## Excavations at Tell Brak

## Vol. 2: Nagar in the third millennium $B C$

By David Oates, Joan Oates and Helen McDonald




Human-faced bison sculpture, limestone.

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with contributions by Janet Ambers, Amy Bogaard, Marco Bonechi, Robert Brill, Mike Charles, Juliet Clutton-Brock, Marie-Agnès Courty, John Curtis, D. Cutler, Malgorzata Daszkiewicz, Jesper Eidem, Candida Felli, Irving Finkel, Charly French, Donald P. Hansen, Julian Henderson, Eufrasia Roselló Izquierdo, M.K. Jones, T. Lawrence, Wendy Matthews, Rachel Maxwell-Hyslop, Theya Molleson, Arturo Morales Muñiz, Peter Northover, Gerwulf Schneider, Colin Shell, Jill Weber \& T.J. Wilkinson

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The following served as site supervisers on thirdmillennium areas of the site over the years 1976-93: Peter Ball (1990, Area SS)
Cyprian Broodbank (1990, Area SS)
Nicolas Cauwe (1985-86, Area FS)
John Curtis (1976-81, Areas CH, ER, ST), also
served as registrar
Peter Dorrell (1978, Area ER), also served as
geomorphologist and photographer $(1976,1978)$
Jesper Eidem (1987-92, Areas SS, FS)
Geoffrey Emberling (1992, Area SS)
Irving Finkel (1984-85, Area FS)
Jane Grenville (1983, Area FS)
Simon Hardy (1985, Area FS)
Haitham Hassan (1991, Area SS)
David Hawkins (1976, 1978, Areas CH, ST), also served as registrar 1976
Ismail Hijara (1980, Area ER)
Jonathan Hodgkin (1978, Area ST)
Wendy Horton (1988, Area SS)
Nicholas Jackson (1991-93, Area SS)
David Jeffreys (1976-83, Area CH)
Evan Jones (1991, Area FS)
Antonia Kershaw (1991, Area SS)
Jean-Marc Léotard (1986, Area CH)
John MacGinnis (1987, 1990-92, Areas FS, SS)
Augusta McMahon (1993, Area SS)
Jean-Philippe Marchal (1985, Area CH)
Tim Matney (1987, 1990, Area FS)
Donald Matthews (1984, 1990, Area FS)
Roger Matthews (1992-93, Area FS)
Jean-Marc Meunier (1984-85, 1987, Area CH)
Mohammed Muslim (1988, Area SS)
Thomas Oates (1978, Area ST)
Mike Parker Pearson (1983, Area FS)
Graham Philip (1984, Areas AL, DH)
Andrew Sargent (1986, Area FS)
Glenn Schwartz (1983, Area ST)
Penny Spikins (1992, Area FS)
Antoine Suleiman (1983-84, Area SS)
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# Introduction 

TThe decision to resume work at Brak was taken after a brief survey of mounds in the Khabur basin carried out in the spring of 1975 by the Director and Sd Kassem Tuweir. At that time no major archaeological work had been carried out there since the pioneering excavations of Mallowan in the 1930s and, even earlier, by Max von Oppenheim at Tell Halaf. It had not at first been our intention to choose Brak, the largest mound in the area, clearly a site of great complexity and a formidable undertaking at any time. But having completed a series of campaigns at Tell al Rimah in northern Iraq, where our focus had been on the second millennium, and having worked earlier at Late Assyrian Nimrud and both Hellenistic and Roman sites in and west of the Upper Tigris valley, our primary interest was now the third millennium, for which at that time even a reliable ceramic framework was lacking. Brak stood out as ideal for the investigation of this period. Not only was the site known to be of some historical significance in the third millennium, owing to Mallowan's excavation of the Naram-Sin 'Palace', but the whole of the southern area of the mound appeared to have been abandoned at the end of the third millennium, a situation which promised relatively simple access to levels of this date over a large part of the tell. Such direct access to the third millennium is indeed rare on major sites in northern Mesopotamia. Moreover, Brak lay approximately at the modern limits of rainfed farming, allowing at least the possibility of investigating the impact of marginal climatic variation on the history of the area at this time. Thus our primary objectives were to establish a well-dated material culture sequence and to obtain basic environmental and economic data; our long-term objective was to contribute to the understanding of urban growth in this region in the third millennium and, very specifically, to investigate the credibility of Akkadian imperial claims.

This volume of the final reports provides the basic data from and commentaries on the fourteen seasons of excavation of the third-millennium city carried out between the years 1976 and 1993. Although Brak was occupied throughout the third millennium, with the exception of early third-millennium levels in Areas TW and ST (tell plan, Fig.

13, p. 16) and several deep soundings, those levels that have been excavated up to now lie entirely in the second half of that millennium. Ninevite 5 pottery was recovered from numerous levelling fills, in particular in Area SS, but with the exception of Area ST, the uppermost level in Area TW and a small sounding in Area ER, no occupation floors of this date were reached during the seasons published here. Further information on the distribution of Ninevite 5 at the site, from the 1994-96 excavations under the Field Direction of Roger Matthews, will be published in Volume 4 (preliminary reports in Matthews 199496). The early third-millennium materials from Area TW will be published in Volume 3 because this material provides an important terminus ante quem for the extensive and important fourth-millennium BC sequence identified there; the latter constitutes the focus of Volume 3 (preliminary reports in Iraq 53, 1991; 55, 1993). The investigation of earlier thirdmillennium levels is a major objective of the new series of field seasons which began in the spring of 1998, with Dr Geoffrey Emberling as Field Director. We have, of course, greatly benefited from the knowledge gained from Mallowan's earlier excavations, despite our revision of some of his conclusions. We would like here to record our gratitude for his support and encouragement during the early years of our work at the site.

## A. Geography

Brak lay on one of several major routes which led from the Tigris valley to southeastern Anatolia and to western Syria. This road left the Tigris at Assur and passed through the gap at the western end of Jebel Sinjar, between it and Jebel Jeribe. It then ran via Lake Khatuniyah northwards towards Brak, the first major city encountered north of Sinjar and one which controlled the crossing of the Wadis Radd and Jaghjagh, approximately at their confluence (Figs. 1a \& 2). Thus Brak functioned as a Gateway City to the rich agricultural lands of the Khabur, and a major road station on routes to the north and west. To the north one major road passed through the Mardin Gap, on a clear day visible from the site, and onwards towards Diyarbakr and the rich copper mines of Ergani.


Figure 1. Tell Brak: a) from the north with the gap between Jebel Sinjar and Jebel Jeribe visible in the distance; and b) from the southwest showing Area SS before excavation (the large area of mound in the left foreground). To the right of the gap is the site of the Naram-Sin Palace and the Eye Temple.


Figure 2. Map of the northern Khabur region (D. Oates).

The importance of the Jaghjagh in antiquity is clearly shown by the number of large sites lining its banks, from ancient Nisibis at the foot of the Tur Abdin at modern Nusaybin/Qamishli via Tell Mohammed, Tell Hamidi (almost certainly ancient Tadum / Ta'idu), Shaikh Names, Tell Barri and Brak, over a distance of only some 45 km . Brak, which was almost certainly the ancient city of Nagar, was clearly the largest of these, at least until the end of the third millennium, and at that time politically the most important. Indeed the goddess known as the 'Lady of Nagar' continued to sanction sovereignty within the area of the Khabur well into the second millennium, by which time Brak, though still a major city, had clearly become a smaller and less important settlement (Vol. 1, 141).

The main mound is approximately $800 \times 600 \mathrm{~m}$, and stands some 40 m in height (Figs. $3 \& 4$ ). The high north ridge was occupied throughout the second millennium, at least until Middle Assyrian times,
while in the Late Bronze Age the Mitanni city, published in Volume 1, reoccupied the southwestern corner of the mound (Area SS) and spread to what are now ploughed fields to the northwest. Traces of Late Assyrian occupation also survive. The main mound is surrounded by a corona of small tells, which are either Roman or, so far as we know, Northern Middle Uruk in date. Roman settlement in the area is reviewed in Oates \& Oates (1990); the fourthmillennium material will be published in Volume 3. A survey of the surrounding landscape is published by Eidem \& Warburton (1996); more detailed comment on the immediate landscape is to be found in Chapter 1 in this volume.

Brak today lies at the southern limits of rainfed agriculture within the Khabur triangle. This is clearly illustrated in the diminishing number of sites as one moves southwards towards Jebel Sinjar. Indeed only in the Roman and Islamic periods were there settlements of any consequence within this more south-



Figure 3. EDM topographic map of Tell Brak and surroundings, one-metre contour intervals. (Courtesy of Geoff Emberling, Tim Skuldbel \& Torben Larsen.)
ern landscape. To the south of the Jebel, however, as along the Tur Abdin to the north, rain-bearing winds from the west provide well-watered but narrow bands of rich, arable soils, the rainfall total decreasing as one moves southwards from both hill ranges. When we first worked at Brak the limit of reliable rainfed agriculture was said to lie roughly at the latitude of Chagar Bazar (Fig. 2). The modern landscape, however, has been totally altered by the introduction of diesel pumps for irrigation, in particular
making possible the summer cash crops of cotton and sesame. The ancient staples of wheat and barley are, of course, winter-growing, coinciding with the rainy season, approximately November to March/ April.

It is unlikely that the Khabur basin was ever forested in recent times. Such evidence as we have suggests a landscape of open scrubby steppe, in the past heavily cultivated as it is today in the vicinity of Brak and particularly within the areas of marginally
greater rainfall to the north, with a more steppe-like environment to the south and possible areas of marsh to the southeast along the Radd. Dense thickets with trees such as tamarisk and poplar would have lined the rivers and perennial wadis. In the third millennium the Jaghjagh was certainly a perennial watercourse with some considerable depth of water, as we first saw it in the 1970s and early 1980s; reeds would also have grown along its banks (see Vol. 1, Fig. 64). The rich Holocene grasslands would have attracted early settlers; indeed PPNB flints have been found among the chipped stone materials at Brak and proto-Hassuna sites have been identified at nearby Khazna and Kashkashok.

## B. Terminology

In southern Mesopotamia terminology for the third millennium $B C$ is well-established and remains generally useful despite some fundamental disagreements, in particular with respect to the first half of that millennium and the identification, even the existence, of 'ED II'. In this volume the periods with which we are most concerned lie within the historically defined range ED IIIB to Ur III/Isin-Larsa. North Mesopotamian terminology for this time frame, however, remains a matter of contention. Indeed at present there is little agreement as to appropriate usage, while the section on northeast Syria in the latest COWA volume (Schwartz \& Weiss 1992) makes no attempt at generalization. A colloquium organized by Marc Lebeau at Tell Beydar in May 1998 has made by far the most successful effort to rationalize the existing evidence for northeastern Syria, but it has to be admitted that it has not been possible to reach full agreement on attribution and dating on the part of all the archaeologists involved. The generalized chronology now in press (Lebeau et al. in press) and


Figure 4. Vertical air photograph of Tell Brak. (Courtesy Hartmut Kühne and Norbert Grundmann. Photograph taken on behalf of the German Expedition to Tell Schech Hamad in cooperation with the Syrian Agricultural Ministry and the Syrian Antiquities Department, 2 May 1984. Photographer Norbert Grundmann; pilot, Abbad Samman; co-pilot, Hartmut Kilhne. Copyright Tell Shech Hamad Excavation 1984.)
based particularly on the material from several 'key sites', including Chuera, Hammam et-Turkman, Beydar, Leilan and Brak, and on Peter Pfälzner's 'Jazira chronology' (Pfälzner 1998), is a tribute to Marc Lebeau's considerable patience and persistence.

In this volume we publish a chronological chart for general guidance, listing those periods up to now identified at Tell Brak, in which alphabetic designations have been used in order to provide less controversial labelling (Table 1, p. xxx). These phases are further defined in terms of very approximate radiocarbon determinations and current periodizations, including the new chronology from the Beydar colloquium. We note recent suggestions, inter alia by Dittmann (1994) and more recently by Gasche et al. (1998), that third- and early second-millennium Meso-

Table 1. Chronological chart for Tell Brak.


The prehistoric dates are approximations, based on radiocarbon; the gaps reflect flexibility/ uncertainty and do not represent gaps in the site.
The historic dates follow Brinkman 1976. EJ = the Early Jazirah chronology based on Pf laner 1998, and modified in Lebeau et al. 2000; TG = Tepe Gawra.
potamian dates should be significantly lowered. We have adhered, nonetheless, to the slightly earlier scheme still widely in use, largely because the new proposals seem to us equally inconclusive but also because, in our view, the slightly earlier dates conform, in the second millennium, more closely with the evidence of the Assyrian King-List, again a muchdebated source.

Contact between Brak and southern Mesopotamia was often close. Indeed during the Akkadian period, which forms a major focus in this report, Brak appears to have been a provincial administrative centre of Akkadian 'imperial' power. For this reason the term Akkadian is used (how it is used is explained below), and south Mesopotamian terminology is referred to where the material culture from Brak displays close similarities with the south. We recognize that this is not an entirely satisfactory system, but hope that by explaining clearly how each term is being employed, the reader will find that the information content of such usage overrides the obvious objections. In particular, we are reluctant to invent new labels. The archaeology of Western Asia is becoming increasingly complex, and there are advantages in retaining both simple frameworks and existing terminologies, whenever this seems to make historical or chronological sense.

