EXCAVATIONS AT

# Tell Rubeidheh

IRAQ ARCHAEOLOGICAL REPORTS - 2

**R.G. Killick et al. TELL RUBEIDHEH *An Uruk Village in the Jebel Hamrin***

This is an excavation report on Tell Rubeidheh, an Uruk period mound dug as part of the Hamrin Dam rescue project in Eastern Iraq. It includes reports on the archaeology, finds, animal bones and flints.

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IRAQ ARCHAEOLOGICAL REPORTS – 2

# TELL RUBEIDHEH

## AN URUK VILLAGE IN THE JEBEL HAMRIN

by
T. Cuyler Young, R.G. Killick, P.J. Watson, S. Payne,
D. Downs, E. McAdam, H.S. Mynors, R. Miller,
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## PREFACE

On May 4th 1977, the Director-General of Antiquities in Iraq issued an invitation to foreign archaeologists to participate in the salvage of sites which were to be flooded by the completion of a dam on the Diyala River, 120 km. north-east of Baghdad.

Responding to this request, the British Archaeological Expedition to Iraq was one of the first foreign teams to arrive in the Hamrin area, beginning work on Tell Madhhur, near Keshkul village, on December 3rd 1977. Tell Madhhur was chosen because it had Late 'Ubaid pottery on the surface, a period which promised to be particularly interesting within the valley, and because it was of a manageable size. In spite of the latter, the site was to keep the staff of the Expedition busy for the next three years. It was also intended, once the Expedition's base was firmly established at Keshkul, to investigate some of the early sites on the western edge of the project, sandwiched between the Narin River and the Jebel Hamrin. One of these was Tell Rubeidheh which on the original survey map was dated to the 'Ubaid period. However, an initial visit to the site suggested that it was predominantly Late Uruk in date - several bevelled-rim bowl sherds were retrieved. Such a date made the site an interesting prospect to the excavators of Abu Salabikh and Godin Tepe.

Over the winter it was not possible to work west of the Narin River so that the first season at Tell Rubeidheh did not begin until April 22nd 1978. It was a very short season, lasting only thirteen days. Each day either Nicholas Postgate or Philip Watson drove from Keshkul to Tell Rubeidheh, taking one Sherqati and two workmen. The area and depth of deposit on the tell were investigated and enough found to justify a second season.

The second and final season at the site began on April 14th 1979 and ended on May 17th. Again we commuted each day from Keshkul, a journey which took a little under one hour. It was possible to reach Tell Rubeidheh either from the north, via Qara Tepe and across the Narin which was fordable throughout the season, or from the south, crossing the river on a bridge at Sa'ya as-Saghir. In the second season, six to eight workmen were employed from the nearby villages of Khallawiyeh and Khezeraneh.

The recording system used was the same as that used at Abu Salabikh (Postgate (ed.), 1983). A grid of 100 x 100 m. squares was laid across the site oriented to the north and these were designated by a single number and a letter, e.g. 2F. Within the larger squares a grid of 10 x 10 m. was laid out and numbered from 00 in the north-west corner to 99 in the south-east, thus 2F44. A series of batch numbers (similar to lot numbers, or excavation units etc.) was assigned to each trench. A list of these may be found in Appendices 3 & 4. Each batch number should in theory correspond to an observed layer of earth within a trench. Find numbers were related to the square number and given a running series from 01 to infinity, e.g. 2F44:01 represents the first object found in that square. An exception to this was made in the first season where finds from the surface scrape were given numbers 2FS:01 to infinity.

Excavation at Tell Rubeidheh was partly undertaken by unskilled workmen who in the short time available could not be trained beyond a very rudimentary level. The supervisory staff thus did much of the digging. Small and large picks were used and no doubt some information was lost. In an attempt to compensate for this a programme of dry sieving was initiated and up to 20% of selected deposits sieved through one centimetre screens in the first few days of excavation. However, meagre results, windy conditions and staff shortages resulted in the exercise being discontinued. Material for flotation was also collected and stored on site but, unfortunately, the prize of the sacks in which it was kept proved too great a temptation to the local *bedu* who removed them. This lack of botanical samples represents a major omission from the specialist studies of the site.

The brevity of the excavation seasons resulted in many of the questions about the site remaining unanswered. However, the badly-eroded nature of the settlement suggested that further excavation would not necessarily produce more information. Furthermore, there was no possibility of carrying out much horizontal excavation to expose coherent building plans. The brief for the second season was simply to collect a representative sample of the assemblage. It is on this that the success of the enterprise must be judged.

The Jebel Hamrin Salvage Project marked a new era in the history of archaeological excavation in Mesopotamia. It was the first occasion in Iraq when a small, archaeologically unknown area was subjected to a very intensive programme of survey and excavation. Almost a decade later, with the

gradual publication of the site reports, the results of the project are now beginning to percolate through the literature. This final report on the excavations at Tell Rubeidheh will, I hope, add a few more pieces to that mosaic of life through the millennia in the Hamrin valley which was, between 1977 and 1980, so painstakingly uncovered by the many foreign and Iraqi teams who responded to the original invitation.

R.G. Killick
Cambridge.

17.7.87

## ACKNOWLEDGEMENTS

The excavations at Tell Rubeidheh were undertaken as part of the British-Canadian contribution to the Jebel Hamrin Salvage Project. The partnership was between the Royal Ontario Museum, represented by Professor T. Cuyler Young, and the British Archaeological Expedition to Iraq under its director at that time, Mr. J. N. Postgate.

As always, the publication of an archaeological report reflects the endeavours of many people. Thanks are due to Dr. Mu'ayyad Sa'id Bassim Damerji, President of the State Organization for Antiquities and Heritage, who initiated and administered so successfully the Hamrin project. A debt must also be acknowledged to the late Professor Fuad Safar, to Dr. Behnam Abu as-Soof, and to the local staff of the State Organization in Jelaula and Bahiza for all their help and efforts on our behalf.

The staff of the first season consisted of Mr. J.N. Postgate and Mr. P.J. Watson who directed the initial trenching and surface scraping at the site. The members of the second season were R.G. Killick (director), Dr. Harriet Crawford (archaeologist), and Dr. Ellen McAdam (pottery specialist). Sd. Abdul Mejid Muhammad acted as representative of S.O.A.H. The following members of the Tell Madhhur team also worked on material from Tell Rubeidheh: Mr. P.J. Watson (registrar), Mrs. A. Watson (finds assistant), Mr. R. Britton (draughtsman), Miss. M. Logan and Mr. A. Kennedy (archaeological assistants). My thanks to all of them for their hard work and good companionship.

Specialist reports were subsequently prepared by D. Downs (human skeletal remains), E. McAdam (pottery typology), R. Miller (flaked stone technology), H.S. Mynors (pottery analysis), & S. Payne (faunal material), all of whom cheerfully coped with the inadequacies of the original excavation. J.A. Moon contributed an appendix on the results of a sounding at Tell Haizalun which was undertaken at the same time as excavations at Tell Rubeidheh and K. Arnold an appendix on X-ray analysis of flint. G. Owen photographed and printed the flint from Rubeidheh and bravely volunteered to print the other photographs for which I have to admit responsibility. Mr. J.N. Postgate facilitated in several ways the publication of this report. Dr. Sabah Abboud undertook the Arabic translation. My grateful thanks to them all.

We operated out of the main base of the British Archaeological Expedition to Iraq in Keshkul village and I would like to thank Dr. M.D. Roaf who, while excavating at Tell Madhhur, still found time to take an interest in the work at Tell Rubeidheh and who offered much useful advice.

Canadian participation in the project was made possible by funding from the Royal Ontario Museum. The work of the British Archaeological Expedition to Iraq was supported by the British School of Archaeology in Iraq and the British Academy.

The State Organization for Antiquities and Heritage met the cost of the workmen and provided much of the site equipment. Publication of this report was undertaken by the British School of Archaeology in Iraq.

# CHAPTER 1: THE NATURAL AND HISTORICAL LANDSCAPE OF TELL RUBEIDHEH

by
T. Cuyler Young & R.G. Killick

Most archaeologists seek not only to understand the historical dynamics of the particular site they are excavating but also to examine the relationship between that site and the wider natural and historical landscape in which it functioned. Our temptation, and ability, to deal with this larger setting is, of course, much greater when, as is the case with the Jebel Hamrin Project, so many sites are being investigated in so relatively small an area.

The region discussed here is that which has now been flooded by the dam built on the Diyala River at the south end of the Jebel Hamrin (fig. 1). Its limits are fixed to the south by the confluence of the Narin River with the Diyala and northwards it extends to the area around the modern town of Qara Tepe. The western limit is the Jebel Hamrin range and to the east that of the Jebel Nasaz and the higher ranges of the Jubbeh Dag. Most of the surveyed and excavated sites lay within this area; a few sites lay on the left bank of the Diyala River, between it and the Kurdere River. This is not however, the whole of the area that analysis suggests would have made a proper stage against which to examine the archaeological history of this part of Mesopotamia. Such an area would have included the extension of the Hamrin valley to the northwest from Qara Tepe at least as far as the headwaters of the Narin River; the valley to the northeast falling between the Jubbah Dag and the next fold of the Zagros; and probably the valley of the Helwan River as well, at least as far east as the modern Iraq-Iran border. This area is in part ecologically similar to regions higher up the Zagros. It is, nevertheless, not a highland valley but a border landscape lying at the north-eastern edge of the lowlands and at the south-eastern edge of the Zagros highlands. A brief look at rainfall patterns underlines this point.[1]

The Hamrin valley receives sufficient rainfall today for dry farming to play an important role in agriculture. In fact, over 50% of the wheat and barley grown is produced in dry farm conditions; this figure is all the more significant when one considers that the average yield of irrigated wheat and barley locally is about 3.4 times larger than the yield for dry farm.[2] Dependance on rainfall is, however, a risky undertaking. While the mean annual rainfall is between 250 and 300 mm., and thus within the dry farm minimum, actual annual variations of precipitation have been observed to fluctuate as much as 0.4 and 1.5 times the mean annual average. This degree of uncertainty about the amount of rain which will fall in any given year is the reason that dry farm crops are successful today in only three out of five years. Even so, unlike the Lower Diyala region, immediately southwest of the Jebel Hamrin, dry farming is reasonable and profitable in the Hamrin valley. Here, irrigation is a useful supplement to natural precipitation, but not absolutely necessary.

The value and importance of selected parts of the valley are today enhanced by limited possibilities for irrigation both to supplement winter dry farming and to make possible some summer cropping as well. Two forms of irrigation are documented in the modern valley. At several points along the faces of the Jebel Hamrin and Jubbah Dag, catchment irrigation is practised, using wadi run-off to allow a deeper penetration of the moisture into the soils than is possible with unaugmented dry farming. More important, of course, is the limited way in which water from the Diyala is used for irrigation. Only two relatively small areas of the valley can be supplied from the Diyala. The larger is the area around and immediately south-west of Sa'adiyeh, where simple canals bring water to land on the left bank of the river, and to land on the right bank only for a distance of about seven to eight kilometres from the river-bed.[3] Diyala water can also be brought, with much difficulty, to the opposite end of the valley in the region of Qara Tepe and Keshkul.[4] To accomplish this, canals must be brought off the Diyala at the northern boundary of the valley. From this take-off they run along the northeast face of the Jubbah Dag and then with difficulty, given the sharp fall of the land, enter the Hamrin through the Qara Tepe gap. This water makes possible the gardens of Qara Tepe.

Both these irrigation systems are easily disrupted for two main reasons. Firstly, at high water the river naturally feeds into the head of both systems, but very soon after the crest of the flood artificial weirs must be constructed to get the water into the canals - and it is after
the crest of the flood that the water is most needed for the winter growing season. Yet the local river regime, a heavily braided system in a wide gravel bed, means that the weirs are destroyed every year by the flood. Thus irrigation depends on mustering the necessary labour and capital to rebuild the

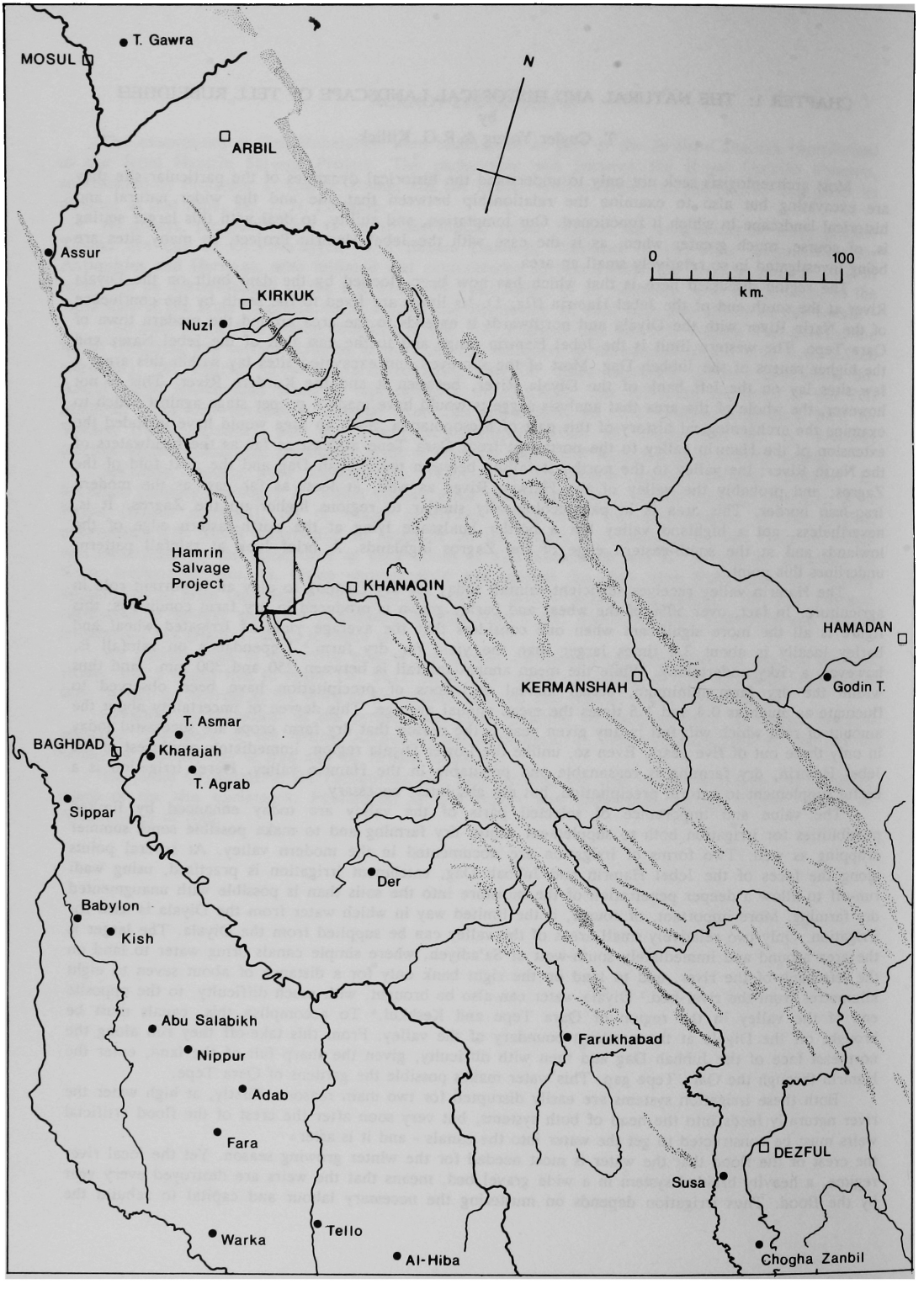


Figure 1
The location of the Jebel Hamrin Salvage Project.

weirs each year, as soon as possible after the destructive flood crest is past. Secondly, particularly in the case of the Qara Tepe area, the entire system is subject to major disruption by flooding and alluviation from the many wadis coming out of the jebel which cross the canals.

Thus, the waters of the Diyala river can be used only in two fairly restricted parts of the valley and then only with some difficulty. Even when irrigation systems are in place and functioning, they are subject to sudden disruption and need careful maintenance.

The Hamrin valley has been considered so far as a geographical unit. In fact, there are significant variations within it and only parts of the valley are suitable for agriculture. Most of the cultivable land lies on the east side of the Narin River which today bisects the valley from north to south. This river lies in an incised bed up to 6m. below modern plain surface and is thus useless for non-mechanical irrigation. Furthermore, it drains some 3,000 sq. km. and the heavy surface run-off within this area makes it prone to flash flooding. Tell Rubeidheh was one of only a handful of settlements located on the west side of the Narin river. The land here is poor quality, made up of gravelly soils; vegetation cover is sparse and the low rainfall is mostly lost through excessive surface run-off. Winter wheat and barley are grown on a narrow strip close to the Narin river and in spring a thin covering of grass and herbs provides sufficient pasturage for sheep and goats attended by small numbers of nomads who move into the valley late in this season.

An important feature of the basic topography of the Hamrin is that the slopes of the low hills to the northeast and southwest, and the large areas of the valley floor totally unsuited to cultivation, given the amount of annual precipitation, provide good grazing lands. This opportunity is today seized by the local settled farmers and townsmen, who maintain larger herds of sheep, goat and cattle than is common in lowland Mesopotamia, and by transhumant pastoralists who come from higher in the Zagros to exercise long-standing grazing rights throughout the valley. This modern pattern may be considered a paradigm for the past. Thus a somewhat greater reliance on animals within the context of mixed farming than was usual in more downstream areas, as well as the development of symbiotic relationships between settled agriculturalists and transhumant pastoralists, perhaps more characteristic of the higher Zagros, are also important features of border landscapes such as the Hamrin.

The location of Tell Rubeidheh in the strip between the Narin River and the Jebel Hamrin suggests that agriculture may not have been the prime factor in deciding the location of the settlement. The area west of the Narin seems consistently to have been lacking the villages which were so numerous on the east bank where presumably the most fertile land lay. Tell Rubeidheh is one of only three settlements dating to the Uruk period found in the valley - a remarkable contrast with the situation in the Late 'Ubaid. This particular contrast highlights the very extreme variation in settlement from period to period which was one of the major puzzles set by the results of the Hamrin Project. A secondary and related problem which emerged from this was the reason for the considerable variation in soil deposition within the valley.

Modern soil conditions in the Hamrin, like rainfall patterns, vary a good deal from those found immediately on the other side of the Jebel Hamrin in the "land behind Baghdad". In the Lower Diyala the top-soils are derived mainly from riverine alluvium spread over the landscape either by the rivers themselves or by the ancient irrigation works of man whose high-banked, disused canals are a characteristic feature of the region. These soils are fairly fine-grained; the water table is high and salinity is a major problem. In the Hamrin, on the other hand, the best present top-soil is fairly coarse and is derived from local wadi run-off from the Jebel Hamrin and Jubbah Dag. Present day alluviation is more or less confined to both banks of the Diyala itself, around and between Sa'adiyeh and Jebel Hamrin. The water table is fairly deep; the good soils are well drained and salination is not much of a problem, except in certain depressions such as that south of Qara Tepe.

But to what extent the present pattern of alluvial deposition represents that of the prehistoric and early historic times is another question. The evidence suggests considerable variation within the valley. Thus, Tell Rubeidheh lay on the surface and the dominant process at the site was one of intensive erosion. Elsewhere, soil deposition since the 'Ubaid period has been extensive as the depth to which the 'Ubaid period levels at Tell Madhhur extend below the plain clearly demonstrates. In the Yelkhi area, Late Uruk occupation lay 2m. below the plain and was only found by accident (Invernizzi 1979). Further south, the Halaf settlement of Sungur A lay on a natural ridge where there was little evidence of the same degree of deposition.

In such a marginal area as the Hamrin valley slight and gradual changes in precipitation could have tilted the ecological balance for or against dry farming. Only a very slight decrease in rainfall bringing the mean average precipitation below 200 mm., coupled with decreased reliability, for a period extending over fifty to one hundred years, would be sufficient to destroy temporarily the dry farming potential of the valley. Conversely, only a slight rise in the regular level of the Diyala near

Qara Tepe would have been sufficient to allow one branch of that river to flow down north-east of the Jubbah Dag and into the Hamrin valley through the Qara Tepe gap, considerably increasing the farming potential. Such minor shifts have yet to be pin-pointed in the archaeological record; yet the possibility of their existence must remain a factor in the reconstruction of ancient settlement patterns in this area.

These questions about the palaeo-climate remain basic to our understanding of settlement patterns in antiquity in the valley. How are we to account for such dramatic variation in site numbers from period to period? This fluctuation in the intensity of occupation and exploitation is perhaps the single most striking feature of the overall history of settlement in the region. We have evidence of a remarkably fragile settlement pattern in the Hamrin from prehistoric times onwards. There are no large sites in the valley which were more or less continuously occupied over long periods of time. It might have been expected that patterns of rainfall, soil distributions, irrigation possibilites, and local topography would have combined at one or two spots in the valley to maximize the benefits of all four factors, thus encouraging occupation at that spot in almost any period in which man was exploiting the valley as a settled agriculturalist. This does not seem to have ever been the case. Most sites are also quite shallow; some were occupied for not more than one period, such as Tell Rubeidheh, and many were occupied for only two periods at most. Tell Madhhur is typical of such sites not just in that it reveals two occupation periods, architecturally documented, but also in that those two settlements, Late 'Ubaid and Early Dynastic I, are separated by an abandonment during the Uruk and Jemdet Nasr periods. Occupation (at least settled occupation) seems to have fluctuated greatly in quantity from period to period over the entire valley.

The distribution of sites in the valley by period is shown on figures 2-10.[5] An early peak of density appears in the late 'Ubaid period. In the following Uruk & Jemdet Nasr periods there is a marked absence of sites across the whole valley - only 3 dating to these periods were identified.[6] A second peak of density comes in the Early Dynastic I period, followed by a fall off in settlement in the late Early Dynastic and Akkadian periods, and followed by a sharp rise in the number of sites dated to the Isin/Larsa and Old Babylonian periods. From an Old Babylonian peak, settlement declines markedly; we have evidence of only sparse occupation in the valley from the end of Kassite times to the Achaemenid period. From this point onwards, the number of settlements increases in the Parthian/Sassanian and Islamic periods, when the valley was more densely populated than at any other time.

In seeking to account for these fluctuations the first question which has to be considered is the extent to which present-day climatic and ecological conditions reflect those prevalent in antiquity. In the Hamrin, this question seemed even more crucial since we could detect no discernible pattern either in the location of settlements within the valley or in their numbers. Fortunately, part of the answer to this problem has now been provided as a result of geomorphological work in the valley carried out by the Italian Archaeological Mission (Baggio *et al.* 1985).

The preliminary report of the geomorphological survey of the valley suggested that for much of antiquity at least one branch of the Diyala, perhaps the major one, flowed down through the Hamrin valley (see fig. 11 following Baggio et al. 1985, fig. 1). The major evidence for these palaeo-river beds came from a series of core drillings taken mostly in the vicinity of Yelkhi (no. 36, figs. 4-7) coupled with field survey and analysis of satellite photographs. As reconstructed from these results, the Diyala River entered the valley east of Qara Tepe; at least five different old beds or meanders were reconstructed at the northern end of the valley. It then flowed southward, parallel with the modern course of the Narin before flowing out of the Hamrin range in the same position as today. On this reconstruction, it now becomes clear that many of the ancient settlements are positioned in a linear progression on or close to the left bank of the old course(s) of the Diyala. North of Yelkhi, the river seems to have been fairly unstable, explaining to some degree variations of settlement in the northern half of the valley. At the south end, in the area of Tell Gubbeh, it may have been more stable.

It is tempting to explain all the shifting patterns of settlement as being dictated by the vagaries of the Diyala course. Thus, in periods of least occupation, in the fourth and early third millennia, perhaps the Diyala was not flowing at all within the valley but was closer to its modern course. Such a shift may have led quite rapidly to the desertion of existing villages just as changes in the course of the Euphrates did further south in Sumer. Dependance on the river was probably only overcome in the Sassanian period when large irrigation schemes diversified the water supply to the valley. Evidence of such a scheme was found (Baggio *et al.* 1985, 218) bringing water off the Diyala along the eastern edge of the valley, perhaps to a string of Sassanian sites further south (fig. 10, nos. 28, 82, 83 etc.).

Although the course of the Diyala was probably the single most important factor in determining

the history of the valley, we should not discount the possibility of a variety of geographical and historical factors which might also, in part, account for fluctuations in levels and types of exploitation in the Hamrin. From an Akkadian and Babylonian point of view this is a valley on the fringes of their world; it is, if you like, the land behind the "land behind Baghdad". At times when the government in central Mesopotamia was strong, perhaps it was possible to maintain security in the valley. On the other hand, when conditions were such that the area was either a march land between two contending powers, as it certainly was in the first millennium BC when Assyria and Babylonia were at war, or when a central government was simply too weak to exert control in the region, then the valley would hardly have attracted permanent settlement. The region would be highly sensitive as well to fluctuations in the numbers and power of transhumant pastoralists who used the valley. In this respect, it is worth noting that much of the modern settlement of the region dates only from post-Ottoman times. Villagers still remembered when their grandparents farmed from tents, thus making it easier to escape the reach of a less than benevolent government and of equally hostile Kurds.

The valley was also important as a transit area for those travellers going from Sumer to the north. West of the Jebel Hamrin is the Jezireh, stretching without interruption to the Euphrates river and Khabur basin to the west. Travel between Baghdad and Mosul is possible along the west flank of the Jebel Hamrin but it is a difficult and exposed route, with scarcities of grazing land and even of water for some of the way. It is also possible to traverse the left bank of the Tigris, although the Adheim and Zab rivers are not easy to cross where they meet the Tigris. These factors combine to place the western edge of the Hamrin valley and Tell Rubeidheh on one of the most important land routes between Sumer and the north. In historical times, travellers from Baghdad to Mosul journeyed through Delli 'Abbas, keeping between the Tigris and Diyala Rivers, and crossed the Jebel Hamrin through one of the southern passes. This brought them down into the Hamrin valley where the track stayed west of the Narin River and passed close to Tell Rubeidheh. In recent times, the major crossing of the Narin River was at Eski Köprü, south-west of Qara Tepe, and from there the road went on to Kifri and Kirkuk. But how the changing course of the Diyala may have affected these traditional routes we have no way of knowing.

What is clear is that the Hamrin valley has throughout its history been subjected to a number of changing environmental factors which influenced the pattern of human exploitation within it. We have discussed a few of these - the dependance on rainfall and on the regime of the Diyala River, the interplay between pastoralists and agriculturalists, the importance of political stability and the position of the valley at the cross-roads of a wider trading network - but the list may well be incomplete.

**Figures 2-11**
**Key to numbered sites.**

1 Hufayir
2 Umm Salim
3 Rashid
4 Bahktariyeh
5 Deshtanah
6 Laham
7 Abbadeh
8 Abu Khazaf
9 Kheit Imneithir
10 Kheit al-Imheidiyeh
11 Turab
12 Suleimeh
13 Aq Tepe
14 Khirbet al-Qasim
15 Khubari
16 Beni Weis
17 Ayyash
18 Hikmeh
19 Shair
20 Mahmud Agha
21 Shor Tepe
22 Nebi Ismail
23 Zawiyeh
24 Raha
25 Imam Ali
26 Mahattah
27 Gauri
28 Irsheideh
29 Baradan
30 Humeidiyat
31 Gubba
32 Imleihiyeh
33 Imam al-Bairakdir
34 Ababra
35 Abu Husaini
36 Yelkhi
37 Harmaleh
38 Genj
39 Abu Shiafeh
40 Haizalun
41 Tunneireh
42 Sungur
43 Hat[illegible]ayeh
44 Rumeideh
45 Khuzeifeh
46 Seid Alan
47 Tejli
48 Abu Tahin
49 Bustan
50 Keshkul
51 Greish
52 Khallaweh
53 Razuk
54 Tepe Atiqeh
55 Ahmed al-Mughir
56 Khuzeifi
57 Ahmed al-Hattu
58 Abqa'
59 Yarmat
60 Ali Pasha
61 Saray
62 Abu Gubab
63 Shaureh
64 Madhhur
65 Kheit Qasim
66 Sabra
67 Tell Hassan
68 Sara
69 Rubeidheh
70 Abu Samad
71 'Uweisat
72 Rihan
73 Abu Qasim
74 Sa'adiyeh
75 Haddad
76 Kheseran
77 Zubeideh
78 Tannureh
79 Kharbud
80 Abu Su'ud
81 Kheit Nimleh
82 Gurjiyeh
83 Ibn Alwan
84 Sib
85 Ajamat
86 Sheikh Khalid

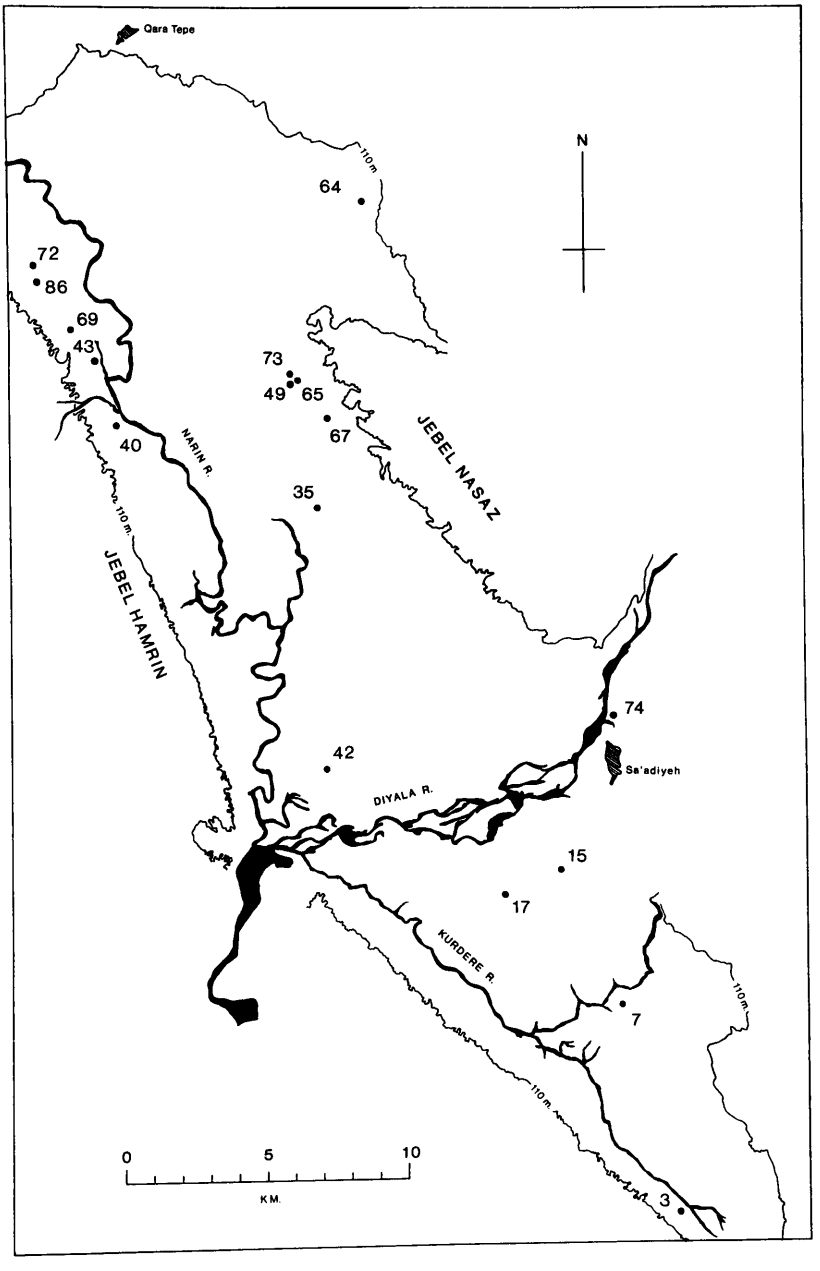


Figure 2
Hamrin Area: Sites with Prehistoric material.

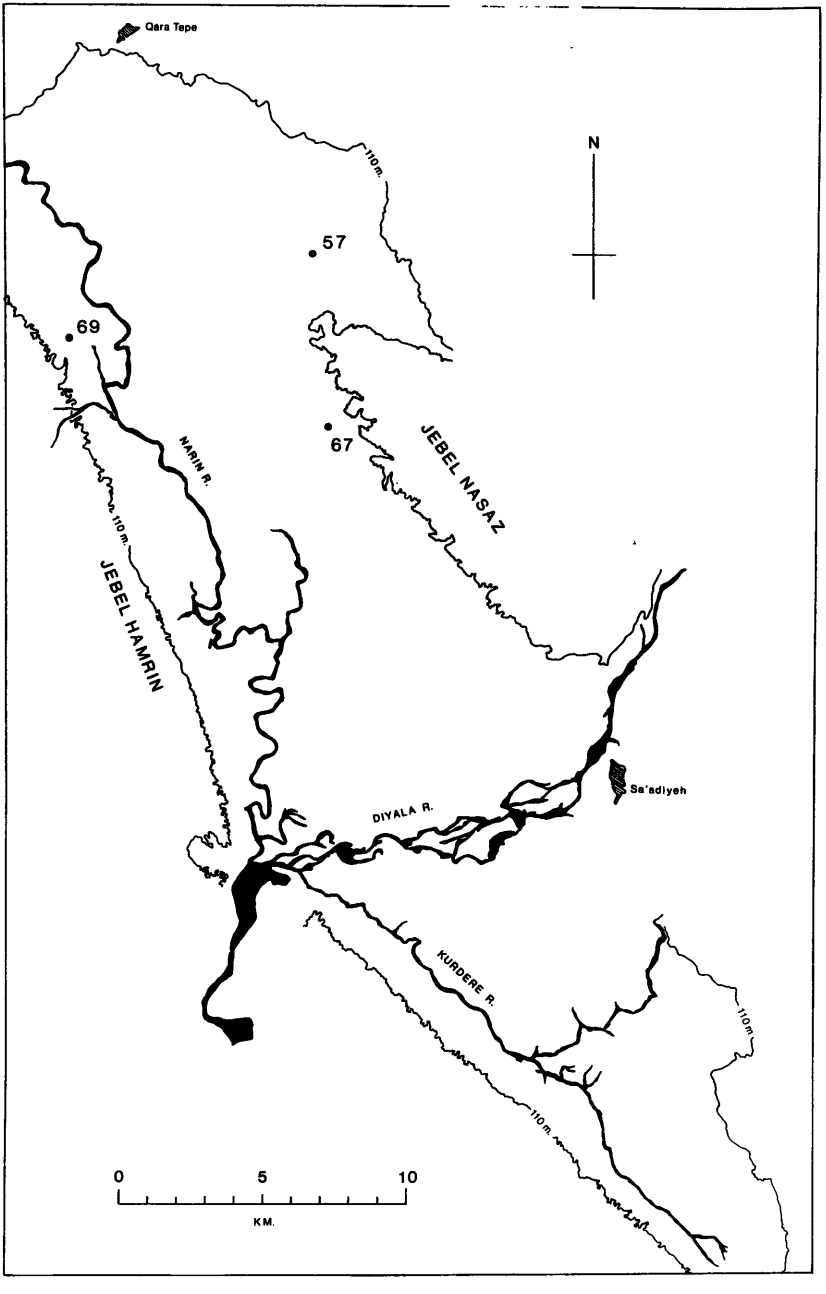


Figure 3
Hamrin Area: Sites with Late Uruk material.

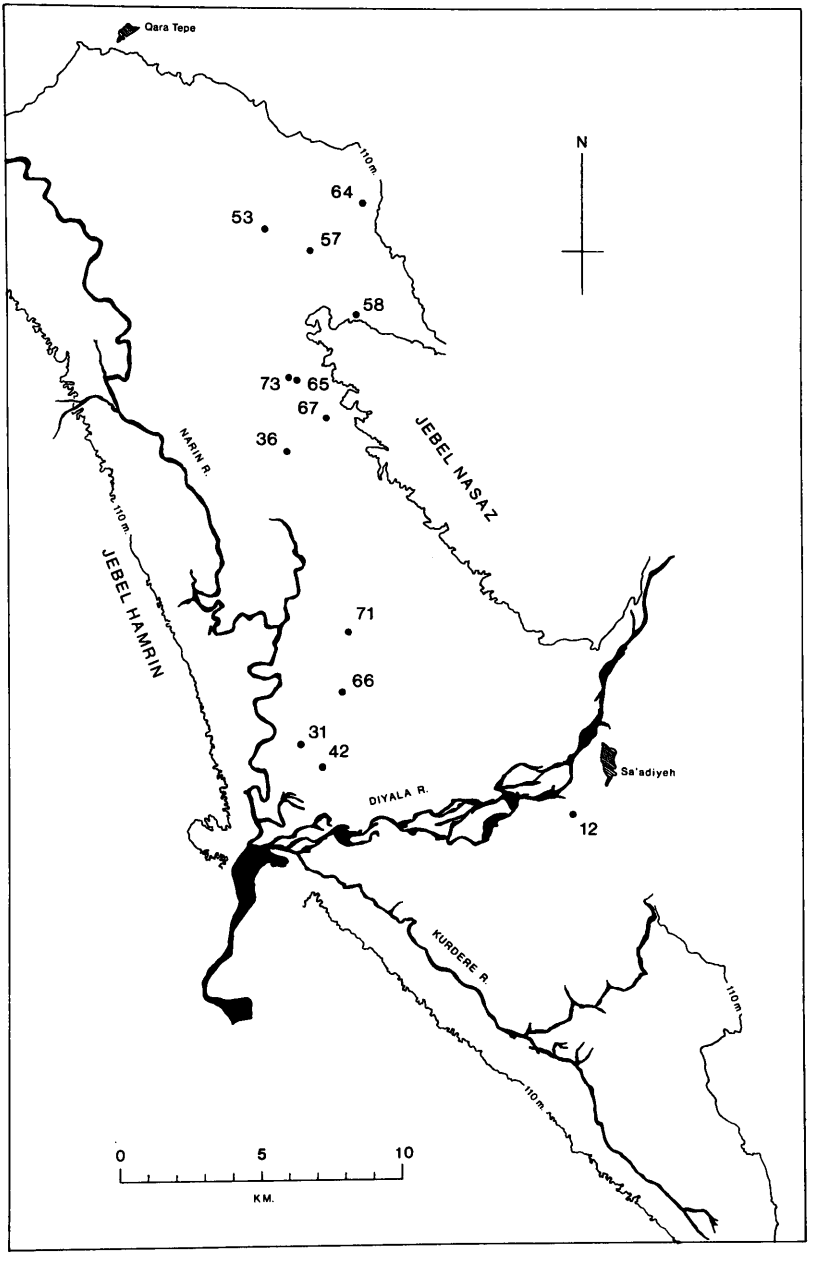


Figure 4
Hamrin Area: Sites with Early Dynastic material.

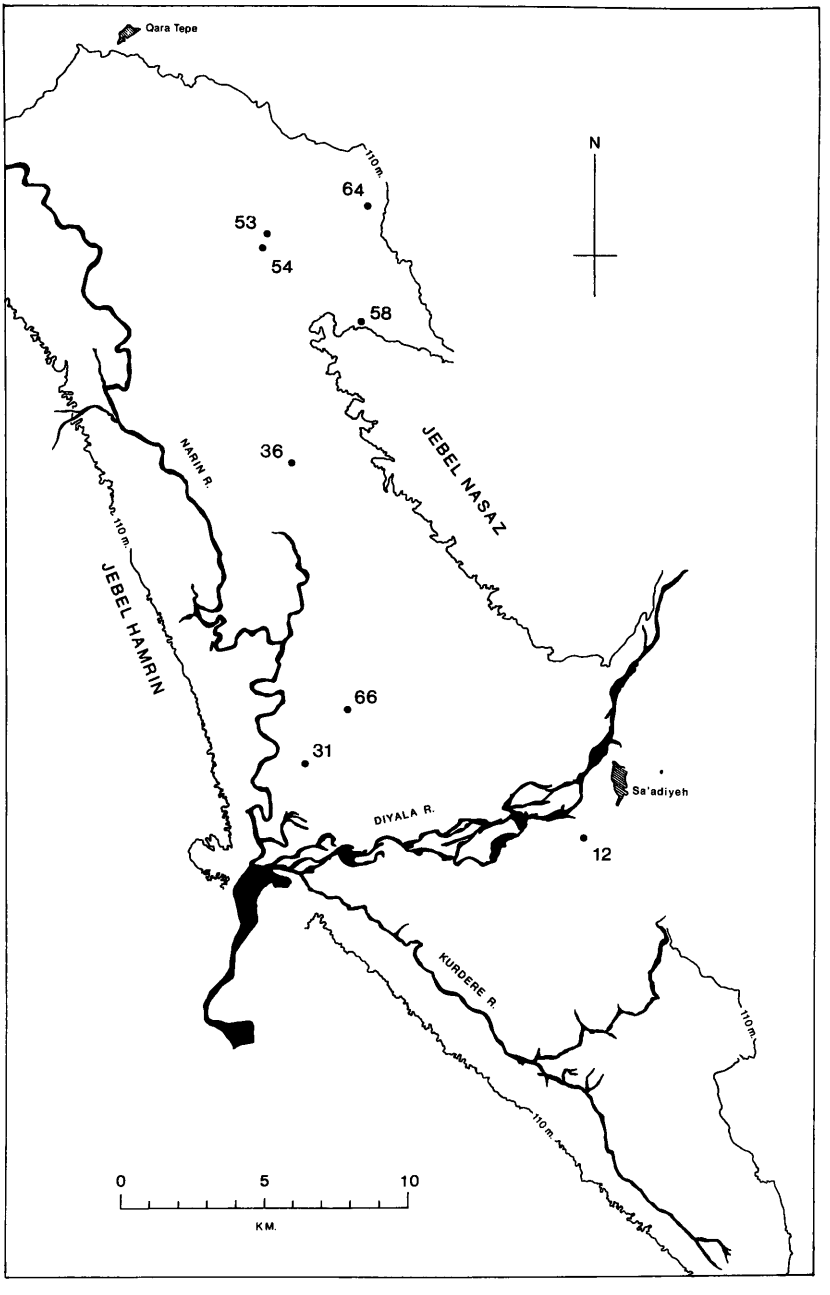


Figure 5
Hamrin Area: Sites with Akkadian/Ur III material.

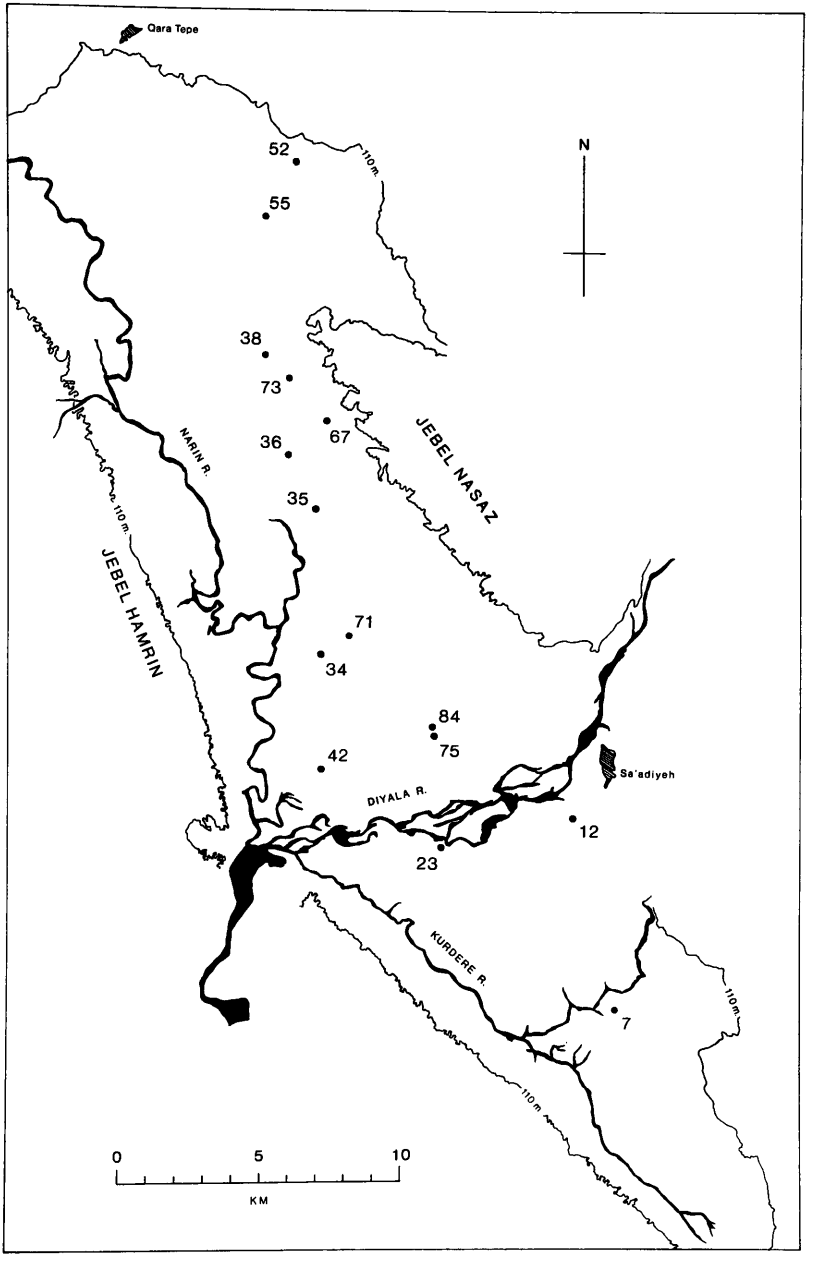


Figure 6
Hamrin Area: Sites with Isin-Larsa/Old Babylonian material.

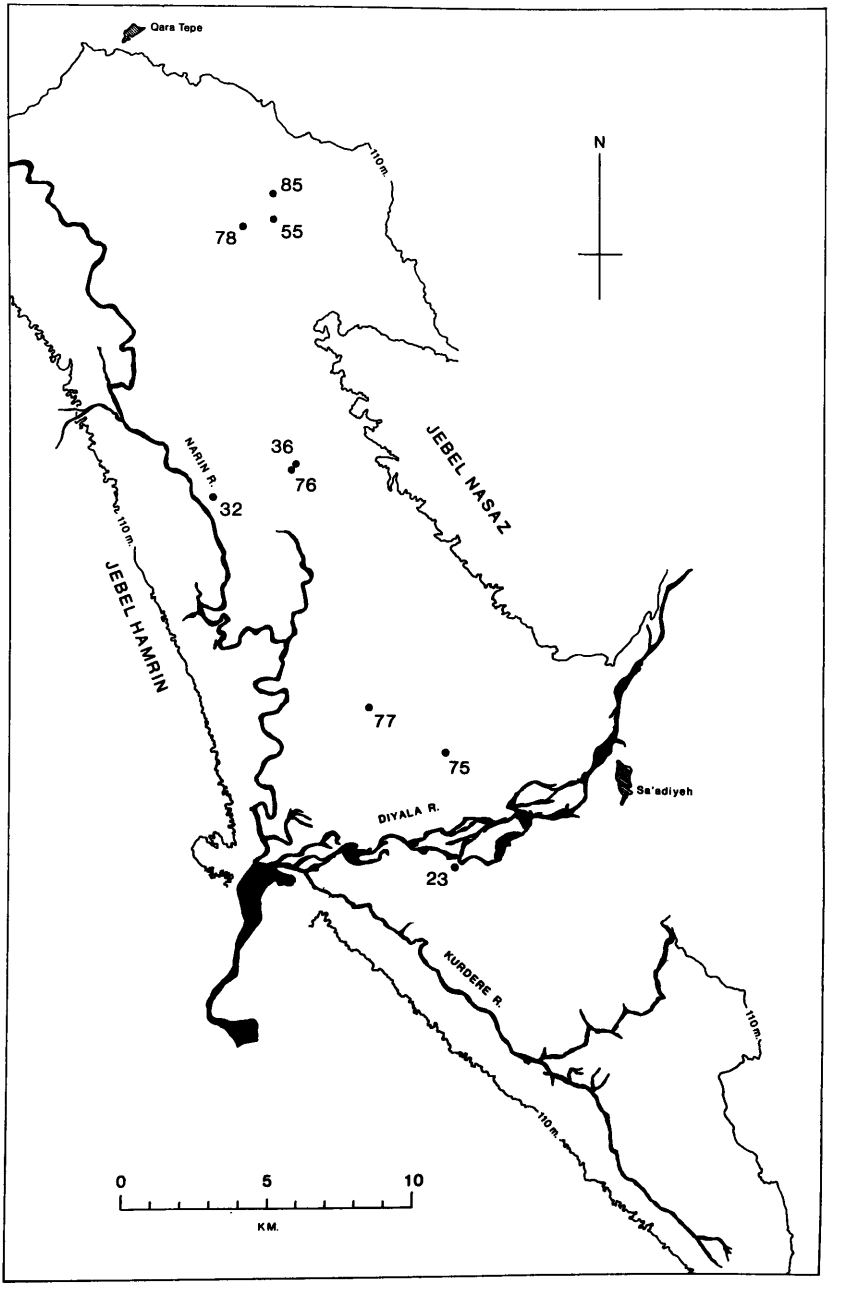


**Figure 7**
**Hamrin Area: Sites with Kassite material.**

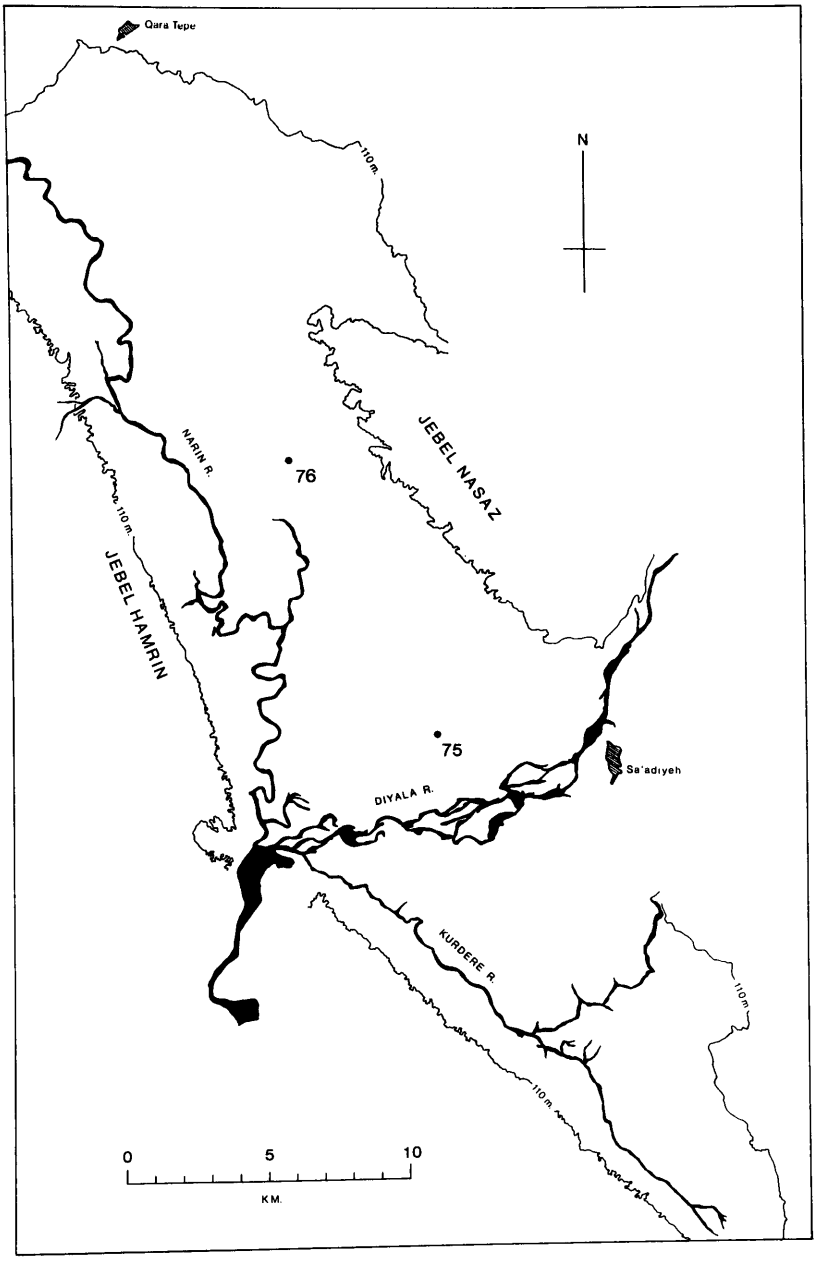


Figure 8
Hamrin Area: Sites with Neo-Assyrian material.

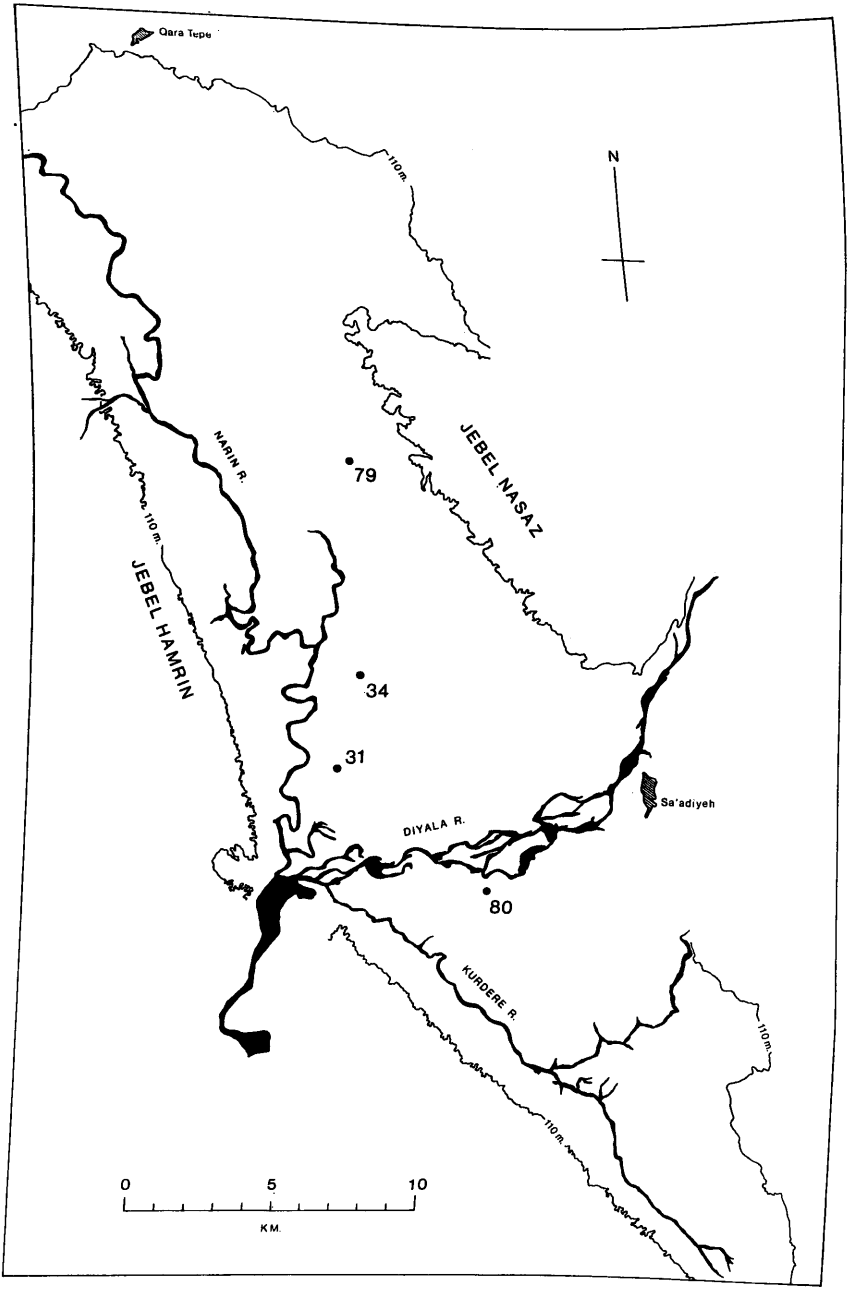


Figure 9
Hamrin Area: Sites with Achaemenid material.

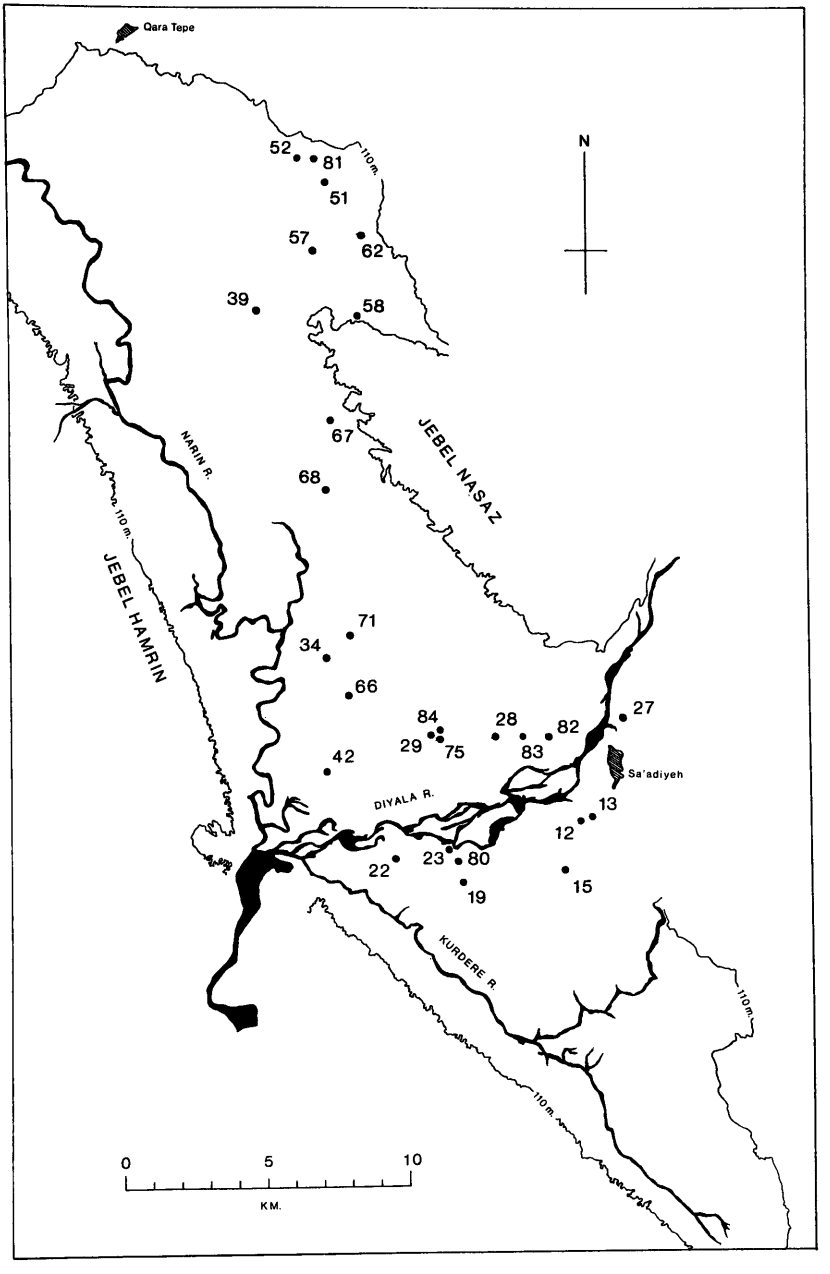


Figure 10
Hamrin Area: Sites with Parthian /Sassanian material.

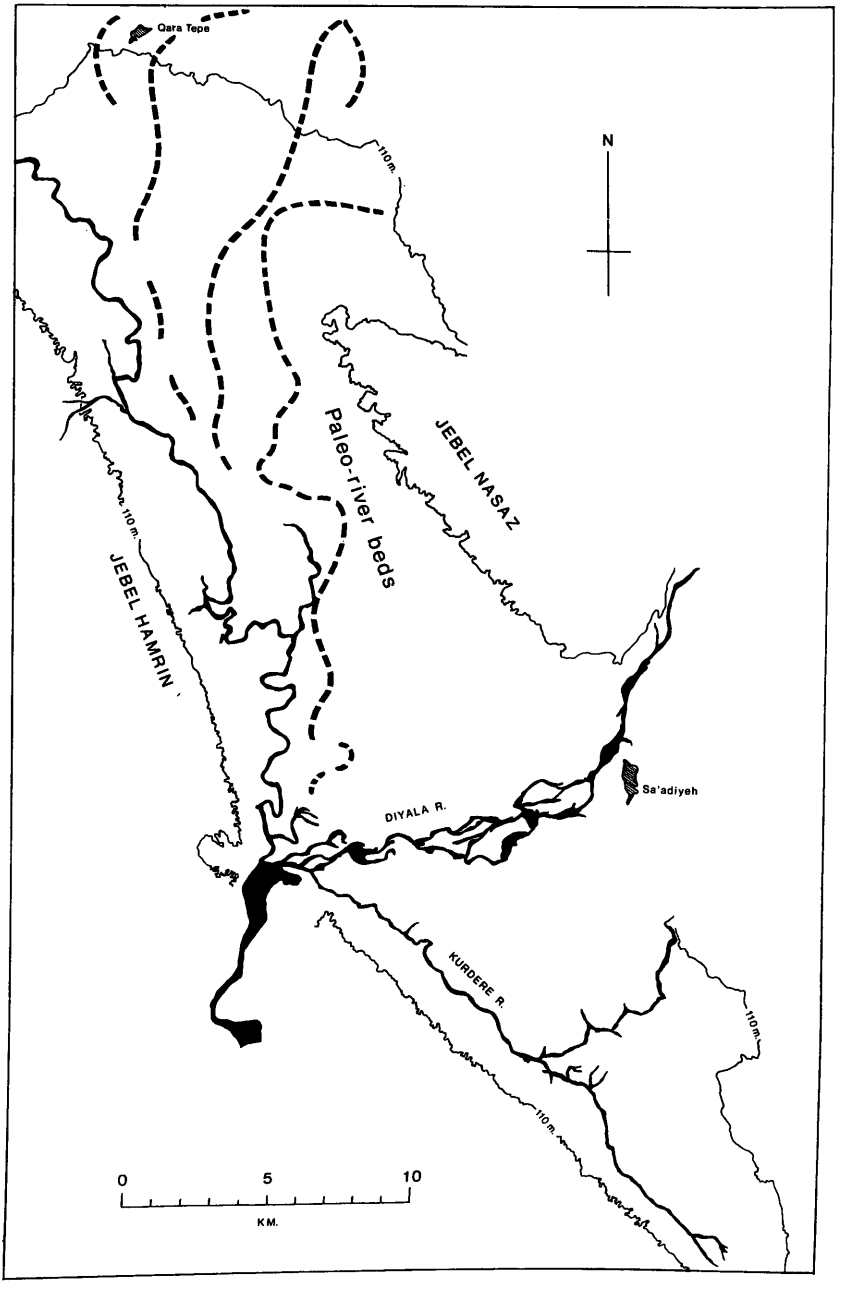


Figure 11
Hamrin Area: Palaeo-river beds (after Baggio *et al.*, 1985)

## Notes to Chapter 1

1. Much of the information presented here is to be found in the report of Sir M. Macdonald & Partners entitled *Diyala and Middle Tigris Projects. Report No. 4. Middle Diyala Development: Soils, Agriculture, Irrigation and Drainage*, published in 1959 by the Republic of Iraq Development Board, 1st Technical Section. Today in this context therefore applies to 1959.
2. In all, only 61,150 misharas (37,913 acres) of land in the area to be flooded enjoy the benefits of some irrigation.
3. A total of some 46,360 misharas (28,743 acres) is today irrigated in this area.
4. Here only about 14,790 misharas (9,170 acres) within the part of the Hamrin valley to be flooded are irrigated. Today this and the Sa'adiyeh area use as a supplement to winter dry farming a total of only about 56.64 million cubic metres of water (October to April) delivered by canals with a total capacity of only about 2.9 cumecs.
5. The maps are based on a corrected version of Map 2 in *Iraq* 41 (1979), 158, supplemented by the published reports of excavations in the Hamrin area. Listed sites not shown on the maps are either unexcavated or Islamic in date. A map for the latter period was not drawn up because of insufficient information. The maps give some idea of the density of settlement in each period but note that we have accepted without qualification all period identifications made by the excavators and that also we have not distinguished between different sorts of settlement (villages, fortresses, cemeteries etc.).
6. The contrast with the Lower Diyala is striking. Here there was almost no 'Ubaid occupation, followed by a great increase in occupation in the Uruk and Jemdet Nasr periods (Adams 1965, 34-38). For corrections on the data in the 'Ubaid in the Lower Diyala, see Adams 1972, 208.

# CHAPTER 2: TELL RUBEIDHEH: STRATIGRAPHY, FINDS, HUMAN SKELETAL REMAINS

by
R.G. Killick, P.J. Watson, S. Payne & D. Downs.

## STRATIGRAPHY (R.G. Killick)

Tell Rubeidheh is one of the few sites found by archaeologists on the west bank of the Narin River. It is located between that river and the Jebel Hamrin, some 6 km. below the village of Eski Kopru and lies on the edge of the present-day zone of cultivation (no. 69 on fig. 3).

The site comprises three low-lying ridges (fig. 12). The main tell rises a maximum of 2.80 m. above the surrounding plain and sherd scatter suggested a maximum area of deposit of c.150 x 125 m. However, even before excavation it seemed likely that most, if not all, of the archaeological deposit had been lost through erosion. Initial surface sherding indicated that the main mound was probably one-period Late Uruk in date and that the two peripheral mounds were prehistoric.

With such a wide but shallow settlement, the first problem was to find those areas of the mound which would yield stratified deposits. In the first season, 4 strips of 2 m. wide trenches were cleared across the main mound within the 100 m. square 2F (fig. 13). Two strips ran west to east (2F00-09 & 2F50-55) and two strips ran north to south (2F00-90 & 2F05-85). Generally, the squares were surface-scraped to an average depth of 20 cm. and selected areas were then excavated deeper. A total length of 332 m. was cleared in this fashion. The two peripheral mounds were also sounded. In the second season excavation was concentrated on the south-east side of the main tell where the results of the first season had indicated the extant deposits lay. In addition, further soundings were made to check the size of the Uruk occupation.

The results are presented square by square. Where a square has been indicated on figure 13 as being scraped but is not mentioned in the text, it may be assumed that no deposits were found or recorded.

**2F00**

After scraping the surface, a shallow cut was observed and excavated. Very few sherds were recovered and most of the deposit was a reddish fill, probably natural soil. Possible traces of brick, 1-2 cm. deep, were observed along the south side of the strip.

**2F10**

A shallow cut appeared in the cleaned surface. This was a pit with grey, ashy fill which went down to 30 cm. below the mound surface. No other archaeological features were noted.

**2F22**

The clearance of top soil in a 4 x 2 m. area produced the outline of a kiln and two pots *in situ* (fig. 14 & pl. 1a). Two thirds of the kiln wall were preserved in poor condition and heavily vitrified so that the original thickness of the wall was difficult to estimate but was probably not more than 8 cm. The wall survived to a maximum height of 23 cm. The kiln was an irregular oval, c.2.25 m. north to south, and there were traces of a flue or second chamber in the south-west corner. The kiln was full of wall collapse and contained an inverted bevelled-rim bowl, a second badly smashed vessel, and 13 pieces of flint flaking waste.

**2F23**

A 2 x 2 m. sounding produced a burnt rubbish layer and much pottery, the deposition of which was perhaps connected with the waste products of the 2F22 kiln.

**2F25**

Some traces of brick were observed towards the north end of this square. A small sounding was dug next to these bricks. Part of an Islamic grave was removed. A pit of red and green fill was excavated to a depth of 0.75 m. below surface. Ashy and rubbish deposits continued down to 1.30 m. below surface when virgin soil was reached.

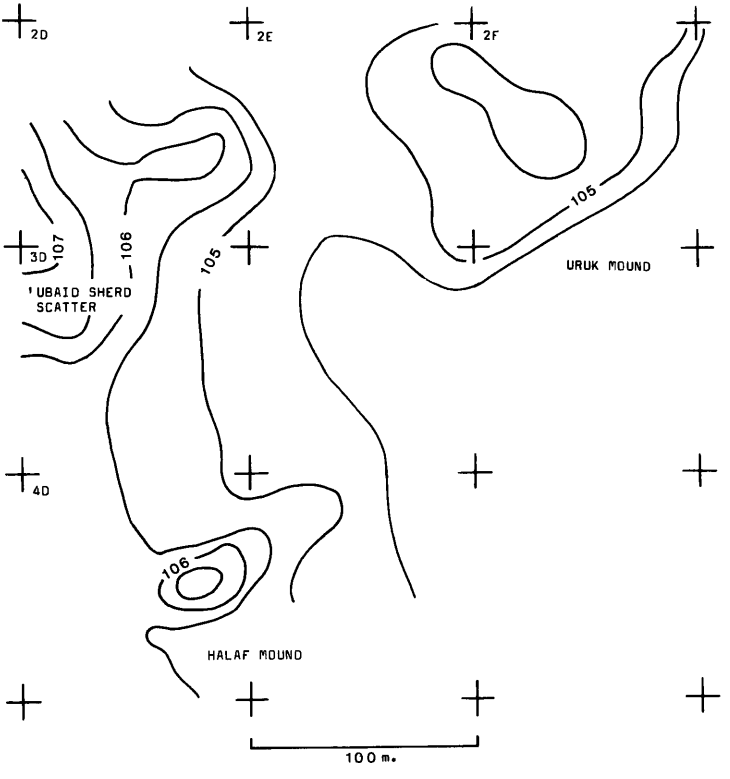


Figure 12
Contour plan of Tell Rubeidheh in metres above sea-level.

