Figs.4,6.5,8), and Wadi Suq (Frifelt 1975:Fig.22b) but those are decorated in a different style. This is also for pottery dated to the Lizq-Period (Maysar-36, Lizq-1, Kroll 1981:Abb.60.5-6,69). Our decorations, which of course are very simple, are only applied on the outer part. This kind is resembled on a sherd from Tawi Sa'id (de Cardi et al.1979:Fig.11,4).

Other fine wares: fabrics 7-13 (Fig.45)

The classification and determination of the various fine wares is far from complete at present. Though all in all some 175 sherds belonging to these fabrics were examined, the final classification is hampered by the small size of the sample belonging to each group as of the fragments as well.

Therefore we do not want yet to discuss in detail here the problematical question if indeed Harappan (fabric 7), Hili Domestic (fabric 8) or Umm an-Nar pottery (fabric 9,13) is present. It must suffice at the moment to state that these fabrics recall the relevant wares.

This is the more apt as the shapes of fabric 9 (Figs.45.1-10) are not very typical for the Umm an-Nar repertoire known so far, but again Ghanadha may be cited for parallels (al-Tikriti 1985:Pl.11, A-B).

Unfortunately diagnostic sherds with black decoration are very few, the most significant one (Fig.46.15) is illustrated here together with comparable sherds from Hili-8 (Fig.46.17) and Ghanadha 1 (Fig.46.16).

Nevertheless, these pieces are considered to be very important as they advocate quite an early date for the site.

The fine grey ware (fabric 10) is represented with 6 sherds (Figs.45.11-13) and as they strongly differ from the Iron Age grey ware they support an early date as do the applicated sherds of fabric 11 discussed below (II.5.3.2. Figs.46.1-4).

It has to be pointed out that up to now these fabrics, which were the typical funerary fine wares of the preceding Umm an-Nar Period, were not recovered from any tomb in Shimal.¹

¹The jar found in tomb Site 6 and compared to Harappan jars found at Lothal and Rangpur (de Cardi 1986a) is entirely different from our fabrics 7,11, or 12.

II.5.2.3. Small finds

U.FRANKE-VOGT

The quantity and variety of objects found beside potsherds is surprisingly small thus emphasizing the different nature of the findings from the settlement and the cemetery.

Resembling the evidence obtained in SY a disappointing small number of objects related to subsistence and production were found. In this respect, mention must be made again of the re-shaped potsherds, for which a use as net-sinkers or the like appears plausible. The ability of the early inhabitants of Shimal to exploit marine resources might be also demonstrated by a fragment of the clay model of a boat (not depicted) and the malaco-faunal remains.

A number of grinding stones was collected from the surface, indicating that grains were consumed beside shellfish, crabs, dates, and sheep and goat (see 5.4.2). Soil samples from pits and vessels will be submitted for analysis and provide information about the palaeo-flora.

Two copper/bronze pins and one rivet of very common shapes were found in K 3 (Figs.48.1-3) and are mentioned for the sake of completeness only.

Some soft-stone artifacts in small fragments were recovered from the SX-area. The knobbed rim sherd decorated with dot-in-double circles and hatched hourglasses found on the surface west of K 6 is without parallel so far (Fig.47a.5), whereas the bowl with the plain, flat base joined from 6 fragments found in K 3/E 27 (Fig.47a.6) is compared by J.Häser (cf.II.7.) with objects from Umm an-Nar grave 1059 at Hili and Sar al-Jisr (cf. Mughal 1983).

The scarcity of personal ornaments is remarkable: only three carnelian beads from different squares are recorded (Figs.48.12-14).

Shell artifacts consist mainly of pendants (Figs.48.6-11), manufactured by cutting and piercing the apex (Figs.48.7-9) or a valve. The shape is rounded, but neither piercing nor shaping are executed carefully. Dentalium (Fig.48.6) is simply cut to the appropriate length.

Rings (Figs.48.4-5) are thin - the diameter of the sections is approx. 3mm - and simple. Shaping and polishing is done with a minimum effort of labour.

The seal (Fig.48.15)

From SX-K 2 (E 15) one of the most interesting artifacts was recovered. It is made from light-green chlorite schist and covered at the back with a greenish-buff patina. The hardness of the material is about 2 on Moh's scale of hardness. Therefore intentional or unintentional exposure to a greater heat can be excluded as this would increase the hardness to a minimum of 4 on the scale by means of the extraction of water.

The bi-facial object is rounded with flat sides, measuring 15mm x 14mm x 2.5-3mm. It is drilled through its width. The holes and the perforation

appear to be quite regular. To the left the hole is enlarged in v-shape towards the centre on the reverse, and even more distinctly, on the obverse. To the right a similar but more pronounced enlargement can be observed on the obverse only. In combination with a shallow incision (width:1mm/ depth:max.0.5mm) along the height this indicates framing and wear.

Traces of wear can further be observed along the lower and left edges, which are rounded and worn down. Accordingly, here the decoration has suffered most. On the obverse it consists of four dot-in-circle motifs arranged symmetrically around the axis. The dots (depth:1.5mm) and the faint circles are neatly incised. The sections of the incisions are not pointed, but rectangular. At the reverse, which is less well preserved, the decoration is not very elaborate. Two pairs of shallow grooves are incised along an axis different from the perforation. One is only badly preserved, but the other shows at least 6 faint strokes on each opposite side. Length, depth and width are different. We can reconstruct that the cutter first incised the grooves and later the shallow strokes with a v-shaped chisel.

Due to the small size of the object its function remains questionable. Though it could have served a sealing purpose with a wire pulled through and a handle, it might also simply have served as a pendant or both purposes respectively. The decoration is not very distinctive, but this fact does not necessarily prevent a sealing purpose.

Anyhow, on these premises and with the precautions in mind we label the object described above as "seal".

Looking for comparable objects, several "pendants" made of buff steatite with dot-in-circle decoration found in the al-Qusais graves have to be mentioned (al-Athar 1975:23), but unfortunately no information about condition and context is available. Some of the bi-facial seals from Failaka resemble the one from Shimal in size, technique and dot-in-circle design (Kjaerum 1983:359,360. cf.here: Fig.48.16).¹

The seal is important for the dating of this complex as it was found in a context, though not on an occupation level. E 15 is the first sub-surface layer of brown to grey soil and coarse gravel deposited above the ashy silt E 16. It was associated with 300 potsherds and approx.46kg of shells, a finding typical for all the upper debris layers.

Among the potsherds a medieval, green-glazed cracelee sherd as well as seven sherds of fabric 5 and three of fabric 9 have to be mentioned, while the remaining bulk belongs to fabric 3.

¹All seals with a very simple decoration and low-standard execution belong to Kjaerum's Group II D, E and III (= others than Dilmun-type seals). Examples known from the Indus Civilization differ in shape (Mackay 1938: LXXXII, 703) and/or decoration (ibid.:Pls. LXXXVI, 156; XCIX, 649. Marshall 1931:Pl. CXIV, 518E; Vats1940:Pls. XCI, 257, 388, 401, 408, etc.).

Situated on the eastern site of the pyramidal mountain SY covers an area of approx. 2800m² limited along its southern edge by a minor wadi-branch, northwards by the mountain crest and at both the eastern and western edges by protruding mountain ledges. Close to the latter scanty remains of stressed skin constructed stone walls running eastwards are visible, while halfway in between remains of a deserted stone hut survived where the ancient wall is supposed to run and the trench was opened.

The surface is covered with clusters of coarse to fine gravel in a silt matrix, on which acacias are growing. It is littered with pottery of predominantly medieval date and shell fragments belonging mostly to the *Terebralia palustris*, Oyster and *Murex* species. Whereas the former is by far the most frequent, the others occur clustering in some delimited areas. Anyhow, the occurrence of shell-mounding within the settlement is up to now attested only at the eastern limits of SY and on the "island" isolated by the wadis a few metres further south. Anyhow, smaller concentrations of certain species can be observed on the surface in places and the occurrence of shell is very dense in general.

Some fragments of flint cores, wasters and bladelets are observed in a small space around two acacia trees north of the outer wall. Though only few and not very elaborate the occurrence is most remarkable as flint-artifacts are otherwise conspicuous by their absence.¹

After some 45m of flat ground the area ascends and the fine clayish silt is substituted by rocks a little further up. Here the area is divided by a protruding ridge into two pockets. The western one, from where ascent to the pyramidal mountain and SW is permitted, shows no change in its surface appearance, except a minor concentration of natural flint splinters, nodules of which occur incrustated in the limestone above.

The appearance of the eastern pocket differs in some aspects from what is observed elsewhere. Further upwards from the partition crystallized quartzites fallen from veins in the rock, where they occur in long, deep grooves, densely litter the surface. From this area, which is separated by a stone setting from the surroundings, 1 polished quartz pendant and one diagnostic potsherd with applicated decoration were recovered from the surface. Though surface finds diminish in general it has to be noted that Julfar pottery is no longer found at all.

Scanty remains of aligned stones might indicate terraced small-space-allotments. Because these are too small to provide sufficient space for

¹ In 1987 a macro-survey of SX is scheduled with the main direction to record tools and craft-indicators. B. de Cardi reported "the first stone tools to be found in the Emirate from Site 41d, situated in Wadi Haqil (1985:194, 205, Fig.16). In Sharjah our French colleagues recorded retouched and non-retouched flints - of mostly local origin - during a coastal and an inland survey (Boucharlat et al. 1986:21, 53ss).

buildings and the gradient otherwise is too steep to allow construction without sub-structures the evidence for proposing a habitation in this area is scanty. The general scarcity of artifacts to be found on the surface underlines this impression.

II.5.3.1. Trench K

The trench was laid out to cover the supposed lining of the outer wall visible to the west and leading eastwards along the wadi. The orientation was indicated by some huge rocks still in situ, while most of them probably were quarried for the construction of a near-by hut.

Two 4m x 5m squares were opened for investigation.

The southern one (K 19) was later extended down into the wadi bed to provide a sequence of deposits, while the northern part (K 18), which covered a depression, was supposed to clarify if structures align the inner face of the wall.

K 18 (Pl.25.Figs.49a,50b)

The up to 15cm thick sub-surface layer (F 2) consisted of loose, coarse gravel mixed with fragmentary plant remains and dark ashes in the north-western quarter of the square. When this was removed fine gravel with silt of hard consistency and whitish appearance was reached. This layer (F 3/4) continues to the northeastern quarter, where the percentage of gypsum particles was higher and thus the colour lighter. The sub-surface layer above has been very hard in this part (F 5).

After the clearing of find unit F 2 stone-settings became apparent which turned out to be part of an semi-oval wall situated just north of the depression (Pl.25, Fig.49a). Its lining coincided with a change in the surface texture from the northern fine, hard grits to a medium to coarse gravel mixed with fine brown soil and ashes and pebbles laid along the western side of the depression. This, on removal of the debris inside (F 17), turned out to be a pit (Pit 1 on Fig.49a) measuring 0.45cm in diameter and 0.87cm in depth, which cutted three earlier pits. Around its western edge medium sized gravel was laid regularly.

Below the above mentioned find unit F 2 dark circular ashy spots were cleaned, which turned out to be more pits and holes of different size and depth, but always with rounded contours and sharply delimited from the surrounding soil. Their filling consisted either of ashes with a percentage of pottery, bones, shells and fish remains higher than usual or of sterile fine hard gravel.

The semi-oval alignment mentioned above was founded on one larger ash-pit and surrounded by several smaller holes, which were already dug into the natural soil. A small stone circle above the pit could have been a fireplace.

The most remarkable pits beside no.1 were nos.4 (F 22,27), 6/8 (F 24-25/31) and 7 (F 28-29), containing pottery, a large amount of *Terebralia* and other shell species in different states of fragmentation as well as some complete specimens, fish vertebrae, crab claws, and some animal bones in a matrix of fine, very dark ashes.¹ Being oval to rounded, these pits were quite shallow with a depth of approx. 25-35cm (cf. Fig.49a). Bottom and sides were lined with small pebbles and larger stones until the beginning of the very hard natural soil which consists of fine to coarse gravel fused together by watering effects. The openings were also covered with stones and in one case (Pit 4) this upper layer is on one level with a pebble layer covering the ashes (F 18) of the adjacent area.

K 19 (Pls.26,27.Figs.49b,50a)

As in K 18 the surface (F 8) of this square consisted mainly of fine to medium gravel in the northern and clayish loose soil in the southern half, where roots of an acacia caused disturbances and the gradient towards the wadi is relatively steep. This change in the texture of the surface coincided more or less with the lining of the boulders supposed to be remains of the prehistoric wall.

The northern part was characterized by the thick find unit F 9 consisting of loose, ashy soil with medium gravel and thick bands of oyster valves and mother-of-pearl here and there (Fig.50, note arrow no.1).

As usually *Terebralia palustris* is the most frequent snail encountered in the settlement area this finding is significant. These layers occurred mainly between the wall and an ash-pit attached to the northern baulk and continued below the boulders and the stone packing of medium sized gravel (Pl.27) surrounding the pit mentioned above. The latter formed the continuation of Pit 4 in square K 18. Covered with 5 big stones on top it was filled with the usual remains and pebbles. Along the outer edge thick bands of ashes containing some fish vertebrae extended beneath the stone packing. After the gravel and soil of the eastern part of the square were cleaned off a yellowish hard and fine gravel floor turned up, into which the pit has been dug. On removal of this gravel layer (F 14) down to a reddish-brown soil (F 15) some further smaller ash-pits were cleared. Beneath F 15 the natural soil started.

Regarding the outer wall the only preserved remains are three aligned boulders, two large imprints in between and settings of smaller stones, which probably served fixing purposes. Significantly enough the findings on either side of the wall were different. Towards the wadi was apart

¹Both zoological and malacological remains are studied at present and the results have to be awaited. Anyhow, the scarcity of mammal remains in relation to shell and fish is significant.

from a recent plant-hole with ashes¹ - no finding except a crusty lining close to the wall, which could be interpreted as the border of a foundation ditch. When the surface below the find unit F 14 and above F 15 was cleaned remains of faint regular lines running parallel to the wall and some crossings were observed on top of the soil (Pl.26, Fig.49b). Unfortunately this finding was not preserved to any depth. Most cautiously an interpretation as remains of a mudbrick or pisé wall underlying and cut by the stone wall is proposed.

Test trench in K 19

As the depth of the cultural deposits on the gravel fan was surprisingly shallow a test trench was opened along the western section of K 19 from the northern baulk down to the wadi to test the evidence achieved in the northern half and to ensure that the depth reached there was not just a sterile inter-alluvial deposit succeeded by another cultural deposit but the virgin soil. It could be confirmed that the latter indeed begins approx. 40cm below surface and that the cultural layers (find units F 30,32) follow the terracing of the fan (Fig.50a).

II.5.3.2. The pottery

The 1640 potsherds recorded in SY correspond with the main bulk from SX. Though variation within the sample is small the occurrence of the main characteristics observed with the settlement pottery from Shimal SX (cf. II.5.2.2) can be noted. This goes for the wares as well as for shapes and technological attributes such as string-cut (Figs.43.1,4,5,8,11) and knife-marked bases (Figs.43.13,17).²

Predominating is the domestic medium ware, the mineral and vegetal tempered fabric 3, while the percentage of fine wares (fabrics 5-12) is 5.9% (97 sherds, cf. Table 1).

Variation of shapes within the coarse and medium fabrics is not very wide. The flat bases (Fig.43) are in some cases accentuated (Figs.43.19-22), trimmed or pedestalled and string-cut (footed goblets Figs.43.1-10). The rims of bowls, vases and jars are pointed or rounded (Fig.41). Prominent everted and beaded rims occur restricted to some vases, but are especially common with storage jars. Beakers and cups with straight or inverted shapes are rare, but the footed goblets are frequent (Figs.

¹The local families have preserved the habit of burning down the roots of sick or dead trees.

²One string-cut base and other shapes resembling those found by us are reported by B.de Cardi from Shimal Sites 40b and c (1985:Figs.10-11.93-104). Another string-cut base is reported by Donaldson (1985:131) from Site 1; Corroborated by Cleuziou Donaldson quoted (1985:95g) parallels to Wadi Suq pottery for some sherds from this tomb and Site 6, where the famous Indus weight and the so-called Harappan jar (de Cardi 1986a) were found.

43.1-10). Deep bowls with straight or slightly flaring walls (Fig.41. 9-11) are more frequent than wide, shallow bowls (Figs.41.1-8), and narrow mouthed vases (Figs.41.12-20).

Decoration was obviously not en vogue - a feature that can also be observed with the pottery from Site 2 (cf. Donaldson 1984:Figs.20,21).

The domestic household ware is string-impressed and/or scratched. Simple vertical lines and hatched or plain loops painted along the outer rim in maroon and brown on a beige slip occur on the typical open shapes of the "domestic fine ware" bowls (fabric 5. Figs.44.4-15).

Similar decorated sherds are published by B.de Cardi (1985:Fig.8) from Site 40b (shell-mound) and al-Khatt 16b (ibid.:Fig.12.128) and dated to the Iron Age. But a matching piece is also reported from a Higham-Grave on Bahrain (During-Caspers 1980:104,Figs.2c,5c) dated to the Isin-Larsa Period by K.Frifelt, who also relates a beaker found there to Wadi Suq beakers (Frifelt 1986:133).

Exceptional are some pieces assigned to the fine wares fabrics 6-13. Some good examples of black on red sherds were found in SX (E 55, Fig. 46.15). One sherd from SY (F 9. Fig.45.5) shows traces of a red band painted along the beaded rim on either side.

It has to be noted that the everted shapes with rounded, beaded or flat rims occurring with the fine red and the grey wares, of which also one piece was found in SY (F 2, Figs.45.11-12) are quite untypical compared with the common repertoire of Umm an-Nar pottery¹.

One diagnostic "wave-appliqued" sherd (SSY:1, Fig.46.3) collected from the surface in the northern areas of SY has to be mentioned. Three similar sherds were found in a context in SX (E 68,26,24.Figs.46,1,2,4). All pieces are made of fabric 11, which is a hard fired, fine quartz-tempered and in colour brick-red to beige ware with a light-red to buff slip. Close to the decoration, which only in one case (E 68) is a true application, faint grooves remain.

Parallels are reported from Baat (Frifelt 1976:66, Fig.7), Umm an-Nar (here Fig.46.5. Frifelt 1979a:Fig.11), Amlah 3b (de Cardi et al.1976:134, Fig.20.164), Wadi Samad 5 (Hastings et al.1975:Fig.13 Y), Site BB 6 (ibid.:Fig.10 G), Ghanadha 1 (here Figs.46.6-9.al-Tikriti 1985:Pl.11D-G) and Hili-8 (here Figs.46.10-14.Cleuziou 1978-9:Fig.23,2,5,6) all of them dated to the late Umm an-Nar Period at present. One sherd is reported by Donaldson (1985:Fig.22.121) from Site 2 who also refers to some of the above cited 3rd millennium B.C. parallels.

Another surface find (SSY:2) belongs to fabric 7, the so-called "Peninsular Harappan", which is characterized by a hard-fired reddish ware

¹This impression was confirmed by S. Cleuziou when he examined photos of the fine wares. On the other hand he noted close resemblances between the Shimal "domestic" wares and yet unpublished pottery from Hili-8, Period III.

with mica, a dark-red to purple ware with a dark slip on the inside and a red or black slip on the outside.

The classification as "Peninsular Harappan" is based on about 10 sherds of this ware found in Hili (Cleuziou 1984:390) which are "foreigners" on the peninsula. But, Cleuziou also mentions the occurrence of imitations (ibid.:390) made of local clay as S.Méry could prove and related wares were now found in Shimal SX and SY (59 potsherds of fabric 7,11&12). Id.1984:390 Fig.38.5=Phase III).¹ Similarly, from Maysar-1 string-decorated sherds, graffiti-marked rims and fingernail-impressed sherds are quoted as being produced locally, but with some relation to the Harappan civilization (Weisgerber 1981: 218, Fig.51-52; 1984:198s. Fig.24.3-5).

With the evidence obtained recently in Ras al-Junayz and by further analyses it might be easier now to define certain features and to reconsider this matter.

Explanation of Table 1:

The total (nos.) quoted is counted exclusive Islamic pottery, while the fine wares are included in that amount.

The numbers given for rims, bases, and bodies also include the fine wares but not the varia.

(FU = Find Unit)

¹E.g. fingernail-impressed sherds found at different levels in Hili-8 (Cleuziou 1978-9:Fig.23,1=Phase IIc, id.1984:390, Fig.38.5=Phase III). If the repeatedly quoted Harappan rim found at Hili-8, III (Cleuziou 1984:Fig.41.28) is compared with other rims from Ghanadha I (al-Tikriti 1985:Pl.13. B), Baat (Frifelt 1975:Fig.34f), BB 6 (Hastings et al.1975:Fig.9:A), and Batin I (ibid.:Fig.16:H), there is as much variation between each of the cited sherds as between the quoted parallels from Mohenjo Daro (Mackay 1939: Pl.LIX, B, C, D, Pl.LXII, 46, 47, 49). Therefore, the "notes of precaution" (Cleuziou 1984) appear indeed apt. Another potsherd of a different type for which resemblances to sherds from Balakot are quoted by Frifelt (1988:130, Fig.32) was found in the cemetery of 'Ali, Bahrain.

FU nos.	Pottery			+	varia	incl. Fine Wares				
	Rim	Body	Base			5	9	10	11	12
0	40	1	36	3		1	1			
1	93	6	80	6	1 spout(3)	2				
2	338	16	285	28	1 spout, 8 w.holes	25		1		1
3/4	173	14	146	9	1 spout					1
5	6		6							
6	109	8	93	7	1 w.holes	8				
7	43	4	31	7	1 lid	2				
8	33	5	28	-		3				
9	431	36	365	28		22	3		1	1
10	15	1	13	1		1				
11	11		11							
12	18	4	13	1		4			2	
13	14	1	13							
14	10		10							
15	5		5							
16	9		5	2	2 w.holes					
17	98	8	82	6	1 spout,1 w. hole,1 rounded	2				
18	-									
19	97	13	73	9	2 spouts,3 w. holes	1		1		
20	6		5	1						
21	31	7	22	3		7				
22	-									
23	-									
24	2		2							
25	2	1	1							
26	1		1							
27	2		2			1				
28	8	1	6	1						
29	2		2							
30	-									
31	-									
32	43	2	33	8			1			

	1640	128	1369	120	23	80	5	1	4	2

Table 1: Distribution of wares in SY

II.5.3.3. Small finds

Few objects were found during the excavation in SY aside from pottery. From the surface close to the quartz veins a pendant made from polished rock-crystal was recovered (Fig.47b.1), while one carnelian bead of the usual shape (Fig.47b.3) was found in Pit 8 (F 25). A small bronze tweezer (Fig.47b.2) was recovered from find unit F 3/4 as well as a green glass bead (Fig.47b.4) which probably dates to the Late Medieval Period. The soft-stone artifacts recorded from SY (Figs.47a.2-4) are all surface finds. The most remarkable is a body sherd (Fig.47a.4) with the dotted circle decoration and grooves below, which was found in the outer wall between the two outer stone linings close to the ledge between SY and SX. The other fragments were found after heavy rains close to the wadi deposited in between the gravel, except the undecorated base fragment depicted in Fig.47a.1, which was found in SW. The small lid (Fig.47a.3) was found south of the wadi.