One of the reasons for returning to Brak in 1976 lay in the presence of the so-called palace of NaramSin, an historical identification made on the basis of mud-bricks stamped with the name of the Akkadian king and found within the foundation walls, the most secure method of historical attribution available to us in ancient Mesopotamia. The significance of the Naram-Sin building at Brak is twofold. At Brak it provides a fixed stratigraphic point, regardless of the actual calendar date, that is, a precise datum to which other third-millennium levels can be related. And in wider historical terms its construction level provides the only precisely dated archaeological horizon at any third-millennium site in northern Mesopotamia or Syria. The presence of this large, fortified administrative building, for it is not really a palace, together with the evidence of the cuneiform texts recovered at the site (discussed in Chapter 3), encourages us to use the term 'Akkadian' for the period during which that southern dynasty administered Brak and neighbouring areas of the Khabur. That is, the term Akkadian is employed in this volume when, and only when, epigraphic evidence indicates south Mesopotamian control by rulers of the Akkadian dynasty. Its general use is therefore 'political' and bears no relation to 'style'
nor, in particular, to the evidence of the seals in the manner argued by D. Matthews (1997a). When used in the sense of south Mesopotamian style, inevitable in the context of the seals, this is made clear. Indeed the evidence from Brak clearly illustrates the potentially misleading nature of 'style' in historical reconstructions, especially at the time of the first Akkadian king who is chronologically contemporary with both late ED III rulers in Sumer and late ED III style.

The appropriate designation of other periods within the third millennium is, unfortunately, not so simply resolved. In the first preliminary reports we referred to the pre-Akkadian material as 'Late ED III'; this undoubtedly unfortunate designation originally derived from the style of the sealings on bullae recovered in 1980 from the Area CH Level 6 destruction debris, an attribution reinforced by the presence in debris from the same level of the very 'Sumerian' mother-of-pearl couchant bull (Fig. 317, p. 296), also found in 1980. At that time we had little knowledge of the associated pottery, which we now know to be entirely northern in its character. We now suggest the substitution of Brak 'Phase L', but recognize that the publication elsewhere of widespread reference to pottery from the 'Late ED III destruction level' (Iraq 1982), requires some continued use of this earlier terminology. No political connection with southern Mesopotamia, however, is implied. The term 'ED I' is also used with reference to pottery types identical with those from the south.

For the period following Akkadian rule (Phase N ), we have preferred the neutral term 'postAkkadian' to include both the Ur III and the ephemeral Gutian periods. Although southern Ur III and even early Isin-Larsa pottery types are found in these levels, which represent the latest extensive occupation of southern areas of the mound, there is no evidence for a southern administrative presence as originally suggested by Gadd and Mallowan. Indeed we have reason to believe that Brak, like Mozan, Nineveh and other sites in north Iraq and northeastern Syria, was ruled by a Hurrian dynasty for at least part if not most of the last two centuries of the third millennium (p. 393).

## C. Organization of the volume

Our intention has been to make the Brak evidence as accessible as possible. For this reason the text is divided into chapters which describe specific types of material; these chapters are preceded by a discussion of the ancient landscape and the excavations themselves. The results of fourteen seasons of exca-
vation have provided a very large body of data, which restrictions of space make it impossible to publish in full. Indeed any attempt to do so would have been unreadable. Thus we have deliberately concentrated on those areas and levels which have provided the most coherent evidence. We have tried to illustrate all types of object but, again for reasons of space, we have tended deliberately to eschew comparanda. Again for reasons of space, the chipped stone material has been moved to Volume 3 where it will appear together with that from the fourth millennium. Some of the scientific analyses and a fuller report on the faunal material will also appear in Volume 3. A locus list is appended, which provides further context information; the excavation notebooks, plans and sections are available in Cambridge for anyone wishing further detail.

In publishing the pottery our emphasis has deliberately been focused on complete and well-stratified vessels (a total of 1780 different profiles). We are not unaware that this is widely considered an inadequate, indeed dated, approach, but since we have been able to illustrate in situ material from three quite distinct assemblages in Phases L, M and N, that is, 'late ED III', Akkadian and post-Akkadian, each of which is securely dated, directly or indirectly, by cuneiform documentation, we believe that this will be prove to be the most useful publication strategy for those who wish to use this report. Moreover, because we have excavated extensive lateral areas, we have come to appreciate the degree to
which pottery is context-specific, especially on large urban sites like Brak: large jars in one room (e.g. FS Level 3, Room 4), large numbers of bottles or urns in another (SS ritual deposits, ST Level 2, etc.). We have not calculated sherd percentages for all types of pottery, not only because of context bias, but largely because almost all of the more unusual types and wares occur only in small fractions of one per cent. An examination of the Stone Ware percentages (pp. 154-5) clearly illustrates this point. Moreover, by far the largest quantity of sherds we have recovered have come from levelling fills, and these were not always recognized when the original counts were done. Large-scale building operations are also directly responsible for the shifting of sherds and other materials from their original contexts. For example, in Area CH alone, some 15 drains and cisterns penetrate the Phase L buildings from the Akkadian levels, causing much disturbance to the earlier levels.

Both the pottery and the objects are illustrated by line drawings in the figures at the end of the volume; these are accompanied by complete catalogue and context information. Each category of object is numbered sequentially, and bold numbers within the text refer to these end-of-volume drawings. The TB numbers identify objects to be found in the new museum in Deir ez-Zor; register numbers refer to the site records, again available in Cambridge. We have deliberately retained the Mallowan site designations in order to facilitate reference to the earlier excavations.

## Chapter 1

# Geoarchaeology, Landscape and the Region 

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The primary objective of this chapter is to provide the results of preliminary investigations of the landscape around the site of Tell Brak, and to place the site within a geoarchaeological context. This will at least provide some baseline data that may eventually contribute to an understanding of the prehistoric and Bronze Age economies. Emphasis is upon the presentation of basic data drawn from aerial reconnaissance, satellite imagery and limited soil investigations as well as the production of a model of landscape development that can be used in future research. Although relatively little geoarchaeological work has been undertaken around the site, the present chapter should provide some basic information regarding the complexities of the archaeological record at Brak. Data come from a brief visit by Wilkinson in 1991, a rapid geoarchaeological reconnaissance of the immediate surroundings of Brak by French and Matthews in March 1993, and observations made by the Oates over the past twenty years. Remote sensing data come from CORONA satellite images in use at the Oriental Institute, Chicago, and the Metropolitan Museum, New York, a series of vertical air photographs taken from a light plane at $5000^{\prime}$ by Hartmut Kühne and Norbert Grundmann (late afternoon, $1^{\text {st }}$ May 1984), and a detailed EDM map, with contour intervals of 0.50 and 1.00 m , respectively, undertaken by Tim Skuldbøl and Torben Larsen during the 1998 season under the field direction of Geoff Emberling (Fig. 3).

The broader landscape perspective is supplied by CORONA satellite photographs taken in May 1965. This series was publicly released by the US government in February 1995 but was taken much earlier, mainly between 1960 and 1972. Although in terms of military reconnaissance these represent obsolete technology, for archaeological work they provide an invaluable resource because, unlike modern imagery, they are cheap, of high resolution and provide a view of the area prior to late twentieth-cen-
tury clutter and urban development. Their spatial resolution on the ground at approximately 6 or 9 feet (c. 2-3 m) makes them almost as good as many air photographs (see also Kennedy 1998).

Tell Brak is located in an area of extensive alluvial and colluvial Quaternary silts and sandy silts derived from calcareous mountains in southern Turkey (Courty 1994). It lies between the 200 and 300 mm isohyets within Mesopotamian steppe vegetation of Artemisietea herbae-albae mesopotamica (Zohary 1973). The soils have been mapped as Mediterranean brown soils on conglomerate (Weiss 1986b, fig. 6) or as calcic xerosols (FAO-UNESCO soil map of the world), that is, the area has semi-arid soils with weak horizon development and a horizon of calcium carbonate enrichment within 75 to 125 cm of the ground surface, the depth depending upon soil texture. Usually this diagnostic horizon is evident as a zone of soft white concretions or fine filaments of calcium carbonate. The climatic environment is often regarded as having been moderately stable over the last 6000 years (Kühne 1991; Ergenzinger et al. 1988), but more recent studies now suggest that minor climatic fluctuations have been significant virtually throughout the Holocene (Courty 1994; Blackburn \& Fortin 1994; see also Blackburn 1998).

Brak lies at the modern southern limit of cultivation in the Khabur basin, and its position is clearly relevant to its importance. In terms of communication Brak controls the crossing of both the Wadis Radd and Jaghjagh, being located near the confluence of these two channels. More importantly, it is on the route from the Tigris Valley that passes west of Jebel Sinjar and on to Mardin and Anatolia, or west to the Euphrates (Figs. $1 \& 2$ ). The site is larger than would be expected from such an agriculturally marginal position, a situation compatible with a gateway community that developed not only on a major route from the Tigris valley but also in an optimum location for exchange between sedentary communi-


Figure 5. Air photograph of Naram-Sin Palace excavations. (Taken by Aviation Française, 28.iii.39, ht 200 m.)
of a village located at or near Brak (referred to as Saffan $=$ M28, in Göyünç \& Hütteroth 1997, 181-2; for the surrounding villages, see M25, M10 and M32). Saffan is conceivably the extensive area of medieval and later settlement between Tell Brak and Tell Barri on the west bank of the Jaghjagh (described in Oates \& Oates 1990, 233: 'the third, polygonal enclosure'; see also Poidebard 1934, pls. 2,3,'ville $C^{\prime}$ ). The nearby site of Tell Adhan, Poidebard's Tell 'Awan, the Aledane of the French map (Poidebard 'camp carré $A^{\prime}$ ), where we have been unable to date the square enclosure, is possibly another; indeed Eidem \& Warburton (1996) identified some 22 firstmillennium AD or later sites within five kilometres of Brak.
ties to the north and more mobile pastoral groups to the south (Mikesell 1958; Geyer 1998). The site's position is also unusual in that it is not directly situated on a water course, the normal practice in this area, although this does suggest the deliberate selection of a situation equidistant from the Jaghjagh to the east, a minor wadi to the west (e, below) and the Jaghjagh, again, to the south. There is no evidence on any of the available images to indicate that the Jaghjagh ever flowed closer to the tell than it does today. Although a linear feature is visible south of the tell, apparently with double banks (Fig. 9), this may represent no more than an artificially dug channel leading from the tell towards the Jaghjagh. It is unlikely to represent a relict river channel because it lacks the sinuous morphology of a natural channel and does not appear to the north or east of the site. This feature was visible in the late 1970s as a crop mark and is present on both the CORONA satellite image taken in 1965 and the 1984 vertical. Surveys of sites in the area, moreover, demonstrate a pattern of occupation along the approximate present course of the Jaghjagh at least as early as the fourth millennium, and probably earlier.

There is little recent historical information on settlement patterns around Brak but, according to Ottoman tax records, in the late sixteenth century there were four small villages within five kilometres

Unfortunately the Islamic sites were not chronologically differentiated. At the time Mallowan's excavation commenced in 1937 there was only a single small village near Brak, located on the Jaghjagh to the southeast of the tell. Since World War II, and especially during the past 20 years with the introduction of diesel pumps and modern agricultural machinery, there has been a massive increase in population in this area, and a consequent reduction in the water table.

## A. Landscape subdivisions on CORONA images

Seven terrain types can be recognized (Figs. 6 \& 9): a) Tell Brak, which because of its size can be classified as a terrain-type itself. The massive bulk of Brak (a1), extending over some 40 ha in area and 40 m high, appears like a range of hills from afar (Fig. 1), and like natural hills the site is dissected by a drainage network in the form of deep gullies (a2). Gullies are a common feature on tells in the northern Jazira where they develop as a result of rapid runoff from impermeable surfaces on the mounds, often guided by concentrated runoff through gates, courtyards and other points of architectural weakness. This process is particularly evident in the main courtyard of the Northwest Palace on the western edge of Nimrud (Mallowan 1966, fig. 1), while at Brak itself a substantial gully was generated running down from the
large room south of the Mitanni palace courtyard (Brak 1, fig. 4). Gullies are particularly welldeveloped in the body of the mound at Brak, and they have effectively dissected the mound into many sub-units (Fig. 4). This post-occupational fluvial activity is especially evident when heavy rainfall results in massive runoff and wadi flow within the area of the mound itself. After a heavy rain there can be sustained flow in the main wadi within the mound for several hours, with flow depths in excess of two feet. Leaving the mound, this water today flows into the fields to the south, where it forms ponds and puddles in a large shallow depression which has darker, more grey sediments. Equally, by eroding large quantities of the often uncohesive sediments, the gullies have resulted in the transport of massive quantities of mound material to the surrounding areas where it has accumulated as colluvial fans and aprons. During the heavy rains in 1993 it was observed that surface run-off on the upper slopes of the mound tended to form multiple, parallel lines of small incised erosion channels and mini-falls with pools which followed the fall-line of each slope. These channels were c. 2-5 cm deep and formed $c .30-50 \mathrm{~cm}$ apart. They either a) deposited material fairly evenly at the base of the broader mound slopes (unit a4) or b) were diverted by changes in the fall-line into small gullies which fed into increasingly larger wadis. At the north of the site, after just one rainstorm, a large gully system deposited a tongue of sediments and eroded pottery several metres in length and up to 14 cm deep on top of the young spring crop (Fig. 7, and unit a3, Fig. 9). The sides of the mound have also been eroded by the impact of browsing sheep and goats which churn up the surface and form a series of horizontal parallel tracks perpendicular to the fall-line.

Qualitatively it can be observed that the degree of gullying on Brak is probably a function of the size of the water-gathering catchments of the mound, the


Figure 6. The area around Tell Brak, showing linear hollows and major terrain types recognizable on satellite images.
permeability of the archaeological deposits, the mound height (therefore the energy of the runoff) and the duration of time that the site has been abandoned. Brak appears more fragmented than most tells in the region possibly both owing to its size and because much of its bulk accumulated prior to the second millennium вс. In fact the gullies act essentially as miniature wadi environments in which substantial overland flow has eroded and redeposited material after every rainfall. Sections exposed along these wadis exhibit variations on the theme of alternating layers of laminated fine gravel, sand, silt, calcareous loam and re-deposited topsoil material. Details of these sediments are provided by a micromorphological spot sample taken from the main wadi that dissects Tell Brak below the expedition house (Sample 61, below p. 13).