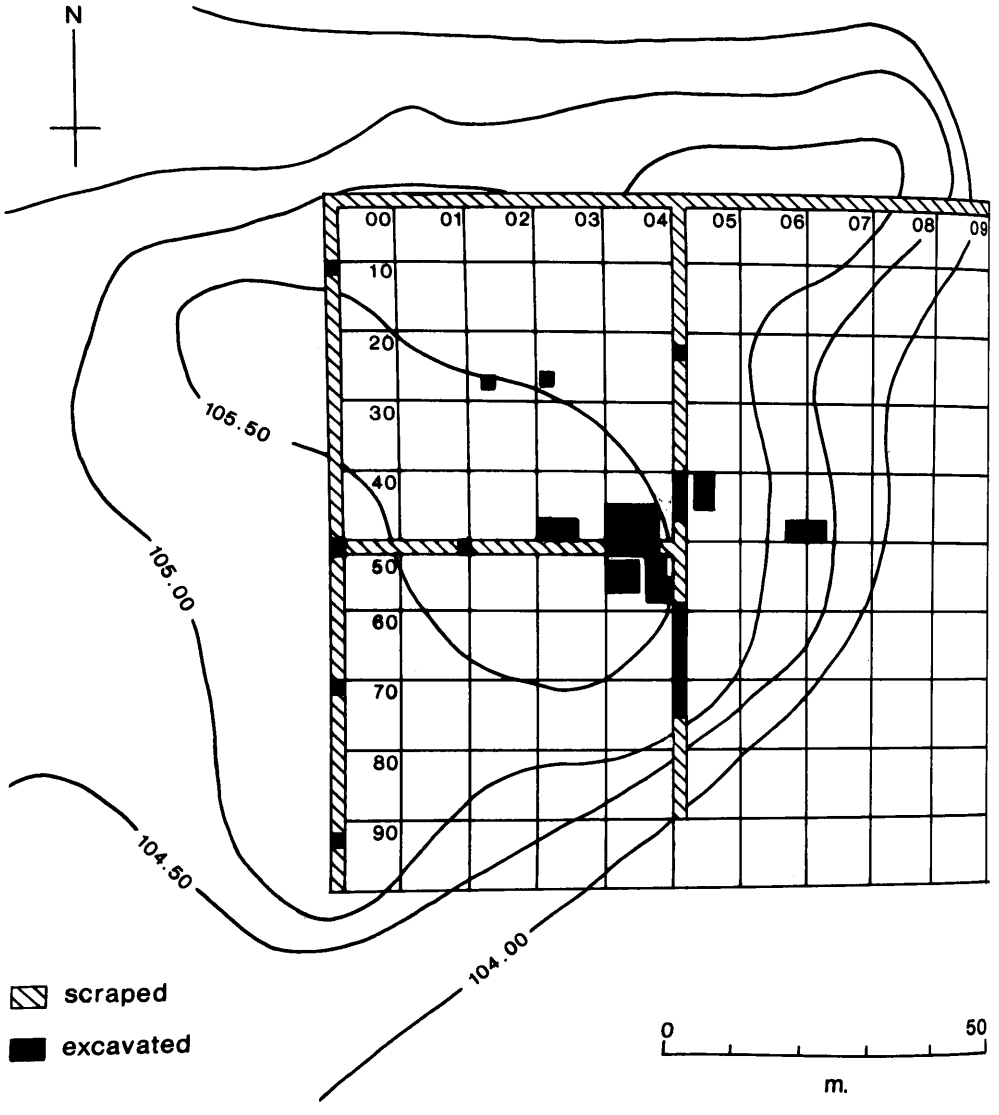


Figure 13
The Uruk Mound: Sq. 2F, showing scraped and excavated areas

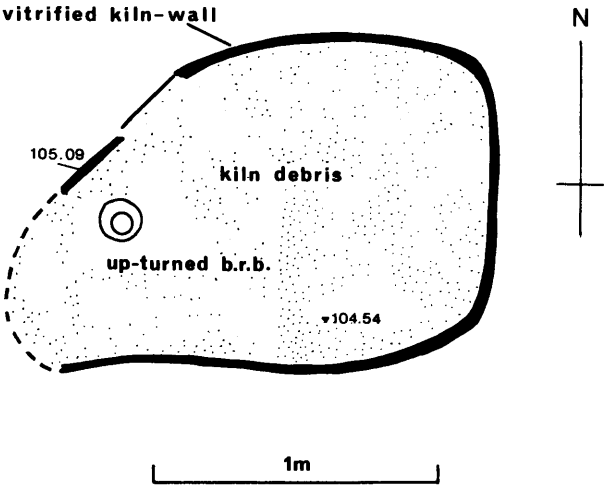


Figure 14
2F22: Uruk kiln.

**2F30**

At the west end of the square some bricks were noted running north-west to south-east. These were very decayed and it was not possible to articulate individual bricks. An area of white, crumbly fill was noted to the west and some smooth sandy fill found against the possible east face of the wall. A miniature jar (fig. 37, no. 137) was found 15 cm. below the surface.

**2F43**

This was originally a 6 x 3 m. sounding, later reduced to 2 x 1.5 m., in which there were ashy and rubbish deposits up to 1.2 m. thick. Near the surface was a complete but very poorly preserved lead bowl (fig. 26, 6). Since no later intrusions were noted in this sounding, and very little post-Uruk material was found on the site, this lead bowl may be considered to be Uruk in date. It was sitting on top of a soil change which may or may not have been a surface at one time. Lower down in the sounding, a good sample of animal bone was recovered which included the complete forelimb of a donkey (see pl. 8a & Payne, this volume).

**2F44/54**

Much of the work of the second season was concentrated in these adjacent squares and the results indicated at least three surviving phases of building. The latest feature was a large wall which was eroding off the surface of the mound (fig. 15). This had been noticed in the first season during the excavation of 2F45. For most of its length only the foundation trench of tauf was left. This was 1.4 m. wide and 1 m. deep and it was traced across the mound for a distance of 24 m. until it was lost off the top to the east and the edge to the west. It was not possible to find a corner to this wall which would have delimited the building. The size of this wall suggests that probably one of the most important phases of Uruk occupation at the site has been completely eroded.

The walls of the next building level were encountered below a thick deposit of decayed brick. They were also badly eroded. This suggests an intermediate period of abandonment between the two building phases in these two squares. In some cases, only the foundation trenches had survived, their brick and clay packing resisting better the effects of erosion. The plan of part of a rectilinear building was recovered (fig. 17 & pl. 1b). One room was completely excavated and had a well-preserved green plastered floor (1005), a hearth and associated objects. The room measured 1.9 m. north-east to south-west and 4.8 m. north-west to south-east. The east wall (1010) was preserved only as a foundation trench, packed with hard clay. There was a break in this trench which may have been a

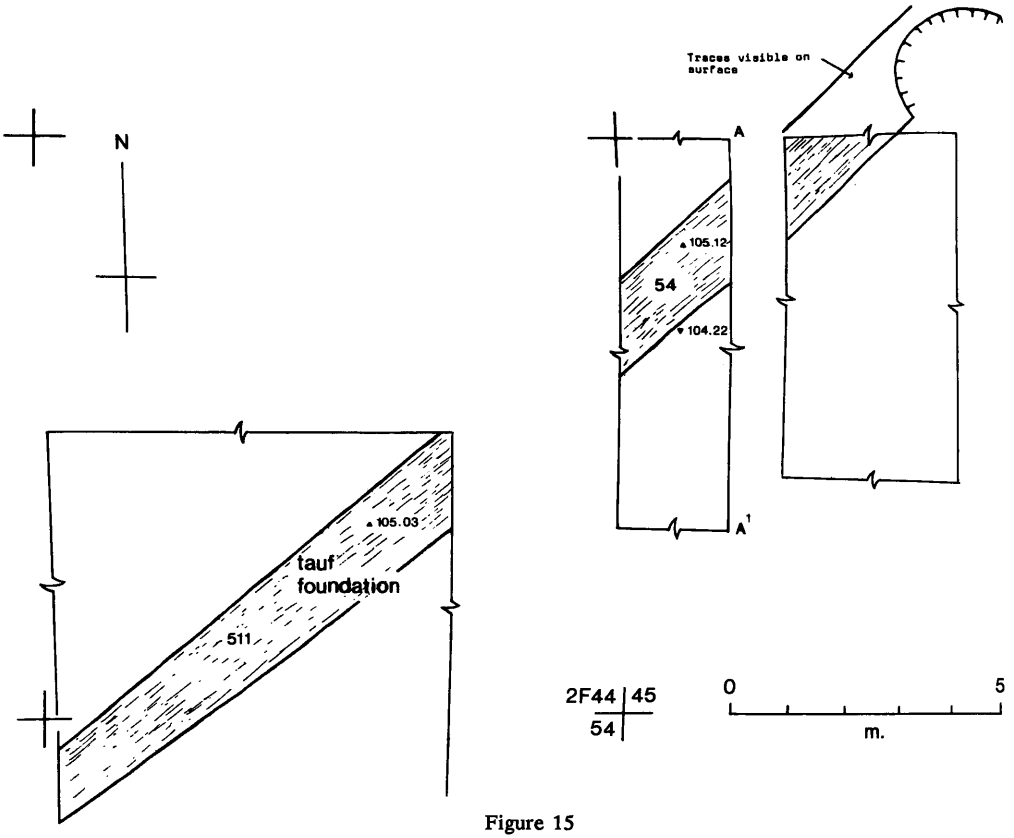


Figure 15
2F44/45: Wall foundation on surface of tell.

doorway although it is perhaps more normal practice to continue a foundation trench across a doorway. Inside the room, next to the east wall, was an oval hearth filled with ash. Part of the floor had been burnt in this area. A drilled stamp seal (fig. 27, 19) and a miniature pottery dish (fig. 37, no. 135) were found on the floor. There was some evidence that the north wall of the room had been re-built: traces of a mud-brick wall (1002) were observed slightly to the south of the tauf foundation. The other walls of the building were very fragmentary but hasty clearance in the last two days of excavation produced elements of three other rooms.

The north wall of the room had cut in its construction an earlier wall (504). This represents the lowest phase in these trenches. The brickwork was well-preserved and it was possible to articulate individual bricks which had been neatly and regularly laid with a row of headers backed by a row of stretchers. They were green in colour, measured 28 x 14 x 14 cm. and were set in orange mortar. Orange plaster 2 cm. thick was found on both faces of both walls. A foundation trench wider than the walls had been dug and filled with clay and occasional brick. Inside the angle of the walls only intermittent traces of surfaces appeared. Outside to the east, a brown sandy surface was detected and in the ashy rubble above was a shell pendant (fig. 27, 20).

**2F45**

In the first season a sounding was dug along the western edge of this square. Large accumulations of pottery and bone from pits and rubbish deposits were recovered. Virgin soil was reached at 1.9 m. below surface, deeper than anywhere else investigated on the site in the first season. The large foundation trench (054/511) had been dug through these deposits. This can be clearly observed in the section (fig. 16) where there is 40 cm. of mud and tauf foundation below three courses of brick foundation. Because the deposits were so rich in pottery and bone a second trench was dug here in the following season. Virgin soil was even deeper, 2.44 m. below the surface. There

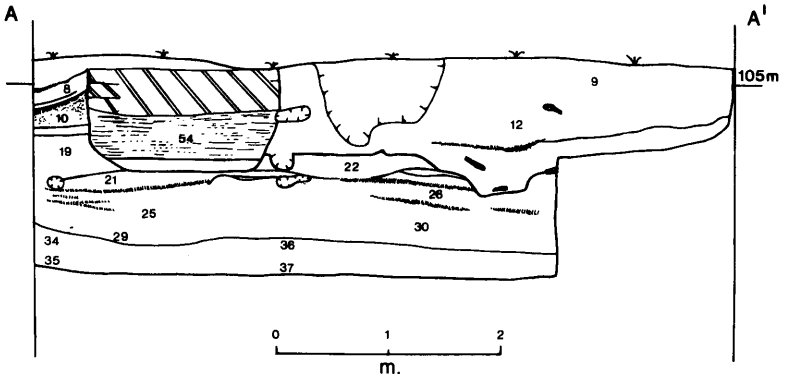


Figure 16
2F45: Section A-A1.

**Key to Figure 16**

Brick. Ash. Animal bone.
Tauf. Pot. Pit.

2F45

008 Soft, sandy yellow fill.
009 Soft, sandy yellow fill.
010 Loose ashy fill.
012 Ashy fill.
021 Loose ashy fill.
022 Loose ashy fill.
025 Clean yellowish band.
026 Loose ashy fill.
029 Soft fill with some ash.
030 Material south of tauf foundation.
034 Dark ashy fill.
035 Clean clayey material.
036 Ashy layers.
037 Clean reddish fill above virgin soil.
054 Packed clay.

were at least two major deposits of ash, pottery and slag. Some of this debris may have been from pottery kilns.

*2F46/47*

A 3 x 6 m. trench was laid out down the eastern slope of the tell to check the extent and depth of the archaeological deposits. Two building phases were noted (see Section C-C1, fig. 21). Along the western edge of the trench and running parallel with the section was a wall made of green and orange bricks (1106). It stood to a height of 50 cm. and was set on top of a clay foundation trench. At a lower level, there was a curving wall with an associated surface. This wall was one row thick and stood 1 m. high. The bricks from it measured 30 x 14 x 12 cm. The wall seems too thin to have been a load-bearing wall and may have been a sheltering or retaining wall for whatever operation was producing the thick deposits of ash which were found in the eastern half of the trench. On a level with the bottom of this wall was a short section of walling built of reddish bricks (1109), measuring 27 x 19 cm. Traces of a reddish plaster were observed on the north-east face of this wall.

An undisturbed burial (Grave 2; fig. 20 & pl. 2b) was found dug under the south face of wall 1104. The body lay flexed on its left side facing north-east. Traces of a reed mat were observed under the body. The arms had been folded across the waist. An up-turned bowl (fig. 28, no. 10) was found next to the left foot. Pathological details of the skeleton are recorded in the section on human remains.

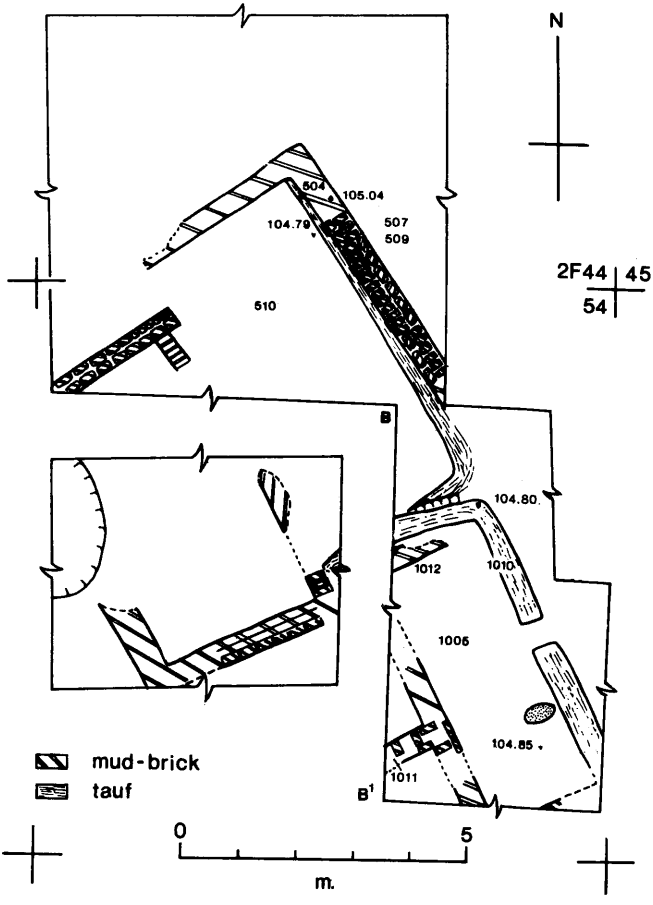


Figure 17
2F44/54: Main building phase.

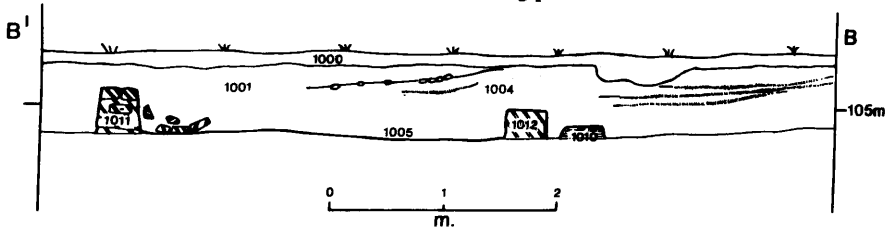


Figure 18
2F54: Section B-B1.

**Key to Figure 18**

Brick. Ash. Stones.

2F54

1000 Top-soil.
1001 Brown fill above floor.
1004 Brown fill, collapsed brick.
1010 Tauf foundation trench.
1011 Wall.
1012 Wall.

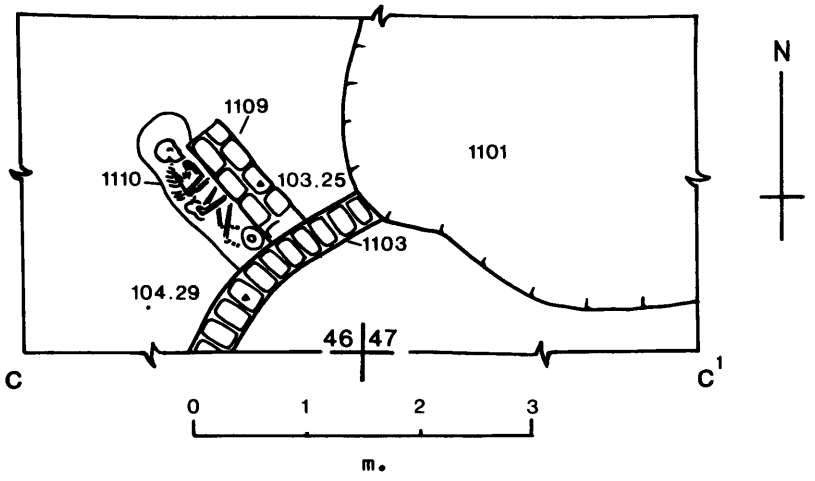


Figure 19
Plan of 2F46/47.

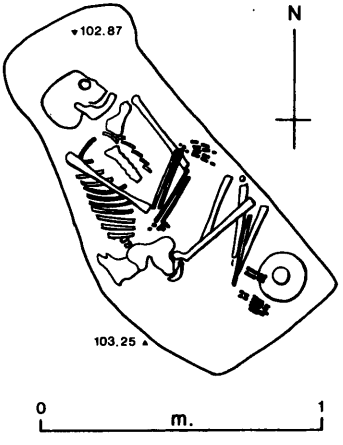


Figure 20
2F46/47: Grave 2.

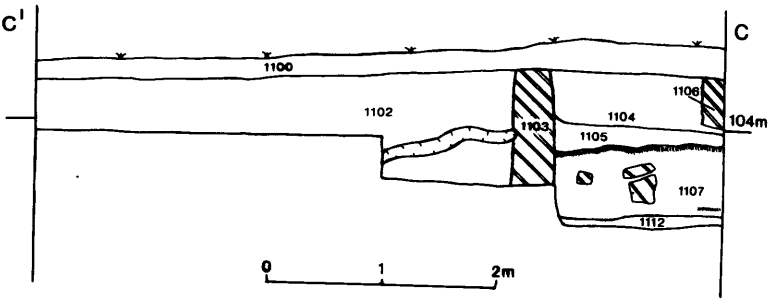


Figure 21
2F46/47: Section C-C1

Brick. Ash. Animal hole.

2F46/47
1100 Top-soil.
1102 Red rubble.
1103 Wall.
1104 Light brown floor.
1105 Brown ash-flecked fill.
1106 Wall.
1107 Ashy brown.
1112 Virgin soil.

**2F50**

2F50 was cleared down to c.10 cm. below top-soil. The remains of a small *tannur* were excavated. The internal diameter of this feature was 46-49 cm. The walls were of a crumbly reddish fabric with a maximum thickness of 2 cm. and were preserved up to 20 cm. high. The burnt base was concave and there was a possible hole with a maximum diameter of 10 cm. near the base on the west side of the oven.

**2F51**

Surface clearance revealed a possible wall face running north-west to south-east along the eastern edge of the square. A small sounding was dug to examine this but after going down 40 cm. the operation was abandoned without establishing the presence of a wall.

**2F65/75**

A 12 x 2 m. trench was dug down the south slope to link with trenches 2F45 & 2F54 further north, providing a profile of the mound and virgin soil from the crown to the limit of occupation on the south side (fig. 23). It demonstrated that the settlement was on a shallow ridge which ran up from south to north. Immediately below the surface was a collection of smashed pottery (pl. 2a). It was originally thought that they might belong to a disturbed grave (Grave 1) but no human bone was identified and closer examination suggested that the pots were in a shallow pit (302). This does not, of course, preclude the possibility that it was a disturbed grave and the principle that whole pots are most commonly found in graves must be kept in mind. There were at least fifteen vessels recovered from this pit including five bevelled-rim bowls, a large jar decorated with incision, and a complete dish (see pottery nos. 1, 47, 56, 72, 89, 91, 103, 105, 106, 112). A 'T'-shaped fragment of wall was found (fig. 22), 2 courses wide with a brick size of 15 x 15 x 6.5 cm. The section shows a surface

with fallen bricks sitting on top (fig. 23). The area was badly pitted. One pit (315) was sealed further north in 2F54 by the lowest walls found in that square, providing evidence of a slightly earlier phase of occupation in this area.

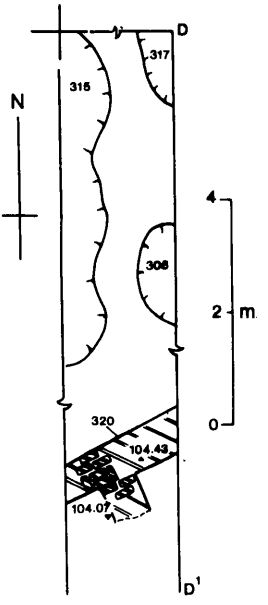


Figure 22
Plan of 2F65/75.

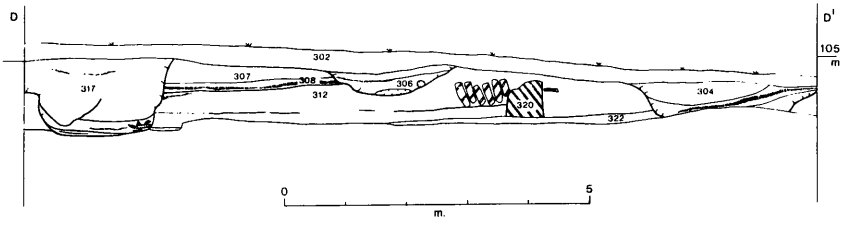


Figure 23
2F65/75: Section D-D1.

**Key to Figure 23**

Brick. Pot. Pit.

Ash. Animal hole.

2F65/75

302 Top-soil.
304 Ash pit.
306 Dirty green fill.
307 Brown fill.
308 Ash and dirty grey fill.
312 Brick collapse
317 Pit fill.
320 Wall.
322 Virgin soil.

**2F70**

Bricks were noted running diagonally across the cleared surface strip. Subsequent excavation revealed a badly eroded area of bricks up to four rows wide, running north-west to south-east. A deposit of grey/brown fill was noted accumulating against the north face. The brick was preserved only 5 cm. high and it was not clear if it was *in situ* or fallen brick.

**2F80**

In the notebook, a wall is recorded as being "definitely present" in the north half of this square, running parallel with the brick observed in 2F70. The bricks were of whitish, fine texture with a possible door jamb. No further details are available.

**2F90**

A sondage in the north half of the square was taken down to 75 cm. below surface when virgin soil was observed. No clear archaeological layers were noted.

**4D38/48: The Halaf Mound**

About 216 m. south-west of the main mound is a small bump rising c.1.5 m. above the plain (see fig. 12). This measured no more than 30 x 18 m. In the first season a sondage was dug on the summit (designated within the 100 m. square 4D) and at least 2.15 m. of deposit were found. A possible wall was noted, sloping out as it went down, and it was suggested that this might represent the exterior of a steep enclosure wall or a cut slope. A trench put down in the second season on the theoretical inside of such a wall seemed to confirm the second suggestion, since very few sherds were found and the deposit seemed to be natural soil. The sherds recovered included bowl rim sherds painted with a single band and festoons and one with a bukrania pattern, confirming a date for this mound within the Halaf period (fig. 24).

**The 'Ubaid Mound**

A small scatter of Late 'Ubaid sherds was noted on a ridge lying due west of the Late Uruk mound, suggesting an occupation of that date in this area. This was not, however, checked by excavation.

**Summary**

The architectural remains at Tell Rubeidheh were poorly preserved and very fragmentary. There was considerable evidence of erosion off the top of the site with the loss of at least one major building phase. In the one area of the site which was investigated in any detail there was evidence for three building phases and for one phase consisting of pits dug into virgin soil. The architectural remains provide no clue to the importance or function of the settlement.

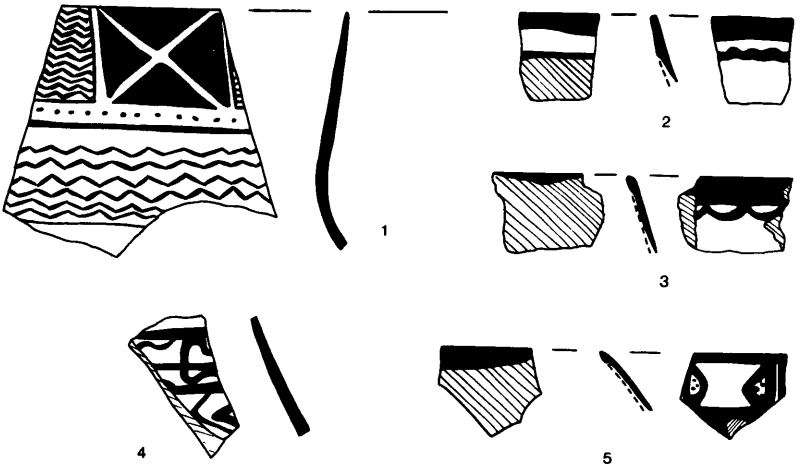


Figure 24
Halaf sherds from 4D38/48 (1:2).

1. Bowl rim fragment. Fine vegetable temper, black paint mostly missing.
2. Bowl rim fragment. Hard baked orange clay, fine grit temper.
3. Bowl rim fragment. Hard baked orange clay, grit temper, dark orange paint.
4. Shape unidentified. Orange clay, fine vegetable temper, orange paint.
5. Bowl rim fragment. Orange clay, grit temper, brown paint.

## SMALL FINDS (P.J. Watson)

Due to the nature of the first season's excavations at Tell Rubeidheh and because considerable areas of the main mound had been ploughed out, many of the small objects must be regarded as surface or sub-surface finds. This lack of good provenances, however, is not too serious because the main mound is a single-period site and the finds do not reflect any great Islamic intrusion although a fragment of an Ottoman clay pipe and an Islamic burial attest to its presence. Despite the short duration of both seasons of excavation, the small finds recovered are of a variety and a quality which attest to the original richness of the site.

### Objects in Clay

Clay and terracotta objects were predominant and most numerous were baked clay beads (fig. 26, 1-13). These were all basically cylindrical in shape; some were squatter than others, with straight sides and either flat or concave ends. Longitudinal perforations had been made before firing and most examples preserved unsmoothed clay ridges around the perforation at one end which probably resulted from the boring process. It seems possible that they were threaded on a rod or a stick while still wet and baked in the fashion of a *kebab*. Apart from one example which had been burnished, none of them were decorated in any way. For comparative purposes, details of all beads are given on Table 1. It should also be mentioned that none of the beads were found in positions which suggest that any of them might have come from the same string.

Three types of spindle whorl were represented. Only one truncated biconical form was found (fig. 27, 11 & Table 2, Type A) and one fragment of a conical whorl with a deep concave base and thin wall (fig. 27, 12 & Table 2, Type B). The most common type has a flat base and very shallow convex sides (fig. 27, 13-16 & Table 2, Type C). This gives it a much lower height-diameter ratio than, for example, the Late 'Ubaid conical whorls from Tell Madhhur. Two pieces were decorated: one with two pairs of impressed depressions not quite diametrically opposed (fig. 27, 16) and the other with incised radial, irregularly curving lines (fig. 27, 15). Other details and dimensions of all the whorls are given in Table 2.

| Object no. | length | diam. | diam. of perforation | temper | colour | provenance |
|---|---|---|---|---|---|---|
| 2F45:29 | 3.1 | 2.4 | 0.6 | grit | brown | sub−surface |
| 2FS:11 | 3.1 | 2.2 | 0.5 | grit | buff | surface |
| 2F44:02 | 2.8 | 2.0 | 0.5 | grit | − | surface |
| 2FS:26 | 2.7 | 2.4 | 0.9 | grit | reddish | surface |
| 2F23:05 | 2.6 | 2.4 | 0.4 | grit | orange−buff | surface |
| 2FS:03 | 2.2 | 2.2 | 0.4 | grit | orange−buff | surface |
| 2F45:55 | 2.2 | 1.6 | 0.4 | grit | brown−buff | ash layers |
| 2F54:11b | 2.1 | 1.4−1.7 | 0.4−0.6 | grit | buff | surface |
| 2FS:30 | 2.0 | 1.9 | 0.5 | grit | buff | surface |
| 2F25:01 | 1.8 | 1.9 | 0.6 | grit | buff | sub−surface |
| 2F45:60 | 1.8 | 1.5 | 0.4 | − | buff | ash layers |
| 2FS:27 | 1.8 | 1.4 | 0.3 | grit | buff | surface |
| 2FS:29 | 1.8 | 1.1 | 0.2 | grit | buff | surface |
| 2FS:09 | 1.6 | 1.8 | 0.7 | grit | buff | surface |
| 2F45:42 | 1.6 | 1.8 | 0.5 | grit | reddish | ash layers |
| 2FS:10 | 1.4 | 1.4 | 0.4 | − | buff | surface |
| 2FS:23 | 1.3 | 1.6 | 0.6 | chaff? | greyish | surface |
| 2FS:05 | 1.3 | 1.4 | 0.4 | grit | buff | surface |
| 2F54:11a | 1.3 | 1.4 | 0.4 | grit | buff | surface |
| 2F45:03 | 1.1 | 1.1 | 0.5−0.6 | − | dark orange | sub−surface |

Table 1
Measurements of clay beads (all measurements in cms.).

Two fragments of clay sickles were found (fig. 27, 9 & 10), one on the surface of the mound and one from the ash and rubbish layers in 2F45. There were also two pieces of nail mullers (fig. 27, 3 & 4). Although both of these classes of objects are often regarded as being characteristically 'Ubaid in date, it is now generally accepted that they had a wider chronological distribution and were in use at least until the end of the Late Uruk period (Adams 1972, 208 & 210).

| Object no. | length | diam. | diam. of perforation | temper | colour | type | provenance |
|---|---|---|---|---|---|---|---|
| 2F44:07 | 5.1 | 1.5 | – | grit | yellow–buff | C | sub–surface |
| 2FS:22 | 5.0 | 3.2 | – | grit | yellow–buff | B | surface |
| 2F44:14 | 5.0 | – | – | grit | orange–buff | C | fill above floor |
| 2F45:33 | 4.8 | 1.6 | 0.9 | grit | greenish | C | sub–surface |
| 2FS:08 | 4.8 | 1.5 | 0.7 | chaff | – | C | surface |
| 2FS:25 | 3.9 | 1.4 | 0.6 | grit | orange | C | surface |
| 2F44:10 | 3.1 | 1.9 | 0.5 | grit | buff | A | ashy pit fill |

Table 2
Measurements of spindle whorls (all measurements in cms.).

The head only of a stylised human figurine was found (fig. 26, 23). It has one eye attached separately with an incised line to represent the pupil. On the crown only the core of the piece survives and it seems likely that any hair detail or head-gear was also separately applied. Small holes occur at certain points and these were possibly keying points for further plastic decoration. There are two of these, one above the other, below the right eye; one below the presumed left eye which has another above it; two on the back down the left edge and three down the right. The lower part of the fragment is triangular in cross-section, the apex forming the nose line. Figurines with such applied, so-called "coffee-bean", eyes are fairly common from Mesopotamia appearing from the earliest times onwards (Barrelet 1968, 354). They are known, for example, from Tell es-Sawwan (Oates 1966, pl. 39, pl. 43e & g), from Warka and from Early Dynastic levels in the Diyala (Barrelet 1968, fig. 22). The coffee-bean eyes are rather cowroid in appearance and it is possible that they represent a cheap imitation of cowrie shells. One animal figurine was found which had suffered badly from weathering (fig. 27, 01). On one side of the head a horizontally-protruding ear or horn survives. The only other head detail preserved is a pinched snout.

Miscellaneous clay objects include the bowl of a pottery spoon (fig. 27, 05 & pl. 3a) which is similar to an example from Tepe Gawra Stratum VIII (Speiser 1935, fig. 211), pierced pottery discs, conical baked jar stoppers, and various unidentified fragments.

**Stone Objects**

Objects in stone were almost as common as those in clay and exhibited considerable variety. Among the more utilitarian items may be mentioned a possible fragment of a stone spindle whorl in a fine white stone and three suspension weights. Two of these weights are circular and fashioned from a dirty white, volcanic stone (fig. 27, 08) and the third is rectangular. All three have central perforations worked from both sides and drill marks are still visible on the bores.

Evidence for stone vessels comes from a mortar fragment (fig. 27, 07) and from two rim sherds of stone bowls. One of these is made from a fine white stone, probably a type of alabaster, and has a plain rim on convex sides. The other is of a black stone with a plain rim but on straighter, tapering sides. A fragment of a circular stone palette was found (fig. 27, 02); it was not polished and still retained many deep scratches. Characteristic of Late Uruk sites are stone cubes and two examples of these were found at Tell Rubeidheh (fig. 26, 24 & 25). They were both made from a green stone. One has bevelled edges resulting in twelve elongated hexagonal faces in addition to the six main square ones.

Three stone beads (figs. 26, 14-16), all of different shapes and different stones, were surface finds. One pierced stone ring (fig. 27, 22 & pl. 3b) was found on the floor of a room. Two stamp seals were also found on the surface (fig. 26, 18 & 20; pl. 3c & e) and one stratified example (fig. 26, 19; pl. 3d) from the floor of a room. Although small, this group of seals is not without interest. It

will be noticed at once that all three have geometrical designs, a type not common in the Late Uruk period except perhaps in the north where there are examples from Tepe Gawra (Homès Fredericq 1970, 52). The use of the drill on two examples (fig. 27, 18 & 19) points to a Late Uruk date as engraved seals are generally more common than drilled ones on earlier sites. The shapes of the three seals are all different; the hemispheroid is the most frequent shape for Uruk stamp seals; the plaquette is not so common and the pendant type even more infrequent (Homès Fredericq 1970, 52). However, pendant seals do occur in the 'Ubaid and Jemdet Nasr periods. The designs of the seals call for little comment. The irregularly placed lines of figure 26, 20 may perhaps be seen as a survival from 'Ubaid seals while the neatly drilled design of figure 26, 18 shows a more orderly mind at work than do most of the early drilled seals. The design of figure 26, 19 is almost exactly paralleled by a seal from Nuzi dated to the Jemdet Nasr period (Starr 1937, pl. 40w) and by one example from Susa C (M.D.P. 48 (1972), no. 303).

**Shell**

Two pieces of worked shell were recovered. One is a very delicate, thin, flat pendant, oval in shape and pierced near one end (fig. 26, 17). The other is a tanged ring pendant, perforated through the tang (fig. 26, 21).

**Metal Work**

A fragmentary piece of copper or bronze was found on the surface. There was also a nearly complete lead bowl found below the surface in 2F43 (fig. 27, 06). This vessel had a plain rounded rim on straight tapering sides. The base was completely corroded but can be reconstructed as convex on the basis of the wedge of compacted fill which was preserved within. The weight of metal still in the vessel was 255.5 grammes. The use of lead for vessels was more common in the Jemdet Nasr and Early Dynastic I periods than at any other time, especially at Ur and in the Diyala (Moorey 1985, 122). The fill of the room in 2F43 contained a tiny lead fragment perhaps from a small plaque or miniature ingot.

**Bitumen**

Two fragments of sickles consisting of small flint blades set in bitumen (Chapter 4 below) and a flat piece with string or straw impressions on one face attest to the use of this material.

**Bone tools** (S. Payne)

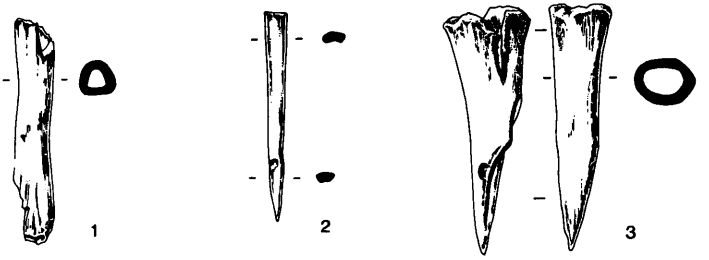


Figure 25
Bone tools (1:2).

Three bone tools were found:
Figure 25, 1: **2F44:18**; Batch 306. A blunt "chisel" made on a gazelle metapodial (probably metatarsal) shaft. Ground facets on the back and front of a broken end have formed a blunt chisel-shaped tip. The grinding does not extend over a large area, the rest of the broken surface being unaltered or only slightly smoothed; it is possible that the chisel-shaped tip was created by the use to which this tool was put rather than having been deliberately shaped. The other end was broken recently.
Figure 25, 2: **2F45:47**; Batch 040. An awl made on a narrow sheep/goat/gazelle-size long-bone shaft fragment. Most of the working shows the fine longitudinal striae and transverse 'chatter-marks' left by

scraping with a flint or metal tool. The butt end is broken.
Figure 25, 3: **2F65/75:30**; Batch 315. A stout awl made on an unfused sheep/goat distal tibia. Marks left by scraping with a flint or metal tool overlie possible traces of initial grinding. The fusion surface at the butt of the tool shows traces of smoothing, showing that the tool was possibly made and certainly used after the loss of the distal epiphysis.

**Figures 26 & 27.**

All measurements in cms.

| | |
|---|---|
| diam. | diameter |
| diam. perf. | diameter of perforation |
| l. | length |
| th. | thickness |
| w. | width |

2FS indicates the object was found on the surface in the scrape of the first season.

Figure 26 (overleaf)

1. **2FS:26**: Baked clay bead; intact; fine grit-tempered reddish clay; pierced longitudinally by perforation of even bore but set to one side; ends flat. l. 2.7; diam. 2.4; diam. perf. 0.9.
2. **2F44:02**: Surface find. Baked clay bead; intact except for small pieces chipped away; fairly coarse, grit-tempered clay, blackened by fire; pierced longitudinally.
   l. 2.8; diam. 2.0; diam. perf. 0.5.
3. **2F45:29**: Surface find. Baked clay bead; intact; fine, grit-tempered brown clay; pierced longitudinally. l. 3.1; diam. 2.4; diam. perf. 0.6.
4. **2FS:03**: Baked clay bead; intact; fine, grit-tempered brown clay; pierced longitudinally.
   l. 2.2; diam. 2.2; diam. perf. 0.4.
5. **2F25:01**: Baked clay bead; intact; fine/medium buff clay; unevenly pierced longitudinally; perforation bored before firing leaving a ridge of clay at one end; ends concave.
   l. 1.8; diam. 1.9; diam. perf. 0.6.
6. **2F45:60**: Batch 041. Baked clay bead; intact; fine buff clay; pierced longitudinally before firing leaving ridges of clay at both ends. l. 1.8; diam. 1.5; diam. perf. 0.4.
7. **2F45:65**: Batch 041. Baked clay bead; intact; fine, grit-tempered brown/buff clay; pierced longitudinally before firing leaving ridges of clay at both ends; ends flat and sides slightly concave. l. 2.2; diam. 1.6; diam. perf. 0.4.
8. **2FS:09**: Baked clay bead; intact; fine, grit-tempered greyish/buff clay; crudely made and pierced longitudinally before firing leaving ridges of clay at both ends; the perforation seems too large and is off-centre. l. 1.6; h. 1.8; diam. perf. 0.7.
9. **2F45:42**: Batch 040. Baked clay bead; intact; fine, grit-tempered reddish clay; pierced longitudinally; one end is flat and the other is rounded, giving a slight taper to the sides. l. 1.6; diam. 1.8; diam. perf. 0.5.
10. **2FS:23**: Baked clay bead; intact; fine chaff-tempered(?) grey clay; pierced longitudinally.
    l. 1.3; diam. 1.6; diam. perf. 0.6.
11. **2FS:10**: Baked clay bead; intact; fine buff clay; unevenly made; pierced longitudinally before firing leaving ridges of clay at both ends. l. 1.4; diam. 1.4; diam. perf. 0.4.

Figure 26 (continued)

12. **2FS:05**: Baked clay bead; intact; fine, grit-tempered buff clay; pierced longitudinally before firing. l. 1.3; diam. 1.4; diam. perf. 0.4.
13. **2F45:03**: Batch 010. Baked clay bead; intact; fine brown clay; one end rounded giving the sides a slight taper. l. 1.1; diam. 1.1; diam. perf. 0.5-0.6.
14. **2FS:19**: Stone bead; intact; greyish/white limestone or marble; well smoothed but not polished; central longitudinal perforation. l. 1.2; diam. 1.5; diam. perf. 0.4.
15. **2F44:03**: Surface find. Stone bead; intact; fine white stone; disc shaped with central perforation; polished. l. 1.45; diam. 0.4; diam. perf. 0.55.
16. **2F44:04**: Surface find. Stone bead; intact; fine-grained, pale blue stone; triangular in section; pierced longitudinally. l. 1.5; diam. 1.1; max. th. 0.6.
17. **2F45:18**: Batch 025. Shell pendant; intact; thin flat piece of shell cut to a roughly oval shape, flattened along the bottom edge and pierced at the top. h. 1.4; w. 1.2; th. 0.1; diam. perf. 0.1.
18. **2FS:06**: Stone stamp seal; intact; fine-grained, green striated stone; almost square, flat stone pierced through the sides; edges and corners slightly rounded; smoothed but not polished. Obverse has eight drill holes arranged in a cross shape.
l. 2.5; w. 2.7; th. 1.0; diam. perf. 0.35.
19. **2F54:05**: Batch 1004. Stone stamp seal; intact; fine white marble with feint pink veining; plano-convex in shape; circular in plan; perforated diametrically; flat face has incised design consisting of two devices of an overlapping pair of drilled depressions with single oblique slashes at each corner; very finely smoothed but not polished. diam. 1.9; h. 0.8.
20. **2F44:01**: Surface find. Decorated stone pendant; intact; fine white crystalline stone; tanged amulet or pendant of uneven shape with geometric decoration of incised straight lines; perforated at top. h. 1.85; max. th. 1.4.
21. **2F44:15**: Batch 507. Shell pendant; intact; shell cut to a circular ring with flat outer rim and pointed inner rim; small piece left protruding which is perforated. diam. 1.9; ring th. 0.4.
22. **2F54:03**: Batch 1001. Pierced ring; intact but for missing flake; fine black stone with some small crystal inclusions; flat piece, circular in plan with large central perforation.
diam. 4.1; th. 1.0; diam. perf. 1.3.
23. **2FS:18**: Figurine fragment; head only; fine grit-tempered buff clay. Very stylised human figurine head; the lower portion is triangular in cross-section, the apex forming the nose line and the back being flat. One "coffee-bean" eye, separately attached, survives with an incised line to represent the pupil; the other eye is missing. Drill holes occur at certain points, perhaps they were keying points for the plastic details: there are two below the right eye; one below the presumed left eye and one above; and five on the back, two down the left edge and three down the right edge. ext. h. 4.4; w. 2.5; th. 2.1.
24. **2FS:01**: Stone cube; intact; fairly coarse-grained, dark green and black mottled stone; accurately shaped to a cube with rounded edges and corners; two corners are slightly flattened; rough-smoothed by pounding but no signs of polishing. l. 4.1; w. 4.2; th. 4.2.
25. **2F43:04**: Surface find. Stone cube; intact; medium-grained green stone; regular cube with edges bevelled to produce twelve elongated hexagonal faces in addition to the six main square faces; not polished. l. 4.2; w. 4.2; th. 4.1.

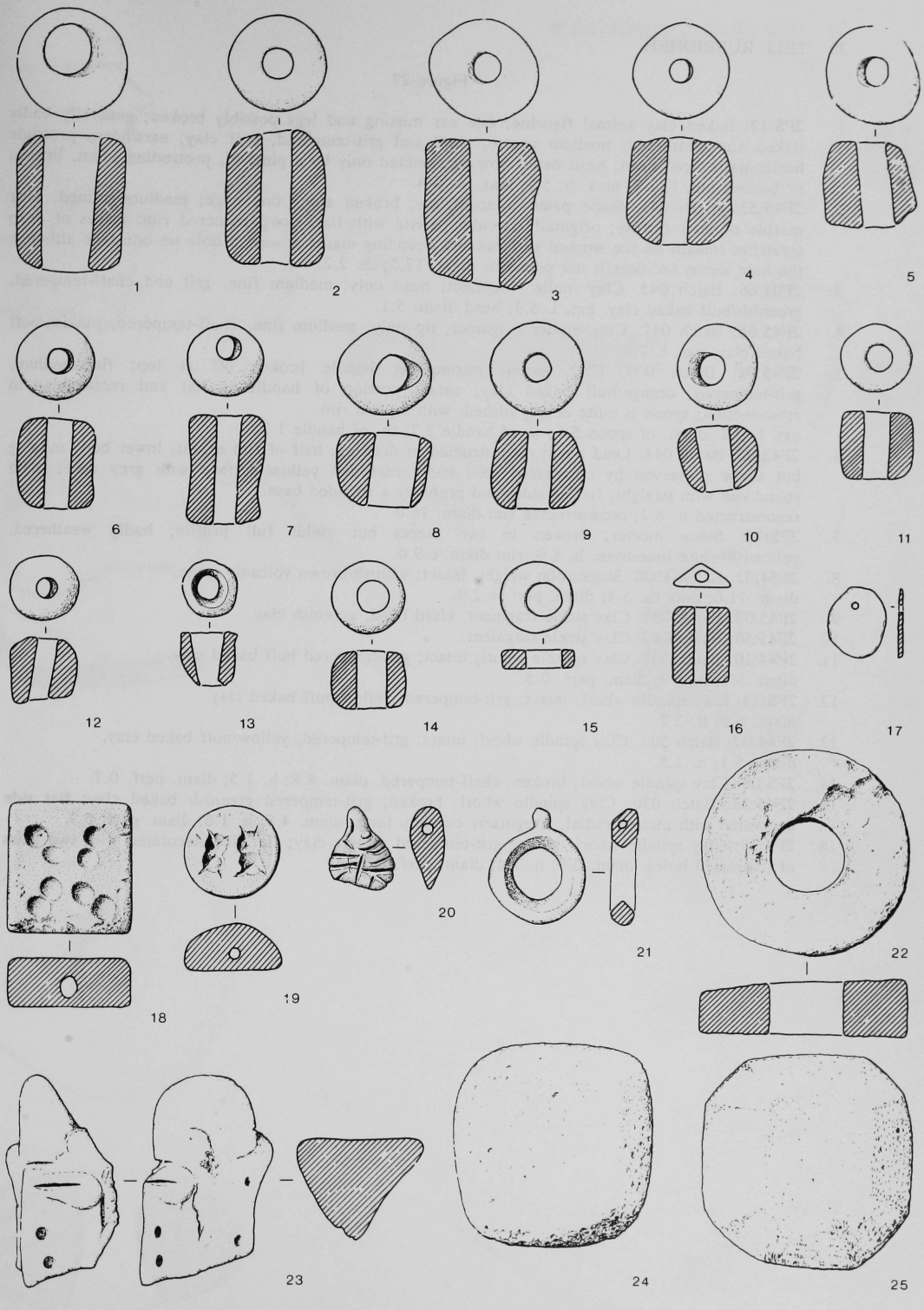


Figure 26
Small finds from Tell Rudeidheh. (1:1)

Figure 27

1. **2FS:17**: Baked clay animal figurine; one ear missing and legs possibly broken; generally badly flaked and weathered; medium coarse, chaff and grit-tempered, buff clay; ears/horns protrude horizontally from head; head detail now represented only by a pinched, protruding snout, broken or bobbed tail. l. 7.7; max. h. 5.7; max. w. 4.4.
2. **2F45:53**: Batch 041. Stone palette; incomplete, broken along one edge; medium-grained, pink marble of poor quality; originally circular palette with flat, sharp cornered rim; traces of deep scratches remain on the worked surfaces and pounding marks around a hole on one face although the hole seems accidental; not polished. diam. 12.5; th. 2.2.
3. **2F04:66**: Batch 043. Clay muller fragment; head only; medium fine, grit and chaff-tempered, greenish/buff baked clay. ext. l. 5.9; head diam. 5.1.
4. **2F45:65**: Batch 041. Clay muller fragment; tip only; medium fine, chaff-tempered, pinkish/buff baked clay. ext. l. 7.8.
5. **2F45:01**: Batch 009. Clay spoon; incomplete, handle broken off at top; fine/medium, grit-tempered, orange/buff baked clay; extant portion of handle is flat and rectangular in cross-section; spoon is quite deeply dished, with a plain rim.
   ext. l. 9.2. diam. of spoon 5.6; w. of handle 2.7; th. of handle 1.2.
6. **2F43:03**: Batch 044. Lead bowl; reconstructed in drawing; half of rim extant, lower body missing but shape preserved by compacted soil; badly corroded yellow surface with grey core; plain round rim with straight, flaring sides and probably a rounded base.
   reconstructed h. 8.2; reconstructed rim diam. 16.0.
7. **2FS:16**: Stone mortar; broken in two pieces but yields full profile; badly weathered, yellowish/white limestone. h. 8.9; rim diam. c.9.0.
8. **2F54:02**: Batch 1000. Suspension weight; intact; whitish/brown volcanic stone.
   diam. 11.0; max th. 5.4; diam. perf. c.2.0.
9. **2F45:02**: Batch 009. Clay sickle fragment. Hard fired, greenish clay.
10. **2F45:50**: Batch 040. Clay sickle fragment.
11. **2F44:10**: Batch 501. Clay spindle whorl; intact; grit-tempered buff baked clay.
    diam. 3.1; h. 1.9; diam. perf. 0.5.
12. **2FS:22**: Clay spindle whorl; intact; grit-tempered, yellow/buff baked clay.
    diam. 5.0; h. 3.2.
13. **2F44:07**: Batch 500. Clay spindle whorl; intact; grit-tempered, yellow/buff baked clay.
    diam. 5.1; h. 1.5.
14. **2FS:08**: Clay spindle whorl; broken; chaff-tempered. diam. 4.8; h. 1.5; diam. perf. 0.7.
15. **2F45:33**: Batch 030. Clay spindle whorl; broken; grit-tempered greenish baked clay; flat side decorated with incised radial, irregularly curving, lines. diam. 4.8; h. 1.6; diam. perf. 0.9.
16. **2FS:25**: Clay spindle whorl; intact; grit-tempered orange clay; flat side decorated with two pairs of impressed holes. diam. 3.9; h. 1.4; diam. perf. 0.5.

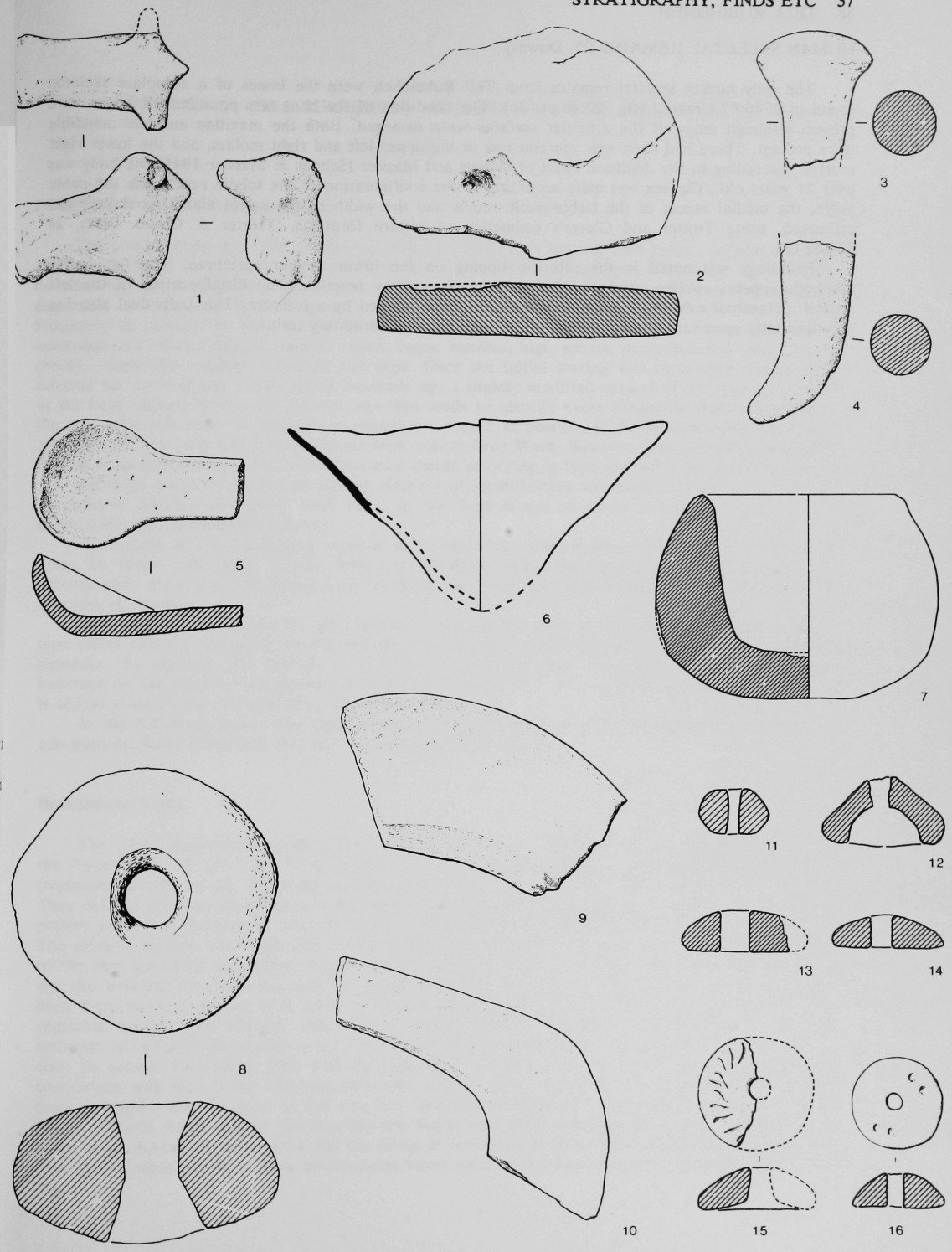


Figure 27
Small finds from Tell Rubeidheh. (1:2)

**HUMAN SKELETAL REMAINS** (D. Downs)

The only human skeletal remains from Tell Rubeidheh were the bones of a complete skeleton found in 2F46/47 Grave 2 (fig. 20 & pl. 2b). The condition of the bone was poor but all bones were present although many of the articular surfaces were damaged. Both the maxillae and the mandible were present. There had been *ante mortem* loss of the upper left and right molars, and the lower right molars. According to the dentition chart of Schour and Massler (Schour & Massler 1944) the body was over 21 years old. The sex was male according to the configuration of the sciatic notch, the sub-pubic angle, the medial aspect of the ischio-pubic ramus and the width of the sacral alae. His stature was estimated, using Trotter and Gleser's estimation of stature formulae (Trotter & Gleser 1958), as 170.58 cm.

Pathology was noted in the arthritic lipping on the lower lumbar vertebrae. The left radius diaphysis appears swollen, probably due to an inflammatory reaction. The distal portion of the left second metacarpal exhibits a callus formation, probably caused by a fracture. This individual also has a congenitally open sacral canal, which might have been an hereditary trait.

# CHAPTER 3: TELL RUBEIDHEH: POTTERY FROM THE URUK MOUND

by
E. McAdam & H.S. Mynors

## POTTERY TYPOLOGY (E. McAdam)

The pottery from the 1979 season was washed, sorted and marked with batch numbers on site.[1] The sherds from each batch were initially sorted into three categories: featureless body sherds, bevelled-rim bowl diagnostic sherds and other diagnostic sherds. Featureless body sherds were discarded. Bevelled-rim bowl diagnostics were counted in order to obtain a rough idea of their frequency in relation to the rest of the pottery, and profiles and complete bowls were kept and measured. All other diagnostic sherds - rims, bases, handles, lugs, spouts, decorated and other feature sherds - were also marked, recorded and kept. Once the initial sorting was completed, sherds were selected for drawing and a type series was built up; a slightly modified version of the type series used in the field appears below. An attempt was then made to identify every diagnostic sherd according to the type series, in order to preserve as complete a record as possible of the numbers and distribution of types. All red wash and burnish sherds were noted; Grey Ware, however, was only recorded in the case of diagnostic sherds. Lists of all diagnostic sherds according to type and batch are given below.

Although every reasonable attempt at accuracy of identification was made, the attribution of type to undrawn sherds (particularly bowl rims) in the field is not an exact procedure and some fine distinctions were undoubtedly missed.[2]

The results of the petrological analysis of 30 sherds are given below. Where relevant, the rough notes on fabric type made in the field are discussed under the appropriate type headings, but unfortunately there was insufficient time to devote as much attention as could have been wished to this area of inquiry.

The pottery is illustrated by 141 numbered drawings arranged on 10 plates (figs. 28-37). In the type series and the discussion of the pottery each drawing is referred to by its number within this sequence. In addition, the section or sections in the type series illustrated by each drawing are indicated on the plate by the numbers prefixed by a capital "T". A description of the illustrated sherd is always given in the first section in which it appears.

In the following section the mass-produced bevelled-rim bowls are discussed first, followed by non-mass-produced bowls and jars and Uruk Red and Grey wares.

### Bevelled-rim bowls

The only mass-produced pottery type to be found at Tell Rubeidheh was the bevelled-rim bowl, the "type-fossil" of the Late Uruk period (no. 01). Large numbers of bevelled-rim bowl sherds (representing 40% of all diagnostic sherds) were found in almost every level and area of the site. They did not differ in manufacture from those recorded from many other sites. Unlike the rest of the pottery from Tell Rubeidheh, most of which is wheel-made, the bevelled-rim bowls were hand-made. The exterior surface was rough and crackled, the interior surface often showed signs of finger-marks on the base where the potter had pressed the clay down to shape it, and the upper part of the interior and the bevelled rim bore the marks of smoothing with wet fingers. The analysis of a bevelled-rim bowl sherd shows it to have been made of clay of probably local origin, with abundant fine to medium vegetable temper (see Mynors, this volume, Group D (iii): Vegetable-tempered Wares), and the inclusion on occasion of pebbles up to 3 x 2 cm. in size is indicative of the careless preparation of the clay. In colour, they range from buff through yellow to pink; the fabric was soft and crumbly by comparison with that of the non-mass-produced pottery, but it would be an exaggeration to describe them as fragile. The presence of one complete bevelled-rim bowl and numerous sherds in the kiln in Square 2F22/23 might suggest that bevelled-rim bowls were fired alongside other types of pottery, and it has been observed at other sites that the firing of bevelled-rim bowls is no more and no less regular than that of other wares; at Susa bevelled-rim bowls were mixed with other kiln wasters (Balfet 1980, 77).

The use of moulds in the manufacture of bevelled-rim bowls was originally suggested by Genouillac (1934, 24) and more recently by Nissen (1970, 137). Subsequent writers (e.g. Johnson 1973, 130-131) have advanced the theory that the moulds in question were small holes dug into the ground and shaped by means of an existing bowl. Balfet (1980, 79) has objected to this on both technical grounds (arguing that both the overhanging form of the rim and the smoothing of the interior with one continuous motion of the hand would have been impossible to achieve in a mould set into the ground) and on grounds of lack of precedent (soil-built moulds have never been observed in any ethnographic context). It is difficult, on the other hand, to see how any form of moveable mould could account for the variations in dimensions observed at Tell Rubeidheh and other sites, since even allowing for warping and bending during removal from the mould some degree of regularity might be expected. It is more easily credible that a soil-built mould would alter slightly each time as the sides crumbled and were patched up again, and if such moulds were used, traces of them may eventually be recovered by excavation. Alternatively, Kalsbeek has suggested in a note on the bevelled-rim bowls from Jebel 'Aruda that they are modelled entirely by hand, using a rather dry paste, and he describes in some detail how such a process might have taken place (Kalsbeek 1980, 3-4 & fig. 2). If the bowls were made by hand in this way out of roughly-measured lumps of clay, a number of features would be explained, including their irregularity, the only approximate standardization of volume, and the marks of continuous smoothing.

| Square | Batch | Brb diagnostics | Other diagnostics | % of brb | r/d. | b/d. | h. | capacity ml. |
|---|---|---|---|---|---|---|---|---|
| 2F04 | 043 | 2 | 6 | 25 | 9.5 | 4 | 9 | 1360 |
| 2F22 | 301 | 11 | 11 | 50 | 8.75 | 2.75 | 8 | 907 |
| | | | | | 8.5 | 3 | 8.5 | 951 |
| | | | | | 8.5 | 4 | 8.5 | 1089 |
| | 305 | 22 | 12 | 65 | 8.5 | 3.25 | 8.5 | 983 |
| | | | | | 8.5 | 3 | 9.5 | 1062 |
| 2F23 | 303 | 22 | 36 | 38 | 9.5 | 3 | 7.5 | 1004 |
| | | | | | 9.5 | 3.5 | 9 | 1280 |
| | | | | | 8.5 | 2.5 | 8 | 836 |
| | 319 | 4 | 22 | 15 | 8.5 | 3 | 9.5 | 1062 |
| 2F43 | 044 | 25 | 34 | 42 | 8.5 | 3 | 8 | 895 |
| | | | | | 10 | 4 | 7 | 1144 |
| | 048 | 31 | 49 | 39 | 10.5 | 3.5 | 9.5 | 1585 |
| | | | | | 10 | 4 | 9 | 1471 |
| | 049 | 31 | 15 | 67 | 9 | 3.25 | 8.5 | 1076 |
| | | | | | 9.5 | 3 | 8 | 1071 |
| | | | | | 9 | 3 | 8 | 981 |
| | | | | | 8.25 | 2.75 | 8.5 | 875 |
| | | | | | 8.75 | 2.75 | 9 | 1020 |
| | 050 | 10 | 11 | 48 | 9 | 3 | 7 | 858 |
| | 051 | 9 | 10 | 47 | – | – | – | – |
| | 052 | 10 | 24 | 29 | 9.5 | 3 | 7.5 | 1004 |
| 2F44 | 500 | 6 | 11 | 35 | 9.5 | 3 | 9 | 1204 |
| | 501 | 52 | 56 | 48 | – | – | – | – |
| | 502 | 48 | 30 | 61 | 9 | 3.5 | 9 | 1176 |
| | 503 | 1 | – | – | 8.75 | 2.5 | 7.5 | 822 |
| | 505 | 60 | 74 | 45 | 8 | 3 | 8 | 813 |
| | | | | | 8 | 3.5 | 8.5 | 920 |
| | | | | | 8.5 | 3.5 | 7.5 | 898 |
| | | | | | 8 | 3 | 7.5 | 762 |
| | | | | | 8.5 | 3 | 7.5 | 839 |
| | 506 | 73 | 122 | 37 | 7.5 | 3.5 | 8 | 794 |
| | | | | | 8 | 3.5 | 8.5 | 928 |
| | 507 | 22 | 45 | 33 | – | – | – | – |
| | 509 | 12 | 24 | 33 | – | – | – | – |
| | 510 | 9 | 10 | 47 | – | – | – | – |

| Square | Batch | Brb diagnostics | Other diagnostics | % of brb | r/d. | b/d. | h. | capacity ml. |
|---|---|---|---|---|---|---|---|---|
| | 511 | 14 | 17 | 45 | – | – | – | – |
| | 512 | 2 | 4 | 33 | – | – | – | – |
| 2F45 | 38 | 5 | 22 | 18 | 9.5 | 3 | 8 | 1071 |
| | 39 | 7 | 25 | 22 | – | – | – | – |
| | 40 | 94 | 154 | 38 | 9 | 2.75 | 8 | 950 |
| | | | | | 9.5 | 4 | 9.5 | 1436 |
| | 41 | 80 | 180 | 31 | – | – | – | – |
| | 42 | 17 | 47 | 26 | 8.5 | 3.5 | 7.5 | 898 |
| | | | | | 8.5 | 4 | 8 | 1025 |
| 2F46/47 | 1100 | 14 | 38 | 27 | 7.5 | 3 | 8 | 735 |
| | 1101 | 23 | 78 | 23 | – | – | – | – |
| | 1102 | 6 | 16 | 27 | 8.25 | 3 | 7 | 747 |
| | 1105 | 8 | 25 | 23 | 9.5 | 3.25 | 9.5 | 1311 |
| | 1107 | 21 | 37 | 36 | – | – | – | – |
| 2F54 | 1000 | 47 | 53 | 47 | 8.5 | 3.25 | 8 | 925 |
| | | | | | 7.5 | 3.5 | 8 | 794 |
| | 1001 | 16 | 28 | 36 | 7.5 | 3.5 | 9 | 893 |
| | 1002 | 14 | 19 | 42 | 9 | 4 | 8.5 | 1184 |
| | | | | | 9 | 3 | 8 | 981 |
| | 1003 | 39 | 40 | 49 | 9 | 3 | 9 | 1103 |
| | | | | | 9 | 4 | 8 | 1115 |
| | 1004 | 7 | 3 | 70 | – | – | – | – |
| | 1005 | 6 | 8 | 43 | 8.5 | 3.5 | 8.5 | 1017 |
| | 1006 | 10 | 9 | 52 | – | – | – | – |
| | 1007 | 13 | 18 | 42 | 8.5 | 3.5 | 9 | 1077 |
| | 1008 | 20 | 21 | 49 | 8.5 | 3 | 8 | 895 |
| | 1009 | 5 | 23 | 18 | – | – | – | – |
| 2F65/75 | 046 | 35 | 14 | 71 | 8.5 | 4 | 7 | 896 |
| | | | | | 9 | 3.5 | 7 | 915 |
| | 302 | 20 | 41 | 33 | 9 | 3 | 9.5 | 1164 |
| | | | | | 8 | 2.25 | 8.5 | 775 |
| | 304 | 24 | 56 | 30 | 9 | 3 | 7.5 | 919 |
| | | | | | 8.5 | 3 | 7 | 783 |
| | | | | | 8.5 | 3.5 | 8.5 | 1017 |
| | 306 | 1 | 4 | 20 | – | – | – | – |
| | 307 | 15 | 14 | 52 | – | – | – | – |
| | 308 | 4 | 12 | 25 | 11 | 4 | 7.5 | 1422 |
| | 309 | 1 | 5 | 17 | – | – | – | – |
| | 310 | 0 | 1 | – | – | – | – | – |
| | 311 | 3 | 12 | 20 | – | – | – | – |
| | 312 | 1 | 1 | – | – | – | – | – |
| | 313 | 32 | 13 | 71 | – | – | – | – |
| | 314 | 53 | 21 | 72 | 9 | 4 | 8 | 1115 |
| | | | | | 8.5 | 3.5 | 8.5 | 1017 |
| | | | | | 9 | 2.5 | 9 | 1035 |
| | | | | | 9 | 3.5 | 8.5 | 1111 |
| | 315 | 7 | 24 | 23 | – | – | – | – |
| | 317 | 10 | 18 | 36 | 9.5 | 3 | 8 | 1071 |
| | 318 | 0 | 4 | – | – | – | – | – |
| 2F70 | 045 | 22 | 48 | 31 | 8.5 | 3 | 8 | 895 |

Table 3
Frequencies, measurements and capacity of Bevelled-rim bowls.

The count of bevelled-rim bowl sherds described in the introduction yielded a total of just over 1,150 diagnostic sherds (including profiles and complete bowls) and provides a rough basis for comparison of the relative frequencies in different areas and levels (cf. Table 3), although since bevelled-rim bowls were identified only by rims and bases, while other diagnostic sherds included various classes of body sherds, the two figures bear different relationships to the original numbers of vessels involved and the comparison is not an exact one. On the whole, the proportion of bevelled-rim bowl to other diagnostics remains constant from level to level within one excavated area (allowing for the smallness of the sample size in many cases), but there are differences between areas. In the three squares in the centre of the site, 2F43, 2F44 and 2F54, bevelled-rim bowls contributed 42-45% of all diagnostic sherds, while in trenches 2F45 and 2F46/47 they represented only 27%. From the long sounding 2F65/75 the average was 30%. The sample is a small one, and since only small areas were excavated the nature of the activities taking place in each trench are not established; nor do we know what factors governed the disposal of rubbish at Tell Rubeidheh, although it is tempting to suppose that the inhabitants followed what was to become the practice of millennia and disposed of their garbage in the nearest street or open space. At present all that can be said is that at Tell Rubeidheh a smaller proportion of bevelled-rim bowls was found in the ashy layers of 2F45 and 2F46/47 which may represent industrial debris, perhaps from a pottery kiln.

Eleven complete bevelled-rim bowls and 52 profiles were recovered, indicating that at Tell Rubeidheh at least they were used until they broke. The rim diameter of each complete bowl or profile was measured to the nearest 1 cm. and the base diameter and the height to the nearest 0.5 cm., and the volumes were estimated according to the formula given by Johnson (1973, 135), as follows:

Estimated volume (cm.$^3$) = $\pi/3H\ (R^2 + R.B. + B^2)$
Estimated volume (ml.) = 0.99997. Estimated volume (cm.$^3$)
(where R = radius at rim; B = interior base radius; H = internal height).

It was necessary to use an approximation for the interior base radius, which was estimated, on the basis of the examples of the complete bowls, as being 1cm. less than the measurement obtained for the exterior base radius. Measurements and volumes are given in Table 3. It was also observed from the complete examples that on one bowl the measurement from rim to rim might vary by as much as 2 cm., while opposite sides of the rim could vary in height by 1 cm.

Table 4 shows the estimated volumes plotted as a histogram. There is a wide spread of sizes, with a majority of the examples (57%) falling in the range 851-1,100 ml. The two peaks within this range could conceivably represent two workshops; it seems improbable that two deliberately-produced sizes are present, since the differences in volume are very small. The two sizes do not correspond to different areas of the site. The general impression conveyed is that, while most of the bowls were roughly the same size, there was almost infinite variation in their dimensions - there is, as Sürenhagen remarks (1974, 74) of the bevelled-rim bowls at Habuba Kabira, only a tendency towards standardization.

Bevelled-rim bowls have generated a considerable literature devoted to the discussion of their possible function, much of which has been ably summarised by Le Brun (1980). Le Brun divides the various explanations offered for the type's profusion (as much as 60-70% of sherds in the Uruk levels of Nissen's Warka sounding), its widespread distribution (from Iran to Syria and from southern Iraq to southern Turkey), and its careless manufacture into three categories: firstly, interpretations of a religious nature, first suggested at Nineveh, where they were considered to be votive or dedicatory bowls (Campbell-Thompson & Mallowan 1933, 168); secondly, interpretations of a utilitarian nature, for example from Khafajah, where Delougaz (1952, 128) suggested that they were used in food preparation, perhaps in the separation of whey from curds (Sürenhagen (1974, 101), in his discussion of the mass-produced wares at Habuba Kabira, points out that such a use might account for their so often being discarded intact, since the porous walls would rapidly become clogged); and finally socio-economic interpretations, beginning with Nissen's hypothesis (1970, 137), according to which bevelled-rim bowls were explained as ration containers.

This latter theory has been adopted and elaborated by, among others, Johnson, who distinguished three different sizes of bevelled-rim bowl and argued that they provided evidence for a ration-based administered local exchange and corvee labour system of some complexity (1973, 139). Subsequent researchers have cast doubt on much of this; the existence of three bowl sizes is not accepted (for example, by Beale 1978) - production seems to have been at a local level and was not centralised in large administering settlements and it has been pointed out that "relatively standardized" bowls need

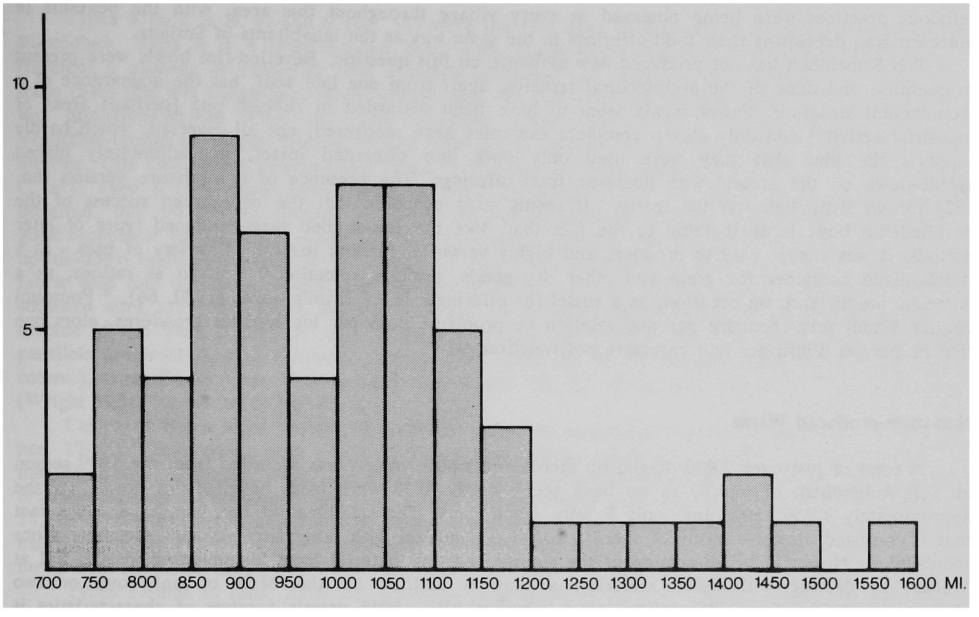


Table 4
Histogram of volumes of Bevelled-rim bowls.

not necessarily imply a centrally-controlled ration system, since some standard measure of volume would be a prerequisite of any complex and extensive system of exchange based on grain (Adams 1975, 459). The bowls themselves would not be an exact measure, any more than a paper bag is, but would require to be approximately the right size to receive a standard, measured quantity.