Most surprising is indeed the absence of tools - except some grinding-stones and flakes scattered on the surface. This finding seems to be quite remarkable as it corresponds to the evidence obtained from other places in the Emirate (de Cardi 1985:194) - with the sole exception of al-Khatt, where beautiful, translucent flint flakes of various colours and some arrow-heads could be collected in an area adjacent to the large tomb beside the modern concrete buildings when we visited the place in 1986 (cf. de Cardi 1985:Site 45c,p.183). In shape and execution they resemble the Qatar D specimens, samples of which are also on display in the Al'Ain Museum.

As mentioned above some flint wasters and flakes were found on the surface of SY-West, but neither their state nor the quantity are sufficient for attesting a use as extensive as can be supposed for a site of this size. Even if we allow limestone flakes which are very often naturally shaped with sharp edges and in cases seem to be retouched as substitutes for flints they are not suitable for certain technologies and crafts. This could especially apply to the manufacture of the more elaborate shell artifacts. But yet we do not know if they were produced locally in the settlement of Shimal. It is hoped that the analysis of the malacofauna which is scheduled for the 1987 season will provide some evidence on this aspect.

II.5.4.1. Malaco-fauna

Mollusca

The excavations in Shimal SX and SY have brought to light approx. 1 ton of mollusc remains. Of this amount 50% were sorted and weighed non randomly, excluding the surface collections (E/F O) and very small units (less than 5gr). In SY the procedure was kept throughout, in SX we had to stop sorting with find unit E 27.

The species predominating in the settlement is *Terebralia palustris* L.¹ This is opposed to the findings in the cemetery and most shell-mounds where oysters are more frequent (cf. II.2, de Cardi 1985:23, cf. Smythe in Donaldson 1984,1985).

In contrast to the marine molluscs the *Terebralia* lives in a biotope of brackish swamp-waters and is closely associated with the mangrove tree. Until recent development eliminated both the mangrove and this snail species along the coastal stretch north of Ras al-Khaimah this species was found and exploited frequently in the lagoons along the Arabian Gulf coast (Biagi et al. 1984-5:47). Catchment is done with hands and reported to be easy and efficient within a short time.

Within the sample from Shimal it could be observed that three states of preservation are prevailing (excluding the crashed fragments and splinters found on the surface): 1. complete, 2. opened at the anterior, and 3. columella and apex preserved only.

The technique of opening half the diameter at the anterior recalls the recent practice, which is applied to allow easier removal of the shellfish. For the opening, which is always executed quite neat, and for the extraction of the columella tools are required as well as for the manufacture of shell artifacts.

Only a few simple ornaments were recovered from the settlement (Figs. 48.6-11), but more were found in the graveyard (Figs. 18.1-5).

Though most shell objects encountered are very simple products (cf. II.5.2.3) not requiring any skill or advanced technology, some are more elaborate, as e.g. the beautiful so-called "belt buckles" or "shell-seals" (Figs. 18.1-5), which are very common in the Greater Gulf Area², and another object of unknown function (a handle ? Fig. 18.5).

Some splinters bearing traces of sawing were found on the surface in SX.

¹ In SX of 927.290kg shells collected and 378.030kg sorted 346.245kg (91.6%) were *Terebralia*.
In SY of 136.553 kg collected (see Table 2) 87.13% of the amount counted per species (= 123.438kg) were *Terebralia*, while only 4.64% were oysters.

² They are reported from Rumeilah I and II (Boucharlat/Lombard 1985: Pl. 66, 1-4), Hafit graves (Cleuziou 1976-7:17, Pl. p. 28. Cleuziou discusses also the occurrences in Mesopotamia and Iran), and from various sites on Bahrain (Khalifa 1986:251ss). Further references are provided by Durante (1977:318ss). At present we cannot decide if the *Engina mendicaria* referred to by Cleuziou is present in Shimal, but Conidae are safe.

There is little doubt that snails formed a part of the daily diet of the inhabitants of Shimal¹ but yet we cannot estimate to which amount. Investigations of their nutritional value and other details could also be helpful to roughly estimate how fast the shell-mounds grow. Additional use of the shells can be made as fertilizer and temper for clay.

The occurrence of very young and complete specimens - this species can be up to approx. 12cm long probably indicates that exploitation of nearby resources took place without selection on the spot.

Evidence for nutritional exploitation of Terebralia is also reported by Dales (1982) from the Harappan levels at the coastal site of Balakot, Pakistan. Durante, who studied the malaco-fauna extensively, mentioned also Strombus as another species eaten, whereas most other species were manufactured (Durante 1979:Table 1).

Regarding other gastropods Muricidae, Conidae, Strombidae, and Cypraeidae are provisionally identified within our sample, for bi-valves mainly Ostreidae (Crassostrea angulata and possibly a few Pinctada R./Meleagrina La.) as well as some Cardidae and Veneridae. Some specimens of Dentalium are also present. Neither pearl-fishing nor purple production from murex is directly manifest, but should not be excluded.²

Turbinella pyrum L. (Xancus, Shank) is attested in Shimal only by one complete specimen of uncertain date found on the surface in SX.

A number of crab-claws was found clustering in Pit 1 in SY and in the pit-area in SX-K 4 west, but parts of the armour were not encountered.

Explanation of Table 2:

sort	Familia	Genus	species
1	Potamididae	Terebralia	Palustris L.
2	Ostreidae	Crassostrea	angulata Lamarck
	Pteriidae	Pinctada	(= Meleagrina La.)
3	Muricidae-Thaididae		not ident.
4	Strombidae	Strombus	decorus persicus Swainson
5	Cypraeidae		not ident.
	Olividae	Oliva	
	Conidae	Conus	
6	Cardiidae		not ident.
	Pectinidae	Chlamys	
7	Lucinidae	Codakia	
	Veneridae		not ident.
8 Misc.	Turritellidae	Turritella	
		Vermicularia	spirata Philippi
	Vermetidae	Bivonia	triquetra Bivona
	Dentaliidae	Dentalium	

¹This matches the anthropological result of teeth-wear analysis and the rare contribution of mammals to the nutrition as far as we can say at present.

²Two deep-water pearls were found in Tombs 102 and 103. The murex is opened in a characteristic way for extraction below the spires (cf. Pfeiffer 1914:Abb.57).

FU	gr	sort 1	2	3	4	5	6	7	8
0	9500	sort 1-8							
1									
2	27467	24500	1325	632	55	40	685	25	205
3	6260	5200	400	350	10	10	200	50	40
4	3863	3400	100	200	-		150	3	10
5	805	500	5		300				
6	2735	2250	200	150	-	-	110		25
7	2175	2000	50	100			25		
8	4500	sort 1-8							
9	61813	54550	2000	750	10	60	850	25	5
			incl.1500 mother-of-pearl (= 2.4%)						
10	-								
11	600	sort 1-8							
12	675	sort 1-8							
13									
14	2425	sort 1-8							
15	260	sort 1-8							
16	675	sort 1-8							
17	9185	7500	1050	375	5	5	175	50	25
18									
19	6615	5500	270	125	15	5	150	10	40
20	775	sort 1-8							
21	750	sort 1-8							
22									
23	-								
24	125	sort 1-8							
25	125	sort 1-8							
26	500	sort 1-8							
27	55	sort 1-8							
28	1100	sort 1-8							
29	525	sort 1-8							
30	-								
31	25	sort 1-8							
32	2520	2150	325	-	5	-	30	-	10
<hr/>									
	136553								
	123438	107550	5725	2682	100	120	2265	223	360
%	100	87.13	4.65	2.17	0.08	0.10	1.83	0.18	0.29
+		0.012 mother-of-pearl, 0.03 miscell.							

Table 2: Distribution of shells (SY)

5.4.2. Animal Bones¹

The condition of the bones ranges from good to very fragile. Mammal and bird remains are of hard consistency, while the fishbones due to their softer consistency tend to flake and break. This is especially true for elements of the skull and gill-apparatus, but less so for vertebrae.

Fish

According to Dr.C.Becker (pers.comm.)fishbones represent 80 90% of the overall bone sample². As no reference collection is at hand a detailed taxonomical determination is not possible yet, but remains of coral-fish are recognized and some general remarks can be provided.

The percentage distribution of remains seen in relation to body elements demonstrates that parts of the skull, fin and gill are less frequent compared with the expected standard distribution, while vertebrae are more than proportionally frequent. In some findings of the cemetery complete spines of one or more specimens are preserved, and it could be possible that filleted or otherwise disarticulated or complete fishes were added to the burials. In size the samples range between some centimeters and 50cm in length.

Mammals

Per find unit 10-20% mammal bones are observed. Very frequently attested are sheep, cattle and goat, but also pig and dog, all domesticated, and gazelle were identified. Bones of one carnivor and lagomorph each could also be determined. The state of fragmentation is typical for slaughter and food remains. No special part of the body is over-represented. Most interesting is the presence of both a camel and an equid (letter J.Boessneck dated 20.10.86) and we want to recall the possible impression of a camel's hoof in SX.

Others

Beside some bones of birds several fragments of ostrich shell and big crabs are present.

¹The following remarks are based on a very brief inspection of the material by Dr.C.Becker, to whom we are very grateful for her comments, and on first remarks on the material by Prof.J.Boessneck (letter dated 20.10.86) who kindly will advance the detailed investigations together with Prof.A.von den Driesch.

²Sampling was done complex-wise and through sieving bone fragments measuring >1mm could be collected.

The cultural deposits in SX and SY consist of layers yielding medieval to recent local and imported pottery on the surface and to a smaller amount from the sub-surface layer and pottery dated to the very beginning of the 2nd millennium B.C.. The latter is also scattered on the surface, but its frequencies increases with depth. The findings indicate only two major periods of occupation, namely the prehistoric and the Islamic one.

The excavation of the trial trenches in SY did not yet provide evidence for a permanent habitation, which more easily may be assumed for SX. Calling in mind the fragile dry masonry used for the now deserted houses up the mountains and the ones still inhabited in Area SW the prehistoric dwellings might have been of a similar appearance.

In SY no comparable structures could yet be encountered and a different functional use of that particular area seems evident: the lined fireplaces and pits and the amount of organic remains of mammals, shells and fish associated with them point to activities serving either actual or storing food preparation or some other purpose not yet identified. We cannot exclude the presence of houses somewhere else in SY, but as their existence is not indicated on the surface positive proof can be obtained only through further excavation in other parts.

Structurally comparable findings, however, may be cited from Ghanadah, Hili-2, and sites dating earlier in Oman (RH 5, Biagi et al.1984-5) and probably contemporary ones in Qatar (Tixier 1986:77, de Cardi 1986b:91)¹.

Altogether the picture of a small coastal site emerges the inhabitants of which exploited the natural marine resources in form of snails and fish, kept sheep, goats, pigs, and dogs, and hunted also. Evidence for agriculture is very scanty though grinding stones indicate the use of cereals. That grains were not the prevailing diet is substituted by a slight to moderate tooth wear encountered with the skeletal material in Shimal Middle and other cemeteries also (cf.II.4). The deduction of ante mortem tooth loss to the consumption of dates (ibid.) on the other hand could be substituted by corresponding finds in SX.

The problems regarding a comparative dating were mentioned above, but nevertheless we feel that a dating of the prehistoric finds into the early 2nd millennium B.C. can be proposed by reason of objects like the soft-stone vessel (Fig.47a.6), and especially the fine ware potsherds (Figs.45,46.1-4.15), while the seal (Fig.48.15) is not a safe chronological marker.

There is no indication available at present to separate the findings

¹Tixier reported a purple factory on an island near Khor (1986:78).

into an earlier and later (i.e. 3rd vs. 2nd millennium B.C.) phase of occupation.

This early date for the settlement makes the correlation with the cemetery difficult (cf. III), and it is important to stress that no sherd of the typical funerary Umm an-Nar fine wares (fabric 9) has been found in the graveyard up to now.

On the other hand, we are not yet sure how far the habitation extended into the 2nd millennium due to the up to now "missing link" between the Wadi Suq Period and the Iron Age. Objects usually dated to the latter are more or less absent from the settlement. Therefore, the duration of the Wadi Suq horizon and the beginning of the Omani Iron Age is a problem mainly concerned with the cemetery and only via its relation to the settlement of relevance for the latter. But likewise this problem is faced when we try to relocate the isolated settlement of Shimal into its prehistoric environment.

Naturally, after just one season of excavation our knowledge is very limited and most questions concerning the various aspects of prehistoric life cannot yet be answered. Anyhow, further investigations directed to provide the necessary corpus of data by a multi-disciplinary approach are hoped to shed some more light on the "dark age" of this part of the Arabian Peninsula.

Since the survey of B.de Cardi and B.Doe in 1971 the Shimal area has been discovered to be a major zone of human implantation from the beginning of the 2nd millennium B.C. in the Oman Peninsula. The recent discovery of a settlement with the Wadi Suq cemetery at Shimal should help to understand the time-span covered by this period which up to now has not yielded a stratigraphy. In certain aspects the pottery assemblage of the Shimal settlement is quite different from that of Period III at Hili-8, the only other Wadi Suq settlement known in the region.

II.6.1. The pottery of Shimal

The present study is the initial stage of a laboratory analysis program which includes the pottery from the main Wadi Suq sites on the Oman Peninsula, i.e. Hili-8, Period III, Wadi Suq, Wadi Sunaysl, and Shimal.

During a stay at Ras al-Khaimah in February March 1986 we had the opportunity to examine the material from the Shimal collective tombs SH 102 and SH 103, and the SX settlement excavated by the German Mission. The pottery from tomb Site 1 has been the subject of a technical and typological study by the excavator P.Donaldson (1984, 1985), while the material from Site 6 is under publication (de Cardi, in press).

The following were our aims during the preliminary phase of the project:

- description of paste fabrics and systematic classification of the material. This study relates to the classical typological study data (shape and decoration) and the examination of forming marks (rough shape and finishing).

selection of representative samples for laboratory analysis.

We were able to distinguish 9 different fabrics¹ and 7 wares². Three of these wares that we called coarse, medium, and fine, are actually Wadi Suq (cf. Table 1). We noticed that whatever the fabric, the relative amount of mineral and vegetal temper varies from one sherd to another (this is what probably led P.Donaldson to differentiate 20 fabrics when he studied the Site 1 inventory). Thus, it seems that the Wadi Suq potters did not search to duplicate a particular type of paste as systematically as their predecessors did during the second part of the 3rd mil-

¹The fabric is defined by the colour of the paste, the dimensions, shape, colour, and frequency of the mineral inclusions, and the dimensions, shape, and frequency of the vacuoles.

²The ware is defined by a particular fabric, a characteristic shape and finishing, and a limited corpus of shapes and decorations.

lennium B.C. None of the Wadi Suq fabrics at Shimal forms a very tidy group such as the ones noticed during Period IIc2-g at Hili-8 (Blackman et al. n.d., Méry n.d.).

On the other hand, the forming, shaping, and finishing are quite standardized, at least for the fine pottery. Also, if the Wadi Suq funerary pottery does not vary typologically from one area to the other, it is surprising to realise how much the Shimal settlement pottery differs from that of Period III at Hili-8, especially for fabrics and sizes of vessels.

II.6.1.1. The settlement pottery

500 potsherds were examined from the SX-Area (mostly E 19, all sherds are collected during the excavation). Although the levels were close to the actual surface the material was scarcely mixed: less than a dozen Iron Age and Islamic sherds were isolated.

The plain coarse ware represents less than 5% of the sample. With the exception of some flat handmade bases with a diameter of 6cm, only wall-sherds less than 1cm thick were found. As a matter of fact, considering the high amount and thickness of the mineral inclusions, it would have been impossible to throw such a ware. No decoration was noticed.

We can distinguish two kinds of paste:

fabric 1: orange, beige, red to brown colour. Many sherds have a reducing core. Numerous micro-pores, very numerous, elongated mineral inclusions, dark grey or black with metallic glitter, sub-rounded, and measuring 1 to 3mm. Scarce white and brown-red opaque inclusions.

fabric 2: similar to fabric 1, except the very numerous light-grey and white mineral inclusions, subangular to angular measuring 1 to 3mm.

At Hili-8 a coarse ware was also found in Period III levels (nos. 396, 397, 700 UF 62, 792 UF 66, 1295 UF 202, 2489 UF 754) which represent 10% of the assemblage. However, the materials from Shimal SX and Hili-8 cannot be compared in terms of percentage as in Hili only diagnostic sherds were saved, i.e. "every rim- or bodysherd representing an individual pot among the material issued from an excavation unit." (Cleuziou n.d.:1).

Pottery from the settlement SX is mainly associated with the plain medium ware, fabric 3 (Pl.29), thus re-grouping 89% of the SX-E 19 collection. The sherds are orange, beige, buff to brown. Many sherds have a reducing core. There are numerous micro-pores, vegetals and seed impressions. Considering their abundance and the fact that they were previously carefully chopped, we can surmise that the potter intentionally added them. Such temper tends to reduce the shrinkage ability and serves as internal combustible.

Most of the sherds belong to a large sized material: we counted more than 350 wallsherds from 1.5 to 2cm thick, with a diameter reaching up to 40cm, and 35 flat bases with a maximum 20cm diameter (Fig.51.2). Some vessels were thrown after they were coiled: the internal and external walls were carefully smoothed or there are fine horizontal, rhythmic grooves and the thickness of the walls is regular. Finally some bases were cut from the rotating wheel with a string (typical "shell pattern" considered by archaeologists to be a distinctive Wadi Suq feature). With the exception of few large rolled rims with a maximum diameter of 30cm (nos.65,1973 UF 501), there is no exact equivalent to such a large sized ware at Hili-8, Period III. There were also a few pieces from a smaller material associated with fabric 3: 6 rolled rims (a shape also known at Hili-8), 2 fragments of spouts and the bases of 3 footed goblets (Figs. 51.3-4). Two of them were string-cut. We shall see that spouted jars are typical for the fine funerary pottery.

Fine ware, fabric 5, is characteristic of the tombs and represents less than 5% of the material. We found fragments of beakers, some of them decorated with simple geometrical patterns painted in black or red. Its fabric will be described in the next chapter, together with parallels from Period III at Hili-8.

II.6.1.2. The funerary pottery

We examined the material of 4 collective burials: 67 vessels from Site 1, 70 from Site 6, about 50 from SH 102 and the pottery from SH 103.

Coarse ware is almost absent from the funerary context since we found only 2 big bowls (associated with fabric 2) inside tomb SH 103 (Fig.51.1).

Medium ware, fabric 3, is better represented. 3 flat bases and some large bodysherds from tomb SH 102 are identical to those from the settlement. Some thrown flasks were found in Site 6 (de Cardi, in press, nos. 45,47,48), footed goblets in SH 102 (3 pieces) and Site 6 (id.,nos.43, 44), a large footed base in Site 6 (id.,no.46) and some beakers with a small foot (beakers shape b) in SH 102 (1 piece), from Site 1 (Donaldson 1984:Fig.10a.37), and SH 103 (nos.44.18,44.19, museum registration.Fig. 51.5).

Fine ware is characteristic of the funerary context since it represents more than 90% of the assemblage. The material is very homogeneous in forming, shapes, and decoration. Apart from few miniature pinched jars all the vessels are thrown.

The most frequent shapes are beakers and goblets. Considering the aspect of the base, there are two salient shapes (cf.Table 2):

- shape a (Figs.51.6-10): beakers with a flat or slightly convex bottom

under a very low carination. The vessels are removed from the wheel (sometimes from the rotating wheel) and dried to leather hard. Then, they were trimmed with a blade, leaving sharp-edged facets of unequal shape and size or long, flat sweeps sometimes with grit drag-marks. As to the string-cut, this forming technique is usually considered to be typically Wadi Suq.

- **shape b** (Figs.51.11-14): beakers with rounded base, short foot (not higher than 1cm) and flat bottom.

Beakers are the best represented shape in Hili-8, but lacking vessel bases we cannot make differences between shapes a and b. As at Shimal, those beakers are thin walled with chevrons or a series of undulating black lines (Figs.51.6-10. Cleuziou 1981:Figs.4,6), and sometimes a red external cover.

Footed goblets are represented in all tombs at Shimal. The foot is 2 to 3cm high. Some of the goblets are string-cut. Such goblets were never found at Hili-8, Period III.

Spouted jars (Figs.51.15-18) appear in each tomb. They are big globular, usually decorated jars with flat or slightly convex bottom. There are some with an open spout below the rim (type 1 of de Cardi, in press). Here Fig.51.17), others have a truncated spout on the shoulder (type 2, cf. Fig.51.18). Some of them are string-cut and trimmed. Fragments of spouted jars type 1 (nos.458 UF 59, 829 UF 60, 1141 UF 93, 1296 UF 202, 2060 UF 603, cf.Cleuziou1981:Fig.3) were also found at Hili-8.

At Hili-8, Period III, one fabric only is associated with the fine Wadi Suq ware. Actually, this group is not really tight, but considering the smallness of the inclusions, the small differences detected between the sherds were impossible to quantify or even to qualify. We had exactly the same problem at Shimal and were able to distinguish only two fabrics of fine ware:

- **fabric 4** (Fig.51.18): bright red to brown paste, with numerous micro-pores and few vegetal impressions. Very numerous white opaque inclusions, 1mm or less. This fabric is not abundant, but appears in all Shimal tombs: most of the pieces are beakers shape a (6 pieces in tombs Site 6, 8 in Site 1, also present in SH 102 and SH 103), a few beakers shape b (3 pieces in tombs Site 6, present in SH 102 and SH 103), and only 1 footed goblet in SH 102.

fabric 5 (Fig.51.6): orange, red, beige, brown paste. Some sherds have a reducing core. Numerous micro-pores, chopped vegetal temper, more or less abundant. Very numerous light-grey and white opaque inclusions, 1mm or less.

The great majority are beakers shape a (37 pieces in tombs Site 1, 27 in

Site 6, present in SH 102 and SH 103), some beakers shape b (4 in tombs Site 1, 2 in Site 6, present in SH 102 and SH 103), and only one footed goblet in Site 6. Most of the spouted jars are associated with this fabric.

75 samples (representative sherds and sedimentological samples) were selected for the petrographic thin-section analysis.

We intend to privilege two topics of research:

- pottery technology reconstruction through the study of materials chosen by the potters, their forming and firing techniques.
- petrographic origin of the raw materials through the study of geological maps, earth, sand, soil, and rock samples we shall attempt to determine probable provenience areas for each recognized pottery fabric.

Table 1: fabrics and wares from Shimal

<u>fabric</u>	<u>description</u>	<u>main occurrence</u>
1	coarse ware	SX Wadi Suq settlement
2	-do-	-do-
3	medium ware	-do-
4	fine ware	Wadi Suq tombs
5	-do-	-do-
6 ¹	Harappan ware	late 3rd/early 2nd mill.BC
7	Hili domestic ware	3rd mill.BC Hili settlement
8	fine red ware	3rd mill.BC Oman Pen. tombs

Table 2: occurrence of beakers and goblets related to fabrics

<u>ware</u>	<u>beaker shape a</u>	<u>beaker shape b</u>	<u>goblet</u>
medium(3)	Site 1	SH 102, SH 103	Site 1, SH 102
fine (4)	Sites 1,6; SH 102	Sites 1,6, SH 102 SH 103	SH 102
fine (5)	Sites 1,6; SH 102 SH 103	Sites 1,6, SH 102 SH 103	

¹see note 1 p.78

The actual corpus of soft-stone artifacts which has been found during the two campaigns at Shimal consists of 208 pieces which belong to about 100 vessels and 41 lids. Most of them come from the different excavation areas - especially from the tombs so that they can be related to a clear context. The others are surface finds.