The gullies must have contributed significantly to the morphology of the 'halo', the gently-sloping

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Figure 7. In foreground, accumulation of 14 cm of slope wash on top of young wheat crop, after single rainstorm. North of mound. (Photograph: Wendy Matthews.)
watershed between the Jaghjagh to the east and the ephemeral wadi to the west (broken line on Fig. 6). Whether all the site's water could have been derived from groundwater is uncertain, but the modern village is named Bir Helu ('sweet well') and until recent overdrilling, Brak was known for the quality of its water. The location of Brak could be interpreted as marginal, both in terms of rainfed agriculture today and because it is in a marginal situation between two wadi systems. Alternatively, it may be seen as being centrally located, in order to exploit resources along the Jaghjagh as well as along the wadi to the west. Certainly, as we have already remarked, the location of Brak is unusual, since most large
area that immediately surrounds the mound (stipple, Fig. 6 and cf. Fig. 1), which can be divided into two broad sub-divisions:
a3)fans of material dumped where the wadis that have eroded the mound reach the flat plain or enclosed depressions; at this point the energy gradient of the channel is diminished and aggradation results.
a4)colluvial slope deposits that merge laterally with unit a3 and which result from the direct washing of material down the side of the mound or from minor gullies that have eroded the slopes.
These post-formational gullies create a very varied landscape at Brak, and it seems that such complexity can be traced back into the earlier periods of occupation. In Area CH, for example, the junctions among three overlapping mounds have been exposed, that is, the mound appears to be made up of a number of smaller, intersecting mounds. There is evidence to suggest, moreover, that some gullies were already present in the third millennium $B C$ (cf. Area ST, below p. 38).
b) The Brak plain is a very gently undulating clay loam plain which extends some 2.5 km to the east and south of Brak and c. 3.5 km to the west. At present Brak is located well away from the permanent water of the Jaghjagh, and close to or on the
sites in the Khabur - and indeed throughout the Northern Jazira - are situated on some type of wadi system. Brak's positional anomaly is even more striking because the morphology of the landscape is unsuitable for irrigation except, theoretically, by means of major long canals from much higher up the Jaghjagh, of which there is no evidence either on the satellite photographs or in the belediya trench (below, p. 6). Moreover, ancient sources from this area, for example Chagar Bazar and Tell al Rimah, make no reference to irrigation canals. Although in the early second millennium there is some evidence for deliberate water control (OBTR 291, 295-977), this in no way implies canal irrigation. Indeed, even in more recent times, before the introduction of the diesel pump, the crops in northern Iraq and northeastern Syria were dependent on the winter rainfall, but at Tell al Rimah, for example, the local wadi flooded in the spring (Rimah pl. 10b), and simple damming of such flood water upstream would have both protected the crops and provided water for periods of low rainfall. But this is not true irrigation agriculture.
c) The plain is crossed by numerous broad, straight features that appear as dark grey on the images, and on the ground are evident as straight, shallow hollows, the floors of which lie usually only a few tens
of centimetres below the surrounding plain. The one feature examined in 1991 had a very gentle cross profile and was $60-70 \mathrm{~m}$ wide with a maximum depth of 1.5 m . Occasional concentrations of dwarf leguminous shrubs occurred along the base. According to topographic surveys by McClellan and Grayson, lines northeast of Brak had a gradient that was more constant than the adjacent terrain (McClellan \& Porter 1995). The hollows would, therefore, have conducted water along them and funneled it downslope, that is towards the main site of Brak, and beyond. Auger holes by McClellan and Grayson indicate that the linear features were not dug features subsequently infilled by deep sedimentation; rather they appear to be hollowed into the natural reddish-hued soils of the plain. Some features appear to fade out within c. 2.5 km of Brak, whereas others extend virtually across the area, fading out and re-appearing at intervals. In such cases they appear to have crossed minor watersheds between drainage catchments. At least two hollows have bifurcations at $c .0 .7$ to 1.0 km from the edge of Brak (Fig. 6). The examples mapped are not ephemeral, since they appear on satellite images and air photographs taken some 35 years apart and most can be traced on the ground today. Their dark colour appears to result both from an increase in the thickness of the soil and from a concentration of dark green perennial vegetation along the lines, although the condition of each needs to be confirmed for the Brak area by further work. Similar examples near Tell Beydar to the northwest of Brak, an area of slightly greater rainfall, have been very heavily eroded by ploughing and are often difficult to find on the ground today. The Beydar examples form shallow straight hollows c. $50-75 \mathrm{~cm}$ deep, often as at Brak with concentrations of green leguminous plants along the base.
d) The alluvium of the river Jaghjagh. On the verticals taken in 1984, a narrow, dark soil band is visible along either side of the Jaghjagh, incorporating those areas in which ancient meanders can be seen. This is clearly illustrated in Figure 11, which it is of interest to compare with a similar photograph taken by Poidebard in 1926 (Poidebard 1934, pl. 122; the Roman barracks visible in the Poidebard photograph are now concealed by the modern village). This suggests that recent alluvium is of limited extent, and indeed the overall slope of the land surface in the vicinity of Brak would serve to prevent further flooding in the direction of the tell. The extent of this sedimentary unit has not yet been tested, nor has its


Figure 8. South slope of tell below Area DH, showing erosion of sherds.
date, but on the satellite images a narrow floodplain land system is also implied by a distinct land use of smaller field parcels which are demarcated by long field boundaries parallel to the river and extending c. 0.5 km from it. The terrain slopes from the north towards the Jaghjagh which along most of its length has a very sinuous, meandering channel with occasional short relict channels and cut-off meanders. Another vertical taken by Poidebard at al-Bab, further downstream from Brak, also reveals a small, late site and linear features interpreted by Poidebard as ancient canals. A similar feature extending south along the Jaghjagh from Tell Barri has been identified as a 'Classical or Islamic' canal, and a possibly earlier feature upstream has been suggested as 'ancient $^{\prime}$ (van Liere 1961/62). None of the above canallike features have been investigated in the field; if they were canals, however, they would have irrigated only a narrow zone along the floodplain. Indeed the Al-Bab channels might more plausibly have
been used to control the spring flooding, which would have threatened the ripening crops, or for some other form of water control.
e) To the west of Brak a sinuous feature running roughly north to south forms a very shallow and poorly defined wadi which, according to the French 1:200,000 map, drains terrain from virtually the Syrian/Turkish border to the east-west arm of the Jaghjagh. This appears to be the course of a natural wadi. There seems to be no relationship between this and the radial linear hollows (c) except that in a single case a short gully system has eroded away from this wadi along the line of one of the former (in the northwest of Fig. 6). Such wadis remain today the scene of dangerous and destructive flash-floods after heavy rains in the north.
f) Occasional archaeological sites of various dates. Only a small proportion of known sites are unambiguously evident on the satellite photographs. Among these is the castellum (Fig. 4) and the site of Saibakh (Fig. 10; Eidem \& Warburton 1996, site 38; Poidebard 1934, pl. 122). The latter is a sub-square barracks of some 4 ha (cf. Ain Sinu: Oates 1968, fig. 6), described by Poidebard as a bridgehead fort. To the west of the Jaghjagh is a soil mark of a second possible feature and approximately between these a stone road or reinforced wadi crossing has been recorded in the field (Oates \& Oates 1990). This feature appears to be part of a Roman road leading from Brak southeast via Saibakh towards Lake Khatuniyah (Lacus Berberaci) and Beled Sinjar. A significant number of other sites recorded by Eidem \& Warburton (1996) are either ambiguous on the existing photographs or invisible; enhancement of the scanned images may, however, improve feature recognition in future. The small outlying mounds shown on Fig. 9 have been noted before (Iraq 1993, fig. 39; Fielden 1981). They consist of five small, but prominent, tells and at least four areas of low, indeterminate mounding. Occupation includes a significant area of Northern Middle Uruk date (mid-fourth millennium BC ); two areas of settlement are Parthian/Roman. One outlying site, consisting of ploughed-up baked bricks, stone door sockets and pottery of Mitanni date (Brak 1, 141), was found to the west, just beyond the 'skirt' of the mound.
g) Forming the 'halo', some 100 to 400 m wide, is an area of complex terrain. On the images and air photographs this forms a patchwork of light and dark, which, on the basis of the recently completed 0.5 m
interval topographic map, can be subdivided into both depressions and occupied sites. The latter include the small satellite mounds and the castellum, originally excavated by Poidebard (1934, 144-6; see also discussion in Oates \& Oates 1990, 227-8).

Beyond this 'halo' the ground surface rises to the general level of the plain where the surrounding satellite mounds survive (unit f, Fig. 6). The halo of low ground consists of enclosed depressions immediately to the north of Brak and a more integrated network of gently sloping depressions to the east and west. The new topographic plan enables flow paths of water to be reconstructed as indicated on Figure 9 and clearly emphasizes the overall northsouth land slope. Contributing to these flows are direct precipitation onto the land surface, accelerated flow from the gullies of the mound itself, and general run-off from the Brak plain, guided by the linear depressions (c). Flow around the tell is clearly contingent upon local topographic conditions, and Brak conforms to a general model already suggested for Tell al-Hawa, Iraq. In this model the linear hollows, which are interpreted as relict tracks (see below), gather water as concentrated flow and, because they focus upon the mound, carry a significant discharge towards it. At this point water can build up but eventually finds its way around the tell, to be evacuated by similar linear hollows leading away from the mound (Wilkinson 1993, fig. 8). Although topographic mapping at Brak provides only a small part of this system, the upstream contributory areas and downstream discharge (to the north and south, respectively) can be inferred from the general map (Fig. 2). These flow patterns are of more than geomorphological interest, as is discussed below.

## B. Brak and its immediate environs (terrain types a and g)

As already noted, the great mass of the site presents a confusing picture of deep eroded gullies and intervening ridges surrounded by the broad 'halo' of terrain type ' $g$ ' described above. The 'halo' around Brak is little understood, but several shallow sections exposed in a long trench beside the tarmac road east of the tell, cut by the local belediya to house a sewer pipe serving the village of Bir Helu, provide some hints of subsurface morphology. Three sections were described by Wilkinson in 1991 (1-3), and an additional profile by French and Matthews in 1993 at (4) (Figs. 9 \& 12). Unfortunately the belediya trench, was not sufficiently deep to provide a description of the full depth of archaeological sediments.

Irregular but locally dense cultural debris was observed along the whole length of this trench, but there was a distinct cessation of occupation material beyond about $350-400 \mathrm{~m}$ to the south of the site access road (i.e. south of 4, Fig. 9). Here, approximately 80-100 cm below the present ground surface, a natural soil/ subsoil sequence or old ground surface was observed to continue as far as the eye could see towards the Jaghjagh. Two sets of soil blocks for micromorphological analysis were taken through the upper 25 cm of the old ground surface of profile 4 (see below). In the following descriptions 'Northern Middle Uruk' refers to fine wares and predominantly chaff-tempered pottery of northern or local late Chalcolithic type (as published in Iraq 1993), not southern Uruk wares or forms.

Section 1 (Fig. 12). Located east of the intersection of a linear hollow and the outlying halo.
$0-80 \mathrm{~cm}$ [1]: Pale brown silt loam; very coarse weak blocky structure becoming dense and structureless below. Occasional small sherds at various angles; rare stones. Layer becomes softer, looser, and greyer between 70 and 80 cm where there are ashy cultural deposits. One fragment of vitrified kiln waste between 70 and 80 cm .

80-100 cm [2]: Grey and olive grey clay loam; dries to pale olive-grey. Well-developed medium subangular blocky structure with hard soil units (peds); some minor mottles of dull orange result from localized oxidation of iron. Common sherds of chaff-tempered fourth millennium вС pottery.
$100-120 \mathrm{~cm}$ [3]: Reddish yellow clay loam with welldeveloped subangular blocky structure. Weakly developed calcium carbonate soft concretions and filaments result from the secondary accumulation of calcium carbonate. Pottery absent.

To northwest and southeast, grey and greyish brown
powdery amorphous silt, ashy with finely divided charcoal ([4], stipple Fig. 9), fills several apparent depressions.

Interpretation: Within the sequence at section 1 the reddish yellow stratum [3] at $100-120 \mathrm{~cm}$ appears to be the natural subsoil horizon of the plain. The absence of a distinct organic soil (or A horizon) suggests that such upper soil might have been truncated or reworked in antiquity before the accumulation of layer [1]. The grey/olive colour of horizon [2] suggests that chemical reduction of sediments took place in antiquity within a waterlogged environment, perhaps in the presence of organic matter. The orange mottles within level [2] result from the oxidation of iron owing to localized drying of the sediments. It seems here that several pits have been filled with ash and other cultural material. The upper 70-80 cm [1] appears to have accumulated gradually as a result of soil wash from the adjacent archaeological sites and perhaps also along the nearby linear hollow.

The presence of relict waterlogged deposits in [2] suggests that ancient excavations either penetrated down to groundwater level or there was prolonged standing water in these depressions. This suite of

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Figure 10. 1984 vertical air photograph of northeastern corner of the tell showing Roman castellum, lower centre, Tell Majnuna to the northwest, and area of test trenches $1 \mathcal{\&} 2$ along the road to the Jaghjagh. (Figs. 10 \& 11: Photographer, Norbert Grundmann; pilot, Abbad Samman; co-pilot, Hartmut Kilhne; copyright Tell Schech Hamad Excavation 1984.)

T2 (Fig. 3; Iraq 1993, fig. 39)
$0-200 \mathrm{~cm}$ [1]: Cultural deposits with abundant Northern Middle Uruk pottery; lowermost ashy deposit included carbonized grain. Traces of walls in upper levels.

200-220 cm [2]: Olive-grey clay, coarse blocky structure. Occasional sherds of chafftempered, Northern Middle Uruk pottery; rare charcoal flecks.

220-300 cm [3]: Greyish brown becoming pale brown below, clay loam with dull orange mottles. Hard deposit with well-developed, fine-medium, sub-angular blocky structure. Abundant vertical fine root holes to 1 mm stained with orange coatings resulting from localized oxidation of iron. Pottery only in upper few cm .