Beale brings the cycle of arguments concerning bevelled-rim bowl function full circle, rejecting the "ration bowl" hypothesis on the grounds that few bowls are large enough to contain a day's ration for a man, that it would be illogical to pay less than a living wage and yet to make workers a present of the container and that if ration bowls were given to workers one would expect to find them only in certain areas of the site. Instead, he returns to the religious explanation and suggests that "the bowls served as a means of presenting, on special occasions, a token amount of some commodity, probably most often grain, to the gods or a priest-king (*en*) at a temple, shrine or temple administrative centre" (Beale 1978, 305). He explains the presence of bevelled-rim bowls on small sites with the argument that, in such cases, "the bowls were sometimes deposited with food offerings in purely domestic contexts" (ibid., 309).

A number of objections may be raised to Beale's suggestions. Firstly, if bevelled-rim bowls were made not only in central kilns but also, as he suggests, in purely domestic contexts where they were fired in bread ovens or cooking hearths, one would expect to find very considerable variations in fabric and firing, whereas, as we have seen, this is not the case; nor is it true, at Tell Rubeidheh at any rate, that the bowls crumble too easily to hold liquids, although they are certainly too porous to hold any liquid for very long. It is difficult to understand why a token offering, part of a larger amount conveyed to the temple administration by other means, should have been made in a vessel provided by the offerer which was immediately discarded (as Beale alleges) in the vicinity of the temple or administrative building and not retrieved or recycled. One is reluctant to believe that purely

religious considerations could produce an object so unattractive, but a more serious objection to Beale's theories is that they require one to accept not only that the temple administration was already dominant in the Late Uruk period, with agents operating from Godin to Hama, but also that identical religious practices were being observed in every village throughout this area, with the peasants of northern Iraq depositing their food offerings in the same way as the inhabitants of Susiana.

Tell Rubeidheh has not produced new evidence on this question. Bevelled-rim bowls were present in quantity, and none of the architectural remains, apart from one late wall, has the appearance of a monumental structure. Fewer bowls seem to have been discarded in rubbish pits (perhaps areas of industrial activity) and only eleven complete examples were recovered, not all inverted, which hardly supports the idea that they were used only once and discarded intact, or deliberately placed upside-down on the ground with domestic food offerings. The presence of a miniature version (no. 132) throws little light on the matter. It seems most probable that the widespread success of the bevelled-rim bowl is attributable to the fact that, like the less-studied mass-produced types of later periods, it was cheap, easy to produce, and highly versatile, lending itself to a variety of uses - as a standardized container for grain and other dry goods, perhaps sometimes received as rations, as a domestic utensil and, on occasion, as a vessel for offerings. In Le Brun's words (1980, 66), " Pourquoi vouloir à tout prix répondre par une solution au problème posé par les écuèlles grossières, alors que rien ne permet d'infirmer leur caractère polyfonctionnel? "

**Non-mass-produced Wares**

A total of just over 2,900 diagnostic sherds and whole vessels was recorded from the 1979 season at Tell Rubeidheh, of which, as we have seen, nearly 40% were from bevelled-rim bowls. Of the approximately 1,750 remaining, only 9 were whole pots. The smallness of the sample, and the fact that it consisted almost entirely of sherds, makes comparison with other sites difficult for the reasons indicated by Nissen in his discussion of the similar body of material from his sounding in K/L XII at Warka; in dealing with sherd material, a type is defined on the basis of only one or two characteristics (rim form, decoration, etc.), whereas with whole vessels a range of characteristics is involved, including rim and base form, overall shape, decoration, and features such as handles and spouts (Nissen 1970, 144). A corollary of this is a tendency to over-refinement in constructing sherd typologies; separate types are created on the basis of minor variations in rim shape or neck angle which probably do not correspond to any conscious intention on the part of the potter, who was working with the external appearance of the complete, finished pot in mind. There are a few instances in the type series here - jars with rolled rims, for example - where a combination of form, decoration and fabric suggests that two or more types should really be regarded as variants of one vessel form.

A short list of features generally considered diagnostic in date was drawn up, including rocker pattern, wedge and triangular impressions and finger-impressed ribs (Middle Uruk) and twisted handles, rim swellings, drooping spouts, and cross-hatched triangles (Late Uruk), and the incidence of these features in the various areas of excavation was noted. The numbers of sherds involved are very small, but both Middle and Late Uruk types seem to be distributed evenly throughout the areas and deposits. The pottery from Tell Rubeidheh is therefore treated here as an homogeneous assemblage.

**Bowls**

Types 2-4 (nos. 2-4) are small, round-bottomed shapes which may have been used as lids or dippers. All were wheel-made in fine fabrics; nos. 2 & 3 had a pink to orange body with fine vegetable temper and cream slip and no. 4, which was subjected to petrological analysis, belongs to Group C(ii): Fine Sandy Wares, with a buff core and buff-yellow slip. These simple shapes were infrequent but apparently long-lived; parallels occur at Warka in level XII of the Eanna sounding (von Haller 1932, Tafel 18, A, h; hand-made) and from considerably later in level 2 of the K/L XII sounding (Nissen 1970, Tafel 40, 2/2).

Type 6 (no. 6), a small, thin-walled conical bowl with a pinched rim and flat base, was one of the commoner bowl types, with parallels in the "sinuous-sided cups" of levels XX-XVI of the Inanna sounding at Nippur (Hansen 1965, fig. 5) and from level VIII of the Eanna sounding at Warka (von Haller 1932, Tafel 18, C, y; wheel-made with a diameter of 11.6cm.); as Nissen's Type 10 it was restricted to the Uruk levels of the K/L XII sounding at Warka (Nissen 1970, Tafel 104). At Rubeidheh, Type 6 was wheel-made and quite carefully finished, belonging to Group F(ii): Fine Ware,

with a pale green core and cream-yellow slip. Some examples were straight- rather than sinuous-sided and bore a close resemblance to the conical bowls to which they are probably ancestral. Pouring lips were not noted.

Types 8 (nos. 8 & 9) and 9 (no. 10) were the two most frequently occuring bowl types at Tell Rubeidheh. Type 8 is a straight-sided bowl with slightly-incurving rim, wheel-made and carefully finished; a number of examples bore a lightly-burnished red wash on the exterior, and although in some cases this was lighter and more fugitive than the red wash and burnish found on jars, in others it was indistinguishable from it. The example shown in no. 8 belongs to Group D(ii): Vegetable-tempered Wares, and no. 9 was light green with a fine grit temper and carefully-smoothed interior. One Grey Ware example was found, paralleled in Eanna level VI (von Haller 1932, Tafel 19, C, a"). Type 9 bore some resemblance to Type 8 externally, but the shape of the profile is quite different, the rim curving inwards for some distance to produce a shape which would have made a good receptacle for liquids, the inturned rim preventing spillage. The complete bowl no. 10 was found upside-down beside the burial in Grave 2. This very common bowl type was wheel-made, often in buff fabric with fine vegetable temper, and one example had red wash on the exterior. Similar bowls from southern sites are often more angular although bowls with sharply-incurving rims occurred on the surface of the West Mound at Abu Salabikh (Postgate (ed.) 1983, figs. 37, 38 & 84). The closest parallels are from Ahmed al-Hattu, another Late Uruk site in the Hamrin valley (Sürenhagen, pers. comm.), from Godin Tepe (Young 1969, fig. 9 nos. 10, 13, 16 & 24), and from Tepe Farukhabad (Wright 1981, fig. 41, e, f; fig. 46, i, j).

Carinated bowls were present, the smaller examples sometimes bearing decoration (Types 11-13, nos. 12-18). There was a wide range of shapes and fabrics and it was unusual to find two alike. All the illustrated examples were wheel-made in fine, vegetable-tempered or mixed fabrics, either orange-pink with a pink-cream slip (nos. 12 & 15) or greenish buff with a cream-yellow slip (nos. 13, 14, 16 & 17); no. 16 is a member of Group F(ii): Fine Wares. The large carinated bowl no. 18 was exceptionally coarse, in a pink fabric with a cream slip and medium-coarse grit temper. Carinated bowls with spouts or pouring lips were not found; at other sites these are considered an early feature.

Types 17 and 18 (nos. 22 & 23) are large Grey Ware bowls with medium-coarse black and white grit temper. Type 21 (no. 27) was the largest bowl form to be found at Tell Rubeidheh, with a diameter of 45 cm., and would perhaps be better described as a vat; it was hand-made in a buff, vegetable-tempered fabric. Similar large bowls, although with blunter and more incurving rims, occurred in levels 37 and 39 of Nissen's sounding (Nissen 1970, Tafel 104, 22). Large bowl rims also feature intermittently in levels XII-VI of the Eanna sounding but diameters are not indicated (von Haller 1932, Tafel 18, A, x, a', c'-e'; hand-made; Tafel 19, A, q', r').

Decoration on bowls was relatively unusual. The commonest form of decoration was a red wash, sometimes burnished and often fugitive. The small carinated bowl no. 12 bore a cross-hatched design in red paint on the exterior, and another small carinated bowl, no. 13, had a neatly-executed impressed rib below the rim. The rim of the large bowl no. 26 of Type 20 which belongs to Group B(ii): Medium Sand-tempered Wares, was decorated with finger-nail impressions along both edges.

### Jars

Most jars were wheel-made, and the range of shapes was characteristic of Late (or Middle-Late) Uruk pottery in general. Many of these simple rim forms are extremely long-lived, and any future refinement of their dating will depend upon the identification of combinations of shape, fabric and decoration within stratified sequences, something more readily achieved with whole pots rather than with sherd material.

One characteristic Uruk type is the large storage jar Type 30 (nos. 32 & 33), which is hand-made in coarse, vegetable-tempered fabric with a buff or pink core and buff-cream slip. The example shown in no. 32 has a finger-impressed rib below the rim. At Warka similar jars, sometimes with impressed ribs, appear for the first time in hand-made coarse ware in Eanna level XIII and continue into level VI (von Haller 1932, Tafel 17, D, o; Tafel 18, A, u, w, z, b'; Tafel 18, D, d; Tafel 19, A, l', m', s').

Rolled rims were a popular form at Tell Rubeidheh (Type 31, nos. 34-36 & Type 39, no. 45). The small rocker-patterned jar no. 34 is of particular interest; it belongs to Group B(iii): Medium Sand-tempered Wares, and has been identified as an import from southern Mesopotamia. Rocker-impressed jars of similar size, although of rather different shape, were found in level XIX of the Inanna sounding (Hansen 1965, fig. 1) and Eanna level VI (von Haller 1932, Tafel 19, D, a').

Other rolled rim jars were usually larger and coarser, in buff, self-slipped fabrics with medium mixed temper like no. 35, or in Grey Ware like no. 36, which is a member of Group B(i): Medium Sand-tempered Wares. The body shape was rounded and comb decoration, usually curving, random cross-hatching, was common. Only one rolled rim can be detected in the illustrations of pottery from the Eanna sounding; it comes from level VII and seems to have had two impressed ribs on the shoulder (von Haller 1932, Tafel 18, D, y), like a Grey Ware rolled rim sherd from the West Mound at Abu Ṣalabikh (Postgate (ed.) 1983, fig. 179).

Band rims of various types are also well-represented at Tell Rubeidheh (Types 49-53, nos. 56-60 & nos. 100, 107). Most of them are from wide-mouthed jars, and band rims from narrow bottle necks were completely absent. Band rims were wheel-made in a variety of fabrics, usually medium-fine, and the sherd shown in no. 56 was unusually coarse, with a mixed vegetable and grit temper. No. 57, with a row of finger-nail impressions at the base of the neck, belongs to Group D(i): Vegetable-tempered Wares, and no. 59, with diagonal reserved slip below a row of triangular impressions, was in a green fabric with fine vegetable temper, probably part of the same group. No. 58, with a circular-impressed rib below the rim, was also finely vegetable-tempered, in a pink fabric with cream slip, and no. 60 was in a buff fabric with no visible temper. Band rims also occurred on four-lugged jars (no. 100; with a row of finger-nail impressions between the lugs) and on spouted jars (no. 107; with rocker pattern below two rows of finger-nail impressions, in a surprisingly coarse grit-tempered yellowish-buff fabric). The type of decoration most frequently noted in association with band rims was the row of finger-nail impressions or finger-nail impressed rib, but there were also a few examples of triangular impressions with or without diagonal reserved slip.

The band rim is a long-lived form which extends well into the Early Dynastic period, but at Tell Rubeidheh they were often slightly dished on the interior, perhaps to accomodate a lid, in a way which is unusual in later periods. This is a feature which is not confined to band rims (see nos. 51, 52, 67, 82) and it finds parallels in the Uruk levels of Nissen's sounding at Warka (Nissen 1970, Tafel 105, nos. 38, 42, 46, 49 & 51).

The rim forms Type 56 & 57 (nos. 63-66) were frequently associated with cross-hatched comb decoration. No. 64 belongs to Group B(ii): Medium Sand-tempered Wares, and the other illustrated sherds were in pink fabrics with cream slip or self-slip and vegetable temper. Two Grey Ware examples were noted. Possible parallels for Type 56 are to be found in Eanna level VI (von Haller 1932, Tafel 19, B, n') and Inanna level XIX (Hansen 1965, fig. 13) but the scale of the drawings is too small for certainty. The same is true of the popular Type 59 (no. 68), which apart from one instance of red wash is undecorated, but Types 56, 57 and 59 all find parallels at Ahmed al-Hattu, not far from Tell Rubeidheh in the Hamrin Valley (Sürenhagen, pers. comm.).

Type 60 (nos. 69-72) was one of the most delicate and attractive jar types found at Tell Rubeidheh. The analysed sherd (no. 69) belonged to Group C(i): Fine Sandy Ware (or Local Fine Ware) and the field notes indicate that the other examples were also made of Local Fine Ware. All four examples carry very careful decoration; in the case of no. 70 the impressions were certainly produced with a reed of the type used in cuneiform script, and in nos. 69 & 71 probably so. It was not clear by what means the oval impressions above the diagonal reserved slip of no. 72 had been produced, but it is possible that these were also vegetable (perhaps the other end of the reed) rather than finger-nail impressions.

Strap-handled jars were plentiful at Tell Rubeidheh (Types 72 & 73, nos. 83 & 92). The handle was usually level with the rim or rose only slightly above it; no. 86 shows an unusual specimen of a small, round-bottomed cup with a high, springing strap handle. Most strap-handled jars had simple, out-turned rounded or cut rims and were made in medium-coarse buff or red fabrics, with an occasional example in Grey Ware. The analysed sherd, no. 84, belonged to Group A(v): Coarse Ware. The small jar no. 83 with two rows of finger-nail impressions at the shoulder and another at the junction of handle and rim was made in an unusually fine pink fabric with fine vegetable temper and thin white slip. Decoration was relatively infrequent; besides finger-nail impressions (nos. 83 & 90), rocker pattern was used (nos. 87 & 88), sometimes in combination with impressions at the junction of handle and rim, and there were a few examples of horizontal combing (no. 89). One Grey Ware jar bore triangular impressions at the junction of handle and rim (not illustrated). The infrequency of decoration on strap-handled jars, combined with their generally coarse fabrics, suggests that most of them were vessels of everyday domestic use.

Only two examples of rope or twisted handles were found (Type 74, no. 93), both detached from their parent jars but with small sections of rim remaining to show that they were vertical, not horizontal, handles. Rope handles first appear at Nippur in Inanna level XVII (Hansen 1965, 202) and at Warka in level VIII of the Eanna sounding (von Haller 1932, Tafel 18, C, p; Grey Ware).

Type 75 (no. 94) is almost certainly not a handle. In the field, these objects were described as "clay doughnuts" and they appear to be fragments of baked clay rings, perhaps weights of some kind, rather than handles as at one time thought.

Five rim swellings, formed by adding a crescentic piece of clay to the jar rim to produce a flat or slightly raised projection, were found at Tell Rubeidheh (Type 76, nos. 95-97). These are illustrated as if they occurred in pairs, but it is more probable that they were originally found singly opposite vertical handles, as at other sites. According to Johnson, rim swellings (called by him "rim lugs") were late in date in his Susiana survey as well as at Susa itself, where they appear in Le Brun's levels 18-17a (Johnson 1973, 39 & 58; Le Brun 1971, fig. 49 no. 7 & 1978, fig. 28, nos. 9-11; see also Stève and Gasche 1971, pl. 30, no. 7). There was a rim swelling in level 34 of Nissen's sounding at Warka (Nissen 1970, Tafel 107, no. 92) and in Eanna level II (von Haller 1930, Tafel 20, C, c).

Jars with four horizontally-pierced lugs were less common than strap-handled jars (see Types 77-82, nos. 98-102, and the miniature jar Type 137, no. 138). The lugs were small in proportion to the vessel, triangular or trapezoidal in shape, and elongated lugs were not present. In a number of cases lugs were associated with short, out-turned necks and flat or cut rims (see nos. 98, 99 & 101), sometimes with bands of incised cross-hatching, which (although untidily executed) did not dip towards the lugs as at other sites (cf. Hansen 1965, fig. 14). Other forms of decoration with lugs included rows of finger-nail impressions between the lugs (no. 100), crossed finger-nail impressions (no. 103) and finger-impressed ribs, this last type of decoration occurring most strikingly on the characteristic Uruk ware red wash and burnish 4-lugged jars (nos. 102 & 138). Jar no. 102 was a particularly fine example, with a pattern-burnished zig-zag running round the neck; it belongs to Group H(ii): Painted Wares, and was probably imported from southern Mesopotamia. Raised pellets on four-lugged jars were not found at Tell Rubeidheh.

Spouts tended to break off at the weak point of attachment to the jar and classification in the field was based on the size and shape of the spout rather than on the jar shape. Only one drooping spout was found (Type 83, no. 117) and no false spouts were recorded. Small, tapering spouts (Type 83, nos. 104-106) were associated with rounded, flaring rims and rounded shoulders and no. 106 shows a small spouted jar, complete apart from the tip of the spout, which is carinated and round-bottomed. It is, of course, impossible to predict the overall shape of the jar from a few centimetres of neck and shoulder, and only two other complete or semi-complete spouted jars were found, one with a medium tapering spout and band rim above rounded shoulders which taper to a flat base, decorated with two rows of finger-nail impressions above curving, diagonal rocker pattern (Type 79, no. 107), the other example with a trumpet spout, sharply out-turned rim, ovoid body and flat base, decorated with a single row of finger-nail impressions (Type 81, no. 113). Simple out-turned rounded or cut rims, flat or squashed everted rims, rounded flaring rims and band rims are all found on medium or large spouted jars, with little indication of any standardization of design. A number of spouted jars were in fine buff or pink wares, sometimes with a cream slip (nos. 106, 112, 114-117, 119 & 120); no. 116 belongs to Group F(i): Fine Wares, and its round-bottomed shape, with a long spout reminiscent of an oil-can, finds parallels in jars from Telloh (Parrot 1948, fig. 10, no. 5322) and Susa (Le Breton 1957, fig. 10, no. 10). Nos. 107-110, 113 & 118 were pink or buff with cream slip and mixed or grit temper and no. 105 was Grey Ware with black and white grit temper. Only no. 111, in a pink fabric with a cream slip, was medium-coarse, with a vegetable temper. Diagonal reserved slip was used on spouted jars, perhaps for practical reasons associated with cooling by evaporation (nos. 108, 110, 114).[3] Three rim spouts were found (Type 84, nos. 118 & 119). Drawing no. 118 is not entirely successful in communicating the impression of the female form which the applied knobs and finger-nail impressions on either side of the spout so clearly conveyed in the original. At Nippur, jars with rim spouts concentrated in level XVI (Hansen 1965, 205, fig. 20), but they do not seem to have been decorated. A solitary specimen of a slashed spout was found (Type 85, no. 120) on an open vessel with a band of incised cross-hatching.

### Decoration on Jars

Diagonal reserved slip (Type 86a-c, nos. 59, 72, 80, 108, 110, 114) was much less common than combing or finger and finger-nail impressions and should perhaps be regarded as a functional rather than a decorative feature of the jar, as suggested above. A row of impressions above the diagonal reserved slip was still less usual.

Painted decoration was also unusual at Tell Rubeidheh (Type 87a-d, nos. 39, 50, 121, 135), and where it appears in the batch lists Type 87c usually signifies sherds with a simple red or

reddish-brown horizontal stripe. No. 121 is of some interest; it belongs to Group H(i): Painted Wares, and as such was probably an import from southern Mesopotamia. The design, with cross-hatched lozenges between two bands of paint on a jar shoulder, is a popular and long-lived one, but there is a close parallel from Eanna level XII (von Haller 1932, Tafel 18, A, m').

Sherds with incised decoration, mainly in the form of bands of incised cross-hatching, with only two examples of cross-hatched triangles, were more frequent (Type 88a-d; nos. 31, 51, 98, 99, 120). This type of decoration is particularly associated with 4-lugged and spouted jars. No. 122 shows the single example from Tell Rubeidheh of incised chevrons, and horizontal lines seem to have been used only occasionally as a guide for the placement of impressed decoration (nos. 71, 123, 124).

Combed decoration was very common (Type 89a-d; nos. 30, 35, 63-66, 89, 128). Sherds with curving, randomly cross-hatched comb decoration outnumbered those with a single horizontal comb impression (although these were also frequent) or with cross-hatching in straight lines (sometimes leaving a pattern of open lozenges), but it must be taken into account that this type of decoration covered the entire body of the pot, including the base (see no. 128), which on occasion at least was rounded. Although the rim forms with which horizontal and curving cross-hatched comb decoration are associated overlap to some extent in Types 31 and 38, the latter type of decoration was not found on strap-handled jars and was concentrated upon Types 56-58, whereas horizontal combing is associated with rims of Types 33, 35-36 and 46. Unlike the straight cross-hatching, which tended to be more carefully executed and found on finer vessels, horizontal and curving comb decoration were found on pink or buff fabrics with medium mixed temper and cream slip (no. 64 belongs to Group B(ii): Medium Sand-tempered Wares), less often on Grey Ware. One is tempted to suppose that these are household jars for food preparation or storage.

Combs with three to six teeth set 2-4 mm. apart seem to have been used, although with curving, randomly cross-hatched vessels it is difficult to distinguish where one impression begins and another leaves off. Combing on washed Grey Ware (as opposed to slipped and burnished) first appears in Eanna levels XI-X and become common in level VII; it continues to be frequent into level VI and finally disappears after level IV (von Haller 1932, 38-40).

Impressed decoration of various kinds is also well-represented at Tell Rubeidheh, especially in the form of finger-nail and finger impressions with or without ribs (Types 90a-i & 91a-e). These and other forms of impressed decoration such as rocker pattern, wedge-shaped and circular impressions are frequently associated with features such as handles (nos. 83, 87, 88, 90), rim swellings (nos. 95, 96 & 97), lugs (nos. 100, 102, 103, 138), and spouts (nos. 107, 113, 118, 119). Impressed ribs are particularly common on Grey Ware. The Grey Ware sherd, no. 125, with two rows of deep finger-nail impressions producing a surface effect like sheep's fleece, belongs to Group A(ii): Coarse Wares, and is closely paralleled by sherds from Eridu (Safar, Mustafa & Lloyd 1981, fig. 71 nos. 35 & 36). Finger-nail impressions continue well into the Early Dynastic period, but finger-impressed ribs, rocker pattern and wedge impressions are limited to the Middle or Middle and Late Uruk periods.

### Uruk Red & Grey Wares

All instances of red wash and burnish (Type 94a) were noted, including otherwise featureless sherds, and altogether comprised just under 4% of the total number of diagnostic sherds, a proportion that represents a very small number of complete vessels. No. 102 belongs to Group H(ii): Painted Wares, and was an import; it is wheel-made in a hard orange fabric with a sealing-wax red burnished wash, and comes from a 4-lugged jar with a finger-impressed rib beween the lugs, upright neck with pattern burnished zig-zag and everted rim. With one exception, all identifiable Red Ware jar sherds belonged to this type of 4-lugged jar (there were also a number of flat bases and one ring base), although possibly one or two of the Type 8 bowls should also be considered as having true red wash and burnish. A number of other bowl and jar sherds bore a soft, often fugitive red wash, lightly burnished, which may have been a local imitation of the imported ware. It should be noted that the miniature red wash and burnish 4-lugged jar (no. 138) belonged to Group C(i): Fine Sandy Ware and was not identified as an import. At Nippur, too, Red Ware is concentrated upon 4-lugged jars, most of the examples coming from levels XIX to XVI with a solitary red burnished 4-lugged jar in level XV (Hansen 1965, 204-205). The position with regard to the Eanna sounding at Warka is complex, for von Haller distinguished a number of different types of Red Ware, which first becomes numerous in level XIV, in a variety of different forms; without having seen specimens it is difficult to determine which variety of Red Ware corresponds to the red washed and burnished ware at Tell Rubeidheh, nor is it easy to find parallels in the illustrations for our 4-lugged jars. Perhaps the closest comes from

level VIII - "the prime of Red Ware", according to von Haller - in the form of a jar profile with straight neck, everted rim and what appears to be a lug, although it is not mentioned in the text (von Haller 1932, 38-40 and Tafel 18, C, g'). In the K/L XII sounding, Red Ware survives into the latest levels, although in Eanna sherds of Red Ware are infrequent after level VI (Nissen 1970, 147).

Grey Ware sherds also make their appearance in quantity in Eanna level XIV, and from level VIII onwards von Haller distinguished two types, the grey slipped and burnished ware of previous levels and a new ware which was grey washed and combed or decorated with finger-nail impressions (von Haller 1932, 39). The former perhaps corresponds to the handful of burnished Grey Ware sherds found at Tell Rubeidheh, the latter to the remainder of the Grey Ware. A wide range of vessels were made in Grey Ware at Warka, beginning with bowls with angular, inturned rims in level XIV (von Haller 1932, Tafel 17, D, b-e), a variety of bowl and jar forms in levels XIII-VIII (ibid., Tafel 17, D, c'-d'; Tafel 18, B, r-s and d'-h'; Tafel 18, C, p, q, s, t, u), jars with short, out-turned cut or rounded rims in level VII (ibid., Tafel 19, A, a-r) and bowls with a variety of mainly flat everted rims in level VI (Tafel 19, D, r'-e"). After level VI Grey Ware also becomes infrequent.

In all, Grey Ware sherds formed just under 4% of all diagnostic sherds at Tell Rubeidheh, but since only feature sherds of Grey Ware were counted this represents a larger number of original vessels than the 4% of Red Ware sherds. Two Grey Ware sherds were analysed: no. 125 belongs to Group A(ii): Coarse wares and no. 36 to Group B(i): Medium Sand-tempered Wares. Both were locally made. Only 4 Grey Ware sherds were burnished, all of them without other features. There is some overlap between Grey Ware and other medium-coarse wares in form and decoration, but the preponderance of Grey Ware sherds with impressed ribs indicates that Grey Ware was deliberately produced.

At Nippur, Grey Ware is confined to Inanna levels XX-XVII (Hansen 1965, 202). Shapes include a strap-handled cup, burnished globular jars and 4-lugged jars, including one decorated with incised circles and crescents, a type of decoration restricted to Grey Ware at Nippur and not found at Tell Rubeidheh. Grey-slipped, burnished wares were also found on northern sites like Grai Resh (Lloyd 1940, 18) in a range of unfamiliar forms.

**Discussion**

So far, the search for parallels has emphasised the similarities -and dissimilarities- between the pottery of Tell Rubeidheh and that of the two major stratigraphic sequences of the south, the Eanna sounding at Warka and the Inanna sounding at Nippur. Late Uruk sites, however, extend over a very much wider area, and while our sample of rather less than 3,000 diagnostic sherds (including bevelled-rim bowls) scarcely provides the evidence that would justify an exhaustive re-appraisal of the phenomenon of Late Uruk expansion, a brief summary of the evidence from sites outside Mesopotamia is necessary if we are to attempt to place Tell Rubeidheh within this very complex situation.

There seem to be three variations upon the Late Uruk theme outside southern Mesopotamia; sites such as Nineveh, Habuba Kabira and Rubeidheh itself whose pottery repertoire, including bevelled-rim bowls in large numbers, is essentially that of southern Mesopotamia, with only occasional elements from other traditions; sites like Tell Mohammed Arab with smaller numbers of bevelled-rim bowls whose pottery otherwise falls largely or entirely within a purely local tradition; and sites such as Grai Resh and Qalinj Agha whose pottery is entirely local, and which are called "Late Uruk" only by virtue of position in the chronological sequence.

Mound C at Tell Ahmed al-Hattu, one of only two other Late Uruk sites found in the Hamrin valley, seems to have yielded a comparable range of pottery types, including both bevelled-rim bowls and an early variant of the solid-footed goblet (indicating a somewhat later date than Tell Rubeidheh), Red Ware (1 sherd), Grey Ware and bowls and jars paralleling our Types 9, 12, 30, 36, 46, 51, 60, 65, 77d. Decoration includes horizontal and random cross-hatched combing, finger-nail impressions with and without ribs and finger-impressed ribs and diagonal reserved slip below oval impressions (Sürenhagen 1979, 47-50 and pers. comm.). There also appears to have been a pierced ring similar to Type 102, no. 141, whose function is obscure. A kiln was excavated, indicating that some of the pottery was locally made.

Bevelled-rim bowls occurred in quantity in level 4 of Mallowan's deep sounding at Nineveh (Campbell-Thompson & Mallowan 1933, 165-170). The illustrations are limited and rather confusingly presented, but some similarities to southern types can be detected. The best parallels to the material from Tell Rubeidheh come from -27 feet to -31 feet below datum; at -31 feet there are two jar shoulders in what Mallowan describes as "dark greenish-grey clay" with combed decoration (pl. L, 10

& 12); at -30 feet a straight-spouted jar with diagonal reserved slip (pl. LII, 12; see Type 82, no. 115), at -29 feet a jar rim with wedge impressions and a small sinuous-sided bowl (pl. XLIX, 21 and pl. LI, 5; see Type 6, no. 6); at -28 feet a strap-handled cup with horizontal combing (?) on the shoulder (pl. LI, 6) and at -27 feet a carinated bowl, an impressed strap handle and a Red Ware 4-lugged jar (pls. XLIX, 6; L, 4; LII, 9; see Type 12, no. 15). Comb decoration and applied pellets are also found on Red Ware, and drooping spouts occurred towards the top of the Ninevite 4 levels. A number of the sherds illustrated by Mallowan belong to types which appear to be purely local, but the Red Ware and other types cited suggest strong links with the south.

In contrast, bevelled-rim bowls are found at a number of other sites in the north where the remainder of the pottery seems to have been an indigenous growth. Bevelled-rim bowls were found at Nuzi in levels IX and VIII of the test pit 14, but apart from a strap-handled jar the pottery looks unfamiliar; there is, however, insufficient evidence upon which to base a firm conclusion (Starr 1939, 18-19 & pls. 50 & 51).

Bevelled-rim bowls were found at Grai Resh in levels IV-II alongside "Uruk Grey Ware" (Lloyd 1940, 18-19 and fig. 7). The Grey Ware was straw-tempered with a grey slip and burnish on one or both sides of the vessel, and the forms, which have no recognizable parallels in the south (although there are some similarities to Gawra XIA-XI), include a range of club-headed bowls, "Champagne Chalices", hole-mouthed bowls with squashed everted rims and an "eye symbol" like those from Tell Brak. Brak itself also produced bevelled-rim bowls, drooping spouts and Grey Ware in its Late Uruk levels, but in other respects the pottery of this period at Brak owes little to southern Mesopotamia (Fielden 1981, 157).

The Late Uruk assemblage from Tell Mohammed 'Arab in the Eski Mosul area, while it included a few bevelled-rim bowls and a number of other characteristic Late Uruk types, displayed features such as painting on bowls and jars which point to a local tradition at work (Roaf 1984b, 154-155 & fig. 8).

At Tepe Gawra bevelled-rim bowls were absent in levels XIA and XI, which are assigned to the Late Uruk period, and there are no other signs of southern connections, although some of the pottery forms, as has been noted, resemble those of Grai Resh (e.g. Tobler 1950, figs. 344 & 400). Double- or multiple-mouthed jars first appear at Gawra in the Stratum XIII well and become more popular in Strata XIA-XI (Tobler 1950, 153 & figs. 221, 356, 434). The double-mouthed jar is one of the few distinctively northern types to appear at Tell Rubeidheh, where fragments of two such jars were found (Type 100, no. 139). Other examples come from Telul eth-Thalathat (Egami 1959, fig. 50, 5 & 8), Chagar Bazar (Mallowan 1937, fig. 19, 11) and Tell Mohammed 'Arab (Killick, pers. comm.).

At Qalinj Agha bevelled-rim bowls, strap handles and spouted jars were absent in both soundings, although red-slipped and burnished sherds and Grey Ware sherds were recorded. Some of the collared jar rims and slightly-incurving or internally-sloping bowl rims have a familiar appearance from Tell Rubeidheh (Abu al-Soof 1966, 77-82 & pls. IV & V). Decoration was apparently restricted to one painted and two incised (or combed) sherds.

At Habuba Kabira on the Euphrates to the west ample evidence of connections with the south of Mesopotamia is provided not only by the pottery but also by the architecture and other aspects of the material culture (Sürenhagen 1974). A very full and varied range of Late Uruk types was produced, including the mass-produced "Grobe Blumentöpfe" as well as bevelled-rim bowls; according to Nissen's analysis of the Eanna sounding, "Grobe Blumentöpfe" first appear towards the end of the Late Uruk period in Eanna level V and continue into the Jemdet Nasr period, while bevelled-rim bowls effectively come to an end in level V (Nissen 1970, 133). The non-mass-produced wares at Habuba Kabira also suggest an advanced stage of the Late Uruk; there are elongated lugs, often on bands of incised cross-hatching above multiple bands of incised cross-hatched triangles, shoulder handles on lugged or spouted jars, band rim bottles with drooping spouts and rows of finger nail- (but not triangular) impressions above diagonal reserved slip. Random curving cross-hatched comb decoration seems to have been absent.

To the east, Susa produced bevelled-rim bowls in quantities that are impressive by any standards, and the rest of the pottery shows strong affinities with southern Mesopotamia, with features such as rocker pattern, twisted and strap handles, diagonal reserved slip on spouted jars, drooping spouts, lugs with bands of incised cross-hatching or with impressions and applied pellets between the lugs, band rim spouted bottles and bands of incised cross-hatching combined with cross-hatched triangles (Le Breton 1957, figs. 10-14). Parallels with Tell Rubeidheh come mainly from Le Breton's Susa Bc and d phases (Le Breton 1957, fig. 10, nos. 5, 7, 9, 10, 29-31), phase Bd being equated by him with Eanna level VI, while the angular 4-lugged jars, spouted band rim bottles, long lugs, cross-hatched triangles and painted decoration of Susa C indicate a later date, extending into the Jemdet Nasr period and

corresponding approximately to Le Brun's sondage levels 17A and B (Le Brun 1971, 211 & figs. 45-53 and Le Brun 1978, figs. 19-34; see also Johnson 1973, 31-45).

Johnson divides the material from his Susiana survey into Early, Middle, and Late Uruk on the basis of 36 different types (1973, 54-58). Many of the 36 types are not represented in the Warka or Nippur sequences. Those which are represented include, for the Middle Uruk, hatched strip shoulder decoration (?), cross-hatched bands, strap handles (Middle to Late) and sinuous-sided cups, and for the Late Uruk, full twisted handles, band rim bottles, drooping spouts, rim swellings and cross-hatched triangles. Bevelled-rim bowls are both Middle and Late. Confirmation of the late appearance of another definitive Late Uruk type, groove and oblique decoration, comes from Nissen's Warka sounding, where it was found only in phases II-IV and VI, levels 3-21 & 30 (Nissen 1970, 146 & Tab. 3). This kind of decoration was absent at Tell Rubeidheh.

Other sites in Iran demonstrate a combination of local development and external contacts. At Tepe Farukhabad, local Sargarab Ware forms continue into the Middle Uruk from the Early Uruk phase alongside bevelled-rim bowls and increasing numbers of new bowl and jar forms in Uruk Ware; in the Middle Uruk phase, Uruk Ware vessels become more frequent and bands of incised cross-hatching on jar shoulders and sinuous-sided cups appear (Wright 1981, 171-172). In the Late Uruk phase Uruk Ware vessels dominate with strap and twisted handles, groove and oblique decoration, bottles with drooping spouts, cross-hatched triangles and string-cut conical cups. This sequence presents some unfamiliar features, such as the late appearance of strap and twisted handles and the early appearance of conical cups alongside bevelled-rim bowls, while other features common elsewhere, such as combing, impressions and diagonal reserved slip, are rare or absent.

At Godin Tepe, the pottery of Period V can be divided into two categories, one which is a continuation of the local tradition and one which is new to Godin and mainly involves features which are paralleled in lowland Mesopotamia (Weiss & Young 1975, 5-6 & fig. 3). The latter include bevelled-rim bowls and 4-lugged jars with impressed decoration; bowls with gently- or sharply-incurving rim very similar to those from Tell Rubeidheh are also represented (Young 1969, fig. 9). Weiss and Young argue from the pottery, tablets and glyptic of Period V that the oval enclosure on the summit of the mound at Godin in this phase was a Susian trading post, part of a Susian expansion to secure access to the northern trade route for lapis lazuli and other goods, manned by foreign merchants who imported their own pottery repertoire and surrounded by a local agricultural settlement which on the whole adhered to its own traditions (Weiss & Young 1975, 14-15).

The merchants of Godin moved into an existing settlement; the Hamrin valley, on the other hand, seems to have been unoccupied, except perhaps by nomadic peoples without pottery, from the 'Ubaid period until the foundation of Tell Rubeidheh and Tell Ahmed al-Hattu. In this respect Tell Rubeidheh therefore resembles - on a small scale - the "new towns" of Jebel Aruda or Habuba Kabira. In Tell Rubeidheh's case, it seems possible that the settlement came into being as a stage on a major route from north to south, and perhaps an east-west route as well, and was relatively short-lived. Analysis has indicated that the sherds shown in nos. 34, 81, 102, 121 & 127 were imports from the southern alluvium, although it might be more accurate to say that their contents were imported, since with the possible exception of no. 102 it is difficult to imagine these pots having great value in their own right. Northern contacts are demonstrated by the two double-mouthed jar fragments, and by some of the less distinctive jar rims.

The dating of Late Uruk pottery is problematic, since many features are long-lived, and the chronological distribution of various types which are considered diagnostic varies from site to site. At Nippur, Hansen considers levels XX - XVII as Middle Uruk and levels XVI and XV as Late Uruk (Hansen 1965, 202-204). Diagnostic features for the Middle Uruk here are Uruk Red and Grey Wares, finger-impressed ribs, rocker decoration, single bands of incised cross-hatching, 4-lugged jars with finger-nail impressions or finger-nail impressions and pellets, carinated bowls (often spouted), strap-handled cups with decoration other than horizontal grooving and sinuous-sided cups. Late features include strap-handled cups with horizontal grooving, vertical and horizontal rope handles, cross-hatched incised triangles below bands of incised cross-hatching and drooping spouts. Johnson (1973, 56-58) also considers twisted handles, band rim bottles, drooping spouts and cross-hatched triangles to be Late rather than Middle Uruk, and adds groove and oblique decoration and rim swellings, and Wright's list of characteristic Late Uruk features at Tepe Farukhabad coincides with this (Wright 1981, 165-172). Unfortunately, the Eanna sequence is less illuminating than might have been hoped; the fact that level VI produced the largest number of sherds leads to a distorted picture of the chronological distribution and frequency of various types, and the illustrations are unhelpful.[4] Red and Grey Wares, as we have seen, first appear in level XIV and continue in quantity into level VI; in level V there are only a few sherds of each, and with level VI they are very infrequent. A rope

handle is shown in level VIII (von Haller 1932, Tafel 18, C, p), the level in which wheel-made unpainted Uruk pottery appears, but jars with drooping spouts are not shown until level V (Tafel 19, D, c'). Cross-hatched triangles are shown from level IV (Tafel 20, A, l') and a rim swelling from levels II-III (Tafel 20, C, c). Wedge impressions are mentioned from level VII (ibid., 39).

A number of Middle Uruk types appear in level VI, such as finger-impressed ribs (also in level VIII; Tafel 18, C, e'), rocker pattern and a spouted carinated bowl (Tafel 20, C, l & m; D, a & f). Middle Uruk in terms of the Eanna sequence might therefore be seen as levels VIII - VI.

At Tell Rubeidheh Late Uruk features such as twisted handles, drooping spouts, horizontal combing on a handled jar and cross-hatched triangles were present, but in each case were represented by only one or two sherds. The only Late Uruk feature present in greater numbers was the rim swelling, of which there were five, distributed (like the other Late Uruk feature sherds) throughout the deposits side by side with features considered typical of the Middle Uruk. Grooved and oblique decoration and band rim bottles were not present. It seems therefore that Tell Rubeidheh should be seen as essentially Middle Uruk (Eanna VIII-VI or Inanna XX - XVII), with a handful of later features which may indicate a date towards the end of the period.

## PETROLOGICAL ANALYSIS OF POTTERY FROM TELL RUBEIDHEH (H.S. MYNORS)

The geology of the Hamrin Basin does not permit identification of specific sources of raw materials used in the local production of ceramics at Tell Rubeidheh. Classification of the pottery assemblage by both typological and technological attributes has been undertaken in order to determine variations among the local products and to identify the non-local wares. Thin sections provide a means of verifying the classification of pottery fabrics in the hand specimen. While the technique does not pin-point clay sources, it does provide an objective approach to the comparison of pottery fabrics. The identification of diagnostic inclusions serves not only to isolate imported wares but also distinguishes variations in the use of local clays.

### Methodology

Thirty sherds were made available for analysis. The pottery has been classified according to fabric type using the conventional criteria of composition, texture and colour. Fabric descriptions follow the conventions recommended by Peacock (Peacock 1977, 21-33). This aids rapid comparison and identification of additional material from subsequent excavations.

Details of the technique are outlined elsewhere (Mynors 1983). The petrographic analysis is based primarily on a study of the sedimentary petrology of the clays from which the pots were manufactured. Thin sections representing the different fabric types were made by taking a small sample from each sherd, impregnating it with araldite resin and then polishing one surface with carborundum powder. The polished surface was then fixed to a glass microscope slide and ground down to a section thickness of approximately 30 microns. This was subsequently protected by a glass cover-slip.

Thin sections were examined at a magnification of x200 using a polarising microscope. They were subjected to a semi-quantative analysis involving a general assessment of the mineral inclusions in each section. In addition, the variation in size, shape and abundance of quartz grains within each fabric was observed.

The validity of identifications and comparisons within a pottery assemblage depends upon the level of analysis which has been undertaken. In several instances, sherds which appear similar in macroscopic comparisons have shown important differences in thin section.

### Fabric Descriptions

A. COARSE WARES

This group comprises pottery fabrics with coarse tempering materials (shell, flint and sand). With the exception of A(v) they are all probably cooking wares and often hand made.

Reduced fabrics (Grey Wares)

(i) Grey core indistinguishable from surfaces. External surface burnished. Hard, smooth texture. Rough, hackly fracture. Sparse fragments of coarse, angular flint. Sparse crushed shell and moderate sand temper. Sparse angular red inclusions. Sparse mica dusting. (Body sherd; not illustrated).

(ii) Grey core indistinguishable from surfaces. Hard smooth texture. Rough laminated fracture. Moderate fragments of coarse angular flint, sparse crushed shell and abundant coarse sand temper. Sparse angular red and brown inclusions. Abundant small fragments of vegetable matter (straw/chaff impressions visible in fracture and surface). Sparse mica dusting. No. 125.

Oxidised fabrics (Red Wares)

(iii) Narrow grey core with broad outer red-brown margins. Pink-red external and internal surfaces. Exterior surface self-slipped. Hard, smooth texture. Rough hackly, fracture. Variable sand and flint temper ranging from rare coarse angular fragments of flint with abundant medium/coarse sand to little or no flint and moderate coarse sand. Sparse crushed shell and traces of abundant carbonised, coarse vegetable matter. Sparse mica dusting. No. 75.

(iv) Pink-orange external and internal surfaces with red-brown core. Hard, harsh texture. Rough fracture. Abundant medium sand temper. Sparse fine shell. Calcareous. Very sparse mica dusting.

No. 96.

(v) Yellow-green core with cream-yellow external and internal surfaces. Hard, fairly harsh texture. Rough fracture. Abundant medium/fine sand partly visible as fine white specks in fracture. Abundant small flint fragments. Only one sherd in this group. No. 84.

It is assumed that these are all local wares (see below). The use of coarse sand as a tempering agent is common to all sherds in this group but there is a degree of variability in the range of the tempering materials used. Groups A(i) and A(ii) are tempered with sand, sparse flint fragments and mudstone, with the occasional fragment of crushed shell. The tempering material of Group A(iii), however, consists mainly of sand with fewer other inclusions. Sand and flint tempering agents are also present in no. 84 of Group A(v) but under the petrological microscope this fabric differs from the rest of Group A, all of which possess a sandy clay matrix. The clay matrix of no. 84 is very fine. It is not, however, possible to identify this sherd as an import because of the absence of diagnostic inclusions. From a comparison with the fabrics of other groups, it appears more likely that the sherd has a local origin but is produced from a different type of clay.

## B. MEDIUM SAND-TEMPERED WARES

This represents the largest single group of sherds examined. In general the clay is non-micaceous but it is difficult to sub-divide sherds within this group. The following categories have been assigned where distinctions appear valid.

Reduced fabrics:

(i) Grey surfaces indistinguishable from core. Surface texture hard, smooth. Rough hackly fracture. Abundant medium/fine sand temper visible as fine white specks in fracture. Sparse fine flint and sparse mica dusting. No. 36.

Oxidised fabrics

(ii) Colours range from green-yellow to green-pink core indistinguishable from surfaces. Most of the fabrics are cream slipped. Surface texture hard, fairly smooth. Rough, hackly fracture. Abundant medium/fine sand temper partly visible as fine white specks in fracture. Abundant fine vegetable matter and occasional sparse fine flint. No. 64, 130, and possibly 84.

(iii) Similar to fabric C(ii). Pink-buff core with the exception of no. 27 which has a pink-red core and lighter outer margins. Self-slipped external surfaces, usually cream. No. 11 has a pink wash applied to external and internal surfaces. Surface texture hard, fairly smooth. Rough, hackly fracture. Abundant medium/fine sand temper partly visible as fine white specks in fracture. Abundant fine vegetable matter and occasional sparse fine flint. Nos. 11, 26, 34, 132.

Although consistent as a group, the diversity of fabrics present tends to suggest, with one exception, production on a wider local scale from a number of different potters or workshops. The quartz grains in these fabrics are much smaller than those in Group A and in some cases it is difficult to distinguish between sandy clays and the deliberate addition of sand as a tempering agent. No. 36 is a finer fabric than the others and no tempering material is apparent.

Within this group three sherds merit special attention. No. 26 contains large rounded quartz grains, probably added as tempering material. This form of tempering is the only example in this group since the sand temper usually consists of angular quartz grains. A possible explanation is that the sand used in the tempering was selected from a deposit of weathered sand rather than crushed quartz. The tempering material of no. 11 is the more common angular quartz grain but the clay matrix itself is very fine and similar to no. 84 (Group A(v)). The most interesting sherd, however, is no. 34. The fabric of this sherd is very distinctive with inclusions of epidote, a high proportion of iron deposits and an abundance of fine rounded quartz grains. This fabric is more similar to clays of the southern Mesopotamian plain than to those of the Hamrin Basin and may, therefore, be designated an import.

## C. FINE SANDY WARES

This group comprises predominantly wheel-made vessels. With the exception of Groups F, G, & H, this material forms the fine wares of the Tell Rubeidheh pottery assemblage and may be designated

"local fine ware".

(i) Pink-brown to brick-red core indistinguishable from external and internal surfaces. No. 138 has a red-painted external surface. Hard, smooth texture. Slightly rough laminated fracture. Sparse fine sand temper visible as fine white specks in fracture. Sparse small calcareous inclusions. Faint sparse mica dusting. Nos. 69 & 138.
(ii) Buff core indistinguishable from external and internal surfaces. Buff-yellow slip applied to external surface. Sparse fine sand temper visible as fine white specks in fracture. Sparse small calcareous inclusions. Sparse fine vegetable matter and faint sparse mica dusting. No. 4.

Microscopically, these fabrics are similar to Group B fabrics and divide into two: the sandy clays (no. 69) and the finer clay with the possible addition of sand as a tempering agent (no. 4). All are probably local.

## D. VEGETABLE (CHAFF- AND STRAW-TEMPERED) WARES

This group is distinctive by virtue of the high proportion of vegetable matter in the fabric. The vegetable matter is sufficiently fine in some sherds for it to be either a natural constituent of the clay or else added in the form of dung temper. The fabric is typical of bevelled-rim bowls and other hand-made bowls but in some cases it is also used in the manufacture of wheel-made jars.

Reduced fabrics
(i) Grey core with grey-green margins and grey-green external and internal surfaces. The external surface is usually cream slipped. Very hard, smooth texture. Fairly rough fracture. Sparse fine sand visible as fine white specks in fracture. Abundant medium/fine vegetable matter. No visible inclusions. No. 57.

Oxidised fabrics
(ii) Colours range from buff-pink to yellow-pink core and in one instance orange-pink margins (no. 8). External surfaces usually self-slipped. Fairly hard, smooth texture. Fairly rough, laminated fracture. Abundant fine vegetable matter. Sparse to abundant fine sand. No visible inclusions. No. 50.
(iii) Yellow-pink core indistinguishable from surfaces. Fairly soft, harsh, crumbly texture. Rough, hackly laminated fracture. Sparse fine sand visible as fine white specks in fracture. Abundant vegetable matter ranging from fine to medium. Similar to D(ii) but coarser vegetable temper. (Analysed sherd was a bevelled-rim bowl sherd).

The identification of this group is easier from a comparison of sherds in the hand specimen since, in the thin section, the clays are similar to those of Group B, the vegetable matter having been lost in thin-sectioning. Again all sherds appear to have a local origin.

## E. MEDIUM SAND- AND VEGETABLE-TEMPERED WARES

Within this group the degree of sand versus vegetable tempering varies although the material is consistent as a group.

(i) Pink core with green-yellow margins (orange speckled appearance in fracture). Buff external and internal surfaces. Fairly hard, smooth, powdery texture. Frequently with smooth, powdery slip on external surface. Rough, hackly fracture. Sparse fine sand temper visible as fine white specks in fracture. Abundant vegetable temper ranging from fine to medium. No other visible inclusions. No. 122.
(ii) Buff-brown core with pink-red margins. Cream-buff slip to external and internal surfaces. Very hard, smooth, powdery texture. Smooth, laminated fracture. Abundant sand temper ranging from fine to medium. Abundant vegetable temper ranging from fine to medium. Nos. 62 & 76.

The term "tempered" in the description of this group is used advisedly as they are fine fabrics and the sand and vegetable matter are more likely to be natural inclusions in the clay. There is considerable variation in the quartz grains within these fabrics but nothing to signify anything other

than the natural diversity between local clays.

F. FINE WARES

(i) . Buff-green core. Cream-yellow external and internal surfaces with fine slip or wash applied. Hard, powdery texture. Rough fracture. Very fine sand and vegetable matter. No visible inclusions. No. 116.

(ii) Pale green core indistinguishable from surfaces. Cream-yellow slip applied to surfaces. Fairly smooth fracture. Abundant fine sand with sparse coarse sand temper. Fine vegetable matter ranging from abundant to sparse and visible as orange specks in fracture. Nos. 6 & 16.

Originally it was thought possible that sherds in this group were imported but microscopic examination has not borne this out. Although the fabrics are very fine with no apparent tempering, the clays are probably not levigated but are likely to have been specifically selected.

G. FINE RED WARES (imported)

This material is possibly levigated as the fabrics are very dense and fine.

(i) Core ranges from pink-brown to pink-orange. Colour variations owing to differential firing conditions are evident within a single vessel (e.g. no. 61). Buff-pink or cream white slip applied to external surfaces. Hard, smooth texture. Smooth fracture. Sparse very fine sand occasionally visible as fine white specks in fracture. No visible inclusions. Nos. 81 & 127.

H. PAINTED WARES (imported)

These fabrics are also possibly levigated with a fine clay matrix. This ware is much lighter than the dense Group G fabric.

(i) Buff-grey core. External and internal surfaces brick red. Black paint applied over pink-slipped external surface. Very hard, very smooth texture. Very smooth fracture. Sparse very fine sand visible as fine white specks in fracture. Sparse fine calcareous inclusions. Traces of burnishing on external surface. No. 121.

(ii) Yellow-orange core. External surface brick red. Orange-pink paint applied over self-slip to external surface. Hard very smooth texture. Very smooth fracture. Sparse fine sand and sparse fine vegetable matter. No. 102.

It is difficult to isolate diagnostic inclusions in the very fine fabrics of Groups G and H. The identification, however, of volcanic inclusions, epidote, muscovite mica, and the presence of iron compounds distinguishes the painted ware (no. 121) and indicates a non-local origin, with the probability of an alluvial clay source similar to those of the southern Mesopotamian plain.

**Conclusions**

Without the inclusion of kiln products, the identification of pottery of local origin is not strictly accurate but a petrological examination based on mineral inclusions seems to suggest that the majority of sherds analysed may have been produced locally.

It is probable that the differences in the use of tempering agents in local fabrics are not simply related to function, although the coarse-tempered fabric of Group A is likely to indicate a type of cooking ware. The fabric difference may also represent pottery derived from more than one source and the possibility of several potters' workshops or a number of "household-industries" involved in part-time pottery production must be considered. This local variability is most apparent in the pottery of Group B. Furthermore, different potters may well produce fabrics which are visually similar and, conversely, pots of dissimilar fabrics may have been made by the same potter using several different clay sources.

The question of local production is an extremely complex one, since so-called local wares may

have been produced at some distance from the main settlement. Without documentary evidence of the potter's trade it is difficult to postulate how far potters may have travelled to secure a market for their wares. Nor is it known whether these potters supplied more than one market. However, it seems fair to assume in comparisons between pottery assemblages of neighbouring sites that where fabrics of similar or identical clays are observed such pots are the product of a single workshop. Thus, instead of indicating pottery exchange between the sites, they may represent a common market or supplier.

Some of the pottery from Tell Rubeidheh is not local. A small jar (no. 34) probably of an utilitarian nature, is imported as is a fine, painted jar (no. 102). These wares would appear to have their origins in the alluvial clays of the Mesopotamian plain. The fabrics appear similar to Early Dynastic III fabrics rather than to the Uruk period wares.

The application of petrology in pottery studies has become widespread during the last decade. This advance in scientific methods of characterising and studying the distribution of pottery, however, requires the integration of scientific data with archaeological and technological studies. The present report demonstrates the relevance of such an approach where the fabric classification is not only suited to the analysis of form and function but also provides the basis for more general studies of production and potential marketing.

## Pottery Type Series

BOWLS.

1. **Bevelled-rim bowl**: mass-produced type; see Tables 3 & 4 and above p.39 for details.
   Example: no. 1.
2. **Curving sides, rounded rim**: a small, round-bottomed, almost hemispherical shape.
   Diam. 9 cm.
   Example: no. 2.
3. **Rounded sides, incurving rim**: a small, round-bottomed bowl, perhaps for use as a lid.
   Diam. 8 cm.
   Example: no. 3.
4. **Curving sides, pinched rim**: a small, shallow, saucer-like, round-bottomed bowl, perhaps for use as a lid.
   Diam. 11 cm.
   Example: no. 4.
5. **Inward-sloping sides, internally-sloping rim.**
   Diam. 11 cm.
   Example: no. 5.
6. **Straight or sinuous sides, pinched rim**: a small, thin-walled, conical shape with a flat base.
   Diam. 12 cm.
   Example: no. 6.
7. **Curving sides, flat everted rim**: a medium-sized, flat- bottomed bowl.
   Diam. 16-18.5 cm.
   Example: no. 7.
8. **Straight sides, slightly incurving rim**: a conical shape, probably flat-bottomed.
   Diam. 17-25 cm.
   Examples: nos. 8 & 9.
9. **Straight sides, sharply-incurving rim**: a flat-bottomed bowl.
   Diam. 19-22 cm.
   Example: no. 10.
10. **Straight sides, rounded rim**: a conical flat-based shape.
    Diam. 26 cm.
    Example: no. 11 (with red slip or wash on exterior).

CARINATED BOWLS: these vary considerably in size and shape; it is unusual to find two alike.

11. **Small carinated bowls.**
    Diams. 8-11 cm.
    Examples: nos. 12 (with cross-hatching in red paint on exterior), 13 (with finger-nail impressed

rib below rim) & 14.

12. **Medium carinated bowls.**
Diams. 15-21 cm.
Examples: nos. 15, 16 & 17.
13. **Large carinated bowls.**
Diam. 30 cm.
Example: no. 18.
14. **Curving sides, projecting rim**: a deep, probably flat-bottomed shape.
Diam. 18 cm.
Example: no. 19 (with red slip or wash on exterior).
15. **Curving sides, internally-sloping projecting rim**: a flat-bottomed bowl.
Diam. 17 cm.
Example: no. 20
16. **Outward-sloping sides, cut rim.**
Diam. 19 cm.
Example: no. 21.
17. **Curving sides, internally-sloping rim.**
Diam. 33 cm.
Example: no. 22 (Grey Ware).
18. **Outward-sloping sides, dished rim.**
Diam. 32 cm.
Example: no. 23 (Grey Ware).
19. **Vertically-sided bowls**: these are always in a medium to coarse fabric, but quite carefully finished inside and out, perhaps for use as potstands.
Diam. 11-16 cm.
Examples: nos. 24 & 25.
20. **Straight-sided, cut rim**: a large, deep, coarse bowl.
Diam. 30 cm.
Example: no. 26 (with finger-nail impressions on edges of rim).
21. **Slightly curving sides, projecting rim**: a large, coarse bowl.
Diam. 45 cm.
Example: no. 27.
22. **Decoration on bowls**: it was unusual for bowls to be decorated.
a Over-all red wash or slip on bowl exteriors: nos. 11 & 19.
b Cross-hatched design in red paint on exterior: no. 12.
c Finger-nail impressed rib below the rim: no. 13.
d Finger-nail impressions on the rim edges: no. 26.

BOWL BASES

23. **Round bases**: some of the small bowl types were definitely round-bottomed. Base sherds from larger round-bottomed types may well have been missed and discarded as body sherds in the course of the initial sorting.
Examples: nos. 2, 3 & 4.
24. **Flat bases.**
Examples: nos. 6, 7, 10 & 20.
25. **Ring bases**: no ring base was definitely identified as belonging to a bowl.

JARS

26. **Neckless, plain collar rim.**
Diam. 10 cm.
Example: no. 28.
27. **Neckless, flat projecting rim**: the illustrated example is from a carinated jar.
Diam. 9 cm.
Example: no. 29.
28. **Neckless, out-turned collar rim.**
Diam. 11 cm.
Example: no. 30 (with straight cross-hatched comb decoration).

29. **Neckless, sloping everted rim.**
Diam. 20 cm.
Example: no. 31 (with incised cross-hatching below rim).

30. **Neckless, blunt everted rim**: this rim form appears to be exclusively associated with large storage jars.
Diam. 27-48 cm.
Examples: nos. 32 (with finger-nail impressed rib below rim) & 33.

31. **Neckless, rolled rim**: this rim form is usually associated with a globular or ovoid body.
Diam. 8-14 cm.
Examples: nos. 34 (with horizontal bands of rocker decoration on body), 35 (with curving cross-hatched comb decoration) & 36 (Grey Ware).

32. **Neckless, curled rim**: an accident?
Diam. 10 cm.
Example: no. 37.

33. **Neckless, swollen rim.**
Diam. 10 cm.
Example: no. 38 (with row of large finger-nail impressions below rim).

34. **Neckless, rhomboid rim.**
Diam. 18 cm.
Example: no. 39 (with bands of black paint at rim and 2 rows of triangular impressions on shoulder).

35. **Short, straight neck, slightly out-turned rim.**
Diam. 16 cm.
Example: no. 40.

36. **Short, straight neck, flaring rim.**
Diam. 13 cm.
Example: no. 41.

37. **Short neck, flaring rim**: this rim form is found on jars with globular or ovoid bodies and flat or gently rounded bases.
Diam. 8-16 cm.
Examples: nos. 42 (with 2 rows of chevron-shaped vegetable impressions on shoulder) & 43 (complete pot with rounded base).

38. **Short neck, sharply out-turned rim.**
Diam. 13 cm.
Example: no. 44 (with 2 finger-impressed ribs on shoulder; Grey Ware).

39. **Short neck, rolled rim.**
Diam. 16 cm.
Example: no. 45 (Grey Ware).

40. **Short neck, bulbous rim.**
Diam. 16-19 cm.
Example: no. 46 (with finger-impressed rib on shoulder).

41. **Short, out-turned neck, plain rim.**
Diam. 6.5-15 cm.
Examples: nos. 47 (complete pot with rounded base) & 48 (with row of finger-nail impressions on shoulder).

42. **Short, out-turned neck, flat rim.**
Diam. 6-13 cm.
Examples: nos. 49 & 98 (4-lugged jar with incised cross-hatching).

43. **Short, out-turned neck, cut rim.**
Diam. 10-11 cm.
Examples: nos. 50 (with design in red paint), 99 (4-lugged jar with band of incised cross-hatching above cross-hatched triangles) & 101 (complete flat-based 4-lugged jar).

44. **Short, dished neck, cut rim.**
Diam. 17 cm.
Example: no. 51 (with band of incised cross-hatching on shoulder).

45. **Short, dished neck, concave rim.**
Diam. 11 cm.
Example: no. 52.

46. **Long, gently-curving neck, plain rim**: a small, round-bottomed beaker, gently carinated.
Diam. 8 cm.
Example: no. 53.

47. **Inturned neck, plain rim**: a small, globular, round-bottomed beaker.
Diam. 7 cm.
Example: no. 54.
48. **Upright neck, flat-topped rim.**
Diam. 10 cm.
Example: no. 55.
49. **Out-turned neck, plain band rim.**
Diam. 15 cm.
Example: no. 100 (complete 4-lugged jar with row of finger-nail impressions between lugs, rounded body & flat base).
50. **Out-turned neck, overhanging band rim.**
Diam. 21 cm.
Example: no. 56.
51. **Short, out-turned neck, concave band rim.**
Diam. 20-30 cm.
Examples: no. 57 (with row of finger-nail impressions on shoulder) & no. 58 (with finger-impressed rib on shoulder).
52. **Outward-curving neck, concave band rim.**
Diam. 16-23 cm.
Example: no. 59 (with row of triangular impressions on shoulder above diagonal reserved slip).
53. **Short neck, dished band rim.**
Diam. 16 cm.
Example: no. 60.
54. **Flaring neck, plain rim.**
Diam. 10 cm.
Example: no. 61 (with row of finger-nail impressions at base of neck).
55. **Out-turned neck, plain rim.**
Diam. 18 cm.
Example: no. 62 (with 3 rows of finger-nail impressions on the shoulder).
56. **Short, out-turned neck, plain or slightly swollen rim.**
Diams. 10-28 cm.
Examples: nos. 63 (with curving cross-hatched comb decoration),
64 (with curving cross-hatched comb decoration) & 65 (with straight cross-hatched comb decoration).
57. **Short, out-turned neck, rolled rim.**
Diam. 23 cm.
Example: no. 66 (with curving cross-hatched comb decoration).
58. **Short, out-turned neck, dished curved rim.**
Diam. 17-25 cm.
Example: no. 67.
59. **Short, out-turned neck, rounded flaring rim.**
Diam. 10-18 cm.
Example: no. 68.
60. **Outward-curving neck, pointed rim**: this rim and neck form are invariably found in a very fine fabric, with very carefully executed decoration. The body is rounded.
Diams. 10-14 cm.
Examples: nos. 69 (with row of triangular impressions on shoulder), 70 (with row of reed impressions on shoulder), 71 (with row of triangular impressions on horizontal incised line) & 72 (with row of finger-nail impressions above diagonal reserved slip on shoulder).
61. **Outward-curving neck, concave rim.**
Diam. 11-19 cm.
Example: no. 73.
62. **Upright or slightly out-turned neck, sloping everted rim.**
Diam. 10-15 cm.
Example: no. 102 (4-lugged jar with finger-nail impressed rib between lugs; red wash and burnish

with pattern-burnished zig-zag on neck).

63. **Out-turned neck, internally-sloping everted rim.**
Diam. 9 cm.
Example: no. 74.

64. **Out-turned neck, rounded everted rim.**
Diam. 19 cm.
Example: no. 75 (with three finger-impressed ribs on shoulder and body).

65. **Out-turned neck, flat everted rim.**
Diam. 16 cm.
Example: no. 76 (with finger-nail impressed rib on shoulder).

66. **Out-turned neck, sloping blunt everted rim.**
Diam. 18 cm.
Example: no. 77.

67. **Neckless, squashed everted rim.**
Diam. 17 cm.
Example: no. 78 (with row of large finger-nail impressions on shoulder).

68. **Short, out-turned neck, projecting rim.**
Diam. 16 cm.
Example: no. 79 (burnished).

69. **Out-turned neck, projecting rim.**
Diam. 14 cm.
Example: no. 80 (with diagonal reserved slip).

70. **Short neck, flat projecting rim.**
Diam. 5-8 cm.
Example: no. 81.

71. **Out-turned neck, flat flaring rim with interior swelling.**
Diam. 17 cm.
Example: no. 82.

## HANDLES, RIM SWELLINGS & LUGS

**Strap handles**: in most cases the handle seems to have been level with the rim or to have risen only slightly above it; no. 86 shows one of the few examples of a high, springing handle.

72. **Small strap handles.**
Diams. 6-8 cm. Handle widths 1.5-2.5 cm.
Examples: nos. 83 (with 2 rows of finger-nail impressions on shoulder and finger-nail impressions at junction of handle and rim), 84, 85 (with rounded base) & 86 (with rounded base).

73. **Medium strap handles.**
Diams. 10-13 cm. Handle widths 3-4 cm.
Examples: nos. 87 (with vertical bands of rocker pattern on the shoulder and 3 rows of circular impressions at the junction of handle and rim), 88 (with horizontal rocker pattern on shoulder), 89 (with horizontal comb decoration on shoulder), 90 (with finger-nail impressions at junction of handle and rim), 91 & 92.

74. **Rope or twisted handles**: only two examples were found, detached from their parent jars.
Example: no. 93.

75. **Circular "handles"**: 4 examples were found; these are almost certainly not handles, as was originally thought.
Diam. of "handle": 2.4 cm.
Example: no. 94.

76. **Rim Swellings**: these are produced by adding a crescent-shaped piece of clay to the rim to produce a flat or slightly raised projection; each of the three examples found is decorated.
Examples: nos. 95 (with 4 rows of triangular impressions on the swelling and 2 rows on the shoulder), 96 (with 3 rows of finger-nail impressions on the swelling) & 97 (with 2 rows of finger-nail impressions on the swelling and a finger-nail impressed rib at the shoulder; Grey Ware).

**Lugs**: these are horizontally pierced and triangular or trapezoidal in shape. The usual number of lugs

seems to have been four, positioned at regular intervals around the jar shoulder. Widths: 0.8-2.5 cm. Lengths 1.2-4.5 cm.

77. a. On band of incised cross-hatching at shoulder.
Diam. 13 cm.
Example: no. 98.

b. On band of incised cross-hatching at shoulder above row of incised cross-hatched triangles bordered by horizontal incised lines.
Diam. 28 cm.
Example: no. 99.

c. On row of finger-nail impressions at shoulder.
Diam. 15 cm.
Example: no. 100 (complete jar with short out-turned neck, plain band rim, rounded body and flat base).

d. On undecorated jar shoulder.
Diam. 10 cm.
Example: no. 101 (complete jar with short out-turned neck, cut rim and flat base).

e. On red wash and burnish jars with finger-nail impressed rib between the lugs.
Diam. 10-13 cm.
Examples: nos. 102 (with zig-zag pattern burnishing on neck) & 138 (miniature jar).

f. On row of crossed finger-nail impressions.
Example: no. 103.

SPOUTED JARS: most spouts taper towards the end and point upwards; no. 117 shows one of the few examples of a drooping spout found at Tell Rubeidheh. Most spouts were attached to the jar by smoothing clay from the jar body up into the spout, sometimes so carefully that the join was barely visible (e.g. no. 112); no. 105 shows an example in which the normal process was reversed. No. 136 shows a miniature spouted jar.

78. **Small tapering spouts.**
Diam. 6.5-12.5 cm. Spout lengths: 1.5-2 cm. Spout diam. at base: 1.8-2 cm. Examples: nos. 104, 105 (Grey Ware) & 106 (spout broken; with rounded base).

79. **Medium tapering spouts.**
Diam. 10-16 cm. Spout lengths: 2.8-4 cm. Spout diam. at base: 4 cm.
Examples: nos. 107 (spout broken; with two rows of finger-nail impressions above rocker decoration; flat base) 108 (with diagonal reserved slip) & 109.

80. **Large tapering spouts.**
Diam 14 cm. Spout lengths: 5-6 cm. Spout diam. at base: 4.5-5.5 cm.
Examples: nos. 110 (with diagonal reserved slip), 111 & 112.

81. **Trumpet-shaped spouts.**
Diam. 14 cm. Spout lengths: 2.5-4 cm. Spout diam. at base: 3-3.5 cm.
Examples: nos. 113 (complete pot with row of finger-nail impressions below rim, flat base) & 114 (with diagonal reserved slip).

82. **Long thin spouts.**
Diam. 4.5-11 cm. Spout length: 5.5-7 cm. Spout diam. at base: 2.5-4 cm. Examples: nos. 115 & 116.

83. **Drooping Spouts.**
Spout length: 4.5 cm. Spout diam. at base: 4 cm. Example: no. 117.

84. **Spouts attached to rim.**
Diam. 9.5-15 cm. Spout length: 2-3.5 cm. Spout diam. at base: 3.5 cm.
Examples: nos. 118 (with 2 applied knobs and 2 rows of finger-nail impressions on shoulder and around spout) & 119 (with row of finger-nail impressions on shoulder and around spout).

85. **Slashed spout**: a 'v'-shaped cut has been made in the upper surface of the spout.
Diam. 19 cm. Spout length: 3 cm. Spout diam. at base: 2.5 cm.
Example: no. 120 (with band of incised cross-hatching on shoulder).