Their colour varies between grey, green, blue and brown and except very few pieces all of them are decorated with geometrical incisions. They are manufactured of a material which is generally called soft-stone. In order to identify the mineral type proper 95 samples have been taken for neutron activation analysis during the last campaign. A selection will be investigated by Miss H el ene David in Paris who is analysing a large series of 3rd and 2nd millennium B.C. soft-stone artifacts from the Gulf region. It will be interesting to compare the results with the data of J.M. Becker (in Donaldson 1985:102-121) who has recently analysed some examples of the material from Sites 1 and 4 at Shimal and Site 2 at Ghalilah.

Though the analyses will show to what extent the samples are similar in their mineralogical composition, they will not state anything about the exact origin of the raw material, first of all because the composition of the rocks varies too much within a single source and secondly, because we do not possess any dates about these.

It is commonly known that soft-stone occurrences exist on the Oman Peninsula, and I agree with J.M. Becker (*ibid.*:102) that we first ought to look for them here than in more distant regions such as Saudi Arabia or Yemen.

The soft-stone corpus of the Ghalilah tomb SH 103 consists of 18 complete or fragmented vessels and 20 lids (Figs.25-28a).

The main type of the vessels is conical in shape with the widest circuit in the lower third where generally four - in one case three knobs are placed (Figs.25.5-10). They are decorated with dotted circles or dotted double circles between horizontal lines in the upper part and with composed zig-zag-lines or "tree"-like patterns between the knobs. With respect to the shape parallels can be found in SH 102 (Figs.15.3-5), SH 99 (Figs.33.4-8), in the settlement area SX (Fig.47.5), Site 1 (Donaldson 1984:Fig.11.4), Qattarah (Cleuziou 1978-79:44) and Wadi Suq (Frifelt 1975:Fig.24c). It is striking that in this corpus no example exists with pierced lugs which is also a common type of these vessels. It appears possible that hereby we are dealing with a local variant that does not exclude the use of vessels with pierced lugs, as we know from the finds of tomb SH 102 (Figs.15.6-7), SH 99 (not depicted) and those at Shimal Site 1 (Donaldson 1984:Fig.11.5), Shimal South (de Cardi and Doe 1971:

Fig.52) and Site 2 at Ghalilah (Donaldson 1984:Figs.24.9-10). Regarding the decoration they show very usual patterns: dotted circles or dotted double circles between horizontal lines in the upper part and composed zig-zag-lines between the knobs in the lower part. We know this combination of patterns with some variants from SH 102 (Figs.15.3-7), SH 99 (Figs.33.4-6,8), Shimal Site 1 (Donaldson 1985:Fig.11.5), Ghalilah (ibid.:24.5,9-10), al-Qusais (Vogt 1985a:Fig.117.3), Qattarah (Cleuziou 1981:Fig.10.4) Khudra (pers.comm.B.Vogt), Wadi Sunaysl (Frifelt 1975: Fig.25b), Wadi Suq (ibid.:Fig.24b) and from such distant sites like al-Rufayah on the island of Tarut (Zarins 1978:Fig.71.136) and Bandar Bushir in Iran (Pezard 1914:Fig.8.2). But two of these vessels are differently decorated: instead of the zig-zag-lines they show a "tree"-like pattern between the knobs (Figs.25.9-10). No parallels can be found for such a decoration combined with this kind of vessel.

The second group of vessels consists of four bowls with slightly rounded bottoms, of which two are spouted (Figs.25.1-4). The unspouted ones are provided with almost the same decoration as the conical vessels: in the upper part we see one row of dotted circles between horizontal lines and in the lower part composed zig-zag-lines. This type is widely distributed on the Oman Peninsula, for example at Shimal SH 102 (Fig.15.2), SH 99 (Figs.33.1-2), at Hafit (Frifelt 1970:Fig.14), Hili-8 phase H (Cleuziou 1978-79:Figs.41.5-6), Wadi Suq (Frifelt 1975:Fig.24a) and Khudra (Vogt 1985a:249). One of the spouted bowls shows a similar decoration as described above. The difference lies only in the replacing of the dotted circles by dotted double circles. The second bowl shows a herring-bone pattern just below the rim, followed by one row of dotted double circles and two horizontal lines. The rim of both vessels is decorated by slashing. Examples of spouted bowls which can be very different in shape are known from SH 99 (Fig.33.3), SH 102 (Figs.14.1-2), Shimal Site 1 (Donaldson 1984:Fig.11.2), Wadi Suq (Frifelt 1975:Fig.24d), Khudra (Vogt 1985a:249) and from the settlement Hili-8 (Cleuziou 1984:Fig.41.26). Also at sites which do not belong to the Oman Peninsula such bowls have been discovered, at Rufayah on Tarut (Zarins 1978:Figs.71.246,75b.550), at al-Hajjar on Bahrain (Mughal 1983:Fig.44.3), at al-Ubaid (Hall et al. 1927:Fig.62.35) and at Ur (Woolley et al.1976:Fig.100.6). But in no case there can be found a close parallel in respect to the decoration of the second bowl. Although we can point to a lot of parallels to the vessels of tomb SH 103 as mentioned above, it becomes difficult to give an exact dating for them. Many of the examples have been found in unclear context, the others like Hili-8 phase H, Wadi Suq or Ur suggest a date in the beginning of the 2nd millennium B.C. On top of that, it also became clear that differences exist to the material known to us until now. The cause of these dissimilarities can not yet be given.

The finds from the tomb SH 99 stand very close to the corpus described above. To date, we have 17 more or less complete vessels and 11 lids. Remarkable is again the prevalence of the type of the conical vessel with knobs, totalling 9 in number (cf. Figs. 33.4-8). Only one fragment shows a pierced lug. Once more, we find well known decorative elements with only slightly differences. But one completely preserved vessel is unique in this corpus (Fig. 33.7). It is not as strongly restricted and the knobs are only hinted at. Immediately below the rim four horizontal lines surround the vessel, followed by dotted double circles covering the rest of the vessel. On the bottom this area is bordered by two horizontal lines. In respect to decoration it resembles beakers from the settlement of Maysar-1 (Weisgerber 1981: Fig. 46.11) which is dated to the turning from the 3rd to the 2nd millennium B.C., as well as in Tomb A at Hili North (Vogt 1985b: 34). One better parallel can be found in Sar al-Jisr (Mughal 1983: Fig. 24.7). Here a dating to the early 2nd millennium B.C. is most probable. A decoration more typical for the Wadi Suq horizon show the two bowls from SH 99 (Figs. 33.1-2). One of these diverges from the rest of the presented bowls in respect to its shape: the walls are not as rounded and the bottom is flat (Fig. 33.2).

One undecorated bowl should be regarded as a special case (Fig. 35.4): its shape is completely irregular and the manufacturing very poor. It was probably shaped from the walls of another vessel.

Similar to the vessels from SH 103 is a spouted bowl with regard to the decoration (Fig. 33.3). Between two horizontal lines respectively two rows of dotted double circles fill the whole surface of the vessel. The rim and in this case for the first time the extension of the bottom are provided with slashes. Also regarding the shape we can notice some differences: the bowl is much deeper, the sides are not as rounded and the bottom is almost flat.

On the whole the soft-stone inventory from SH 99 is so similar to that of SH 103 that they may be regarded as contemporaneous, whereas some vessels from SH 99 may be dated - as suggested above - to a slightly earlier time.

From tomb SH 102 we possess four uncomplete lids and 36 fragmented vessels. Only one vessel is intact (Fig. 15.8). This is a conical beaker found in the bottom layer of the ditch underneath the tomb and can be paralleled to a vessel from al-Qusais (Vogt 1985a: Fig. 119.7). But this is of no help in respect to the dating, because the latter comes from an uncertain context. Another vessel shows almost the same decoration. However, this is incised in a biconical vessel from Rumeilah dated to the Iron Age.

Other types from tomb SH 102 are better known from 2nd millennium B.C. soft-stone assemblages, e.g. vessels with knobs or lugs (Figs. 15.1-3)

decorated with rows of dotted circles and horizontal lines in the upper part and composed zig-zag-lines in the lower part. A special case is one fragment where dotted circles are combined with dotted double circles (Fig.15.6). One parallel is the very unusual fragment from the settlement area at Shimal SX (Fig.47.5), a closer one is the half of a vessel from Ghalilah (Donaldson 1984:Fig.24.9). It is possible that we are dealing here with a regional phenomenon, but this statement must be taken very precautiously, because of the small base of material. It is striking that in this corpus three variants of this type of vessels exist. One vessel is globular shaped (Fig.15.1), another group of three vessels is more conical (Figs.15.3-4,6) and the last group with two examples is more barrel-shaped. For all these shapes we can find parallels, but yet it is not possible to determine their chronological and geographical relations. Without doubt we can suggest a date in the 2nd millennium B.C. The same applies to two spouted bowls from tomb SH 102 (Figs.14.1-2). Very outstanding are two funnel-shaped beakers with flat bottoms which are decorated with dotted double circles combined with lines of saw-tooth pattern (Figs.14.4-5). One bottom fragment of a cylindrical beaker with a similar decoration has been found at Fashghah in a tomb dated to the Iron Age (pers.comm.C.Phillips). In fact, the beakers like other soft-stone fragments from SH 102 (Figs.14.5,7,11) show some details on the decoration which recall Iron Age motifs, e.g. saw-tooth pattern and crosses, but in the whole, they are not characteristic for this period (cf. Lombard 1985). One can guess that these decoration elements occur probably already in the late 2nd millennium B.C. This can also be derived from other finds of the tomb like the arrowheads. It might also be possible on the other hand that we are dealing here with the inventory of some Iron Age secondary burial.

In any case, we can state at least two different typological phases of soft-stone artifacts in the graveyard at Shimal: the first one with the so-called "classical" Wadi Suq material from SH 103, SH 99 as well as some pieces from SH 102, and the second one which shows very close reminiscences to Iron Age material.

A very outstanding find which does not belong to either group comes from the settlement area SX. We are dealing here with six fragments of a dark green flat based beaker with slightly concave walls (Fig.47.6). It is extraordinarily well executed but without any decoration. The closest parallels can be drawn to plain beakers from the Umm an-Nar grave 1059 at Hili (Frifelt 1971:Fig.3B), grave 1 on the island Umm an-Nar (Thorvildson 1962:Fig.21) and in the burial complex at Sar al-Jisr (Mughal 1983:Fig.50.6). These would suggest a dating in the early 2nd millennium B.C. This is supported by the pottery and the seal which have been found in the same archaeological context of the settlement area of SX.

But here should also be mentioned that beside the vessels of soft-stone described above, 41 lids have been discovered at the site of Shimal. One of them is the only find which probably can be related to the tomb SH 101 (Fig.5.7). Four lid fragments have been found in tomb SH 102 (cf. Figs.14.12-14). A total number of 20 lids could be uncovered in SH 103 (cf. Figs.26.1-10,27.1-6,28.1-3) exceeding the number of vessels in this tomb. Eleven examples come from the half excavated tomb SH 99 (Figs.34.1-9,35.1-3) and at last, we must add five surface finds from different areas at Shimal (cf.Figs.5.4-6).

In no case a lid can be surely ascribed to a vessel although it is beyond doubt that they belong to the type of conical, globular or barrel-shaped vessels with knobs or pierced lugs. The general shape of the lids is round with always circular bottom sides which are either flat, concave or convex. The first shape is the usual one, for the second one we can find parallels at Shimal Site 4 (Donaldson 1985:Fig.2.2), outside Tomb A at Hili North (Vogt 1985b:Fig.27.24) and in Maysar-1 (Weisgerber 1981:Figs.46.7-8). The first and second example comes from an undatable context. The parallel from Maysar-1 provides us with a dating in the beginning of the 2nd millennium B.C.

The shape of the cut-in-ledge of the lids from Shimal is more or less pronounced. The shoulders are oblique towards the neck of the handle which is either vertical but mostly concave. Its top is either flat or convex. Usually the lids show on their shoulders one or more rows of dotted circles or dotted double circles. The rim is very often slashed. In most cases the neck of the handle is decorated with horizontal lines or with short incisions that run in zig-zags. The top of the handle is sometimes plain but mostly decorated with varying motifs, e.g. crosses sometimes with dotted circles between the angles, only dotted circles in various numbers, dotted double circles, and "tree"-like patterns. All these features are known for the soft-stone lids of the Wadi Suq horizon. But like the vessels some examples of the lids show a very unusual decoration. First of all, a lid from tomb SH 103 with a "star"-like pattern (Fig.27.6) and secondly, a completely undecorated one (Fig.28.3). The third example comes from tomb SH 99 and shows only a row of dots (Fig.34.5). To date, it has not yet been possible to establish chronological or geographical differences within the corpus of lids.

In summary, we can state that at the site of Shimal artifacts are proved which show the general features of the soft-stone assemblage discovered in the Gulf region. But there exist also differences which must probably be regarded as local variants. Including some pieces (cf.Fig.28.4) not presented above because they are surface finds the whole corpus found at Shimal covers the time span from the early 2nd millennium B.C. until the first half of the 1st millennium B.C. A more detailed classification can

only be given after a typological study of the artifacts including also aspects of geographical distribution, production techniques and function which is under preparation.

The results of two campaigns of archaeological and anthropological research in Shimal are certainly not a very safe basis for a comprehensive appreciation of the geographically wide-spread Wadi Suq cultural horizon. It is notwithstandingly the moment to demonstrate the advancement of knowledge of a hitherto rather neglected "dark age" and to develop a first explanatory model for the material expressions of the Shimal community. Some older problems of research, both general and particular, start to clear but questioning the rich cultural heritage of Shimal's ancient population will give rise to new questions and further discussion.

Comparing Shimal to other 2nd millennium B.C. archaeological sites in the region proves difficult in certain aspects. First of all, it is the only better known site of this period with a settlement and an extensive graveyard. Secondly, we have to take into account the very special location of the site. And furthermore, due to the extension and the good preservation of the site the quantity of finds by far exceeds that of any other 2nd millennium B.C. site. The availability of data consequently is larger than elsewhere. These aspects may therefore contour our general impression that the material assemblage of Shimal has a lot in common with the already known Wadi Suq material but on the other hand displaying many traits of regionally restricted prevalence.

The vestiges of the Shimal settlement and cemetery reflect a population which took all advantages of the convenient location of the site. From the masses of mollusc and fish remains we have learnt that probably the subsistence was depending mainly on the exploitation of marine resources, but also the growing of date palms might have played an important role. Technical facilities and capabilities must have existed to reach even less easily accessible resources as for instance certain sub-tidal shell species. It is beyond doubt that the proximity to the sea was indispensable in the daily life of the ancient Shimalians granting shelter on one hand but simultaneously providing a line for the traffic of goods and ideas in either direction. It is certainly the combination of several factors that this area was always involved in exchanges of different kind and intensity as it also applies to the later prospering nearby city of Julfar. This is to say that since about four millennia the Ras al-Khaimah area is one of the major gates of the Oman Peninsula. There are good reasons to believe that the general conditions were so favourable to permit a population of considerable size to settle here. In this context one must not disregard the fact that it is only a link (although the largest one) in the chain of 2nd millennium B.C. sites along the

mountains comprising Ghalilah, Dhayah, Shimal and al-Khatt.

For the time being we feel able to correlate the Shimal settlement and the adjacent cemetery only in terms of a very broad contemporaneity. Since the cultural deposits are relatively thin and a more substantial stratigraphy is still missing the duration of occupation in the settlement cannot be determined more accurately. In that respect two findings are of a particular significance.

The discovery of late 3rd millennium B.C. appliqué and Umm an-Nar fine ware pottery and the fragment of a tronconical chlorite beaker in the settlement leads to one of the most urging questions, i.e. the origins of the material culture in this area. It was already stressed that previously no objects older than the 2nd millennium B.C. were recorded from Ras al-Khaimah. Even now one may get the impression that the Shimal cultural assemblage is already fully developed. Admittedly the number of definite 3rd millennium B.C. objects is still small, but one might also expect one of the most outstanding features of this period, i.e. the well-famed circular and multi-chambered Umm an-Nar tombs. Until now, however, they have never been registered in the Ras al-Khaimah area. It is one of the peculiarities of the tombs in Shimal that all the architectural characteristics are fully developed (although an internal typological evolution can be theoretically reconstructed). To our knowledge the different grave types studied in Shimal (except the circular tombs as SH 100) are for some unknown reason restricted to the territory of the Emirate of Ras al-Khaimah, although tombs of distantly similar appearance have been sporadically reported from al-Qusais and Qattarah.

At present there are indications that during the 2nd millennium B.C. the prevailing mode of burial in the Oman Mountains were single and double burials whereas westwards and at the foot of the mountains collective tombs were dominating. The latter could have met the social requirements of the ancient Shimalians who were perhaps organized in kin-groups, lineages or the like. Anyhow, biotic relations which for example may be one of the ruling principles could not yet be anthropologically proved. Whatever the structure of the population was the need for an internal differentiation is manifested both by the dense spatial co-existence of the different grave types (incl. their varying orientation) and different funerary customs in a single burial monument as e.g. SH 99 (body inhumation vs. cremation). This view also takes into consideration the alternating numerical occurrence of the different grave types. Apart from the high number of collective burials (which indirectly defines also the conceptional boundaries of the affiliation to societal groups) the funerary inventories including those revealed by P. Donaldson do also support the assumption that the different architectural types are more or less contemporaneous. The spatial distribution of the tombs may in some way

speak in favour of (if not an allocation of construction ground) at least an organization of labour. Their monumental size, the basically standardized appearance and the long-term maintainance of the tombs certainly required a well-experienced organization and much effort. The different inventories from the settlement and the tombs may furthermore suggest the specialized production of settlement goods and grave goods. The second finding which has to be mentioned here in particular is the stratigraphic observation from tomb SH 102 which provides the basis for a dating into the second half of the 2nd millennium B.C. It is the first archaeological context of this date on the whole Oman Peninsula with decisive consequences for the process of the cultural evolution. Its very existence and certain features anticipating the Iron Age cultural traits strongly suggest that the Wadi Suq period was not a mere episode of 300 or 400 years ending somewhere in a chronological vacuum. It is more likely that the Wadi Suq cultural horizon persisted throughout the 2nd millennium B.C., eventually successively detached by the Iron Age assemblage.

The Shimal settlement provided us for the first time with quite a homogeneous and comprehensive Wadi Suq domestic inventory. Judging from this collection we start to reassess the finds originating from other sites. It is evident that several archaeological assemblages hitherto dated to the 1st millennium B.C. virtually produce Wadi Suq material as well thus clearly multiplying the number of 2nd millennium B.C. sites. The white patches on the 2nd millennium B.C. archaeological map start to fade. At some time or other we will possibly feel the need to abandon the idea of an interruption of settled life at 1700/1600 B.C. as it was commonly advocated.

It is therefore hoped that our future research in Shimal will supply us with better clues on a more precise dating for the settlement, its organization and its palaeo-environment. Further excavations in the cemetery area may help us to complete the catalogue of grave types and eventually to elucidate the ruling mechanisms of intentionally differentiated funerary customs.

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BIBLIOGRAPHY

Abbreviations:

- n.d. no date
BTAC - Bahrain through the ages: the Archaeology.
 al-Khalifa, H./Rice, M. (eds.), London, 1986
E&W - East and West
JOS - Journal of Oman Studies
Or. Ant. - Oriens Antiquus
PSAS - Proceedings of the Seminar of Arabian Studies
SAA - South Asian Archaeology
UAEA - Archaeology in the U.A.E., Al'Ain

Allchin, B. The Agate and Carnelian Industry of Western India
1979 and Pakistan, in van Lohuizen-deLeeuw (ed.) - SAA
 1975, 91-105, Leiden

Ash, T. - An Introduction to the Archaeology, Ethnography, and
1979 History of Ras al-Khaimah, Ras al-Khaimah

al-Athar - Ministry of Information and Culture, Dept. of Antiquities,
1975 Al'Ain.

al-Khalifa, Shaikha H.A., - Bahrain through the ages: the Archaeology,
Rice, M. (eds.) London.
1986

al-Noeimi, T. - Hili, Min. of Information and Culture, Abu Dhabi
n.d.1

al-Noeimi, T. - Mazyad, Min. of Information and Culture, Abu Dhabi
n.d.3

al-Noeimi, T. - Qattarah, Min. of Information and Culture, Abu Dhabi
n.d.4

al-Sayari, S.S., - Quaternary Period in Saudi Arabia, Wien, New York
Zötl, J.G.
1978

- al-Shanfari, A., A Late Bronze Age Warrior Burial from Nizwa (Oman)
Weisgerber, G.
in press
- al-Tikriti, W. - Reconsiderations of the Late Fourth and Third Mil-
1981 lennium B.C. in the Arabian Gulf with Special Refer-
 ence to the United Arab Emirates, unpubl. Ph.D. thesis,
 Cambridge
- al-Tikriti, W. - The Archaeological Investigations at Ghanadha Island
1985 1982-1984: Further Evidence for the Coastal Umm an-Nar
 Culture, in UAEA IV, 9-19
- ar-Rahman, S. Hili-3, in al-Athar (in Arabic), 35-42
1975
- Bach, H. - Zur Berechnung der Körperhöhe aus den langen Glied-
1965 maßenknochen weiblicher Skelette, in Anthropologi-
 scher Anzeiger 29, 12-21
- Biagi, P., Torke, W., Tosi, M. - Qurum: a case study of coastal archaeology
Uerpman, H.-P. in northern Oman, in World Archaeology 16, 43-61
1984-5
- Bibby, G. - Arabian Gulf Archaeology, in Kuml, 144-152
1965
- Bibby, G. - Looking for Dilmun, London
1970
- Blackman, J., Méry, S. Ceramic production on the Oman Peninsula from the
Wright, R. perspective of Hili.
in preparation
- Boucharlat, R. (ed.) Second Archaeological Survey in the Sharjah Emi-
1985 rate, 1985. Lyon
- Boucharlat, R., Lombard, P. - The Oasis of Al'Ain in the Iron Age: Excava-
1985 tions at Rumeilah 1981-1983, in UAEA IV, 44-73
- Boyce, W., Chalmers, S., - Organic matrix of urinary calculi, in Acta
Meschan, I., King, J. radiologica 50, 543-560
1958

- Breitinger, E. - Zur Berechnung der Körperhöhe aus den langen Gliedmaßenknochen, in Anthropologischer Anzeiger 14, 249-274
1936
- Calvet, Y., Caubet, A., French Excavations at Failaka, 1984, in PSAS 15, Salles, J.-F. 11-26.
1985
- Clarke, M.W.H., Keij, A.J. - Organisms as Producers of Carbonate Sediment and Indicators of Environment in the Southern Persian Gulf, in Purser, B.H. (ed.) - The Persian Gulf, 33-56, Berlin
- Cleuziou, S. The 2nd and 3rd seasons of excavations at Hili 8, in UAEA II-III, 30-69
1978-9
- Cleuziou, S. Oman Peninsula in the Early Second Millennium B.C., in Härtel, H. (ed.) - SAA 1979, 279-293, Berlin
1981
- Cleuziou, S. - Oman Peninsula and its relations eastward during the 3rd Mill. B.C., in Lal, B.B./Gupta, S.P., (eds.) - Frontiers of the Indus Civilization, 371-394, New Delhi
1984
- Cleuziou, S. The chronology of Prehistoric Oman as seen from Hili, in Oman Studies, Orientalia Romana 7, 1986
n.d.1
- Cleuziou, S. - Oman Peninsula and Pakistan during the 3rd Mill. B.C. Paper read at the 1st International Conference on Pakistan Archaeology, Peshawar, 1-4th April, 1982
n.d.2
- Cleuziou, S. Trente ans de recherche de Failaka au Ras al-Hadd: un essai de perspectives historiques, manuscript for the de Cardi Felicitation Volume.
n.d.3
- Dales, G. - Adaption and Exploitation at Harappan Coastal Settlements, in Pastner, S./Flam, L. (eds.) - Anthropology in Pakistan: Recent Socio-Cultural and Archaeological Perspectives. South Asia Occ. Papers and Theses, No.8. Cornell University, 145-153, Karachi
1982
- de Cardi, B. - A preliminary report of field survey in the northern Trucial States, in Kuml, 214-217
1969