Interpretation: The distinctive olive-grey clay [2] from 200220 cm resembles a lacustrine sediment deposited in a chemi-cally-reducing (i.e. waterlogged) environment. The underlying deposits [3] below 220 cm appear to be natural subsoils that have become
deposits appears to be associated with a series of pits which start immediately southeast of the linear hollow and continue 120 m further to the southeast where they extend just to the south of an area of low archaeological mounding. The location of [2] on a slight rise in the subsoil suggests that this waterlogged material may not be in situ but may have been excavated nearby and thrown up on to horizon [3].

Section 2, southeast of 1 (Fig. 9)
$0-\mathrm{c} .120 \mathrm{~cm}$ : Clay loam with hard sub-angular blocky structure mottled olive green and dull orange. Upper 50 cm includes cultural deposits with frequent sherds of shallow, Northern Middle Uruk bowls.

Section 3, southeast of section 2 and adjacent to tell
waterlogged from above and then subsequently became re-oxidized along vertical root holes.

## Section 4

The belediya pipe trench was partially backfilled, but at profile 4 , some 300 m southeast of the apron of the tell, a thick buried soil lay beneath about $80 / 100 \mathrm{~cm}$ of alluvial silty clay material ([1] Fig. 12). Two sets of spot samples ( $36 \& 37$ ) were taken for micromorphological analysis from the upper 25 cm of the buried old ground surface of section 4, just beyond the point where the soil was overlain by Northern Middle Uruk occupation debris (Iraq 1993, 183). One spot sample (61) was also taken from the sediments exposed in the main wadi that bisects Tell Brak between the Naram-Sin Palace and Area SS.

Descriptions: Both sets of samples of the buried soil in the belediya pipe trench exhibited similar features and are therefore described together. Both in the field and in thin section, the soil exhibits a poorly to moderately well-developed sub-angular blocky ped structure defined by fine interpedal channels. These micro-peds are small, $<5 \mathrm{~mm}$, and are organized into larger peds of about $2-10 \mathrm{~cm}$ in size. The soil is composed of a pale grey-ish-brown to yellowish-brown (under plane-polarized light), micritic, silty clay loam, which is dominated by micrite, that is non-biogenic calcite ( 30 per cent), pure and impure clay ( 35 per cent) with weak to moderate birefringence and irregular to sub-rounded aggregates of amorphous calcium carbonate ( 20 per cent). There are relatively minor amounts of medium to very fine sand size quartz ( 15 per cent), with only minor quantities of fine organic matter and charcoal within the groundmass.

There are a variety of other minor inclusions present. The rare aggregates of pure clay and silt with fine organic matter are suggestive of rolled aggregates carried in flood waters. Although the whole groundmass is weakly impregnated with sesquioxides, there are a few ( $<5$ per cent) irregular but strong zones of amorphous sesquioxide impregnation of the fine groundmass. Some of the void space is discontinuously infilled with sub-rounded to irregular aggregates of fine groundmass material similar to the main groundmass. These probably indicate disturbance and movement down profile between peds in seasonal dry periods.

Interpretation: The buried soil profile (samples 36 \& 37 ) is characterized by a calcareous silty clay which exhibits a blocky ped structure. The soil is very oxidized and therefore devoid of non-carbonized organic matter. The silt and clay components are
probably a result of repeated seasonal flooding and the settling out of suspension of fine sediments in still, relatively shallow water conditions. In addition, it is reasonable to suggest the possibility of an aeolian element (very fine sand and silt), incorporated and reworked by water action (Courty 1994). Associated with this, the secondary iron and calcium carbonate features are indicative of alternate wetting/drying conditions resulting from seasonal rise and fall of groundwater levels.

Soil profile 4 should be seen as a past stabilization surface of a gradually accreting soil either in an active floodplain or resulting from wash from the site or local floods overspilling from the borrow pits that surround Brak (see below). The sedimentary events in which this soil developed cannot be dated precisely and may even reflect a situation long


Figure 12. Sections $1,3 \mathcal{E} 4$, described on pp. 7-8; 36 and 37 refer to soil micromorphology samples, p. 13.
before the settlement of Brak. Both soil formation and alluvial aggradation had already begun before the fourth millennium вс. There has been some secondary disturbance of the profile which has caused the partial infilling of the void space with calcareous silty clay aggregates, which may well be associated with recent agricultural disturbance and/or the general drying out and cracking of the overlying ploughsoil.

Micromorphological analysis indicated that the buried soil consisted of two horizons. The upper 15 cm was a light, greyish brown, silty clay loam soil (or lower A horizon) with a relatively well-developed, sub-angular blocky ped structure merging into a light orangey-brown silty clay loam or weathered $B_{(w)}$ horizon [as in profiles 2/3]. A similar but less well-developed soil ped structure continued for a visible depth of over one metre [4]. This natural soil/subsoil sequence or old ground surface was observed to continue as far as the eye could see towards the Jaghjagh. Thus this buried soil would appear to be a relict soil profile comprised of an upper, weakly organic, A horizon developed in an alluviallyderived subsoil. The upper 10 cm of the subsoil may
in fact be a poorly developed B (i.e. exhibiting some soil formation). The profile has developed in earlier Holocene silty clay or alluvial sediments.

The wadi infill deposits (sample 61) collected from within the area of the tell are comprised of a series of lenses of slightly different size grades of aggregated, micritic, silty clay with various inclusions such as fragments of mud-brick, pottery, bone and dung. The sediments exhibit abundant but irregular void space between the aggregates. The mi-cro-aggregated and rounded nature of the wadi deposits in sample 61 indicates that they are waterlaid and eroded deposits. As expected for materials within a tell environment they derive from archaeological deposits and clearly post-date the occupation of the tell. The unusually high pore space may be due to the subsequent oxidation of its former organic component. Similar types of mixed natural and humanderived deposits may be expected as infilling of the gullies and clay pits off-site.

In summary it appears that along part of the belediya trench (samples 1-3), pits of uncertain date have been cut into a reddish-hued palaeosol. Further southeast ( 4 and to the southeast) beyond the limit of occupation, flood-derived deposits overlay a reddish-hued soil which itself also showed some evidence of having developed in an environment affected by the seasonal deposition of water-borne fine sediments.

## C. Discussion and conclusions

In the area of Brak both human and natural factors appear to have contributed to the formation of the archaeological landscape. Given the limited amount of information that is available it would be unwise to make too bold a statement about landscape development, and the following should be regarded as a tentative reconstruction only.

From the infilled depressions described at sections 1-3 and the enclosed depression recorded on the contour maps, it can be inferred that a series of pits and broad depressions occurred around the immediate perimeter of the tell (i.e. within zone ' $g$ ', Fig. 9). These pits are comparable with similar features around tells in northern Iraq, which can plausibly be argued to result from the long-term extraction of soil for use in mud-brick construction (Wilkinson \& Tucker 1995). Indeed the Epic of Gilgamesh tells us that such claypits were a substantial feature of the Babylonian urban landscape (George 1999, I, p. 2; XI, p. 99). In the case of Brak such pits are inconspicuous, a point which requires explanation.

The overall demand for mud-brick to construct the buildings comprising a tell the size of Brak must have been massive, and we can assume that the amount of mud-brick used through time would have been roughly proportional to the volume of the mound itself. Here the minimum volume of Brak is roughly (under) estimated as a truncated cone of base radius 300 m , height 40 m and slope angle 30 degrees. This provides an estimated volume of $8,889,968 \mathrm{~m}^{3}$. This assumed shape is an oversimplification for Brak, which is not circular and which has an inner area much lower than the rest of the site. The truncated cone equation is retained here, however, because it makes a useful general model for application to other tells elsewhere in the Near East. David Oates has estimated the tell volume at 7 million $\mathrm{m}^{3}$ by calculating individually the separate areas of high mound. If it is assumed that a percentage of the tell is comprised of mud-brick (here calculated as 100 per cent, 50 per cent and 10 per cent of the total mound volume), then the volume of mud-brick in the mound would be approximately:

$$
V \times M b
$$

where $V=$ volume of Brak, $M b=$ the proportion of mud-brick contained within Brak.

Similarly the volume of the soil pits can be inferred, from the admittedly very limited field data, as occupying a ring between 300 (inner radius $=r$ ) and 700 m (outer radius $=R$ ). At Brak, as on many tells in the area, there appear to have been two sources of mud-brick, first a red-hued soil derived from beyond the settlement which was used largely in monumental and public buildings and second, a greyish soil recycled from occupation debris and used for both monumental and lesser buildings (Oates 1990, 388-9). Assuming that all the mud-brick in the mound was excavated from the surrounding pits, we can equate the volume of the ring (which is of unknown depth $D$ ) with the volume of mud-brick at Brak.

Therefore:

$$
\pi\left(R^{2}-r^{2}\right) D=V \times M b
$$

where $R=$ outer radius of pitted area, $r=$ inner radius (i.e. radius of the mound), $D=$ depth of pits.

This enables us to establish the depth of the pits:

$$
D=\frac{V \times M b}{\pi\left(R^{2}-r^{2}\right)}
$$

Assuming that the outer and inner radii define the edges of the pits, we can estimate that the depth of the pits would range from 7 m , in the unlikely event of all the site being composed of mud-brick, 3.5 m if 50 per cent were mud-brick to as little as 0.7 m if the tell material were only 10 per cent mud-brick. Using David Oates' estimate of $7,000,000 \mathrm{~m}^{3}$ would give pit depths of 5.6 m (mound 100 per cent mud-brick), 2.78 m ( 50 per cent), 1.39 ( 25 per cent), and 0.56 ( 10 per cent). Given the unknowns, the fact that this process occupied a minimum of 5000 years and the fact that much soil was recycled, there is little point in attempting greater accuracy at present. Nevertheless, it is evident that a tell of the scale of Brak must have been surrounded by an extensive area of deep pits. In reality, of course, such pits would have been dug episodically as required. They would also have been infilled periodically as the mound eroded and the gully system developed and deposited considerable quantities of cultural debris in them.

In the case of Brak little extant evidence for such pits survives. Nor is there any sign that pits formed a geometrical configuration such as occurred around Tell Beydar, where a recent machine-excavated trench demonstrated that the 300 m diameter tell was surrounded by a trench roughly 60 m wide. This massive ditch extended at least 3 m below the ancient ground surface, that is to more than 4 m below the present surface. Although in the case of Beydar the excavation was a formal construction built partly for defense, it would also have provided a valuable clay source for buildings within the town or for the outer wall itself.

The mud-brick requirements of Brak would have been considerable, and in order to conserve labour such pits would best have been located close to the site (mud-bricks are extraordinarily heavy). Therefore the pit-like feature at section 1 along the belediya trench and the enclosed depressions may result from the excavation of mud for brick. Furthermore, given the considerable mud-brick demands of the settlement, it is feasible that the entire 'halo' area (g) might include such pits, but whether they formed a complex of smaller depressions or were one massive feature is a matter for speculation. Certainly they were both infilled and obscured by the massive amounts of colluviation from the tell (see units a3 and a4 above). It should also be pointed out that such a demand for mud-brick would have been matched by formidable needs for water and for straw to be used as temper in the brick, and it has been estimated that the foundation walls alone of the 'Palace' of Naram-Sin would have required the straw
from some $13 \mathrm{~km}^{2}$ of land (Oates 1990, 390), i.e. from all fields within an area of 2 km radius. The total requirement for all walls in the structure would have been far more, and this for a single building. One consequence of the location of clay pits adjacent to the tell is that during the winter rains they would have filled with water and acted as medium-term water storage. The infilling with water of such pits must itself have been important for brick-making and probably also for everyday life at Brak, as will be discussed below. The high summer temperatures, however, would have ensured that such water would almost certainly not have survived the intense summer heat, that is, until the autumn planting season.

The linear hollows radiate out from the mound, and they appear to be mainly eroded into the loams of the plain. The hollows appear to start at the outer end of the 'halo', that is beyond the area where they would have been cut by pits or obscured by soil wash from the mound. In general the radial hollows differ significantly in morphology, being straight with occasional forks, from the slightly sinuous dry wadi systems (type e, above) and from the Jaghjagh that is highly sinuous and carries perennial flow. The same linear features were originally recorded by van Liere \& Lauffray (1954). The minor differences between the two plots may arise because van Liere and Lauffray used earlier air photographs that showed linear hollows with greater clarity than our CORONA images.

Brak was occupied from an early date through the fifth, fourth, third and early second millennia BC when settlement appears to have declined. There was a re-expansion in the Mitanni period, and the site was finally abandoned perhaps as late as the tenth or ninth century вс (Brak 1, 153-4). It can therefore be argued that the linear hollows, although not necessarily contemporary, developed during this long period. As originally suggested by van Liere and Lauffray, the linear hollows can be interpreted as representing the lines of ancient tracks. In other words they probably developed as a result of the sustained passage of humans and their animals along selected pathways that were constrained by field boundaries, an action which over many millennia must have disturbed and compressed the soil. This would also have concentrated runoff which in turn would have amplified flow and erosion along the tracks, so that the combined effect of human activities and channelization of runoff resulted in the hollow ways now evident (Sheets \& Sever 1991; Wilkinson 1993; Tsoar \& Yekutlieli 1993; Oates \& Oates 1990). Such processes of erosion are commonly seen along
dirt tracks today and must have obtained in the past. Although a dissenting voice comes from McClellan \& Porter (1995), the significant difference is of intentionality; it is most likely, and widely agreed, that the lines were tracks, which mainly provided access to the surrounding fields, but also to nearby settlements. However, because the frequent movement of humans and animals along them resulted in their being physically lowered, they had an accidental secondary function of conducting water which itself resulted in their further erosion. They were clearly not for irrigation since the line of flow, indeed the landscape itself, was inappropriate. Furthermore, as in the North Jazira Project in Iraq, longer features visibly crossed watersheds, and at Brak even the Jaghjagh itself.