DECORATION ON JARS

86. **Diagonal reserved slip.**
    a. On jar shoulder.
       Example: no. 80.
    b. On spouted jars.
       Examples: nos. 108, 110 & 114.
    c. Below row of triangular(?) or finger-nail impressions on jar shoulder.
       Examples: nos. 59 & 72.
87. **Paint.**
    a. Band of black paint on interior and exterior of jar rim, with 2 rows of triangular impressions on shoulder.
       Example: no. 39.
    b. Cross-hatched lozenges between 2 horizontal lines in black paint on jar shoulder.
       Example: no. 121.
    c. Vertical strokes of fugitive red paint inside rim and below horizontal line on jar shoulder.
       Example: no. 50.
    d. Cross in red paint on base of miniature bowl.
       Example: no. 135.
88. **Incised decoration.**
    a. Incised chevrons.
       Example: no. 122.
    b. Bands of incised cross-hatching.
       Examples: nos. 31, 51, 98 (4-lugged jar), 99 (4-lugged jar with band of incised cross-hatching above row of incised cross-hatched triangles) & 120.
    c. Incised cross-hatched triangles.
       Example: no. 99 (4-lugged jar with band of incised cross-hatching above row of incised crossd-hatched triangles).
    d. Horizontal incised line with finger-nail or triangular impressions.
       Examples: nos. 71, 123 & 124.
89. **Combed decoration**: combs with 3-6 teeth set 2-4 mm. apart seem to have been used, but it is often difficult to distinguish where one impression ends and the next begins.
    a. Horizontal comb impressions.
       Example: no. 89 (strap-handled jar).
    b. Curving cross-hatched comb decoration covering the body of the pot (usually globular in shape).
       Examples: nos. 35, 63, 64 & 66.
    c. Curving cross-hatched comb decoration on base.
       Example: no. 128.
    d. Straight cross-hatched comb decoration.
       Examples: no. 30 & no. 65 (forming lozenges).

**Impressed decoration**: finger and finger-nail impressions, with or without ribs, are a relatively common form of decoration at Tell Rubeidheh. The shape and size of the impression depends on how deeply and at what angle the finger or finger-nail was pressed into the clay. Rocker decoration is also found, as are triangular and circular impressions which appear to have been produced by means of vegetable materials such as reeds or grasses.

90. **Finger-nail impressions.**
    a. Single row of finger-nail impressions at base of neck on jar shoulder (small impressions).
       Examples: nos. 57, 61 & 100 (4-lugged jar).
    b. Single row of finger-nail impressions at base of neck or on jar shoulder (large impressions).
       Examples: nos. 38, 48 & 78.
    c. Single row of finger-nail(?) impressions above diagonal reserved slip.
       Example: no. 72.
    d. Double row of finger-nail impressions on jar shoulder.
       Examples: nos. 83 (strap-handled jar) & 107 (above rocker pattern on complete spouted jar).

e. Triple row of finger-nail(?) impressions on jar shoulder.
Example: no. 62.

f. Finger-nail impressions on handles and rim swellings.
Examples: nos. 83 (strap-handled jar), 90 (strap-handled jar), 96 (rim swelling) & 97 (rim swelling; Grey Ware).

g. Finger-nail impressions around spouts.
Examples: nos. 113, 118 (2 rows with 2 applied knobs) & 119.

h. Double row of finger-nail impressions, producing "sheep's fleece" effect.
Example: no. 125 (Grey Ware).

i. Crossed horizontal and vertical finger-nail impressions.
Example: no. 103 (with lug).

91. **Finger-nail & finger-impressed ribs.**

a. Finger-nail impressed ribs on jar shoulders.
Examples: nos. 76, 97 (rim swelling; Grey Ware), 102 (red wash and burnish 4-lugged jar) & 138 (miniature red wash and burnish 4-lugged jar).

b. Crossed finger-nail impressions on rib at jar shoulder.
Example: no. 126 (with applied knobs).

c. Finger-impressed ribs on jar shoulder.
Examples: nos. 32, 46 & 58.

d. Double finger-impressed ribs on jar shoulder.
Example: no. 44 (Grey Ware).

e. Triple finger-impressed rib on jar shoulder.
Example: no. 75.

92. **Other impressed decoration.**

a. Rocker pattern.
Examples: nos. 34, 87 (strap-handled jar), 88 (strap-handled jar) & 107 (spouted jar with double row of finger-nail impressions above rocker pattern).

b. Chevron-shaped vegetable impressions.
Example: no. 42.

c. Wedge-shaped (probably reed) impressions.
Example: no. 70.

d. Single row of triangular (possibly reed) impressions.
Examples: nos. 59 (with diagonal reserved slip), 69 & 71 (on horizontal incised line).

e. Double row of triangular impressions.
Examples: nos. 39 (with black paint at the rim) & 95 (2 rows at the carination, 4 on the rim swelling).

f. Circular impressions.
Example: no. 87 (on handle of jar with rocker pattern).

93. **Plastic decoration**: in addition to finger-nail and finger- impressed ribs, there were several pairs of applied knobs.
Examples: nos. 118 (spouted jar with 2 rows of finger-nail impressions), 126 (on jar with rib with crossed finger-nail impressions) & 127.

94. **Burnishing.**

a. Red wash and burnish.
Examples: nos. 102 (red wash and burnish 4-lugged jar with finger-nail impressed rib and pattern burnishing on neck) & 138 (miniature red wash and burnish 4-lugged jar with finger-nail impressed rib).

b. All-over burnish.
Example: no. 79.

c. Pattern burnish.
Example: no. 102 (red wash and burnish 4-lugged jar with finger-nail impressed rib and pattern-burnished zig-zags on neck).

JAR BASES

95. **Rounded.**
Examples: nos. 43, 47, 53, 54, 85 & 86 (strap-handled jars), 106 (spouted jar) & 128 (with curving cross-hatched comb decoration).

96. **Flat.**
Examples: nos. 100 (4-lugged jar with row of finger-nail impressions), 107 (spouted jar with 2 rows of finger-nail impressions above rocker pattern), 113 (spouted jar with row of finger-nail impressions) & 129 (from large jar).

97. **Ring.**
Example: no. 130.

98. **Pointed.**
Example: no. 131.

99. **Miniature Vessels.**
a. Bevelled-rim bowl.
Diam. 6.5 cm.
Example: no. 132.
b. Flat-based bowls.
Diams. 4.5-6 cm.
Examples: nos. 133, 134 & 135 (with cross in red paint on base).
c. Jars.
Diams. 2.7-3 cm.
Examples: nos. 136 (spouted) & 137.
d. Red wash and burnish 4-lugged jar.
Diam. 6 cm.
Example: no. 138 (with finger-nail impressed rib).

MISCELLANEOUS

100 **Double-mouthed jars.**
Diams. of mouths: c.9 cm.
Example: no. 139.

101 **Coarse, straight-sided tray.**
Example: no. 140.

103 **Pierced ring:** this seemed to have been made in the form of a shallow bowl, but the base had been cut out before firing, converting it into a ring. Holes were pierced through the sides and a U-shaped section was cut out of the rim at one point. 6 examples were found.
Diam. 24 cm.
Example: no. 141.

## Notes to Chapter 3

1. With the exception of the miniature jar found on the surface (no. 99d), it has not been possible to include the pottery from the 1978 soundings at Tell Rubeidheh in this report, but the notes kept at the time indicate a pottery repertoire similar to that found in the 1979 excavations.
2. Experienced archaeologists will be familiar with the phenomenon whereby two draughtsmen, given the same sherd, will produce plausible likenesses of two drastically different pots.
3. Spouted earthenware water jars are widely used throughout the modern Near East, the evaporation of the water seeping through the walls serving to cool the remaining contents. The unslipped jars sold in Baghdad are often so porous that their contents leak away before cooling can take place, and it is sometimes necessary to reduce permeability by scraping the jar with the back of a knife, producing a kind of partial burnishing. The application of a slip would also have the effect of reducing porosity and it is possible that reserved slip represents an attempt to strike a balance between waterproofing and the permeability necessary for cooling by transpiration.
4. This is partly because two different scales are employed and partly because the drawings are reproduced at a quarter of the scale at which they would have been usable. Perhaps the report should be seen as a casualty of world economics in 1933.

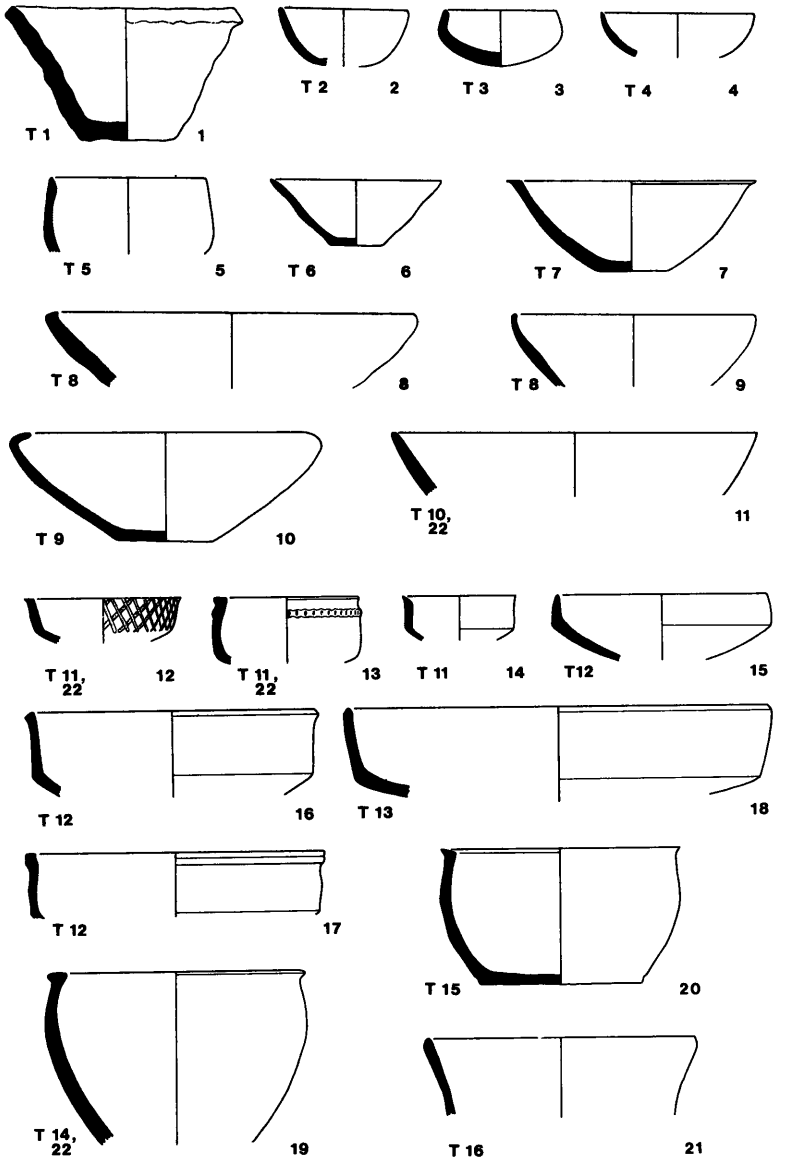


Figure 28
(Scale 1:4)

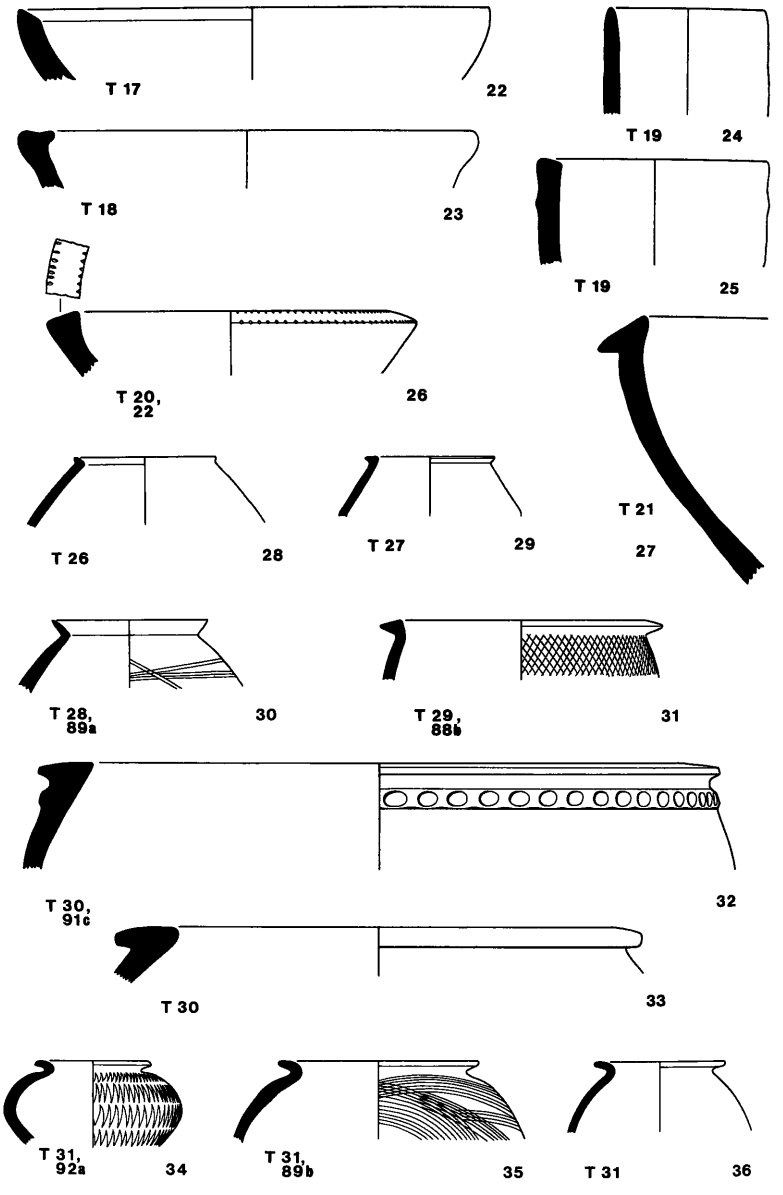


Figure 29
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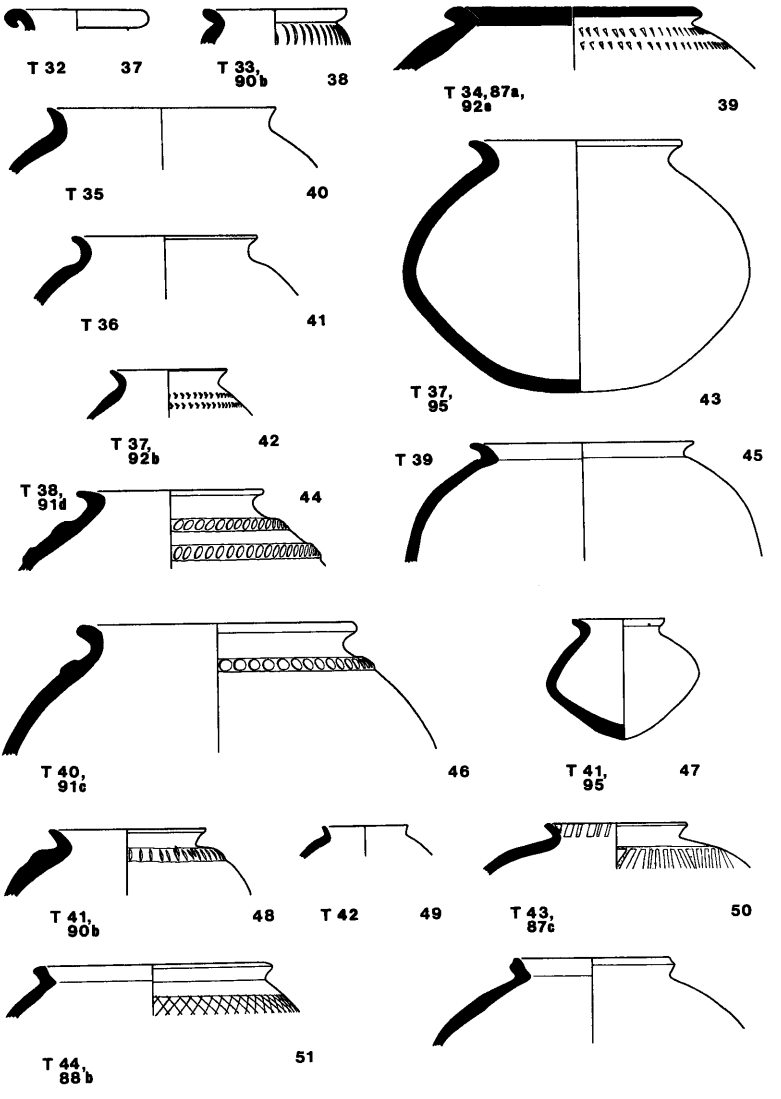


Figure 30
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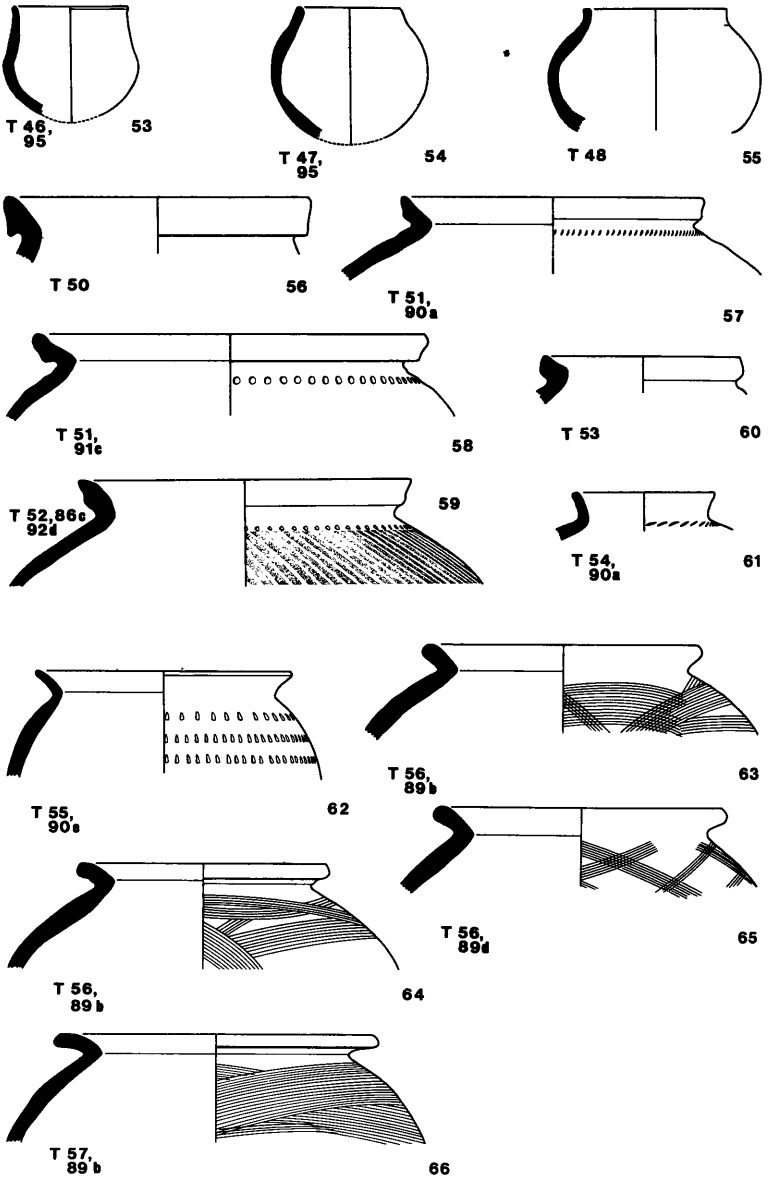


Figure 31
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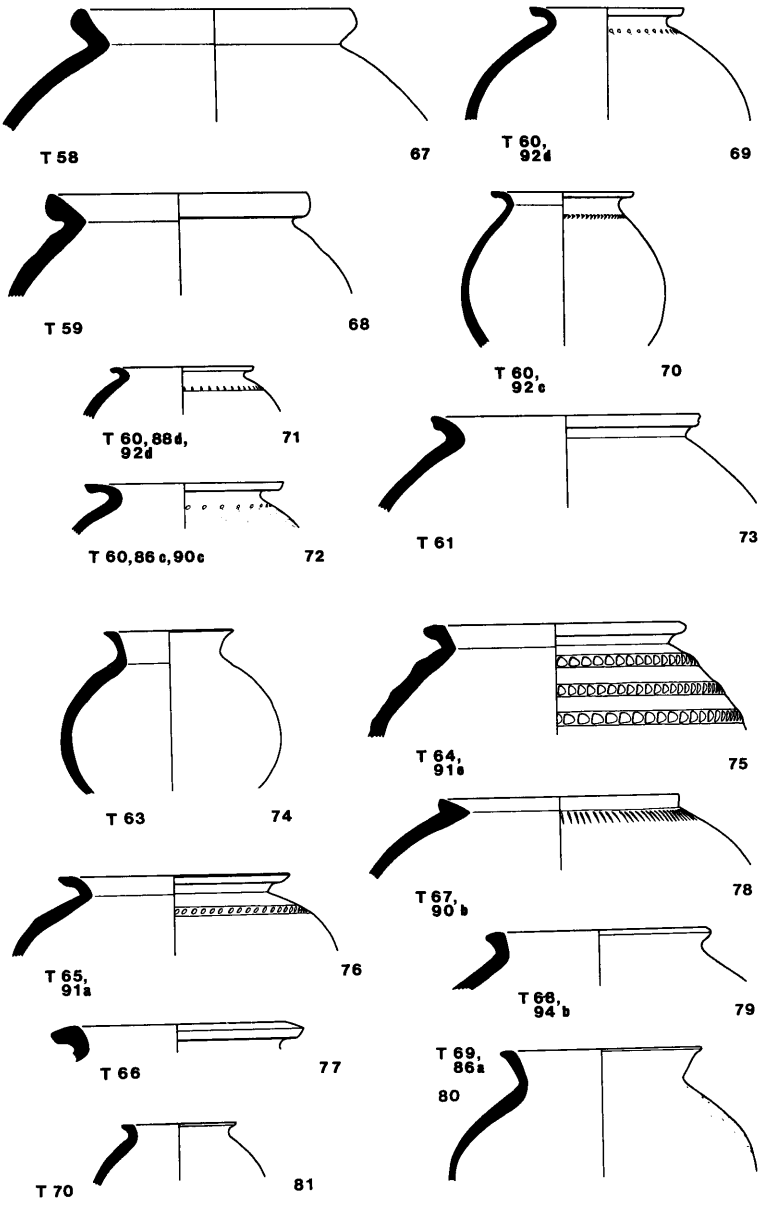


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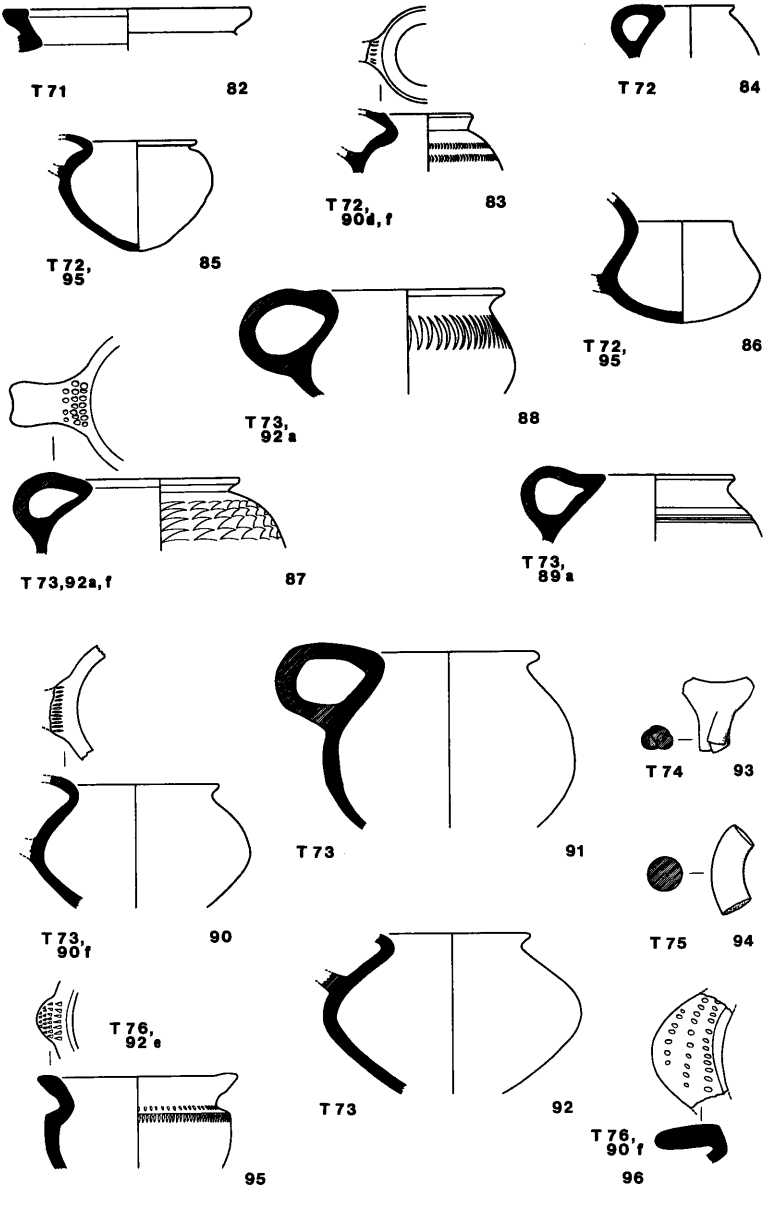


Figure 33
(Scale 1:4)

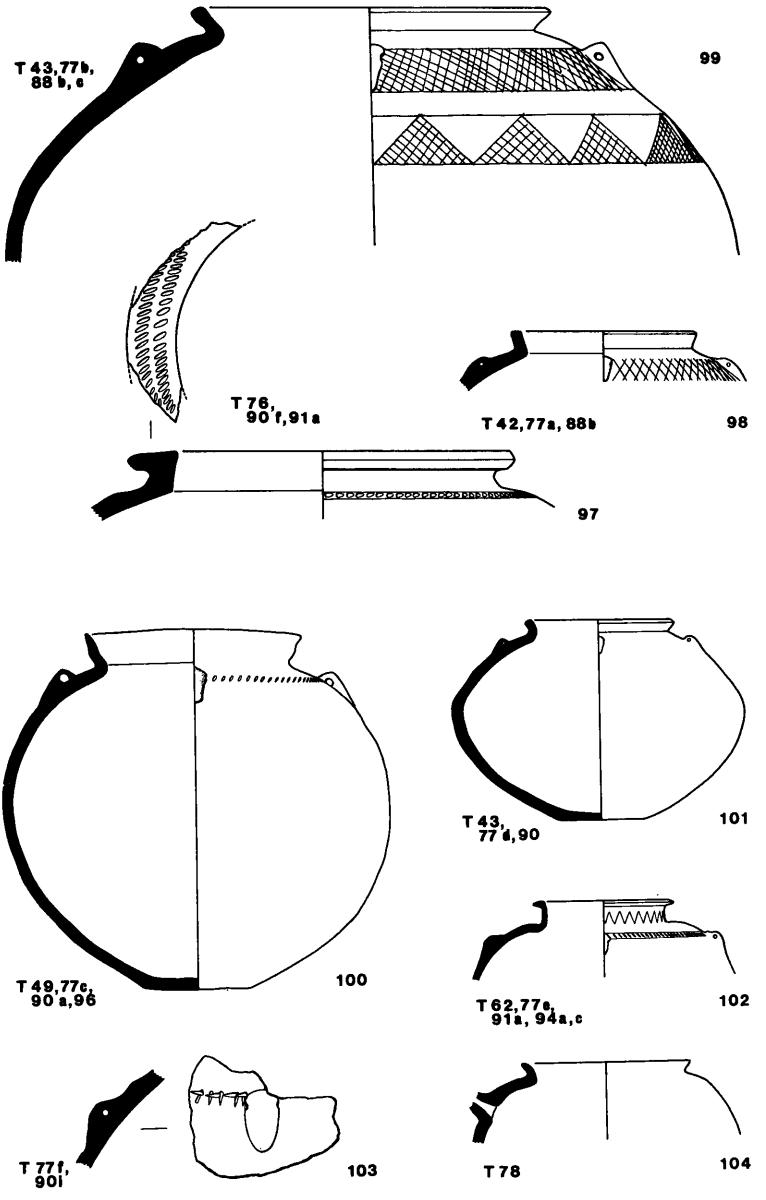


Figure 34
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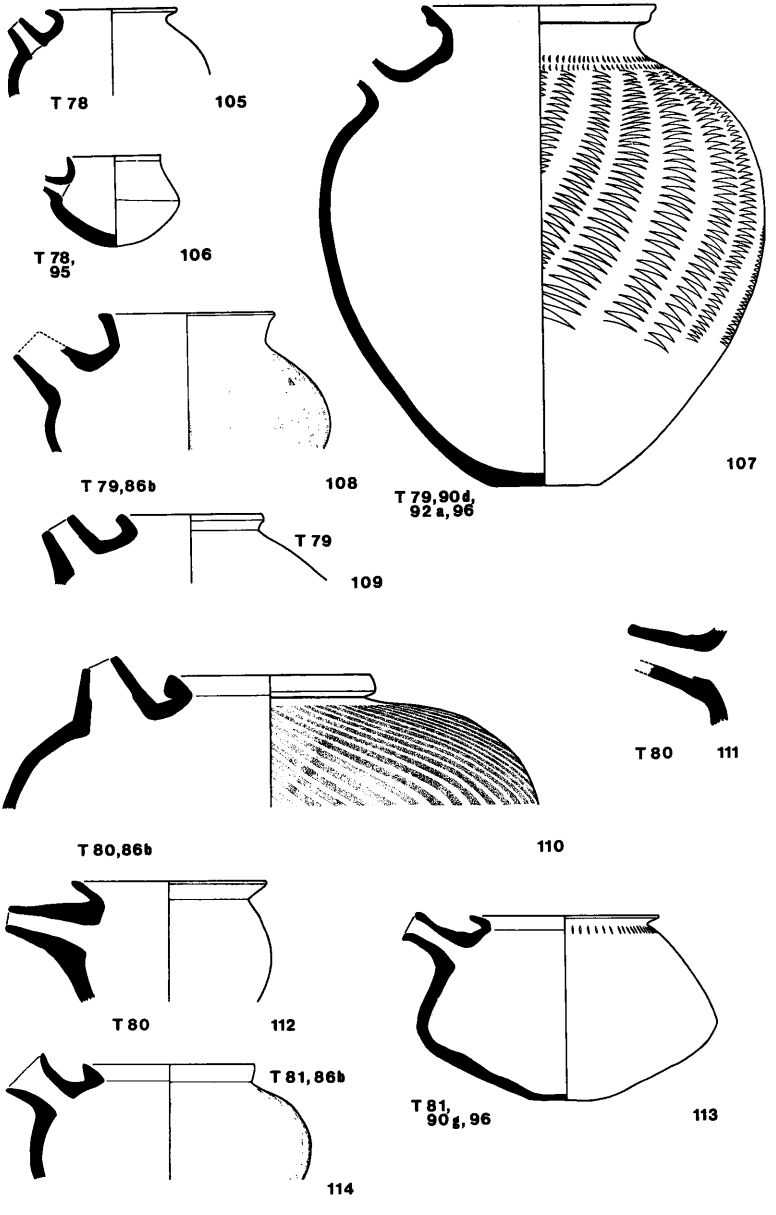


Figure 35
(Scale 1:4)

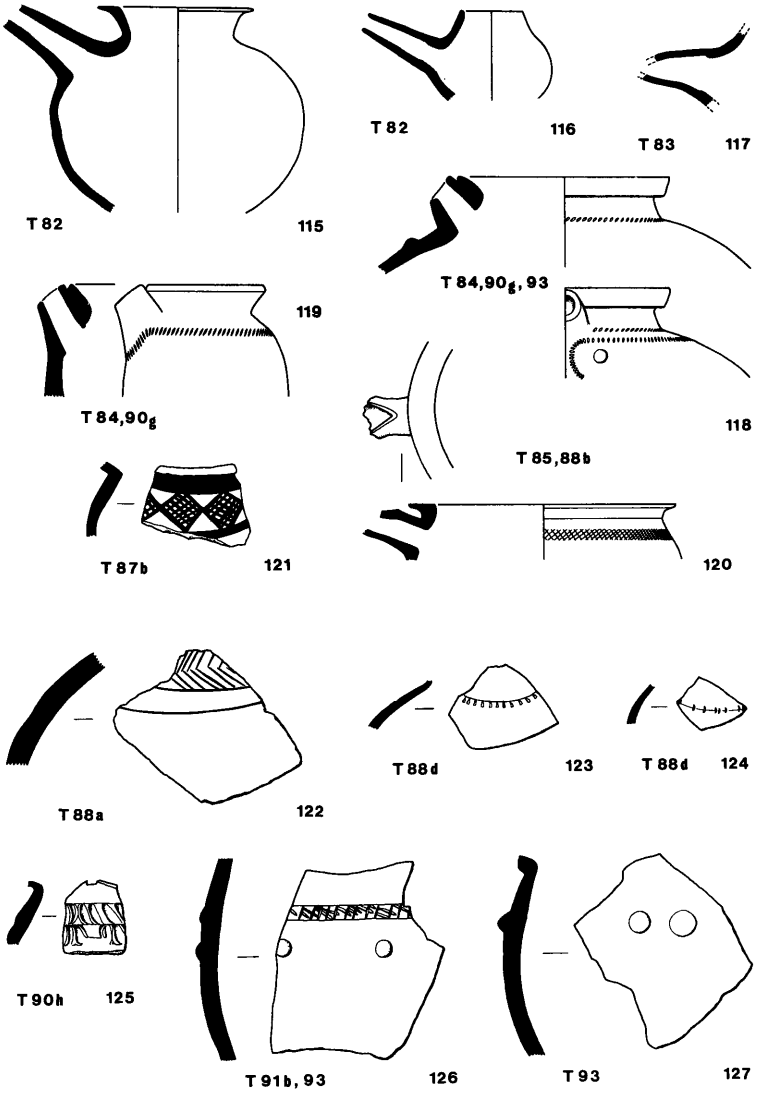


Figure 36
(Scale 1:4)

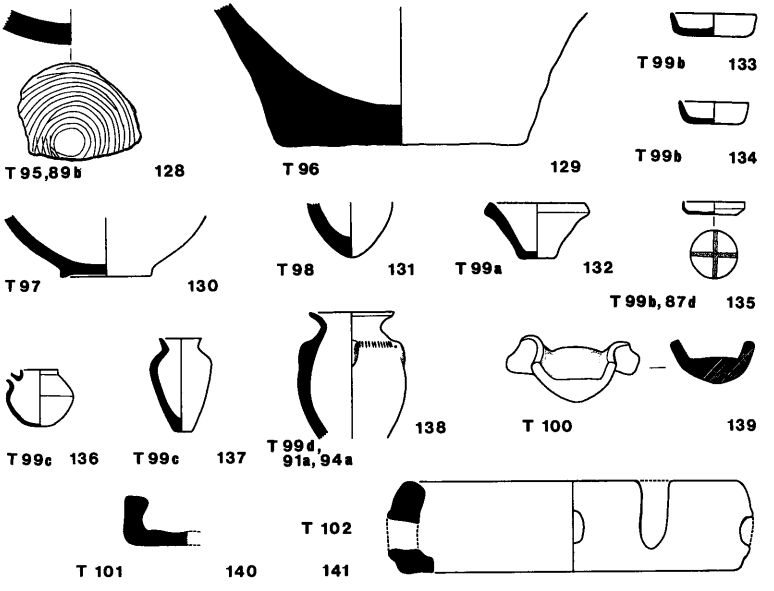


Figure 37
(Scale 1:4)

# CHAPTER 4: FLAKED STONE TECHNOLOGY FROM TELL RUBEIDHEH

by
Robert Miller

The flint and obsidian assemblage from Tell Rubeidheh provides valuable information on the technology of flaking in an Uruk settlement, including the stages of production used for making flaked stone tools, the selection of flakes and blades of different qualities to be used as tools, and the types of tool used. Although only 22 tools were found[1], much information about the knapping technology and habits of the people who made the tools can be derived from the analysis of their flaking waste using approaches developed in experimental lithic technology.

## Raw Materials

Flint/chert dominates the assemblage with 426 out of 431 pieces studied (Table 5).[2] Only 5 pieces of obsidian were found - one flake and 4 blades. This reliance on local materials in flaked stone manufacture is more marked than in a nearby 'Ubaid site, Tell Madhhur, where obsidian was present at a somewhat greater frequency. The rarity of obsidian in Uruk flaked stone assemblages has also been noted at Jebel Aruda in northern Syria (Hanbury Tenison 1983) and Tepe Farukhabad in southwestern Iran (Wright 1981, 275). Although the presence of an obsidian pressure-core at Aruda (Hanbury-Tenison 1983, fig.27) indicates blades were produced there, other obsidian artifacts from this site are limited to two flakes, five blades and one arrowhead. Distance from source does not seem to be clearly reflected in the distribution of obsidian, as Aruda and Farukhabad are respectively closer to and further from Anatolian obsidian sources than Rubeidheh itself. Whether or not this was because other minerals, particularly metals, were more likely to move between communities and regions through the limited channels of transport, exchange and distribution available during this period, or because a minor rural site or entrepôt was less likely to have access to a rare imported material, or because of other factors which need to be taken into consideration cannot be determined until studies of flaking technology in the context of local economic activity become available from related late 4th millennium BC sites (cf. Wright 1981). However, with the possible introduction of the domestic donkey at this period (Payne, this vol.), transport of raw materials in relatively significant bulk would probably not have presented too many difficulties, which might suggest that exports of copper and copper ores could have displaced obsidian within the social and administrative systems which made supplies of Anatolian raw materials available to Mesopotamian trading groups at this time.

## Flaking Tools

The only direct evidence of flaking tools found in the assemblage recovered from the excavation is a fragment of a hammerstone 2F45:40p from batch 036, a succession of ashy layers. This is a flake of dark grey silicified chert measuring 33 x 57 x 23 mm. This coarse-grained material is adapted to heavy duty use (cf. Crabtree 1972, 5; Payne 1978, E02; Miller 1980, 101) and extensive battering and incipient cones of percussion in relief on the dorsal surface attest to the intensive use of the hammerstone this fragment came from before it shattered during use.

While chert hammerstones with extensive battering are known to have been used as tools for dressing grinding stones (Baker 1874, 54; Evans 1897, 250; Dodd 1979; Miller 1984, 145) the large amount of flaking debris and waste found in this area, as well as the presence of cortex on the tip of this hammerstone fragment, suggest that the flint pebble it came from may have been used as a flaking hammer whose limestone cortex would have helped cushion the force of blows struck against flint cores. Experimental knapping in 1979 showed that cortex-covered flint/chert pebbles from the Hamrin gravel terraces make effective flaking hammers.

| Material | Category | Description | | No. | % |
|---|---|---|---|---|---|
| Flint | Flakes | waste flakes | | 212 | 49.19 |
| | | core preparation/rejuvenation flakes | | 25 | 5.80 |
| | | flakes used as cores (flc) | | 3 | 0.70 |
| | | tools | | 6 | 1.39 |
| | | | Total | 246 | 57.08 |
| | Blades | waste blades and blade segments | | 68 | 15.78 |
| | | core preparation/rejuvenation blades | | 5 | 1.16 |
| | | blades used as cores (blc) | | 1 | 0.23 |
| | | tools | | 16 | 3.71 |
| | | | Total | 90 | 20.88 |
| | Cores | (not counting flc & blc) | | 25 | 5.80 |
| | Debris | chunks and pebbles | | 64 | 14.85 |
| | | hammerstone fragment | | 1 | 0.23 |
| | | | Total | 65 | 15.08 |
| Obsidian | Flakes | core preparation (crested) flake | | 1 | 0.23 |
| | Blades | waste blades and blade segments | | 3 | 0.70 |
| | | core preparation (crested) blade | | 1 | 0.23 |
| Total | (All materials and categories) | | | 431 | 100.00 |

Table 5
Flaked stone assemblage from Tell Rubeidheh.

However, the concentration of calcium shown by a scanning electron microscope to be present on the butt of a flake from Rubeidheh unfortunately cannot be said to reflect the composition of the limestone cortex of a cobble flaking hammer. As Arnold has noted (Appendix 6, this vol.), the Ca signal recorded by an energy-dispersive X-ray spectrometer attached to a scanning electron microscope is more likely to be derived from the clay present on the unwashed piece, which in turn reflects the composition of the clayey excavation unit the flint sample 2F45:35 was found in. The Rubeidheh flake butt spectra can be compared to the energy-dispersive X-ray spectra for the calcareous clay body of a sherd of 'Ubaid pottery analysed by Tite et al. (1982, fig. 9) whose fabric reflects the composition of calcareous clays available in Mesopotamian alluvial catchments (ibid., 112; Hedges and Moorey 1975, table 1 on p. 31; Maniatis et al. 1982, 103). Although there is less calcium present in the Rubeidheh clay sample than in the 'Ubaid sherd, this may reflect the rarity of calcareous soil-forming material in the alluvial deposits overlying the sandstone bedrock of Jebel Hamrin (cf. Adams 1965, 7).

Selective sampling of lithics during excavation could be carried out so as to improve the possibility of recovering traces of contact material adhering to stone tool surfaces, and further microtrace analysis of archaeological pieces as well as experimental controls will be needed to investigate the possibility that hammerstone and flaking tool residues could be found on the material they worked (cf. Moorey 1985, 51). However, when the composition of the flaking hammer used at early stages of production does not differ significantly from the stone it flakes or from the sedimentary environment both are eventually incorporated in, any residue from the flaking tool would be difficult to identify even if it had survived.

Even though the tools used at the earliest stage of stone tool production for flaking and roughing out cores for later blade removals might not leave recognisable traces at contact points, it is possible that if some of the blade blanks used for sickle elements at Rubeidheh were made by pressure or indirect percussion, evidence of the tools used at this stage of manufacture might be possible to obtain. While one possible pressure core and a number of sickle elements apparently made by pressure were noted in the flaked stone assemblage at Rubeidheh, the deeply indented denticulated plan of the striking platforms of a number of cores at Rubeidheh might also indicate the use of indirect percussion with a flaking punch (cf. Bordes 1947, 18). If this is the case, it could be significant that there is a

possible reference to the use of a chisel in flaking flint/obsidian in a later Sumerian text, Lugale (Van Dijk 1983, I, 123), and a possible technological parallel might be found in the embedded metal spikes used in producing parallel-flaked bead blanks closely resembling microlithic blade cores in western India in recent times (Allchin 1979).

If antler or bronze pressure tips or bronze chisel punches were used, the material from the tips of these flaking tools should be recognisable on the butt of the flakes they produced, provided that flakes and cores from later stages of production could be examined which had not had evidence of contact materials carefully washed off them. Not every flake found on a site would be necessary or relevant to such a study, but if some pieces from concentrations of thin flaking debris and narrow bladelets could be carefully collected unsieved to avoid contact with modern metal, using plastic tools to collect them and individual plastic bags to store them, direct evidence of flaking tools might be obtained from microtrace analysis of residues.

**Stages of Production**

Evidence of a number of stages of production is often visible on the surface of cores and flakes. Unlike more malleable materials such as ceramics or metal, where the latest stage of manufacture obliterates or obscures earlier stages of work, each blow struck against a lithic artifact leaves a mark either in the form of a flake scar or an incipient cone of percussion, and there is little room for error. A succession of mis-hits or a lapse of flaking control results in a broken or damaged piece of stone which has to be discarded (cf. fig. 43.2), as it cannot be melted down like metal or blunged like unfired earthenware.

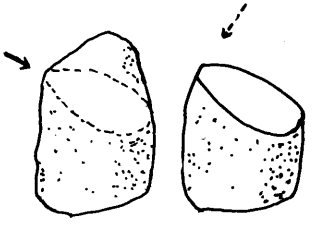

Figure 38
Creating a striking platform.

The earliest stages of production at Rubeidheh included digging up or gathering pebbles, shattering them to set up workable flaking angles, and removing test flakes to sample the flaking quality of the raw material. These activities were probably located off-site. As the raw material was found in the gravel cobbles of the Pleistocene river terraces surrounding the site, flint pebbles could have been collected from on or near the surface. However, sub-spheroidal pebbles cannot be flaked until a flat surface for a striking platform has been created which stands at an acute angle to the side of the pebble from which flakes are to be struck off once the core has been roughed out (fig. 38). Both experimental and ethnographic accounts of stoneworking show that one way to create striking platforms with the acute angles needed to facilitate a series of controlled flake removals is to throw the pebble down against other rocks, breaking it into chunks (Crabtree 1972, 9-10; Tindale 1965, 160; Hayden 1977, 179). While it is not always possible to distinguish a deliberate episode of shattering from a knapping accident where uncontrolled fracture and end shock can also occur, surfaces exposed by shattering are often marked by intersecting cleavage planes and lack a uniform axis of percussion with the proximal features which would be left by contact with a hammerstone. At Rubeidheh, 9 out of 29 cores had vestiges of what appeared to be chunk shatter surfaces used as striking platforms, and chunks which could have been transformed into cores were found on the floor of the kiln in 2F22.

Not every flint pebble or chunk is suitable for flaking, especially if it contains inclusions or deeply-embedded fracture planes, so some testing and preliminary reduction would probably have taken place as the material was being gathered. Testing the material before bringing it to the site would avoid the unnecessary effort of returning to the site with a load of frost-fractured or heavily battered material which could not be worked by controlled flaking.

The rarity of obsidian in the flaked stone assemblage from Rubeidheh has already been noted. Uruk sites are known from the valley of the upper Euphrates in southern Turkey, as well as from the upper Tigris in northern Iraq, and the obsidian available to the knappers at Rubeidheh could have come from eastern Anatolia, through patterns of exchange linking a number of population centres along the way so that the amount of obsidian that made it to the Hamrin might not have been very great. However, as obsidian is a form of volcanic glass, it is worth noting that a comparable range of flaked stone artifacts could have been produced at Rubeidheh by the deliberate modification of a local raw material, the flint pebbles occurring in the Hamrin gravels, by heat treatment at 250-350° C which gives such flints a glassy texture with enhanced fracture properties. With cores of heat-treated flint it was possible to produce longer, thinner and sharper flakes and blades than could have been struck off cores of raw flint (Crabtree and Butler 1964; Sollberger and Hester 1973; Mandeville and Flenniken 1974; Inizan, Roche and Tixier 1976).

The Rubeidheh flintworkers' knowledge that the flaking properties of this flint could be enhanced by the controlled use of fire represents an application of the skills in pyrotechnology which were also being used at this period to make ceramic and metal artifacts. A kiln which appears to have been used for heating flint was excavated at Rubeidheh (2F22). Thirteen pieces of flint flaking waste (2F22:26), including two crested flakes from core preparation were found on the floor of this kiln, but no tools or cores.

There is ethnographic evidence for the use of hearths and fire pits for heat treating flint in North America and Africa (Crabtree and Butler 1964; Sollberger and Hester 1973, 182-83; Inizan et al. 1976). 8 of the 9 flakes found in the Rubeidheh kiln, as well as all four chunks, showed features of colour or texture which indicated they had been heated. Four flakes, including one of the crested flakes, and two chunks may have come from the same pebble of red-green, mottled, silicified chert. Although these pieces appear to have been discarded in the ashes of the kiln, the chunks were of roughly the same size as many of the cores found on the site and the material would have been suitable for flaking. It is possible that two episodes of heat treatment are represented here. The waste from working one batch of heat treated material may have been swept up and deposited in the kiln together with the pebble chunks being modified in preparation for flaking.

It may also be significant that flints tend to be found in ashy deposits at Rubeidheh. More than half (20) of the 35 ashy excavation units found at the site contained flint, in contrast to the c.1 in 4 (12/43) of other deposits which had flint where ash and burning were not noted in the description of the excavation unit. Flint, like ash, is disposed of so that it is out of the way, to avoid people cutting their feet or soiling their clothes, and it is possible that in some instances the association of flints with burnt loci and ashy rubbish might be due to the use of heat from fires and hearths to soften the bitumen of sickle hafts so that worn out sickle elements could be removed and replaced with fresh cutting edges (cf. Wright 1969, 56, 75-77, 118). Fragments of bitumen hafting debris occurred at hearths in Habuba Kabira-Süd (Sürenhagen 1978, 98). Associations between hearths and discarded tool elements have also been noted as characteristic by-products of composite tool maintenance in European Upper Palaeolithic sites where heat-activated hafting adhesives were used (Leroi-Gourhan 1983). It would also be expected that flaking waste might be found together with debris from the process used to modify the flaking quality of the flint. The use of a kiln to heat flint, the frequency with which flaked stone is associated with burnt or ashy deposits at the site, as well as the frequent occurrence of flints with physical characteristics typical of heat-treated flint suggest that heat treatment was an important stage of flintworking at this late Uruk site. Although the use of kilns for heat treating flint appears to be indicated by 2F22, the low range of temperatures best for heat treatment may have sometimes been obtained by covering the flints with the ashes of a fire already used for some other purpose and allowing them to cool overnight. Closer attention to the occurrence of flints, pebbles and chunks around the hearths and ovens frequently noted on other Uruk period sites might reveal further examples of Uruk period lithic pyrotechnology, perhaps as an occasional adjunct to food preparation and pottery manufacture (cf. Barrelet 1974). A somewhat later association of debris from food processing and flaked stone tool maintenance at a rural ED I site near Ur led Wright to conclude that these two activities appeared to occur in relatively close proximity (1969, 75-77).

Physical characteristics of heat-treated flints include colour, texture and altered flaking properties. Red or pink colours often occur after heat treatment of silica minerals (Arkell 1936; Purdy 1978; Rick and Chappell 1983), although these colours will also be found on flint nodules and strata modified by volcanic activity. Surfaces exposed by flaking after heat treatment also exhibit a finer-textured greasy lustre (fig. 39).

When raw material has been subjected to heat treatment to improve its flaking qualities, it is sometimes possible to use contrasting surface textures to observe relict surfaces from earlier stages of

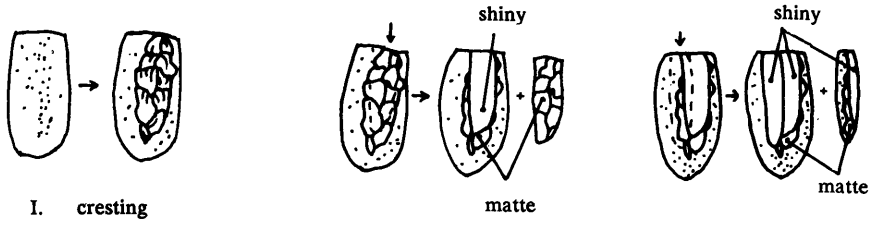


Figure 39
The relationship of heat treatment to stages of production.

production. Contrasting matte and shiny flaked surfaces on the same piece are one of the best indicators of cores and tool blanks flaked at different stages of production before and after heat treatment (fig. 39), as only surfaces exposed by flaking after heat treatment exhibit the characteristic greasy lustre of heat-treated flint first noted by Crabtree (Crabtree and Butler 1964; cf. photograph in Tixier, Inizan and Roche 1980, fig. 27).

Two cores with matte flake scars on the back or striking platform from test flaking which occurred before the roughed out core had been heat treated were found in the ashy fill of two units from 2F45, an area of the site which seems to have been used for dumping debris from kiln firings (see Chapter 2). The fill of the 2F22 kiln suggests it could have been used for flint as well as pottery. One of these pieces, 2F45:9v from batch 010, is a parallel-flaked blade core where the contrast between the fine grained lustre of the flake removal scars on the flaking face of the core and the matte surface of the test flake scar on the back of the core shows that the latter flake was struck off before this piece of flint had been heated. The other piece from the ashy debris dump, 2F45:13b3, from batch 012, is also a parallel-flaked core where the contrast between the matte flake scar of the striking platform and the finer-grained surface texture of the subsequent flake removals again suggests that episodes of flaking occurred at stages of manufacture before and after heat treatment.

Possible indications of heat treatment were present on about half of the flakes and blades from Rubeidheh, although there were fewer examples of contrasting matte and shiny flaked surfaces among blades than among flakes, which is what would be expected from pieces such as blades which would be more likely to come from later series of flake removals struck off cores. There is a clear linear trend in decreasing frequencies of contrasting matte and shiny surfaces visible on pieces of flint from successive stages of production (Table 6). This contrast was noted on 21% of the cores, 11% of the flakes, and only 5% of the blades. When contrasting matte and shiny flaked surfaces occurred on the same flake or blade, the matte surface was usually the flake or blade butt which would carry a part of the edge of the surface of the striking platform. Matte flake scars on the tip and on flake cresting scars were also noted.

Indications of heat treatment were also found on two thirds of the cores from Rubeidheh.

### Technological aspects of cores

All the cores found at Rubeidheh were made of flint. No obsidian cores were found at the site, and although a crested obsidian flake found at Rubeidheh might imply that cores were present, this flake could have been brought onto site along with the handful of obsidian blades also found in the flaked stone assemblage. After the flint used for flaking had been gathered from the pebbles in the gravel terraces near the site, broken into chunks if a workable flaking angle was not present on the original flint pebble, and heat treated, it was ready for working into cores. A number of interesting features characterise the core assemblage, apart from the evidence for heat treatment already discussed.

The core assemblage is dominated by parallel-flaked cores for the production of blades (l/w >2:1) and parallel-sided flakes with a length/width ratio less than 2:1. One possible pressure blade core (not illustrated) was found, 2F45:58d, and one of the cores for the manufacture of parallel-sided flakes was a flake used as a core. Two other flakes and a blade were also used as blanks for

| Type of piece | description | No. | % |
|---|---|---|---|
| core | pink/red colour | 15 | 52 |
| | all flake surfaces shiny | 4 | 14 |
| | contrasting matte/shiny surfaces | 6 | 21 |
| | Total[3] | 19 | 66 |
| flake | pink/red colour | 91 | 37 |
| | all flake surfaces shiny | 40 | 16 |
| | contrasting matte/shiny surfaces | 26 | 11 |
| | | 130 | 53 |
| blade | pink/red colour | 35 | 38 |
| | all flake surfaces shiny | 18 | 20 |
| | contrasting matte/ shiny surfaces | 5 | 5 |
| | Total[3] | 46 | 51 |

Table 6
Indications of Heat Treatment.

sub-discoidal centripetal cores and had had flakes struck off them using the dorsal or ventral surfaces as striking platforms. Polymorphous cores and centripetal cores made on flat chunks complete the core assemblage. In a slightly later assemblage from a nearby site, Tell Gubba VIIb c, a similar range of discoidal, pyramidal and miscellaneous cores has been noted (Ohnuma 1981, Table 1).

| Description | No. |
|---|---|
| parallel-flaked cores | |
| blade cores | 5 |
| parallel-sided flake cores[4] | 11 |
| centripetal cores | |
| on chunk | 3 |
| flc/blc | 3 |
| polymorphous cores | 7 |
| | Total 29 |

Table 7
Classification of cores.

With such a small sample of cores, the technological features of the assemblage can be treated together. Most of the cores were made from pebbles or flakes and chunks removed from pebbles, and still had some cortex remaining (20/29). However, only five cores had cortex on the striking platform used for the removal of flakes, and only one instance of a core with a completely cortical striking platform was found (2F45:40o). This last piece was a pebble chunk, which had been removed from the ashes too soon or exposed to air by a gust of wind blowing away the ashes insulating it while it cooled so that the flint surface exposed on one side of the core is pocked with fine potlid fractures from heat spalling; a knapper struck only one flake off the side and threw the core away when this flake plunged and overshot the base of the core (cf. fig. 40).

Single platform cores dominate the assemblage:

| Number of striking platforms | No. of cores |
|---|---|
| 1 | 14 |
| 2 | 9 |
| 3 | 4 |
| 4 | 2 |

Many of these single platform cores may have been core rough-outs which would have been worked into blade cores if flaking had continued. Only two cores were found with opposed striking platforms which can help maintain the convex flaking face needed for multiple series of blade

removals. On one multiple-platform, polymorphous core there had been an abortive attempt at removing a crested blade (2F25:3q).

While it is possible that the knappers at Rubeidheh were satisfied with the first series of flake removals from a core, somewhat like the French gunflint knappers of the 19th century who preferred the "lardy" finer-grained flint just under the cortex, only five cores from the assemblage had escaped serious flaking accidents which would have inhibited or prevented success in further series of flake removals. The most common flaking accident, noted on 18/29 cores, was hinged flake removal (fig. 40), when a flake stopped short and left a hook on the surface of the core flaking face which would cause later flake removals to stack up at the same spot. Experimental knapping by Newcomer suggests that hinging "happens more frequently on cores where the flaking angle is not adjusted by preparing the striking platform, or where a surface from which flakes are to be removed is not prepared to a convex profile" (1971, 54). The predominance of plain butts in the Rubeidheh flake assemblage and the rarity of opposed and subsidiary striking platforms might indicate that both of these factors could have been at work.

plunging flake hinged flake

Figure 40
The removal of plunging and hinged flakes.

Plunging flake removals marred 2 cores and a combination of plunging and hinged flake removals ruined 3 more cores. Incipient cones of percussion were also noted on more than half the cores (15/29). When the hammerstone or hard flaking hammer makes contact near the edge of the striking platform, but does not effect a flake removal the force of the blow leaves a cone-shaped fracture embedded in the raw material below the apex of the incipient cone of percussion which is visible on the surface of the striking platform. These embedded cones of percussion can prevent further controlled flaking in this spot, and since there are often few other places on the core with the correct flaking angle needed for a striking platform the core may have to be abandoned (cf. fig. 43.2). Incipient cones of percussion can be the result of the knapper having used a hammerstone which was too light for effective flake removal, and show poor judgement in choosing a flaking angle as well as implying "an inability to hit the same place twice running" (Newcomer 1971, 54).

The high incidence of ruined cores and the relatively restricted series of flake removals struck off these cores might suggest that one function of the area of the site excavated could have included the manufacture of roughed-out cores for final reduction in other areas of the site, or in urban centres located elsewhere in the Hamrin region, or even further afield in southern Mesopotamia (cf. Wright 1981, 265, 267; Miller in press).

However, the rate of knapping failure should not be exaggerated, as the Rubeidheh knappers were able to produce the flakes and tools they wanted to, and a majority of the cores (15/29) had more than five flakes removed from them, which would have given the flintworkers a range of blanks from which to choose. The care the knappers took with their material, within the limits in which they were working, can be seen in the way they automatically removed the overhanging spurs left at the proximal ends of flake scars on the core flaking face by flaking or abrading the edge of the striking platform following a series of flake removals: 26/29 cores had been flaked or flaked and ground at the edge of the striking platform to strengthen it and remove overhang (fig. 41). Strengthening the edge of the striking platform in this way allows the flaking force to travel further, resulting in longer flakes being struck off the core, and avoiding the even greater frequency of hinge fractures which would have occurred if the flintworkers had neglected to abrade the edge of the striking platform (cf. Bordes 1947; Newcomer 1971).

Further insight into the Rubeidheh flintworkers' conservation and preparation of their raw material can be obtained from the evidence of ore preparation and rejuvenation provided by the flake and blade assemblages. Apart from the isolated obsidian crested flake already referred to, evidence of core preparation is confined to flintworking.

| Type of piece | Description | No. | % |
|---|---|---|---|
| Flake | core tablets | 3 | 1 |
| | core trimming flakes | 5 | 2 |
| | crested flakes | 17 | 7 |
| | Total | 25 | 10 |
| Blade | core tablets | 0 | 0 |
| | core trimming blades | 1 | 1 |
| | crested blades | 4 | 4 |
| | Total | 5 | 6 |

Table 8
Core preparation and rejuvenation.

Core preparation and rejuvenation pieces occurred roughly twice as frequently among the Rubeidheh flakes (10%, N = 25) as among the blades (6%, N = 5). This is in line with the technological distinction between the stages of production at the site already suggested, as the flakes could represent an earlier stage of production directed towards preparing the core for blade removal. Support for this model of flintworking can be found in the frequency of crested flakes which make up 7% of the overall flake assemblage (N = 17), as these are used to set up guide ridges for blade removals at the next stage of production. Crested flakes make up the largest component of the core preparation flakes, but the same purpose is served by the naturally crested flakes (core trimming flakes); in this case a suitable ridge along the side of the pebble is used as a guide ridge to help set up the core for blade removal.

Core tablets are rare (1%, N = 3) but show that knowledge of this technique of core rejuvenation was known at Rubeidheh.[5] Core rejuvenation could also be achieved by removing flakes from auxiliary striking platforms located at the base or sides of the core to help the knappers maintain the convex flaking surface of the core needed for successful runs of flakes (Newcomer 1971). However the orientation of undercut hinge scars suggests that flaking from opposed or transverse striking platforms used to maintain a convex core face affected only 8-13% of the flakes and 3-9% of the blades.

Indirect evidence of flintworking habits at Rubeidheh related to core preparation can also be derived from flake topography. The proximal ends of flakes and blades preserve part of the edges and sides of the cores they were struck from. The importance of overhang removal before flaking, which has already been noted in the discussion of cores, is shown by the fact that a majority of the flint flakes found at the site had evidence of flaked or flaked and ground overhang removal at the proximal end (56%, N = 128 of the 229 pieces where the presence or absence of overhang removal could be observed). An even higher percentage of the blades had signs of overhang removal by flaking and abrasion at the proximal end. Three quarters (75%) of the flint blades and blade segments where the proximal end is preserved show evidence of overhang removal (39/52). The significantly higher incidence of overhang removal in blade- making shows the greater care taken at this stage of manufacture to ensure that the flaking hammer made contact as accurately as possible so that flakes struck off the core were as long as possible. It is also worth noting that only one obsidian flake and one of four obsidian blades still had the proximal end of the flake or blade preserving evidence of core preparation, suggesting that the obsidian could have been brought on site in already finished form as blade segments (cf. Azoury and Bergman 1980).

There is also evidence of striking platform preparation preserved on the butts of flakes and blades which carried away part of the striking plaform where the flaking tool or hammerstone struck against the core.[6]

Figure 41
Overhang removal on edge of striking platform.

| Material/type of piece | butt type | No. | % |
|---|---|---|---|
| flint flake (N = 233)[7] | plain (without cortex) | 141 | 61 |
| | plain (with cortex) | 47 | 20 |
| | facetted | 16 | 7 |
| | punctiform | 14 | 6 |
| | crushed | 15 | 6 |
| | Total | 233 | 100 |
| flint blade (N = 54)[7] | plain (without cortex) | 32 | 62 |
| | plain (with cortex) | 7 | 13 |
| | facetted | 6 | 12 |
| | punctiform | 3 | 6 |
| | crushed | 4 | 8 |
| | Total | 52 | 100 |
| obsidian flake | plain | 1 | |
| obsidian blade | plain | 1 | |
| | punctiform | 1 | |

Table 9
Butt type.

**Technological aspects of flakes and blades**

Flakes outnumber blades in the flint assemblage from Rubeidheh by more than two to one (Table 5), but the relative proportions are reversed in the obsidian assemblage where only one flake and five blades were found. A number of technological aspects of the flake and blade assemblages at Rubeidheh are worth recording, although this is flaking waste, because of the evidence for the skills and habitual motor patterns of the people who worked it (cf. Roche and Tixier 1982). As Gingell and Harding note, "In flake industries most of the evidence for the production of controlled flakes lies in the waste rather than in the processes involved in the conversion into functional tools" (1981, 73).

*Cortex.* The presence of cortex on the surface of a flint flake or blade from Rubeidheh is related to the process of knapping and the selection of flakes or blades for tool manufacture. The frequency of cortical flakes among the flints found at Rubeidheh (Table 10) shows that pebbles and pebble chunks were often brought to the site for flaking, although the initial gathering of flint pebbles, as well as some of the preliminary stages of reduction such as test flaking and using shattering or controlled percussion flaking to remove one end of the pebble to set up a striking platform for a core, could have been located off site. 14% of the 246 flakes are either primary cortical flakes with no previous flake scars on the dorsal surface or secondary cortical flakes with only one previous flake scar (N = 34). These primary and secondary cortical flakes had to be removed to prepare the core for later flake or blade removals by setting up guide ridges along each side of the flake scar to increase the knapper's chances of taking off a longer flake removal running along the ridges. Removing the cortex covering the outside of the pebbles used as raw material meant that later series of flakes had at least one sharp, non-cortical edge, unlike primary and secondary cortical flakes where the cortex which extends to both edges of the flake makes it too dull and weak for effective cutting and scraping.

Only 4 of the 34 primary and secondary cortical flakes had a cortex-covered butt which showed that the unmodified pebble had had a surface which could be used as a striking platform. In most cases the butts of the primary and secondary cortical flakes were plain, remnants of a striking platform created by removing one end of the pebble by flaking or shattering to set up an acute angle between the surface of the striking platform and the surface of the cobble from which the primary cortical flake and subsequent flakes could be struck off.

| Type of piece | Description | No. | % |
|---|---|---|---|
| flakes | primary cortical | 17 | 7 |
| | secondary cortical | 17 | 7 |
| | cortex + flake scars | 169 | 69 |
| | without cortex | 43 | 17 |
| | Total | 246 | 100 |
| blades | primary cortical | 1 | 1 |
| | secondary cortical | 1 | 1 |
| | cortex + flake scars | 45 | 50 |
| | without cortex | 43 | 48 |
| | Total | 90 | 100 |
| flake tools | | +Cx | −Cx |
| | sickles | 0 | 1 |
| | denticulates | 4 | 0 |
| | miscellaneous | 0 | 1 |
| | Total | 4 | 2 |
| | % | 67 | 33 |
| blade tools | | | |
| | sickles | 1 | 11 |
| | backed + bitumen hafted | 1 | 3 |
| | Total | 2 | 14 |
| | % | 12 | 88 |

Table 10
Cortex.

Although only 2% of the 90 blades (N = 2) had cortex covering most of the dorsal surface, these primary and secondary cortical blades show that a split cobble with a natural guide ridge was sometimes selected for initiating a series of blade removals. One of these naturally crested blades (2F45:13h) had a punctiform butt and flaked and ground overhang removal, which suggested a careful preparation of the edge of the cobble before flaking. The other naturally crested blade (2F45:4k) measured 51 x 23 mm and had a shiny, greasy lustre on both the plain butt and the ventral surface, which indicated that the whole pebble may have been heat treated before the reduction sequence began (cf. Miller 1983).

Even when it does not cover most or all of the dorsal surface of the flake, cortex is present on roughly 4 out of 5 flakes from Rubeidheh, a proportion which can also be noted in the slightly later Jemdet Nasr assemblage from another Hamrin site, Tell Gubba VIIb, c (Ohnuma 1981, Table 1).

***Flake and blade part.*** In the flint assemblage, complete flakes were more frequent than complete blades. The greater length of blades makes them liable to flex back towards the core and break into multiple segments as they are removed (cf. Roche and Tixier 1982, fig. 1). Roughly one quarter of a series of blades in one experiment broke into segments as they were struck off the core using a technique of flaking which tends to produce this result (Tixier 1972, fig. 4). As Crabtree noted:

If fracture of the blade does occur, it usually breaks into three almost equal pieces, even though it is removed entirely from the core (1968, 474, high speed photograph fig. 13).

In this context it is perhaps significant that roughly equal numbers and proportions of blade butts, mid-sections and tips were found at Rubeidheh in both the flint and obsidian assemblages. This may suggest that a relatively small number of blades, perhaps roughly 19-20 flint blades and 1-2 obsidian blades, could have been responsible for the 56 flint and 4 obsidian blade segments found at the site.

A number of factors contribute to blades breaking during manufacture. Flaking onto a pad gives a greater incidence of broken blades as the blades are pressed back against the core after lifting off. The marked curvature of the flaking face of blade cores made on small pebbles such as those available in the gravel terraces of the Hamrin region would also tend to produce higher frequencies of blade segments during manufacture.

The choice of blanks for tools also reveals interesting differences in preferences. Sickle elements are usually made out of mid-sections of blades (10/12), with only one example each of a complete

flake (2F45:57d) and a blade butt (2F45:13u), while complete flakes and flake or blade butts were preferred for retouched tools other than sickles.

| Type of piece | Description | No. | % |
|---|---|---|---|
| Flakes (flint) | All | 218 | 89 |
| (N = 246) | Butt | 18 | 7 |
| | Mid-section | 2 | 1 |
| | Tip | 8 | 3 |
| | Total | 246 | 100 |
| Blades (flint) | All | 34 | 38 |
| (N= 90) | Butt | 18 | 20 |
| | Mid-section | 19 | 21 |
| | Tip | 19 | 21 |
| | Total | 90 | 100 |
| Flake (obsidian) | All | 1 | |
| Blade (obsidian) | All | 0 | |
| | Butt | 2 | |
| | Mid-section | 1 | |
| | Tip | 1 | |
| | Total blades | 4 | |
| Tool (sickle) | All | 1 | |
| | Butt | 1 | |
| | Mid-section | 10 | |
| | Tip | 0 | |
| | Total sickles[8] | 12 | |
| Tool (retouched) | All | 4 | |
| | Butt | 3 | |
| | Mid-section | 2 | |
| | Total retouched | 9 | |

Table 11
Flake and blade part.

***Flake termination.*** The flakes and blades from Rubeidheh show a high incidence of sharp terminations. Roughly two thirds of the flake and blade removals ran cleanly across the surface of the core without hinged or plunging terminations stopping short or overshooting the base of the core. The Rubeidheh flintworkers' care in ensuring that the edge of the striking platform was flaked and abraded after a series of flake removals has already been noted. Overhang removal reduces the chances of flakes terminating in hinge fractures by allowing the flaking hammer to make a clean impact on the strengthened edge of the striking platform, and the high frequency of sharp terminations in the Rubeidheh flake and blade assemblages shows the success of this strategy (Table 12).

| Type of piece | type of termination | No. | % |
|---|---|---|---|
| Flake | sharp | 123 | 66 |
| | hinged | 42 | 22 |
| | plunging | 22 | 12 |
| | Total[9] | 187 | 100 |
| Blade | sharp | 28 | 62 |
| | hinged | 11 | 24 |
| | plunging | 6 | 13 |
| | Total | 45 | 100 |

Table 12
Flake and blade termination.

***Flake/blade type.*** One index of knapping skill in early farming communities was the ability of flintworkers to produce blades which, when hafted together in a composite tool to provide a continuous, evenly aligned cutting edge, could be used to harvest wild and cultivated plants. Unless special care was taken to prepare a core with straight, clearly defined, guide ridges and the convex flaking face needed for blade removals, flake removals would tend to be expanding flakes which spread across the surface of the core (Crabtree 1968, 463). These would produce only a discontinuous edge which would catch and break if someone attempted to haft them in series to make a composite cutting edge. When composite elements of a cutting edge do need to be replaced, it is also useful to have new pieces as close as possible to the thickness and width of the piece being replaced to fit into the same groove in the handle. For this reason pressure was often used to produce interchangeable blades of uniform dimensions in industries where composite tools were in use (Tixier 1976, 31).