- de Cardi, B. - Ras al-Khaimah. Further Archaeological Discoveries,
1976 in Antiquity 50, 216-222
- de Cardi, B. Surface Collections from the Oman Survey, 1976, in JOS
1977 3, 59-70
- de Cardi, B. (ed.) Qatar Archaeological Report, Qatar
1978
- de Cardi, B. - Archaeological Survey in southern Ras al-Khaimah, in
1983 PSAS 13, 31-35
- de Cardi, B. Further Archaeological Survey in Ras al-Khaimah,
1985 U.A.E., 1977, in Or. Ant. 25, 163-240
- de Cardi, B. - Harappan finds in a tomb at Ras al-Khaimah, U.A.E., in
1986a PSAS 16, 23-24
- de Cardi, B. Some Aspects of Neolithic Settlement in Bahrain and
1986b adjacent regions, in BTAC, 87-93
- de Cardi, B. - The Grave-goods from Shimal Tomb 6 in Ras al-Khaimah,
in press in Potts, D. (ed.) - Memorial Volume for M. Golding
- de Cardi, B., Doe, B. Archaeological Survey in the Northern Trucial Sta-
1971 tes, in E&W 21, 225-289
- de Cardi, B., Collier, S., Doe, B. - Excavations and Survey in Oman 1975-
1976 1976, in JOS 2, 101-188
- de Cardi, B., Bell, R.D., Starling, R.J. - Excavations at Tawi Silaim and
1979 Tawi Sa'id in the Sharqiyah, in JOS 5, 61-94
- Donaldson, P. - Prehistoric Tombs of Ras al-Khaimah, in Or. Ant. 23,
1984 191-312
- Donaldson, P. - Prehistoric Tombs of Ras al-Khaimah, in Or. Ant. 24,
1985 85-142
- Dostal, W. - Egalität und Klassengesellschaft in Südarabien.
1985 Anthropologische Untersuchungen zur sozialen Evolution,
Wiener Beitr. zur Kulturgeschichte und Linguistik Bd. XX, Wien

- Durante, S. Marine Shells from Balakot, Shahr-i Sokhta and Tepe
1979 Yahya: Their Significance for Trade and Technology in
Ancient Indo-Iran, in Taddei, M. (ed.) SAA 1977,
317-344, Naples,
- During-Caspers, E. - The Bahrain Tumuli, Uitgavens van het Nederlands
1980 Historisch-Archaeologisch Instituut te Istanbul,
Bd. XLVII
- Evans, G., Murray, J.W., Biggs, H.E.J., - The Oceanography, Ecology, Sedi-
Bate, R., Bush, P.R. mentology and Geomorphology of Parts of the Trucial
1973 Coast Barrier Island Complex, The Persian Gulf, in
Furser, B.H. (ed.) The Persian Gulf, 233-278,
Berlin
- Eickhoff, S., Surface marks on bones from a neolithic collective
Herrmann, B. grave (Odagsen, Lower Saxony). A study on differen-
1985 tial diagnosis. Journ. of Human Evolution 14, 263-
274
- Francfort, H.P.- Tradition harappéenne et innovation bactrienne a'
1985 Shortughai, in L'Archéologie De La Bactriane An-
cienne, C.N.R.S., 95-104, Paris
- Frifelt, K. - Jamdat Nasr Graves in the Oman, in Kuml, 374-383
1970
- Frifelt, K. - On Prehistoric Settlement and Chronology of the Oman
1975 Peninsula, in E&W 25, 359-425
- Frifelt, K. - Evidence of a 3rd Millennium B.C. town in Oman, in
1976 JOS 2, 57-74
- Frifelt, K. - The Umm an-Nar and Jemdet Nasr of Oman and Their
1979a Relations Abroad, Lohuizen-de Leeuw, J.E. (ed) SAA
1975, 43-57, Leiden
- Frifelt, K. Oman during the Third Millennium Urban Development of
1979b Fishing/Farming Communities, in Taddei, M. (ed) SAA
1977, 567-587, Naples
- Frifelt, K. Burial Mounds near 'Ali, in BTAC, 125-134
1986

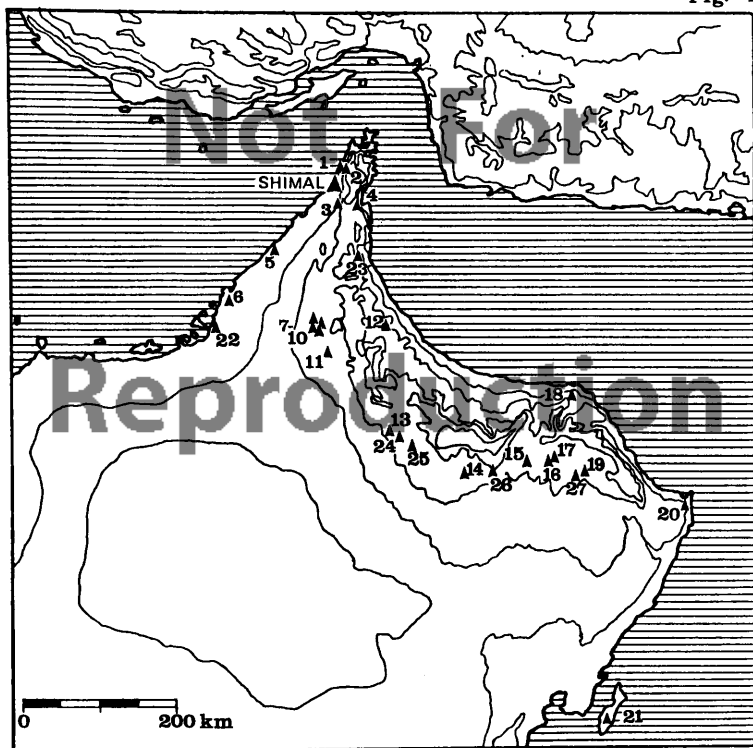
- Fröhlich, B. The human biological history of the early bronze age
1986 in Bahrain, in BTAC, 47-63
- Gebel, H.G. - Erste Ergebnisse der Früh-/Mittelholozänforschung im
1982 östlichen Golfgebiet (Oman), in Archaeologica Venet-
 toria e.V. Mitteilungsblatt 4, 13-19
- Gigneaux, P., - Sceaux Sasanides de diverses collections privées,
Gyselen, R. Leuven
1982
- Grupe, G. - Verteilungsmuster von Skelettelementen in neolithi-
1984 schen Kollektivgräbern als Ergebnis natürlicher De-
 kompositionsphänomene, in Archäologisches Korrespon-
 denzblatt 14, 141-143
- Grupe, G. - Multielementanalyse: Ein neuer Weg für die Palädemo-
1986 graphie. Bundesinstitut für Bevölkerungsforschung (ed.)
 Materialien zur Bevölkerungswissenschaft Sonderheft 7
 Wiesbaden
- Hastings, A., Humphries, J.H., Meadow, R. - Oman in the 3rd Mill. B.C., in
1975 JOS 1, 9-56
- Herrmann, B. - Behandlung und Bearbeitung von Leichenbrand, in
in press Knussmann, R. (ed.) - Handbuch der Anthropologie 1
- Højgaard, K. - Dentition on Umm an-Nar (Trucial Oman), 2500 B.C.
1980a Scandinavian Journal of Dental Research 88, 355-364
- Højgaard, K. - Dentition on Bahrain, 2000 B.C.. Scandinavian Jour-
1980b nal of Dental Research 88, 467-475
- Højlund, F. The Chronology of City II and III at Qala'at al-Bah-
1986 rain, in BTAC, 217-224
- Kjaerum, P. Failaka/Dilmun-The Second Millennium Settlements.
1983 Vol.1: The Stamp and Cylinder Seals. Jutland Arch-
 aeological Soc. Publ. XVII:1, Aarhus
- Klein, J., Lerman, J.C., Damon, P.E. - Calibration of Radiocarbon dates,
Ralph, E. in Radiocarbon 24/2, 103-150
1982

- Kraul, U. - Untersuchungen über die gegenseitigen Beziehungen ei-
1963 niger Maße des menschlichen Oberschenkelknochens als
Beitrag zur Beurteilung von sogenannten Leichenbrän-
den, unpubl. med. thesis Humboldt Univ., Berlin
- Kroll, S. - Das Gräberfeld in Maysar-27; Die Bergfestung Lizq-1,
1981 in Weisgerber 1981, 225-231
- Kunter, M. Bronze- und eisenzeitliche Skelettfunde aus Oman.
1981 Bemerkungen zur Bevölkerungsgeschichte Ostarabiens,
in Homo 32, 197-210
- Lombard, P. Aspects culturels de la péninsule d'Oman au Ier
1979 Mill. av. J.C., Mémoire de Maîtrise, U.E.R., Archéolo-
gie et Histoire de l'art, Université de Paris I, Paris
- Lombard, P. L'Arabie Orientale à l'Age du Fer. Thèse doctoral,
1985 Paris
- Lowick, N. - An 11th century coin hoard from Ras al-Khaimah, and
1986 the question of Sohar's decline, in PSAS 16, 89-168
- Lüling, G. Archaische Metallgewinnung und die Idee der Wieder-
1985 geburt, in Zeitschrift für Religions- und Geistesge-
schichte 37, 22-37
- Mackay, E. - Further Excavations at Mohenjo Daro, Delhi
1938
- McClure, H. - The Arabian Peninsula and prehistoric populations,
1971 Miami
- Medvedskaya, J.N. Iran: Iron Age I. British Archaeological Reports
1982 International Series 126
- Méry, S. - Standardisation/specialisation, quelle alternative?
n.d. in preparation
- Moorey, P.R.S. - Catalogue of the Ancient Persian Bronzes in the
1971 Ashmolean Museum, Oxford
- Mughal, M.R. - The Dilmun Burial Complex at Sar, The 1980-82 Exca-
1983 vations in Bahrain, Bahrain

- Nickerson, J.L. - Intrarasite Variability During the Kaftari Period at
1983 Tal-e Malyan (Anshan). Ph.D.thesis, Ohio
- Pearson, K. - On the reconstruction of the stature of prehistoric
1899 races, in Phil. Trans. Royal Soc. Series A 192, 169
-244
- Pezard, M. - Mission à Bandar Boushir, Mémoires de la Délégation
1914 en Perse 15, Paris
- Pfeiffer, L. - Die Steinzeitliche Muscheltechnik, Jena
1914
- Piepenbrink, H. - Beispiele biogener Dekompositionerscheinungen am
1984 Knochen unter längerer Liegezeit, in Anthropologi-
scher Anzeiger 42, 241-251
- Porada, E. - Remarks on Seals found in the Gulf States, in Artibus
1971 Asiae 33, 331-337
- Purser, B.H., Evans, G. - Regional sedimentation along the Trucial Coast, in
1973 Purser, B.H. (ed) The Persian Gulf, 211-232, Berlin
- Ralph, E.K., Michael, H.N., Radiocarbon Dates and Reality, in MASCA
Han, M.C. Newsletter Vol. 9/1, 1-20
1973
- Schaeffer-Forrer, C.F.-A. - Corpus I des Cylindres-Sceaux de Ras Shamra-
1983 Ugarit et d'Enkomi-Alasia, Editions Recherche sur les
Civilisations, Synthèse 13, Paris
- Schutkowski, H. - Geschlechtsdifferente Merkmale an kindlichen Skelet-
1986 ten. Kenntnisstand und diagnostische Bedeutung, in
Morph. Anthrop. 76, 149-168
- Schutkowski, H., - Zur Möglichkeit der metrischen Geschlechtsdiagnose
Herrmann, B. an der Pars petrosa ossis temporalis, in Zeitsch.
1983 für Rechtsmedizin 90, 219-227
- Smythe, K. Mollusca (Identification) in Donaldson 1984, Or. Ant.
1984 23, 219, 273-274, 279
- Smythe, K. Mollusca (Identification) in Donaldson 1985, Or. Ant.
1985 24, 88, 93, 127

- Thorvildsen, K. - Burial cairns on Umm an-Nar, in *Kuml*, 191-219
1982
- Tixier, J. - The prehistory of the Gulf: recent finds, in *BTAC*,
1986 76-78
- Tosi, M. - ISMEO activities: Ras al Junayz, in *E&W* 31, 195-198
1981
- Tosi, M. Early Maritime Cultures of the Arabian Gulf and the
1986 Indian Ocean, in *BTAC*, 94-107
- Tosi, M., Cleuziou, S. - Ras al-Junayz. Paper read at the Seminar of Ara-
1986 bian Studies, 1986, London
- Tubb, J. N. Three Inscribed Arrowheads from Tell el-'Ajjul, in:
1977 *Bull. of the Inst. of Archaeology* 14, 191-195
- Vats, M. S. Excavations at Harappa, Delhi
1940
- Vogt, B. Das 2. Jt. v. Chr. (Wadi Suq Zeit): Die Gräber in
1981 Maysar-9, in *Weisgerber* 1981, 219-223
- Vogt, B. - 1st Mill. B.C. Graves and Burial Customs in the Sa-
1984 mad Area (Oman), in Boucharlat, R./Salles, J-F. (eds.)-
*Arabie Orientale, Mésopotamie et Iran Méridionale de
l'Age du Fer au Début de la Période Islamique.*
(Ed. Rech. sur les Civil., mem. no 37) Paris, 271-284
- Vogt, B. - Zur Chronologie und Entwicklung der Gräber des späten
1985a 4.-2. Jt. v. Chr. auf der Halbinsel Oman: Zusammenfas-
sung, Analyse und Würdigung publizierter wie auch
unveröffentlichter Grabungsergebnisse, unpubl. Ph.D.
thesis, Göttingen
- Vogt, B. - The Umm an-Nar tomb A at Hili North: a preliminary
1985b report on three seasons of excavation, 1982-1984, in
UAEA IV, 20-37,
- Vogt, B., Gockel, W., The Coastal Survey in the Western Province of Abu
Hofbauer, H. Dhabi 1983, manuscript for *UAEA* V.
in press

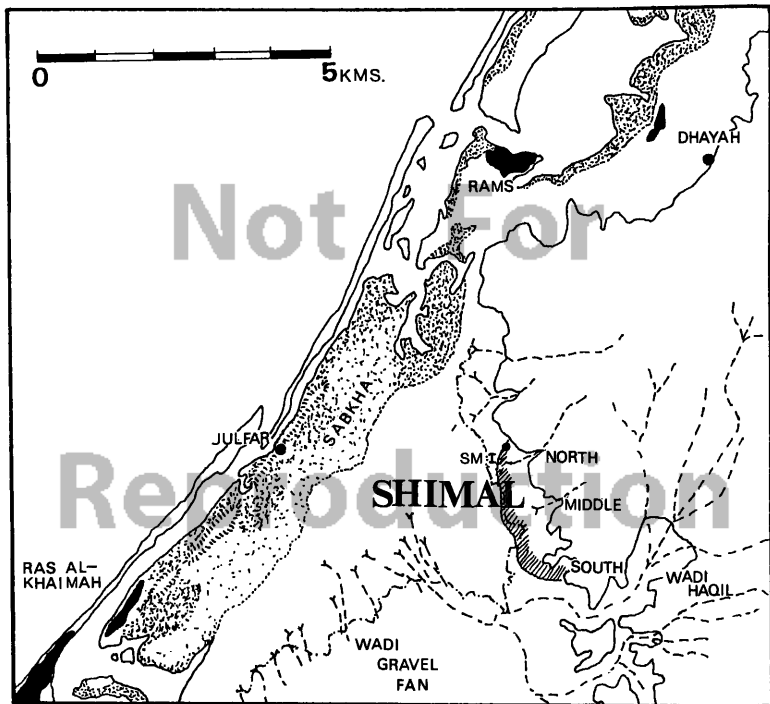
- Vogt, B., Häser, J., Velde, C. - Archäologische und anthropologische Forschungen in Shimal, Ras al-Khaimah.
n.d.1
- Vogt, B., Häser, J., Kästner, J.M., - Preliminary remarks on two recently excavated tombs in Shimal, Ras al-Khaimah, Paper presented for the 8th Conference of South Asian Archaeology, 1985, Moesgard
Schutkowski, H.
Velde, C.
n.d.2
- Weisgerber, G. - Mehr als Kupfer in Oman, in Der Anschnitt, 33. Jahrgang, 174-263, Bochum
1981
- Weisgerber, G. - Makan and Meluhha 3rd Mill.B.C. copper production in Oman and the evidence of contact with the Indus Valley, in Allchin, B. (ed) - SAA 1981, 196-201, Cambridge,
1984
- Wells, C. - Human bone, in Donaldson 1984, Or.Ant.23, 213-218, 268-272, 277-279
1984
- Wells, C. - Human bone, in Donaldson 1985, Or.Ant.24, 87-88, 90-93
1985
- Whitehouse, O. - Cornelian in the Persian Gulf, in Antiquity 49, 129-130
1975
- Wilkinson, J.C. - Water and Tribal Settlement in South-East Arabia: A Study of the Aflaj of Oman, Oxford
1977
- Woolley, L./ - Ur Excavations Vol.7: The Old Babylonian Period,
Mallowan, M. London
1976
- Zarins, J. - Steatite Vessels in the Riyad Museum, in Atlal 2, 65-93
1978



MAP OF THE OMAN PENINSULA SHOWING THE ARCHAEOLOGICAL PLACES MENTIONED

- | | |
|-------------------------|---|
| 1 Ghalilah | 15 Wadi Salh |
| 2 Dhayah | 16 Wadi Samad (Samad cemetery, Maysar-27, Maysar-1) |
| 3 al-Khatt | 17 Khudr |
| 4 Dibba | 18 Ras al-Hamra |
| 5 al-Qusais | 19 al-Batin |
| 6 Ghanadha | 20 Ras al-Junayz |
| 7 Qarn Bint Saud | 21 Masirah Island |
| 8 Rumeilah | 22 Umm an-Nar |
| 9 Hili-8, Hili North | 23 Wadi al-Qawr |
| 10 Qattarah | 24 Baat |
| 11 Jabal Hafit (Mazyad) | 25 Amlah |
| 12 Wadi Suq | 26 Nizwa |
| 13 Wadi Sunaysl | 27 Tawi Sa'id |
| 14 Wadi Bahla (Bisyah) | |

Fig. 2



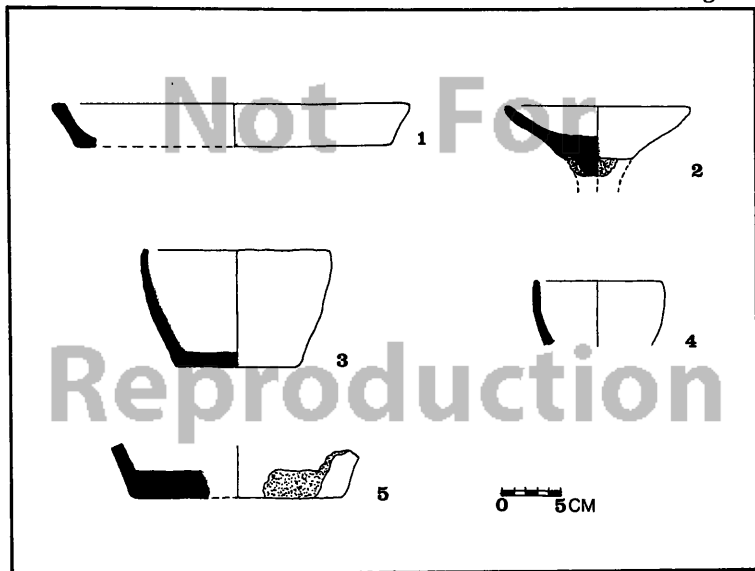
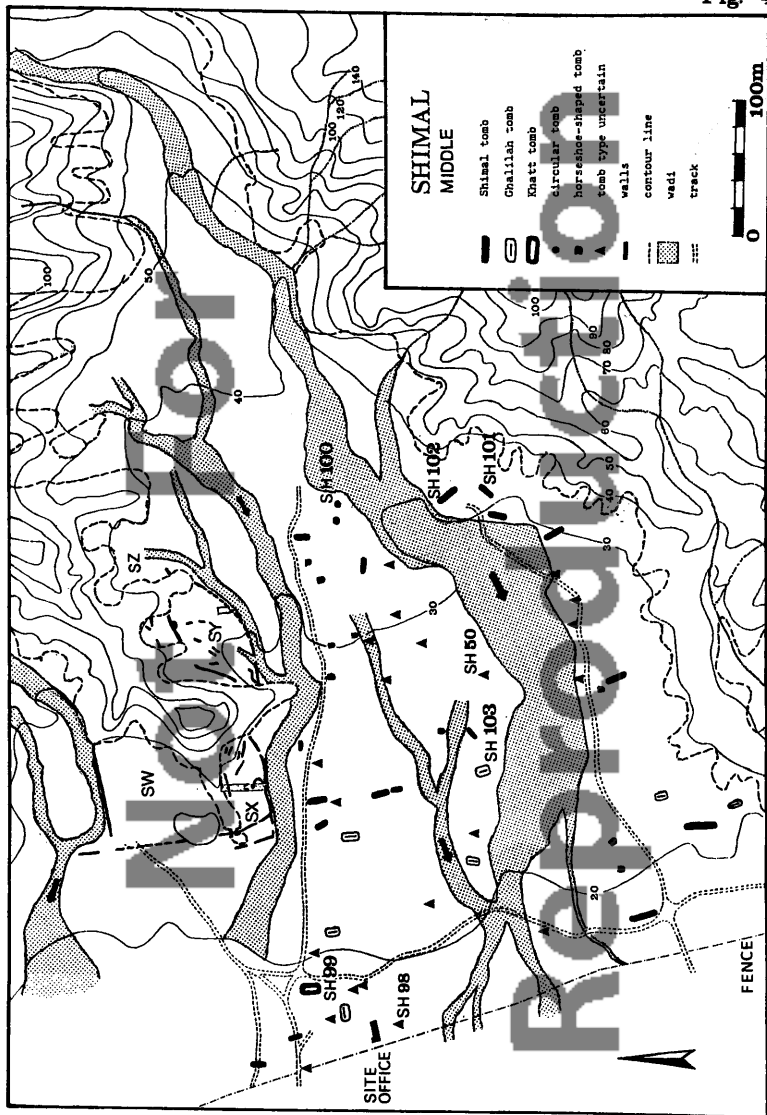