If the linear hollows were in use at the same time as the soil pits that surround Brak, these pits would certainly have filled up with water in the winter and spring. Water would also have arrived as runoff from the main tell, as direct precipitation, and perhaps also from occasional long return interval floods of the Jaghjagh though we have no evidence to suggest the latter. The presence of standing water in the pits is supported by the mottled and reduced horizons along the belediya trench (1-3). If such inputs of water filled the pits, the extraneous water would have spilled over to flow downstream along the paths indicated on Figure 9. Despite some manmade topographic irregularities and the development of fans debouching from the Tell Brak wadis, the flow pattern in general follows a north-south path around the east and west sides of the tell. Similar flow paths probably also obtained in antiquity. Thus, following particularly wet winters, Brak may have been surrounded by extensive pools of water, which would have been valuable for domestic purposes and the watering of flocks. The actual manufacture of mud-brick must of course have been carried out later in the spring or early summer, since the heat of summer sun is needed both for the preparation of the clay mixture and the proper drying of the bricks. As already emphasized, this water supply was in the wrong place and at the wrong time for field irrigation.

The presence of such pits around Brak may have meant that settlement on the main body of the site could only be extended by encroaching into and backfilling the zone of pits. The alternative would have been to establish satellite communities beyond the pits. Therefore, some outlying satellite sites, immediately beyond zone $g$, may have resulted from the necessity to shift to the far side of the pits owing

Appendix 1. The detailed micromorphological descriptions.

## Sample 36

Buried soil below outlying fourth-millennium BC mound and pits to the southeast of the main tell.
Structure: apedal to weakly developed, fine, sub-angular to irregular blocky, $<5 \mathrm{~mm}$;
Porosity: 10-30\% vughs, irregular to sub-rounded, weakly serrated, 50 um- $5 \mathrm{~mm} ; 2-5$ per cent interpedal channels, irregular, discontinuous, $<250$ um wide, $<1 \mathrm{~cm}$ long;

Organic components: rare ( $<2$ per cent) fragments of fine charcoal in groundmass, $<250$ um; rare ( $<10$ per cent) very fine fragments of organic matter and charcoal, <50 um;

Mineral components: limit 100 um; coarse/fine ratio: 10/90; coarse fraction: 5 per cent medium and 5 per cent fine quartz, 100-350 um, sub-rounded to sub-angular; fine fraction: 5 per cent very fine quartz, $50-100$ um, sub-rounded to sub-angular; $c$. 20 per cent amorphous calcium carbonate, in irregular to sub-rounded aggregates, $<200 \mathrm{um} ; c .30$ per cent micrite, evenly distributed throughout; $c .20$ per cent silt; $c .15$ per cent clay; pale brown to gold (CPL), pale greyish brown to yellowish brown (PPL), pale yellow to yellow (RL);

Groundmass: fine and related: porphyric;
Pedofeatures: textural: clay component is even mixture of non-laminated pure and dusty clay, weak to moderate birefringence, gold (CPL);

Fabric: c. 30 per cent of void space $<50$ per cent infilled with irregular to sub-rounded aggregates of fine groundmass material;

Amorphous: very rare ( $<1$ per cent) fragments of pure clay, strong birefringence, yellow to gold (CPL), $<200$ um; very rare ( $<1$ per cent) aggregates of silt and very fine organic matter, sub-rounded, $<500 \mathrm{um}$, pale yellow (PPL); whole fabric exhibits weak amorphous sesquioxide impregnation; few ( $<5$ per cent), irregular zones of fine fabric exhibit strong sesquioxide/ manganese impregnation; few ( 2 per cent) fragments of bone, <500 um; rare ( 1 per cent) fragments of shell.

## Sample 37/1 and 37/2

Buried soil below outlying Uruk mound and pits to the southeast of the main tell. These two samples are essentially the same as for sample 36 .

## Sample 61

Waterlain and eroded sediments in the main wadi cutting through Tell Brak.
Structure and components: there are 3 major horizons evident with distinct contacts.
Horizon $1(0-1.5 \mathrm{~cm})$ : fine to medium aggregates of amorphous calcium carbonate and micritic silty clay, $50-100 \mathrm{um}$ and $1-4 \mathrm{~mm}$, irregular to sub-rounded to rounded; c. 40 per cent porosity; $c .10$ per cent included very fine charcoal fragments;
Horizon $2(1.5-5 \mathrm{~cm})$ : mixture of $c .60$ per cent fine pebbles, pottery and mud-brick fragments, $<8 \mathrm{~mm}$, subrounded with $c .40$ per cent micritic silty clay aggregates as in horizon 1 above; with common ( 10 per cent) bone fragments, $<0.5 \mathrm{~mm}$, and sub-rounded aggregates of dung, $<3 \mathrm{~mm} ; c .40$ per cent porosity; Horizon $3(5-13 \mathrm{~cm})$ : more massive (upper part) to micro-aggregated (lower part) micritic silty clay and amorphous calcium carbonate; common ( 10 per cent) bone and pottery fragments, $<0.5 \mathrm{~mm}$; c. 20-40 per cent porosity; distinctive lens of fine stones and mud-brick and pottery fragments at $8-9.5 \mathrm{~cm}$ within horizon 3.
either to excessive flooding or overcrowding and social constraints within the main settlement. It should be noted, however, that the satellite settlements date largely from the fourth millennium BC , whereas the major monumental buildings at Brak, and therefore the greatest demand for mud-brick, date from the second half of the third millennium.

The alluvial soil/subsoil sequence represented by samples $36 / 37$ indicates the accumulation of fine sediments in a low-energy environment. Although this could be a result of overbank flooding from the Jaghjagh, this source is both distant and of lower elevation than the sampled section. A closer and more plausible source may, therefore, have been overspill of water from the pits situated to the northwest which, in turn, received flood waters from the linear hollow catchments to the north, or simply wash from the site itself. Evidence from section 4 suggests that the gradual accretion of alluvial fine sediments and/ or slope wash may have operated over the past six millennia and possibly much earlier. The presence of sustained occupation along the bank of the Jaghjagh from at least the Halaf period (Eidem \& Warburton 1996) suggests that flooding was not sufficiently high nor severe to destroy such sites. The main distribution of sites was on the east bank suggesting the possibility that floods or even a shift in the river may have removed sites along the west bank, though the present landscape does not support this view (Fig. 11). It is equally possible that some more practical or even social reason dictated this pattern, and in particular that the empty space around Brak was deliberate.

There are several implications. First, if alluvial aggradation did extend well to the west of the Jaghjagh, in the early Holocene the Jaghjagh may have been a larger and more active river and associated floodplain. Unfortunately we do not know how early the bed became deeply incised, but examination of the Roman ford near Saibakh may in future provide some clues, and indeed the apparently short paved roadway suggests that it crossed a relatively narrow and deep wadi. Second, the silty clay alluvial soils would have been rich in nutrients and may have been one major factor responsible for the extensive settlement of the area in prehistoric times. Although this soil type would have been rather difficult to use
for arable farming, either 'rock hard' when dry or intractable when wet, in the early years of the excavations the area around Brak was still used to grow exclusively rainfed cereals, and we believe this to have been the major component of the ancient economy (see also Chapter 12). There is, of course, considerable arable land within this area, on which rainfed agriculture has been moderately successful in recent years; indeed minor climatic fluctuations in the past could even have made the region more reliably productive. The modern line of reliable rainfed farming, however, lies to the north, approximately at the latitude of Chagar Bazar (Fig. 2), and the only large sites between Brak and Jebel Sinjar are of Roman or later date. It is perhaps relevant that around 6000 cal . BC, at which time Brak first existed as a settlement, farming sites in the Iraqi Jazira are to be found well south of the limits of modern rainfed agriculture (J. Oates 1982, 367). Certainly the drier areas to the south of Brak provided important seasonal pasture, and sheep and goats to this day remain an important resource in the Jazira. Third, the thick and extensive sedimentary aggradation which overlaps the outer edges of the Brak mound may mean that both the archaeological record and old land surfaces are relatively well-preserved around the periphery of the mound. It also suggests the relatively recent build-up of these fine sediments either as a result of wash from the mound or as overspill from the surrounding pits. What is unknown is how extensive and how stable the floodplain was during the main fifth to second millennium $B C$ use of the tell. Thus, future investigation immediately adjacent to the site may hold the key to deciphering further past land-use and organization that supported the large community living on and around the tell.

## Acknowledgements

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## Chapter 2

## The Excavations

## David Oates \& Joan Oates

## A. Area CH

$\left.\begin{array}{ll}\text { Level } 1 & \begin{array}{l}\text { post-Akkadian, contempo- } \\ \text { rary with Ur III in southern } \\ \text { Mesopotamia } \\ \text { post-Akkadian }\end{array} \\ \text { Level } 2 & \begin{array}{l}\text { Level } 3 \\ \text { Level } 4 \\ \text { final Akkadian occupation } \\ \text { Akkadian, period of con- } \\ \text { struction of NSP } \\ \text { probably early Akkadian } \\ \text { (pre-Naram-Sin) }\end{array} \\ \text { Level } 5 \\ \text { Level 6 } \begin{array}{l}\text { so-called 'ED III destruction } \\ \text { level', represents independ- } \\ \text { Level 7 } 7 \\ \text { Level 8 } 8 \\ \text { pre-6 building phase } \\ \text { Phase L with some admix- } \\ \text { ture of earlier third- and } \\ \text { fourth-millennium material } \\ \text { in fill }\end{array}\end{array}\right\}$ Phase M

## 1. Levels 1-2 (Phase N, post-Akkadian)

We opened our investigations in Area CH (Fig. 13) deliberately adjacent both to Mallowan's excavations here of late third-millennium houses and to the Naram-Sin Palace (NSP), knowing that the identification of its construction level would provide an invaluable historically-dated point of reference. From 1976 to 1984 an area of $15 \times 14 \mathrm{~m}$ was excavated to a depth of over 8 m . A number of deep soundings were also carried out; these yielded fourth-millennium materials which will be published in Volume 3 of the final reports.

The first objective was to locate the large wall shown on Mallowan's plan just east of the NaramSin Palace (1947, fig. 61); this was quickly found at the western limits of both Trenches A and B (for plan of 1976 trenches, see Fig. 21, p. 22) and is indicated on the south and north sections (Figs. $15 \& 24$ ). This
was a massive though roughly constructed feature some 3.5 m thick, clearly a boundary wall for buildings to the west, presumably including or perhaps primarily enclosing the late third-millennium reconstruction of the Naram-Sin Palace, identified by Mallowan. From the level of this wall a foundation trench had been dug, cutting through the upper strata in Trenches D and E. It was in following this trench that we identified the eastern wall of the Naram-Sin Palace itself.

The evidence suggests that this foundation trench had been dug immediately before the postAkkadian reconstruction of the Palace, ascribed by Mallowan mistakenly to the 'Ur III' period, though his absolute dating of the reconstruction was correct. Why this vast trench was dug, especially if the massive superstructure of the Akkadian Palace was still standing - even in ruins - is a question we cannot answer, unless it was to obliterate the Akkadian superstructure while reusing its foundations. This 'Ur III' level has been designated Phase N, both here and elsewhere on the southern reaches of the mound. We now know of course that it almost certainly represents a period of Hurrian control of the city of Nagar, now generally accepted as the ancient name of Tell Brak. (The evidence for this and the identification with Nagar is discussed in Chapters 3 and 16.)

Little survived of Mallowan's upper house walls east of the Palace, described by him as 'in a ruinous condition' in the 1930s (1947, 70), and it should be noted that Mallowan's plan, as elsewhere, appears to incorporate rooms of both Levels 1 and 2, and indeed some Akkadian material (our Level 3). He remarks that in the upper metre and a half there were three well-preserved levels. This accords with our observation of at least two phases of Level 1 and a distinct Level 2, all post-dating the Akkadian occupation, a fact clearly visible on the sections, where the tops of the latest Akkadian walls lie some 2-3 m


Figure 13. EDM tell plan, one metre intervals. (Courtesy Geoff Emberling, Tim Skuldbol \& Torben Larsen.)
below the modern surface. Much of the pottery published by Mallowan is clearly of post-Akkadian date (e.g. the recess-beaded-rim beaker with convex base, Mallowan 1947, pl. 72:11, this volume pp. 171 \& 175), though some is clearly Akkadian, inter alia the small Stone Ware jar said to come from a 'Sargonid kitchen' (pI. 39:4); the latter context also produced two stone troughs of the type illustrated in Figure 484:11, and found by us almost exclusively in Phase L, that is, 'late Early Dynastic III' contexts, suggesting that Mallowan's deposit represented either a deep
sounding not otherwise recorded or heirlooms deliberately preserved. The shallow depth of Mallowan's trenches in the area re-excavated by us is clearly visible on the sections. However, the confusion over the locus of tablet(s) F. 1186 and F. 1158 (see Finkel 1985, 199 and text $33, \mathrm{p} .113$ ) and of the vessels which contained the jewellery hoards found in the earlier excavations (p. 236) suggests the possibility of some confusion in the publication between sites ER and CH .

In 1976 in Trench B we were also able to iden-
tify a very eroded wall previously dug by Mallowan on the west side of his Room 14 (Mallowan 1947, fig. 61). No trace of the north wall survived, but the line of stones next to the ovens and parallel with the ranging pole in Figure 14 indicates its position. Pottery from the recent excavation of Mallowan Room 14 includes bowl 654 and jars 820 and 843. Another group of late third-millennium pottery was associated with a Level 1 wall at the east side of Trench A (locus CH 8); these included open bowls 638, 639, beakers with string-cut bases 692, 705, jar 832 and bottle 800 .

Our own excavations in Area CH added relatively little to our knowledge of this period. Not only did much of the material lie close to the surface but large parts of the area had been disturbed by the previous excavations. Those walls we identified were in general built of reddish bricks with grey mortar. The most informative material came from the undisturbed northeastern corner of the excavations, where beneath a Level 1 floor, excavated in 1980, were found, stacked together and upside-down, two copper/bronze bowls and the strainer illustrated in Figure 482:162-4 (CH 124, Fig. 16). In the same deposit was the low-footed goblet 704, which contained a magnetite burnisher (p. 265) and 13 frit beads ( p . 225). A large storage jar (reg. no. 80.1) was found above the fallen wall shown in the section. Pottery from the 1976 season is published by Fielden (1977).