The importance of blade manufacture at Rubeidheh is shown by the use of blade segments to manufacture the elements of the predominant tool type, the composite flint sickle. The regularity of the edges and dorsal ridges on the narrow sickle elements, which are the most common type in the sickle assemblage (fig. 44.1 & 4), suggests that they could have been manufactured using a pressure technique such as has already been documented at 'Ubaid and Halaf sites in Mesopotamia (Inizan and Tixier 1983; Azoury and Bergman 1980), as well as in Jemdet Nasr and Early Dynastic flaked stone assemblages (Ohnuma 1981, fig. 57.9-11, 13-16; Payne 1980, fig. 5.1-2). Most of the sickles are narrow blades or blade segments ranging from 10-21 mm wide and this range of blade widths is similar to that produced by experimental replication of pressure flaking (Clark 1985).

Flaked stone assemblages related to blade production are associated with a high proportion of flakes with a central ridge (Gingell and Harding 1981), as the control of flake removals needed in blade-making is achieved by setting up and maintaining central ridges which are lifted off by the flakes and blades which run along them. In the flaked stone assemblage at Rubeidheh roughly three quarters of the flakes (72%, N = 174/242) and almost all of the blades (97%, N = 87/89) have a single or double ridge running down the dorsal surface. It is perhaps worth noting that, although single and double-ridged flakes and blades occur in the flaked stone assemblage in roughly equal numbers, double-ridged flakes or blades were chosen for both sickles and retouched tools twice as often as single-ridged flakes.

One sickle element, 2F45:13u (fig. 43.4) was made on an unusually wide (46 mm) double- ridged blade blank which resembles the wide double-ridged blades characteristic of late 4th millennium BC industries across a wide area of western Asia (Neuville 1930; Payne 1948 and 1960; Cauvin 1968, 182-184; Copeland, 1981, 94-96; Hours 1979; Hanbury-Tenison 1983; Rosen 1983). While no cores which could have produced such wide blades were found at Rubeidheh, production could have been located at knapping stations or workshops in the countryside near the site, if the distribution of flintworking noted in the Eski Mosul region by Dr. R. Mazurowski of Warsaw University (1987, 22) applies in the Hamrin as well.

The use of double-ridged blades as blanks for sickles and retouched tools also reflects the relative frequency with which these can be produced during a series of blade removals. In a series of blades struck off a core, double-ridged flakes predominate after the initial, triangular, section, guide blades have been removed (Clarke 1935, 50; Crabtree 1968; Tixier 1972, 137). Roughly 70-80% of series of blades removed from cores can be double-ridged blades with a trapezoidal cross-section (Hours 1979, 61; Clark 1985, 12). The Rubeidheh toolmakers' preference for double-ridged flakes was shared by Brandon gunflint makers a century ago. According to Skertchly:

> Single-backed flakes are never struck intentionally. The first two flakes must necessarily have only one back; but if the stone be good no others are made from a quarter (1879, 29).

While double-ridged flakes and blades were preferred for toolmaking, the relatively high frequency of single-ridged flakes and blades in the flaked stone assemblage at Rubeidheh might suggest that raw material was sufficiently abundant locally for the knappers to limit themselves to one or two series of flake and blade removals from a given core, especially if finer grained chert near the cortex was preferred (cf. Clarke 1935, 49). Flaking waste sometimes also lacks evidence of the best quality pieces which can be taken elsewhere to use as tools (Karlin and Newcomer 1982), so double-ridged blades with trapezoidal cross section could have been produced at Rubeidheh and taken elsewhere for distribution or exchange. However, it is unlikely that flakes would be taken away in sufficient numbers to affect the relative proportions within the waste flake and blade assemblages.

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### Knapping Accidents

The frequency with which a number of characteristic knapping accidents can be observed on flakes, blades and tools can give some indication of knapping skills and of the degree of care taken at different stages of production.

***Undercut hinge scars.*** The problems created by hinged flake removals which ran short and turned up from the flaking plane, leaving an isolated hook raised above the flake removal surface of the core, have already been referred to. The ability to rectify this common knapping accident (Roche and

| Type of piece | Description | No. | % |
|---|---|---|---|
| Flake | Axial UHS | 81 | 33 |
| | Opposed UHS | 20 | 8 |
| | Transverse UHS | 31 | 13 |
| | Number with UHS[10] | 110 | 45 |
| | Number without UHS | 136 | 55 |
| Blade | Axial UHS | 16 | 18 |
| | Opposed UHS | 3 | 3 |
| | Transverse UHS | 8 | 9 |
| | Number with UHS | 23 | 26 |
| | Number without UHS | 67 | 74 |
| Sickle | Number with UHS[8] | 1 | 8 |
| | Number without UHS | 11 | 92 |
| Retouched tool | Number with UHS | 4 | 44 |
| | Number without UHS | 5 | 56 |

Table 14
Undercut Hinge Scars (UHS).

Tixier 1982; Tixier, Inizan and Roche 1980, 102) by undercutting the hinge scar is an important index of knapping skill. The undercut hinge scar is then visible on the dorsal surface of the flake which removed it. Undercut hinge scars also provide information on changes of direction in knapping, cresting and the creation of auxiliary striking platforms needed to keep the flaking face convex enough for controlled flaking. The flintworkers at Rubeidheh removed most of their hinge scars by striking a clean blow further back in from the edge of the same striking platform the hinged flake had come from. This left an undercut hinge scar visible on the dorsal surface of a flake or blade with the same axis of percussion. Axial undercut hinge scars are almost twice as common on the surface of flakes (33%) as on the surface of blades (18%), perhaps because the energy of the blow tends to be absorbed by the greater amount of material in the hinge scar which needs to be lifted off the core. Even successful undercutting flakes tend to run for a lesser extent along the core, resulting in the production of fewer blades and more flakes. Hinge scars can also be attacked from one side or the opposite end of the core, resulting in transverse or opposed undercut hinge scars, which show when the axis of flaking had to be shifted to remove the hinge scar. Transverse hinge scars can also be created during preparation of the flaking crest to guide blade removals.

***Axial splits.*** These are also known as "burins de Siret" or "Siret accidents" to commemorate the prehistorian who confused them with burins in his tool count (Bordes 1981, 50, fig. 42; Tixier, Inizan and Roche 1980, 103). An axial split is a characteristic, hard hammer knapping accident where the flake splits down the axis of percussion as it is struck off the core, leaving two pieces with fracture facets perpendicular to the flaking plane running from the point of percussion towards the distal end of the flake (fig. 42). The incidence of axial splits at Rubeidheh is greater among flakes (8%) than among blades and blade segments (2%).

Incipient cones of percussion are the result of a hard blow struck against the core at an angle too oblique for flake removal or at a point too far in from the margin to initiate flaking. The presence of incipient cones of percussion shows poor judgement in choosing the point of impact on the striking platform, as any flake struck off later from the core near the point of impact will carry the traces of incipient cones of percussion left by this blow, reducing the knapper's ability to control flake removal. 7% of the flakes from Rubeidheh carry incipient cones of percussion on the dorsal surface and 10% have incipient cones of percussion on the butt. While incipient cones of percussion still occur, although less often, on the butts of blades from Rubeidheh, no blades with incipient cones of percussion on the dorsal surface were found. This may show some skill in removing parts of the core with embedded incipient cones of percussion from the flaking face, before removing the blades the knappers appear to have been intending to produce.

Tixier and Crabtree have stressed the importance of the distance between the margin of the striking platform and the point the flaking hammer strikes in determining the characteristics and success of flake removal (Tixier 1982; Crabtree and Swanson 1968), and the distance between the edge of the striking platform and the incipient cone of percussion left by a mis-hit blow can sometimes be correlated with different flaking strategies.

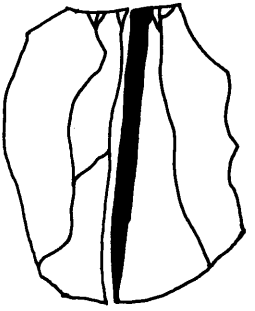


**Figure 42**
**Axial split.**

| Type of piece | Description | No. | % |
|---|---|---|---|
| Flake | axial splits | 19 | 8 |
| | incipient cones of percussion | | |
| | dorsal | 18 | 7 |
| | butt | 24 | 10 |
| | Subtotal knapping accidents[11] | 55 | 22 |
| Blade | axial splits | 2 | 2 |
| | incipient cones of percussion | | |
| | dorsal | 0 | 0 |
| | butt | 5 | 6 |
| | Subtotal knapping accidents[11] | 6 | 7 |

Table 15
Knapping accidents.

**Selection of Blanks for Tools**

Comparison between the technological features of tools and waste flakes or blades suggests that an approach to some of the factors governing the selection of tool blanks might be possible. Flakes and blades appear to have been used as blanks for different sorts of tools at Rubeidheh. In particular, the presence of cortex or undercut hinge scars on the surface of a flake or blade seems to be related to whether or not a particular piece was judged to be suitable for toolmaking.

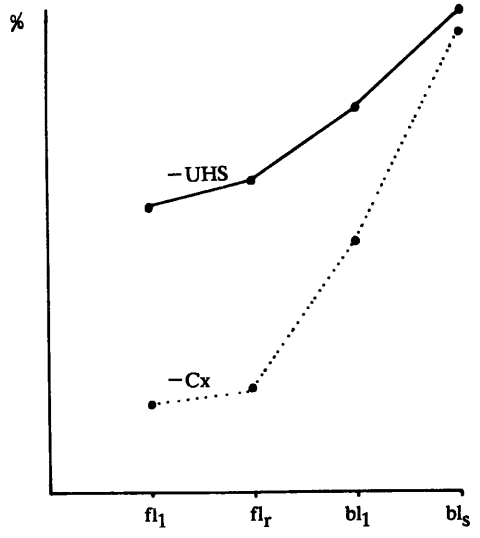
The frequency with which cortex and evidence of knapping accidents, especially undercut hinge scars can be observed on flake tools and denticulates from Rubeidheh is close to that observed on flakes from the site. The higher quality of blank needed for sickles and composite tools, including the backed and bitumen-hafted blades from the site, is reflected in the lower incidence of knapping accidents, undercut hinge scars and cortex observed on these pieces. The blades they would have been made from are also relatively free of these features (Table 16).

Cortex is present on only 1 of the 13 sickle elements, mostly blades, found at Rubeidheh. In contrast 4 out of 6 flakes used for tools, including one sickle element made on a flake blank, had cortex on some part of the dorsal surface or butt (Table 16). The relative frequency of cortex on the flakes used as tools is close to the proportion of cortex present on the waste flakes from the site. 83% of the flint flakes from the site have cortex on their butt or dorsal surface, which shows that these flakes (N = 203) were among the outer series of flakes struck off the cores made from pebbles and pebble chunks. Although more than half of the blades also had cortex on their outer surfaces (52%, N = 47), the smaller frequency of blades with cortex indicates that, like most of the sickles, they were produced at a later stage of reduction in the process of manufacturing flint tools (Tables 15 and 16).

Two sorts of blank thus appear to have been favoured, with a blade without cortex being preferred for making sickles and backed or bitumen-hafted blades, and a flake, usually with cortex being preferred for making denticulates (Table 16). If the denticulates were casual tools made, used and discarded on the spot, less trouble might have gone into their manufacture, whereas the sickle elements which were taken to the fields and used for some time before being removed from their haft and replaced by new elements, may have usually had more time invested in them.

The contrasting frequency of knapping accidents on sickles, in comparison to retouched flakes and denticulates from Rubeidheh, also suggests that different qualities of flake and blade blank were chosen for different uses (Table 16). Blades have a lower incidence of knapping failure than flakes, and lower proportions of axial splits and incipient cones of percussion also characterise the blanks chosen for sickle elements and for backed and bitumen-hafted blades, in comparison to the flakes chosen for denticulates and retouched flake tools. The lower proportion of cortex and undercut hinge scars on sickle elements in comparison to retouched flake tools has already been noted. Could the differences between blanks chosen for sickles and blanks chosen for retouched flake tools represent the difference between tools produced by specialists and tools made by non-specialists? Another explanation is also possible.

If the flaked stone industry at Rubeidheh was the work of specialist stoneworkers, which is a possibility, they might have produced a higher and lower grade of flaked tool blank. Two grades of threshing sledge blank were produced for sale in Turkey in the 1960s (S. Payne, pers. comm.) and different qualities of gunflint or strike-a-light blanks made at Brandon a century ago were sorted into




Vertical scale represents percentage of flakes, blanks and tools without cortex (Cx) or undercut hinge scars (UHS).

$fl_1$ = all flakes (N= 246).
$fl_r$ = retouched flakes (N= 5, not counting sickles).
$bl_1$ = all blades (N= 90).
$bl_s$ = sickles + backed/bitumen stained blades (N= 17, not counting 2F45:23 which is too deeply embedded in its bitumen haft to determine whether or not Cx & UHS are present).

Table 16
Flakes and blades as two grades of tool blanks.

different bins as they were struck off the core (Skertchly 1879, 29). During experimental knapping blades may also be sorted into two piles, one on each side of the knapper, consisting of higher and lower quality blanks for toolmaking (Sussman 1982).

**Tools**

22 tools were noted among the 336 flakes and blades excavated at Rubeidheh (Table 17). Blades used as tool blanks were slightly more than twice as common as flakes (16:6). Sickles were the dominant tool type (13/22), followed in relative frequency by denticulates (4/22), backed and bitumen hafted blades (4/22), and a scraper (1/22). The proportion of retouched and hafted tools in the flake and blade assemblage is 7%. Allowing for the presence of unretouched flakes and blades used as tools without the edges being damaged, which might raise the overall proportions slightly, this is the same order of magnitude for the proportion of tools in an assemblage as the c. 13% of their raw material which skillful knappers at Brandon were able to make into gunflints (calculated from figures given in Skertchly 1879, 26) and the 10% of raw material which experimental flintworking at the Lejre Research Centre in Denmark suggested could be converted into flake tools (Hansen and Madsen 1983, 55).

In the absence of microwear and microtrace analysis the function of the tools found at Rubeidheh can only be inferred from their wear and morphology. The denticulates still have sharp, relatively fresh, acute, working edges and were unlikely to have been used on a hard or resistant material; while the actual function of these denticulates can only be guessed at, they might have been useful tools in shearing sheep if wool production was a feature of the economy of the site (Payne, this vol.). It is likely that the sickles could have been used to harvest crops, cut fuel, fodder and bedding, and to gather and process reeds. The backed and bitumen-hafted blades can in most instances probably be assimilated with the sickles. Although backed blades could have been used for the transverse arrowheads known to have been used at this period as Wright has suggested (1981), one example of a backed blade found at Rubeidheh (fig. 43.3, 2F45:13b) lacks evidence of impact damage and seems to me to be too irregular on both the backed and the unretouched edges to be suitable for use as a transverse arrowhead. In the absence of sickle gloss showing it had been used, or bitumen traces showing it had been hafted, it is even possible that the appearance of backing on this piece could have been an accidental by-product of trampling or environmental retouch (cf. note 1).

| Description | | No. | % |
|---|---|---|---|
| Sickle | | 13 | 59 |
| Backed blade[12] | | 2 | 9 |
| Unbacked, bitumen hafted blade | | 2 | 9 |
| Denticulate | | 4 | 18 |
| Scraper | | 1 | 5 |
| | Total | 22 | 100 |

Table 17
Tools.

Most of the technological features of the tools have already been dealt with. However, a number of features of the sickle elements should be noted. Most sickle elements are made on blade mid-sections (10/13). There is also a sickle on a wide blade butt of a parallel-sided flake.[8] Most of the blade mid-sections were used unmodified on either end; 8 out of 13 have a snap or break facet on both ends and 3 sickle elements have a snap or break facet on only one end. These snap or break facets could have been produced as blades broke into segments during manufacture (Crabtree 1968; Tixier 1972; Roche and Tixier 1982); there is unfortunately no way of distinguishing accidental flex breaks from deliberate flex breaks (Owen 1982). Positive and negative scars of intentional percussion breaks, where a blade or flake had been set on an anvil and struck with a hammer, were noted on only 6 flakes and 4 blades from Rubeidheh; no signs of deliberate percussion breaks were noted on the tools from the site, although some of the snap breaks could have been produced by this technique (Owen 1982; Bergman et al. 1983).

Direct retouch truncation was used to finish the ends of 2 sickle elements. In both cases oblique direct retouch was used to truncate one end of the sickle and the opposite end was an unretouched snap or break facet (cf. fig. 43.1). No sickle elements had squared direct retouch truncation on both ends. As a low frequency of this double truncation seems to be characteristic of early 3rd millennium BC flint sickle assemblages in southern Mesopotamia (Payne 1978 and 1980, 109), it is possible that further work might show that the absence of double truncations is also a chronologically significant technological trait of other late 4th millennium BC industries besides Rubeidheh.

Backing was also rare, and 9 sickles were set into their bitumen hafts without any modification of the edge set into the haft. Only 3 sickle elements had been backed and the backing was different in each instance: alternate direct and inverse retouch (fig. 43.4), anvil retouch, and irregular inverse retouch were used.

The distribution of sickle sheen shows that the Rubeidheh sickle elements had been used on only one edge. Sickle sheen ran in a linear band 1-6 mm wide parallel to the sickle edge, and while this sickle polish sometimes extended 5-6 mm back from the edge to the midrib, one example of a sickle element still set in its bitumen haft shows how little of the edge was sometimes exposed (fig. 44.2). A sickle element from a slightly later Jemdet Nasr context at Farukhabad also suggests that in some instances only a very narrow part of the working edge needed to be exposed outside the bitumen and wood handle to make an effective tool. Irregular retouch was noted on a minority of the sickle edges (5/13) which could be from resharpening, edge damage during working or post-depositional environmental modification.

It is possible that the apparent lack of any standardised technique for backing and truncating the sickle elements from Rubeidheh is related to their having been used on only one edge. The greater frequency of squared, direct retouch, truncation on both ends in later southern Mesopotamian flint industries might be related to the need to fit tools used on both edges evenly into the haft after they have been turned around. In the Brandon gunflint industry extra specialist time was devoted to the process of manufacturing retouched blanks of uniform dimensions which could be reversed in their settings as one edge became too worn to work, and it may be significant that these gunflints were made with double-squared truncations. In contrast, Turkish threshing sledge flints were often sold unretouched to the farmer who would trim them himself (S. Payne, pers. comm.). If the Uruk sickle flints were made by specialist flintworkers and distributed to users who were not flaked stone specialists, the lack of uniformity in retouched truncation and backing which was observed at Rubeidheh could perhaps be the result.

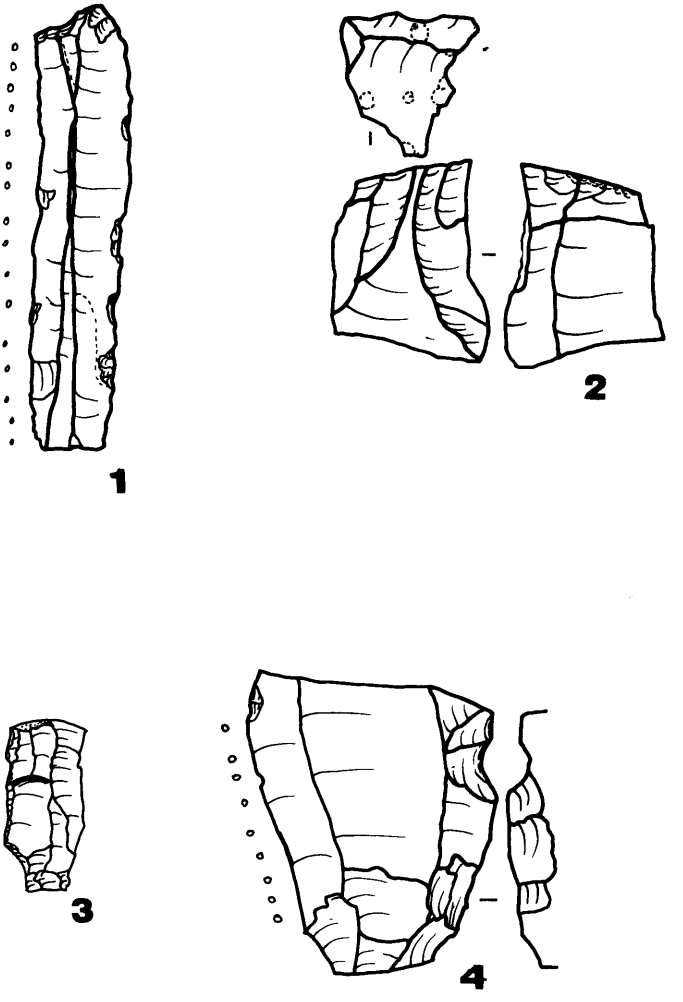



Figure 43
Sickles (nos. 1 and 4), backed blade (no. 3) and core (no. 2).

43.1: 2F45:46c. Sickle. Flint. Proximal oblique direct retouch truncation. Bitumen stains on left side. Linear sickle sheen 3-6 mm wide parallel to edge running up to mid-rib on dorsal surface. 77 x 16 x 5 mm.
43.2: 2F45:13yy. Core. Flint. Incipient cones of percussion on striking platform, which is deeply indented from hard-hammer blows to remove flakes. Hinge fractures. Overhang removal. Height of core 36 mm, width 28 mm, thickness 25 mm.
43.3: 2F45:13b. Backed blade. Flint. Direct retouch backing left edge. Bitumen stains from hafting suggest it was a tool but environmental retouch is also possible. 31 x 14 x 6 mm.
43.4: 2F45:13u. Sickle. Flint. Alternate direct and inverse retouch backing right edge. Linear sickle sheen 2 mm wide parallel to edge visible on ventral surface. 54 x 46 x 10 mm.

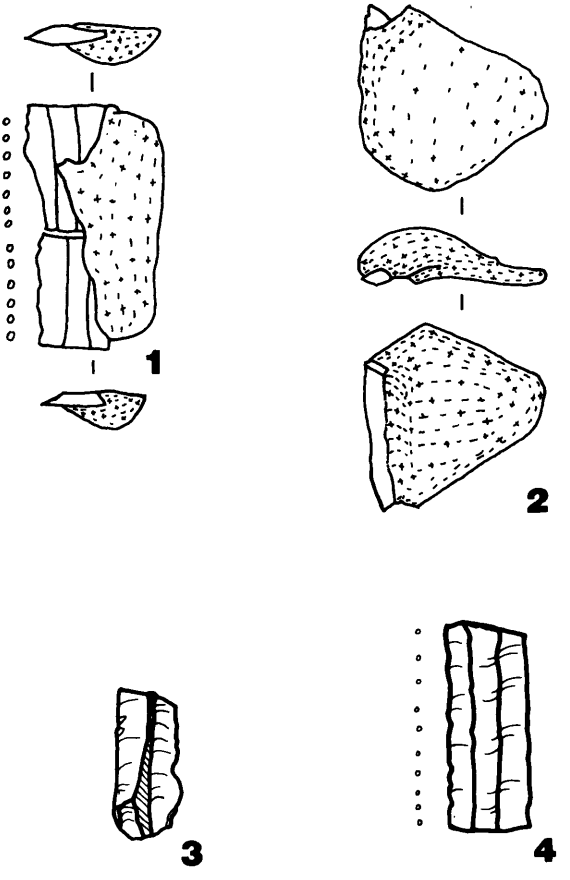



Figure 44
Sickles (nos. 1, 2 & 4) and obsidian blade butt (no. 3).

44.1: 2F43:11. Sickle. Flint. In bitumen haft.
44.2: 2F45:23. Sickle. Flint. Cutting edge of sickle barely exposed on one face.
44.3: 2F43:14. Blade butt. Obsidian. Abraded dorsal ridge. 26 x 12 x 4 mm.
44.4: 2F65/75:25. Sickle. Flint. 37 x 15 x 4 mm.

## Conclusion

While the flaked stone industry from Rubeidheh is not particularly rich in numbers or varieties of tool types, the flaking waste from the site provides valuable information on a craft tradition which continued to provide stone tools needed for cutting edges well after the introduction of bronze. Flaked stone is uniquely suited to reconstructing stages of manufacture, and indirect evidence of flintworking habits at Rubeidheh related to core preparation and patterns of flaking within an industry can be derived from the study of flaked stone waste at the site. As flints and flaked stone artifacts often preserve cumulative evidence of a series of individual blows struck against a block of raw material, patterns of decisions made about flaking strategy and techniques can be observed. The study of patterns of deliberate and accidental features of flake topography provides information about aspects of culturally-transmitted behaviour relevant to a craft tradition which is not always observable through other categories of artifacts from archaeological sites.

Analysis of prehistoric flaked stone assemblages in the Levant and western Europe has shown that a local or regional technological consensus on the shape and proportions of flakes can sometimes be observed (Jelinek 1981, fig. 4; Gingell and Harding 1981). As most knappers learn flintworking from observing other knappers at work, traditions of flaking, including the degree of tolerance shown to a given range of knapping accidents, tend to develop within groups of knappers working in proximity, producing a kind of signature recognisable to people within and outside a given tradition. While it is too early to identify flaking groups with the same degree of confidence that contemporary styles of pottery can be identified, as more assemblages of flaked stone from Mesopotamia become available, it may become possible to compare contemporary approaches to common technological traditions developed within different regions, residential areas, households and workshops.

The ways in which the flaking properties of the raw materials available near the site were used and modified also provide information which could be used to study the organisation of production in a late prehistoric site during the transition to forms of economic activity related to the urban milieu developing at this time in Mesopotamia. Further study of the materials and technologies used in flaked stone assemblages from a number of sites in the Uruk and later periods is needed. It is hoped that it might become possible to reconstruct patterns of access to raw material, and to reconstruct the networks of activity related to the modification and distribution of flaked stone by a combination of technological, typological and archaeometric approaches.

## Notes to Chapter 4

1. An attempt was made to exclude the miscellaneous notches, scrapers and "utilized" pieces which enrich type-lists from impoverished late industries or surface collections where much of the retouch can be the result of environmental disturbance. One piece eliminated from the tool count was a truncated blade tip (2F44:06a) with inverse retouch along one edge, as this piece came from modern topsoil where the possibility of ploughing and environmental disturbance would be greatest. Environmental retouch closely resembles what would result from the intentional application of the same range of force and pressure to the same edge angle (Warren 1914), so retouched pieces which closely resemble the regular patterns produced by sub-soil subsidence (Warren 1923; Bordes 1981, 67-68) and livestock trampling (Warren 1905; Pei 1936, 46-47; Knudson 1979; Miller 1982) should be treated with considerable skepticism when they come from sites where domestic livestock, building construction, reconstruction and collapse can be expected to have played a role in the lives and lithic type-lists of the sites' inhabitants. In a surface assemblage up to 20% of a standard type-list could be expected to be spurious tools retouched by trampling according to Vaufrey's estimate (1955, 112 n.3); a similar proportion of pseudo-tools could be expected among flints lying loose on stony surfaces in streets and courtyards or swept up from these contexts and incorporated in levelling or construction fills elsewhere on the site.
2. Two bags with a total of 34 pieces were left unwashed so that these pieces could be available for microwear/microtrace analysis. As details of flaking technology, tool-forming retouch and surface appearance cannot be effectively studied on unwashed pieces, these bags were omitted from this study. One possible pressure-flaked core has been set aside for SEM analysis and was not drawn or photographed at the time of going to press.
3. In the heat treatment table the total refers to the total number of pieces showing possible indications of heat treatment, including flakes and blades with both colour and surface indications of heat treatment on the same piece.
4. Includes one flake used as a core. Flakes used as cores (nucléus sur éclat, Newcomer and Hivernel-Guerre 1974) which have had a series of flakes struck off around their edge, often resulting in a piece with a star-shaped plan resembling a coarsely denticulated flake, are characteristic waste products in a number of historic period industries ranging from 17th-18th c. AD gunflint and strike-a-light industries in England (Chandler 1918; Clay 1925), to casual strike-a-light manufacture by shepherds in the upper Euphrates valley east of Aleppo (personal observation 1976), and late 3rd millennium BC flintworking in the same region (Miller 1985).
5. A core tablet is a flake or blade "which removes all or part of the striking platform of a blade core in order to create a new angle between platform and core front, or to remove a crushed platform. This waste product....is usually relatively thick and has a facetted butt since the blow which removes it lands on the front of the core which has the ridges left by previous blade removals" (Newcomer 1972, 32).
6. The butt is the part of the core striking platform carried off by the blow which removed a flake or blade. Although the flake or blade butt itself is sometimes called the striking platform, this nomenclature can lead to confusion between the surface of the core and the flake removed from it, as Bordes noted (1981, 15).
7. The proximal part of a number of flakes and blades from Rubeidheh was not preserved, so the count for butt types is lower than the overall flake or blade total.
8. The bitumen haft of one sickle, 2F45:23, was almost completely preserved so that no features of flake topography could be observed (Fig. 44.2).
9. Tips of 187 flakes and 45 blades were preserved. The termination of butts and mid- sections could not be determined and in some cases environmental retouch, trampling and post-depositional damage have prevented comment on flake and blade termination, even where it was nearly complete.
10. More than one orientation of undercut hinge scar can appear on the same flake or blade.
11. Marks of different knapping accidents were sometimes preserved on the butt and dorsal surface of the same flake or blade.
12. One backed blade (2F45:13b) has bitumen stains from hafting, as well as retouch from use or post-depositional environmental disturbance (Fig. 43.3).

# CHAPTER 5: ANIMAL BONES FROM TELL RUBEIDHEH

by

**Sebastian Payne**



## 1: INTRODUCTION

This report describes the animal bones from the second season of excavation at Tell Rubeidheh; those recovered during the first season were not available at the time I was in Iraq, and have not been examined.

### 1.1: Recovery:

Animal bones were routinely recovered during excavation at Tell Rubeidheh. The bulk of the sample was recovered without sieving; some of the earth from a few contexts (15-20% of the earth from Batches 038, 040, 041, 042, 501 and 502) was dry-sieved with a 1 cm mesh.

### 1.2: Condition and treatment:

The bones were generally rather light, brittle and fragile, suggesting that much of the collagen had been lost. Surfaces were sometimes pitted or rootlet-marked, and frequently covered with a thin skin of concretion; large masses of soil salts forming within voids had sometimes split bones and teeth open. The teeth and bones of the larger species (equid and large bovid) were often in poorer condition than those of the medium-sized species (sheep, goat and gazelle).

There was not enough time or consolidant to treat the whole sample (the work was done in field conditions during the 1985 excavation season at Abu Salabikh), so anything that was clearly only a long-bone shaft fragment (without any part of the articulation or fusion surface), rib, vertebra or skull

fragment was sorted out at the outset and left untreated unless it appeared to be of particular interest (e.g. of a species otherwise unrepresented in the sample). The rest of the sample, including all tooth and jaw fragments, all appendicular bones with any part of an articular or fusion surface, and all horncore fragments, was cleaned in and consolidated with dilute Vinamul 6815[1]. This appeared to improve the strength of the specimens, though penetration may not have been very good.

1.3: Location of material:

In 1985, when I examined the bones from the second season of excavation, they were temporarily stored at the British Archaeological Expedition's dig-house at Abu Salabikh. Anyone wanting to see them should contact the Director of the British Archaeological Expedition in Baghdad.

1.4: Acknowledgements:

I am most grateful to Robert Killick for information about the site and the excavations, for much helpful discussion, and for taking the photographs; to Nick Arnold (reptiles) and Tony Legge (gazelles) for comment on specimens; to Simon Davis, Pam Derish, Rosemary Payne and John Watson for reading and commenting on drafts of the manuscript; and to Nicholas Postgate for inviting me to work on the animal bones from Tell Rubeidheh while I was a member of the excavation team at Abu Salabikh in April/May 1985. The work was done while I held a Visiting Fellowship at Trinity College, Cambridge.

## 2: SPECIES DESCRIPTIONS

Preliminary summary:

Animal bones from 41 contexts (Batches) were examined, and nearly 800 bones were identified. Of these, 550 were sheep/goat, 93 sheep/goat/gazelle, 78 equid, 30 large bovid and 18 gazelle; there were also a few bones of dog (or small wolf), hedgehog, reptile, and rodent, a single long-bone shaft that is probably from a fox, and a fresh-water mussel shell. Tables 18 and 19 give a general overview of the sample.

2.1: *Equus asinus* and *E. ?hemionus*. Donkey and ?onager.

Measurements of the equid bones and teeth, which are of moderate size, are given in Table 29.

There are only a few teeth, and they are in poor condition. The one measurable $P_{34}/M_{12}$ (2F44:18; Batch 506) has a relatively long protocone (LP x 100/OL = *c.* 54.3), simple styles, and a trace of a caballine fold; a broken upper cheek-tooth (2F44:17; Batch 507) has a stronger caballine fold. A broken $P_{34}/M_{12}$(2F65/75:20+21; Batches 306+304) has no penetration by the buccal sulcus between the preflexid and the postflexid; of the two $M_3$s, one (2F45:63; Batch 041) has no penetration, while in the other (2F44:18; Batch 506) penetration is deep and the buccal sulcus is almost in contact with the lingual sulcus.

Some of the equid bones are in the fragmented state typical of food debris from ancient sites; but two groups stand out as being very much less broken:[2]

GRP 1: A complete right forelimb was found in articulation, in a pit, (Plates 8a and 8b) together with fragments of all seven cervical vertebrae, six or seven thoracic vertebrae, eight ribs and four sternal elements (2F43:9 and 10; Batch 049). No butchery marks were seen, but the surfaces of the ribs and vertebrae were in poor condition. All the long-bone epiphyses are fused, showing that the animal was more than three years old.

GRP 2: The bone sample from another context (2F45:45; Batch 040) includes most of the bones of a lower right forelimb. They were found fairly close to the surface, and are in relatively poor condition. The radio-ulna is now broken, but was probably complete when found; two carpals are still concreted to its distal end. The metacarpal is complete, and to it are concreted two lateral metapodials, two proximal sesamoids, and a proximal first phalanx. There were also some humerus shaft fragments. Again no butchery marks were found. The distal radius is unfused, but the distal ulna and metacarpal are fused, indicating that the animal was probably in its third year.

In neither case is there any indication that these bones are of post-Uruk date. Only a few stray later objects were found from the site, and the pit in which GRP 1 was found was clearly cut from below the modern surface.

The equid that one might expect to find in fourth millennium sites in eastern Iraq is the wild

onager, *E. hemionus*. Onager metacarpals are relatively slender: in a sample of 45 (Eisenmann and Beckouche, 1986), including various subspecies, the average slenderness index (SD x 100/GL) is 12.0, and the range is from 10.9 to 13.5, as compared with averages of 13.5 for *E. africanus* (the wild ass), 13.7 for domestic donkeys, and over 14.5 for *E. przewalskii* and domestic horses:

| | Slenderness index (SD x 100/GL) | | | |
|---|---|---|---|---|
| | n | mean | range | standard deviation |
| *E. hemionus* | 45 | 12.0 | 10.9 - 13.5 | 0.69 |
| *E. africanus* | 7 | 13.5 | 12.2 - 14.6 | |
| *E. asinus* (domestic donkeys) | 24 | 13.7 | 11.5 - 17.3 | 1.20 |
| *E. przewalskii* | 31 | 14.6 | 13.5 - 16.5 | 0.76 |
| *E. caballus* (ponies) | 4 | 15.6 | 13.9 - 16.8 | |
| *E. caballus* (heavy horses) | 5 | 16.7 | 16.0 - 17.7 | |

(Note: All data from Eisenmann and Beckouche, 1986)

One of the Tell Rubeidheh metacarpals has an index of 13.3, close to the upper limit of the onager's range, while the other has an index of 14.6, which makes it improbable that they are from onagers. This is confirmed by the ratio between the length of the metacarpal and the radius in the GRP 1 equid. According to von den Driesch and Amberger (1981), this ratio is over 70% in onagers and under 70% in donkeys; in the GRP 1 equid it is 64.5%.

It is now generally agreed, on the basis of both epigraphic and osteological evidence, that domestic donkeys were common in Sumer in the third millennium. The Tell Rubeidheh metacarpals agree closely in size and proportions with donkey metacarpals from various sites of the third and second millennia, while contrasting with onager metacarpals from the Neolithic site of Umm Dabaghiyah (Bökönyi, 1986) and the considerably more robust horse metacarpal reported by Davis from Early Bronze Age Arad (Davis, 1976):

| | | | Slenderness index (SD x 100/GL) | |
|---|---|---|---|---|
| *Equus* cf. *hemionus* | | | | |
| Umm Dabaghiyah | Neolithic | Iraq | (11.7) | est. from Bökönyi, 1986: Fig 1 |
| Umm Dabaghiyah | Neolithic | | (11.7) | |
| Umm Dabaghiyah | Neolithic | | (11.9) | |
| *Equus* cf. *asinus* | | | | |
| Tell Rubeidheh 2F45:45 | Late Uruk | Iraq | 13.3 | this report |
| Tell Rubeidheh 2F434:9 | Late Uruk | | 14.6 | |
| Tell Asmar D16:10 | Sumerian | Iraq | 13.4 | Hilzheimer, 1941 |
| Abu Salabikh 6G.37.61 | Sumerian | Iraq | 13.0 | Clutton-Brock, 1986 |
| Abu Salabikh 6G.66.94 | Sumerian | | 13.6 | |
| Abu Salabikh 6G.65.77 | Sumerian | | 13.8 | |
| Abu Salabikh 6G.56.13 | Sumerian | | 13.8 | |
| Tell Madhhur 5G.259 | Sumerian | Iraq | 13.3 | Clutton-Brock, 1986 |
| Tell Madhhur 5G.258 | Sumerian | | 13.7 | |
| Nippur WA | Sumerian | Iraq | 13.0 | Clutton-Brock, 1986 |
| Tell Ababra Z32 | Old Babylonian | Iraq | 14.5 | Clutton-Brock, 1986 |
| ed-Duweir D4022.1 | Early Bronze | Israel | 12.7 | Clutton-Brock, 1986 |
| ed-Duweir D4022.2 | Early Bronze | | 13.3 | |
| Arad X-387 | Early Bronze | Israel | 13.0 | Davis, 1976 |
| Jericho 74.5899 | Middle Bronze | Israel | 14.3 | Clutton-Brock, 1986 |
| *Equus* cf. *caballus* | | | | |
| Arad 8672 | Early Bronze | Israel | 15.7 | Davis, 1976 |

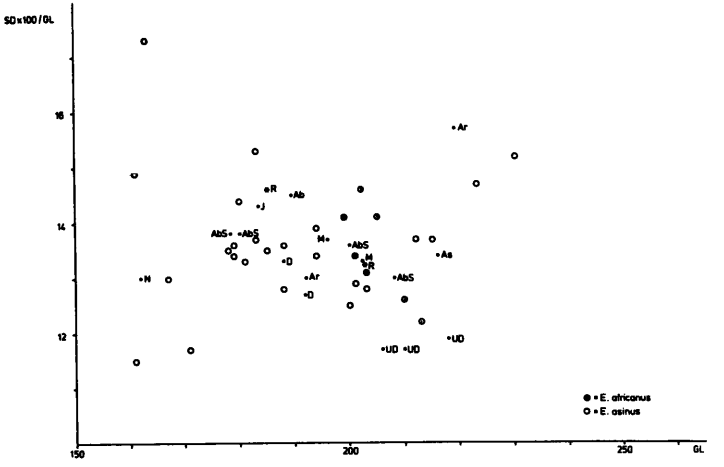



Figure 45
Scattergram comparing length (GL) and robustness (SD x 100/GL) in the metacarpals of modern onagers (+) and equids from Near Eastern sites (•). The metacarpals from Umm Dabaghiyah (UD) resemble those of the onagers, while those from Tell Rubeidheh (R) and later sites (Ab = Tell Ababra; AbS = Abu Salabikh; Ar = Arad; As = Tell Asmar; D = ed-Duweir; J = Jericho; M = Tell Madhhur; N = Nippur) are more robust. (See text for sources of data.)

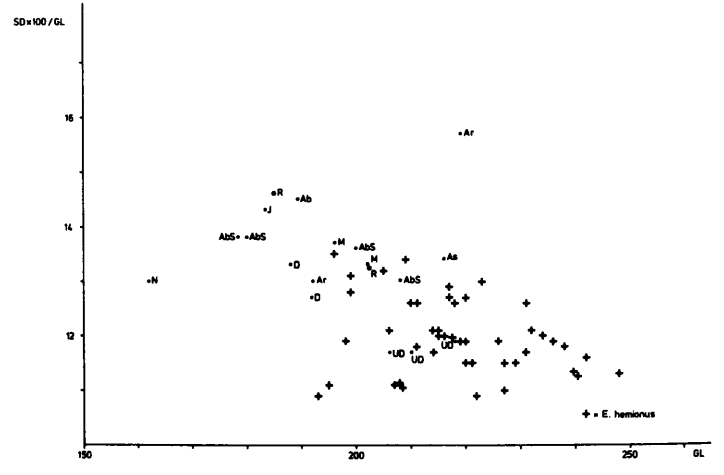



Figure 46
Scattergram comparing length (GL) and robustness (SD x 100/GL) in the metacarpals of modern donkeys (O), modern wild asses (O) and equids from Near Eastern sites. The metacarpals from Tell Rubeidheh (R) and later sites (Ab = Tell Ababra; AbS = Abu Salabikh; Ar = Arad; As = Tell Asmar; D = ed-Duweir; J = Jericho; M = Tell Madhhur; N = Nippur) resemble those of the donkeys and wild asses, while those from Umm Dabaghiyah (UD) are more slender. (See text for sources of data.)

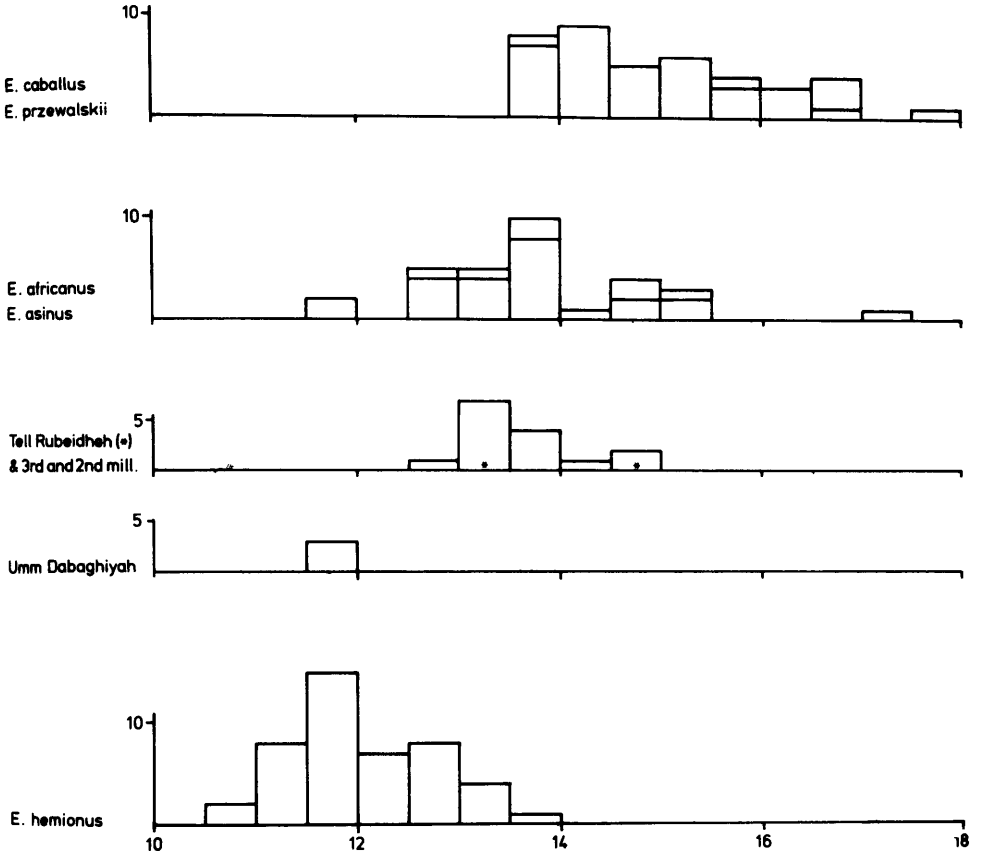



Figure 47

Histogram comparing robustness (SD x 100/GL) in the metacarpals of modern caballine equids (horses and *E. przewalskii*), asinines (donkeys and *E. africanus*) and *E. hemionus*, and equids from Umm Dabaghiyah (Neolithic, *E.* cf. *hemionus*) and from Tell Rubeidheh and sites of the third and second millennia (*E.* cf. *asinus*).

If the metacarpals from Tell Rubeidheh and these later sites are considered as a group, they are clearly generally more robust than onagers (Figure 45), while agreeing closely with the range seen in domestic donkeys and wild asses (Figures 46 and 47).[3]

Several of these donkeys from third millennium sites were buried as whole skeletons, either in graves (e.g. at Tell Madhhur and Abu Salabikh (Clutton-Brock, 1986; Postgate, 1986)) or in rubbish tips (e.g. at Abu Salabikh (Clutton-Brock, 1986)). This contrasts with the bones of animals such as sheep, goat and cattle, which are nearly always broken and scattered, and suggests that donkeys may not have been eaten. Similarly, the articulated donkey limbs from Tell Rubeidheh contrast with the broken and scattered condition of the bones of the other animals in the Tell Rubeidheh bone samples, and suggest that the donkeys at Tell Rubeidheh were also not eaten. One possible explanation for these articulated limbs is that they may have been buried in pits as ritual offerings, as, presumably, is the case for the whole skeletons in the later graves; another more prosaic explanation is that they may simply have been buried as rubbish. A partial parallel from the same period is provided by a

relatively complete equid right innominate and femur found in articulation in Uruk IV levels at Warka (Boessneck, von den Driesch and Steger, 1984), again identified as from a domestic donkey.

It would be simplest to assume that the other scattered and broken equid remains from Tell Rubeidheh are also from donkeys; but this presents difficulties. The morphology of the teeth would be surprising in donkeys, which usually have shorter protocones (Eisenmann, 1980) and only rarely show any tendency for the buccal sulcus to penetrate deeply (Eisenmann, 1981: Table 6). Both features are found more commonly in onagers. As onager bones, broken just like other animal bones, are commonly found on earlier sites in the area, it seems reasonable to suggest that while the groups of equid bones are from donkeys, most or all of the scattered bones may be from onagers. If so, the difference in treatment may well reflect a difference in use. The finding of whole bones in groups suggests that the donkeys were not eaten, and were probably domestic; while the scattered and broken ?onager bones suggest that these may have been butchered and eaten in the same way as the sheep, goats, gazelles and cattle. The discovery of a figurine of an equid carrying a pack, found in a roughly contemporary Late Chalcolithic tomb near Tel Azor in Israel (Druks and Tsaferis, 1970), lends added support to the suggestion that the inhabitants of Tell Rubeidheh had domestic donkeys.

As Table 20 shows, all the equid long-bones and phalanges have fused epiphyses except for the distal radius of the GRP 2 animal. One of the loose upper cheek-teeth is in very early wear; the other teeth are in full wear. None of the equid bones has definite cut-marks; a distal humerus (2F45:54, Batch 041) has three sub-parallel marks on its medial side, but they are rather faint and not as straight and V-bottomed as cut-marks on other bones from the site. The only burnt equid bone was a broken tarsal (2F43:6; Batch 048).

2.2: Large bovid.

The large bovid bones are mostly in relatively poor condition, and broken into small fragments. A few measurements are given in Table 29. They are of moderate size. It seems very probable that these bones are from domestic cattle, though it is hard to rule out other possibilities.

As Table 21 shows, most of the long-bone and phalangeal epiphyses are fused; an ischium fragment (2F44:18; Batch 506) had an unfused margin where it would have met the ilium, and is from a calf. Of the four molars, two are broken and unworn or in early wear, and two are in wear. The only cut-marks to be noted were a group of relatively weak sub-parallel marks on the external face of the calf ischium, roughly parallel with the edge of the acetabulum, as if made by cutting in slightly the wrong place while trying to disarticulate the head of the femur from the acetabulum. Another pelvic fragment (part of an ilium) was the only burnt large bovid bone.

2.3: *Gazella subgutturosa*. Goitred gazelle.

Gazelle bones are fairly scarce, and mostly in relatively good condition. Measurements are given in Table 29. The two male horncores are relatively robust. One (2F46/47:3; Batch 1106) also has part of the frontal bone (Figure 48): the medial side of the horn-core base is so close to the mid-frontal suture that the bases of the two horns must have been more or less in contact, which is characteristic of *G. subgutturosa* (Harrison, 1968).

As Table 22 shows, all the gazelle long-bone and phalangeal epiphyses were fused; the only possible cut-mark to be noted was a single nick on the tuber of one of the two scapulae.

One scapula (2F54:10; Batch 1003) has a small exostosis on the glenoid edge. The one mandible (2F65/75:27; Batch 311) is from an old animal: the occlusal plane dips in the region of $M_1$, which is worn down to its roots.

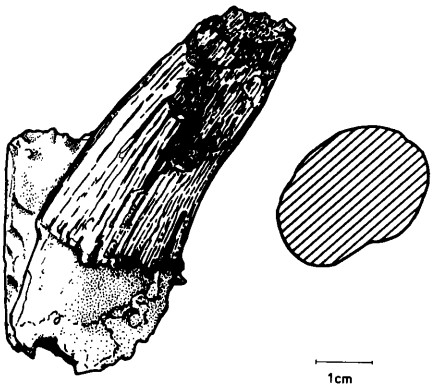



Figure 48
*Gazella subgutturosa*, horncore and frontal, 2F46/47:3, Batch 1106.
The horncore is very close to the mid-frontal suture, which is characteristic of this species.

2.4: *Ovis* and *Capra*. Sheep (domestic) and goat (domestic).

Bones of sheep/goat are abundant, and generally in reasonable condition. There are fragments of both sheep and goat horncores, none of which are particularly robust. A frontal bone of a hornless sheep (2F46/47:4; Batch 1107) has a low rounded boss of thin bone (broken in this specimen) in place of a horncore (Plate 8c).

Most of the teeth and postcranial bones that could be identified to genus are of sheep - Table 19 lists 31+?12 specimens of sheep against 3+?2 of goat. Measurements are given in Table 29. These show that the Tell Rubeidheh sheep were fairly large. Similar measurements are given by Bökönyi (1977) for sheep from the approximately contemporary (late Uruk - early Protoliterate) site of Tepe Dehsavar, near Kermanshah, and by Boessneck, von den Driesch and Steger (1984) for sheep from later levels at Warka.

There is considerable variation in the relative abundance of the different parts of the skeleton, as Table 23 shows.[4] Teeth, and especially molars, are relatively abundant, while limb-bones are fairly common, and carpals, phalanges and sesamoids notably scarce.

Two reasons probably account for most of the variation in relative abundance of the different parts of the skeleton: the more frequent destruction of weaker bones, whether by physical or chemical attack, or by the actions of dogs, rodents or micro-organisms, and the more frequent failure to see and collect smaller bones during excavation. Destruction is evidenced by the occurrence of bones gnawed by dogs and rodents, and of bones corroded in a way that suggests passage through an animal's digestive system (Tables 24 and 25, Plate 9a; see also below, p. 109 and Payne and Munson, 1985); and destruction is probably the main reason for the scarcity of weak parts of the skeleton such as the proximal humerus and proximal tibia. Loss during excavation is suggested by the relative scarcity of incisors and premolars as compared with molars, and is probably the main reason for the scarcity of smaller bones such as carpals, tarsals, phalanges and sesamoids. There is little in the figures that cannot be explained by both causes acting together, and no reason for the most part to seek explanations in terms of butchery or disposal practices. One possible exception is the rather low relative counts for metapodials - these are fairly large and solid parts of the skeleton, and one might have expected them to be commoner. This might suggest that feet were removed from the carcass at an early stage, possibly, as often today, with the skin, and disposed of or dealt with in a way that reduced their chances of survival.[5]

2.4.1: Age and sex data:

When domestic animals are kept, the numbers of males, females and castrates and the ages at

which animals are killed are determined by the purpose for which the animals are kept - and, in particular, by the relative importance of meat production and different secondary products such as milk and wool. When meat or milk are important, high reproductive rates are required, and adult females far outnumber the few adult males needed for breeding purposes. Most of the male offspring, together with those females not needed for stock replacement, are killed as young animals - generally within the first few months if milk is the main aim, but more often as sub-adults if meat is the main aim. When products such as wool are important, on the other hand, reproductive rates are lower, aimed only at safe replacement; relatively few young animals are killed, and males are commonly castrated and retained as wethers.

Thus at sites where meat production was the main aim, we can expect to find a high proportion of the bones are from sub-adult males, while most of the adult bones will be from females. At sites where milk production was the main aim, we can expect to find a similar pattern with the one difference that most of the young males will be killed earlier - probably within the first three months of life. At sites where wool production was important, the expected pattern is completely different: bones of young animals will be relatively scarce, and there may be as many adult castrates as adult females. When animals are kept for a combination of purposes, this will produce mixed patterns reflecting the balance drawn between the different products and production strategies (Payne, 1973).

Tooth eruption and wear provide the best basis for determining the ages at which animals were killed; information is also given by epiphysial fusion data, and the two methods provide a useful cross-check for each other.

Data on the mandibular cheek-teeth of sheep and goat from Tell Rubeidheh are given in Tables 26 and 27. Most are single loose teeth, and there are few mandible fragments with more than two teeth in association. Of the 50 lower third molars, for instance, only seven are in mandibles with $M_2$, and only one in a mandible with $P_4$, $M_1$ and $M_2$; the remaining 43 are either loose teeth, or in mandibles or mandible fragments without other teeth (Tables 26a and 27). Any analysis based on tooth-rows would be dealing with small numbers, and would run the risk that the teeth in tooth-rows may not be representative of the sample as a whole. The following analysis is, therefore, based on wear-stage data for single teeth so that data for isolated teeth can be included (Tables 26b ($dP_4$), 26c ($P_4$), 26d ($M_{1,2}$)[6] and 26e ($M_3$)). No distinction could be made between sheep and goat for any of the teeth apart from the milk molars; as goat appears to be much scarcer than sheep on the basis of postcranial identifications (Table 19), the data are taken as basically applying to the sheep.

In sheep, the third molar erupts at 18-24 months of age, and starts to come into wear a few weeks later, at about the same time that the milk molars are replaced by the premolars.[7] The ratio between the numbers of milk molars and premolars suggests that a relatively small proportion of the sheep were killed before they were two years old. Thus there are 7 $dP_4$s (16%) as compared with 38 $P_4$s (84%), and figures for the other milk molars and premolars give similar ratios (Table 26a). These figures have to be treated with some caution partly because they include a few unworn premolars (Table 26c), which might be from mandibles which still retained their milk molars, and partly because milk molars and premolars at different wear stages may have different chances of survival and recovery. But the relatively low proportion of first and second molars in early wear stages (Table 26d) again implies that relatively few sheep were killed when young. The lower first molar reaches wear stage 9A at around a year of age, and the second molar reaches the same wear stage at around 2 years of age; of 117 classifiable first and second molars only 18 (15%) are at wear stages earlier than stage 9A. Wear stage data for the lower third molars give some basis for subdividing the older animals. As we still know too little about rates of wear in sheep teeth, the ages given can only be rough approximations, but they suggest killing was spread over a wide adult age range. Relatively few of the sheep were very old: second molars in which the infundibula are starting to be erased are fairly scarce (1 in 19 classified cases is later than stage 9A); and only 1 of the 45 classified third molars is beyond stage 11G (Table 26e). In summary, the following kill-off pattern is suggested, though it must be remembered that the sample is not large, and the analysis is subject to a variety of uncertainties:

| | | % killed within age range | cumulative % killed |
|---|---|---|---|
| 0-2 years: 7 $dP_4$ | 16-18% | 16–18% | 16–18% by *c.* 2 years |
| > 2 years: 38 $P_4$, of which 5 unworn | 82-84% | | |
| This 82-84% subdivided on the basis of the $M_3$ wear stage data (Table 26e): | | | |
| 2-3 years: 3 $M_3$, wear stages 2A-4A | | 6% | 21–23% by *c.* 3 years |
| 3-5 years: 18 $M_3$, wear stages 5-10 | | 35% | 57–58% by *c.* 5 years |
| 6-10 years: 21 $M_3$, wear stage 11G | | 40–41% | 98% by *c.* 10 years |
| >10 years: 1 $M_3$, wear stage after 11G | | 2% | 100% |
| (Total: 43 classified $M_3$s at wear stage 2A or later) | | | |

(If the unworn $P_4$s are included, the percentage of $dP_4$s is 16% (7/45); if not, the percentage is 18% (7/40). The figures for the older classes are derived from the relative frequency of $M_3$s at different wear stages (excluding those at wear stage 0 (unworn), which would have been less than two years old, and have had an unreplaced dP4); e.g. the percentage killed between 2 and 3 years is taken as 3/43 x 38/45 *or* 3/43 x 33/40 (depending on whether the unworn $P_4$s are included or not), and the cumulative percentage of those killed by 3 years is taken as 7/45 + (3/43 x 38/45) *or* 7/40 + (3/43 x 33/40).)

Data on epiphysial fusion are given in Table 24. Again, sheep and goat have to be considered together as they could only be distinguished in a minority of specimens; and, as before, the data can be taken as basically applying to the sheep. Samples are smaller than for the teeth, and the destruction and loss involved are likely to have biased the samples in favour of fused specimens. Group 1 epiphyses (tuber scapulae, distal humerus and proximal radius) fuse in sheep within the first year (Smith, 1956; Hatting 1983); only 4% of these epiphyses are unfused in the Tell Rubeidheh sample. Group 2 epiphyses (distal tibia and metapodials) fuse some time in the second year in females and entire males; only 15% are unfused. This is close to the results from the teeth, which suggest that 16-18% were killed before 2 years.

| | unfused shafts | unfused epiphyses | fused + fusing articulations | % killed before fusion | Approximate age at fusion in females and entire males (castrates fuse later) |
|---|---|---|---|---|---|
| Group 1 epiphyses (sc. t., hu. d., ra. p.) | 2 | | 44(+1) | 4% | *c.* 4-5 months |
| Group 2 epiphyses (ti. d., mp. d.) | 4 | 4 | 22(+1) | 15% | *c.* 15-21 months |
| Group 3 epiphyses (hu. p., ra. d., fe. p. and d., ti. p.) | 3(+2) | 7(+8) | 9(+14) | 39-44% | *c.* 18-30 months |

(The figures in brackets are additional specimens identified as sheep/goat/gazelle (Table 25), most of which are probably sheep. The percentages killed before fusion are calculated using whichever is the larger of the counts for unfused shafts and unfused epiphyses (counting both would bias the result towards unfused individuals), e.g. for Group 3, this is 7/16 *or*, if the sheep/goat/gazelle specimens are included, 15/38.)

According to Smith, the Group 3 epiphyses (proximal humerus, distal radius, proximal and distal femur, proximal tibia) fuse in sheep between 17 and 30 months.[8] The proportion of Group 3 epiphyses that are unfused in the Tell Rubeidheh sample is 39-44%. This figure is unexpectedly high in relation to the tooth-wear data, which suggest that only 21-23% of the sheep were killed by 3 years; especially as the parts of the skeleton concerned have low survival rates, which can be expected to bias the results in favour of fused specimens. Hatting, who gives results similar to Smith's for females and entire males, shows that fusion is substantially delayed in castrates; a possible explanation for the Tell Rubeidheh data is that castration was a common practice, and that many of the bones in the sample are from wethers (compare O'Connor, 1982:24, for Mediaeval sheep at Flaxengate, Lincoln).

Sex could only be reliably determined from the pelves, on the basis of the shape of the pubis and the medial rim of the acetabulum. The Tell Rubeidheh sheep/goat/gazelle pelves (most of which can be assumed to be from sheep) are very fragmented. Of 43 specimens (11 of which include part of the pubis), four (1+?3) were identified as females, and five (3+?2) as males or castrates.

The low proportion of young animals is what would be expected if wool production was the dominant aim in sheep husbandry at Tell Rubeidheh, as is the indication that wethers may have been common. A possible alternative interpretation is that lambs were being produced for an outside market; but this is less likely - if so, the sex ratio in the pelves would be expected to be heavily biased in favour of females, a higher proportion of very old animals would be expected (wool production declines both in quantity and in quality in older animals, while older ewes make better mothers as long as they are still sound), and there would be no reason to keep adult wethers in any number.

While most of the sheep bones are from older animals, four of the five specimens of goat listed in Table 19 are from young animals - three milk molars, and an unfused distal metatarsal epiphysis (the fifth is an astragalus which gave no indication of age). This is very slender evidence, but if goats were primarily kept for milk or for meat one would expect a higher proportion of young animals to be killed.

2.4.2: Cut-marks and burning:

A number of the sheep/goat bones show cut-marks, and a few have been burnt (Table 24).

The cut-marks are all relatively fine and shallow, and often in sub-parallel groups. Most are on or near articulations, and their direction suggests that they were made in the course of disarticulation rather than while cutting meat off the bones (Plate 9b). Many look fairly unskilful - while in the right direction, they are often up to a centimetre away from where they should be to be effective: whoever was butchering the animal with the proximal radius shown in Plate 9b:1, for instance, made six or seven cuts all several millimetres away from the right place. But a skilful butcher need leave no marks at all when disarticulating a joint, and will try to avoid doing so since hitting bone blunts the knife (whether flint or metal). Only a small proportion of the bones show cut-marks: only one of the seventeen proximal radii, for instance, and only two or three of the more than twenty distal humeri. All this could equally be taken to suggest generally skilful butchery, the cut-marks reflecting the occasional mistake. As anyone knows who has prepared comparative skeletons, even when one is trying not to leave any cut-marks it is easy to mistake the position of a joint by a few millimetres while it is still covered by flesh and sinew, and then to make several cuts in the wrong place thinking that one must be closer to the joint than one is.

A distal metatarsal has a single cut-mark running across the shaft on the posterior side, a couple of centimetres above the articulation, and a distal metacarpal has a pair of possible cut-marks in a similar position. These are less likely to result from attempted disarticulation, and more likely to have been made during skinning.

2.4.3: Pathology and anomalies:

Despite the high proportion of older animals, no serious pathologies were noted. A mandible with fairly heavily-worn teeth (2F54:16; Batch 1009) had irregular tooth-wear, with a dip in the area of $P_4$ and $M_1$; this is relatively common in older sheep and goats. An isolated incisor (2F46/47:1; Batch 1101) is worn so that the wear facet is almost at right angles to the buccal surface rather than meeting it at the normal acute angle (Plate 9c); this is caused by the incisors not being far enough forward in relation to the premaxillary pad (overshot, or overbite).

Minor dental anomalies include two $M_{12}$s and one $M_3$ with well-developed interlobar pillars. In four $P_4$s paraconid-metaconid fusion is incomplete, so that the valley between the paraconid and the

metaconid remains open buccally until a relatively late wear-stage (Plate 9d); a number of examples of the same anomaly were noted in sheep/goat teeth from the Roman to Islamic site of Dibsi Faraj in northern Syria (Gail Bull, pers. comm.).

2.5: *Canis*. Dog.

A mandible (2F65/75:17; Batch 302) has most of the tooth-row ($P_1$-$P_4$, $M_1$ and $M_2$), though the ramus itself is broken (Plate 10a). Measurements are given in Table 29. The teeth are of moderate size, fairly robust, and not very crowded: the alveolar length from $P_{1-4}$ is about 34.6 mm, while the total of the crown-lengths of the four premolars is 36.0 mm. In $M_1$ the metaconid is relatively stout; the postero-internal corner of $M_2$ is a flat shelf bounded by a very low rounded ridge. Golden jackal (*C. aureus*) can safely be excluded - the mandible and teeth of the Tell Rubeidheh canid are too large and heavily-built, and the postero-internal corner of $M_2$ in golden jackal usually has a stronger ridge or cusplet (Payne, 1983: Table 15.3). The measurements of the Tell Rubeidheh molars fall within the range found in the small modern Arabian wolf (*C. lupus arabs*), but the premolars are shorter (compare Payne, *loc. cit*: Figs. 15.34 and 15.36), reflecting the facial shortening already found in early dogs (e.g. at Jarmo (Lawrence and Reed, 1983)).

As has already been mentioned (p. 105), a few of the sheep/goat bones show clear traces of damage by being gnawed (Table 24); they include a caput femoris (2F44:18; Batch 506) with three depressions in the triangular pattern that would be left by a canid $M^1$. A number of sheep/goat and sheep/goat/gazelle bones and bone fragments are corroded as if they have passed through the digestive system of a dog; they look very like specimens obtained experimentally when dogs were fed with goat bones (Payne and Munson, 1985). As in those experiments, these corroded specimens are all small (none are larger than 3 cm), and most are bones whose shape makes them easy to swallow, e.g. phalanges, carpals, tarsals and a patella (Tables 24 and 25; Plate 49a.

2.6: ?*Vulpes*. ?Fox.

A humerus shaft from a relatively small carnivore has no supracondylar foramen, and is probably from a small fox.

2.7: *Hemiechinus*. Long-eared hedgehog.

Two mandibles were found. One is edentate; the other has an incisor, a broken $P_4$ and a broken molar. Measurements are given in Table 29.

2.8: Rodents:

A tibia and two femora are from rodents of about the size of a rat. Several rodents of this size occur in Iraq today, including *Rattus*, *Nesokia* and *Tatera*. All three burrow, and so these bones may be intrusive; the bones could not be identified more closely as suitable postcranial comparative material was not available for all the relevant species.

A sheep/goat calcaneum had been much gnawed by a rodent (Plate 10b).

2.9: Reptiles:

Dr. E.N. Arnold, of the British Museum (Natural History), has kindly identified the four reptile bones. Two presacral vertebrae and a femur shaft are from a monitor lizard (*Varanus* sp., likely on the basis of geographical distribution to be *V. griseus*); a humerus shaft is probably chelonian, and might be from a small soft-shelled turtle (*Trionyx euphraticus*).

## 3: DISCUSSION

3.1: Relative representation of the different animals:

Taken at face value, the figures in Table 19 suggest that the relative representation of the different mammal species in the Tell Rubeidheh sample is as follows:

| | | | | | |
|---|---|---|---|---|---|
| *Equus* | 42+[36] | +6 *E/LB* | | 6% [11%] | |
| Large bovid | 30 | | | 4% [4%] | |
| *Gazella* | 18 | | +93 *O/C/G* | 3% [3%] | |
| *Capra* | 5 | +502 *O/C* | | 86% [82%] | ?9% [9%] |
| *Ovis* | 43 | | | | ?77% [73%] |
| *Canis* | 4 | | | 1% [1%] | |
| *Vulpes* | ?+ | | | ?+ | |
| *Hemiechinus* | 1 | | | + | |
| Rodent | 3 | | | + | |

(total n = 747 [783])

(In calculating these percentages, bones identified to a group of taxa have been distributed *pro rata* between the taxa concerned. Thus the 502 *Ovis/Capra* bones have been distributed between *Ovis* and *Capra* according to the ratio of bones identified to the genus level (5*C*: 43*O*), giving 5 + (5/48 x 502) *Capra* (= 57), and 43 + (43/48 x 502) *Ovis* (= 493); and the 93 *Ovis/Capra/Gazella* bones have then been distributed between *Ovis*, *Capra* and *Gazella* according to the ratio of the identified bones *including* the *Ovis/Capra* specimens (i.e. 18*G*:57*C*:493*O*), e.g. giving the total count for *Gazella* as 18 + (18/568 x 93) = 21. Results are given both including (figures in square brackets) and excluding the equid groups.)

However, as discussed above (p. 105), there is clear evidence that many of the smaller bones were not recovered, and this will have biased these figures in favour of the larger species. When recovery was tested at a prehistoric site in Greece, for instance, it was found that normal recovery during excavation found fewer than 10% of the sheep/goat bones, as against about 50% of the cattle bones (Payne, 1975).

Some of the earth from some contexts at Tell Rubeidheh was dry-sieved, using a 1 cm mesh. The resulting counts are not easy to assess because the earth that was sieved had already had bones removed from it during excavation, and those bones were bagged with the rest of the bones from the unsieved earth. Thus the samples from the dry-sieving are partial samples, missing some of the larger bones; but if the trench-recovered samples from the same contexts are added, the resulting totals include the bones recovered from the unsieved earth as well as the remainder of the bones from the sieved earth. In neither case will the figures show what would have been present in a whole sieved sample.

Six contexts were part-sieved. One (Batch 42) seems to have produced no bones; two (Batches 501 and 502) produced single bags of bone with no indication as to whether they came from the trench or the sieving; and one (Batch 38) produced no bone from the trench and only a small sample of bones from the sieving. Larger samples from the trench and from dry-sieving are available for two contexts (Batches 40 and 41), and these are compared in Table 28. According to the excavation notes, about 20% of the earth from each of these units was sieved. A crude approximation to what would have been produced by sieving all the excavated earth for each of these two contexts can be provided by multiplying the counts from the sieved samples by five, and adding the counts from the unsieved part of the sample. As expected, the effect is to decrease the percentage of equid and large bovid, and to increase the percentage of gazelle and sheep/goat; but the figures almost certainly underestimate the full correction that would be needed, as dry-sieving still misses a considerable proportion of smaller bones (Payne, 1975: in the experiment reported, 42% of the sheep/goat bones were still missed by dry-sieving), and the mesh used at Tell Rubeidheh (1 cm) was relatively coarse.

Another often-used approach is to take the minimum number of individuals represented in the sample as a basis for calculation rather than the number of identified specimens. This has advantages and problems - one problem is that there are many different ways of arriving at the minimum number for each species; another is that there is a tendency for the relative importance of any species

represented by only a few bones to be exaggerated.

A third possibility, and one which in this case probably gives the best available estimate, is to base comparison on a part of the skeleton that is relatively abundant, and likely to survive and to be recovered relatively well, such as molars. Taking the whole Tell Rubeidheh sample as a single group, these three approaches give the following results:

| | Number of identified specimens | | Minimum number of individuals | | Number of molars | Molar index | |
|---|---|---|---|---|---|---|---|
| *Equus* | 6% | [11%] | 2 | 5% | 8 | 0.33 | 1% |
| Large bovid | 4% | [4%] | 2 | 5% | 4 | 0.33 | 1% |
| *Gazella* | 3% | [3%] | 1 | 2% | 5 | 0.42 | 2% |
| *Capra* / *Ovis* | 86% | [82%] | 33 | 79% | 291 | 24.25 | 95% |
| *Capra* | ?9% | [9%] | | | | | |
| *Ovis* | ?77% | [73%] | | | | | |
| *Canis* | 1% | [1%] | 1 | 2% | 2 | 0.20 | 1% |
| *?Vulpes* | ?+ | | 1 | 2% | 0 | + | |
| *Hemiechinus* | + | | 1 | 2% | 1 | 0.08 | + |
| *Rodent* | + | | 1 | 2% | 0 | + | |

(In order to calculate the minimum number of individuals for each species, the whole Tell Rubeidheh sample has been treated as a single group. The count for each element has been divided by the frequency of that element in the skeleton, taking no account of age, size and side, and the highest figure for each species has been taken as the minimum number of individuals. The molar index has been calculated by taking the total number of molars for each species (in the case of *Equus* premolars have also been included), and dividing this by the total number of molars in one individual of that species.)

Whatever basis is used, what emerges clearly is the dominance of sheep/goat (mainly sheep) among the medium-sized and large mammals. Figures for the smaller species cannot be regarded as reliable, and they may have been considerably commoner than the figures indicate.

3.2: Environment and economy:

Large mammals tend to have relatively wide ecological tolerances, and most domestic mammals can be kept in a very wide range of conditions. For this reason, the animal bone sample from from Tell Rubeidheh gives no very precise indication of environmental conditions around the site; but there are indications that conditions must have been fairly dry. Among the wild species, *Gazella* and *Hemiechinus* both suggest steppe or semi-desert (as also does *Equus hemionus* if correctly identified). The absence of pig among the domestic animals also suggests dry conditions (Grigson, forthcoming; see also below, p. 115), while the presence of cattle makes dry steppe more likely than semi-desert.