Fig. 4



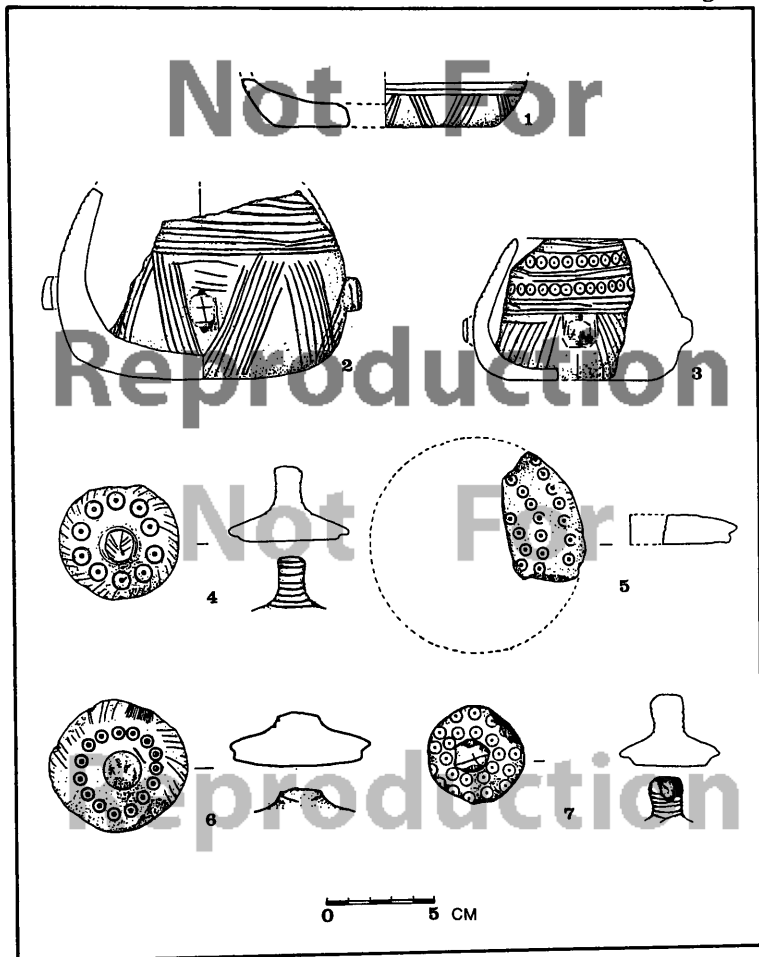


Fig. 6

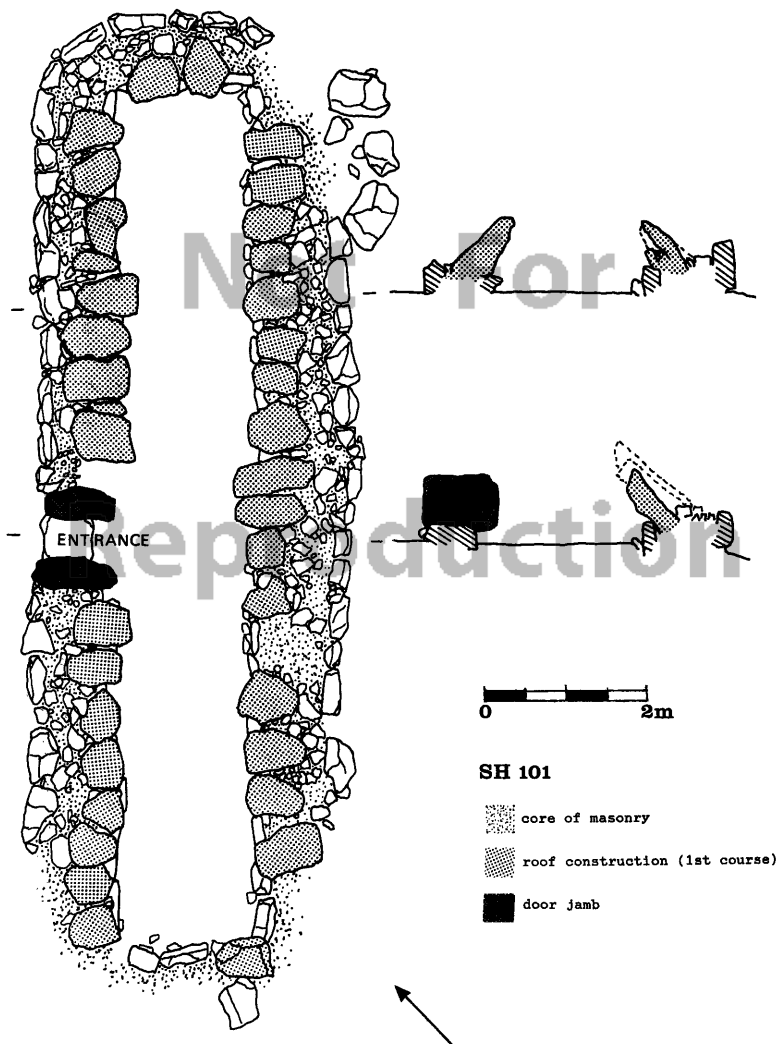
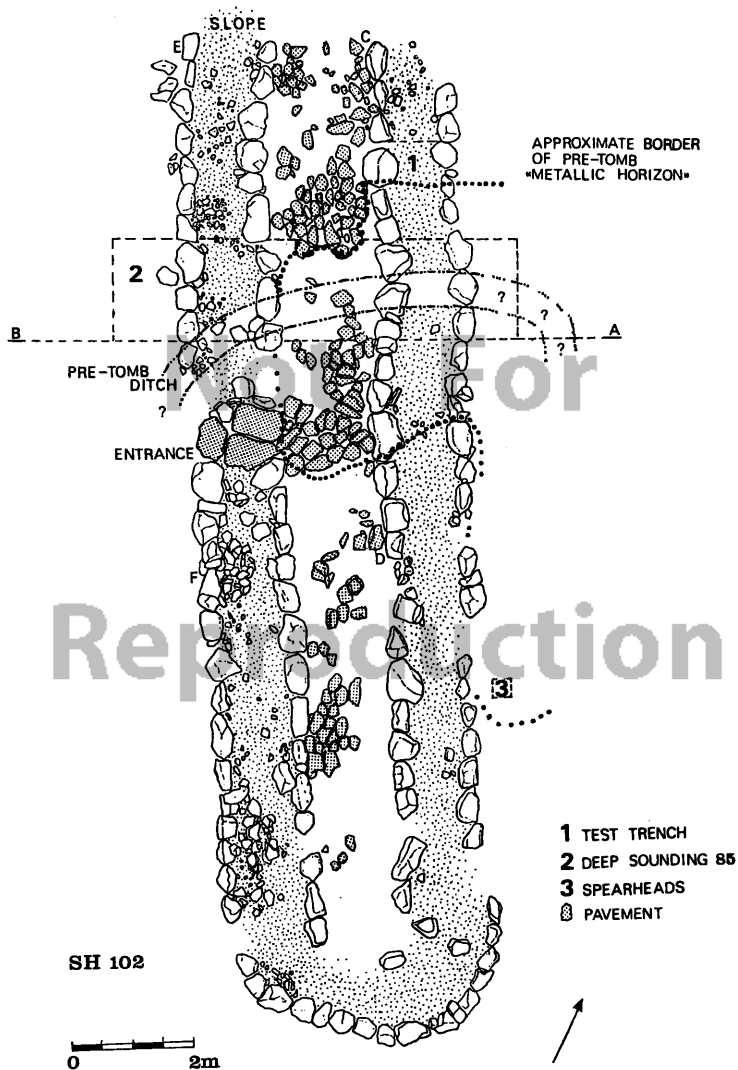
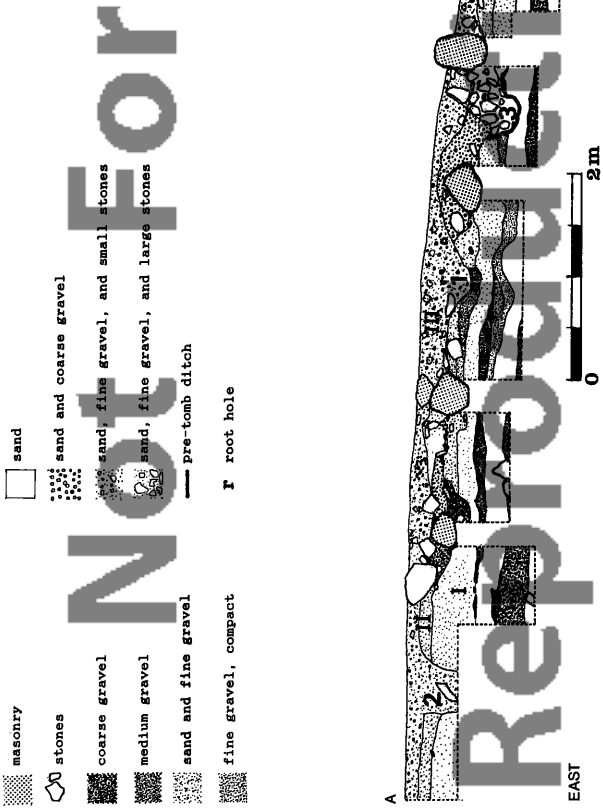


Fig. 7





SH 102

Fig. 9

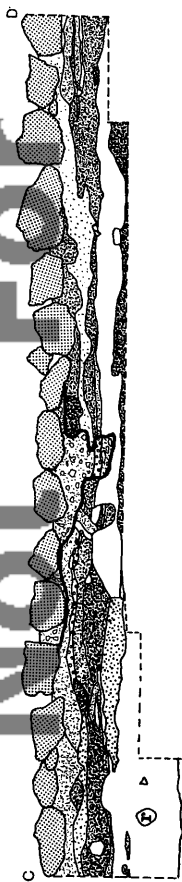
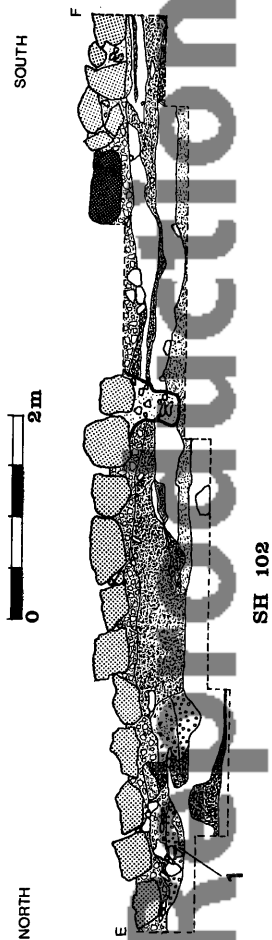


Fig. 10





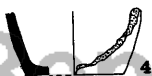
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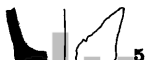
2



3



4



5



6

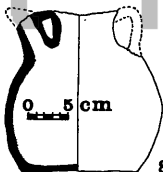


0

5 cm



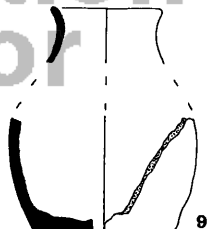
7



0

5 cm

8



9



10



11



12



13



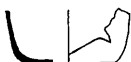
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15



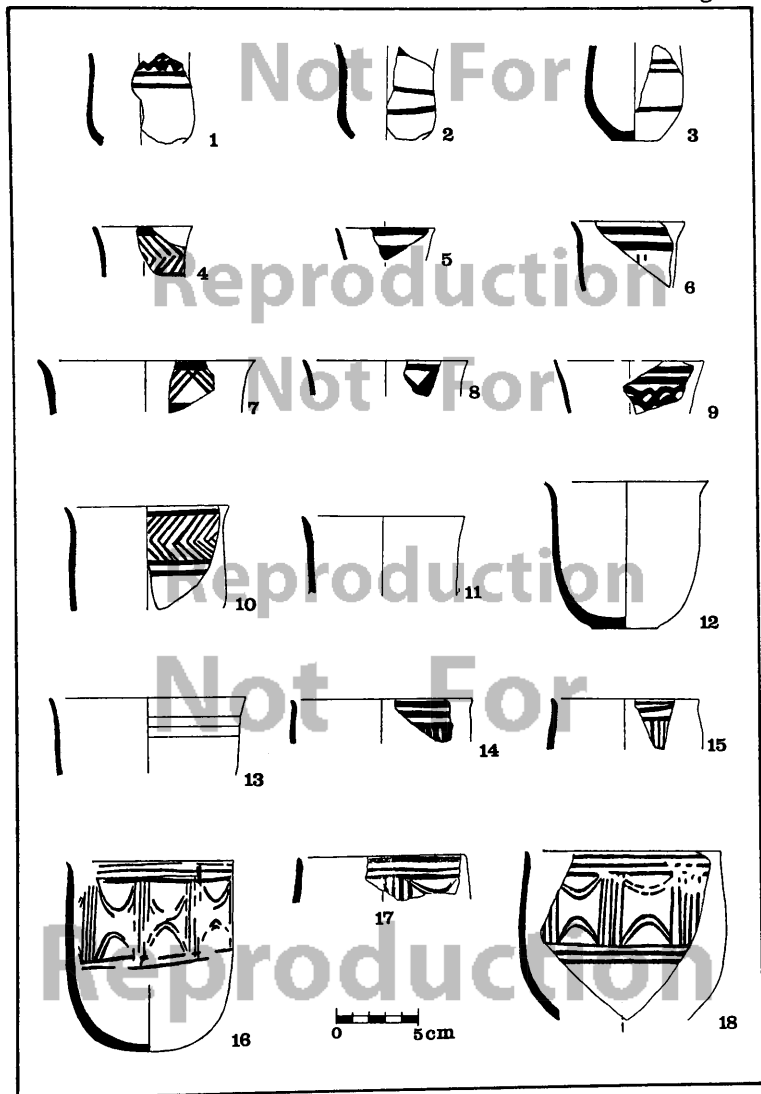
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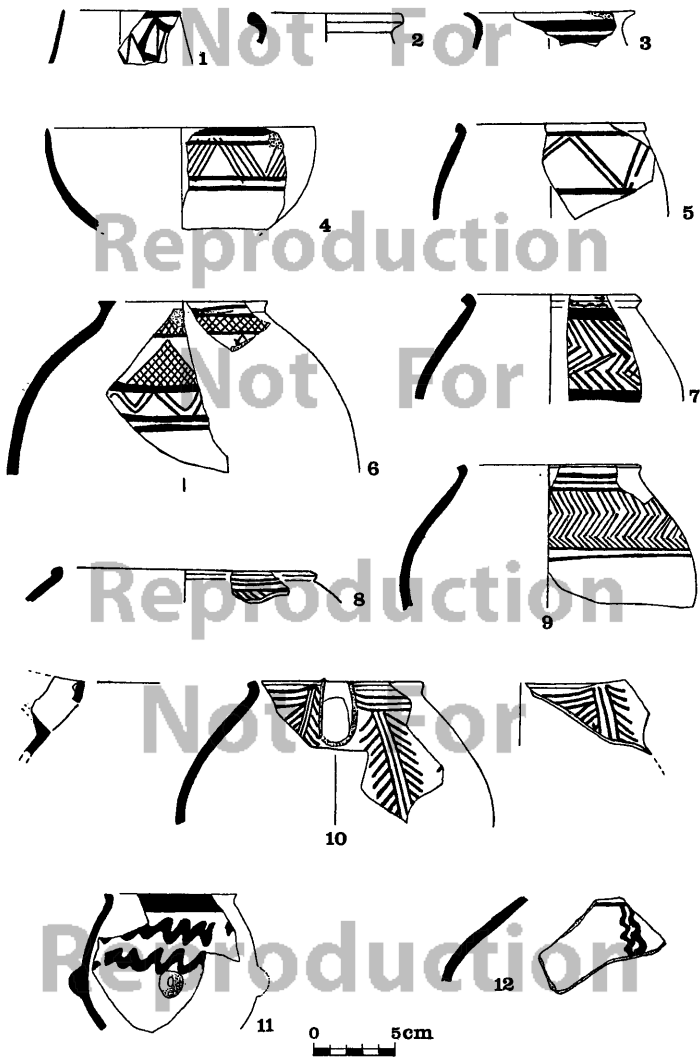


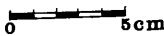
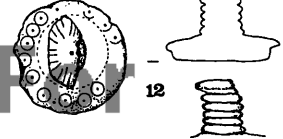
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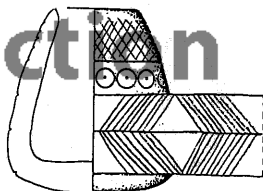
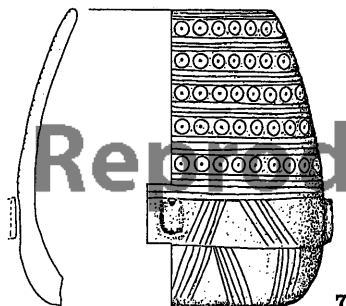
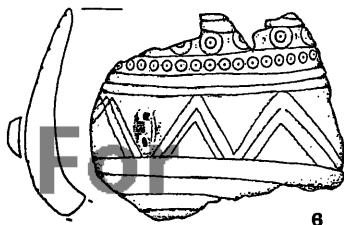
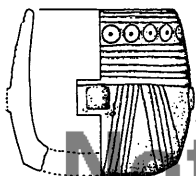
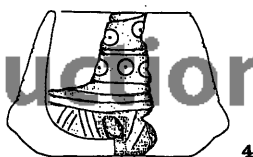
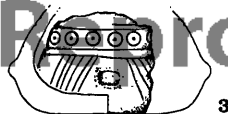
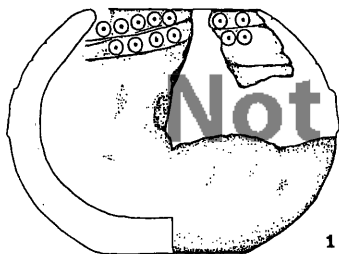


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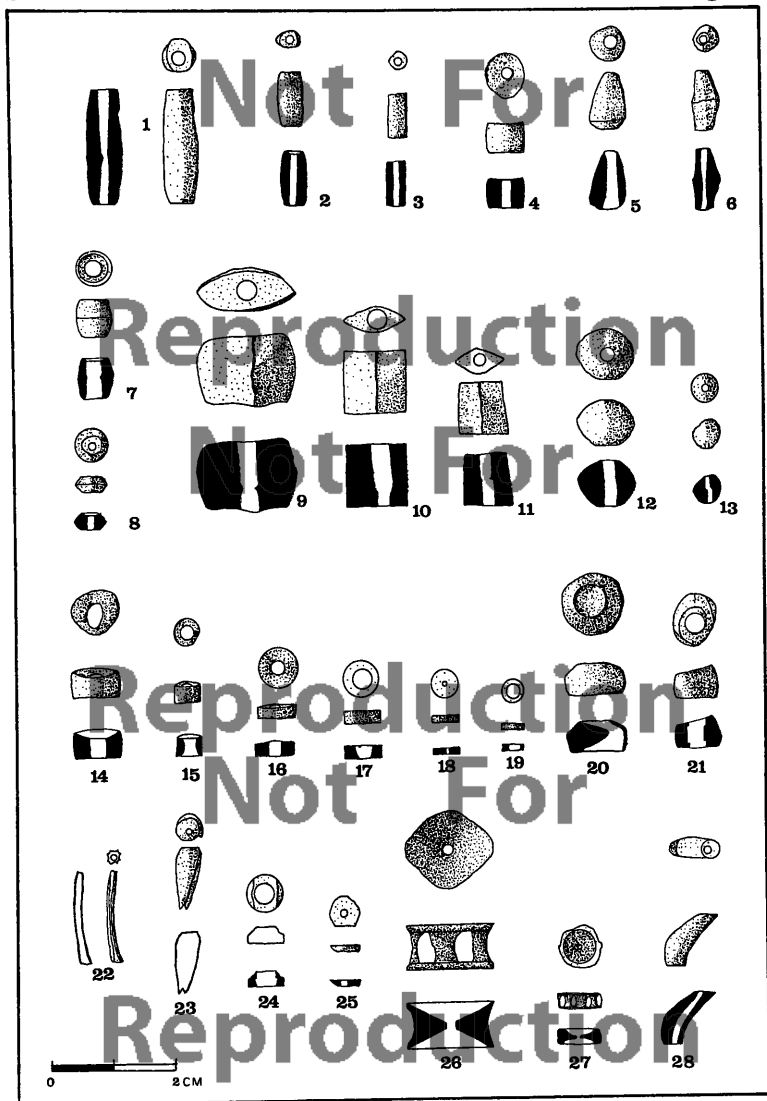


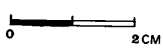
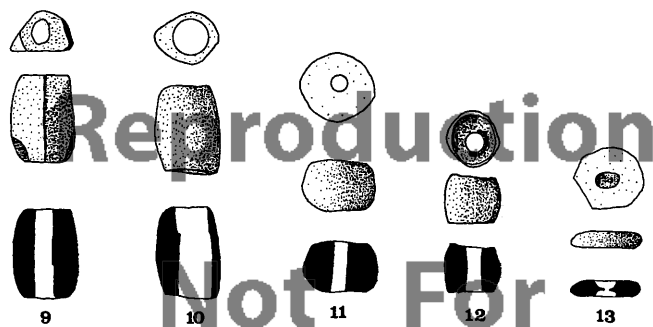
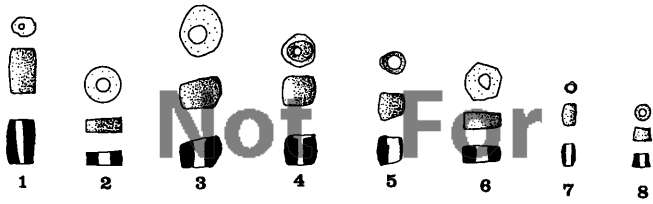