Figure 14. View of southeast corner of Area CH Trench B showing very eroded west wall of Mallowan Room 14, beside which are two ovens and a pot sunk into the Level 1 floor (floor level lies at the top of the jar).


Figure 15. Area CH, south section, levels excavated 1976 to 1984 (the section from the boundary wall (262) to the NSP east wall is taken from the $A-A^{\prime}$ section line, Fig. 21). The heavy line marks the level at which the Naram-Sin Palace was constructed (Level 4). (See also section detail, p. 369.)


Figure 17. East foundation wall NSP, showing the slots within the wall and the foundation trench as partially dug in 1976. View from the north. The unexcavated ancient trench line can just be seen continuing down to where it lips under the wall (see section, Fig. 15).

The second level of occupation had also suffered considerable disturbance and was in general equally ill-preserved, though traces of a mud-brick pavement were identified over much of the central area of the trench, some 50 to 70 cm below the base of the large Level 1 wall, and at least three separate phases of Level 2 construction are illustrated on the east section (Fig. 16). It was not possible to reconstruct a coherent plan, however, and again the northeast corner of the trench provided the best-preserved deposits. Here a Level 2 floor was excavated (locus CH 132), which had obviously been used for the preparation of food. A single mud-brick lay in the centre of the room (?courtyard) around which were large numbers of shells of the local fresh-water bivalve. Stacks of beakers and shallow plates were found in the room (p. 176), together with grinding stones, visible in the photograph Figure 207. A single jar, with its base
deliberately and carefully cut off (833), also rested on the floor. In the photograph, the Akkadian monumental walls are visible in the background (Levels 3 \& 4); the seeming isolation of floor 132 results from the simple fact that this area was dug in 1980, while the adjacent areas had been excavated in previous seasons.

## 2. The Naram-Sin Palace

Our fundamental dating reference point for the second half of the third millennium at Brak is the eastern wall of the Naram-Sin Palace. The term 'palace' is used for convenience, but it was of course a 'fortified storehouse' rather than a royal residence. The building is unequivocally dated by the presence of bricks stamped with the name of Naram-Sin found by both Mallowan and ourselves within the foundation walls (Fig. 136). The use of the prefixed divine determinative on all the known brick inscriptions places the construction of the 'palace' relatively late in the reign of that king. The outer wall itself, which can be seen in Figures 17 and 26, still stands to a height of 26 courses ( 2.42 m ); its face is pierced by a row of slots at intervals of about 3 m , presumably weeper holes to facilitate the drying out of the core of the 9 m thick wall. Its upper surviving surface corresponds approximately with the pavement level of Court 2. Although within the excavated area nothing remains of the upper walls of either the Akkadian building or the 'Ur III' structure which succeeded it, both construction trenches remain clearly visible, the earlier descending to the base of the surviving brickwork, the later lipping over its top. The levels from which the two trenches were excavated clearly mark, and provide fixed dating points for, the beginning of each of the two phases of occupation. It will also be seen from the section that the Akkadian trench cut through and severely damaged a mass of earlier brickwork, revealed by further excavation to be a casemate wall (cf. Figs. 27 \& 28 wall 262; also visible in the middle of Fig. 18; it should be noted that the identification of a 'ramp' on the plan published in Iraq 1977 was a misinterpretation of this casemate wall, parts of which are also visible in Figs. 17 \& 26; that is, there is no such ramp).

The purpose of this wall remains unknown, but its substantial character and casemate construction


Figure 18. Re-excavated NSP foundation trench (1984), detail of trench showing, in foreground, casemate construction of the boundary wall; the original section has been cut back to the south.
strongly suggest that it formed the boundary to some important complex which lay to the west, beneath the area subsequently occupied by the Naram-Sin Palace, an area also at least partly occupied by the Eye Temple into which the western foundation walls of the NSP were trenched. We do not know whether the function of the now-missing building(s) was secular or religious, but this was clearly an area of significant status from at least as early as the fourth millennium. An Akkadian wall on the same line continued the boundary wall tradition. This was decorated with deep niches, later blocked, which elsewhere at Brak (Areas FS \& SS) are found largely in religious contexts. If there is any significance in this observation, and in the fact that this Akkadian wall follows precisely the line of the earlier casemate, possibly associated with the latest version of the Eye Temple precinct, it seems possible that the 'Palace' of the deified Naram-Sin may have had some religious as well as administrative character. At all events, this was clearly an area of considerable importance.

Careful excavation has established the presence of a working floor, characterized by a number of deep cisterns and ovens, underlying the formal Level 4 Akkadian building, discussed below, and clearly constituting the level from which the Naram-Sin Palace (NSP) foundation trench was dug. This floor is marked with a heavy line on the south section. As can be seen, it coincides with a point at which the boundary wall had been damaged and, apparently, with a heavy ash level in the adjacent street, visible

on the south section. Two Akkadian building levels lie below this point (Levels $5 \& 4 b$ ). The possible significance of the damaged wall and ash level are discussed on p. 371.

In 1978 a deep sounding was excavated near the northwest corner of the CH excavations (Trench D), revealing lower walls within the brickwork. Two small rectangular rooms were also exposed through one of which a deep well or cistern (CH 93) had been cut, apparently from the Akkadian 'working floor'; the well contained hundreds of bowls and conical cups, some of Akkadian date but many apparently originally associated with this earlier structure through which the well had been dug and in which other similar pottery vessels were found (Fig. 19; see also p . 183). Two radiocarbon determinations from charred stoking fuel, taken from the base of the double ovens found below the northern small room but undisturbed by the deep well pit, gave determinations which seem to us low in relation to the Akkadian


Figure 19. Section and plan showing Phase $L$ double ovens, overlying plaster-lined basin (xv) and 'conical cup rooms' (47), and position of cistern 93, Area CH. Radiocarbon samples BM-1758 and -1759 came from the stoking fuel of the ovens $(64,67)$.
dates (BM-1758, BM-1759, 2300 to 1970 and 2360 to 2110 cal BC at 68 per cent probability; see also Fig. 375), since these structures were incorporated within, that is, are earlier than the Phase L (late ED) boundary wall. The oldest limits of these determinations are, however, just compatible with those from the end of Phase L. An unusually reliable 'single year' determination from grain in the Phase $L$ destruction level, that is, post-dating the stoking fuel samples, gave readings of 2450 to 2430 or 2350 to 2200 cal BC at 68 per cent probability.

Earlier levels of occupation could be observed in the sides of the well shaft, which was cleared to a depth of just over 5 m from its surviving lip (section published in Iraq 44, 1982, 203). At a depth of some 4.3 m below the floor of the room containing the conical cups was exposed the angle of a building with walls and floor carefully finished with orange plaster. Associated with this floor were a number of large fragments of painted 'Ubaid pottery. A report


Figure 20. Cobbled path and entrance to Room 1 of formal Akkadian building in Area CH (plan Fig. 21).
on this deep sounding and a second excavated also in 1978 in the southeast quadrant of CH will appear in Volume 3 of the final reports.

## 3. The Akkadian buildings (Phase M)

Having established that the construction of the Naram-Sin Palace was contemporary with the adjacent Level 4 in Area CH we have, not unreasonably, designated Levels 3 and 4 as Akkadian, since during this time both the NSP and the Level 4 building excavated in 1976-80 remained in use, and Akkadian officials were present at the site (see p. 384). As explained in the introduction, the use of this 'politi$\mathrm{cal}^{\prime}$ label is deliberate for the period when there is convincing evidence that the site was under Akkadian control. That is, we are referring not to an Akkadian 'style', but to Akkadian political hegemony. In comparison with the underlying levels, described below, there is in Area CH a clear change of plan during this period, with the construction of
the formal public building and the NSP, both of which continue in use in Level 3. By contrast, the earlier monumental buildings discovered in Areas FS and SS, reported below, do not survive in the equivalent Level 3, although in Area FS the 'reception suite' and the official storerooms are rebuilt on precisely the same plan. Elsewhere, however, the monumental buildings are overlaid by what is essentially a single phase of Akkadian residential structures. Although in Area FS the Level 3 buildings continue to some extent the formal plans of Level 5, elsewhere on the site the more extensive residential areas appear to represent a period of reduced status, and possibly also of ideological change, at the end of the period of Akkadian control. The evidence for these general comments is presented below; see also the broader discussion in Chapter 16.

The west wall of the earliest phase of Level 4 (Level 4b), 1.35 m in width, was constructed along the line of the street which had existed throughout the time of the earlier boundary wall. This new building (hatched walls, Fig. 23) was of more regular plan than its immediate predecessors. The Phase L boundary wall, discussed above, was also rebuilt. Between them the wheel-rutted street, already present in Phase L , continued in use (width 3.0 m narrowing to the south to 2.6 m ), maintaining the pattern of monumental complex, boundary wall and street which characterized this area for much of the second half of the third millennium (Phases L \& M). The Level 4b building was now rebuilt as a more formal complex (Level 4a), approached by a cobbled path leading up from the north (Fig. 20, section Fig. 16). Our reconstruction shows only part of the plan, since this building continued to the south and the east (Fig. 21).

On either side of the cobbled path were mudbrick benches, some $20-30 \mathrm{~cm}$ high, perhaps for the comfort of those awaiting entry. The use of cobbles and the accumulation of debris on the surface of the path, sufficient to compel the raising of the benches, suggest that this entrance area was not roofed. At its southern end a doorway, decorated on both faces with reveals and with a raised mud-brick sill to accommodate the upward slope of the tell, led into the northwest corner of Room 1, the principal room in the complex as we know it at present (Figs. 21 \& 22). It is 9.50 m long and possibly 3.2 m wide (the eastern wall is tentatively reconstructed on the basis of a probable wallface in the southeast corner of the room). Both the walls and the floor were rendered with a very fine reddish-brown plaster. At the south end of the room its entire width was occupied by a two-stage platform; an inset flight of steps, identi-


Figure 21. Plan showing location of original Area $C H$ trenches and main Akkadian building in relation to the Naram-Sin Palace.

fied in its northwest corner, was heavily eroded and perhaps continues also across the eastern side of the lower platform. What was originally described as a 'dais', some 50 cm above the lower platform in height, consisted of packed brick debris faced with a single thickness of mud-brick.

The layout of Room 1 strongly suggests that it may have been the central element in a formal tripartite plan, of which one series of lateral chambers, on the west, has been excavated. Room 2 contained two large ovens, set into the floor, the larger measuring 80 cm in diameter and 60 cm in height; large quantities of ash covered the floor. A second doorway, at the foot of the steps gave access to a suite of three rooms, also on the western side of the building. The possibility that this building was a shrine seemed to be supported both by the elaborate reveals on the external doorway and the presence of three large, elaborately fenestrated terracotta boxes (Fig. 467) in association with the so-called dais (b11 on the east section, the 'upper platform' in Fig. 22). Moreover, the kernos ring (387) was found upside-down in a shallow pit that had been dug into the gypsum plaster floors of the level below and was overlaid by the brickwork of the platform below the 'dais'. Removal of the 1976 baulks and further investigation of the plan suggested, however, that the upper part of this platform was, like the lower, no more than an accommodation to the steeply sloping tell, and that it was not a 'dais' as originally described but simply a further platform providing access to rooms to the east through a doorway at the same level. That the building has some formal purpose is clear, but whether this was religious must remain uncertain. Its proximity to the Palace also suggests some official character.

A further feature of interest within Room 4 is an elaborate drainage system running under the west wall (Fig. 23). This consisted of a juss, that is, gypsum, plaster slope leading down from the thick juss floor of the room (locus CH 273) into the drain pipes themselves. These ran under the west wall (171) and finally through a large Stone Ware jar into the adjacent street where the effluent seems to have joined an open drain lined with burnt brick (just to the west of the section), a feature which, together with the waterproof floor, suggests that Room 4 was an ablution room. Almost certainly coincidentally, a vast 'cistern' (319) lies beneath the drain, under the northwest corner of Room 4. This appears to have been sealed


Figure 23. Plan of earliest phases of Area CH Level 4 (hatched plan is Level 4b), showing drain 274 under west wall of Room 4 and pit/cistern 319 dug from the underlying NSP construction level (304), together with sections of (a) the drain and (b) the underlying cistern, the fill of which (318) contained hundreds of triangular-section clay objects of types 120, 121, together with a number of bottles. CH 273 is the juss plaster floor of Room 4 in the Level 4 Akkadian building (see Fig. 21); it overruns the pit but had collapsed into it. Sections not to scale, but roughly twice that of plan.

by the laid brick foundation (310) for the gypsum plaster floor. The upper fill in the large pit contained broken pieces of gypsum plaster and a crumbly deposit which was probably degraded fallen brick, both seemingly collapsed in from the overlying floor. The pit itself would appear to have been associated with what we believe to be the 'working floor' for the construction of the Naram-Sin Palace (304); it cuts through the corner of wall 185, the western wall of the earliest Level 4 structure (Fig. 23), the wall through which ran the drain associated with Room 4. We believe that the 'conical cup well' 93 which, like the 'cistern' 319, penetrated below all the levels so far excavated in Area CH, was also dug from the working floor associated with the construction of the Naram-Sin Palace. The contents suggest that the latter was almost certainly used to provide water not only for the large number of workmen involved but also for the on-site making of plaster and mortar. The bricks themselves must have been made off site (see p. 11). The material found in these deep pits, of which there were a number of others in the working area, presumably consisted of deliberate fill dating to the time of the construction of the overlying Level 4a building, which can only have been built after the completion of at least the adjacent part of the Palace but almost certainly still in the time of Naram-Sin, since contemporary use of the earlier phases of both buildings can be stratigraphically demonstrated.