Nowadays the area around Tell Rubeidheh is dry steppe, just at the margin of dependable rain-fed agriculture; there is nothing in the animal bone sample to suggest that things were very different in Uruk times.

One mussel shell and the humerus shaft that may be from a small soft-shelled turtle (*Trionyx euphraticus*) are the only remains of river animals; but small fish bones may have gone undetected.

The evidence already presented shows that sheep are the commonest animals in the Tell Rubeidheh sample, followed by goats, gazelles, cattle, equids and dogs. Relative abundance and relative importance are, of course, not the same; and a common way to look at relative importance is to convert figures into estimates of relative meat yield:

| | Meat/animal (kg.) | Relative meat yield estimate based on: | | |
|---|---|---|---|---|
| | | Minimum number of individuals | Number of identified specimens | Molar index |
| *Equus* | 125 | 19% | 23% [35%] | 7% |
| Large bovid | 200 | 30% | 26% [21%] | 11% |
| *Gazella* | 12 | 1% | 1% [1%] | 1% |
| *Capra/Ovis* | 20 | 49% | 51% [43%] | 81% |
| *Canis* | 8 | 1% | + [+] | + |
| *?Vulpes* | 3 | + | + [+] | + |
| *Hemiechinus* | 0.25 | + | + [+] | + |
| Rodent | 0.1 | + | + [+] | + |

(Estimates based on the number of identified specimens are calculated excluding the equid bones found in groups; the figures in square brackets are calculated including them.)

These estimates are of necessity crude, and vary considerably. While two of the three sets of figures agree in putting the relative meat yield of sheep/goat at around 50%, both probably overestimate the relative importance of equid and large bovid: recovery biassing affects the number of identified specimens, and minimum numbers of individuals tend to be too high when the number of bones involved is small. The effect of multiplying by meat yield for large animals is to magnify any errors of this kind. I regard the 'molar index' figures as providing a better estimate; on this basis sheep/goat (mainly sheep) would have provided four-fifths of the meat eaten at Tell Rubeidheh.

Meat supply is not the only measure of importance. The milk produced by a good milk goat, for instance, will provide several times as many calories and protein as its carcass when slaughtered; and the food grown on the fields ploughed by an ox will provide many times as much food as killing the ox.

The evidence discussed in section 2.4.1 suggests that the Tell Rubeidheh sheep were primarily kept for wool. The relative scarcity of young sheep suggests that the sheep were not milked, or that the milking was of subsidiary importance. Samples of goat and cattle are too small to provide any reliable indication, but it is possible that these were also used for secondary products - for milk, and for traction, both clearly normal uses in Mesopotamia less than a millennium later. And it has already been suggested that the groups of equid bones are from donkeys, which are likely to have been used for riding or for carrying loads. In view of the way in which secondary products are of much greater economic importance than meat in traditional village economies in the Near East, the possibility has seriously to be considered that secondary products may have been of primary importance at Tell Rubeidheh - that sheep may have been kept mainly for wool, goats for milk, cattle for draft, and donkeys for riding or carrying loads; and that meat may have been an occasional luxury, supplemented by some hunting of gazelles and onagers.

In the recent past, animal husbandry has been of greater importance than agriculture along much of the western flank of the Zagros, and the same may well have been true of Tell Rubeidheh. The main reason for this is the low rainfall. To the south of the Diyala rainfall is too low for dependable rainfed agriculture, and crops can only be grown where irrigation is possible; only north of the Diyala does higher rainfall make it possible to depend on cereals without irrigation. The Hamrin basin is very much a marginal area for dry-farming: dry farm crops are successful in only three out of five years (Young and Killick, this volume).

Gibson (1981) relates how the farmers of Uch Tepe cultivate small plots irrigated from wells which tend to become brackish after only a few years; larger areas of cereals grown without irrigation are planted only in years when above-average winter rain makes it worthwhile. Winter grazing, on the other hand, is good and dependable:

> "The great marsh in the northern end of the valley has abundant grasses, which are a mainstay for the hundreds of cows and thousands of sheep,the main source of income for the villagers." (Gibson, 1981: 13)

Before 1918, most of the population was semi-nomadic, over-wintering with their herds of sheep, goats

and a few cows in the Hamrin basin, and moving further west and north in the summer.

Gibson suggests that the variation from period to period in the abundance of sites which is so marked a feature of the Hamrin basin is to be explained in political terms:

> "The oral tradition of Uch Tepe, relating the basically nomadic lifestyle of the villagers, must be seen as part of the last phase of unstable conditions in the area during the Ottoman period. The situation seems to fit into a pattern with the Uruk, Early Dynastic, Akkadian and Isin-Larsa periods of the Basin, when there were at most one or two towns and a number of fortresses on strategic routes. The situation we encountered on first entering the valley, with a population of about 3,000 persons, excluding those in Sa'adiya, Qara Tepe and Jalawla, scattered in farming villages, may be comparable to the Halaf-Ubaid, late Kassite and Medieval Islamic periods. In the late Kassite, Mediaeval Islamic and current situations, the possibility of occupying settlements outside major towns can be attributed to the ability of a strong central government to secure and maintain borders beyond the Basin. The similarity we see in the Halaf-Ubaid settlement may indicate some kind of stable social and economic relations linking the lowlands with the mountains to the north and east." (Gibson, 1981: 24)

An additional - or alternative - explanation for the instability of settlement pattern in the Hamrin may lie in minor climatic and environmental fluctuations.[9] Today, the area lies just on the margin of dependable dry-farming; a relatively small increase in rainfall might have been enough to make dry-farming reliable, and might shift the balance from semi-nomadic life to life in settled villages, while a relatively small decrease in rainfall might have made dry-farming too unreliable to be worthwhile. The absence of early Uruk and early Kassite sites might thus reflect slightly drier periods, when dry-farming was not possible; while the frequent village sites of the Ubaid, late Kassite and Mediaeval Islamic periods might reflect slightly wetter periods, when dry-farming was reasonably dependable and the population became more settled.

On this interpretation, the small number of late Uruk sites would suggest a slightly drier period, when animal husbandry would have been the mainstay. As today, grazing is likely to have been better in winter and spring than in summer and autumn, when the flocks might well have spread out over a wider area, especially to higher areas to north and east, and the Hamrin Basin Uruk sites may have only been seasonally occupied, or occupied by fewer people in the summer.

There is, unfortunately, little direct evidence as to whether Tell Rubeidheh was occupied seasonally or year-round. Given a larger sample, this could be tested by looking at the ageing evidence for the younger sheep and goats. If, as seems likely, births were in the late autumn, winter occupation would be indicated by a relative abundance of bones from animals within a few months of birth, and around a year old, and a scarcity of animals between 5 and 10 months old. Such younger sheep and goat bones as the sample provides are consistent with this prediction: the sample includes a small number of very juvenile sheep/goat/gazelle bones from animals that must have died or been killed close to birth[10], a sheep/goat mandible with an incompletely-erupted $dP_2$ and two unfused sheep/goat distal humeri, which are probably from animals less than four months old, and two mandibles with $M_2$ in early wear (stages 2a and 4a), which are from animals around a year old. But no case of any strength can be made without a large enough sample to see whether there are in fact real *gaps* in the age distribution; the present sample is certainly not large enough for this. The absence of pig at Tell Rubeidheh provides another possible indication of seasonal movement: Flannery (1983) has suggested that the absence of pigs at some Zagros sites, and their abundance at others, may be explained in this way. But it might simply be explained by the semi-arid conditions (Grigson, forthcoming; though wild boar were common until recently in the Hamrin marshes), or by cultural avoidance. These weak indications, and the relatively flimsy nature of the architecture, are consistent with seasonal occupation, but do not provide any very strong basis on which to exclude the possibility of year-round occupation.

It is harder to understand the location of Tell Rubeidheh in purely local terms. Its position seems to offer no special advantages: places closer to the Narin Çay would seem to offer better access both to water and to such fertile land as there is, and the Narin Çay has to be crossed to reach the grazing on the marshy areas. But local conditions in the fourth millennium may have been very different - a shift in the position of the Narin Çay, for instance, would radically alter things: the site might, for instance, have been much closer to the river, or, if further, would have had better access to the low-lying part of the plain. It is probably unprofitable to speculate further in the absence of more detailed geomorphological survey information.

3.3: Comparisons with bone samples from other sites:

Bone samples from Neolithic and Chalcolithic sites along the western flank of the Zagros share many common features. Most obvious among these is the dominance of sheep and goat, goat tending to be relatively commoner in sites of the seventh and sixth millennia, and sheep becoming commoner in the fifth and fourth millennia.

Data from a number of sites of the fifth and fourth millennia (BC, MASCA calibration) are briefly summarised in the following table. Comparison has to take into account the long timespan involved, differences in local environmental conditions, differences in sample recovery techniques, and methodological differences between different zoo-archaeologists. Nonetheless, the basic similarity of these bone samples to each other and to the Tell Rubeidheh sample is clear - the dominance of sheep/goat, the presence of cattle and onager, and the scarcity or absence of pig/wild boar. Some differences in relative abundance probably reflect local conditions: at Dehsavar and Choga Maran, cattle are more abundant, perhaps reflecting slightly higher rainfall in the Kermanshah area; in Khuzistan goats are relatively commoner; and in the Deh Luran plain gazelle is particularly common.

Comparison of the available ageing data for the sheep and goats from these sites has to be treated with even more caution: methods used vary widely, and are often not very explicitly described; conclusions are sometimes presented without supporting data. Nonetheless, it appears that there may be differences in kill-off pattern, and thus in the use made of the sheep and goats.

At Sarafabad, the bone sample is one taken from a single refuse pit, dry-sieved to 5 mm. Distinction is made between bones from layers thought to have accumulated during the winter and during the summer. The summer sample has a higher proportion of younger animals, and of males; the winter sample a higher proportion of older animals, and of females. Overall, a relatively high proportion of the sheep and goats were killed young - less than 10% of summer kills and less than 35% of winter kills were of animals aged more than 42 months (Wright, Miller and Redding, 1980: Fig. 5). Insofar as one can draw conclusions from the contents of a single, if large, pit, the pattern is one that suggests husbandry aimed primarily at meat production.

Davis (1984) gives data from several sites in the Kermanshah area excavated by Levine. As samples are small, data for broad time ranges are amalgamated. His data suggest that the proportion of younger sheep and goats was relatively high in the Neolithic, but decreased in later periods; he suggests that there was a shift towards the exploitation of secondary products in the Chalcolithic. Even in his Chalcolithic samples, however, the proportion of younger mandibles appears to be much higher than at Tell Rubeidheh, as is shown by the $dP_4/P_4$ ratio (20 $dP_4$: 23 $P_4$ in Davis's Chalcolithic sample as compared with 7 $dP_4$: 38 $P_4$ at Tell Rubeidheh); and the larger number of mandibles in stages H and I (Davis, *loc. cit.*: Fig. 6) may suggest that milk production was relatively important.

Samples from the Deh Luran Chalcolithic sites are fairly small; and the data from Farukhabad are hard to interpret because gazelle is included in the fusion data together with sheep and goat. The available data suggest that these samples include a higher proportion of older animals than Neolithic samples from Ali Kosh, and they may reflect a pattern similar to that in Davis' Chalcolithic sample from the Kermanshah sites.

The only site whose kill-off pattern may more closely resemble that from Tell Rubeidheh is Dehsavar, where sheep considerably outnumber goats, as at Tell Rubeidheh, and between 73% and 93% of the sheep are said to be adult (Bökönyi, 1977). But no details are given, and the figures may be considerably biased by the omission of bones identified as 'sheep/goat' but not identified more closely - Bökönyi comments that this category includes a higher proportion of immature bones, but gives no counts or further details. He suggests, on the basis of the proportion of adults, that both sheep and goats were used for secondary products from the Neolithic onwards, and, on the basis of a figurine from Sarab, that wool-bearing sheep were already present in the Kermanshah area by the seventh millennium; but his data are hard to reconcile with those given by Davis for more recently-excavated samples from the same sites, which suggest a higher proportion of younger animals, and fewer sheep at least in the Neolithic sites.

The picture that seems to be emerging is one of a shift into secondary products in the Chalcolithic, as suggested by Davis, followed, in the Late Chalcolithic, by a more specialised shift into wool production. But this specialised shift into wool may only happen locally, or only later in the Uruk period, as it does not seem to be shown by the Uruk samples from Farukhabad or Sarafabad:

| | Sheep & goat | Gazelle | Cattle | Equid | Dog | Pig/wild boar | |
|---|---|---|---|---|---|---|---|
| Tell Rubeidheh (L. Uruk) Late 4th. mill. | 82% (43 *O*: 5 *C*) few young sheep, ?wool | 3% | 4% | 11% donkey and ?onager | 1% | – | Hamrin basin |
| Dehsavar (L. Uruk/ E. Protolit.) Late 4th. mill. | 80% (461 *O*: 35 *C*) most sheep adult, ?wool | 3% | 13% | 1% onager | – | <1% | Kermanshah valley |
| Choga Maran (M. Ch.) Early 4th. mill. | 81% (11 *O*: 3 *C*) more older animals in Chalcolithic than in Neolithic, ?milk/wool | – | 17% | present | present | 1% | Kermanshah valley |
| Sabz (Bayat) 5th. mill. | 63% (3 *O*: 1 *C*) more older animals than at Ali Kosh | 24% | 4% | 3% onager | 4% | 1% | Khuzistan (Deh Luran plain) |
| Farukhabad (Farukh–Bayat) Late 5th. mill. | ?41% (6 *O*: 6 *C*) more older animals than at Ali Kosh | ?48% | 3% | 5% onager | 3% | – | Khuzistan (Deh Luran plain) |
| (Uruk) 4th. mill. | ?60% (13 *O*: 16 *C*) more older animals than at Ali Kosh | ?21% | 2% | 14% onager | 2% | – | |
| Sarafabad (Uruk) 4th. mill. | 96% (83 *O*: 57 *C*) mostly younger animals | + | 2% | – | – | 2% | South Khuzistan |

(Percentages are based on the number of identified specimens of mammals (excluding rodents and other small mammals). Data for Dehsavar are taken from Bökönyi (1977: Table 1, also p. 24), for Choga Maran from Davis (1984: Table 2, also pp. 274-277), for Sabz from Hole, Flannery and Neely (1969: Table 57 and Fig. 113), for Farukhabad from Redding (1981: Table 66), and for Sarafabad from Wright, Miller and Redding (1980: Table V). When necessary, sheep/goat/gazelle bones have been distributed *pro rata* as before (p. 110). Only a small proportion (around 10%) of the sheep/goat/gazelle bones at Farukhabad were identified to genus; for this reason the *pro rata* figures given may well not be reliable. Dates follow Henrickson (1985), in calibrated (MASCA) rather than Libby years.)

## 4: SUMMARY

The following animals are represented in the Tell Rubeidheh bone sample (in approximate order of abundance):

| | | |
|---|---|---|
| *Ovis* (domestic) | sheep | abundant |
| *Capra* (domestic) | goat | frequent |
| *Equus* sp./spp. | equid | frequent |
| *E. asinus* (domestic) | donkey | |
| and *E. ?hemionus* | ?onager | |
| Large bovid (cf. *Bos* (domestic)) | cattle | frequent |
| *Gazella subgutturosa* | goitred gazelle | frequent |
| *Canis* (domestic) | dog | scarce |
| Rodentia | unidentified rodents | scarce |
| *Varanus* cf. *griseus* | monitor lizard | scarce |
| *Hemiechinus* | long-eared hedgehog | scarce |
| Unionidae | fresh-water mussel | one shell |
| *?Vulpes* | ?fox | one bone |
| *?Trionyx euphraticus* | soft-shelled turtle | one bone |

The area was probably dry steppe. Dry-farming may well have been unreliable and opportunities for irrigation are likely to have been limited; herding was probably the mainstay, as in the recent past. The site may have only been occupied seasonally; such indications as the sample provides are consistent with winter occupation, but year-round occupation cannot be excluded.

The high proportion of older sheep, together with some indication that many of the sheep were wethers, suggests that wool production was important. A donkey right forelimb buried in a pit, together with the bones of another right forelimb from another context, are probably from domestic donkeys, and are among the earliest domestic donkeys yet reported.

The bone sample shares common features with those from other Chalcolithic sites along the Zagros edge. But the extent to which sheep outnumber goats, and the high proportion of older sheep, are shared only by Dehsavar, and raise the possibility that the Hamrin basin and the Kermanshah valley may have been specialised centres of wool production in the Late Uruk period.

## Notes to Chapter 5

1. We would have preferred to use an acrylic colloidal dispersion such as Primal WS24 (Koob 1984), but the supply that was sent out by Landrover froze *en route* and was unusable.
2. Excavation records suggest that a group of bones found in 2F65/75 (called "Grave 1" when it was thought that they were human bones) may have been yet another articulated equid leg; but the bones appear to have been lost.
3. The possibility that some of these specimens may, as Clutton-Brock (1986) suggests, be from hybrids between donkeys and onagers, cannot at present be excluded, but there seems to be no reason to advance this more complex interpretation without more positive indication, and it anyway implies the presence of donkeys.
4. Table 23 includes gazelle and sheep/goat/gazelle bones as well as sheep/goat bones in order to give a fairer comparison, since excluding these would bias against bones that tended to be more broken and less readily identified. This is particularly relevant in the case of the pelvis (see Table 19, footnote).
5. As metapodials are often chosen for making bone tools, this provides an alternative explanation for their scarcity at some sites. As few bone tools were found at Tell Rubeidheh, and only one of these was made on a metapodial (of a gazelle - p. 32), this explanation seems less likely unless some tool were involved that for some reason had a low chance of survival.
6. A further problem is that isolated first and second molars could not be reliably distinguished.
7. Silver (1969) gives the age of eruption of M3 in 'semi-wild, hill sheep, old figures (1790)' as 3-4 years; but the source for this is not given, and it seems unlikely. All modern figures agree that M3 in sheep erupts at 18-24 months (Deniz and Payne, 1979), and this is true of primitive breeds (e.g. Gotland sheep (Hatting, 1983) and Soay sheep (Gillian Jones, pers. comm.; Holmes, Legge and Payne, in prep.)) as well as impoved breeds.
8. A number of other sources, almost certainly deriving originally from Lesbre (1897/8), give the age at which the Group 3 epiphyses fuse as 36-42 months; but Lesbre's data apply to the time at which the last trace of the fusion cartilage disappears, which is some time after the time at which the epiphysis no longer separates from the shaft (the usual zoo-archaeological definition of fusion, and the one used here for the distinction between unfused and fusing, on which these figures are based).
9. Baggio *et al.* (1985) have recently provided evidence that for much of antiquity a branch of the Diyala may have entered the Hamrin basin east of Qara Tepe, running parallel with the Narin Çay to rejoin the modern course of the Diyala where it cuts through the Jebel Hamrin; Young and Killick (this volume) have suggested that changes in the course of the Diyala may provide a further reason for changes in site distribution and abundance in the Hamrin Basin.
10. One drawback of the counting method used (see Table 18) is that very juvenile long-bones tend to be undercounted, as their midshafts are stronger than their ends and their epiphyses. For this reason separate note was made of very juvenile bones. There were 14, all of sheep/goat/gazelle; 3 (2 ulnae and an astragalus) had fusion surfaces, and so could be (and have been) included in the counts, while 11 (1 humerus, 2 radii, 1 metacarpal, 3 tibiae, 2 metatarsals and 2 metapodials) were reduced to non-countable midshafts.

Table 18

Tell Rubeidheh: summary of identified bones by archaeological context.

| Trench | Batch | *Equus* | *E*/LB | Large bovid | *Gazella* | *O/C/G* | *Ovis/ Capra* | Other |
|---|---|---|---|---|---|---|---|---|
| 2F22 | 301 | . | . | 3 | . | . | 7 | . |
| | 305 | + | 1 | . | . | . | 15 | . |
| 2F43 | 044 | 1 | . | 2 | . | . | 3 | . |
| | 048 | 3 | . | 1 | . | . | 13 | . |
| | 049 | [19](GRP 1) | . | . | . | . | 1 | . |
| | 050 | . | . | 2 | . | . | 10 | . |
| | 051 | . | . | . | . | . | 7 | . |
| | 052 | 1 | . | . | 1 | 4 | 34 | . |
| 2F44 | 501 | . | 1 | . | . | 10 | 37 | . |
| | 502 | 1 | . | . | . | . | 2 | . |
| | 506 | 4 | . | 2 | 2 | 5 | 38 | . |
| | 507 | 4 | . | 1 | 1 | . | 14 | . |
| | 509 | + | . | 1 | . | 1 | 9 | 1Ro |
| | 510 | 1 | 1 | . | 1 | . | 4 | . |
| | 511 | . | . | . | . | 1 | 8 | +Re |
| 2F45 | 038 | . | . | 1 | . | 2 | 6 | +Sh |
| | 040 | 4+[17](GRP 2) | 1 | 2 | . | 16 | 73 | 1C,?+V,+Re |
| | 041 | 13 | 1 | 6 | 5 | 34 | 143 | 1C,1Ro |
| 2F46/47 | 1101 | 2 | . | 3 | . | . | 15 | . |
| | 1102 | . | . | . | . | . | 1 | +Re |
| | 1106 | . | . | . | 1 | 4 | 7 | . |
| | 1107 | . | . | . | 4 | 4 | 5 | . |
| | 1110 | . | . | . | . | . | 2 | 1H |
| 2F54 | 1000 | . | . | . | . | 1 | 8 | 1C |
| | 1001 | . | . | . | . | . | 5 | . |
| | 1002 | . | . | . | . | . | . | . |
| | 1003 | . | . | 2 | 1 | . | . | . |
| | 1004 | . | . | . | . | . | . | . |
| | 1005 | . | . | . | . | . | 2 | . |
| | 1006 | . | . | . | . | . | 5 | . |
| | 1009 | . | . | . | . | 1 | 8 | . |
| 2F65/75 | 046 | 1 | . | 1 | . | . | + | . |
| | 302 | . | . | . | . | . | . | 1C,1Ro |
| | 304 | 3 | . | . | . | 1 | 8 | . |
| | 304+306 | 1 | . | . | . | . | . | . |
| | 306 | . | . | . | . | 4 | 7 | . |
| | 307 | 1 | . | . | . | 1 | 6 | . |
| | 308 | . | . | 1 | + | . | 10 | +H |
| | 311 | . | 1 | 1 | 1 | 2 | 25 | . |
| | 314 | . | . | . | . | . | . | . |
| | 315 | 2 | . | 1 | 1 | 1 | 3+1w | . |
| | 318 | . | . | . | . | 1 | 8 | . |
| Total | | 42+[36] | 6 | 30 | 18 | 93 | 550 | 4C,1H,+Re,3Ro, ?+V,+Sh |

Notes: Counts include all long-bone and other fragments of the appendicular skeleton with at least some part of an articular or fusion surface; teeth are only counted when more than half the tooth is present, and mandibles or maxillae when they include a countable tooth. Other skull, mandible and tooth fragments, vertebra, rib and other fragments of the axial skeleton, long-bone shaft fragments and other miscellaneous fragments were checked through rapidly in case any other species was represented, but have not been included in the counts. Equid bones found in groups (GRP) are listed in square brackets.

C = *Canis*, *E*/LB = *Equus*/Large bovid, H = *Hemiechinus*, *O/C/G* = *Ovis/Capra/Gazella*, *Re* = reptile, Ro = rodent, Sh = shell, V = *Vulpes*, w = worked bone, + = present but not countable (e.g. identified from tooth fragment).

Table 19
Tell Rubeidheh: summary of identified bones by taxon and part of skeleton.

| | | *Equus* | *E*/LB | Large bovid | *Gazella* | *O*/*C*/*G* | *Ovis*/ *Capra* | (*Ovis*) | (*Capra*) | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Maxilla | | . | . | . | . | 1 | 7 | . | . | . |
| Maxillary teeth: | Incisor | . | . | . | . | . | . | . | . | . |
| | Canine | . | . | . | . | . | . | . | . | . |
| | Milk molar | . | . | . | . | . | 3 | . | . | . |
| | Premolar | . | . | . | . | 2 | 17 | . | . | . |
| | Molar | . | . | 2 | 1 | . | 102 | . | . | . |
| | P/M | 4 | . | . | . | . | . | . | . | . |
| Mandible | | . | . | . | 1 | . | 59 | . | . | 1C,1H |
| Mandibular teeth: | Incisor | . | . | . | . | . | 14 | . | . | 1H |
| | Canine | . | . | . | . | . | . | . | . | 1C |
| | Milk molar | . | . | . | . | . | 18 | $2dP_4$ | $3dP_4$ | . |
| | Premolar | 1 | . | . | 2 | . | 80 | . | . | 4C,1H |
| | Molar | 2 | . | 2 | 4 | . | 189 | . | . | 2C,1H |
| | P/M | 1 | . | . | . | . | . | . | . | . |
| Scapula | | [1] | . | 3 | 2 | . | 14 | ?1 | . | 1C |
| Humerus proximal | | [1] | 2 | . | . | 6 | . | . | . | . |
| Humerus distal | | 2+[1] | . | 1 | . | 2 | 24 | 3+?3 | . | . |
| Radius proximal | | [2] | 1 | 1 | 2 | . | 17 | 2+?3 | . | . |
| Radius distal | | 2+[2] | . | . | 2 | 1 | 4 | . | . | . |
| Ulna proximal | | 1+[1] | . | 1 | . | 3 | 13 | . | . | . |
| Ulna distal | | 2+[2] | . | . | 1 | 1 | . | . | . | . |
| Carpals | | 1+[14] | . | . | . | . | 10 | . | . | . |
| Metacarpal proximal | | [2] | . | . | 1 | . | 7 | 1+?2 | . | . |
| Metacarpal distal | | [2] | . | . | . | . | 5 | 5 | . | . |
| Pelvis (acetabulum) | | 3 | . | 3 | .* | 43* | .* | . | . | 1C |
| Femur proximal | | . | . | . | 1 | 6 | 5 | . | . | 1R |
| Femur distal | | . | 2 | . | . | 14 | 9 | . | . | 2R |
| Patella | | . | . | . | . | . | 3 | . | . | . |
| Tibia proximal | | . | 1 | . | 1 | 3 | . | . | . | . |
| Tibia distal | | 3 | . | 1 | 1 | 1 | 18+1w | 9+?1 | . | 1R |
| Astragalus | | 4 | . | 2 | . | 1 | 8 | 5 | ?1 | . |
| Calcaneum | | 1 | . | 4 | 1 | 3 | 8 | 2 | . | . |
| Other tarsals (incl. lat. mall) | | 3 | . | 1 | 1 | . | 4 | . | . | . |
| Metatarsal proximal | | 1 | . | . | . | 8 | 5 | . | . | . |
| Metatarsal distal | | . | . | . | . | . | 4 | 2+?1 | ?1 | . |
| Metapodial proximal | | 1 | . | . | . | . | . | . | . | . |
| Metapodial distal | | 5 | . | 3 | . | . | 2 | . | . | . |
| Lateral metapodial proximal | | [4] | . | . | . | . | . | . | . | . |
| Proximal sesamoid | | [4] | . | . | . | . | 1 | . | . | . |
| Phalanx 1 proximal | | 3+[2] | . | 5 | 1 | . | 14 | . | . | . |
| Phalanx 1 distal | | 2+[1] | . | 4 | 1 | . | 15 | . | . | . |
| Phalanx 2 proximal | | 2+[2] | . | . | . | . | 8 | . | . | . |
| Phalanx 2 distal | | 2+[2] | . | 1 | . | . | 6 | . | . | . |
| Distal sesamoid | | [1] | . | . | . | . | . | . | . | . |
| Phalanx 3 | | 2+[2] | . | . | . | . | 6 | ?1 | . | . |
| Number of identified specimens | | 42+[36] | 6 | 30 | 18 | 93 | 550 | (31+?12) | (3+?2) | 4C,1H,3R |

Notes: For counting method see notes to Table 18. The number of identified specimens is generally lower than the total of all entries in the relevant column, a) because counts for teeth include both loose teeth and teeth in jaws, and b) because a complete bone may contribute to more than one count - a complete phalanx 1, for instance, would be included both in the count for phalanx 1 proximal and for phalanx 1 distal, and a complete synostosed radio-ulna would be included in the counts for proximal and distal radius and ulna. Equid bones found in groups are listed in square brackets; specimens listed under *Ovis* and *Capra* are also included in the total count for *Ovis/Capra*.

C = *Canis*, H = *Hemiechinus*, R = rodent, w = worked bone.

* Many of the *Ovis*, *Capra* and *Gazella* pelves are small fragments; as my field comparative collection did not include a *Gazella* pelvis, it seemed more sensible to treat all as *Ovis/Capra/Gazella*, though most are probably *Ovis/Capra* and only one was noted as probably *Gazella*.

Table 20

Tell Rubeidheh: *Equus* sp./spp., fusion and other data.

| | | Total | fused | unfused | butchery | burnt |
|---|---|---|---|---|---|---|
| Maxilla | | . | | | | |
| Maxillary teeth: | Incisor | . | | | | |
| | Canine | . | | | | |
| | Milk molar | . | | | | |
| | Premolar | . | | | | |
| | Molar | . | | | | |
| | P/M | 4 | . | . | . | . |
| Mandible | | . | | | | |
| Mandibular teeth: | Incisor | . | | | | |
| | Canine | . | | | | |
| | Milk molar | . | | | | |
| | Premolar | 1 | . | . | . | . |
| | Molar | 2 | . | . | . | . |
| | P/M | 1 | . | . | . | . |
| Scapula | | [1] | [1] | . | . | . |
| Humerus proximal | | [1] | [1] | . | . | . |
| Humerus distal | | 2+[1] | 2+[1] | . | ?1 | . |
| Radius proximal | | [2] | [2] | . | . | . |
| Radius distal | | 2+[2] | 2+[1] | [1s+e] | . | . |
| Ulna proximal | | 1+[1] | [1] | . | . | . |
| Ulna distal | | 2+[2] | 2+[2] | . | . | . |
| Carpals | | 1+[14] | . | . | . | . |
| Metacarpal proximal | | [2] | . | . | . | . |
| Metacarpal distal | | [2] | [2] | . | . | . |
| Pelvis (acetabulum) | | 3 | 2 | . | . | . |
| Femur proximal | | . | | | | |
| Femur distal | | . | | | | |
| Patella | | . | | | | |
| Tibia proximal | | . | | | | |
| Tibia distal | | 3 | 3 | . | . | . |
| Astragalus | | 4 | . | . | . | . |
| Calcaneum | | 1 | . | . | . | . |
| Other tarsals (incl. lat. mall.) | | 3 | . | . | . | 1 |
| Metatarsal proximal | | 1 | . | . | . | . |
| Metatarsal distal | | . | | | | |
| Metapodial proximal | | 1 | . | . | . | . |
| Metapodial distal | | 5 | 5 | . | . | . |
| Lateral metapodial proximal | | [4] | . | . | . | . |
| Proximal sesamoid | | [4] | . | . | . | . |
| Phalanx 1 proximal | | 3+[2] | 3+[2] | . | . | . |
| Phalanx 1 distal | | 2+[1] | . | . | . | . |
| Phalanx 2 proximal | | 2+[2] | 2+[2] | . | . | . |
| Phalanx 2 distal | | 2+[2] | . | . | . | . |
| Distal sesamoid | | [1] | . | . | . | . |
| Phalanx 3 | | 2+[2] | . | . | . | . |
| Number of specimens | | 42+[36] | | | ?1 | 1 |

Notes: Total counts as in Table 18. An articulation is taken as unfused when the epiphysis separates from the shaft without bone breakage; as fusing when bone joins the epiphysis to the shaft but while some part of the metaphysial line is still open; and as fused when the metaphysial line is no longer open (though it may still be marked by a difference in colour or texture). Bones found in groups (GRP) are listed in square brackets.

e = epiphysis, s = shaft.

Table 21
Tell Rubeidheh: Large bovid, fusion and other data.

| | | Total | fused | unfused | butchery | burnt |
|---|---|---|---|---|---|---|
| Maxilla | | . | | | | |
| Maxillary teeth: | Milk molar | | | | | |
| | Premolar | . | | | | |
| | Molar | 2 | . | . | . | . |
| Mandible | | . | | | | |
| Mandibular teeth: | Milk incisor | . | | | | |
| | Incisor | . | | | | |
| | Milk molar | . | | | | |
| | Premolar | . | | | | |
| | Molar | 2 | . | . | . | . |
| Scapula | | 3 | 1 | . | . | . |
| Humerus proximal | | . | | | | |
| Humerus distal | | 1 | 1 | . | . | . |
| Radius proximal | | 1 | 1 | . | . | . |
| Radius distal | | . | | | | |
| Ulna proximal | | 1 | . | . | . | . |
| Ulna distal | | . | | | | |
| Carpals | | . | | | | |
| Metacarpal proximal | | . | | | | |
| Metacarpal distal | | . | | | | |
| Pelvis (acetabulum) | | 3 | . | 1 | 1 | 1 |
| Femur proximal | | . | | | | |
| Femur distal | | . | | | | |
| Patella | | . | | | | |
| Tibia proximal | | . | | | | |
| Tibia distal | | 1 | 1 | . | . | . |
| Astragalus | | 2 | . | . | . | . |
| Calcaneum | | 4 | 1 | . | . | . |
| Other tarsals (incl. lat. mall.) | | 1 | . | . | . | . |
| Metatarsal proximal | | . | | | | |
| Metatarsal distal | | . | | | | |
| Metapodial proximal | | . | | | | |
| Metapodial distal | | 3 | . | 1e | . | . |
| Proximal sesamoid | | . | | | | |
| Phalanx 1 proximal | | 5 | 5 | . | . | . |
| Phalanx 1 distal | | 4 | . | . | . | . |
| Phalanx 2 proximal | | . | | | | |
| Phalanx 2 distal | | 1 | . | . | . | . |
| Distal sesamoid | | . | | | | |
| Phalanx 3 | | . | | | | |
| Number of specimens | | 30 | | | 1 | 1 |

Notes: See Table 20. e = epiphysis.

Table 22

Tell Rubeidheh: *Gazella subgutturosa*, fusion and other data.

| | | Total | fused | unfused | butchery |
|---|---|---|---|---|---|
| Maxilla | | . | | | |
| Maxillary teeth: | Milk molar | | | | |
| | Premolar | . | | | |
| | Molar | 1 | . | . | . |
| Mandible | | 1 | . | . | . |
| Mandibular teeth: | Milk incisor | . | | | |
| | Incisor | . | | | |
| | Milk molar | . | | | |
| | Premolar | 2 | . | . | . |
| | Molar | 4 | . | . | . |
| Scapula | | 2 | 2 | . | ?1 |
| Humerus proximal | | . | | | |
| Humerus distal | | . | | | |
| Radius proximal | | 2 | 2 | . | . |
| Radius distal | | 2 | 2 | . | . |
| Ulna proximal | | . | | | |
| Ulna distal | | 1 | 1 | . | . |
| Carpals | | . | | | |
| Metacarpal proximal | | 1 | . | . | . |
| Metacarpal distal | | . | | | |
| Pelvis (acetabulum) | | . | | | |
| Femur proximal | | 1 | 1 | . | . |
| Femur distal | | . | | | |
| Patella | | . | | | |
| Tibia proximal | | 1 | 1 | . | . |
| Tibia distal | | 1 | 1 | . | . |
| Astragalus | | . | | | |
| Calcaneum | | 1 | . | . | . |
| Other tarsals (incl. lat. mall) | | 1 | . | . | . |
| Metatarsal proximal | | . | | | |
| Metatarsal distal | | . | | | |
| Metapodial proximal | | . | | | |
| Metapodial distal | | . | | | |
| Proximal sesamoid | | . | | | . |
| Phalanx 1 proximal | | 1 | 1 | . | . |
| Phalanx 1 distal | | 1 | . | . | . |
| Phalanx 2 proximal | | . | | | |
| Phalanx 2 distal | | . | | | |
| Distal sesamoid | | . | | | |
| Phalanx 3 | | . | | | |
| Number of specimens | | 18 | | | ?1 |

Notes: See Table 20.

Table 23
Tell Rubeidheh: relative survival of different bones of sheep/goat/gazelle.

| | Total count, *Ovis/Capra/Gazella* | Total number in adult skeleton (n) | Relative frequency (count/n) | |
|---|---|---|---|---|
| Maxilla | 8 | 2 | 4.0 | **** |
| Maxillary teeth: | | | | |
| Milk molar and premolar | 22 | 6 | 3.7 | **** |
| Molar | 103 | 6 | 17.2 | ********** |
| Mandible | 60 | 2 | 30.0 | ********** |
| Mandibular teeth: | | | | |
| Incisor | 14 | 8 | 1.8 | ** |
| Milk molar and premolar | 100 | 6 | 16.7 | ********** |
| Molar | 193 | 6 | 32.2 | ********** |
| Scapula | 16 | 2 | 8.0 | ******** |
| Humerus proximal | 6 | 2 | 3.0 | *** |
| Humerus distal | 26 | 2 | 13.0 | ********** |
| Radius proximal | 19 | 2 | 9.5 | ********** |
| Radius distal | 7 | 2 | 3.5 | **** |
| Ulna proximal | 16 | 2 | 8.0 | ******** |
| Ulna distal | 2 | 2 | 1.0 | * |
| Carpals | 10 | 12 | 0.8 | * |
| Pelvis: pubis | 11 | 2 | 5.5 | ****** |
| ilium | 18 | 2 | 9.0 | ********* |
| ischium | 25 | 2 | 12.5 | ********** |
| Femur proximal | 12 | 2 | 6.0 | ****** |
| Femur distal | 23 | 2 | 11.5 | ********** |
| Patella | 3 | 2 | 1.5 | ** |
| Tibia proximal | 4 | 2 | 2.0 | ** |
| Tibia distal | 21 | 2 | 10.5 | ********** |
| Astragalus | 9 | 2 | 4.5 | ***** |
| Calcaneum | 12 | 2 | 6.0 | ****** |
| Other tarsals (incl. lat. mall.) | 5 | 8 | 0.6 | * |
| Metapodial proximal | 21 | 4 | 5.3 | ***** |
| Metapodial distal | 11 | 4 | 2.8 | *** |
| Proximal sesamoid | 1 | 16 | 0.1 | |
| Phalanx 1 proximal | 15 | 8 | 1.9 | ** |
| Phalanx 1 distal | 16 | 8 | 2.0 | ** |
| Phalanx 2 proximal | 8 | 8 | 1.0 | * |
| Phalanx 2 distal | 6 | 8 | 0.8 | * |
| Distal sesamoid | . | 8 | 0.0 | |
| Phalanx 3 | 6 | 8 | 0.8 | * |

Notes: Data taken from Table 19. See text (p. 105) for comments.

Table 24
Tell Rubeidheh: *Ovis/Capra*, fusion and other data.

| | | Total | fused | fusing | unfused | butchery | burnt | corroded | gnawed |
|---|---|---|---|---|---|---|---|---|---|
| Maxilla | | 7 | . | . | . | . | . | . | . |
| Maxillary teeth: | Milk molar | 3 | . | . | . | . | . | . | . |
| | Premolar | 17 | . | . | . | . | . | . | . |
| | Molar | 102 | . | . | . | . | . | . | . |
| Mandible | | 59 | . | . | . | . | . | . | . |
| Mandibular teeth: | Milk incisor | . | | | | | | | |
| | Incisor | 14 | . | . | . | . | . | . | . |
| | Milk molar | 18 | . | . | . | . | . | . | . |
| | Premolar | 80 | . | . | . | . | . | . | . |
| | Molar | 189 | . | . | . | . | . | . | . |
| Scapula | | 14 | 5 | . | . | 2+?1 | . | . | 1D+?1D |
| Humerus proximal | | . | | | | | | | |
| Humerus distal | | 24 | 18 | 4 | 2s | 2+?1 | . | . | ?1D |
| Radius proximal | | 17 | 16 | 1 | . | 1 | 1 | . | . |
| Radius distal | | 4 | 3 | . | 1s | . | . | . | . |
| Ulna proximal | | 13 | . | . | 1s+e,2s | . | 1 | . | . |
| Ulna distal | | . | | | | | | | |
| Carpals | | 10 | . | . | . | . | . | 1+?3 | . |
| Metacarpal proximal | | 7 | . | . | . | . | . | . | . |
| Metacarpal distal | | 5 | 5 | . | . | ?1 | 1 | . | . |
| Pelvis (acetabulum) | | . | | | | | | | |
| Femur proximal | | 5 | 1 | 1 | 3e | . | . | ?1 | 1D |
| Femur distal | | 9 | 3 | 1 | 1s+e,1s,3e | 2 | . | . | . |
| Patella | | 3 | . | . | . | . | . | ?1 | . |
| Tibia proximal | | . | | | | | | | |
| Tibia distal | | 18+1w | 16 | . | 2s,1sw | 1+?2 | . | . | . |
| Astragalus | | 8 | . | . | . | . | . | 1 | . |
| Calcaneum | | 8 | . | . | 1s+e,2s | . | 1 | . | 1R |
| Other tarsals (incl. lat. mall) | | 4 | . | . | . | . | . | 1 | . |
| Metatarsal proximal | | 5 | . | . | . | . | . | . | . |
| Metatarsal distal | | 4 | 1 | . | 1s,2e | 1 | 1 | . | . |
| Metapodial proximal | | . | | | | | | | |
| Metapodial distal | | 2 | . | . | 2e | . | . | . | . |
| Proximal sesamoid | | 1 | . | . | . | . | . | . | . |
| Phalanx 1 proximal | | 14 | 12 | 1 | 1s+e | . | . | ?1 | . |
| Phalanx 1 distal | | 15 | . | . | . | . | . | ?1 | . |
| Phalanx 2 proximal | | 8 | 7 | 1 | . | . | . | ?2 | . |
| Phalanx 2 distal | | 6 | . | . | . | . | . | ?2 | . |
| Distal sesamoid | | . | . | . | . | . | . | . | . |
| Phalanx 3 | | 6 | . | . | . | . | . | . | . |
| Number of specimens | | 550 | | | | 9+?5 | 5 | 3+?9 | 2D+?2D,1R |

Notes: See Table 20. D = gnawed by dog, e = epiphysis, R = gnawed by rodent, s = shaft, w = worked.

Table 25
Tell Rubeidheh: *Ovis/Capra/Gazella*, fusion and other data.

| | | Total | fused | fusing | unfused | butchery | burnt | corroded |
|---|---|---|---|---|---|---|---|---|
| Maxilla | | 1 | . | . | . | . | . | . |
| Maxillary teeth: | Milk molar | . | | | | | | |
| | Premolar | 2 | . | . | . | . | . | . |
| | Molar | . | | | | | | |
| Mandible | | . | | | | | | |
| Mandibular teeth: | Milk incisor | . | | | | | | |
| | Incisor | . | | | | | | |
| | Milk molar | . | | | | | | |
| | Premolar | . | | | | | | |
| | Molar | . | | | | | | |
| Scapula | | . | | | | | | |
| Humerus proximal | | 6 | . | 1 | 5e | . | . | . |
| Humerus distal | | 2 | 1 | . | . | . | . | . |
| Radius proximal | | . | | | | | | |
| Radius distal | | 1 | 1 | . | . | . | . | . |
| Ulna proximal | | 3 | | | | | | |
| Ulna distal | | 1 | | | | | | |
| Carpals | | . | | | | | | |
| Metacarpal proximal | | . | | | | | | |
| Metacarpal distal | | . | | | | | | |
| Pelvis (acetabulum) | | 43 | 11 | . | . | 3+?1 | 1 | 1 |
| Femur proximal | | 6 | 4 | . | 2s | . | . | . |
| Femur distal | | 14 | 3 | 2 | 3e | . | . | . |
| Patella | | . | | | | | | |
| Tibia proximal | | 3 | 2 | 1 | . | . | 1 | . |
| Tibia distal | | 1 | 1 | . | . | . | . | . |
| Astragalus | | 1 | . | . | . | . | 1 | . |
| Calcaneum | | 3 | 2 | . | . | . | . | ?1 |
| Other tarsals (incl. lat. mall) | | . | | | | | | |
| Metatarsal proximal | | 8 | . | . | . | . | . | . |
| Metatarsal distal | | . | | | | | | |
| Metapodial proximal | | . | | | | | | |
| Metapodial distal | | . | | | | | | |
| Proximal sesamoid | | . | | | | | | |
| Phalanx 1 proximal | | . | | | | | | |
| Phalanx 1 distal | | . | | | | | | |
| Phalanx 2 proximal | | . | | | | | | |
| Phalanx 2 distal | | . | | | | | | |
| Distal sesamoid | | . | | | | | | |
| Phalanx 3 | | . | | | | | | |
| Number of specimens | | 93 | | | | 3+?1 | 3 | 1+?1 |

Notes: See Table 20. e = epiphysis, s = shaft.

## Table 26
## Tell Rubeidheh: *Ovis/Capra* mandibular teeth, counts and wear data.

a: Counts of teeth, and teeth in association.

| | Total | Loose | In mandible | In mandible with $dP_4/P_4$ | In mandible with $M_1$ | In mandible with $M_2$ | In mandible with $M_3$ |
|---|---|---|---|---|---|---|---|
| Incisors | 14 | 10 | 4 | 0 | 0 | 0 | 0 |
| $dP_2$ | 5 | 2 | 3 | 2 | 1 | 1 | 0 |
| $dP_3$ | 6 | 2 | 4 | 2 | 1 | 1 | 0 |
| $dP_4$ | 7 | 4 | 3 | – | 2 | 1 | 0 |
| $P_2$ | 15 | 5 | 10 | 7 | 5 | 2 | 0 |
| $P_3$ | 27 | 10 | 17 | 14 | 8 | 2 | 0 |
| $P_4$ | 38 | 17 | 21 | – | 14 | 5 | 1 |
| $M_1$ | 27 | – | 27 | 15 | – | 16 | 5 |
| $M_2$ | 21 | – | 21 | 5 | 16 | – | 7 |
| $M_3$ | 50 | 37 | 13 | 1 | 5 | 7 | – |
| $M_{1/2}$ | 84 | 79 | 5 | – | – | – | – |
| $M_{1/2/3}$ | 7 | 7 | 0 | – | – | – | – |

Note: See Table 27 for details of $dP_4$, $P_4$, $M_1$, $M_2$ and $M_3$ together in mandibles.

b: $dP_4$ wear data.

| | *Ovis* | *Capra* | *Ovis/Capra* | Total |
|---|---|---|---|---|
| Wear state | | | | |
| 14L | 1 | . | . | 1 |
| 17M | . | 1 | . | 1 |
| 18L | 1 | 1 | . | 2 |
| 21M | . | 1 | . | 1 |
| 23L | . | . | 1 | 1 |
| unclassified (damaged) | . | . | 1 | 1 |
| Total | 2 | 3 | 2 | 7 |

c: $P_4$ wear data.

| | Total |
|---|---|
| Wear state | |
| 0 (incl. unerupted) | 5 |
| 5T | 1 |
| 5V | 1 |
| 7S | 1 |
| 8A | 2 |
| 8B | 3 |
| 9A | 8 |
| 12S | 9 |
| 15A | 4 |
| unclassified (damaged) | 4 (all in wear) |
| Total | 38 |

d: $M_{1/2}$ wear data.

| | $M_1$ | $M_2$ | $M_{1/2}$ | Total |
|---|---|---|---|---|
| Wear state | | | | |
| 0 | . | . | 2 | 2 |
| 2A | . | 1 | 1 | 2 |
| 4A | . | 1 | 1 | 2 |
| 5A | . | . | 2 | 2 |
| 7A | . | 1 | 6 | 7 |
| 8A | . | 1 | 2 | 3 |
| 9A | 9 | 14 | 47 | 70 |
| 10A | 3 | . | 3 | 6 |
| 11A | 1 | . | . | 1 |
| 11B | . | . | 1 | 1 |
| 12A | 3 | . | 5 | 8 |
| 14A | . | . | 1 | 1 |
| 15A | 6 | 1 | 5 | 12 |
| unclassified (damaged) | 5 | 2 | 8 | 15 |
| Total | 27 | 21 | 84 | 132 |

e: $M_3$ wear data.

| By individual wear state | | By wear state range (allows more damaged teeth to be included) | | |
|---|---|---|---|---|
| Wear state | Total | Wear state range | Total | approx. age |
| 0 | 1 | 0–1A | 2 | second year |
| 2A | 2 | 2A–4A | 3 | third year |
| 4A | 1 | | | |
| 7G | 1 | 5–10 | 18 | fourth – fifth years |
| 7Z | 1 | | | |
| 8G | 1 | | | |
| 9G | 5 | | | |
| 10G | 3 | | | |
| 10H | 3 | | | |
| 11G | 21 | 11G | 21 | sixth – tenth years |
| | | after 11G | 1 | > ten years |
| unclassified (damaged) | 11 | unclassified (damaged) | 5 | |
| Total | 50 | Total | 50 | |

Notes: For details of wear stage symbols and codes see Payne (1973, 1987). The distinction between *Ovis* and *Capra* $dP_4$s is based on the criteria described in Payne (1985).

Table 27

Tell Rubeidheh: Wear states of *Ovis/Capra* posterior lower cheek-teeth ($dP_4$, $P_4$, $M_1$, $M_2$ and $M_3$) found together in mandibles.

| Find No. | Batch | $dP_4$ | $P_4$ | $M_1$ | $M_2$ | $M_3$ |
|---|---|---|---|---|---|---|
| 2F23:4 | 301 | . | . | 15A | br | . |
| 2F43:15 | 052 | . | 7S | 9A | . | . |
| 2F43:15 | 052 | . | 12S | 12A | 9A | . |
| 2F43:15 | 052 | 23L | 0 (V) | 9A | 8A | . |
| 2F43:15 | 052 | . | . | 15A | 9A | . |
| 2F44:8 | 501 | . | 5T | 9A | . | . |
| 2F44:8 | 501 | . | . | 9A | 2A | . |
| 2F44:17 | 507 | . | 12S | 15A | 9A | 11G |
| 2F44:17 | 507 | . | 12S | 12A | . | . |
| 2F44:18 | 506 | . | 9A | 9A | 8A/9A | . |
| 2F45:45 | 040 | . | 12S | 15A | 9A | . |
| 2F45:45 | 040 | . | . | br | 7A | 0/1A |
| 2F45:47 | 040 | . | 12S | 15A | . | . |
| 2F45:47 | 040 | . | . | 10A | 9A | 10G |
| 2F45:54 | 041 | . | 8A | 9A | . | . |
| 2F45:54 | 041 | . | . | 9A | 9A | . |
| 2F45:54 | 041 | . | . | br | 4A | . |
| 2F45:54 | 041 | . | 9A | 9A | . | . |
| 2F45:54 | 041 | 18L | . | 9A | . | . |
| 2F45:54 | 041 | . | . | . | 9A | 11G |
| 2F45:54 | 041 | . | . | 15A | 9A | . |
| 2F45:56 | 041 | . | . | . | 9A | 8G/11G |
| 2F45:59 | 041 | . | . | 12A | 9A | 8G/9G |
| 2F45:68 | 038 | . | . | 10A/11A | 9A | . |
| 2F54:16 | 1009 | . | 8B | 10A | . | . |
| 2F54:16 | 1009 | . | 15A | 15A | . | . |
| 2F65/75:23 | 308 | . | 12S/15A | 15A | . | . |
| 2F65/75:33 | 318 | . | . | 11A | 9A | 7Z |

Note: This table lists all mandibles with two or more countable posterior lower cheek-teeth. For details of the codes used see Payne, 1987.

## Table 28
## Tell Rubeidheh: summary of identified bones from sieved samples.

| Bag number | Context (Batch) | *Equus* | E/LB | Large bovid | *Gazella* | O/C/G | *Ovis/ Capra* | Other |
|---|---|---|---|---|---|---|---|---|
| 2F45:45 | 040 unsieved | 4+[17] | 1 | 2 | . | 5 | 39 | ?+V |
| | | 9%[32%] | | 5%[3%] | | | 88%[65%] | |
| :47 | 040 sieved (part) | . | . | . | . | 11 | 34 | 1C,+Re |
| Assuming sieved part was 20% of context, total would be: | | 4+[17] | 1 | 2 | . | 60 | 209 | 5C |
| | | 1%[6%] | | 1%[1%] | | | 96%[92%] | 1%[1%] |

| Bag number | Context (Batch) | *Equus* | E/LB | Large bovid | *Gazella* | O/C/G | *Ovis/ Capra* | Other |
|---|---|---|---|---|---|---|---|---|
| 2F45:54,63 | 041 unsieved | 11 | 1 | 3 | 2 | 17 | 88 | 1Ro |
| | | 10% | | 3% | 2% | | 85% | |
| 56,59 | 041 sieved (part) | 2 | . | 3 | 3 | 17 | 55 | 1C |
| Assuming sieved part was 20% of context, total would be: | | 21 | 1 | 18 | 17 | 102 | 363 | 5C,1Ro |
| | | 4% | | 3% | 4% | | 87% | 1% |

Notes: Counts for equid bones from groups (GRP) are given in square brackets. As excavation records estimate that 20% of the earth from each of these two contexts was sieved, the numbers of bones from the sieved part have been multiplied by 5 and added to the numbers of bones recovered during normal excavation from the whole context in order to arrive at an estimate of what would have been produced had the whole context been sieved. Percentages have been calculated including bones identified to categories such as *Equus*/large bovid and *Ovis/Capra/Gazella* distributed *pro rata* (see p. 110), and excluding equid bones found in groups; the percentages given in square brackets include equid bones found in groups.

## Table 29
## Tell Rubeidheh: measurements of animal bones.

Notes: Unless otherwise specified, measurements and their abbreviations follow von den Driesch (1976). For equid postcranial measurements, equivalents as defined by Eisenmann (1986) are also given (Eis.).

Scapula: BGP is the breadth of the glenoid taken at right angles to GLP (Fig. 49a); BG is taken as the minimum breadth of the glenoid (Fig. 49b).

Humerus: HTC is the minimum diameter of the distal trochlea at its central constriction (Payne, 1983: 44, = Duerst, 1926: Measurement 21); HT is the height of the medial part of the trochlea (Fig. 49c).

Radius: BpP is the breadth of the proximal end taken at right angles to the sagittal ridge and groove; BFpP is the breadth of the proximal articular surface taken in the same orientation (Fig. 49d).

Tibia: BdP is the breadth of the distal end taken at right angles to the articular grooves (Fig. 49e).

Metapodia: BFd is the distal articular breadth, i.e. taken across the condyles, not across the fusion plane (= Duerst, 1926: Measurement 15); for Wcond (= Duerst, 1926: Measurement 16) and Wtroch (= Duerst, 1926: Measurements 24/25) see Payne (1969).

Phalanx 1: BpP is the breadth of the proximal end taken at right angles to the articular groove (Fig. 49f).

A measurement is given in parentheses when approximate but within +2%; + is added when the specimen is slightly chipped or abraded, but the loss is less than 2%; and - when the measurement is slightly too large but again within 2% (e.g. when the bone has split and warped). If a specimen appeared to have been burnt, this would be noted. Fusion data are given when appropriate: p = proximal, d = distal, u = unfused, f = fused, fing = fusing (see Table 20, notes).

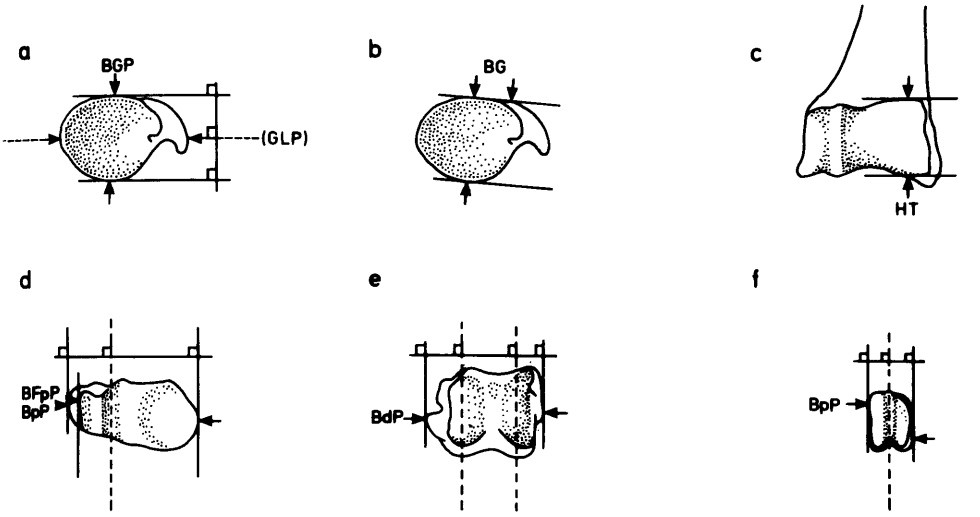



Figure 49
Definitions of measurements. Axes which are used to determine the orientation of a measurement are shown with dashed lines. a: scapula: BGP is the breadth of the glenoid taken at right angles to GLP; b: scapula: BG is the minimum breadth of the glenoid (often with two contacts on one side as shown); c: humerus: HT is the height of the medial part of the trochlea; d: radius: BpP is the breadth of the proximal end taken at right angles to the sagittal ridge and groove, and BFpP is the breadth of the proximal articular surface taken in the same axis; e: tibia: BdP is the breadth of the distal end taken at right angles to the articular grooves; f: phalanx 1: BpP is the breadth of the proximal end taken at right angles to the articular groove.

*Equus* sp./spp. (see text)

$P^{3/4}/M^{1/2}$

| | |
|---|---|
| Find number | 2F44:18 |
| Batch | 506 |
| OL (Payne, in press) | (22.3) |
| Be (Payne, in press) | (24.6) |
| LP (Eisenmann, 1980) | 12.1– |

$P_2$

| | |
|---|---|
| Find number | 2F45:56 |
| Batch | 041 |
| Lnd (Payne, in press) | 13.0 |
| LF (Eisenmann, 1981) | 12.7 |

$P_{3/4}/M_{1/2}$

| | |
|---|---|
| Find number | 2F65/75:20+21 |
| Batch | 306+304 |
| Lnd | 15.4 |
| LF | 11.2 |

**$M_3$**

| | | |
|---|---|---|
| Find number | 2F44:18 | 2F45:63 |
| Batch | 506 | 041 |
| Lnd | 10.8 | – |
| LF | 10.8 | 8.6 |

**Scapula**

| | |
|---|---|
| Find number | 2F43:9 |
| Batch | 049 |
| SLC (= Eis. 2) | 48.2 |
| GLP (= Eis. 3) | 75.3 |
| LG (= Eis. 4) | 47.0 |
| Fusion | f |
| Comment | GRP 1<br>?*E. asinus* |

**Humerus**

| | | | |
|---|---|---|---|
| Find number | 2F43:9 | 2F44:18 | 2F45:54 |
| Batch | 049 | 506 | 041 |
| SD (= Eis. 3) | 27.6 | – | (27.2) |
| BT (= Eis. 6) | (60.4) | – | – |
| HTC (see notes, = Eis. 8) | – | (32.8) | (31.4) |
| Fusion | pf,df | p?,df | p?,df |
| Comment | GRP 1<br>*E. asinus* | | |

**Radius**

| | | | | | |
|---|---|---|---|---|---|
| Find number | 2F43:9 | 2F45:45 | 2F45:45 | 2F45:54 | 2F45:63 |
| Batch | 049 | 040 | 040 | 041 | 041 |
| GL (= Eis. 1) | (287.0) | – | – | – | – |
| Ll (= Eis. 2) | (274.0) | – | – | – | – |
| SD (= Eis. 3) | (33.5) | – | – | – | – |
| Bp (= Eis. 4) | 67.1 | (70.0) | – | – | – |
| BFp (= Eis. 5) | 60.7 | – | – | – | – |
| Bd (= Eis. 7) | 63.1 | – | (63.5) | – | 60.9 |
| BFd (= Eis. 8) | 49.4 | – | (51.5) | (52.5) | 48.7 |
| Fusion | pf,df | pf,d? | p?,du | p?,df | p?,df |
| Comment | GRP 1<br>*E. asinus* | GRP 2<br>*E. asinus* | GRP 2<br>*E. asinus* | | |

**Ulna**

| | |
|---|---|
| Find number | 2F43:9 |
| Batch | 049 |
| LO | 67.7+ |
| SDO | 40.0 |
| DPA | 53.3 |
| Fusion | pf,df |
| Comment | GRP 1<br>*E. asinus* |

**Metacarpal**

| | | |
|---|---|---|
| Find number | 2F43:9 | 2F45:45 |
| Batch | 049 | 040 |
| GL (= Eis. 1) | (185.0) | (202.0) |
| Ll (= Eis. 2) | (179.0) | (197.0) |
| SD | 27.0 | (26.9) |
| Bp (= Eis. 5) | 41.2 | (45.0) |
| BFd (= Eis. 11) | 38.3 | 37.8 |
| Dd (= Eis. 12) | 27.5 | – |
| Fusion | df | df |
| Comment | GRP 1<br>*E. asinus* | GRP 2<br>*E. asinus* |

**Astragalus**

| | | |
|---|---|---|
| Find number | 2F43:6 | 2F45:63 |
| Batch | 048 | 041 |
| LmT (= Eis. 2) | 52.3 | 47.9 |
| LlT (Payne, in press) | – | 45.0 |
| BFd (= Eis. 5) | – | 40.4 |
| GH | – | 46.9 |

**Metapodial**

| Find number | 2F45:54 | 2F45:63 | 2F46/47:1 | 2F65/75:30 |
|---|---|---|---|---|
| Batch | 041 | 041 | 1101 | 315 |
| BFd (= Eis. 11) | 40.1 | 38.1 | – | – |
| Dd (= Eis. 12) | 31.5+ | – | (30.1) | 30.3+ |
| Fusion | df | df | df | df |

**Phalanx 1**

| Find number | 2F43:9 | 2F44:12 | 2F45:45 |
|---|---|---|---|
| Batch | 049 | 502 | 040 |
| GLcal (Payne, in press) | 72.8 | – | 76.5 |
| SD (= Eis. 3) | 26.0 | 28.7– | 25.6 |
| Bp (≙ Eis. 4) | 40.1 | – | 41.8 |
| BFp | 38.5 | – | (38.5) |
| Bd (= Eis. 6) | 36.1 | 38.7 | 36.3 |
| BFd (= Eis. 14) | 35.2 | 37.0 | 34.1 |
| Fusion | pf | pf | pf |
| Comment | GRP 1 fore *E. asinus* | | |

**Phalanx 2**

| Find number | 2F43:9 | 2F44:24 | 2F45:45 | 2F65/75:25 |
|---|---|---|---|---|
| Batch | 049 | 510 | 040 | 304 |
| GLcal (Payne, in press) | 38.9 | 38.1 | 38.4+ | 40.5+ |
| SD (= Eis. 3) | 35.3 | – | 31.4 | 36.7 |
| Bp (= Eis. 4) | 41.2 | 37.3 | 37.8+ | (40.9) |
| BFp | 37.1 | (33.0) | – | (37.5) |
| Bd (= Eis. 6) | 37.3 | – | – | 39.0+ |
| BFd (as Phal. 1) | 36.9 | – | – | 38.9+ |
| Fusion | pf | pf | pf | pf |
| Comment | GRP 1 fore *E. asinus* | | GRP 2 *E. asinus* | |

**Phalanx 3**

| Find number | 2F65/75:25 |
|---|---|
| Batch | 304 |
| GL (= Eis. 2) | (51.0) |
| GB (= Eis. 4) | (56.9) |
| Ld (= Eis. 1) | 44.7 |
| BF (= Eis. 6) | (38.8) |

**Large bovid**

**Scapula**

| Find number | 2F44:18 |
|---|---|
| Batch | 506 |
| GLP | 74.5 |
| BG | (49.2) |
| Fusion | f |

**Astragalus**

| Find number | 2F45:54 |
|---|---|
| Batch | 041 |
| GLl | 70.8 |
| GLm | 66.5+ |

**Metapodial**

| Find number | 2F46/47:1 | 2F46/47:1 |
|---|---|---|
| Batch | 1101 | 1101 |
| Wcond (see notes) | 29.7+ | 29.4+ |
| Fusion | d? | d? |

**Phalanx 1**

| Find number | 2F22:4 | 2F45:56 | 2F45:56 | 2F65/75:30 |
|---|---|---|---|---|
| Batch | 301 | 041 | 041 | 315 |
| GLpe | – | 66.6 | (61.0) | – |
| BpP (see notes) | – | 31.8 | 30.4 | (32.5) |
| SD | 25.0 | 27.2 | 25.1 | – |
| Fusion | pf | pf | pf | pf |

***Gazella subgutturosa***

**Horncore**

| Find number | 2F45:54 | 2F46/47:3 |
|---|---|---|
| Batch | 041 | 1106 |
| Max. basal diameter | (30.0) | (33.0) |
| Min. basal diameter | (21.8) | (22.1) |
| Sex | pres. m | pres. m |

**Scapula**

| Find number | 2F45:56 | 2F54:10 |
|---|---|---|
| Batch | 041 | 1003 |
| GLP | 28.4 | 30.3 |
| BGP (see notes) | 19.8 | * |
| BG (see notes) | 19.6 | * |
| SLC | 14.7 | 15.3 |
| Fusion | f | f |
| Comment | – | * exostosis |

**Radius**

| Find number | 2F46/47:3 | 2F46/47:4 |
|---|---|---|
| Batch | 1106 | 1107 |
| BpP (see notes) | 24.8 | – |
| BFpP (see notes) | 22.8 | – |
| Bd | – | (22.1) |
| Fusion | pf,d? | p?,df |

**Tibia**

| Find number | 2F45:63 |
|---|---|
| Batch | 041 |
| BdP (see notes) | 21.8 |
| Fusion | p?,df |

***Ovis/Capra***

**Scapula**

| Find number | 2F45:45 | 2F45:45 | 2F45:45 | 2F45:54 |
|---|---|---|---|---|
| Batch | 040 | 040 | 040 | 041 |
| GLP | 42.2 | 33.1+ | – | – |
| BGP (see notes) | 27.3 | – | – | – |
| SLC | 23.6 | 17.4 | 19.7 | 20.8 |
| Fusion | f | f | ? | ? |
| Identification | – | – | ?*Ovis* | – |

| Find number | 2F45:59 | 2F54:16 |
|---|---|---|
| Batch | 041 | 1009 |
| GLP | 35.2 | – |
| BGP | – | – |
| SLC | 20.1 | 19.7 |
| Fusion | f | ? |
| Identification | – | – |

**Humerus**

| Find number | 2F44:8 | 2F44:8 | 2F44:22 | 2F45:47 |
|---|---|---|---|---|
| Batch | 501 | 501 | 511 | 040 |
| BT | – | – | – | – |
| HTC (see notes) | 16.1 | – | 17.8 | 15.8 |
| HT (see notes) | – | 21.2 | – | – |
| Fusion | p?,df | p?,df | p?,df | p?,df |
| Identification | – | – | – | – |

| Find number | 2F45:54 | 2F45:54 | 2F45:54 | 2F45:54 |
|---|---|---|---|---|
| Batch | 041 | 041 | 041 | 041 |
| BT | 30.5 | 29.5+ | (34.6) | 33.3 |
| HTC | 14.8 | 15.4 | 17.7 | 16.3 |
| HT | 20.6 | 19.6 | 23.8 | (20.7) |
| Fusion | p?,df | p?,df | p?,df | p?,dfing |
| Identification | *Ovis* | *Ovis* | *?Ovis* | *?Ovis* |

| Find number | 2F45:54 | 2F45:54 | 2F45:54 | 2F45:56 |
|---|---|---|---|---|
| Batch | 041 | 041 | 041 | 041 |
| BT | 34.9 | – | – | (33.2) |
| HTC | 18.2 | 15.5 | 16.9 | 15.4+ |
| HT | – | – | – | – |
| Fusion | p?,dfing | p?,df | p?,dfing | p?,df |
| Identification | – | – | – | – |

| Find number | 2F46/47:1 | 2F65/75:23 | 2F65/75:27 | 2F65/75:27 |
|---|---|---|---|---|
| Batch | 1101 | 308 | 311 | 311 |
| BT | – | – | 29.5 | 30.7+ |
| HTC | 16.0 | – | 15.3 | 15.8 |
| HT | 21.2 | 19.5 | (19.8) | 19.4+ |
| Fusion | p?,df | p?,df | p?,df | p?,dfing |
| Identification | – | – | *Ovis* | – |

**Radius**

| Find number | 2F43:6 | 2F44:18 | 2F44:26 |
|---|---|---|---|
| Batch | 048 | 506 | 509 |
| BpP (see notes) | – | 32.4 | – |
| BFpP (see notes) | – | 29.4 | 26.4+ |
| Bd | 32.9 | – | – |
| Fusion | p?,df | pf,d? | pfing,d? |
| Identification | – | *Ovis* | – |

| Find number | 2F45:54 | 2F65/75:21 |
|---|---|---|
| Batch | 041 | 304 |
| BpP | 35.8+ | 32.2+ |
| BFpP | 32.6+ | 29.7+ |
| Bd | – | – |
| Fusion | pf,d? | pf,d? |
| Identification | *?Ovis* | *Ovis* |

**Ulna**

| Find number | 2F22:19 | 2F44:18 | 2F45:54 | 2F45:54 |
|---|---|---|---|---|
| Batch | 305 | 506 | 041 | 041 |
| SDO | – | 21.8 | 24.9 | 22.8 |
| DPA | 24.8+ | 26.1 | 29.0+ | 26.9 |
| Fusion | p?,d? | p?,d? | pu,d? | p?,d? |
| Identification | – | – | – | – |

| Find number | 2F45:56 | 2F46/47:1 |
|---|---|---|
| Batch | 041 | 1101 |
| SDO | – | 22.0 |
| DPA | (28.8) | 25.3+ |
| Fusion | p?,d? | p?,d? |
| Identification | – | – |

**Metacarpal**

| Find number | 2F43:2 | 2F43:6 | 2F44:18 | 2F44:18 |
|---|---|---|---|---|
| Batch | 044 | 048 | 506 | 506 |
| Bp | 26.2 | – | 26.7 | – |
| SD | 15.6 | – | – | – |
| Wcond (see notes) | – | (13.2) | – | 11.2 |
| Wtroch (see notes) | – | (14.1) | – | 12.0 |
| Fusion | d? | df | d? | df |
| Identification | *Ovis* | *Ovis* | *?Ovis* | *Ovis* |

| | | | | |
|---|---|---|---|---|
| Find number | 2F45:45 | 2F45:47 | 2F45:47 | 2F45:47 |
| Batch | 040 | 040 | 040 | 040 |
| Bp | (25.7) | – | – | – |
| SD | – | – | – | – |
| Wcond | – | 11.4+ | 11.5 | 12.6 |
| Wtroch | – | 11.0 | (12.3) | 13.1 |
| Fusion | d? | df | df | df |
| Identification | *?Ovis* | *Ovis* | *Ovis* | *Ovis* |

**Femur**

| | | | |
|---|---|---|---|
| Find number | 2F45:47 | 2F45:68 | 2F45:68 |
| Batch | 040 | 038 | 038 |
| DC | 24.0 | 22.9 | 21.8 |
| Fusion | pu,d? | pfing,d? | pu,d? |
| Identification | – | – | – |

**Tibia**

| | | | | |
|---|---|---|---|---|
| Find Number | 2F44:8 | 2F44:18 | 2F45:45 | 2F45:45 |
| Batch | 501 | 506 | 040 | 040 |
| BdP (see notes) | 27.1+ | 27.1+ | 29.4 | 28.8+ |
| Fusion | p?,df | p?,df | p?,df | p?,df |
| Identification | *Ovis* | – | *Ovis* | *?Ovis* |

| | | | | |
|---|---|---|---|---|
| Find number | 2F45:45 | 2F45:54 | 2F45:56 | 2F45:59 |
| Batch | 040 | 041 | 041 | 041 |
| BdP | 30.0– | 29.2 | (32.9) | 34.6 |
| Fusion | p?,df | p?,df | p?,df | p?,df |
| Identification | *Ovis* | *Ovis* | *Ovis* | *Ovis* |

| | | |
|---|---|---|
| Find number | 2F65/75:20 | 2F65/75:33 |
| Batch | 306 | 318 |
| BdP | 27.4 | 30.5 |
| Fusion | p?,df | p?,df |
| Identification | *Ovis* | *Ovis* |

**Astragalus**

| | | | | |
|---|---|---|---|---|
| Find number | 2F43:15 | 2F46/47:4 | 2F54:1 | 2F65/75:21 |
| Batch | 052 | 1107 | 1000 | 304 |
| GLl | 28.4 | 33.8 | – | 30.8 |
| GLm | 26.9 | 32.6 | – | 29.2+ |
| Bd | 18.3 | 21.3 | 21.6+ | 19.6 |
| Dl | 14.5 | 18.4 | – | 16.4 |
| Identification | *?Capra* | *Ovis* | *Ovis* | *Ovis* |

| | | |
|---|---|---|
| Find number | 2F65/75:24 | 2F65/75:33 |
| Batch | 307 | 318 |
| GLl | 32.7 | – |
| GLm | 31.2 | 31.4 |
| Bd | 21.0 | 19.9 |
| Dl | 18.4 | 17.9 |
| Identification | *Ovis* | *Ovis* |

**Metatarsal**

| | | |
|---|---|---|
| Find number | 2F44:12 | 2F44:24 |
| Batch | 502 | 510 |
| SD | 12.3 | – |
| BFd (see notes) | 25.1+ | (27.8) |
| Dd | 16.8+ | – |
| Fusion | df | du |
| Identification | *Ovis* | *Ovis* |

*Canis*

**Mandible**

| | |
|---|---|
| Find number | 2F65/75:17 |
| Batch | 302 |
| $P_1$ L | 4.6 |
| B | 3.4 |
| $P_2$ L | 8.3 |
| B | 4.7 |
| $P_3$ L | 10.2 |
| B | 5.3 |
| $P_4$ L | 11.9 |
| B | 6.7 |
| $P_1$–$P_4$ alv. length | (34.6) |
| $M_1$ L | 23.3 |
| B | 9.1 |
| $M_2$ L | 9.6 |
| B | (8.0) |

**Scapula**

| | |
|---|---|
| Find number | 2F54:1 |
| Batch | 1000 |
| GLP | 28.5 |
| BGP | 17.7 |
| BG | 17.2 |
| Fusion | f |

*Hemiechinus*

**Mandible**

| | | |
|---|---|---|
| Find number | 2F46/47:6 | 2F65/75:23 |
| Batch | 1110 | 308 |
| L, infradentale to condyle | 33.5+ | 31.3+ |
| $I_1$ - $M_3$ alv. length | 18.6 | 17.3+ |

# CHAPTER 6: CONCLUSION

by

H.E.W. Crawford

The excavations at Tell Rubeidheh revealed one of the rarest types of archaeological sites, a small agricultural settlement. Such sites seldom appear in the archaeological record for a variety of reasons. They are difficult to locate by survey as they leave little trace on the landscape and erosion or siltation may erase them completely, while artefacts are destroyed by the action of salts. Their retrieval is often a matter of chance where it does occur: Ras al Amiya was located under a 3 m. blanket of silt in the course of irrigation works (Stronach 1961). A further problem arises from the fact that such sites produce little in the way of museum pieces or startling new information so that, even when discovered, they have, until recently, had little appeal for the excavator. The pendulum of archaeological opinion has now swung the other way and it is recognised that such sites do produce crucial, though unspectacular evidence, with which to flesh out our picture of the economic and social structures of previous millennia. Such small and dispersed settlements must, after all, have formed numerically the largest class in the settlement hierarchy of the late fourth millennium BC., as they do today.