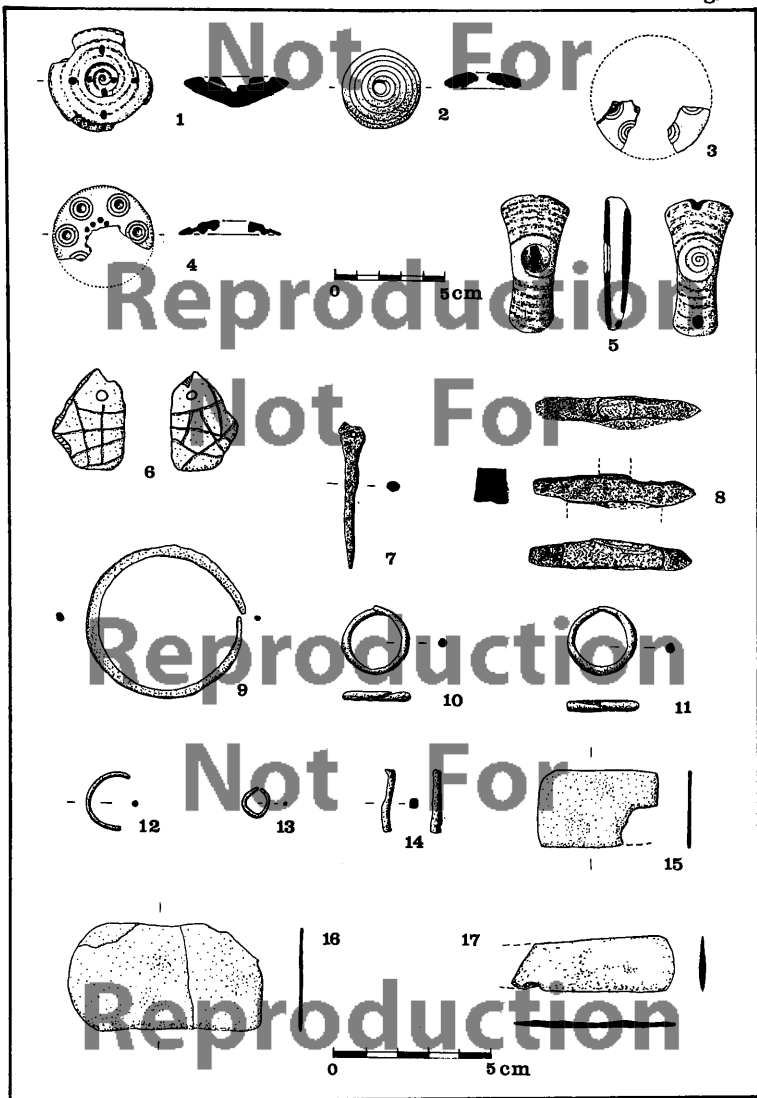


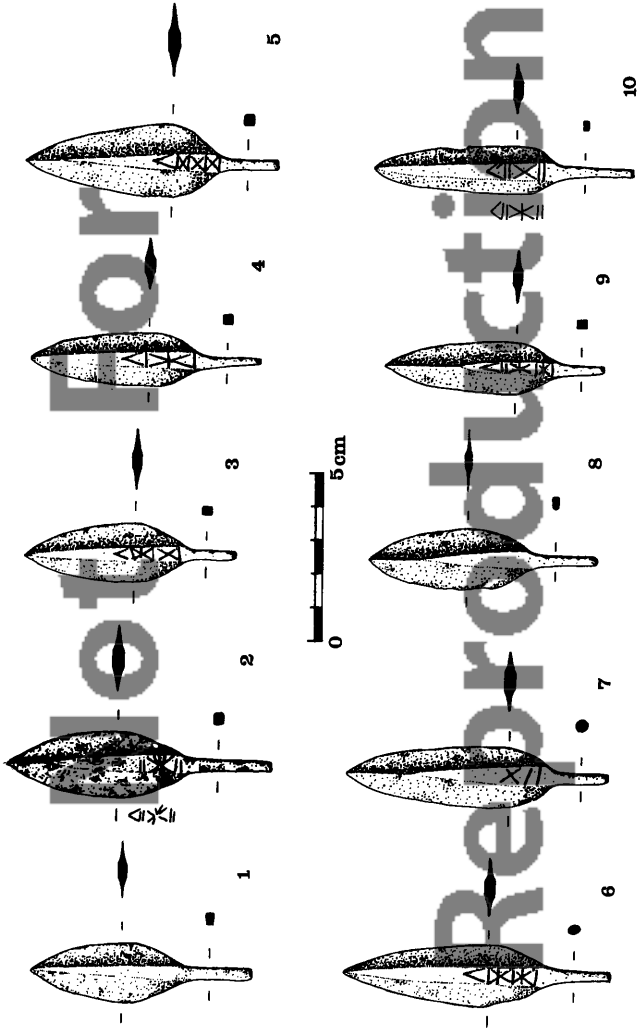


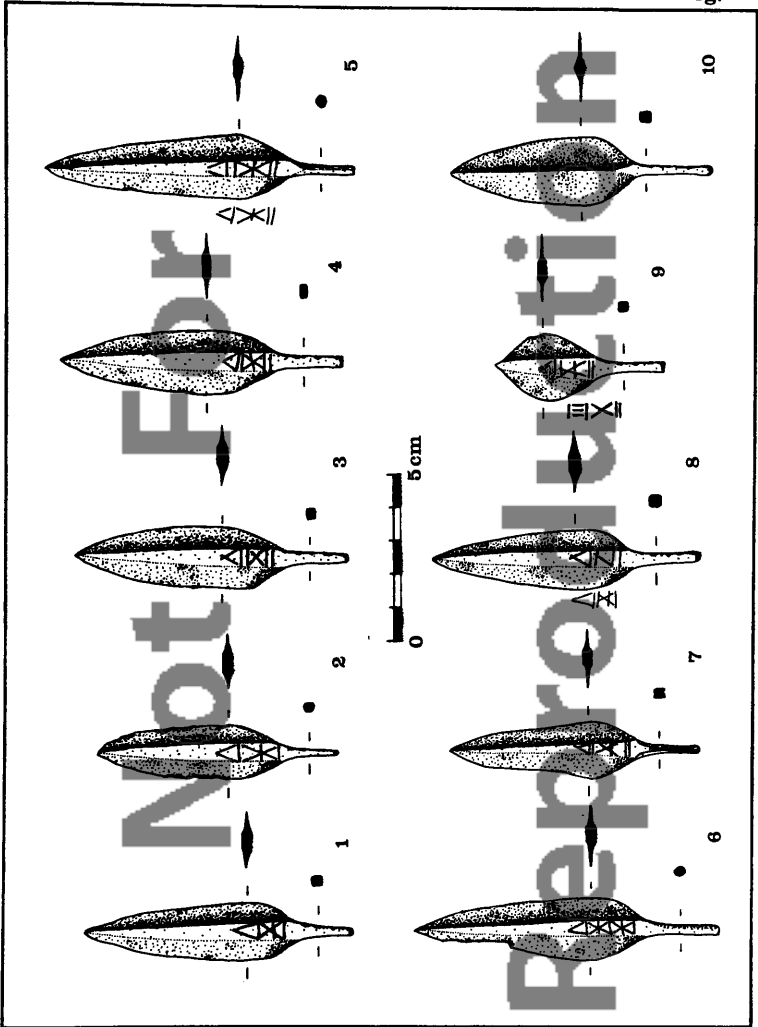
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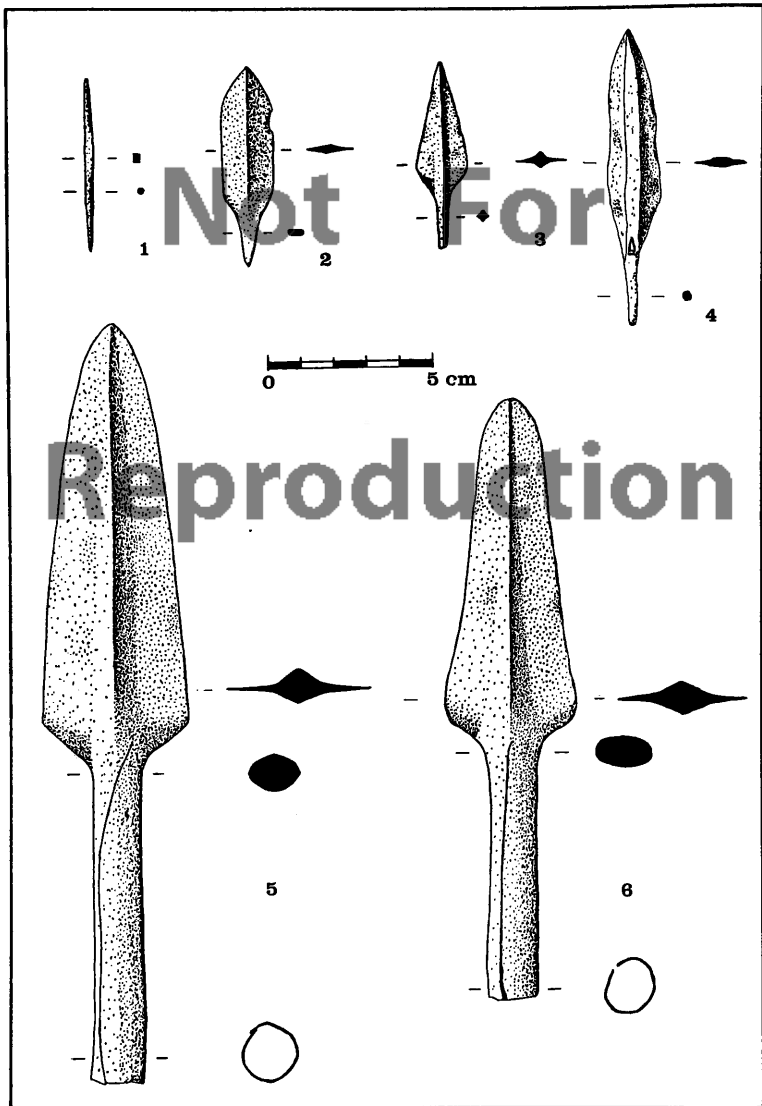



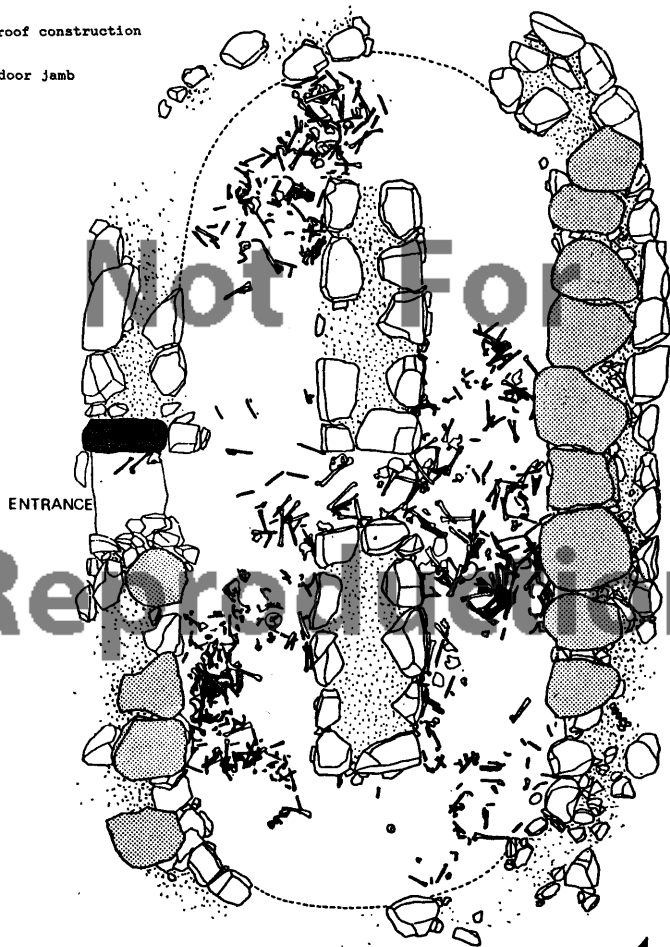


Fig. 22

-  core of masonry
-  roof construction
-  door jamb

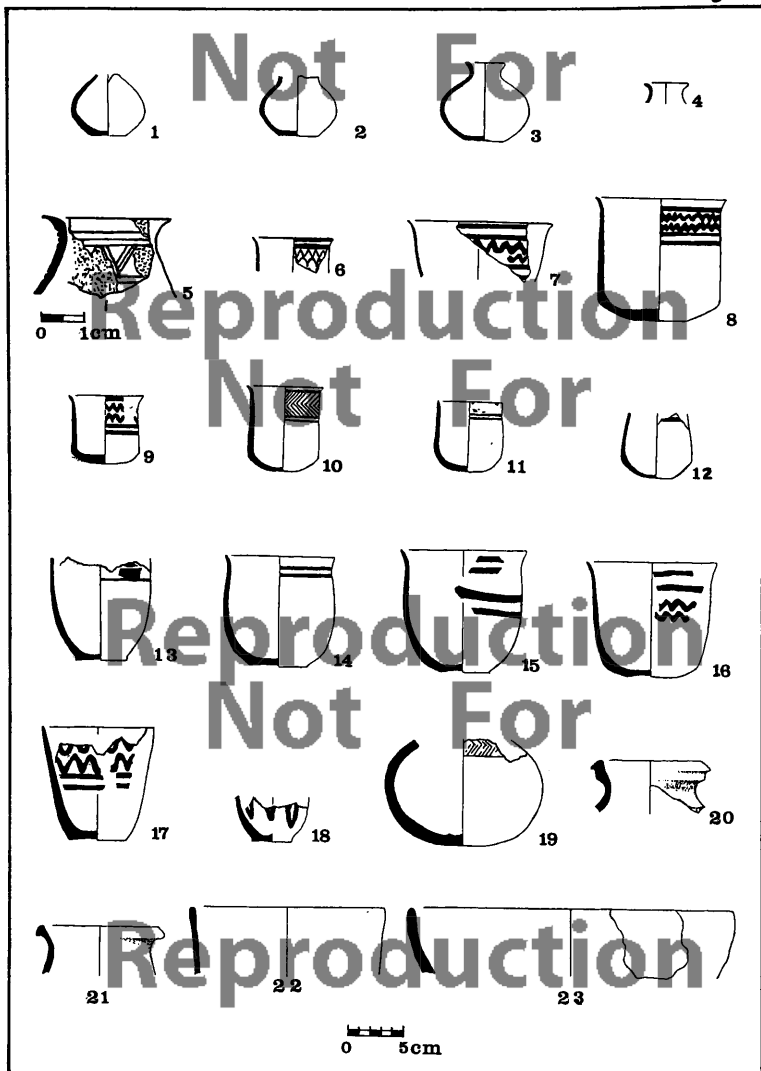


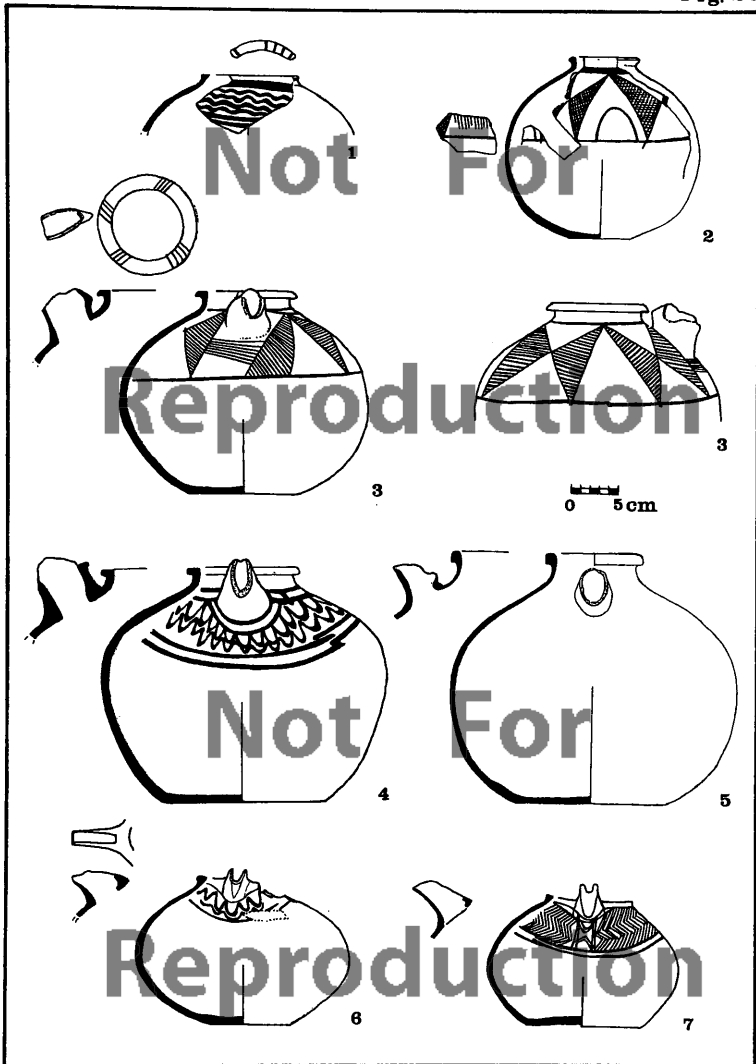
ENTRANCE

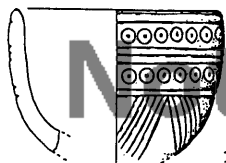
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SH 103









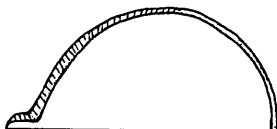
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2



3



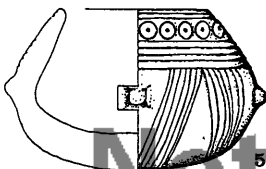
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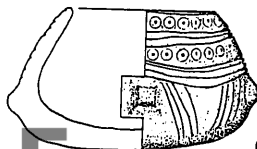
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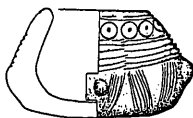
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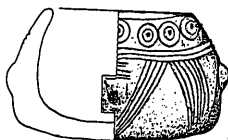
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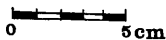
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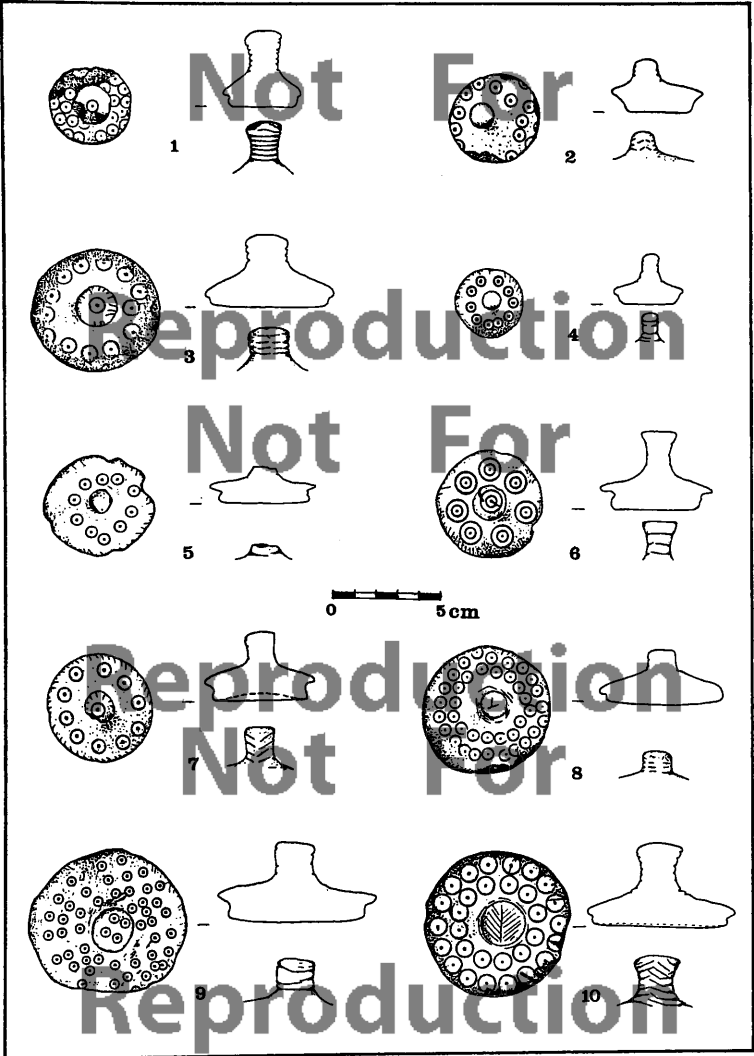


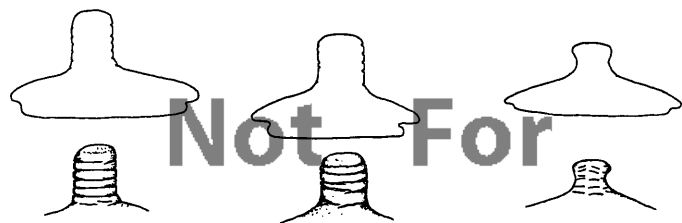
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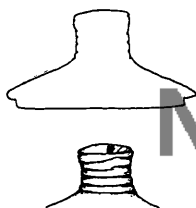
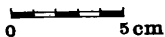
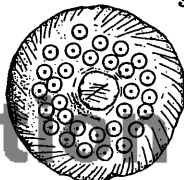
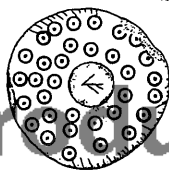
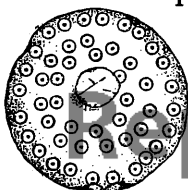




1

2

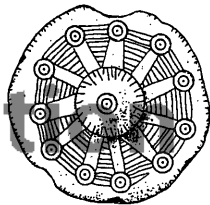
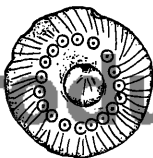
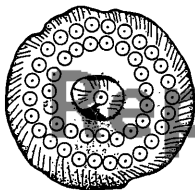
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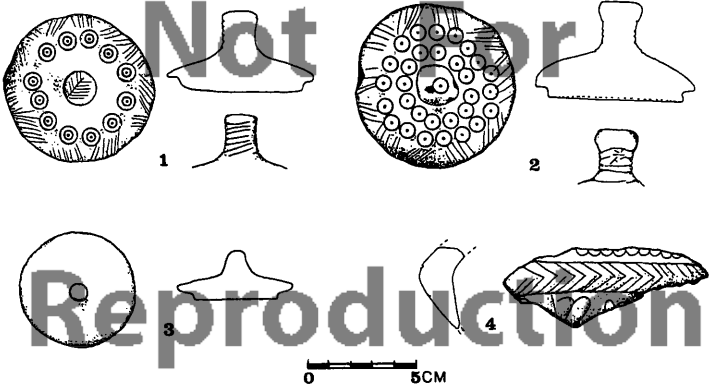
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5

6



a



b

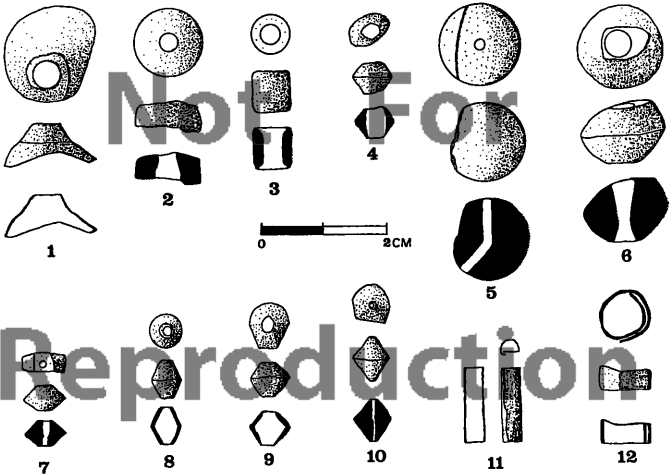
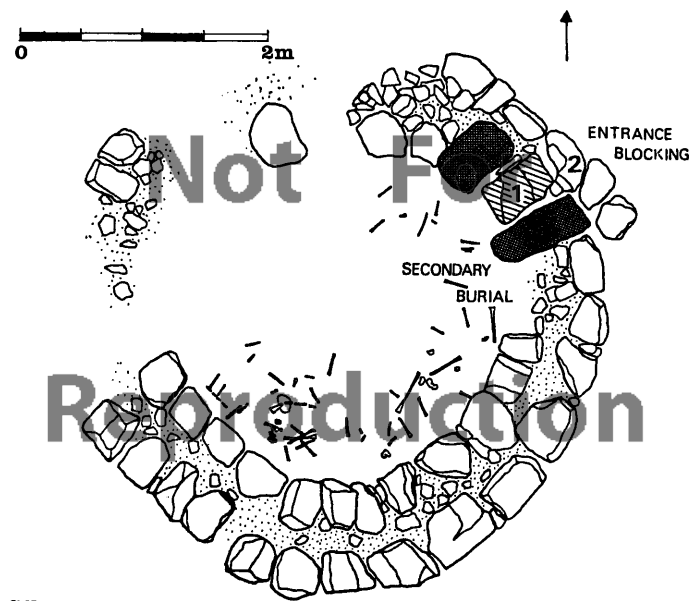