There is a second possi-


Figure 25. Area CH looking north in 1980 season. On left, the Akkadian street with wheel ruts, to the right the eroded walls of the Level 4 Akkadian building (excavated in 1976), with the cobbled path just visible through the cast door. A Level 3 wall and door are visible on the north section, cf. Figure 24.


Figure 26. Area CH looking south in 1980, uppermost Level 6 walls and roadway iisible in foreground, to the right the upper, damaged Akkadian and, below, Phase L casemate walls, with the east wall of the NSP just visible on the right. The east line of both boundary walls is that of the uppermost excavated portion. Level 4 Akkadian walls are iisible on the section, left; the depth of the pre-Akkadian roadway deposits can be seen in the south section, Figure 15.
ble interpretation for the deep pit 319 beneath Room 4 , which was filled with dense deposits of triangu-lar-section clay objects (clay 120 \& 121), and that is that it may have been a latrine. It has been suggested
that the clay objects themselves may have served as an ancient equivalent of lavatory paper, but thin-section analysis, although it demonstrates a high level of fluorescence and the origin of some of the clay from cess-pit contexts, remains inconclusive (p. 278). Several bottles were also found within the fill, including 1341, the bottle actually shown on the section, 1318, 1363, 1366; a dark grey Stone Ware bowl (40) and a number of fine grey bowls and beakers (e.g. 55) were also recovered. The working floor itself consisted of bright brownish-yellow, hard-compacted, slightly brittle material; it was identified over much of the eastern part of Trench CH and can still be seen at the site on the eastern section, beneath the cobbled path (CH 30). Various hearths were found on this surface, including one just to the east of pit 319 (CH 332). The working floor contained much yellow, sulphur-like material, and thin-section analysis demonstrates here the manufacture of true lime plaster (multiple layers of quick lime and lime plaster, p. 361). The sample analyzed came from another small firepit (CH 384) which had been cut by pit 319; its gritty, sandy sides had been burnt to a hard, brittle brownish-red and the firepit itself was surrounded by a large area of ash (CH 387). Other deep pits, perhaps also wells or cisterns, belong to this same working surface, as does another elaborate pot drain (CH 453), which ran from a large jar (CH 346) set into the working floor through a drain consisting of a number of medium-sized jars, with bases and some tops removed, set into one another and running beneath a Level 5 wall (390) and along the surviving surface of retaining wall 474 ; this drain is visible cutting into the Level 6 and 7 plans (drain 453 , Figs. 27 \& 28).

Level 3 is represented in Area CH by a rebuilding of the formal plan of Level 4, which seems to have suffered some damage or neglect, several of the original walls having tilted severely, suggesting some interruption to the site late in Level 4, that is, late in the reign of Naram-Sin or, perhaps more likely, at the time of his successor. The upper, Level 3 walls are clearly visible both in the north section (Fig. 24)


Figure 27. Area CH, Level 7 plan, indicating also the position of the cistern (93) and the small rooms illustrated in Figure 19. The houses are terraced to the south.
and Figure 22, a section through the building itself. These Level 3 walls can also be seen in Figure 26, which illustrates also one of the more interesting features of the street which ran between the western precinct wall and the Phase L and M buildings to the east, that is, the wheel ruts, mentioned above and clearly visible in both Figures 25 and 26. These ruts lie some 1.3 to 1.45 m apart, providing some clue to the size of the wagons in use at the time (modern standard railway gauge is 1.435 m ).

We believe that CH Level 3 represents the final Akkadian occupation of the site, and that the se-
quence of buildings in CH represents far more than an ephemeral presence both in terms of architecture and time. Indeed given the stratigraphic contemporaneity of Level 4 and the Naram-Sin Palace, and the fact that the stamped bricks in the foundations of the Palace bear the divine determinative and thus cannot be dated early in the reign of Naram-Sin, it is clear that Level 3 must fall very late within the period of Akkadian rule. As noted above, this suggests that it is unlikely to be earlier than the time of his son, Šar-kali-šarri. The duck weight from Titriş Höyük, inscribed with the name of Šu-Durul, may in
fact represent more than a mere trophy brought from the south.

## t. Levels 7-5

The walls of the excavated areas of both Level 6 and Level 7 were terraced up the slope of an earlier mound (Fig. 16, and see Iraq 47, 1985, 163 \& pl. 20a). In Level 6, for example, the floor of Room 61 lay a metre below that of the Room 63 bins. Indeed the northern house in Level 7 had been built up against a large retaining wall ( CH 474 ), which continued in use in Level 6 . Some of the same walls are re-used throughout these levels but we believe that the political history of the site underwent a change during this period following the Level 6 destruction, a change that in Area CH is neither architecturally nor ceramically visible until the earliest stage of Level 4.

The Level 7 walls follow the alignment of the boundary wall, as do all succeeding walls in Area CH . We are uncertain of the date when the original casemate boundary wall was built, but the incorporation of the small rooms with conical cups, which lie approximately at the same level in absolute terms as the Level 7 building, suggests that it may have been built approximately at this time (see p. 20 and Figs. $19 \& 27$ ). Between the boundary wall and the residential structures lay the wheel-rutted street which remained in use throughout the Phase L and Akkadian levels; its gradient was much steeper in Level 7 than in Level 6. In Level 7 parts of two apparently domestic buildings were excavated (Fig. 27). Two building phases are attested, the lower having apparently been burnt and rebuilt. Level 6 suffered massive destruction, not only in Area CH but apparently over the whole of the site (identified on the basis of the pottery and the degree of destruction also in Areas ER, DH, AL and TC (for Area TC, cf. Emberling et al. 1999).

The plan of Level 7 differs in some respects from the succeeding Level 6 buildings, although the latter re-use many of the Level 7 walls. Although the Level 7 house was heavily burnt, unlike the Level 6 destruction, relatively little material was left in situ. This earlier burning is attested by heavily scorched wall plaster and thick ash deposits, especially under the Level 6 stairs and beneath the bin walls which had been trenched into ash. The western wall of the northern house was also leaning at such an angle that a large buttress was added for support. The lack of scorching on the south face of the northern wall of this house (471) suggests that the space between the two buildings may already have been infilled as part of a terracing process, while the reconstructed stair
and door may have led to the higher level associated with the residence to the south. It remains unclear, however, whether this Level 7 conflagration was simply a local fire or a more widespread event, since material of this date has not as yet been excavated elsewhere on the site.

As already noted, the Level 7 and Level 6 plans are in many ways similar, but the Level 6 building had suffered a violent fire, leaving vast quantities of in situ material. The rooms contained pottery, grinding stones, and other household items, illustrated especially in Rooms 61 and 610 (Figs. 29 \& 30). Both the plan and the surviving room contents suggest that we have excavated here the stores and working areas of domestic structures which lay for the most part outside the limits of our trench. Given their proximity to the enclosed and clearly important precinct to the west, these houses may have belonged to senior officials of the pre-Akkadian kingdom of Nagar, perhaps even of the latest Eye Temple, which we now know to have remained in use in the third millennium and possibly as late as Phase L .

Looking at the plan itself (Fig. 28), no external doorways have been found in Rooms 62-64, and they were presumably reached from a higher ground or floor level, possibly by steps in Room 64. The presence of a basalt mortar sunk into the floor of Room 63, with jar 1543 above it, and a pile of grain against the wall, indicates that at least part of this area served as a bin. Room 62 was furnished with two ovens, suggesting that the whole complex may have been a domestic bakery; the sides of the larger oven had been very carefully set onto sherd 'plates', that is, sherds on edge lining the firepit which had been dug into the floor. Two deposits were observed in Room 63, the lower representing the contents of the room at the time of the destruction, the upper, material that fell in as a result of the fire. In this upper deposit we found the five sealed bullae that are responsible for the 'ED III' description (Fig. $158 \mathrm{~b}, \mathrm{c}$ ), four of which bore the same impression.

As we have already observed, Room 61 to the north was founded at a lower level; originally it had a doorway to the east, which was blocked at some later date. A large number of vessels was found here, three of which contained grain preserved by the fire and the source of our samples for radiocarbon determinations BM-1971, -1972, -2531 (Fig. 29). Also from this room were several lugged troughs (stone type 11) and another bulla of the same general type that was recovered in Room 63 (Fig. 158a) and which, from its position, had been in the room before the destruction. From Room 65, possibly part of


Figure 28. Area CH, Level 6 plan; numbers beginning with 6 are room numbers.
an open area to the north of Room 61, came the mother-of pearl pendant of a human-headed bull (Fig. 317) and a cylinder seal (Fig. 149b). A grinding pit was set in the floor, with a white stone mortar at the base (CH 524); a covered drain flowed from the south towards the street. Room 610 contained a large oven in the northeast corner, a considerable amount of pottery, more of the stone troughs found also in

Room 61, one of which held a variety of grassy substances that have yet to be identified, and the earliest stratified 'Brak style' sealing (DM 184; see p. 127) (Fig. 30). A very calcified collection of shell and bone was also found here, including the burnt remains of at least one large conch shell.

Some of the pottery from these rooms was published in 1982 (Iraq 44), at which time this level was


Figure 29. Room 61, Level 6. The room contents include a stone trough and bulla (Fig. 158a) in the area of shadow, and a large number of pots, including the two small Stone Ware jars, visible in the photograph.
referred to as the 'Late ED III destruction level'. There is, of course, no evidence for any direct connection with the Early Dynastic south. The appellation was derived from the stylistic attribution of the sealed bullae recovered from the burnt remains, but we now know that the houses of this level and its predecessor were domestic structures of the local and seemingly powerful kingdom of Nagar. Thus the original date was correct, but the (unintended) implication of a southern connection unfortunate, especially since the term seems now to have entered the general literature. Levels 6,7 and the unexcavated Level 8 now comprise 'Phase L', so designated in order to avoid such terminological problems. At Brak Phase L includes all post-Ninevite 5 material of preAkkadian date, including that from Level 8 in which Ninevite 5 sherds were found in increasing numbers but did not as yet appear to be in situ. Phase L will almost certainly prove to be of longer duration than the levels now excavated. In 1984 we chose to focus our third-millennium investigations in Area FS, not only because of the promising potential of an area that had not been terraced to the degree of Area CH but also because of the great depth northwards to which the CH Phase L buildings were apparently descending, making their excavation increasingly dangerous. The dating of the latest phase of Ninevite 5 is considered further on p. 188.

CH Level 5 represents a post-destruction reconstruction of Level 6 , which we now believe may correspond with the earliest Akkadian presence at the site (Fig. 31). This cannot be proved on the basis of the plan alone, but is suggested by evidence elsewhere at the site, for example in Areas SS and FS


Figure 30. Room 610, Level 6. Two stone troughs, a number of grinding stones and a small fenestrated stand (Fig. 462:1594) are visible on the floor; the drain beneath the floor was originally covered with sherds.


Figure 31. Area CH, Level 5 plan.
where the earliest Akkadian evidence would seem to pre-date the time of Naram-Sin (see pp. 389-92). The plan is more regular than that of Level 6, though retaining some Level 6 features. Many of the materials used in its construction, however, clearly derive from the destroyed Level 6. Thus some Level 5 objects are reasonably attributed to Phase L, from which they almost certainly originate; not surprisingly, the ceramic style remains little changed. CH Level 4 dates unquestionably to the time of Naram-Sin, al-
though the Level 4b plan demonstrably pre-dates the construction of the so-called Palace (see above). Indeed Levels 4 and 3 clearly represent a period of Akkadian hegemony at the site, attested not only by the Naram-Sin Palace but also by the contents of the cuneiform texts. Our present reconstruction suggests that Level 5 , with its more regular plan and following on the destruction of Level 6 , represents the earliest surviving Akkadian construction in Area CH, leaving the possibility that the Akkadians were re-
sponsible for the Level 6 destruction, though we have no direct evidence of this and there are some arguments to suggest a more peaceful Akkadian takeover. This reconstruction is further considered in Chapter 16.

## B. Area ER

$\left.\begin{array}{l}\text { Level } 1 a \\ \text { Level } 1 b\end{array}\right\}$ post-Akkadian
$\left.\begin{array}{l}\text { Level } 2 \\ \text { Level } 3 \\ \text { Level 4 }\end{array}\right\}$ Akkadian

## Level $5 \quad$ Phase L destruction level

Like Area CH, ER was originally excavated by Mallowan in the 1930s. He identified three main levels 'in the top two metres of soil', the uppermost characterized by 'cement and cobbled floors at a depth of about half a metre below the surface' (Mallowan 1947, 72-3). Mallowan's second level receives little attention in his text, despite the discovery there of 'a few Akkadian tablets', in particular F.1157-59 and 1162 (p. 112) found in Rooms 5 and 6. These proved to be classic 'Sargonic' tablets of the time of Naram-Sin or later. In Room 6 also was an Akkadian Stone Ware beaker containing gold and silver jewellery and bullion (1947, pls. 33 \& 34). Also important are the sealings from this and the overlying house, which clearly identify at least one residence as that of a senior official in the Akkadian administration. One of four inscribed Area ER sealings (DM 320) identifies its owner as a 'servant of Naram-Sin', while another, illustrated in Figure 382, belonged to a 'cupbearer', an official of high status, and again a royal servant. The location of the houses in both Areas ER and CH, in the vicinity of what had long been a major ritual precinct and was in the Akkadian period to become the site of the Naram-Sin Palace, further emphasizes the status of these residential buildings. 'School texts' recovered here suggest the presence of some formal teaching institution at Brak, and that teaching was undertaken in the ER residence.