The specialist reports from Tell Rubeidheh illustrate well the contribution such sites can make. The evidence of the animal bones indicates that the climate and the environment were similar to conditions in the Jebel Hamrin today and that they favoured an economy based on herding of sheep, goat, and to a lesser degree, cattle. Gazelle and onager, which apparently roamed wild on the dry steppe, were a useful source of meat. The average age of the sheep when slaughtered appears to be five years, indicating that the herds were primarily kept for wool and milk rather than meat. The presence of a number of spindle whorls on the site may also point to the presence of a cottage industry in woollen garments. The most important new evidence to emerge from the study of the animal bones is that the donkey was already domesticated by the late fourth millennium and may well have been the major beast of burden.

Unfortunately it was not possible to recover any palaeo-botanical remains to provide supporting evidence on the ecology or to indicate what crops were grown. However, as discussed in Chapter 1, the presence of areas of potentially fertile soil in the valley, together with an adequate, though meagre, rainfall all point to the cultivation of wheat and barley at least. The presence of sickles with a high gloss and of querns on the site indicate the cutting and processing of cereals. It is reasonable to suggest that various legumes and possibly flax may also have been grown.

The architectural remains show at least three superimposed building levels in 2F54, indicating some length of occupation, but the remains are too fragmentary to enable us to say more than that they represent the remains of rectilinear mud-brick structures, probably quite widely spaced across the settlement. This is the pattern observed in sites such as Sakheri Saghir and Raidau Sharqi (Wright 1969; Heinrich & Falkenstein 1938). The discovery of at least two kilns at Rubeidheh suggests that the site was producing much of its own pottery, a finding supported by the analysis of the pottery fabric. The oval kiln described was, additionally, apparently used to heat treat flint and stone preparatory to further processing. The stages of this manufacturing process are fully described in the report and throw light on an area often neglected in studies of material from this period. It is suggested that the raw materials were, in the main, of local origin.

In the absence of C14 samples, the dating of the site rests largely on the evidence of the pottery. The closest parallels for the pottery corpus come from Middle Uruk levels of Eanna VIII-VI. There are also parallels with pottery from the Late Uruk levels from Ahmed al-Hattu and other sites. The pottery is not easy to date as many of the features, such as reserved slip decoration, are not specific to one chronological period but occur in a number of archaeological horizons. The evidence from some of the small finds is somewhat at odds with the evidence of the pottery. The only stratified stamp seal finds its closest parallels with one from a Jemdet Nasr level at Nuzi and another from Susa B, while the lead bowl from the upper levels can be compared with those from the Jemdet Nasr cemetery at Ur. These comparisons may indicate that a date in the Late Uruk or Jemdet Nasr period should be preferred. The occurrence of Middle Uruk traits might in part be explained by the isolated

and rural nature of the site which allowed such characteristics to survive longer than on the Sumerian plain.

In spite of its position on the north-south route along the Hamrin Valley there are very few convincing indications of external contacts to be identified at Tell Rubeidheh. Five pieces of obsidian were recovered; the lead bowl and scrap of copper must be imports and analysis of the fabrics indicates that the two jars, nos. 34 & 102, are probably imports from south Mesopotamia. On the other hand, the double-mouthed pots have connections with north Mesopotamia. If we add to this tenuous evidence the fact that only three sites of Uruk date were identified in the whole valley, it suggests that there was something of a cultural, and probably political vacuum in the area during the Uruk period. The main thrust of trade from Sumer at this time seems to have been north and west to sites on the Upper Euphrates of which Habuba Kabira is probably the best known example. Sites like Godin Tepe and Tepe Yahya on the Iranian plateau which have produced important finds of Uruk types (like the Bevelled Rim Bowl) seem to have had closer links with Susa rather than with south Mesopotamia, although cylinder seals from Godin show some contact with the Diyala Valley, south of the Hamrin area (Weiss & Young 1975). All in all, it seems that the Hamrin valley in the Uruk period had lost much of the significance it had had in the later 'Ubaid period as a major artery of communication.

Tell Rubeidheh seems to represent a small, self-sufficient agricultural village, making much of its own pottery and many of its own stone tools. Thanks to its position on a once popular trade route it maintained intermittent contact with the outside world and this provided it with small quantities of exotic materials like obsidian, and a few luxury items like the lead bowl and whatever was traded in the jars originating in south Mesopotamia. It was a poor community, most of the beads are of clay, and only three seals were found from a site covering 150 x 125m. or 1.9 hectares. If as McAdam suggests, BRBs are discounted as ration bowls, there is very little evidence for administrative activity, for craft specialization, or for a stratified society.

In summary, Rubeidheh seems to represent a community which has many similarities to the small villages scattered across the valley today. It is perhaps not too fanciful to suggest that subsistence agriculture had changed little from the Uruk period until the introduction of modern machinery and artificial fertilizers less than thirty years ago.

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## APPENDIX 1
## EXCAVATIONS AT TELL hAIZALUN
by
J.A. Moon

### The Sounding

Tell Haizalun is situated about 250 m. from the west bank of the Narin River and south of the modern village of Khallawiyeh (no. 40 on fig. 2). The site measures c.100 m. from north to south and c.80 m. from west to east, and seems to have been built up against a natural ridge on the west side. The mound rises some 6 m. above the plain level but part of this may be a natural ridge of gravel. Extensive remains of modern houses occupy the east half. Surface sherds, which were abundant both on the ground and in the mud walls of the recent houses, indicated a one-period site of the Late 'Ubaid period.

During the course of excavations at Tell Rubeidheh, a small sounding was made at Tell Haizalun to the east of the mound summit in order to determine the depth of deposit. Lack of time prevented us from concluding this operation and work was suspended at a depth of 3 m. below the surface without reaching virgin soil. The only finds apart from pottery were modern.

The work was not supervised and the eight levels were arbitrary divisions of approximately 40 cm. each, level 1 being the highest.

### The Pottery

The sounding at Tell Haizalun produced two near-complete vessels (fig. 50, 1 & 15, lid and container of an infant burial), three profiles or near profiles (fig. 50, 2-3, & fig. 51, 1), and a total of thirty three feature sherds. Nearly all these are illustrated here, the exceptions being too damaged or indeterminate to present adequately.

It is obviously impossible to draw far-reaching conclusions about this small, unstratified sample, but there is enough to establish an 'Ubaid date for the mound. Once the bulk of the 'Ubaid pottery from the Hamrin area is published it may prove possible to suggest a closer dating for Tell Haizalun but for now it must suffice to suggest Late 'Ubaid, perhaps not as late as Tell Madhhur.

The Tell Haizalun sherds seemed to be distinct from the Tell Madhhur 'Ubaid corpus in the following ways: the manufacture was on the whole better, the clay being more evenly tempered and the surface more neatly finished; in some instances, the paint was quite carefully applied (e.g. fig. 51, 4). Careful painting was extremely rare at Tell Madhhur. Painted designs, as far as they could be reconstructed, were all different from any found at Tell Madhhur. A few of the Tell Haizalun sherds have patterns that involve relatively large areas of paint, with smaller areas of background left in between (e.g. fig. 50, 5 & 6), and one small bowl fragment has painting on both sides (fig. 50, 9). This is contrary to the norm at Tell Madhhur. On the other hand, "jabbed" incised designs (fig. 51, 8-11) and globular pots of pink clay are both features characteristic of the Tell Madhhur corpus. There are, of course, features at both sites that are common among all 'Ubaid sites, such as the simple shallow bowls. It must be stressed that these remarks are tentative and may need refining once the pottery from other Late 'Ubaid sites in the area has been published.

The types represented at Tell Haizalun are as follows:

Open bowls with flaring sides (fig. 50, 1-9). Fig. 50, 10 is possibly a spout.

Deep bowls and more globular shapes (fig. 50, 11-15 & fig. 51, 1-3; for the shapes see Roaf 1984a, fig. 16, 21, & fig. 18, 14)

Fragments of short-necked jars (fig. 51, 4-6; for the shape see Roaf 1984a, fig. 18, 8 & 12. Body fragments, painted (fig. 51, 7), and incised (fig. 51, 8-12).

The following types which have not been illustrated were present at Tell Haizalun:

Rim of a shallow bowl, three horizontal painted stripes near rim (level 7).

Part of a miniature painted bowl (level 6; for the shape see Roaf 1984a, fig. 21, 3).

Heavy rim from an open bowl (level 8; for the shape see Roaf 1984a, fig. 17, 4).

Fragment possibly from a pedestal bowl (level 5; for the shape see Roaf 1984a, fig. 21, 16).

Club rim from a large deep bowl, with paint on top of the rim (level 1; for the shape see Roaf 1984a, fig. 17, 3).

Smaller rim shape as above, with stripes painted on the rim.
Fragment of a vessel probably similar to fig. 51, 2-3.
Fragment of a globular jar with single horizontal stripe around the base of the neck (level 9; for the shape see Roaf 1984a, fig. 22, 4).
Fragment of a short-necked jar painted outside in horizontal stripes, and inside rim with scalloped pattern (level 3; for the shape see Roaf 1984a, fig. 22, 5).
Body fragment of a painted carinated bowl (level 8).
Fine sherd of orange clay and vegetable temper, painted on outside with hatched design in red (level 4).

## Figure 50.

All measurements in cm.

1. Shallow bowl. Max. pres. ht. 7.4, rim diam. 13.2. Medium fine buff clay, vegetable temper, black paint. Found covering infant burial in level 1.
2. Shallow bowl. Ht. 13.2, rim diam. 19.0. Fairly coarse buff clay, vegetable temper. Level 2.
3. Shallow bowl. Ht. 8.3, rim diam. 26.2. Hard, medium-textured buff clay, vegetable temper. Black paint (very little remaining). Level 6.
4. Rim fragment of shallow bowl. Fine buff clay, fine vegetable temper, black paint. Level 2.
5. Rim fragment of shallow bowl. Fine buff clay, fine vegetable temper, black paint. Level 1.
6. Rim fragment of shallow bowl. Fairly fine buff clay, fine vegetable temper, black paint. Level 2.
7. Rim fragment of shallow bowl. Hard, fine buff clay, vegetable temper, black paint. Level 8.
8. Rim fragment of shallow bowl. Rim diam. c.22.0. Fine buff clay, fine vegetable temper, black paint. Level 5.
9. Rim fragment of shallow bowl. Medium-textured pink clay with paler surface, black paint. Level 4.
10. Part of straight-sided bowl or broken off spout. Rim diam. 7.6. Fine buff clay, fine vegetable temper, black paint applied over pale buff slip. Level 2.
11. Fragment of deep bowl. Fine buff clay, vegetable temper, black paint. Level 3.
12. Rim fragment of deep bowl. Hard, medium-textured buff clay, vegetable temper, reddish brown paint. Level 7.
13. Rim fragment of deep bowl or hole-mouthed pot. Hard pink clay, white surface, vegetable temper, black paint. Level 6.
14. Fragment of deep bowl or bag-shaped pot. Preserved ht. 7.0, rim diam. 17.6. Hard, medium-textured clay, pink-buff with paler surface, vegetable temper, black paint. Level 6.
15. Deep bowl. Ht. 22.4, rim diam. 24.0. Medium-coarse red clay, vegetable temper, now salted. Found covered by fig. 50, 1, and containing infant burial. Level 1.

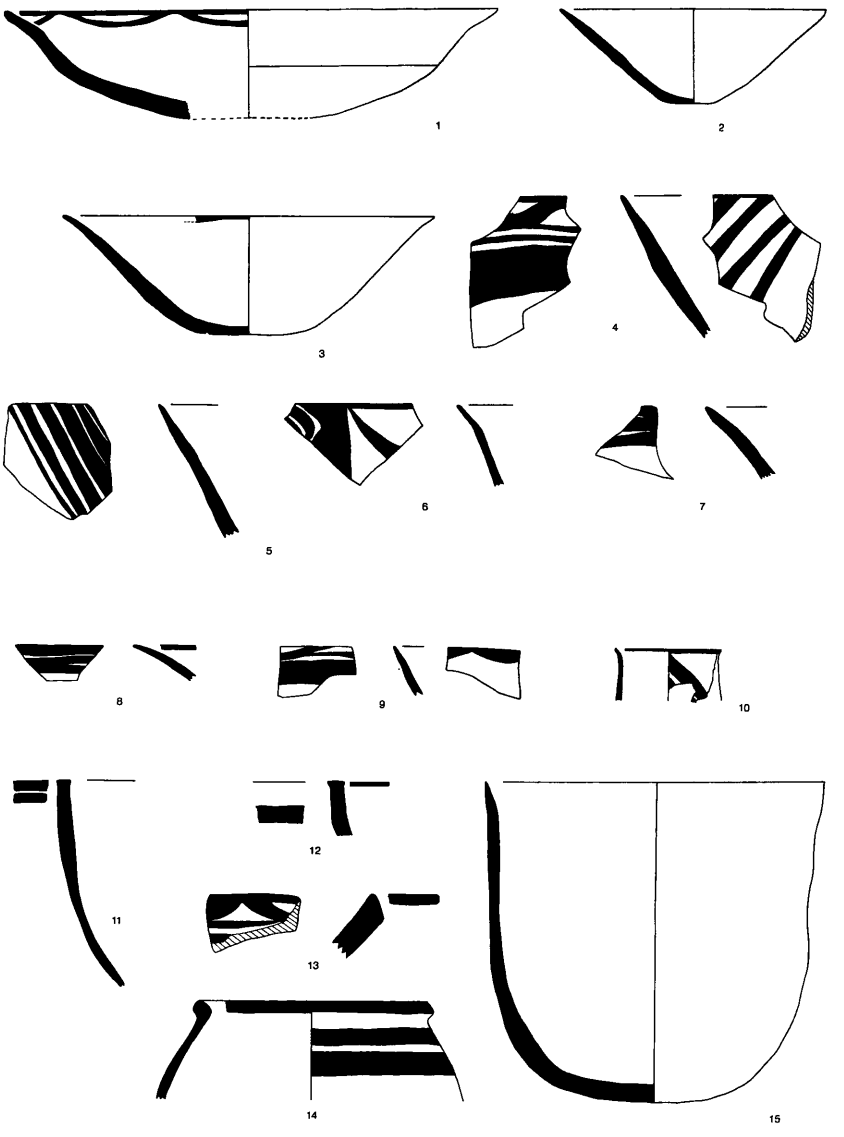



Figure 50
Late 'Ubaid pottery from Tell Haizalun. (Scale 1:4)

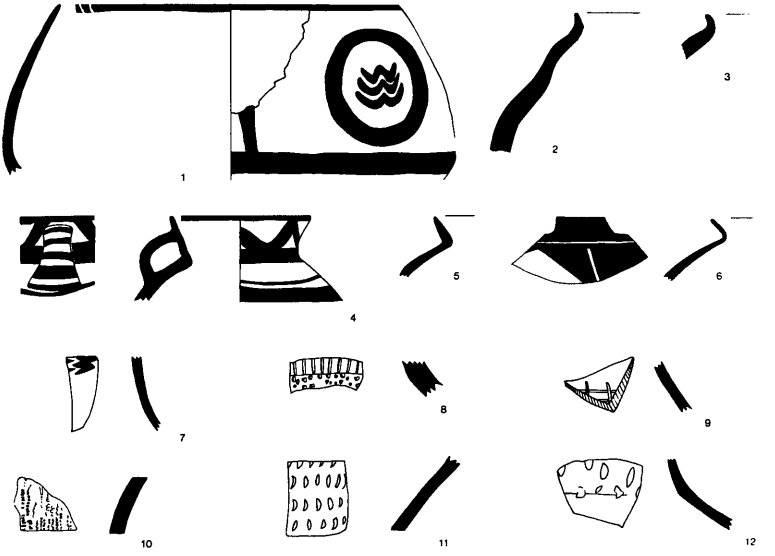


Figure 51
Late 'Ubaid pottery from Tell Haizalun. (Scale 1:4)

All measurements are in cm.

1. Fragmentary deep bowl. Preserved ht. 12.5, rim diam. 24.0. Coarse, greeny buff clay, vegetable temper, black paint. Parts found in levels 1 & 2.
2. Rim fragments of deep bowl or bag-shaped pot. Coarse red clay, black core, vegetable temper. Level 4.
3. Rim fragment, probably of bag-shaped pot. Coarse pink clay, vegetable temper. Level 6.
4. Fragment of handled jar. Preserved ht. 6.3, rim diam. 10.1. Fine buff clay, vegetable temper, surface neatly smoothed, black paint. Fragment only preserved so possibly more than one handle originally. Level 3.
5. Rim fragment of globular jar. Fine buff clay, vegetable temper. Level 1.
6. Rim fragment, presumably from globular jar. Rim diam. c.14.0. Medium-textured buff clay, vegetable temper, red wash, black paint applied over the top to produce bichrome design. Level 4.
7. Body fragment, perhaps from deep bowl. Hard buff clay, fine vegetable temper, black paint. Level 8.
8. Body fragment. Coarse buff clay, vegetable temper. Gouged and scraped decoration.
9. Body fragment. Fine buff clay, grit and straw temper. Incised on inside.
10. Body fragment. Coarse green clay, vegetable temper. Comb-stuck decoration, probably six teeth.
11. Body fragment. Fine buff clay, fine vegetable temper. Gouged decoration.
12. Body fragment. Coarse pink clay with paler surface, vegetable temper. Gouged decoration.

## APPENDIX 2
## ENERGY DISPERSIVE X-RAY SPECTROSCOPY OF THE SURFACE OF A FLINT WASTE FLAKE FROM TELL RUBEIDHEH, IRAQ

by
K. Arnold

There has recently been a great deal of interest in the study of organic residues left on stone tools (Anderson-Gerfaud 1986; Van Gijn 1986). Plant phytoliths adhering to experimental tools have been detected with the use of a scanning electron microscope (SEM) and it has been suggested that animal tissue on antler residue may survive on the surface of some archaeological pieces. The following analysis was conducted to determine if metal traces such as that from a copper flaking tool would perhaps survive on the striking platform of a tool or flake (provided that this was the actual material used as a flaking tool).

For the analysis an energy dispersive X-ray analyser (EDAX) attached to a scanning electron microscope was employed. When a sample is bombarded with electrons from the electron gun in the SEM column, electrons from a high energy level in the atoms which make up a material may be knocked out. In this case, another atom moves in to fill up the empty space creating a jump in energy in the form of an X-ray. Each element in the periodic table has a characteristic X-ray which may be detected by the use of the EDAX.

Using this method, elemental copper was detected in the butt of an experimental piece as was antler residue (appearing in the form of a specific calcium to phosphorus ratio). Whether or not such residue will survive on archaeological pieces remains unknown, since a number of chemical and mechanical processes (wind, soil and water action) may very well remove such residues.

During preliminary analysis to determine if contact residues from flaking tools could be observed on archaeological flakes, two energy dispersive X-ray spectra were taken of the butt of a waste flake from Tell Rubeidheh. To avoid the possibility of removing traces of contact residues left by the flaking tool, the flake was left unwashed. The composition of the surface of the flake butt was examined using the energy dispersive X-ray spectrometer.

Results of the analysis can be seen in figure 52. The silica peak is derived from the flint itself and the most probable explanation of the calcium peak is that it reflects the composition of the clayey soil which covered this flake. The traces of aluminium and other elements are also indicators of the contents of the surrounding soil. It should be mentioned that EDAX would not indicate if a stone hammer was used since the elements of such a tool can never be distinguished from the composition of soil.

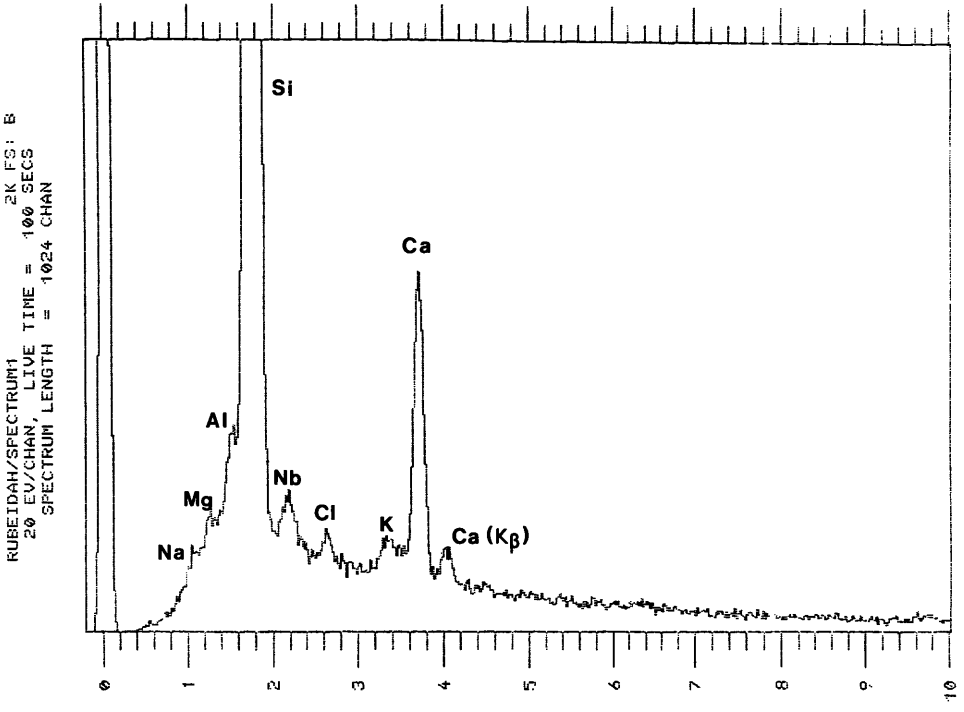



Figure 52
Energy dispersive X-ray spectra resulting from an area scan of the butt of a flint waste flake.

## APPENDIX 3
## INDEX OF BATCHES

| Batch | Trench | Batch | Trench | Batch | Trench |
|---|---|---|---|---|---|
| 001 | 2F90 | 050 | 2F43 | 1004 | 2F54 |
| 002 | 2F60 | 051 | 2F43 | 1005 | 2F54 |
| 003 | 2F70 | 052 | 2F43 | 1006 | 2F54 |
| 004 | 2F70 | 053 | 2F43 | 1007 | 2F54 |
| 005 | 2F10 | 054 | 2F43 | 1008 | 2F54 |
| 006 | not used | 055 | 2F43 | 1009 | 2F54 |
| 007 | 2F70 | 056 | 2F43 | 1010 | 2F54 |
| 008 | 2F45 | | | 1011 | 2F54 |
| 009 | 2F45 | 300 | 2F50 | 1012 | 2F54 |
| 010 | 2F45 | 301 | 2F22 | | |
| 011 | 2F45 | 302 | 2F65/75 | 1100 | 2F46/47 |
| 012 | 2F45 | 303 | 2F23 | 1101 | 2F46/47 |
| 013 | 2F25 | 304 | 2F65/75 | 1102 | 2F46/47 |
| 014 | 2F06 | 305 | 2F22 | 1103 | 2F46/47 |
| 015 | 4D38/48 | 306 | 2F65/75 | 1104 | 2F46/47 |
| 016 | 4D38/48 | 307 | 2F65/75 | 1105 | 2F46/47 |
| 017 | 4D38/48 | 308 | 2F65/75 | 1106 | 2F46/47 |
| 018 | 2F25 | 309 | 2F65/75 | 1107 | 2F46/47 |
| 019 | 2F45 | 310 | 2F22 | 1108 | 2F46/47 |
| 020 | 2F25 | 311 | 2F65/75 | 1109 | 2F46/47 |
| 021 | 2F45 | 312 | 2F65/75 | 1110 | 2F46/47 |
| 022 | 2F45 | 313 | 2F65/75 | 1111 | 2F46/47 |
| 023 | 2F25 | 314 | 2F65/75 | | |
| 024 | 2F25 | 315 | 2F65/75 | | |
| 025 | 2F45 | 316 | 2F65/75 | | |
| 026 | 2F45 | 317 | 2F65/75 | | |
| 027 | 2F25 | 318 | 2F65/75 | | |
| 028 | 4D38/48 | 319 | 2F65/75 | | |
| 029 | 2F45 | 320 | 2F65/75 | | |
| 030 | 2F45 | 321 | 2F65/75 | | |
| 031 | 2F54 | 322 | 2F65/75 | | |
| 032 | 2F51 | | | | |
| 033 | 4D38/48 | 501 | 2F44 | | |
| 034 | 2F45 | 502 | 2F44 | | |
| 035 | 2F45 | 503 | 2F44 | | |
| 036 | 2F45 | 504 | 2F44 | | |
| 037 | 2F45 | 505 | 2F44 | | |
| 038 | 2F45 | 506 | 2F44 | | |
| 039 | 2F45 | 507 | 2F44 | | |
| 040 | 2F45 | 508 | 2F44 | | |
| 041 | 2F45 | 509 | 2F44 | | |
| 042 | 2F45 | 510 | 2F44 | | |
| 043 | 2F04 | 511 | 2F44 | | |
| 044 | 2F43 | 512 | 2F44 | | |
| 045 | 2F70 | | | | |
| 046 | 2F65/75 | 1000 | 2F54 | | |
| 047 | 2F43 | 1001 | 2F54 | | |
| 048 | 2F43 | 1002 | 2F54 | | |
| 049 | 2F43 | 1003 | 2F54 | | |

## APPENDIX 4
## BATCH LIST BY TRENCH

| Trench | Unit | Brief description |
|---|---|---|
| 2F04 | 043 | Virgin soil below top-soil. |
| 2F06 | 014 | Grey, crumbly pit fill. |
| 2F10 | 005 | Shallow cut in pit fill. |
| 2F22 | 301 | Top-soil. |
| | 305 | Kiln debris. |
| | 310 | Brown fill outside kiln. |
| 2F23 | 303 | Top-soil. |
| 2F25 | 018 | Red & green pit fill. |
| | 020 | Fine yellowish layers. |
| | 023 | Grey ashy deposit. |
| | 024 | Mixed fill. |
| | 027 | Natural soil. |
| 2F43 | 044 | Collapsed brick and eroded deposit. |
| | 047 | Hard, white surface. |
| | 048 | Mixed fill, some burning. |
| | 049 | Green & ashy stripes. |
| | 050 | Mixed fill, some burnt material. |
| | 051 | Black ashy layer. |
| | 052 | Scorched patch. |
| | 053 | Virgin soil. |
| | 054 | Tauf wall. |
| | 055 | Pit. |
| | 056 | Virgin soil. |
| 2F44 | 500 | Top-soil. |
| | 501 | Ashy pit fill. |
| | 502 | Tauf foundation trench. |
| | 503 | Black ashy layer, some collapsed brick. |
| | 504 | Wall. |
| | 505 | Top-soil & brick tumble. |
| | 506 | Ash lenses, some sand. |
| | 507 | Ash and decayed brick. |
| | 508 | Wall. |
| | 509 | Brown sandy layer. |
| | 510 | Brick tumble above floor. |
| | 511 | Brick tumble. |
| | 512 | Dark brown material in cut or pit. |
| 2F45 | 008 | Soft, sandy yellow fill. |
| 1st | 009 | Soft, sandy yellow fill. |
| season | 010 | Loose ashy fill. |
| | 011 | Loose ashy fill. |
| | 012 | Ashy fill. |
| | 013 | Ashy, some decayed brick. |
| | 019 | Ashy fill. |
| | 021 | Loose ashy fill. |
| | 022 | Loose ashy fill. |
| | 025 | Clean yellowish band. |
| | 026 | Loose ashy fill. |
| | 029 | Soft fill with some ash. |
| | 030 | Material south of tauf foundation. |
| | 034 | Dark ashy fill. |

| | | |
|---|---|---|
| | 035 | Clean clayey material. |
| | 036 | Ashy layers. |
| | 037 | Clean reddish fill above virgin soil. |
| 2nd season | 038 | 1st season's back fill. |
| | 039 | Top-soil. |
| | 040 | Loose brown fill, some ash. |
| | 041 | Dirty, ashy pit fill. |
| | 042 | Green, yellow and black stripey pit fill. |
| | 054 | Tauf foundation trench. |
| | 055 | Pit. |
| | 056 | Virgin soil. |
| 2F46/47 | 1100 | Top-soil. |
| | 1101 | Black ashy layer. |
| | 1102 | Red rubble. |
| | 1103 | Wall. |
| | 1104 | Light brown floor. |
| | 1105 | Brown, ash-flecked fill. |
| | 1106 | Wall. |
| | 1107 | Ashy brown. |
| | 1108 | Pit with black fill. |
| | 1109 | Wall. |
| | 1110 | Grave. |
| | 1111 | Brick tumble. |
| 2F50 | 300 | Top-soil. |
| 2F51 | 032 | Top-soil. |
| 2F54 | 031 | Top-soil |
| | 1000 | Top-soil. |
| | 1001 | Brown fill above floor. |
| | 1002 | Top-soil. |
| | 1003 | Brown fill, collapsed brick. |
| | 1004 | Brown fill, collapsed brick. |
| | 1005 | Green-plastered floor. |
| | 1006 | Brown fill. |
| | 1007 | Top-soil. |
| | 1008 | Brown, bricky fill. |
| | 1009 | Ashy pit. |
| | 1010 | Tauf foundation trench. |
| | 1011 | Wall. |
| | 1012 | Wall. |
| 2F60 | 002 | Virgin soil. |
| 2F65/75 | 046 | Top-soil. |
| | 302 | Top-soil. |
| | 304 | Ash pit. |
| | 306 | Dirty green fill. |
| | 307 | Brown fill. |
| | 308 | Ash and dirty grey fill. |
| | 309 | Green band, some ash. |
| | 311 | Dirty ashy fill. |
| | 312 | Brick collapse. |
| | 313 | Pit fill around smashed pots. |
| | 314 | Brown band above virgin soil. |
| | 315 | Pit. |
| | 316 | Eroded bricky fill. |
| | 317 | Pit fill. |
| | 318 | Virgin soil. |
| | 319 | On virgin soil. |
| | 320 | Wall. |
| | 321 | Pit. |

| | | |
|---|---|---|
| | 322 | Virgin soil. |
| 2F70 | 003 | Grey, ashy area. |
| | 004 | Grey, ashy area. |
| | 007 | Grey & brown ashy, some sand. |
| | 045 | Grey and brown lenses. |
| 2F90 | 001 | Brown band above virgin soil. |
| 4D38/48 | 015 | Top-soil. |
| | 016 | Hard, reddish soil. |
| | 017 | Lumpy, reddish soil. |
| | 028 | Hard, reddish fill. |
| | 033 | Homogeneous reddish fill. |

## APPENDIX 5
## CONCORDANCE OF REGISTERED OBJECTS

| Catalogue no. | Object no. | Iraq Museum no. |
|---|---|---|
| RB.1 | 2FS.26 | |
| RB.2 | 2F45.29 | |
| RB.3 | 2F44.02 | |
| RB.4 | 2FS.03 | |
| RB.5 | 2F25.01 | |
| RB.6 | 2F45.55 | |
| RB.7 | 2F45.60 | |
| RB.8 | 2F45.42 | |
| RB.9 | 2FS.09 | |
| RB.10 | 2FS.23 | |
| RB.11 | 2FS.10 | |
| RB.12 | 2FS.05 | |
| RB.13 | 2F45.03 | |
| RB.14 | 2F44.03 | |
| RB.15 | 2FS.19 | |
| RB.16 | 2F44.04 | |
| RB.17 | 2FS.06 | IM.84290 |
| RB.18 | 2F44.01 | IM.84299 |
| RB.19 | 2F45.18 | |
| RB.20 | 2FS.01 | IM.84288 |
| RB.21 | 2F45.53 | |
| RB.22 | 2F45.01 | IM.84286 |
| RB.23 | 2FS.18 | |
| RB.24 | 2FS.17 | |
| RB.25 | 2F54.03 | IM.84289 |
| RB.26 | 2F43.04 | |
| RB.27 | 2F54.05 | IM.84291 |
| RB.28 | 2F44.15 | |
| RB.29 | 2FS.07 | IM.84292 |
| RB.30 | 2F44.13 | IM.84309 |
| RB.31 | 2F54.08 | IM.84301 |
| RB.32 | 2F45.52 | IM.84297 |
| RB.33 | 2F43.07 | |
| RB.34 | 2F65/75.02 | IM.84298 |
| RB.35 | 2F65/75.03 | |
| RB.36 | 2F65/75.13 | IM.84305 |
| RB.37 | 2F54.17 | |
| RB.38 | 2F46.07 | IM.84284 |
| RB.39 | 2FS.04 | |
| | 2FS.08 | |
| | 2FS.11 | |
| | 2FS.14 | |
| | 2FS.20 | |
| | 2FS.22 | |
| | 2FS.24 | |
| | 2FS.25 | |
| | 2FS.27 | |
| | 2FS.30 | |
| | 2FS.31 | |
| | 2FS.32 | |
| | 2F04.66 | |
| | 2F04.67 | |
| | 2F23.05 | |
| | 2F25.02 | |
| | 2F43.01 | |
| | 2F43.11 | |
| | 2F44.07 | |
| | 2F44.10 | |
| | 2F44.14 | |
| | 2F44.19 | |
| | 2F44.20 | |
| | 2F44.21 | |
| | 2F45.02 | |
| | 2F45.05 | |
| | 2F45.11 | |
| | 2F44.07 | |
| | 2F44.10 | |
| | 2F44.14 | |
| | 2F44.19 | |
| | 2F44.20 | |
| | 2F44.21 | |
| | 2F45.02 | |
| | 2F45.05 | |
| | 2F45.11 | |
| | 2F45.21 | |
| | 2F45.22 | |
| | 2F45.23 | |
| | 2F45.30 | |
| | 2F45.33 | |
| | 2F45.50 | |
| | 2F45.51 | |
| | 2F45.61 | |
| | 2F45.64 | |
| | 2F45.65 | |
| | 2F54.02 | |
| | 2F54.11 | |
| | 2F65/75.28 | |
| | 2F65/75.32 | |
| | 4D.38/48.04 | |
| | 4D.38/48.05 | |

Object number refers to the field number of the object as recorded in the excavation note books.
Catalogue number refers to the number given to the object in the site catalogue.
Iraq Museum numbers are given where they were assigned. Objects without such numbers are currently stored at Bahiza, Jebel Hamrin.

## APPENDIX 6
## LIST OF POTTERY TYPES BY BATCH

Note: The entries against a particular type in a batch represent the number of sherds of that type found. Where a sherd combines more than one type, it is entered against one type in the batch list and the other types (for example of decoration) with which this was combined are listed in an entry below the batch list. Unless otherwise stated, these entries refer to one sherd.
Type 77c includes all lugs on rows of finger-nail impressions.
Type 77d includes all lugs on plain body sherds.
Type 87c includes all sherds with red paint.

: 2F04
043. Brb diagnostics: 2. Other diagnostics: 6.

| Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|
| 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 18 | 31−1 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 22a | 35−1 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 22b | 36 | 51−1 | 66 | 77e | 87c | 90f | 93 | |
| 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 23 | 38−2 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96−1 | |
| 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Square 2F22
Batch 301. Brb diagnostics: 11. Other diagnostics: 11.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 1−11 | 16 | 29 | 44 | 59−1 | 74 | 84 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60−1 | 75 | 85 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 86a | 90a−1 | 92b | 99c |
| 4 | 19−1 | 32 | 47 | 62 | 77a | 86b | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 86c | 90c | 92d | 100 |
| 6−1 | 21 | 34 | 49−1 | 64 | 77c | 87a | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51−1 | 66 | 77e | 87c | 87c | 90f | 93 | |
| 9 | 22c | 37−1 | 52−1 | 67 | 77f | 87d | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 88c | 91a−1 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 88d | 91b | 96−1 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 89b | 91d | 98 | |

Type 52 + 91a. Type 60 + 92d.

Square 2F22
Batch 305. Brb diagnostics: 22. Other diagnostics: 12.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–22 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20–1 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7–1 | 22a | 35–1 | 50 | 65–1 | 77d | 87b | 90e | 92f | 102 |
| 8–2 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70–1 | 80 | 88c | 91a–1 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–1 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–1 | 91c | 97 | |
| 15 | 28 | 43–1 | 58 | 73 | 83 | 89b–1 | 91d | 98 | |

Type 43 + 88b.

Square 2F23
Batch 303. Brb diagnostics: 22. Other diagnostics: 36.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–22 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61–2 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62–1 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20–6 | 33 | 48–1 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49–1 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–3 | 22b | 36–2 | 51–1 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12–1 | 25 | 40–1 | 55 | 70 | 80 | 88c | 91a–2 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–3 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–2 | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73–2 | 83 | 89b–7 | 91d | 98 | |

Type 36 + 89a. Type 40 + 89b. Type 62 + 94a. Type 73 + 89a.

Square 2F23
Batch 319. Brb diagnostics: 4. Other diagnostics: 22.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–4 | 16 | 29 | 44 | 59–2 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a–1 | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21–1 | 34 | 49–1 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7–1 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–2 | 22b | 36–3 | 51–2 | 66 | 77e | 87c | 90f | 93 | |
| 9–1 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–3 | |
| 14 | 27 | 42 | 57 | 72–1 | 82 | 89a–1 | 91c | 97–1 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b–1 | 91d | 98 | |

Square 2F43
Batch 044. Brb diagnostics: 25. Other diagnostics: 34.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–25 | 16–2 | 29 | 44 | 59 | 74–1 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60–1 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76–1 | 86a–3 | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6–2 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–1 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–2 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70–1 | 80–2 | 88c | 91a–4 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–7 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28–4 | 43 | 58–1 | 73 | 83 | 89b | 91d | 98 | |

Type 58 + 86a. Type 60 + 90f + 92d. Type 76 + 90f + 91a; Grey Ware.
Type 91a: Grey Ware (4 examples: possibly from same vessel as Type 76).
1 'Ubaid sherd.

Square 2F43
Batch 048. Brb diagnostics: 31. Other diagnostics: 49.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−31 | 16−1 | 29 | 44 | 59−2 | 74 | 84 | 89c−1 | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b−1 |
| 3 | 18 | 31−1 | 46−1 | 61−1 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b−1 | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6−2 | 21 | 34 | 49−3 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35−1 | 50 | 65 | 77d | 87b | 90e | 92f | 102−1 |
| 8−1 | 22b | 36 | 51−3 | 66 | 77e | 87c | 90f | 93 | |
| 9−1 | 22c | 37 | 52−1 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78−1 | 88a | 90h | 94b | |
| 11 | 24 | 39−1 | 54−1 | 69 | 79−2 | 88b | 90i | 94c | |
| 12 | 25 | 40−1 | 55 | 70 | 80−1 | 88c | 91a | 95 | |
| 13 | 26 | 41−1 | 56 | 71 | 81 | 88d | 91b | 96−6 | |
| 14 | 27 | 42 | 57 | 72−1 | 82 | 89a−6 | 91c | 97 | |
| 15 | 28 | 43−2 | 58 | 73−2 | 83 | 89b | 91d−1 | 98 | |

Types 8, 40 & 91d: Grey Ware. Type 43 + 89a. Type 46 + 89a.
1 Flat dish sherd.

Square 2F43
Batch 049. Brb diagnostics: 31. Other diagnostics: 15.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−31 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35−2 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36−1 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10−1 | 23 | 38−1 | 53−1 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79−1 | 88b | 90i | 94c | |
| 12 | 25 | 40−1 | 55 | 70 | 80 | 88c | 91a−2 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96−1 | |
| 14−1 | 27 | 42 | 57 | 72 | 82 | 89a−2 | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73−1 | 83 | 89b | 91d | 98 | |

Type 14 with 22a. Type 38 with band of black paint inside rim.

Square 2F43
Batch 050. Brb diagnostics: 10. Other diagnostics: 11.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−10 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46−1 | 61−1 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e−1 | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a−2 | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39−1 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95−1 | |
| 13 | 26 | 41−1 | 56 | 71 | 81 | 88d | 91b | 96−2 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97−1 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 77e: Grey Ware. Type 96 + 94a.

Square 2F43
Batch 051. Brb diagnostics: 9. Other diagnostics: 10.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−9 | 16−1 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17−1 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6−1 | 21−2 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8−1 | 22b | 36 | 51 | 66 | 77e−1 | 87c | 90f | 93−1 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b−1 | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96 | |
| 14 | 27 | 42 | 57−1 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 57: Grey Ware.

Square 2F43
Batch 052. Brb diagnostics: 10. Other diagnostics: 24.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–10 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c–1 | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–1 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33–1 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7–1 | 22a | 35–1 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–2 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9–4 | 22c | 37 | 52 | 67 | 77f–1 | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68–1 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12–1 | 25 | 40 | 55 | 70 | 80 | 88c | 91a–4 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–1 | |
| 14 | 27 | 42 | 57 | 72–1 | 82 | 89a–3 | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Types 35, 77f and 91a (2 examples): Grey Ware. Type 31 + 89b.
Type 91a + 94a.

Square 2F44
Batch 500. Brb diagnostics: 6. Other diagnostics: 11.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–6 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61–1 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6–1 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–2 | 22b | 36–1 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52–2 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81–1 | 88d | 91b | 96 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–1 | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Square 2F44
Batch 501. Brb diagnostics: 52. Other diagnostics: 56.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–52 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–5 | 46 | 61–2 | 76–1 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20–1 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49–1 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–1 | 50–2 | 65 | 77d | 87b | 90e | 92f–1 | 102 |
| 8–2 | 22b | 36–1 | 51–1 | 66 | 77e–2 | 87c | 90f | 93 | |
| 9–2 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68 | 78–2 | 88a | 90h | 94b | |
| 11 | 24 | 39–1 | 54 | 69–3 | 79–1 | 88b–1 | 90i | 94c | |
| 12–2 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41–7 | 56 | 71 | 81 | 88d | 91b | 96–5 | |
| 14 | 27–2 | 42 | 57–2 | 72–1 | 82 | 89a–2 | 91c–1 | 97 | |
| 15 | 28–3 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 8 + 22a. Type 31: Grey Ware; + 89b (2 examples). Type 41 + 90a.
Type 57 + 89d. Type 76 + 92e. Type 77e: Grey Ware.

Square 2F44
Batch 502. Brb diagnostics: 48. Other diagnostics: 30.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–48 | 16 | 29–1 | 44 | 59–2 | 74 | 84 | 89c–1 | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4–2 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20–1 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49–2 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–2 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–1 | 22b | 36 | 51–1 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68–2 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80–1 | 88c | 91a | 95–1 | |
| 13–4 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–3 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–1 | 91c | 97–2 | |
| 15 | 28 | 43 | 58 | 73–1 | 83 | 89b | 91d | 98 | |

Type 35: Grey Ware + 91a. 1 'Ubaid sherd.

Square 2F44
Batch 503: 1 complete BRB only.

Square 2F44
Batch 505. Brb diagnostics: 60. Other diagnostics: 74.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−60 | 16 | 29 | 44 | 59−1 | 74 | 84−1 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31−2 | 46 | 61 | 76 | 86a | 90a−2 | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20−2 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21−2 | 34 | 49−4 | 64 | 77c | 87a | 90d | 92e | 101−1 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102−1 |
| 8−2 | 22b | 36−5 | 51−1 | 66 | 77e−1 | 87c | 90f | 93−1 | |
| 9 | 22c | 37−3 | 52−1 | 67 | 77f | 87d | 90g | 94a−2 | |
| 10 | 23 | 38 | 53 | 68−2 | 78−2 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79−2 | 88b | 90i | 94c | |
| 12 | 25 | 40−1 | 55 | 70−1 | 80 | 88c | 91a | 95−1 | |
| 13 | 26−1 | 41 | 56 | 71 | 81 | 88d | 91b | 96−14 | |
| 14 | 27 | 42 | 57 | 72−3 | 82 | 89a−1 | 91c−1 | 97−1 | |
| 15 | 28 | 43−2 | 58−2 | 73−3 | 83 | 89b−1 | 91d−4 | 98 | |

Type 31 + 89b (2 examples). Type 36: Grey Ware. Type 72 + 89a.
Type 73 + 90b. Type 95 + 89c. Type 94a + 91a.

Square 2F44
Batch 506. Brb diagnostics: 73. Other diagnostics: 122.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−73 | 16 | 29 | 44 | 59−3 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75−1 | 85 | 89d | 92a | 99b |
| 3 | 18−3 | 31−1 | 46−1 | 61−4 | 76−1 | 86a−2 | 90a−3 | 92b | 99c |
| 4−4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d−1 |
| 5 | 20−10 | 33 | 48 | 63 | 77b | 86c | 90c | 92d−2 | 100 |
| 6−4 | 21−1 | 34 | 49−5 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35−1 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8−8 | 22b | 36 | 51−4 | 66 | 77e−3 | 87c | 90f | 93 | |
| 9−5 | 22c | 37 | 52 | 67 | 77f−1 | 87d | 90g | 94a−4 | |
| 10 | 23 | 38 | 53 | 68 | 78−4 | 88a | 90h−1 | 94b | |
| 11−2 | 24 | 39 | 54 | 69 | 79−5 | 88b | 90i | 94c | |
| 12 | 25 | 40−3 | 55 | 70−2 | 80 | 88c | 91a | 95 | |
| 13 | 26−1 | 41 | 56 | 71 | 81 | 88d | 91b | 96−11 | |
| 14 | 27 | 42 | 57 | 72−2 | 82 | 89a−4 | 91c | 97−1 | |
| 15−1 | 28 | 43−1 | 58−3 | 73−3 | 83 | 89b−5 | 91d | 98 | |

Type 18: Grey Ware. Type 49 + 90a. Type 61 + 92d.
Type 76 + 90f: Grey Ware. Type 77e + 62 + 94a (3 examples; 1 with Type 94c).
Type 77f + 90i. Type 79 + 90g. Type 89b with 6 teeth.
Type 90h: Grey Ware. Type 94a + 91a.

Square 2F44
Batch 509. Brb diagnostics: 12. Other diagnostics: 24.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−12 | 16−1 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61−1 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19−2 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20−1 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21−2 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8−3 | 22b | 36−1 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37−1 | 52 | 67 | 77f | 87d | 90g | 94a−2 | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b−1 | |
| 11 | 24 | 39 | 54 | 69 | 79−1 | 88b | 90i | 94c | |
| 12 | 25 | 40−2 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96−1 | |
| 14 | 27 | 42 | 57 | 72−1 | 82 | 89a | 91c−1 | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b−3 | 91d | 98 | |

Type 61: Grey Ware. Type 96: string−cut.

Square 2F44
Batch 510. Brb diagnostics: 9. Other diagnostics: 10.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−9 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30−1 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a−1 | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e−1 | 87c | 90f | 93 | |
| 9 | 22c | 37−1 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b−1 | 90i | 94c | |
| 12 | 25 | 40−1 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96−1 | |
| 14 | 27 | 42 | 57 | 72−1 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b−2 | 91d | 98 | |

Type 30 + 91c

Square 2F44
Batch 511. Brb diagnostics: 14. Other diagnostics: 17.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–14 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46–1 | 61 | 76 | 86a–1 | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e–1 | 101 |
| 7 | 22a | 35–1 | 50 | 65 | 77d | 87b | 90e–1 | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9–2 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56–1 | 71 | 81 | 88d | 91b | 96–4 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43–1 | 58 | 73 | 83 | 89b–1 | 91d | 98 | |

Type 90e: Grey Ware. 1 'Ubaid sherd.

Square 2F44
Batch 512. Brb diagnostics: 2. Other diagnostics: 4.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–2 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–1 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b–1 | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–2 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 31 + 89a. Type 94b: Grey Ware.

Square 2F45
Batch 038. Brb diagnostics: 5. Other diagnostics: 22.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–5 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17–1 | 30 | 45 | 60–1 | 75 | 85 | 89d–1 | 92a | 99b |
| 3 | 18 | 31 | 46 | 61–1 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19–1 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6–1 | 21 | 34 | 49–2 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–3 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9–1 | 22c | 37–2 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40–1 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–2 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58–1 | 73–2 | 83 | 89b–1 | 91d | 98 | |

Type 35: 1 Grey Ware. Type 37: 1 Grey Ware. Type 58 + 89b. Type 60 + 94a.

Square 2F45
Batch 039. Brb diagnostics: 7. Other diagnostics: 25.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–7 | 16 | 29 | 44 | 59–2 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61–1 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62–1 | 77a | 86b | 90b–1 | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49–2 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f–1 | 102 |
| 8 | 22b | 36–1 | 51–2 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52–2 | 67–2 | 77f | 87d | 90g–1 | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h–1 | 94b–1 | |
| 11–1 | 24 | 39 | 54 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56–1 | 71 | 81 | 88d | 91b | 96–3 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b–1 | 91d | 98 | |

Type 62 + 77e + 94a + 91a. Type 67 + 90b (2 examples). Type 79 + 90g.
Type 90h: Grey Ware.

Square 2F45
Batch 040. Brb diagnostics: 94. Other diagnostics: 154.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–94 | 16 | 29 | 44 | 59–7 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17–1 | 30–3 | 45 | 60 | 75 | 85 | 89d | 92a | 99b–2 |
| 3 | 18–1 | 31–3 | 46 | 61–10 | 76 | 86a | 90a | 92b | 99c–2 |
| 4–4 | 19–1 | 32 | 47 | 62 | 77a–1 | 86b | 90b | 92c | 99d |
| 5 | 20–4 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100–1 |
| 6–1 | 21 | 34 | 49–8 | 64–1 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65–1 | 77d | 87b | 90e | 92f | 102 |
| 8–2 | 22b | 36–9 | 51–7 | 66 | 77e–2 | 87c | 90f | 93 | |
| 9–5 | 22c | 37–7 | 52 | 67 | 77f | 87d | 90g | 94a–5 | |
| 10–1 | 23 | 38 | 53–1 | 68 | 78–2 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–3 | 88b–5 | 90i | 94c | |
| 12 | 25 | 40–6 | 55–1 | 70 | 80–2 | 88c | 91a–1 | 95 | |
| 13 | 26 | 41 | 56–2 | 71 | 81 | 88d | 91b | 96–9 | |
| 14 | 27 | 42–1 | 57 | 72–5 | 82 | 89a | 91c–12 | 97–2 | |
| 15 | 28–1 | 43 | 58–4 | 73–4 | 83–2 | 89b–2 | 91d | 98 | |

Type 17: Grey Ware. Type 20 + 22d (4 examples). Type 28 + 89d.
Type 30 + 91c. Type 51 + 91a (2 examples). Type 55 + 90e.
Type 56 + 89d. Type 60 + 91a; + 92d; + 92f. Type 64 + 91e.
Type 65 + 91a. Type 73 + 92a + 92f.
Type 77e + 94a + 94c + 91a (2 examples). Type 91a: Grey Ware.

Square 2F45
Batch 041. Brb diagnostics: 80. 0ther diagnostics: 180.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–80 | 16 | 29–2 | 44–2 | 59–7 | 74–1 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60–2 | 75–1 | 85 | 89d | 92a | 99b–1 |
| 3 | 18 | 31–11 | 46 | 61–3 | 76–1 | 86a | 90a | 92b | 99c–1 |
| 4 | 19–1 | 32 | 47–2 | 62–6 | 77a | 86b | 90b–1 | 92c | 99d |
| 5 | 20–2 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100–2 |
| 6 | 21–1 | 34 | 49 | 64–1 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–13 | 50–3 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–5 | 22b | 36 | 51–8 | 66 | 77e–1 | 87c–4 | 90f | 93 | |
| 9–6 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–2 | |
| 10 | 23 | 38–16 | 53 | 68 | 78–6 | 88a | 90h | 94b | |
| 11–1 | 24 | 39 | 54 | 69 | 79–6 | 88b–1 | 90i | 94c | |
| 12 | 25 | 40–6 | 55 | 70 | 80–2 | 88c | 91a–2 | 95 | |
| 13 | 26 | 41 | 56–2 | 71 | 81–2 | 88d | 91b | 96–9 | |
| 14 | 27 | 42 | 57 | 72–5 | 82–2 | 89a–6 | 91c–1 | 97 | |
| 15 | 28 | 43–2 | 58–3 | 73–2 | 83 | 89b–14 | 91d–1 | 98 | |

Type 11 + 22b. Type 20 + 22d (2 examples). Type 29 + 88b.
Type 31 + 89b (2 examples).
Type 38 + 91d: Grey Ware; + 92a; + 89a; + 89b. Type 40 + 91a.
Type 43 + 87c, with red paint. Type 44 + 88b. Type 56 + 89b.
Type 60 + 86c + 90c (2 examples). Type 62 + 94a.
Type 72 + 90d + 90f (5 examples). Type 73 + 92a; + 92e, Grey Ware.
Type 76 + 90f. Type 77e + 91a + 94a. Type 81 + 90g. 1 'Ubaid sherd.

Square 2F45
Batch 042. Brb diagnostics: 17. Other diagnostics: 47.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–17 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3–1 | 18 | 31–3 | 46 | 61 | 76–1 | 86a | 90a | 92b | 99c |
| 4 | 19–2 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21–1 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–1 | 50 | 65 | 77d | 87b | 90e | 92f | 102–1 |
| 8–2 | 22b | 36–3 | 51–1 | 66 | 77e | 87c | 90f | 93 | |
| 9–1 | 22c | 37–3 | 52 | 67 | 77f | 87d | 90g | 94a–4 | |
| 10 | 23 | 38 | 53 | 68 | 78–3 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–4 | 88b–1 | 90i | 94c | |
| 12 | 25 | 40–2 | 55 | 70–3 | 80–1 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56–1 | 71 | 81 | 88d | 91b | 96–2 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–1 | 91c | 97–2 | |
| 15 | 28 | 43 | 58 | 73–1 | 83 | 89b | 91d | 98 | |

Type 8 + 22a. Type 76 + 90f. Type 94a + 91a (2 examples). 1 'Ubaid sherd.

Square 2F46/47
Batch 1100. Brb diagnostics: 14. Other diagnostics: 38.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–14 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2–1 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a–1 | 99b |
| 3 | 18 | 31 | 46–2 | 61 | 76 | 86a | 90a–1 | 92b | 99c |
| 4 | 19–1 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6–1 | 21 | 34 | 49–2 | 64 | 77c | 87a | 90d | 92e | 101–1 |
| 7–2 | 22a | 35–2 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9–2 | 22c | 37–1 | 52 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68–2 | 78 | 88a–1 | 90h | 94b–1 | |
| 11–1 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c–1 | 91a | 95 | |
| 13 | 26 | 41 | 56–1 | 71 | 81 | 88d | 91b | 96–3 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–1 | 91c–1 | 97–1 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b–7 | 91d | 98 | |

Type 7 + 22a. Type 49 + 90b. Type 56 + 89b: Grey Ware. Type 94b: Grey Ware

Square 2F46/47
Batch 1101. Brb diagnostics: 23. Other diagnostics: 78.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–23 | 16 | 29 | 44 | 59–2 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45–1 | 60 | 75–2 | 85 | 89d | 92a | 99b |
| 3–2 | 18 | 31–2 | 46 | 61–2 | 76 | 86a–2 | 90a | 92b | 99c |
| 4–1 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c–2 | 90c | 92d | 100–1 |
| 6 | 21–1 | 34 | 49–2 | 64 | 77c | 87a | 90d | 92e | 101–1 |
| 7 | 22a | 35–5 | 50 | 65 | 77d–1 | 87b | 90e | 92f | 102–1 |
| 8 | 22b | 36–1 | 51–3 | 66 | 77e | 87c | 90f | 93 | |
| 9–1 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–2 | |
| 10–3 | 23 | 38–1 | 53 | 68–1 | 78–1 | 88a | 90h | 94b | |
| 11 | 24 | 39–1 | 54 | 69–2 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a–1 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–7 | |
| 14 | 27 | 42 | 57 | 72–1 | 82 | 89a–1 | 91c | 97–3 | |
| 15 | 28 | 43 | 58 | 73–2 | 83 | 89b–19 | 91d | 98 | |

Type 31: Grey Ware. Type 35 + 91c (2 examples). Type 38 + 91e: Grey Ware.
Type 39 + 91a. Type 51 + 91a (2 examples). Type 69 + 86a.
Type 77d: Grey Ware. Type 89b: Grey Ware (2 examples). Type 96 + 94a.

Square 2F46/47
Batch 1102. Brb diagnostics: 6. Other diagnostics: 16.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–6 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9–2 | 22c | 37–1 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10–2 | 23 | 38 | 53 | 68 | 78–1 | 88a | 90h | 94b | |
| 11 | 24 | 39–1 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70–2 | 80 | 88c | 91a–2 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–1 | |
| 14 | 27 | 42 | 57 | 72 | 82–1 | 89a–1 | 91c | 97–1 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 39 + 89b. Type 59 with red wash on exterior. Type 91a + 94a.

Square 2F46/47
Batch 1105. Brb diagnostics: 8. Other diagnostics: 25.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–8 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2–1 | 17 | 30–1 | 45 | 60 | 75 | 85 | 89d | 92a–1 | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c–1 |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5–1 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102–1 |
| 8–3 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37–1 | 52 | 67 | 77f | 87d | 90g | 94a–3 | |
| 10–1 | 23 | 38 | 53 | 68–1 | 78–1 | 88a | 90h | 94b | |
| 11–1 | 24 | 39 | 54 | 69 | 79 | 88b–1 | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56–2 | 71 | 81 | 88d | 91b | 96–1 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b–4 | 91d | 98 | |

Type 8 + 22a (2 examples). Type 10 + 22a. Type 11 + 22c.
Type 37 + 92b. Type 56 + 89b (2 examples). Type 94a + 91a.

Square 2F46/47
Batch 1107. Brb diagnostics: 21. Other diagnostics: 37.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–21 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b–1 |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a–5 | 90a | 92b | 99c–1 |
| 4 | 19 | 32 | 47 | 62–2 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33–1 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21–1 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101–1 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102–2 |
| 8–1 | 22b | 36 | 51 | 66 | 77e–1 | 87c | 90f | 93 | |
| 9–3 | 22c | 37 | 52–1 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b–1 | |
| 11–1 | 24 | 39 | 54 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40–3 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–3 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97–1 | |
| 15 | 28 | 43 | 58 | 73–2 | 83 | 89b–4 | 91d | 98 | |

Type 33 + 90b. Type 40 + 91c (2 examples). Type 52 + 86c + 92d.
Type 62 + 94a (2 examples). Type 77e + 91a + 94a. Type 79 + 86b.
Type 89b: Grey Ware (4 examples). Type 94b: Grey Ware.

Square 2F54
Batch 1000. Brb diagnostics: 47. Other diagnostics: 53.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–47 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–2 | 46 | 61 | 76 | 86a | 90a | 92b | 99c–1 |
| 4 | 19 | 32–1 | 47 | 62 | 77a | 86b | 90b–4 | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b–1 | 86c | 90c | 92d | 100 |
| 6–4 | 21 | 34 | 49 | 64–1 | 77c | 87a–4 | 90d | 92e | 101 |
| 7–1 | 22a | 35–5 | 50 | 65 | 77d–1 | 87b | 90e | 92f | 102 |
| 8–1 | 22b | 36–2 | 51–4 | 66 | 77e–1 | 87c | 90f | 93 | |
| 9–2 | 22c | 37 | 52–1 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53–1 | 68 | 78 | 88a | 90h | 94b–1 | |
| 11 | 24 | 39 | 54 | 69 | 79–1 | 88b–5 | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–4 | |
| 14 | 27 | 42–1 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73–1 | 83 | 89b–2 | 91d | 98 | |

Type 51 + 90a. Type 64 + 91c: Grey Ware. Type 77b + 43 + 88b + 88c.
Type 94b: Grey Ware. 1 'Ubaid sherd.

Square 2F54
Batch 1001. Brb diagnostics: 16. Other diagnostics: 28.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–16 | 16 | 29 | 44 | 59 | 74 | 84 | 89c–2 | 91e | 99a |
| 2 | 17 | 30 | 45 | 60–2 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19–1 | 32 | 47 | 62–1 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6–1 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–2 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–1 | 22b | 36 | 51 | 66 | 77e–1 | 87c | 90f | 93 | |
| 9–1 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78–1 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–3 | 88b–1 | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a–2 | 95 | |
| 13 | 26 | 41 | 56–3 | 71 | 81 | 88d | 91b | 96–3 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97–1 | |
| 15 | 28 | 43–1 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 35: Grey Ware. Type 60 + 92c (2 examples). Type 97 + 94a.
1 Halaf sherd.

Square 2F54
Batch 1002. Brb diagnostics: 14. Other diagnostics: 19.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–14 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–1 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64–1 | 77c | 87a | 90d | 92e | 101 |
| 7–1 | 22a | 35–2 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36–1 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–3 | 88b–1 | 90i | 94c | |
| 12 | 25 | 40–1 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–5 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c–2 | 97 | |
| 15 | 28–1 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Square 2F54
Batch 1003. Brb diagnostics: 39. Other diagnostics: 40.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–39 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–1 | 46 | 61 | 76 | 86a | 90a–1 | 92b | 99c |
| 4 | 19–1 | 32 | 47 | 62 | 77a | 86b | 90b–1 | 92c | 99d |
| 5 | 20–1 | 33 | 48 | 63–1 | 77b | 86c | 90c | 92d–1 | 100 |
| 6 | 21–1 | 34–1 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–2 | 50–1 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–3 | 22b | 36 | 51–1 | 66 | 77e | 87c | 90f | 93 | |
| 9–2 | 22c | 37–1 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68–1 | 78–1 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54–1 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40–1 | 55 | 70 | 80 | 88c | 91a–1 | 95–1 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–11 | |
| 14 | 27 | 42 | 57 | 72–1 | 82 | 89a | 91c | 97 | |
| 15–1 | 28 | 43 | 58–1 | 73–1 | 83 | 89b | 91d | 98 | |

Type 31 + 92a. Type 34 + 87a + 92f. Type 72: Grey Ware. Type 90b + 89a.

Square 2F54
Batch 1004. Brb diagnostics: 7. Other diagnostics: 3.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–7 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37–1 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–1 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–1 | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Square 2F54
Batch 1005. Brb diagnostics: 6. Other diagnostics: 8.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–6 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–1 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19–1 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–1 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b–1 | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b–4 | 91d | 98 | |

Type 31 + 89b: Grey Ware. Type 35 + 89a.

Square 2F54
Batch 1006. Brb diagnostics: 10. Other diagnostics: 9.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–10 | 16 | 29 | 44 | 59 | 74 | 84–1 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–1 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6–1 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–2 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–1 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28–1 | 43 | 58 | 73 | 83 | 89b–2 | 91d | 98 | |

Type 31 + 89b. Type 35: Grey Ware. Type 84 + 90g. Type 89b: Grey Ware.

Square 2F54
Batch 1007. Brb diagnostics: 13. Other diagnostics: 18.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–13 | 16 | 29 | 44 | 59 | 74 | 84–1 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a–2 | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20–1 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–1 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–1 | 22b | 36 | 51–1 | 66 | 77e | 87c | 90f | 93 | |
| 9–1 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10–1 | 23 | 38 | 53 | 68 | 78–1 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–6 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58–1 | 73 | 83 | 89b | 91d | 98 | |

Type 8 + 22a. Type 84 + 90g + 93.

Square 2F54
Batch 1008. Brb diagnostics: 20. Other diagnostics: 21.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−20 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61−2 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a−1 | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35−1 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9−1 | 22c | 37 | 52−1 | 67 | 77f | 87d | 90g | 94a−1 | |
| 10 | 23 | 38 | 53 | 68 | 78−1 | 88a | 90h | 94b−1 | |
| 11−1 | 24 | 39−4 | 54−1 | 69 | 79−2 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96−4 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 35: Grey Ware. Type 39: Grey Ware (4 examples). Type 77a + 88b.

Square 2F54
Batch 1009. Brb diagnostics: 5. Other diagnostics: 23.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−5 | 16 | 29 | 44 | 59−1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85−1 | 89d | 92a | 99b |
| 3 | 18 | 31−1 | 46 | 61 | 76 | 86a | 90a | 92b | 99c−1 |
| 4 | 19 | 32 | 47 | 62−4 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6−1 | 21 | 34 | 49−2 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a−1 | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8−1 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9−2 | 22c | 37−1 | 52 | 67 | 77f | 87d | 90g | 94a−1 | |
| 10 | 23 | 38 | 53 | 68 | 78−1 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a−1 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a−1 | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73−1 | 83 | 89b−1 | 91d | 98−1 | |

Type 49 + 90a. Type 62 + 94a. Type 85 + 88b. Type 91a: Grey Ware.

Square 2F65/75
Batch 046. Brb diagnostics: 35. Other diagnostics: 14.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−35 | 16 | 29 | 44 | 59 | 74 | 84 | 89c−2 | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6−1 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9−2 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a−1 | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40−1 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71−1 | 81 | 88d | 91b | 96−2 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a−1 | 91c−1 | 97−1 | |
| 15 | 28 | 43−1 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 43: Grey Ware.

Square 2F65/75
Batch 302: Brb diagnostics: 20; Other diagnostics: 41.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−20 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31−1 | 46 | 61−1 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21−1 | 34 | 49−3 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7−3 | 22a | 35−4 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36−1 | 51−2 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37−1 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78−2 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79−1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41−1 | 56 | 71 | 81−1 | 88d | 91b | 96−11 | |
| 14 | 27 | 42 | 57 | 72−1 | 82−1 | 89a | 91c | 97−2 | |
| 15−1 | 28 | 43 | 58−1 | 73−2 | 83 | 89b | 91d | 98 | |

Type 31: Grey Ware. Type 35 + 91a. Type 49 + 90a (2 examples).
Type 51 + 90a. Type 73 + 90f. Type 79 + 90d + 92a + 96.
Type 81 + 90h. Type 96 + 89d.

Square 2F65/75
Batch 304. Brb diagnostics: 24. Other diagnostics: 56.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–24 | 16 | 29 | 44 | 59–4 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30–3 | 45 | 60 | 75 | 85 | 89d | 92a | 99b–1 |
| 3–1 | 18 | 31 | 46–1 | 61 | 76 | 86a | 90a | 92b | 99c–1 |
| 4 | 19–2 | 32 | 47 | 62–2 | 77a | 86b | 90b–1 | 92c | 99d |
| 5–1 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49–2 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102–1 |
| 8 | 22b | 36 | 51–1 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37–1 | 52 | 67 | 77f | 87d | 90g | 94a–3 | |
| 10–1 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54–4 | 69 | 79–8 | 88b–1 | 90i | 94c | |
| 12–1 | 25 | 40–1 | 55 | 70–1 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–5 | |
| 14 | 27 | 42 | 57 | 72–1 | 82 | 89a | 91c | 97–2 | |
| 15 | 28–1 | 43 | 58–1 | 73 | 83 | 89b–3 | 91d | 98 | |

Type 30 + 91c. Type 51 + 91c. Type 54 + 90a.
Type 59: Grey Ware (2 examples). Type 62 + 94a. Type 96: Grey Ware.
1 'Ubaid sherd.

Square 2F65/75
Batch 306. Brb diagnostics: 1. Other diagnostics: 4.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–1 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51–1 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68–1 | 78 | 88a | 90h | 94b | |
| 11–1 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 68 + 94b.

Square 2F65/75
Batch 307. Brb diagnostics: 15. Other diagnostics: 14.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–15 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3–1 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62–1 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35–3 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51–2 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a–2 | 95 | |
| 13 | 26 | 41–1 | 56 | 71 | 81 | 88d | 91b | 96–1 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73–1 | 83 | 89b | 91d | 98 | |

Type 51 + 90a.

Square 2F65/75
Batch 308. Brb diagnostics: 4. Other diagnostics: 12.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–4 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18–1 | 31 | 46 | 61 | 76 | 86a–1 | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36–1 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68 | 78–2 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40–2 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–2 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43–2 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 78 + 90g. Type 94a + 91a.