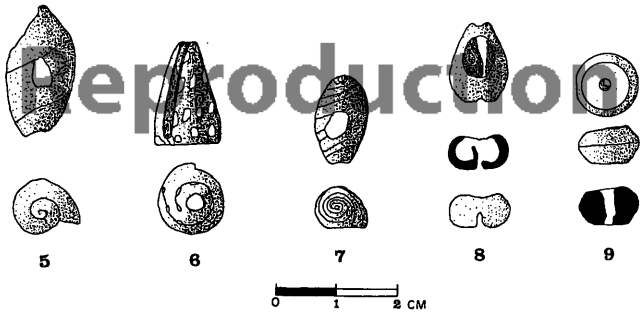
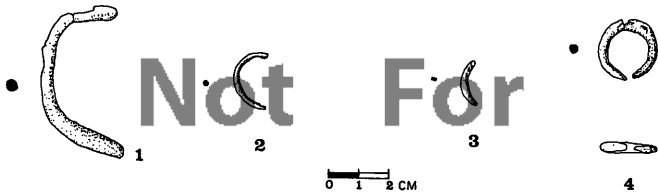
Fig. 29



SH 100

 core of masonry

 door jamb



11

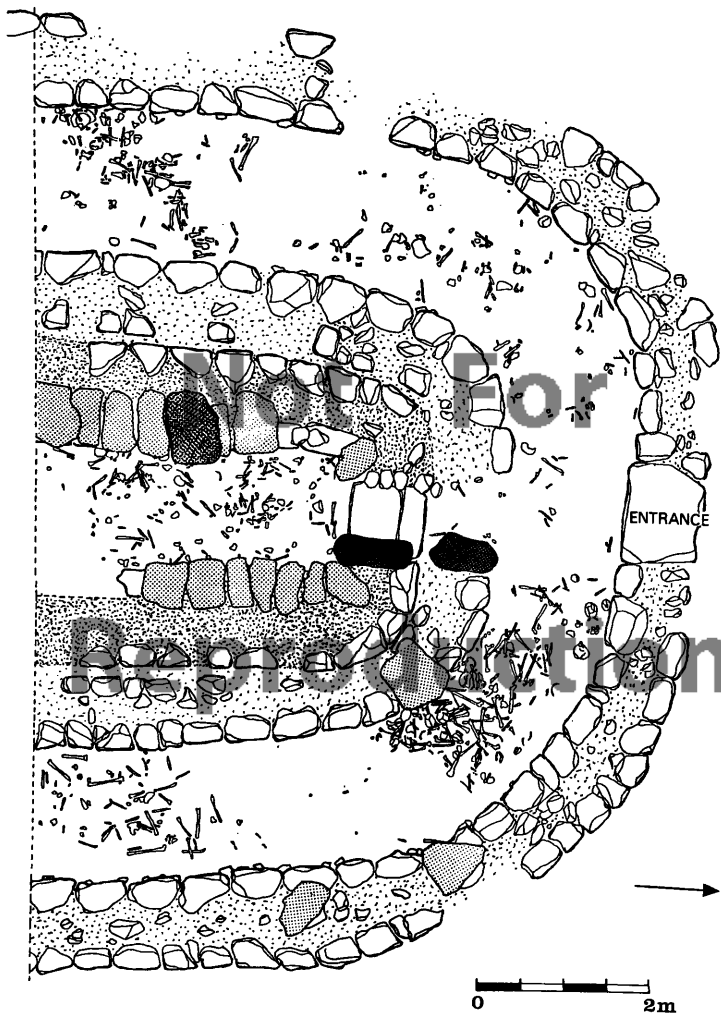
Monogrammes

	e	d	fb	gb	g	o	i	m	n	h	i	q	r
A													
Ab-													



12

Fig. 31



SH 99

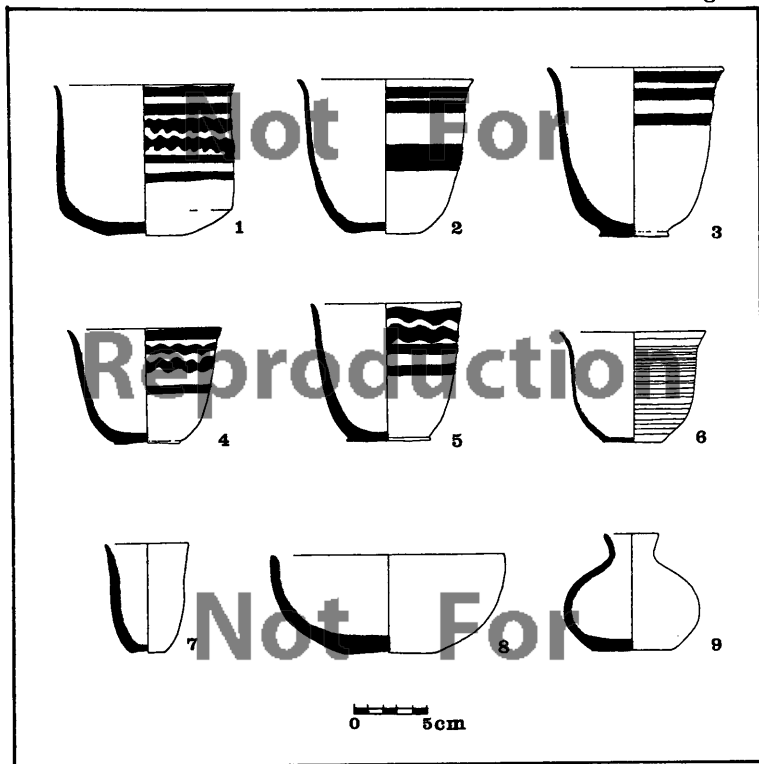




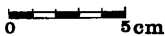
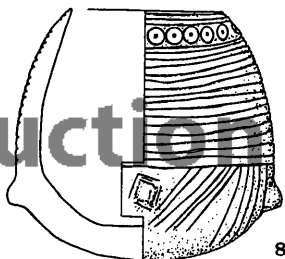
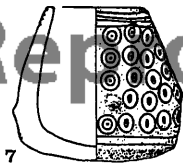
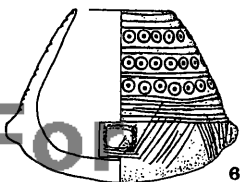
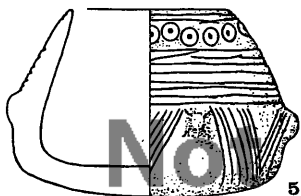
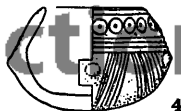
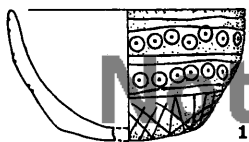


Fig. 31:

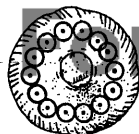
-  core of masonry
-  roof construction (1st course)
-  roof construction (2nd course)
-  door jamb

Reproduction

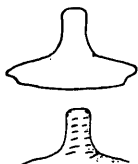




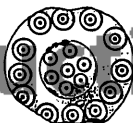
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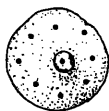
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3



4



5



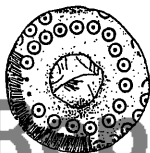
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7



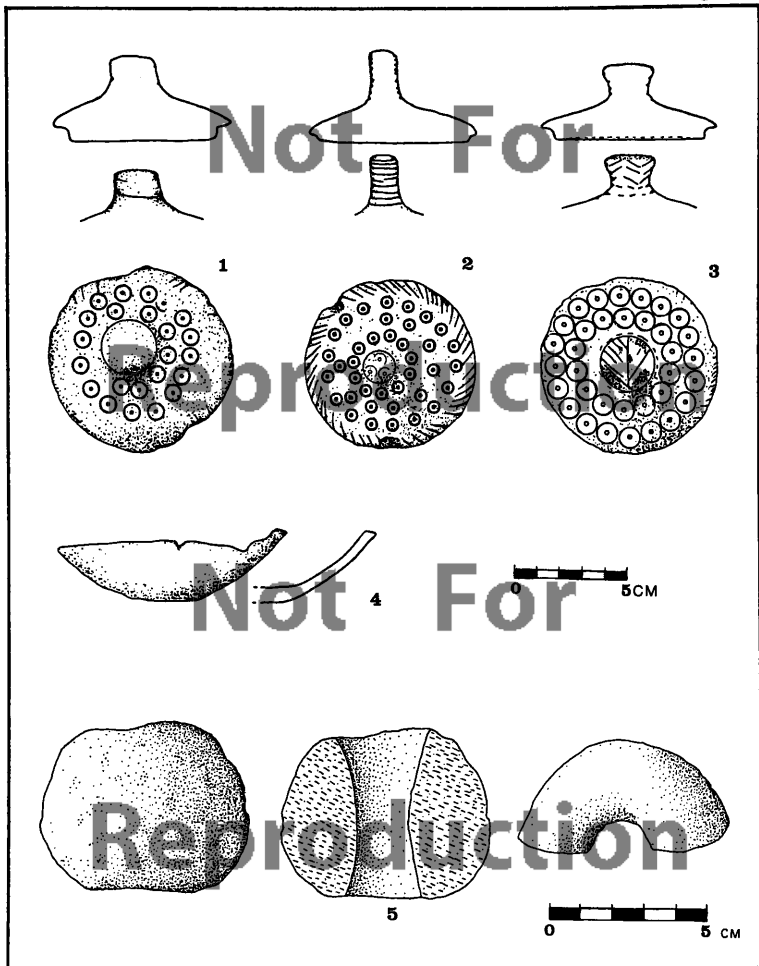
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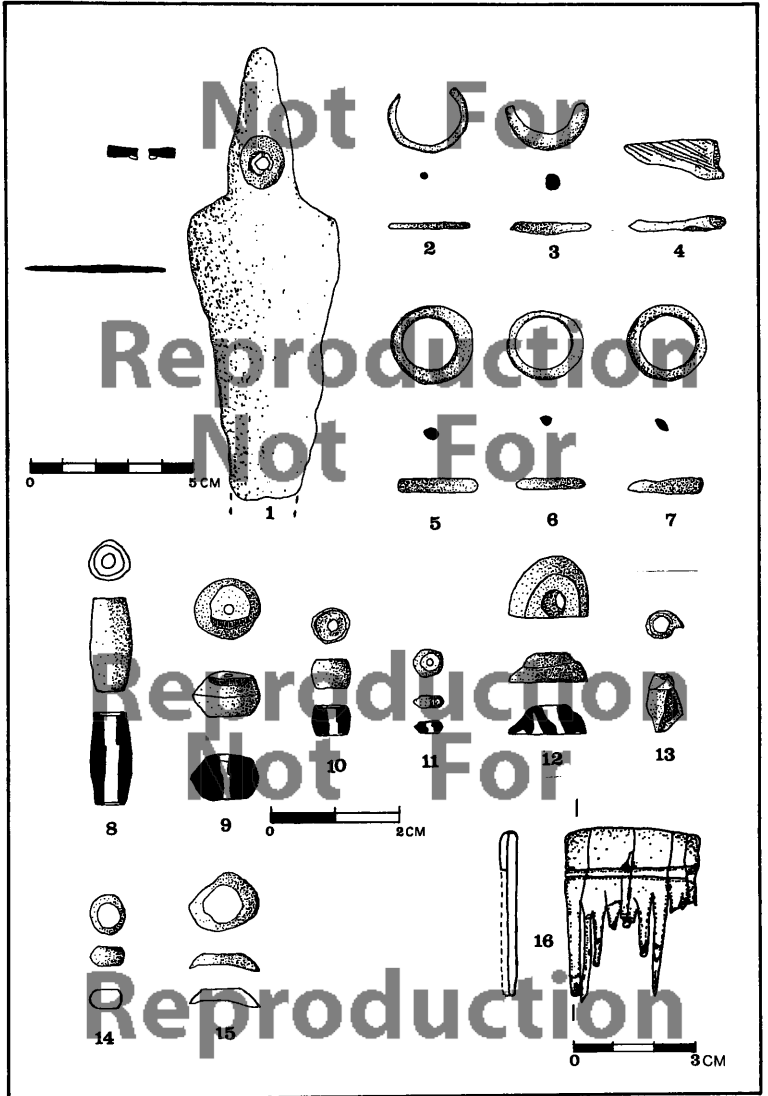


9



0 5cm





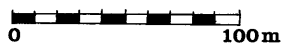
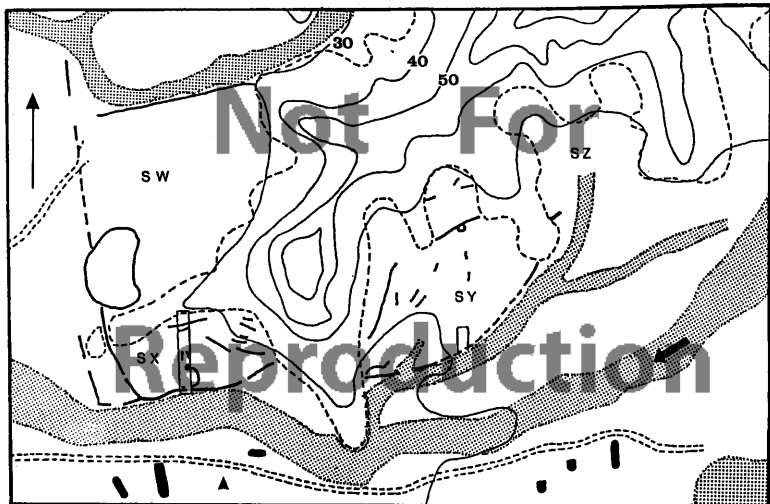


Fig. 38

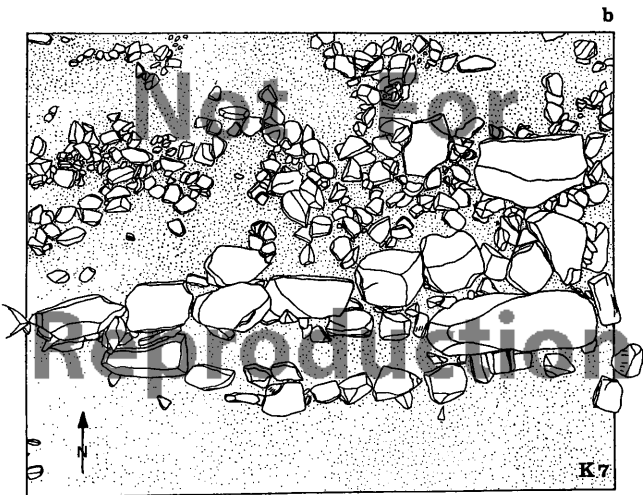
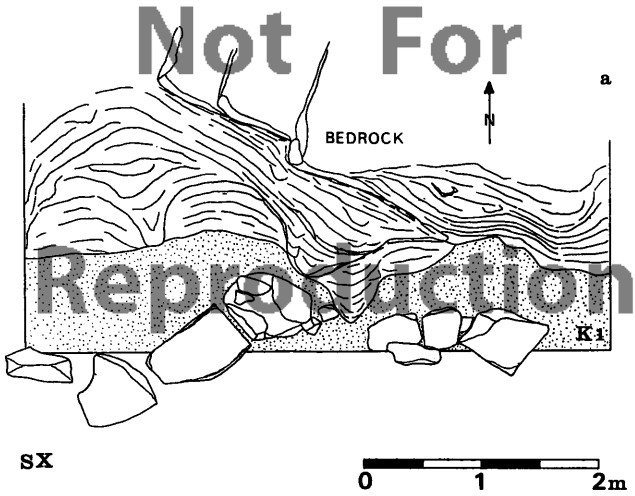
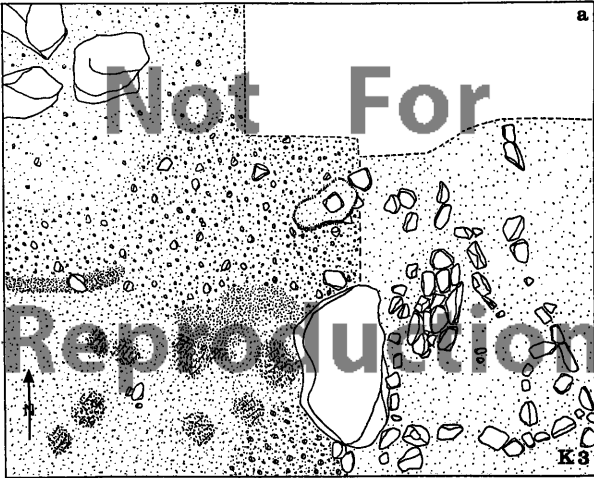


Fig. 39



SX

0 1 2m

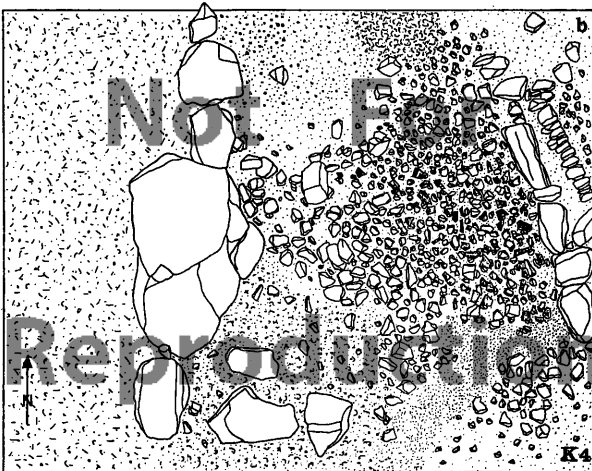
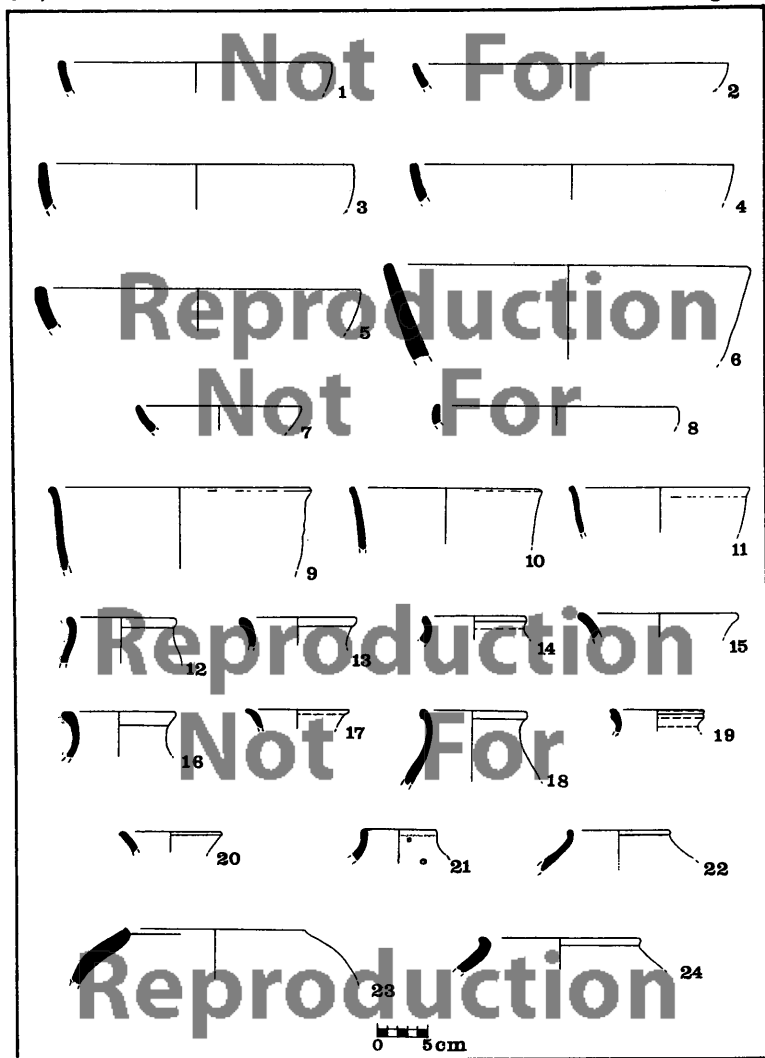
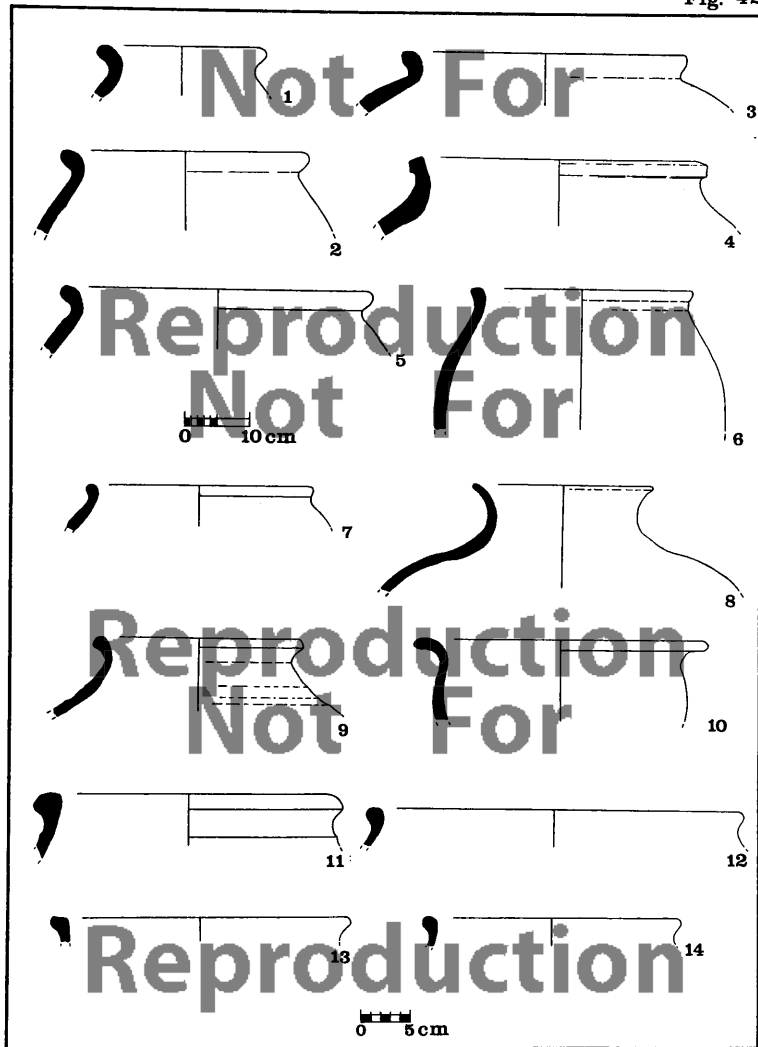
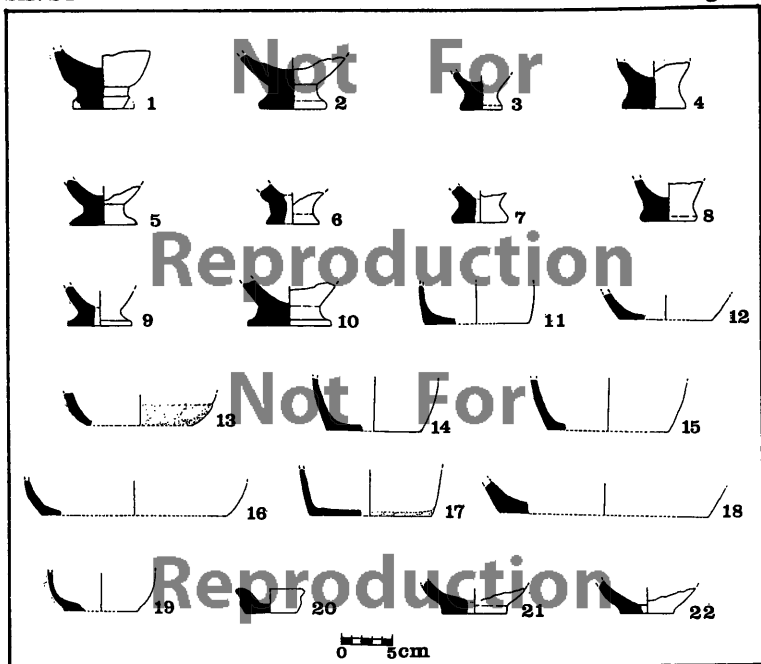




Fig. 40

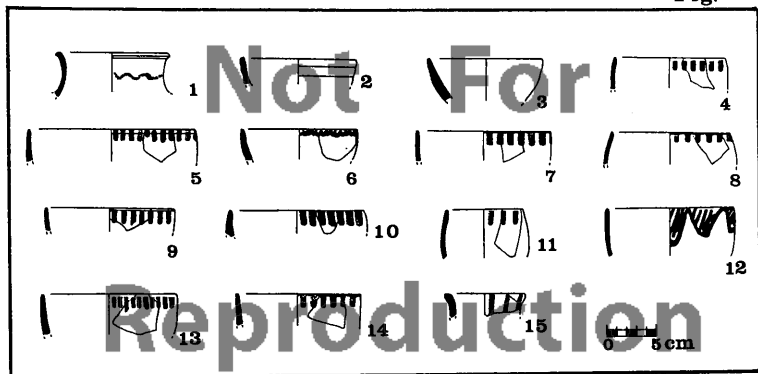






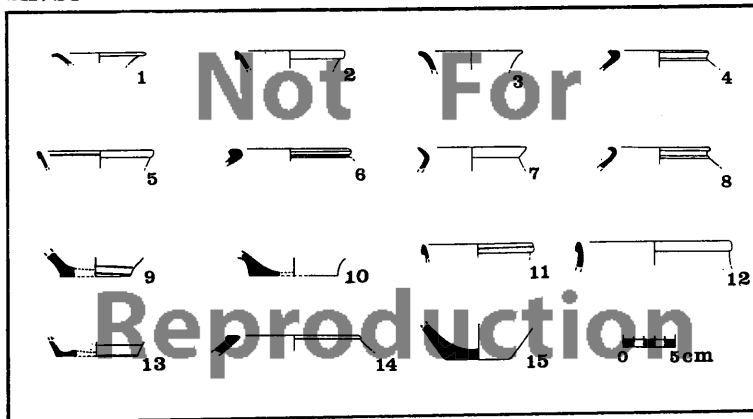
SX, SY

Fig. 44



SX, SY

Fig. 45



1 E 28



2 E 68



3 SSY.1



4 E 24



SHIMAL



5



UMM AN-NAR.