Square 2F65/75
Batch 309. Brb diagnostics: 1. Other diagnostics: 5.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−1 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49−1 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36−1 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9−1 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79−1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96−1 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 36 + 90b.

Square 2F65/75
Batch 310. Brb diagnostics: 0. Other diagnostics: 1 (Type 46).

Square 2F65/75
Batch 311. Brb diagnostics: 3. Other diagnostics: 12.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−3 | 16 | 29 | 44 | 59−1 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31−1 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62−1 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c−1 | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9−2 | 22c | 37 | 52−1 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40−1 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96−2 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97−1 | |
| 15 | 28 | 43 | 58−1 | 73 | 83 | 89b | 91d | 98 | |

Type 9 + 22a. Type 40 + 94a. Type 52 + 92d. Type 62 + 94a.

Square 2F65/75
Batch 312. Brb diagnostics: 1. Other diagnostics: 1 (Type 96).

Square 2F65/75
Batch 313. Brb diagnostics: 32. Other diagnostics: 13.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−32 | 16 | 29 | 44 | 59 | 74 | 84 | 89c−1 | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31−1 | 46−1 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6−3 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37−1 | 52−1 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78−1 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d−1 | 91b | 96 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73−2 | 83 | 89b | 91d | 98 | |

Type 6: 3 sherds probably from same vessel. Type 31 + 89b. Type 73: Grey Ware. Type 78: Grey Ware. Fragment of coarse circular plate.

Square 2F65/75
Batch 315. Brb diagnostics: 7. Other diagnostics: 24.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1−7 | 16 | 29 | 44 | 59 | 74 | 84 | 89c−1 | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a−1 | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a−1 | 90a | 92b | 99c |
| 4 | 19−1 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64−1 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65−1 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36−1 | 51−1 | 66 | 77e | 87c | 90f | 93 | |
| 9−2 | 22c | 37−1 | 52 | 67 | 77f | 87d | 90g | 94a−1 | |
| 10 | 23 | 38−1 | 53−1 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79 | 88b | 90i | 94c | |
| 12−1 | 25 | 40 | 55 | 70−1 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96−4 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97−1 | |
| 15 | 28 | 43−1 | 58 | 73−2 | 83 | 89b | 91d | 98 | |

Type 38: Grey Ware. Type 43 + 92a. Type 51 + 86a.

Square 2F65/75
Batch 314/316. Brb diagnostics: 53. Other diagnostics: 21.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–53 | 16–1 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30–1 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31–2 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62–1 | 77a–1 | 86b | 90b–1 | 92c | 99d |
| 5–1 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21–1 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36–1 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a–1 | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81–1 | 88d | 91b | 96–2 | |
| 14 | 27 | 42 | 57 | 72–2 | 82 | 89a | 91c | 97–1 | |
| 15 | 28 | 43 | 58 | 73–2 | 83 | 89b–1 | 91d | 98 | |

Type 31 + 89a. Type 81 + 86b.

Square 2F65/75
Batch 317. Brb diagnostics: 10. Other diagnostics: 18.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–10 | 16 | 29 | 44 | 59 | 74 | 84 | 89c–2 | 91e | 99a |
| 2–1 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20–1 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21–2 | 34 | 49–2 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102–1 |
| 8 | 22b | 36 | 51 | 66–1 | 77e | 87c | 90f | 93 | |
| 9 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78–1 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54–1 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80–1 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–1 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–1 | 91c | 97 | |
| 15 | 28 | 43–1 | 58–1 | 73 | 83 | 89b | 91d | 98 | |

Type 43 + 89a. Type 79 + 92d. Type 80 + 86b.

Square 2F65/75
Batch 318. Brb diagnostics: 0. Other diagnostics: 4.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 16 | 29 | 44 | 59 | 74 | 84 | 89c | 91e | 99a |
| 2 | 17 | 30 | 45 | 60 | 75 | 85 | 89d | 92a | 99b |
| 3 | 18 | 31 | 46 | 61–1 | 76 | 86a | 90a | 92b | 99c |
| 4 | 19 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5 | 20 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8 | 22b | 36 | 51 | 66 | 77e | 87c | 90f | 93 | |
| 9–1 | 22c | 37 | 52 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38 | 53 | 68 | 78 | 88a | 90h | 94b | |
| 11–1 | 24 | 39 | 54 | 69 | 79–1 | 88b | 90i | 94c | |
| 12 | 25 | 40 | 55 | 70 | 80 | 88c | 91a | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a | 91c | 97 | |
| 15 | 28 | 43 | 58 | 73 | 83 | 89b | 91d | 98 | |

Square 2F70
Batch 045. Brb diagnostics: 22. Other diagnostics: 48.

| Type | Type | Type | Type | Type | Type | Type | Type | Type | Type |
|---|---|---|---|---|---|---|---|---|---|
| 1–22 | 16 | 29 | 44 | 59–1 | 74 | 84 | 89c | 91e | 99a |
| 2–2 | 17–1 | 30 | 45 | 60 | 75–1 | 85 | 89d | 92a | 99b |
| 3–1 | 18 | 31 | 46–1 | 61–1 | 76 | 86a | 90a | 92b | 99c–1 |
| 4–1 | 19–2 | 32 | 47 | 62 | 77a | 86b | 90b | 92c | 99d |
| 5–1 | 20–1 | 33 | 48 | 63 | 77b | 86c | 90c | 92d | 100 |
| 6–1 | 21 | 34 | 49 | 64 | 77c | 87a | 90d | 92e | 101 |
| 7 | 22a | 35 | 50 | 65 | 77d | 87b | 90e | 92f | 102 |
| 8–2 | 22b | 36 | 51–3 | 66 | 77e–2 | 87c | 90f | 93 | |
| 9 | 22c | 37–1 | 52–1 | 67 | 77f | 87d | 90g | 94a | |
| 10 | 23 | 38–3 | 53 | 68–2 | 78–1 | 88a | 90h | 94b | |
| 11 | 24 | 39 | 54 | 69–3 | 79–1 | 88b | 90i | 94c | |
| 12–1 | 25 | 40–2 | 55 | 70 | 80 | 88c | 91a–1 | 95 | |
| 13 | 26 | 41 | 56 | 71 | 81 | 88d | 91b | 96–4 | |
| 14 | 27 | 42 | 57 | 72 | 82 | 89a–2 | 91c–1 | 97–1 | |
| 15 | 28 | 43–1 | 58 | 73 | 83 | 89b | 91d | 98 | |

Type 37: Grey Ware. Type 38 + 89b. Type 51 + 91a (3 examples).
Type 77e: Grey Ware. Type 91a: Grey Ware. 1 'Ubaid sherd.

## APPENDIX 7
## LIST OF POTS FOUND IN GRAVE 1 (BATCH 302)

Figure 20. IM 84305. Type 15. Complete bowl with internally-sloping projecting rim, curving sides and flat base.

Figure 47. IM 84298. Type 41. Small complete jar with out-turned neck, plain rim, ovoid body and rounded base.

Figure 86. Type 72. Profile of small, round-bottomed carinated jar with strap handle.

Figure 90. Type 73. Partial profile of ovoid-bodied strap-handled jar with finger-nail impressions at junction of handle and rim.

Figure 92. Type 73. Medium strap-handled jar with ovoid body; handle broken off at rim.

Figure 104. Rim of spouted jar.

Figure 106. Type 78. Profile of small, carinated, round-based spouted jar.

Figure 107. Type 79. Profile of spouted jar with outward-curving neck, concave band rim and wide shoulder with 2 rows of finger-nail impressions above diagonal rocker decoration, tapering to flat base.

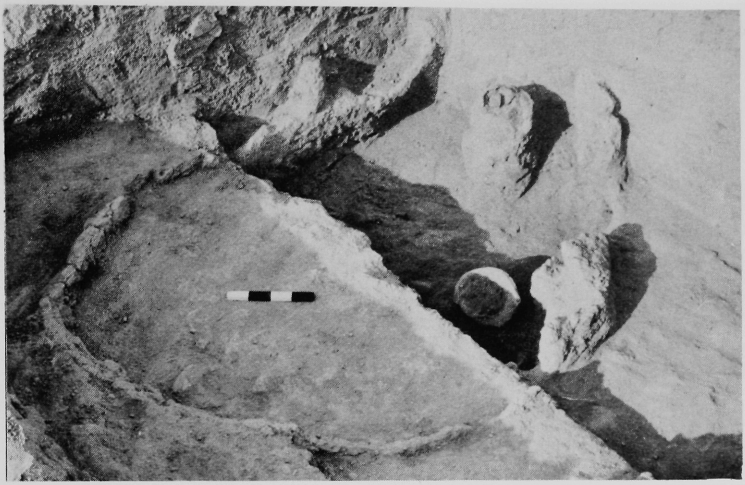
Figure 113. Type 81. Profile of trumpet-spouted jar with row of finger-nail impressions below rim, ovoid body and flat base.

Figure 115. Type 82. Spouted jar with long, thin spout, flat, everted rim on out-turned neck and rounded body.

Figure 129. Type 96. Coarse, vegetable-tempered flat base from large jar.

Also found were a profile of a flat-bottomed bowl with curving sides and flat everted rim (Type 7), a partial profile of a similar bowl and two complete BRBs.

a



b

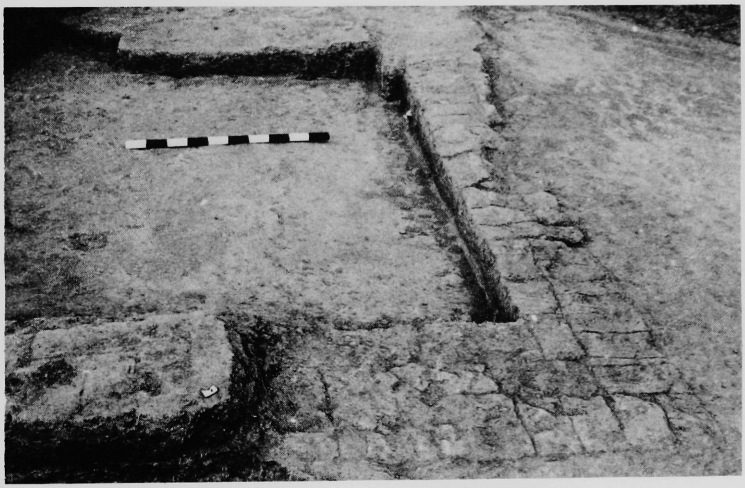


PLATE 1

a. 2F22: Kiln.

b. 2F44/54 looking west; in foreground is wall 504 sliced by foundation trench 511.

a

b

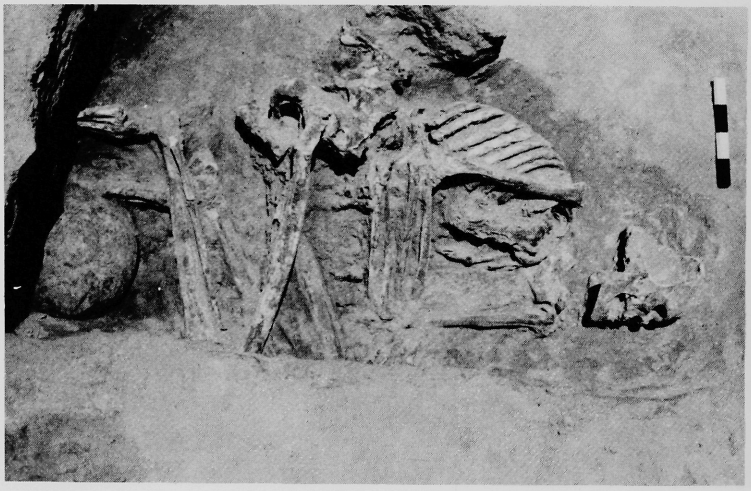
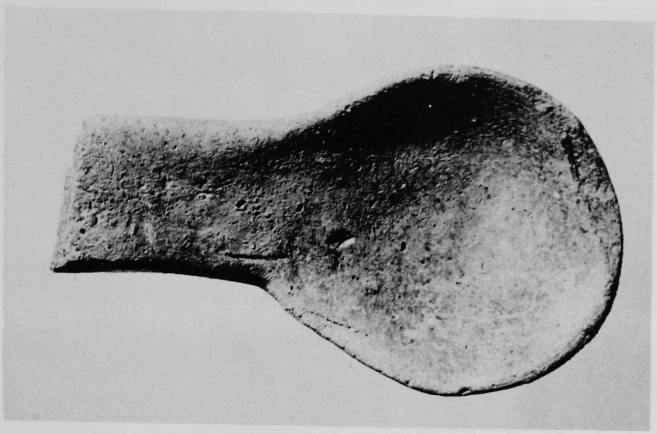
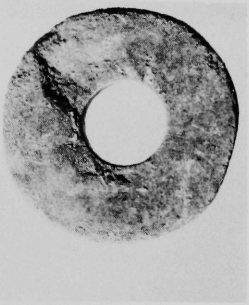


PLATE 2
a. 2F65/75: Grave 1.
b. 2F46/47: Grave 2.



a



b

c

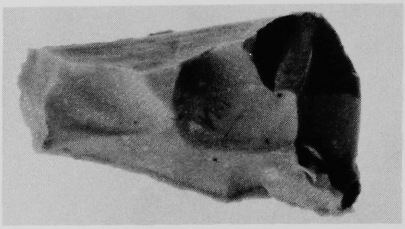
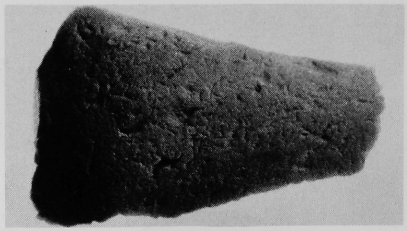
d

e

PLATE 3

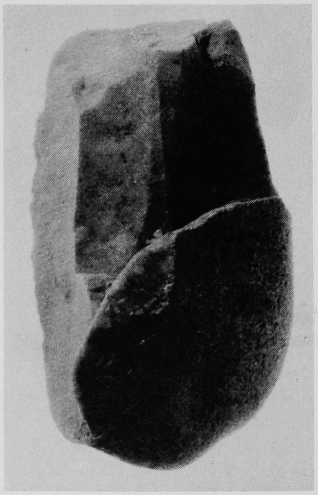
a. Pottery spoon 2F45:01 (1:1).
b. Pierced stone ring 2F54:03 (1:1).
c. Stamp seal 2F54:05 (2:1).
d. Stamp seal 2FS:06 (2:1).
e. Decorated pendant 2F44:01 (2:1).


a

b

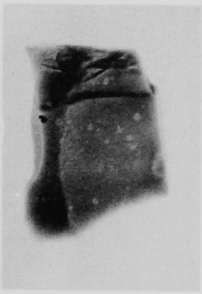

c

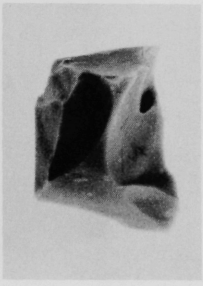


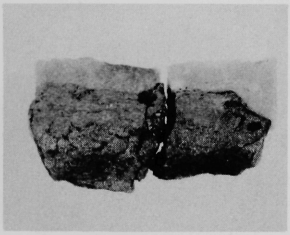

d


a

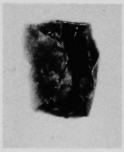

b

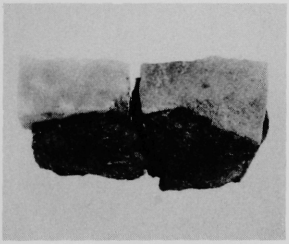

c

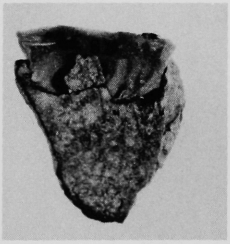



d


e


f





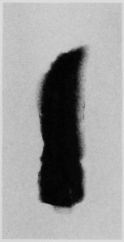
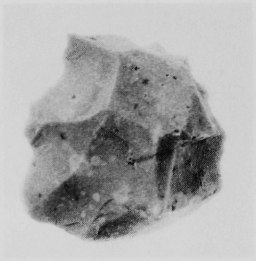

g

PLATE 4
a. 2F45:13 b³, flint core.
b. 2F45:40 m, flint core.
c. 2F45:15 s, flint discoidal core.
d. 2F45:15 l, flint core.

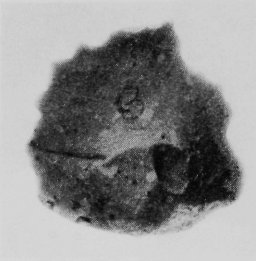
Scale 1:1

PLATE 5 (scale 1:1)
a. 2F25:03 s, flint core.
b. 2F25:03 r, flint core.
c. 2F45:13 yy, flint core.
d. 2F43:11, flint sickle element set in bitumen.
e. 2F45:23, flint sickle element set in bitumen.
f. 2F45:14, obsidian blade mid-section.
g. 2F45:40 a, obsidian blade tip.

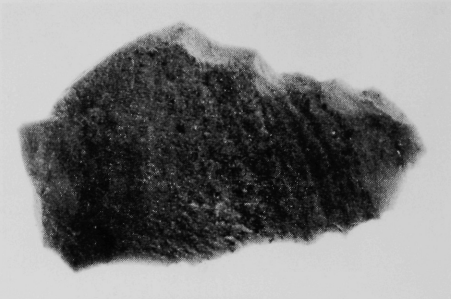
a

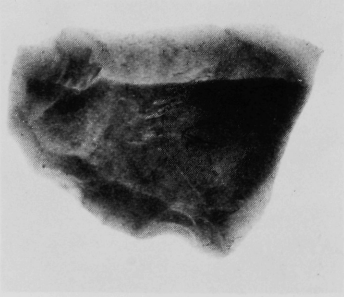


b



c



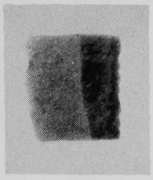


d

PLATE 6

a. 2F45:15 a, flint denticulate.
b. 2F45:15 b, flint denticulate.
c. 2F45:13 ff, flint denticulate.
d. 2F45:13 u, flint sickle element.

Scale 1:1



a

b

c

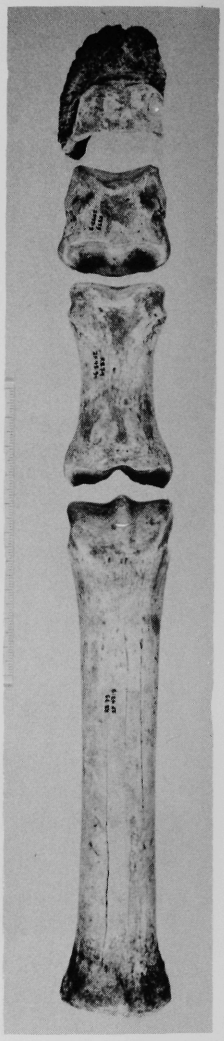
d

e

PLATE 7
a. 2F45:09 a, flint sickle element.
b. 2F45:47 a, flint sickle element.
c. 2F45:57 a, flint sickle element.
d. 2F45:25 b, flint backed blade.
e. 2F45:13 b, flint backed blade.

Scale 1:1

a



b

c

PLATE 8

a. *Equus ?asinus*, foreleg found in articulation, 2F43:9, Batch 049 (GRP. 1).

b. *Equus ?asinus*, metacarpal and phalanges from foreleg found in articulation, after cleaning and conservation, 2F43:9, Batch 049 (GRP. 1).

c. *Ovis*, hornless frontal, 2F46/47:4, Batch 1107.

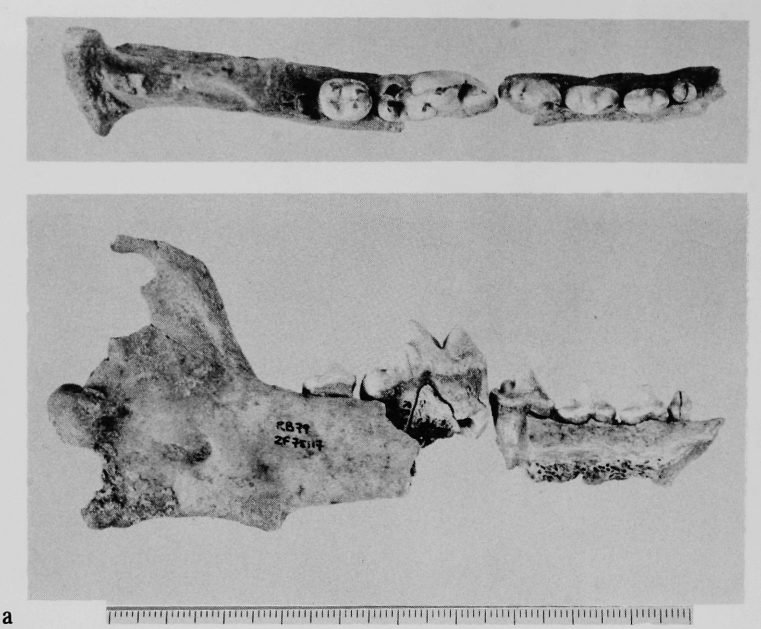

PLATE 9

a. Corroded bones, which have probably passed through the digestive system of a dog.
   1. *Ovis/Capra* astragalus, 2F46/47:2, Batch 1102.
   2. *Ovis/Capra* patella, 2F43:12, Batch 050.
   3. *Ovis/Capra* second and third carpal, 2F45:54, Batch 041.

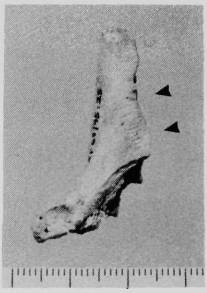
b. *Ovis/Capra*, cut marks.
   1. Distal femur, 2F45:54, Batch 041.
   2. Proximal radius, 2F44:18, Batch 506.
   3. Distal tibia, 2F65/75:33, Batch 318.

c. *Ovis/Capra*, incisors.
   left: normally worn, 2F46/47: 6, Batch 1110 right: overbite, 2F46/47:01, Batch 1101.

d. *Ovis/Capra*: lower fourth premolars with incomplete paraconid-metaconid fusion.
   From left to right: 2F44:17, Batch 507; 2F45:54, Batch 041; 2F22:19, Batch 305; 2F44:26, Batch 509.



a



b

PLATE 10

a. *Canis*, mandible, 2F65/75:17, Batch 302.

b. *Ovis/ Capra*, calcaneum, gnawed by rodent, 2F65/75:25, Batch 304.

الخرز كانت مصنوعة من طين ، و ثلاثة اختام فقط وجدت في موقع يغطي مساحة ١٥٠ × ١٢٥ او ٩ ، ١ هكتار، و اذا كان كما يقترح McAdam قد أسقط من الحساب اعتبار الأواني المقطوفة الحافه اوانى لتوزيع الحصص ، فأن هناك دليل قليل فقط على وجود نشاط اداري او تخصص حرفي او مجتمع طبقي.

تمثل بقايا أبنية من اللبن مستطيلة الشكل اقيمت على ما يحتمل على مسافات متباعده خلال المستوطن . وقد لوحظ مثل هذا التخطيط في مواقع اخرى مثل صغيري الصغير و ريضوالشرقي . ان اكتشاف اثنان من الأفران في تل ربيضة يقترح ان الموقع كان ينتج الكثير من فخارياته . في غياب عينات كاربون ١٤ فان تاريخ الموقع يعتمد بشكل كبير على الفخار . ان اقرب موازيات لمجموعة الفخاريات تاتي من طبقة الوركاء المتوسطة في اى انا ٦ـ ٨ . توجد هناك موازيات ايضا مع طبقات الوركاء المتاخرة من احمد الحتو ومواقع اخرى .

ليس من السهل تاريخ الفخار حيث ان العديد من الصفات ، مثل زخرفة الطلاء المحفوظة ، توجد في عدد من الافاق الاثرية . الدليل المستمد من بعض اللقى الصغيره مثل الختم المسطح الذي يجد اقرب موازيات له مع ختم من جمدة نصر في نوزي وربما يشير الي تفصيل تاريخا في فتره الوركاء المتاخره . على الرغم من موقع تل ربيضة على الطريق المؤدي من الشمال الى الجنوب على طول وادى حمرين ، هناك القليل جدا من الادلة المقنعة على وجود اتصالات خارجية يمكن التعرف عليها في التل . تم العثور على خمسة قطع من الاوبسيدين و الاناء الرصاصي وبعض كسر من النحاس ولابد ان تكون هذه مستور ده و يشير Mynors الى ان الجرتين رقم ٣٤ و ١٠٢ ربما كانت مستور ده من جنوب وادي الرافدين . الاواني ذات الفوهة المزدوجة التي وصفت من قبل McAdam ذات صفات تشير الى صلات مع شمال وادى الرافدين ، و اذا ما اضفنا الى هذا الدليل الطفيف حقيقة ان ثلاثة مواقع فقط تعود الى فتره الوركاء كانت قد وجدت في كل ارجاء الوادي . فيقترح ان هناك نوعا من الفراغ الحضاري وربما السياسي كان سائدا خلال فتره الوركاء يبدو ان حركة التجاره من سومر في هذا الزمن كانت باتجاه الشمال والغرب الى المواقع الكائنة على الفرات الاعلى ويمكن ان نذكر موقع حبوبة الكبيره كاحسن مثال على ذلك . مواقع مثل كون تبة و تبة يحيى علي الهضبة الايرانية والتي انتجت بعض اللقي المهمة من نوع الوركاء مثل الاواني ذات الحافة المنطوقة ، يبدو انها كانت ذات صلات مع سوسة اكثر مما مع جنوب وادي الرافدين ولو ان الاختام الاسطوانية من كودن تظهر صلات مع وادي ديالي جنوب منطقة حمرين . ويبدو تماما ان وادي حمرين في فتره الوركاء كان قد فقد الكثير من الاهمية التي كان يمتلكها كشريان رئيسي للمواصلات في فتره العبيد المتاخره . يبدو ان تل ربيضة يمثل قرية زراعية صغيره مكتفية ذاتيا تصنع الكثير من فخارياتها والعديد من أدواتها الحجرية و بسبب موقعها الذي كان على طريق تجارى مشهور فيما مضى فانها حافظت على صلات متقطعة مع العالم الخارجي مما اتاح فرصة الحصول على كميات قليلة من المواد المجلوبة مثل الاوبسيدين و بعض الكماليات مثل الاناء الرصاصي واية مواد اخري تمت التاجره فيها في جرار صنعت في جنوب وادي الرافدين . لقد كان مجتمعا فقيرا حيث ان اكثر

## خاتمة

بقلم H.E.W. Crawford

لقد كشفت التنقيبات الاثرية في تل ربيضة عن مستوطن زراعي صغير يعتبر اكثر الانواع النادره في المواقع الاثرية. مثل هذا الموقع يبدو نادرا في السجل الاثري ، الا ان مثل هذه المواقع لابد و انها كانت اكبر طبقة في سلم ترتيب المستوطنات من الناحية العددية خلال الالاف الماضية من السنين ، كما هي الحال في الوقت الحاضر. ان مثل هذا الموقع يصعب التعرف عليه عن طريق المسح الاثري حيث انه لايترك سوى اثارا قليلة ظاهره على السطح ، وغالبا ما يتم العثور عليه عن طريق الصدفة فقط كما هي الحال مع تل العمية (Stronach 1961)

ولان مثل هذه المواقع لاتنتج سوى القليل من القطع المتحفية اوتزود بمعلومات خطيره و مهمة فانها و حتى وقت متاخر، كانت لا تجتذب اليها المنقبون. لقد تم الاعتراف الان بأن مثل هذه المواقع تنتج في الواقع دليلا حاسما ولو انه غير مذهل يمدنا بمعلومات مهمه جدا و يزيد فهمنا لاحوال أواخر الالف الرابع ق . م و توضح تقاريرالاختصاصيين عن تل ربيضة هذه النقطة بشكل جيد. يشير دليل الحيوانات ان المناخ والبيئة كانت مشابهة للظروف الحالية السائده في جبل حمرين وان السكان كانوا قد فضلوا اقتصادا قائما على رعي الاغنام واماعز والى درجة اقل الماشية. وكانت الغزلان والحمر الوحشية التي تجوب منطقة السهوب الحافة مصدر اضافي جيد للحوم، حيث أن معدل عمر الاغنام عند ذبحها والذي يقدر بخمسة سنين ، يشير الى ان القطعان كانت قد حفظت بشكل رئيسي لأنتاج الصوف والحليب و ليس اللحم.

ان وجود عدد من اقراص المغازل في الموقع يؤيد مثل هذا الاستنتاج . ان الدليل الجديد الأكثر اهمية الذي ظهر من دراسة عظام الحيوانات هو ان الحمار كان مدجنا في اواخر الالف الرابع ق . م . و ربما كان الحيوان الرئيسي المستعمل لاغراض الحمل . لسوء الحظ لم يكن ممكنا العثور علي دليل نباتي قديم كي يقدم دليل ساند على البيئة اويشير الى المحاصيل التي زراعت . ان وجود المناجل ذات البريق العالي والمجارش وقطع من التربة ذات خصوبة كامنة عالية النسبة ، كلها تشير الى ممارسة زراعة الحنطة والشعير على الاقل. ومن المعقول ان نفترض ان بقوليات متنوعة كانت قد زرعت ايضا .

تظهر البقايا المعمارية وجود ثلاث طبقات بنائية مركبة على الاقل في 2F54 مشيره الى بعض الطول في فتره الاستيطان . الا ان البقايا مهشمة جدا بحيث لاتساعدنا ان نقول اكثر من انها

ان عينات العظام تشترك ببعض الصفات العامة مع تلك التي عثر عليها في مواقع العصر الحجري المعدني الاخرى علي حافة جبال زاكروس. الا ان ظاهره تفوق الاغنام على الماعز والنسبة العالية للاغنام المتقدمة في السن تشابه فقط ما هو موجود في ده سافار و تزيد أمكانية أحتمال ان حوض حمرين و وادي كرمنشاه ربما كانا مركزين متخصصين لانتاج الصوف في فتره الوركاء المتاخره.

## عظام الحيوانات

بقلم S. Payne

استنادا الى نماذج العظام المكتشفة فان الحيوانات التالية كانت ممثلة في تل ربيضة (مرتبة حسب الوفره التي وجدت فيها)

| | |
|---|---|
| اغنام (مدجنة) | وافره |
| ماعز (مدجنة) | متكرره الوجود |
| حمار وحشي ؟ | |
| حمار ؟ (مدجن) | |
| ماشية (مدجنة) | متكرره الوجود |
| غزال | متكرر الوجود |
| كلب | نادر |
| قوارض غير معروفة | نادره |
| ابو بريص | نادر |
| قنفذ طويل الاذنين | نادر |
| قواقع نهرية | واحده فقط |
| ثعلب | عظم واحد |
| سلحفاة | عظم واحد |

من المحتمل ان المنطقة كانت منطقة سهوب جافة ولم يكن بالأمكان الاعتماد على الزراعة الجافة وكانت فرص الري على ما يحتمل محدوده . الا ان الأهوار الموجوده بالقرب منها كانت قد ساعدت على تكوين مناطق رعي شتوية وافره وأكيده، ومن المحتمل ان الحياة الرعوية كانت الدعامة الاساسية لاسلوب العيش كما هي الحال في الماضي القريب. وربما كان الموقع مستوطن بصوره موسمية فقط و يحتمل ان فترة أستيطانه كانت متركزه خلال موسم الشتاء كما يستدل على ذلك من نماذج العظام المتوفره، الا ان أحتمال السكنى الدائم على مدار السنة قد يكون صحيحا ايضا.

ان النسبة العالية للاغنام الكبيره السن، سوية مع بعض الادلة الاخرى التي تشير ألى ان ألعديد من الاغنام كانت أكباشا. تقترح ان انتاج الصوف كان مهما. ويبدو ان بعض الاضلاع الامامية التي وجدت في موضعين منفصلين من الموقع كان تعود الى حمير، و اذا كان الأمر كذلك وبانها كما يبدو اكثر احتمالا حمرا مدجنة فانها من بين اقدم الحمير التي سجلت لحد الان.

بالمحيط المتمدين الذي كان يتطور في هذا الوقت في وادي الرافدين . ان مزيدا من الدراسة للمواد والتكنلوجي التي استعملت في مجاميع الأحجار المشظاة من عدد من المواقع في فتـــره الوركاء والفترات المتأخرة، نكون في حاجة اليها . و نامل ان يصبح بالامكان اعاده تركيب نمازج سبل ألوصول الى المواد الخام واعاده بناء شبكات النشاط المرتبطة بتعديل و توزيع الاحجار المشظاه عن طريق جمع الاساليب التكنلوجية والتايبولوجية والمترية القديمة.

# الادوات الصيوانية

بقلم R. Miller

بينما تكون صناعة الأحجار المقطاه من تل ربيضة غير غنية من حيث اعداد و تنوع الأدوات ، فأن الكسر الناتجه عن التقطية من الموقع تزود بمعلومات مهمة عن التقليد الصناعي الذي أنتج ادوات حجرية ذات حافات قاطعة الى ما بعد ادخال البرونز بفترة طويله. ان الاحجار المقطاه تساعد وبشكل فذ على اعاده تركيب مراحل الصناعة ، كما ان دراسة كسر الاحجار المقطاه في الموقع تزود بدليل غير مباشر لعادات صناعة الصوان في ربيضة والمتعلقة بتحضير اللباب ونماذج التقطية المتواجده ضمن الصناعة. وبما ان الادوات المصنوعة من الصوان والاحجار المقطاه غالبا ما تكون محتفظة بدليل متراكم لسلسلة من اثر الضربات المنفرده التي حدثت نتيجة لضربها على كتلة ضخمة من المواد الخام ، فانه من الممكن ملاحظة نماذج القطع التي شكلت ستراتيجية و تكنيك التقطية. ان دراسة الاشكال الناتجة عن طريق متعمد او عرضي اثناء طبوغرافية التقطية تزود بمعلومات حول مظاهر السلوك المتنقل حضاريا والمتعلقة بتقليد الصناعة اليدوية والذى لايمكن ملاحظته دائما من خلال الاصناف الاخرى للمواد المصنوعة من المواقع الاثرية.

ان تحليل مجاميع الاحجار المقطاه لماقبل التاريخ في منطقة الشرق الاوسط و اوروبا الغربية قد اظهرت ان الاجماع التكنلوجي المحلي والاقليمي على اشكال و نسب النظايا يمكن ملاحظته احيانا (Jelinek 1981; Gingell & Harding 1981) وبما ان معظم مقذبوا الصوان يتعلمون صناعة التقطية عن طريق ملاحظة مقذبي صوان اخرين ، فان تقاليد التقطية بما فيها درجة التفاوت المسموح التي تظهر على صنف معين من حوادث هندمة الحجر، هذه التقاليد تميل لتتطور ضمن مجموعات مقذبي الحجر العاملين في مكان قريب وينتجون نوعا من علامات مميزه او شارات معينة قابلة للتميز من قبل الناس ضمن تقليد معين او بدونه. وبينما يكون السابق لأوانه تمييز حماعات التقطية بنفس الدرجة من الثقة التي يمكن فيها تمييز طرز الفخار المعاصره، ألا أنه وبتوفر مجاميع اكبر من الحجاره المقطاه من وادي الرافدين فربما يصبح ممكنا مقارنة الاساليب المعاصره مع التقاليد التكنلوجية المشتركة التي تطورت ضمن مناطق مختلفة ومناطق سكنية و أسر المنازل و ورش العمل. ان الطرق التي استعملت وعدلت فيها المواد الخام المستعملة في التقطية والمتوفره قرب الموقع تزود ايضا بمعلومات يمكن ان تستعمل لدراسة تنظيم الانتاج في مواقع ماقبل التاريخ المتأخره خلال فتره الأنتقال الى اشكال النشاط الاقتصادي المرتبط

Johnson ايضا (1973،56-58) المقابض الملتوية، القناني ذات الحافة المعمولة على شكل ياقة او طوق ، الصنابير المنحنية والمثلثات ذات التظليل المتعارض ، على انها صفات وركائية متاخره وليست متوسطة ويضيف لها الزخرفة المحزوزه والمائلة و الحافات المنتفخة التي تتطابق مع قائمة Wright لصفات الوركاء المتاخره من تبة فاروخ اباد (Wright 1981، 165-72) .

في تل ربيضة فان صفات الوركاء المتاخره مثل المقابض الملتوية، الصنابير المنحنية، زخرفة المط الأفقية على الجرار ذات المقابض والمثلثات ذات الترقين المتعارض ،كانت موجوده ولكنها كانت متمثلة بكسره واحدة فقط او كسرتين في كل حالة. الصفة الوحيده لعصر الوركاء المتاخر والتي كانت موجوده بأعداد أكبر هي الحافة المنتفخة والتي وجد خمسة منها موزعة (مثل الكسر الاخرى ذات الصفات الوركائية المتاخرة) خلال الترسبات الاثرية ألى جانب صفات اعتبرت ممثلة لفتره الوركاء المتوسطة. الزخرفة الاخدودية والمائلة والقناني ذات الحافة المطوقة لم تكن موجوده، لذلك يبدو ان تل ربيضة يجب أن يرى على انه يعود الى فتره الوركاء المتوسطة بشكل اساسي ، اي انا ٧- ٦ او اينانا ٢١ او ٢٠- ١٨ أ ١٧). مع وجود حفنة من الصفات المتاخره والتي ربما تشير الى تاريخ يقدر بنهاية ذلك الدور.

# الفخار

بقلم E. McAdam

ان اكثر الأشكال الفائمة المنتجة على نطاق واسع في تل ربيضة هو الوعاء ذو الحافة المفطوفة الذي عثر عليه باعداد كبيره في كل مناطق الموقع بهذه الاواني تكون ذات صناعة سميكة الجدران معمولة بالقالب ومعالجة بالقش الخشن وبعض حبيبات الرمل ، يتراوح قطرها بين ١٦- ٢٠ سم تقريبا .

نوع اخر من انواع الوركاء المعروفة جيدا كان الفخار ذو الطلاء الاحمر والمصقول ممثلا بجرار ذات اربعة عري وضلع مرصع يدور حول البدن (الكتف ) اللون يتراوح بين الأرجواني الداكن الى الأحمر الشمعي الساطع . فخار الوركاء الرمادي كان موجودا ايضا و ممثلا بجرار ذات مصبات ومقابض وغالبا ما تكون مزخرفة بصفوف من طبعات الاصابع وزخرفة الترقين المتعارض المعمولة بواسطة المشط . و اضلاع مرصعة بواسطة الاصبع. ان الزخرفة صفة مميزه على الجرار من كل الاشكال والفخاريات في تل ربيضة وتظهر بشكل رئيسي على أكتاف وحافات الجرار . المصبات والمقابض تنال اهتماما خاصا . وبالأضافة الى الاضلاع المرصعة بواسطة الاصبع هناك صفوف من طبعات الاظافر و طبعات اخرى على شكل الأسفين ، وطبعات بيضوية ومستطيلة ، زخرفة الترقين المتعارض بشكل افقي المعمولة بواسطة المشط تبدو شائعة جدا . كما وجدت ايضا زخرفة الطلاء المحفوظ بشكل مائل . لم يكن الصقل شائعا و وجدت ثلاثة كسر مصبوغة فقط بصبغ اسود او احمر. و هناك زخرفة على شكل مهزّ وجدت على اثنان من الجرار.

ان تاريخ فخار الوركاء المتأخر مسالة صعبة الحل وذلك ان العديد من الصفات كانت قد استمرت طويلا كما ان التوزيع الزمني لبعض الأشكال المتنوعة التي تعتبر علامات مميزه ، تختلف من موقع الى اخر. في نفر يعتبر Hansen الطبقات ٢٠ - ١٧ على انها تعود الى فتره الوركاء المتوسطة والطبقات ٢١ أ- ١٨ الى الوركاء المتأخره (Hansen 1965, 202)

ان الصفات التي تعتبر علامات مميزه لفتره الوركاء المتوسطة هي فخاريات الوركاء الحمراء والرمادية ، الاضلاع المرصعة بواسطة الاصبع ، زخرفة المهزّ ، اشرطة منفرده من الترقين المتعارض المحزوز ، جرار ذات اربعة عري مزخرفة بطبعات الاصابع او الاظافر ، والكريات الصغيره ، اوعية جؤ جئية الشكل (مزوده بصنبور على الغالب ) و اكواب ذات مقابض عريطية الشكل . الصفات المتاخره تشمل اكواب عريطية المقبض ذات حز افقي ، مقابض على شكل حبل افقي او عمودي ، مثلثات محزوزه بطريقة الترقين المتعارض ومقابض منحنية . ويعتبر

بدون اهمية. سوف يلاحظ فوراً أن جميع هذه الاختام الثلاثة ذات نقوش هندسية وهذا النوع ليس مألوفاً في فتره الوركاء المتاخره ماعدا ربما في الشمال حيث توجد هناك امثلة من تبة كورا (Homès Fredericq 1970, 52) ، ان استعمال المثقب في اثنين منها (fig. 27,18 & 19) يشير الى تاريخ الوركاء المتأخر حيث ان الاختام المحفوره تكون اكثر شيوعا بشكل عام من الاختام المثقوبة في المواقع العائده الى فتره اسبق. ان اشكال الاختام المسطحه الثلاثة تختلف تماما ، الشكل الكروي هو الشكل الاكثر شيوعا الذي تتميز به اختام الوركاء المسطحة ، الاشكال المعمولة على شكل لوح نادره كما ان النوع الذي يثبت الدلاية هو اكثر ندره (Homès Fredericq 1970, 52) من ناحية اخرى فان الاختام المدلاه وجدت في عصور العبيد و جمده نصر. نقش الاختام يستدعي بعض التعليق ، الخطوط الموضوعة بشكل غير منتظم (fig. 26,20) ربما تشاهد على انها بقايا لأختام العبيد في حين ان النقوش المحفوره بشكل دقيق في (fig. 26,18) تماثل بشكل تام ختما من نوزي بورخ الى فتره جمده نصر (Starr 1937, pl.40w).

## اللقى الصغيره

بقلم P.J. Watson

كانت اللقى المصنوعة من الطين والترتكوتا تشكل اكبر نسبة بين المواد الاخرى المكتشفة و كانت الخرزهي الاكثر وفره (fig. 26,1-13) وجميع هذه الخرز ذات شكل اسطواني تقريبا في الاساس وقسم منها اثخن واقصر من القسم الاخر وذات جوانب مستقيمة ونهايات اما مسطحة اومقعره. ثقبت هذه الخرز بشكل طولي قبل الشوي وتحتفظ معظم الامثله بنتوءات طينيه غيرناعمة حول الثقب عند احدي النهايتين ربما نتجت من عملية الثقب ، يبدو ممكنا ان هذه الخرز كانت قدنظمت على قضيب اوعصا رفيعة عندما كانت لاتزال طرية على طريقة الكباب عثر على كسرتين من مناجل طينية (fig. 27,9 & 10) احدهما على سطح التل والاخرى من طبقات الرمادوالكسرفي 2F45. وهناك ايضا قطعتان من ادوات السحن المعمولة على شكل مسمار (fig. 27,3 & 4) و مع ان كلا هذين الصنفين من المواد غالبا ماعتبرت من الصفات المميزه لفترة العبيد ، فانه الان بات معقولا بشكل اوسع بانها تعود الى فترات زمنية اوسع وكانت لاتزال قيد الاستعمال حتى نهاية أواخر عصر الوركاء على الاقل (Adams 1972,208) كماعثر على موادطينية متنوعة منها اناء فخاري مجوف على شكل ملعقة (fig.27,05; pl.2b) الذى يشبه مثلا من تبه كوره ط ٨ (Speiser 1935, fig.211) ، اقراص فخارية مثقوبة سدادات جرار مثوية مخروطية الشكل ، وكسر متنوعة غير واضحة المعالم.

المواد المصنوعة من الحجر ، مثل المواد الطينة ، كانت شائعة جدا وذات اشكال متنوعة كثيرا. ومن بين المواد النافعة التي يمكن ذكرها كسره ربما تمثل جزء من قرص مغزل مصنوع من حجر ابيض ناعم ، و ثلاث اوزان معلقة اثنان منها دائرية الشكل مصنوعة من حجر ابيض داكن (fig. 27,08) والثالث ذو شكل مستطيل. القطع الثلاثة مثقوبة من الوسط بثقب عمل من كلا الجهتين و لاتزال علامات الثقب ظاهره حول التجويف.

ومن مميزات عصر الوركاء المتاخر قطع حجرية مصنوعة على شكل مكعبات وجدت اثنان منها في تل ربيضة (fig. 26,24 & 25) كلاهما مصنوع من حجر اخضر اللون أحدهما ذاحافة حادة نتج عنها أثنتي عشرة وجها طويلا سداسي الشكل بالاضافة الى ستة وجوه مربعة رئيسية. وجدت اثنان من الاختام المسطحة على السطح (fig. 26,18) و وجد احد الامثلة (fig. 26,19) علي ارضية احدى الغرف. ومع قلتها فان هذه المجموعة من الاختام ليست

الخارج الى الشرق كشف عن سطح رملي بني اللون ، وفي الكسارات الرمادية التي تعلوه عثر علي دلاية (Fig. 27, 20) .

ان البقايا المعمارية في تل ربيضة كانت محفوظة بشكل رديئ ومهشمة جدا . هناك دليل كبير على ان القسم الاعلي من الموقع كان قد تعرض لعملية تعرية كبيرة تسببت في فقدان دور بنائي رئيسي واحد على الاقل في احدى المناطق من الموقع والتي نقبت بالتفصيل كان هناك دليل على وجود ثلاثة ادوار بنائية ودور واحد يتكون من حفر تنزل الي التربة العذراء . ولم تزود البقايا المعمارية باى دليل يشير الى اهمية او وظيفة المستوطن من ناحية اخرى ان التل في الوقت الحاضر يغطي حوالي هكتار واحد مما يجعله من بين اكبر المواقع التي نقبت ضمن مشروع حمرين .

عبر التل الى مسافة ٢٤ م حتى فقدت معالمة باتجاه القمة الى الشرق و الحافة الى الغرب. لم يكن بالمستطاع العثور على زاوية لهذا الجدار الذى كان يحدد البناية. ان حجم هذا الجدار يقترح ان احد اهم ادوار الوركاء اهمية كان قد تعرض للتعرية بشكل تام. وجدت جدران الطبقة السفلى التالية اسفل تراكمات سميكة من الطابوق المتهري، وهذا يقترح وجود فتره متوسطة هجر خلالها التل بين الدورين البنائيين في هذين المربعين. وفي معظم الأحيان لم يبقى سوى خنادق الأس و يبدو ان الطابوق وكتل الطين المستعملة فيها كانت اكثر مقاومة لتاثيرات التعرية. لقد تم الكشف عن مخطط يمثل جزء من بناية مستطيلة الشكل (fig. 17 & pl. 1b). تم تنقيب احدى الغرف بشكل كامل وكانت ذات ارضية مطلية بلصوق خضراء اللون محفوظة بشكل جيد (١٠٠٥) و عثر فيها على موقد وبعض المواد ذات العلاقة. بلغ حجم الغرفة ٩ ، ٤ م من الشمال الشرقي الى الجنوب الغربي و ٨ ، ٤ م من الشمال الغربي الى الجنوب الشرقي. لم يبقي من الجدار الشرقي (١٠١٠) سوى خندق الاساس المرصوص بكتل من الطين الصلب. توجد كسره اوثغره في هذا الخندق ربما كانت تمثل مدخلا مع انه ربما يكون من المألوف بصوره اكثر استمرار خندق الاساس عبر المدخل. في داخل الغرفة وبالقرب من الجدار الشرقي عثر على خندق بيضوى الشكل مليئ بالرماد. وكان جزء من الارضية قد تعرض للحرق في هذه المنطقة. وجد على الارضية ختم مسطح مثقوب (fig. 27,19) ونموذج مصغر جدا لأناء فخاري. وكان هناك دليل على ان الجدار الشمالي للغرفه كان قد تم أعادة بنائه اذ تم ملاحظة بقايا جدار من اللبن (١٠٠٢) الى الجنوب تقريبا من اس الطوف. الجدران الاخرى للبناية كانت في حالة مهشمة جدا الا ان عملية تنظيف مستعجلة تمت في اخر يومين من ايام التنقيب اظهرت عناصر تمثل ثلاث غرف اخرى.

لقد قطع الجدار الشمالي للغرفة اثناء تأسيسة جدارا اقدم (٥٠٤)، وهذا يمثل الدور الأكثر قدما في هذه الخنادق. كان عمل الطابوق محفوظا بشكل جيد وكان من الممكن تبيان اوتفريد الطابوق الذي كان قد وضع بطريقة منتظمة ومرتب علي شكل صفوف تتكون من صف من الطابوق الموضوع بشكل طولي يسنده صف اخر موضوع بشكل عرضي. وكان الطابوق ذا لون اخضر ويبلغ قياسة ٢٨ × ١٤ × ١٤ سم واستعمل في تثبيته ملاط برتقالي اللون بسمك ٢ سم على كلا الوجهين الداخلي والخارجي للجدران. وكان قد تم حفر خندق للاس اعرض من الجدران وملئ بالطابوق احيانا. داخل زوايا الجدران ظهرت بقايا السطوح متقطعة فقط. و من

# ترتيب الطبقات

بقلم R.G. Killick

تل ربيضه واحد من المواقع القليلة التي وجدت من قبل الاثريين على الضفة الغربية لنهرنارين . يقع هذا التل بين النهر وجبل حمرين علي بعد كم اسفل قرية اسكي كوبرو ويقع أسفل حافة منطقة الزراعة في الوقت الحاضر.

يتكون الموقع من ثلاثة تلال منخفضة (Fig. 13). يرتفع التل الرئيسي الى علو ٨٠ ٢٥ سم فوق السهل المجاور وتقترح الكسر الفخارية المبعثره مساحة من الترسبات اقصاها ١٥٠ × ١٢٥ م تقريبا . من ناحية اخرى ، و حتى قبل التنقيب فقد بدى محتملا ان معظم ، ان لم يكن كل ، الترسبات الاثرية كانت قد فقدت بسبب عوامل التعرية لقد اشارت الدراسة الأولية للملتقطات السطحية ان التل الرئيسي ربما كان يؤرخ الى فتره حضارية واحده هي اوخر عصر الوركاء وان التلين الجانبيين يعودان الى عصر التاريخ .

مع مثل هذا المستوطن الواسع والقليل العمق فأن اول مشكلة كانت محاولة ايجاد تلك المناطق من التل التي سوف تظهر ترسبات مرتبة طبقيا . في الموسم الاول تم تخطيط أربعة خنادق بعرض ٢ م فوق التل الرئيسي ضمن المربع 2F البالغة مساحتة ١٠٠م (Fig. 12) أثنان من الخنادق يتجهان من الشرق الى الغرب (2F00-09 & 50-55) و أثنان يتجهان من الشمال الى الجنوب (2F00-90 & 05-85). وبشكل عام فان المربعات قد تم قطها سطحيا الى معدل عمق قدره ٢٠ سم ثم تم انتخاب مناطق معينة لأجراء التنقيب فيها بصوره اعمق وقد بلغ طول المسافة التي تم تنضيفها بهذا الاسلوب ٣٢٢ م . وكان قد تم ايضا سبر التلين الجانبيين الاخرين . في الموسم الثاني كان التنقيب على الجانب الجنوبي الشرقي للتل الرئيسي حيث دلت نتائج تنقيبات الموسم الاول علي وجود ترسبات اثرية باقية. بالاضافة الي ذلك فقد تم اجراء مزيد من حفر الجس للتأكد من حجم أستيطان فتره الوركاء .

كان الكثير من عمل الموسم الثاني مركزا في المربعات 2F44/54 ودلت النتائج علي وجود ثلاثة ادوار بنائية علي الاقل . وكانت اخر ميزه تتمثل بجدار كبير اصابته عوامل التعرية على سطح التل وكان هذا قد لوحظ في الموسم الاول خلال تنقيب المربع 2F45. ان كل ما تبقى من معظم طوله هو خندق أساس من الطوف . وكان هذا بعرض ٤ ، ام وتم تعقيبه

المتغيره التي اثرت في نموذج الأستغلال البشرى فيه. لقدنا قشنا بعض تلك العوامل الاعتماد على سقوط الامطار و طبيعةنهر ديالى ، التفاعل بين الرعاه والمزارعين ، اهميه الاستقرار السياسي وموقع الوادى في ملتقى طرق شبكةتجاريةواسعة الا ان القائمة ربما لاتزال غير كاملة.

سلسلة حمرين في نفس الموضع الحالي. على ضوء اعاده تكوين هذه الصوره يصبح من الواضح الان ان العديد من المستوطنات القديمة كانت قد اقيمت باتجاه طولي على اوبالقرب من الضفة اليسري لمجرى نهر ديالى القديم. كان يبدوغير مستقر في المنطقة الكائنة شمال الهلخي ، وهذا يوضح ألى درجة معينة اختلاف المستوطنات في الجزء الشمالي من الوادى. وفى النهاية الجنوبية، في منطقة تل كبة، ربما كان النهر اكثر استقرارا.

ومع ان مجري نهر ديالى كان على ما يحتمل العامل الوحيد الاكثر اهمية في تقرير تاريخ الوادي الا اننا يجب ان لانسقط من الحساب امكانية تنوع العوامل الجغرافية والتاريخية والتي ربما كانت سببا جزئيا في تقلب مستويات وانواع الاستثمار في حمرين. ومن وجهة النظر الاكدية والبابلية فان هذا الوادي يقع على حواشي عالمهم. و اذا ما اعجبك التعبير ، الارض التي خلف (الارض الكائنة ما وراء بغداد). في العصور التي كانت فيها الحكومة قوية في اواسط وادى الرافدين ، ربما كان ممكنا لها ان تحافظ على الهدوء والاستقرار في الوادي. من الناحية الاخرى كانت الظروف تقتضي ان تكون المنطقة ارض حدود بين قوتين متنافستين كما كانت عليه الحال بالتاكيد في الالف الاول عندما كانت الحرب قائمة بين بابل و اشور ، او عندما تكون الحكومة المركزية ضعيفة جدا بحيث لاتستطيع فرض سيطرتها في المنطقة، فان الوادى في مثل هذه الظروف لايكون مكانا جذابا للقيام مستوطنات دائمة.

لقد كان الوادي مهما ايضا كمنطقة عبور لاولئك المسافرين القادمين من سومر الى الشمال. ألى الغرب. وكذلك فان السفر بين بغداد والموصل يكون ممكنا على طول الجانب الغربي لجبل حمرين ألا انه طريق صعب و مكشوف تتخلله بعض مناطق الرعي القليلة وقلة من المياه. ومن الممكن ايضا اجتياز الضفة اليسرى لنهر دجلة، ومع انه ليس من السهل عبور نهرى العظيم والزاب عند التقائهما بدجلة. ان هذه العوامل تجتمع لتضع الضفة الغربية لوادي حمرين وتل ربيضة على احد اهم الطرق بين سومر والشمال. في العصور التاريخية كان المسافرون من بغداد الى الموصل يسيرون خلال دلي عباس بين نهرى دجلة وديالي ويعبرون جبل حمرين خلال احدا لممرات الجنوبية وهذا يجلبهم نحو وادى حمرين حيث يبقى الطريق ممتدا غرب نهر نارين ويمر بالقرب من تل ربيضة. في العصور الحديثة كانت نقطة العبور الرئيسية لنهر نارين في اسكي كوبرو جنوب غرب قره تبة و من هناك يذهب الطريق الي كفرى و كركوك. ولكن كيف كان تأثير تغير مجري نهر ديالى علي هذه الطرق التقليدية، فان هذا ما ليس لنا به علم. ان ما هو واضح هو ان الوادي كان خلال تاريخه الطويل خاضعا الى عدد من العوامل البيئية

العائدين الي عصر العبيد المتاخر وعصر السلالات الاول ،يفصل بينهما ثغره زمنية خلال عصري الوركاء و جمدة نصر . يبدو ان الاستيطان (المستقر على الاقل ) كان متغيرا الى درجة كبيره من حيث الكمية من فتره الى اخرى كما هي الحال في جميع انحاء الوادي يبدو ان قمه الكثافة المبكره كانت خلال عصر العبيد المتاخر . في خلال عصرى الوركاء وجمدة نصر التاليين يوجد هناك غياب ملحوظ للمواقع في كل ارجاء الوادي ، وان ثلاثة فقط من المواقع التي تؤرخ الي هذين العصرين كانت قد وجدت . قمة الكثافة الثانية تاتي في فتره عصر السلالات الاول اعقبها فتره تضاءلت فيها المستوطنات خلال عصر السلالات الاخير والعصر الاكدي اعقبها بعد ذلك ارتفاع حاد في عدد المواقع التي تؤرخ الى فتره عصر ايسن / لارسا والعصر البابلي القديم . ومن القمة البابلية القديمة بدء عدد المستوطنات بالانخفاظ بشكل ملحوظ . لدينا دليل على بقايا استيطان ضئيل في الوادي منذ نهاية العصر الكاشي الي العصر الاخميني . ومن هذه النقطة فصاعدا ازداد عدد المستوطنات خلال العصور البارثية والساسانية والاسلامية عندما كان الوادي مستوطنا بشكل اكثر كثافة من اي عصر اخر .

اذا ما حاولنا تعليل مثل هذه التقلبات فان اول سؤال يجب ان يؤخذ بنظر الاعتبار هي الى أى مدى تعكس الظروف المناخية والبيئية الحالية تلك التي كانت سائده في الماضي . في حمرين يبدو ان مثل هذا السؤال عصيبا جدا بسبب عدم استطاعتنا تعقب نموذج قابل للتمييز سواء في موقع المستوطنات في الوادى اوفي عددها ،ولحسن الحظ فان جزء من هذه المشكلة قد صار الآن متوفرا نتيجة العمل الجيومورفولوجي الذى قامت به البعثة الاثارية الايطالية (Baggio et al. 1985 )

يشير التقرير الاولي للمسح الجيومورفولوجي للوادي بانة خلال معظم العصور القديمة ، كان واحدا من فروع نهر ديالي ، وربما الفرع الرئيسي ، يجري منحدرا باتجاه وادي حمرين (انظر fig. 11 حسب مصدر Baggio السابق ١٩٨٥ ) .

ان الدليل الرئيسي لقيعان الانهار القديمة هذه جاء نتيجة لسلسلة من عمليات الثقب المركزية التي جرت في معظم الأحيان بالقرب من منطقة اليلخي (no. 36, figs. 4-7)

وكذلك نتيجة المسح الحقلي وتحليل صور الاقمار الصناعية . وكما يتضح من تلك النتائج فان نهر ديالى كان قد دخل الوادى في المنطقة الكائنة شرق قره تبة . لقد تم تمييز خمسة على الاقل من قيعان أنهر قديمة مختلفة ، أوتعرجات في النهاية الشمالية للوادي . وجري بعد ذلك النهر متدفقا باتجاه الجنوب بصوره موازية لمجرى نهر نارين الحالي قبل ان يخرج من

من الحشائش والاعشاب توفر مراع كافية للاغنام والماعز التي يرعاها عدد قليل من البدو الذين جاءوا الى الوادى في اواخر الربيع .

ان موقع تل ربيضة بين نهر نارين و جبل حمرين يقترح بان الزراعة ربما لم تكن السبب الرئيسي في تقرير موقع المستوطن . تبدو المنطقة الكائنة الى غرب نارين تفتقد الى القرى على خلاف الضفة الشرقية ذات القرى المتعددة حيث تكون التربة اكثر خصوبة على ما يفترض . ان تل ربيضة هو واحد من ثلاث مستوطنات فقط تعود الى فتره الوركاء وجدت في هذا الوادي وهذا يعكس اختلافا للنظر بالمقارنة مع نهاية فتره العبيد . ان هذا الاختلاف او التناقض يلقي ضوء اعلى الاختلافات المتطرفة للمستوطنات من فتره الى اخرى و التي كانت تمثل احدا الالغاز الرئيسية التي ظهرت نتيجة لتنقيبات مشروع حمرين . المشكلة الاخرى ذات العلاقة التي ظهرت كانت تتمثل في السبب في الاختلاف الكبير في رواسب التربة الموجوده ضمن الوادي .

يقع تل ربيضة على السطح وكانت الصفة الغالبة على الموقع هى ظواهر التعرية المكثفة . في امكنة اخرى ، كانت تراكمات التربة منذ فترة العبيد مكثفة كما يشير الى ذلك بوضوح العمق الذي امتدت فية طبقات العبيد تحت السطح في تل مضهور . في منطقة اليلخي وجدت مخلفات اواخر فتره الوركاء على عمق ٢م تحت السهل وكشفت عن طريق الصدفة فقط . وبعيدا الى الجنوب فان مستوطن تل صنكرا يقع على مرتفع طبيعي حيث كان يوجد دليل قليل على نفس الدرجة من الترسبات .

ان تلك التساؤلات حول المناخ القديم تبقى اساسية لمعرفتنا بنماذج المستوطنات في الوادي . كيف نستطيع ان نفسر مثل هذا التغاير المثير في عدد المواقع من فتره الى اخرى ؟ ان هذا الاختلاف فى كثافة الاستيطان واستثمار الموارد الطبيعية ربما يكون الصفة الوحيده اللافتة للنظر لتاريخ المستوطنات عموما فى المنطقه . لدينا دليل على نموذج استيطاني قصير لافت للنظر فى حمرين منذ عصور ما قبل التاريخ فصاعدا . لاتوجد مواقع كبيره في الوادي الذي كان مستوطنا بصوره مستمره تقريبا لفترات طويلة من الزمن . ولايبدو ان مثل هذه الحالة كانت قائمة ابدا . و ايضا فان معظم المواقع سطحية تماما او بتعبير اخر قليلة العمق ، وكان البعض منها مستوطنا لمده لاتزيد على فتره حضارية واحده كما هي الحال في تل ربيضة ، والبعض الاخر استوطن لمده دورين على الاكثر . و يعتبر تل مضهور نموذجا لمثل تلك المواقع ليس فقط لاحتوائه على فترتين استيطانيتين كما ثبت ذلك من الناحية المعمارية ، ولكن ان هذين المستوطنين

الوادي الى الشمال الشرقي يقع بين جبل جبة داغ والطبقة التالية لجبال زاكروس و ربما وادي نهر حلوان ايضا ثم يمتد شرقا باتجاه الحدود العراقية الايرانية الحديثة على الاقل. ان هذه المنطقة تشبه جزئيا من الناحية الجيولوجية المناطق الاعلى من جبال زاكروس. و مع ذلك فان المنطقة ليست هي الوادي المرتفع و انما الاراضي المحاذية التي تقع على الحافة الشمالية الشرقية للاراضي المنخفضة وعلى الحافة الجنوبية الشرقية لمرتفعات زاكروس. ان نظره خاطفة على نماذج سقوط الامطار توضح هذه النقطة.

يستلم وادي حمرين في الوقت الحاضر كميات من المطر كافية للزراعة الجافة مما تؤهله لأن يلعب دورا مهما في الزراعة. في الواقع فان اكثر من ٥٠ ٪ من محصول الحنطة والشعير ينتج في ظروف الزراعة الجافة. ويعتبر هذا الرقم ذا دلالة مهمة عندما نعلم ان معدل الحنطة والشعير المزروعة عن طريق السقي محليا هو ٣ ٤٠ مرات اكبر من محصول الزراعة الجافة. من ناحية اخرى فان الاعتماد على هطول الامطار يكون مهمة غير مضمونة. وبينما يكون معدل سقوط الامطار بين ٢٥٠ و ٣٠٠ ملم و هذا يقع ضمن الحد الادنى للزراعة الجافة فقد لوحظ ان التغيرات السنوية الفعلية للمطر تتغير بقدر ٠٫٤ و ١٫٥ مرات بحجم المعدل السنوي. ان هذه الدرجة من عدم المؤكدية حول كمية المطر المحتمل سقوطها في اية سنة معينة هي السبب في ان محاصيل الزراعة الجافة تكون ناجحة في ثلاث سنين فقط من كل خمس سنين ومع ذلك ، بخلاف منطقة ديالى السفلى الى الجنوب الغربي من جبل حمرين مباشره ، فان الزراعة الجافة في وادي حمرين معقولة ومربحة حيث يكون الري كمكمل نافع للمطر الطبيعي ولكن ليس ضروريا بشكل مطلق.

و مع ان وادي حمزين يكوّن وحدة جغرافية فان هناك اختلافات مهمة فيه و ان اجزاء قليلة فقط من الوادي تصلح للزراعة. و تقع معظم الاراضي الصالحة للزراعة على الجانب الشرقي لنهر نارين الذي يخطر الوادي من الشمال الى الجنوب في الوقت الحاضر. يمتد نهر نارين في قاع محفور الى عمق ٦م اسفل سطح السهل الحالي و هو بذلك لا يصلح لاغراض السقي غير الميكانيكي. بالاضافة الى ذلك فان النهر يمتص حوالي ٣٠٠٠ كم من الاراضي المجاورة كما ان السطح المتحدر ضمن هذه المنطقة يجعل النهر عرضة للطوفان السريع كان تل ربيئة واحد من بضعة مستوطنات فقط تقع على الجانب الغربي من نهر نارين. الارض هذا ذات نوعية رديئة تتكون من اتربة حصوية ، والنباتات قليلة و متفرقة. و كذلك فان معظم ما يسقط من الامطار القليلة يضيع خلال السطح الشديد التحدر. بعض المحاصيل الشتوية كالحنطة والشعير تزرع على شريط ضيق قرب النهر وفي الربيع فان غطاء خفيفا

منهور يحد بعض الوقت ليعمل ايضا في تل ربيضة والذي قدم لنا مشورات نافعة جدا .
ان المشاركة الكندية في المشروع اصبحت ممكنة بسبب الدعم الذي قدمه متحف اونتاريو الملكي اما عمل البعثة الاثارية البريطانية الى العراق فقد كان مسندا من قبل المدرسة الاثارية البريطانية في العراق و اكاديمية العلوم البريطانية .
لقد قامت المؤسسة العامة للاثار والتراث العراقية بتغطية نفقات العمل و تجهيز الكثير من معدات و لوازم العمل . و تولت المدرسة الاثارية البريطانية في العراق مهمة نشر هذا التقرير .

## الصوره الطبيعية والتاريخية لتل ربيضة

بقلم

T.C. Young & R.G. Killick

يحاول معظم الاثاريون ان يفهموا ليس فقط القوى المحركة التاريخية لموقع معين يقومون بتنقيبه و انما ايضا ان يتفحصوا العلاقة بين ذلك الموقع وبين البيئة الطبيعية والتاريخية الاوسع التي عمل فيها ذلك الموقع . ان اغراننا و قابليتنا للتعامل مع هذه الصوره الاكبر هي طبعا اعظم كثيرا عندما ، كما هي الحال مع مشروع جبل حمرين ، نجد ان مواقع كثيره قد نقبت ضمن منطقة صغيره نسبيا .
أن المنطقة موضع النقاش هنا هي تلك التي غمرتها الان مياه سدحمرين الذي اقيم على نهر ديالى في النهاية الجنوبية لجبل حمرين ( fig. 1 ) . يحد المنطقة من الجنوب ملتقى نهر نارين مع نهر ديالى وتمتد باتجاه الشمال نحو المنطقة المحيطة بمدينة قره تبة الحديثة . ويحدها من جهة الغرب سلسلة جبال حمرين ومن الشرق مرتفعات جبل ناسار والمرتفعات الاعلى لجبل جبة داغ . تقع معظم المواقع التي شملتها عمليات ألمس والتنقيب ضمن هذه المنطقة و هناك مواقع اخرى قليلة تقع على الضفة اليسرى لنهر ديالى بين هذا النهر و نهر كور دره . و مهما يكن فليس هذه هي كل المنطقة التي يقترح التحليل بانها كانت تمثل المسرح الملائم الذي يساعدنا على تمحيص التاريخ الاثري لهذا الجزء من وادي الرافدين . ان تلك المنطقة لابد وانها كانت تشمل امتداد وادي حمرين الى الشمال الغربي من قره تبة على الاقل حتى منابع نهر نارين ، و كذلك فان امتداد

## شكر و تقدير

لقد قامت التنقيبات في تل ربيضة كجزء من المساهمة البريطانية الكندية في مشروع انقاذ اثار حوض سد حمرين و كانت المشاركة بين المتحف الملكي في اونتاريو ممثلا بالاستاذ T. Cuyler Young والبعثة البريطانية الى العراق برئاسة مديرها انذاك السيد J. Postgate و كما هو مالوف فأن تشر التقرير الأثري يعكس او يمثل جهود اشخاص عديدين لذ لك اتوجه بالشكر الى الدكتور مؤيد سعيد دميرجي رئيس المؤسسة العامة للاثار والتراث الذي بدأ بنجاح باهر مشروع انقاذ اثار حمرين كما و نسجل بالشكر و العرفان التقدير والامتنان الى المرحوم الاستاذ فواد سفر و بهنام ابوالصوف والى موظفي المؤسسة العامة في جلولا و باهيزه لمساعداتهم و جهودهم التي بذلوها نيابة عنا.

كانت بعثة التنقيب في الموسم الاول تتالف من السادة J. Postgate والسيد Watson اللذين تولا مسؤلية ادارة حفر الخندق الاولى و قسط التربة العليا في الموقع. اما اعضاء الموسم الثاني فهم الدكتوره H.E.W. Crawford (اثاريه) والدكتور E. MacAdam (اخصائي فخار) و ممثل المؤسسة السيد عبد المجيد محمد. هذا و قد عمل السادة التالية اسماؤهم ادناه اعضاء بعثة تل مضهور على بعض المواد المكتشفة من تل ربيضة وهم السادة P. Watson (مسجل) و السيده A. Watson (مساعده لقى اثرية) والسيد R. Britton (رسام) والانسة M. Logan والسيد A. Kennedy (مساعدا اثار). اسجل شكري لهم جميعا لجهودهم التي بذلوها و رفقتهم الطيبة. لقد جرى اعداد تقارير الاختصاص فيما بعد من قبل كل من السيد D. Downs (بقايا الهياكل العظيمة البشرية) و E. MacAdam **(دراسة الفخار ألمقارن)** و Miller **(تكنلوجيا الاحجار المصنعة)** وكانوا جميعهم قد بذلوا جهودا رائعة لتخطي كل الصعوبات التي واجهتنا اثناء التنقيب. لقد قامت J.A. Moon باعداد ملحقا يتضمن نتائج عملية السبر في تل حيزلون التي جرت في نفس الوقت الذي كانت تجرى فيه تنقيبات تل ربيضة و قام باعداد ملحقا عن تحليل الصوان بواسطه اشعه اكس. و قام K. Arnold بتصوير وطبع قطع الصوان من ربيضة و تطوع مشكورا لطبع الصور الاخرى. اتقدم بشكري الجزيل الى الجميع.

لقد انطلقنا في عملنا من القاعده الرئيسية للبعثة الاثارية البريطانية الى العراق في قرية كشكول و اودان اشكر الدكتور M.D. Roaf الذي كان اضافة الى عمله في تل

# تـــل ربيضة

بقلم

by
T. Cuyler Young, R.G. Killick, P.J. Watson, S. Payne,
D. Downs, E. McAdam, H.S. Mynors, R. Miller,
H.E.W. Crawford, J.A. Moon & K. Arnold.

المدرسة الاثارية البريطانيةفى العراق
المؤسسة العامةللاثاروالتراث
الجمهورية العراقيـة
تقـرير حمرين رقـــــم ٧

# تـــل ربيضة

# التنقيبات البريطانية في

## تـــل ربيضة