6



7



8



9



GHANADAH 1

10



11



HILI-B

12



13



14



15

E 55



16



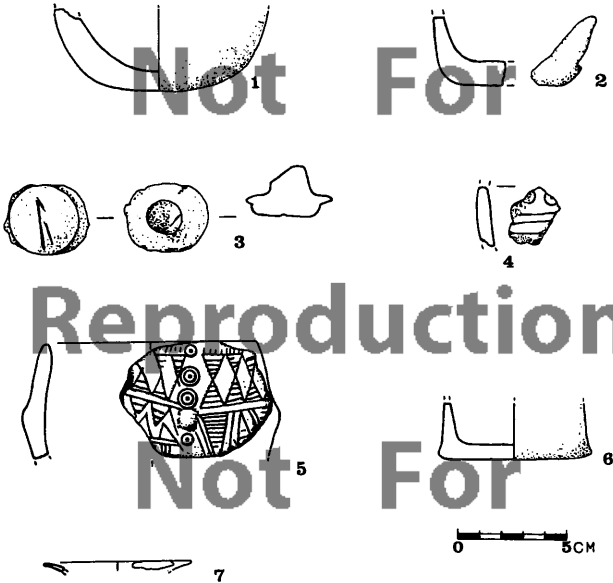
GHANADAH 1

17

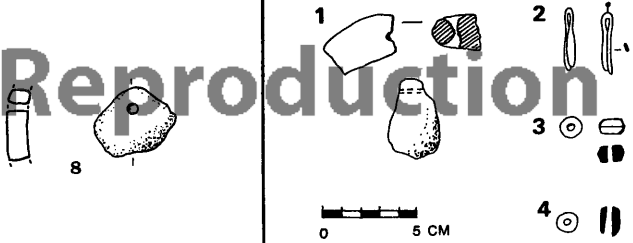


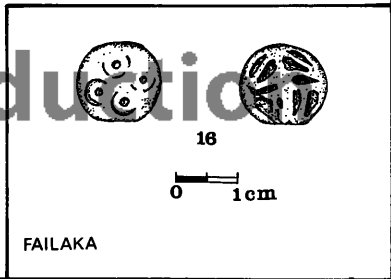
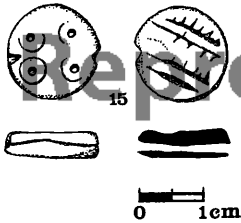
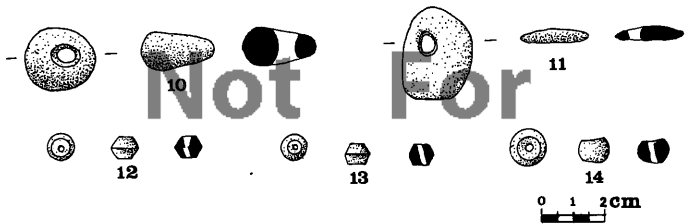
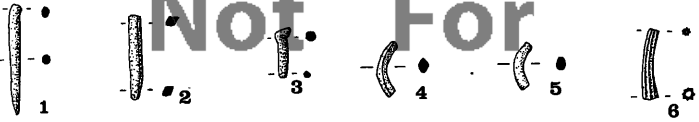
HILI-B

a

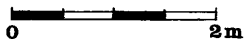
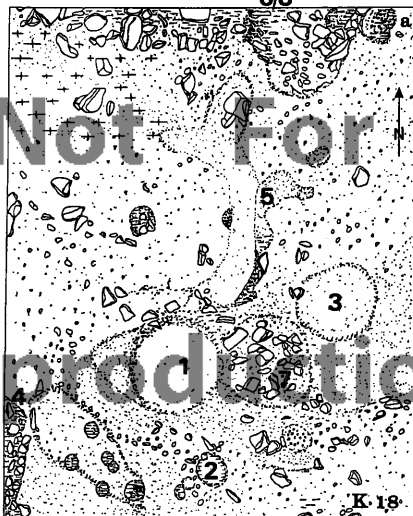


b





FAILAKA

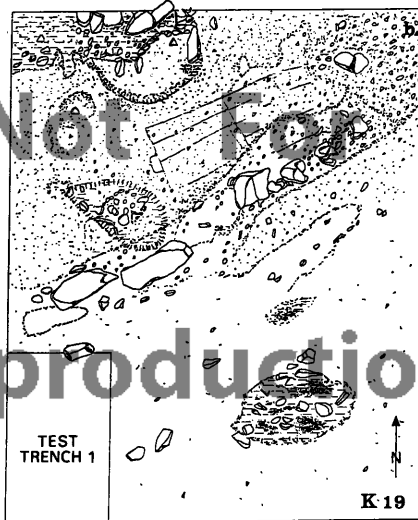


SY

ASHES


1-8 PITS


SILT




Key to Fig. 50


 shells


 silt matrix

 few fine gravel


 fine gravel


 fine to medium gravel


 coarse gravel


 coarse gravel and larger stones

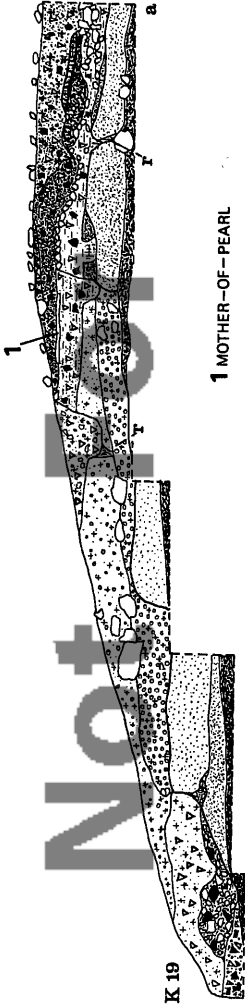
 mixed gravel

 root hole

 potsherds

 ashes

 (shading) ashy soil



1 MOTHER-OF-PEARL

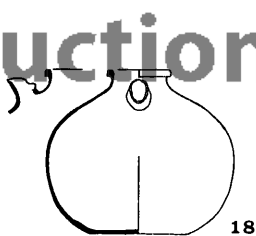
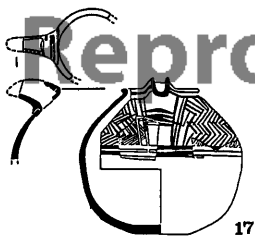
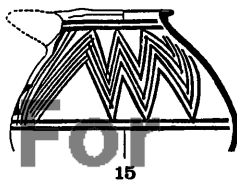
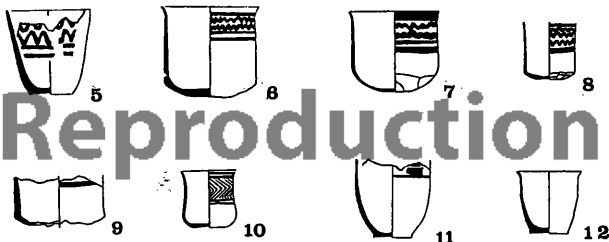
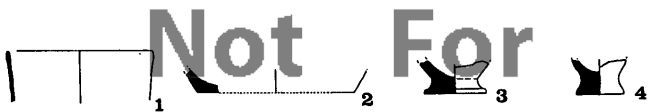


SOUTH

SY

K 18



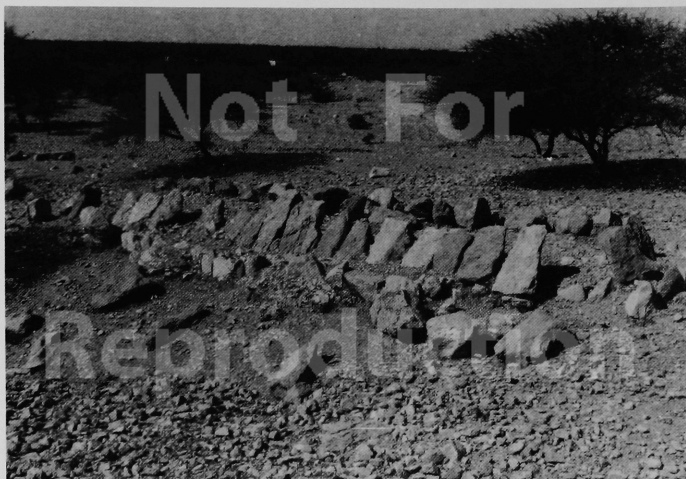




Pl.1: Shimal Middle, shell-mound in settlement area SW



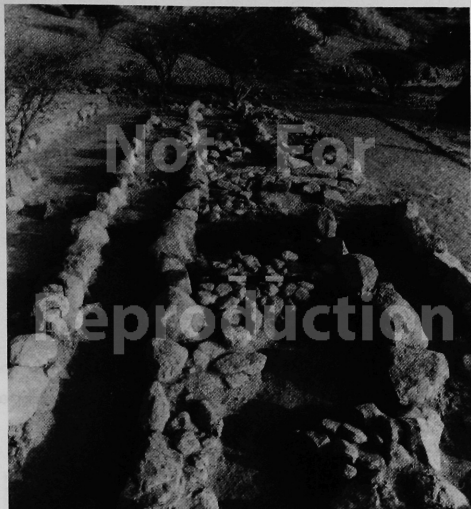
Pl.2: Shimal North, shell-mound SM 1 before excavation



Pl.3: Shimal tomb SH 101 from S



Pl.4: Shimal tomb SH 101 from W (note roof construction)



Pl.5: Shimal tomb SH 102 from N during excavation



Pl.6: Spearheads in situ, E of SH 102



Pl.7: Ghalilah tomb SH 103 from N during excavation



Pl.8: Bone layer in central passage of SH 103



Pl.9: Disturbed bone layer in SH 103



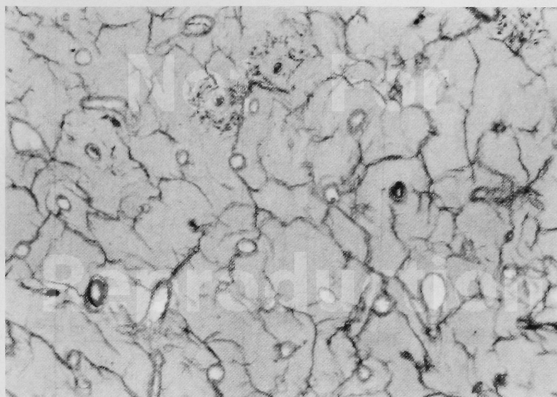
Pl.10: Ring-chambered tomb SH 99 during excavation



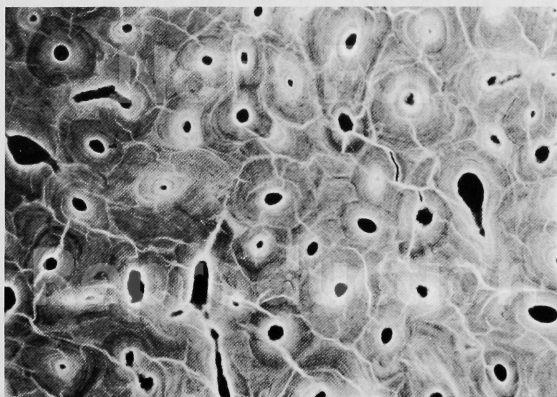
Pl.11: Central chamber of SH 99 with grid system on the remains of the pavement (note mobil square markers)



Pl.12: Concentration of crania in SH 99



Pl.13: Histologic thin ground section of sample B 12'.1. Structural elements of the bony tissue are visible, their condition, however, has been considerably influenced by diagenetic affections (femur compacta, ca. 100 μ , 15x)



Pl.14: as above. After microradiographing, revealing a significant increase of information (femur compacta, ca. 100 μ , 15x)

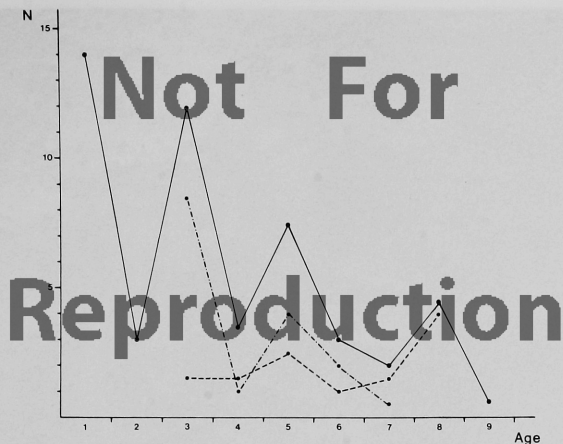


Pl.15: Mandibular fragment (B 12.9) exhibiting ante mortem tooth loss (marked by arrow)

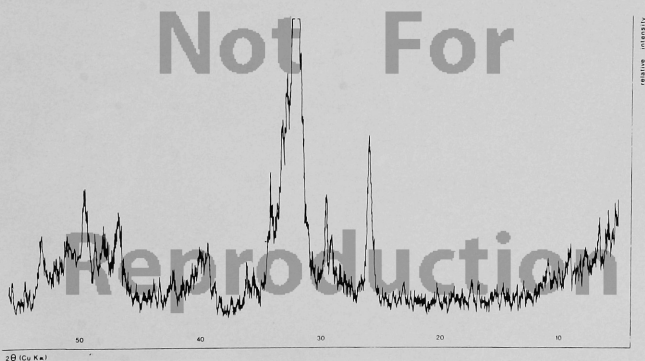
Pl.16: Urinary calculus found in tomb SH 100 (cf.Pl.19)



Pl.17: Fragment of a femoral diaphysis (from tomb SH 99) exhibiting cracking patterns characteristic of high temperature exposition of bone still covered with soft tissue. thus indicating intentional cremation



P1.18: Conditions of mortality in the population of SH 103. 1 - infans 1, 2 - infans 2, 3 - iuvenis, 4 - early adultus, 5 - middle adultus, 6 - late adultus, 7 - early maturus, 8 - late maturus. Solid line: total. Dashed and dotted line: females. Dashed line: males



P1.19: X-ray powder diffractogram of the urinary calculus displaying a spectrum concordant with that of apatite



Pl.20: Shimal Middle, aerial view of the settlement (by courtesy of the government of Ras al-Khaimah)



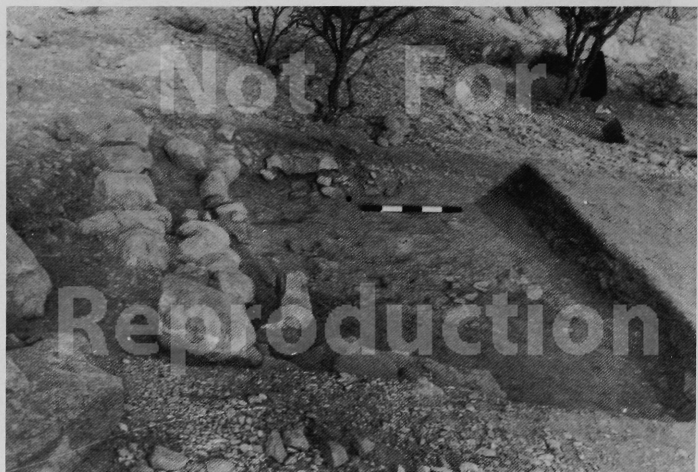
Pl.21: Settlement area SX from E before excavation



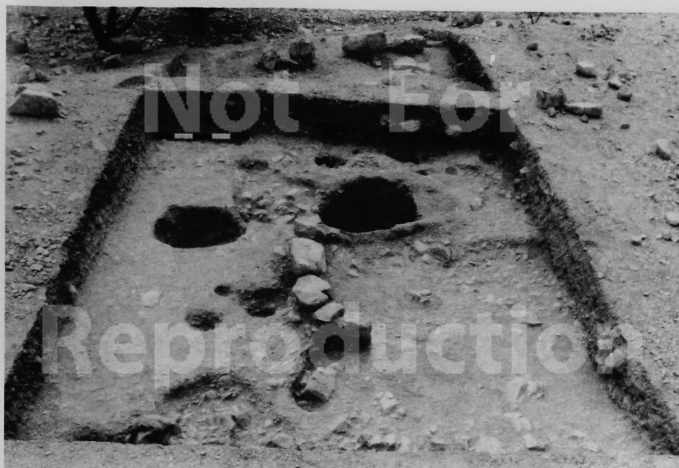
Pl.22: SX, Trench K from S during excavation



Pl.23: SX, enclosure wall with main entrance, stone circle, and monolith (cf.Pl.22)



Pl.24: SX, square K 2 from W



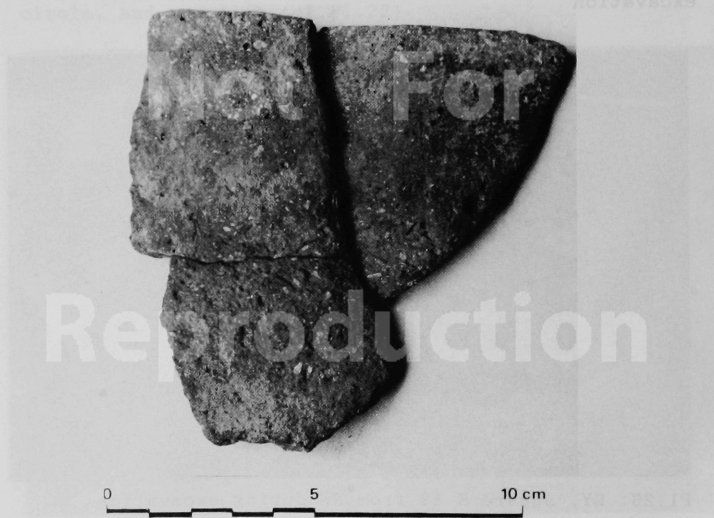
Pl.25: Settlement area SY, square K 18 from N after excavation



Pl.26: SY, square K 19 from NW during excavation



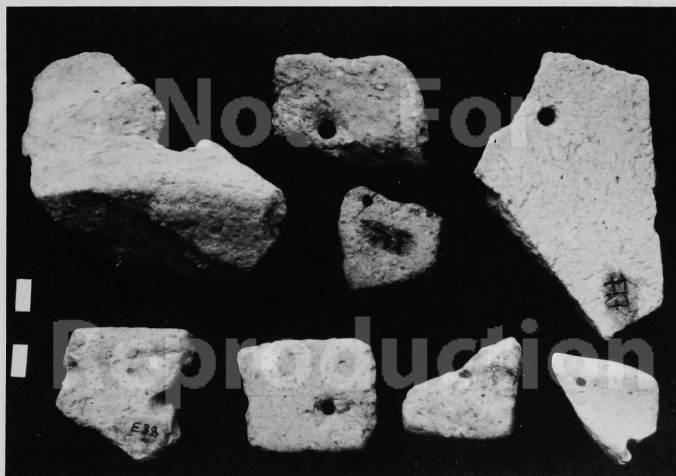
Pl.27: SY, square K 19, western section



Pl.28: Coarse ware pottery (fabric 2) from tomb SH 103



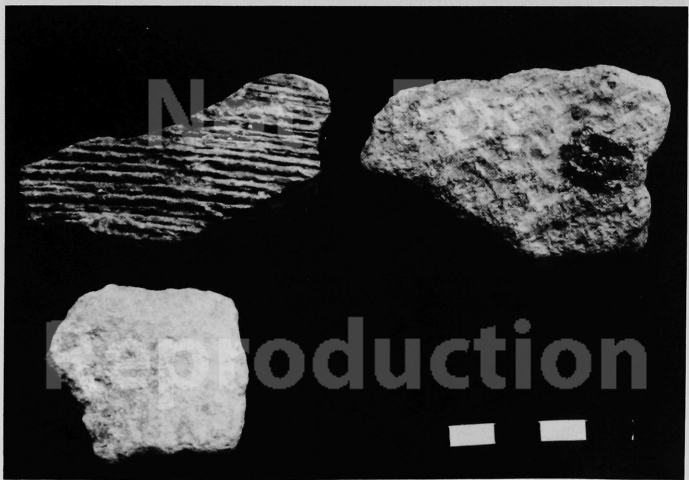
PL.29: Medium ware storage jars (fabric 3) from the settlement



PL.30: Perforated sherds from the settlement



Pl.31: Fragments of painted bowls (fabric 5) from the settlement



Pl.32: Pottery with reed and mat impressions from the settlement