As in Area CH, Mallowan's published plan would appear to be an amalgamation of levels, in this instance of Levels 2 and 3 which, at least in the trenches dug in 1978, used many of the same walls. Only our Level 4 walls, however, seem to align with his plan which consists of walls either side of a large spine wall, of which both the brick sizes and width


Figure 32. Area $E R$, north, east and south sections of northeast trench (Trench 1); dotted spaces are animal holes, dashed items are stone, including basalt quern and grinding stone on bench in Level 5 Room 29, east of wall $N$.

 in Figure 34; $4=$ shallow pottery basin resting on courtyard floor; groups of mud-bricks are further supports for trays or querns; $p=$ pot; $s=$ sump, part of drainage system running beneath Room 9 and courtyard 23; $t=$ tannur.
also accord better with our Level 4. The foundations of his Level 3 house rested on what Mallowan described as a 'platform' of rammed earth, 'showing that the site had been levelled prior to this period of occupation' (p. 73). Evidence of a similar 'platform' was identified in 1980 in the area of Mallowan's excavations at the eastern side of the new trenches, excavated in 1978 to 1981.

In 1978 we opened four trenches to the west of Mallowan's excavations, over an area of 20 $\times 8.5 \mathrm{~m}$. Here, the uppermost level consisted of an irregular brick pavement, which lay very near the surface and was preserved only at the highest point of the excavations (Level 1a, Fig. 32). This level is heavily eroded and may not have been identified by Mallowan, whose 'Level $1^{\prime}$, with its juss and cobbled floors, resembles more our Level 2 which lies just over a metre below the surface and was also characterized by similar pavements and cobbling. A further ephemeral floor level (Level 1b) was found some 40 cm below the uppermost brick pavement. This level ran across the tops of the Level 2 walls, that is between the uppermost pavement and the betterpreserved Level 2. Unfortunately it was not clearly identified during the recent excavations,


Figure 34. Storage jar 872 from ER Level 1, ht 115 cm ; the jar had been set into the uppermost Akkadian level (see Fig. 33). View from the surface of Area ER looking towards Area HH.

эoundary respected also in Level 3, at which time many of the Level 2 walls were founded. The most interesting feature of the western house is its elaborate drainage system, while both houses displayed an unusually well-preserved array of inbuilt fittings, in particular large trays and grinding stones set on small, low platforms built of mud-brick. In Room 6, for example, a large, oval clay tray, $44 \times 34 \mathrm{~cm}$ and a bright orange-red in colour, lay on a carefully plastered support consisting of three courses of two mud-bricks. Nearby a large, basalt grinding stone ( $64 \times 41 \mathrm{~cm}$ ) was supported by mud-bricks on end. A flat-based storage jar was also set in the Room 6 floor, while in Room 4 and Courtyard 23 jars were sunk completely into the floor. Other rooms also contained large storage jars, of-
and material from it, in particular from above Rooms 4 and 6 in the northeast corner of the trench, was given the same locus number as the underlying Level 2 floor. This has proved especially unfortunate, since what we now know to be Level 1 b proves on reexamination to contain classic post-Akkadian material, while Levels 2 and 3, below, are clearly Akkadian. Level 2 is basically a rebuild of Level 3, many of the same walls remaining in use throughout, a situation very similar to and almost certainly contemporary with that in Area CH Levels 3 and 4. Locus numbers ER 10, ER 11, ER 15 in Trench 1 and ER 54 in Trench 12, to the south, are of particular importance here, since the considerable quantity of complete pottery bearing these numbers is, to judge by better-stratified material, especially in Area FS, clearly of post-Akkadian date and must come from the overlying Level 1 b , a re-interpretation also supported by the excavation photographs. Among the vessels re-assigned to Level $1 b$ are a bowl with radial pattern burnishing (519), an 'Ur III' type ribbed jar rim (754), jars with light ribbing on the shoulder ( $806,809 \& 812$ ), round jars also of 'Ur III' type ( 829 \& 844), large bowl 671 and large urns like 855 and 859.

The 1978 Level 2 plan (probably contemporary with Mallowan's Level 1) consists of parts of two separate houses, built at different times, but at least partly co-existing, the eastern house being the later of the two. Wall D seems to mark the southwestern limit of the Trench 1 house (Fig. 33), a property
ten set into the floor. Others had brick-built supports, as in Room 4 and the external area south of the northern house (Fig. 34). The Level 2 houses follow approximately the same alignment as those in Level 3 , the floors of which lay some 90 cm below. In Level 2 the area also appears to have been terraced downslope to the southeast.

The 1978-80 excavations further explored ER Level 4, possibly just reached by Mallowan since, as noted above, only our Level 4 walls are on the alignment of his published plan. Traces of a regular structure with substantial walls were identified, visible on the section, but little could be reconstructed beyond the presence of three rooms and a possible courtyard. A small room running into the north baulk was floored with red plaster and there were two post-holes in the floor of the corner of the room, with a similar post-hole in the courtyard to the east. In some parts of the trench a black, ashy deposit separates Levels 3 and 4, though this is not consistent and in places seems to lie above the actual Level 3 construction level. We believe that ER Level 4 may date to the period of early Akkadian occupation, identified in Area CH (Level 5) and in the Area SS and FS monumental buildings, though there is no internal, independent confirmation of this in ER itself.

Beneath ER Level 4 we have excavated a building of some considerable interest, only superficially if at all exposed by Mallowan. Here we identified a heavily destroyed residence (Level 5), a destruction

which in many respects resembles that in Area CH Level 6. This has led to our assumption of a contemporaneity not apparently supported by the radiocarbon determinations (p. 374). We have considered the possibility that ER Level 5 may, like Level 4, be of early Akkadian date, but the evidence of massive destruction and the presence of very distinctive Phase L types of Stone Ware (for example, Fig. 187 and two reddish Stone Ware jars including 133), together with other pottery similar to that from CH Level 6 , including the jar with 'ED' seal impression (Iraq 44, 1982, pl. 17a; DM 147, ER Level 5), persuade us that the contemporaneity of these levels is far more likely. Moreover, a sounding beneath the Level 5 building, excavated in 1980, revealed no evidence of an earlier violent destruction which could be compared with the Phase L 'destruction level' (see below).

Unfortunately we have recovered only a small portion of the very large Level 5 house, but here, as in CH, we have almost certainly found an important residence dating from the period of the kingdom of Nagar. It was clear from the whole of the area investigated that the building had been the scene of an intense fire, which had destroyed the contents of the rooms in situ. The plan (Fig. 35) is not particularly informative, and must represent storage

Figure 35. Area ER, plan of Level 5 (Phase L). The 'tunnel storage cupboard', leading from Room 27 to Room 43, is indicated within the walls (cf. Figs. 36 \& 37). A low corbelled doorway (ht 87 cm ) leads from Room 43 to Room 29.


Figure 36. View from the west of Area ER, Level 5, Rooms 27 and 29, showing 'tunnel storage cuphoard'; Room 43 upper right.


Figure 37. Close-up of west door of within-wall 'tunnel storage cupboard', Area ER, Level 5.
and work rooms/private quarters of a large residence. The excavated portion includes one large room (41) with a substantial platform at the western side. There is also a most extraordinary 'within-wall' storage area, situated within the eastern wall of room 27 and leading into room 43 , to the south (Figs. 36 \& 37). This 'tunnel cupboard' was full of a variety of jars and bowls, themselves full of various food stuffs. In Room 27 itself was a deposit of burnt grain some 35 cm thick, overlain by a further 35 cm of heavily burnt brick and ash. The charred grains recovered from this area are identified in Chapter 12; that used for the ER Level 5 radiocarbon determinations came from a vessel within the cupboard. In Room 29 also there was a thick layer of heavily burnt bricks together with much ash. To the east of the 'tunnel cupboard', was a further low entrance, with its lintel preserved, leading from Room 43 into Room 29. The brickwork over the doorway is corbelled and then
plastered over to give the appearance of a true arch at a height of 87 cm above the floor. A step leads down into Room 29; there is also an orange-plastered step leading down from Room 42 into Room 43.

Among the jars and bowls found in the 'tunnel cupboard' were the medium-sized, red (interior dark grey) Stone Ware jar 133, a smaller but also reddish Stone Ware jar TB 1003 and miniature Stone Ware jar 123 (which contained a number of Arcularia beads, p. 297), jars 1530, 1537, 1538, 1540, 1542, 1551 and 1556, bottle 1519, and cooking vessels 1676 and 1679; various uncatalogued bowls were also found. Other locus numbers associated with Level 5 are ER 27-39, $41-5,69,70,104,111,115,118,223,227,228,230,231-$ $3,237,238$; pottery and other objects from this building are listed under these locus numbers in the figures at the end of the volume.

In 1980 a deep sounding $(1.0 \times 2.9 \mathrm{~m})$ was excavated beneath Room 43 , just to the west of wall 4 . The layers below the Level 5 floor consisted of brown clay (Layer 6), a grey layer (7), mud-brick tumble and fill within which late types of excised Ninevite 5 and a bichrome stand fragment (Fig. 185:b1) were recovered (Layer 8, ER 241), an ashy grey layer (9, ER 242), a mud-brick wall of which 7 rows of bricks were preserved, a brown ash layer (11), reddishyellow and brown fills $(12,13)$ and, at -2.82 m below the Level 5 floor, a layer of brown fill from which a number of Uruk potsherds were recovered. It is this sequence that seems to leave no room for a Phase L 'destruction level' in Area ER below that of Level 5.

## C. Area ST

Levels 2-4

Level 5
?Phase L destruction level
Levels 6-12 $\left.\begin{array}{ll}\text { not precisely } \\ \text { dated owing } \\ \text { to heavy } \\ \text { terracing } \\ \text { operations }\end{array}\right\}$

Levels 13-15 incised Ninevite 5
(Phases L-K)

In 1978 excavations were opened at the top of one of the many steep wadis that cut deeply into the perimeter of the Brak tell. Designated Area ST, the intention here was to investigate earlier third-millennium levels within the mound by means of a deep trench
within the wadi, where problems of surface wash and erosion would be less than on the outer contours. The surface was scraped down the steep upper slopes of the wadi for some 23 m , and the upper and lower limits further investigated (Fig. 38). Two phases of a large Akkadian building were excavated at the top of the trench, while at its lower extent two rooms of a structure containing large quantities of Ninevite 5 pottery were revealed. The deep trench was further excavated in 1980, and in 1981 five squares were opened on the flat surface of the tell at the top of the original trench (Fig. 39). Parts of three large buildings were found here, one of which continued the 1978 building to the northwest. In 1983 the trench down the wadi was deepened in the hope of identifying more of the earlier buildings, but excavation here was abandoned at the end of that season owing to the massive terracing that was encountered. It has given us, nonetheless, a narrow glimpse into the earlier third-millennium sequence, which we hope may prove more accessible in Area TC, opened in 1998 (Emberling et al. 1999).

In both the wadi trench and the squares opened in 1981 a surprising quantity of relatively barren wash, to a depth of some 2.0 to 2.5 m , was found on the surface of the mound, presumably erosion from the higher ridge to the north on which Area FS is located (see also Emberling et al. 1999, Area TC). Beneath this wash were found the walls of the three buildings referred to above, separated by a cobbled area (Fig. 39). The wall of the main building excavated had been reconstructed at least once, in some cases twice, but on the same general alignment. The building in Square C seems to be overlaid by the cobbling, and is therefore earlier than the others. The walls of the latest phase in the sequence (Level 2), preserved only in the original 1978 trench and in Square F, were narrower and the rooms smaller than in the earlier period of use of the larger walls. Traces of an overlying level were detected, of which very little was preserved.

The Level 2 buildings had been destroyed, leaving material in situ on their floors, particularly in the southernmost building dug in 1978 and 1981 (Squares A \& F). Fragments of several 'snake troughs' were found in this building, including Figure 199 (see also Fig. 407:364), and the terracotta tilt wagon illustrated in Figure 303. An unusual number of large urns (p. 180 and Fig. 452) was also recovered here, including the very large example decorated with 'breast-like' ornament (1413), which was found in the southwest corner of Room 2, in the latest phase of the building. The large Stone Ware jar (170), which was complete


Figure 38. View of Area ST trench during 1978 excavations, showing Akkadian level at top, Ninevite 5 house excavation at base of trench, and Area FS, unexcavated, in background; rebated walls of lower building (Fig. 39) are visible on the slope.
but badly broken when found, came from this late Akkadian level. We have no idea of the function of this building, since too little of the plan has survived, but both its contents, which are not the usual residential repertoire, and the thick walls suggest the possibility of a more formal character. The most unusual Level 2 discovery was the ivory statuette, discussed in Chapter 11 (Fig. 315), which came from the fill above the Level 2 floor in the building identified in the southwestern corner of Square F (Fig. 39).

Three dark grey Stone Ware jars were recovered from the Level 3 floor of the southern building, including 124 and 135 . The bricks of this building were of grey libn. Beneath was a mud-brick platform built of red mud-bricks ( $34^{2} \times 8$ ); in terms of absolute level this should correspond with the so-called 'red libn building', excavated in 1983 and cross-hatched on the plan (Fig. 39), but both the brick size ( $36^{2}$ ) and the orientation differ. In Square B no walls were recovered but a surface, cobbled in parts, was found over the whole of the trench at a depth of 2.25 m . A similar cobbled area was identified in Square C, beneath which were the large walls of a building of which the floor was not reached except in the north-

east corner room. Here a floor covered with destruction debris lay 0.45 m below the wall tops, above a lower floor at -1.38 below the tops of the walls. In Trench D the cobbled space was also encountered. An ashy level below the cobbles contained a number of sealings and a silver earring (metal 157).

During the excavation of Trench D it became clear that in parts of the trench there was an area, in the dig records originally referred to as the 'sump', which was packed full of water-stained sherds and stones. Also identified here was an ancient surface running downhill to the southeast, apparently the remnants of an ancient wadi which appears to have followed a course between the Akkadian buildings. Indeed these buildings, in their original phases, seem to have stood on either side of an erosion gully, which was later filled in; within this area a number of irregular drainage channels or sumps produced an interesting series of seal impressions and other objects, including the equid figurines illustrated in Figure 309. The seal illustrated in Figure 149a was found here; among the sealings are several impressions on pottery, including Figure 377 (p.383). One of the more interesting observations from this part of the ST excavations was the apparent existence of an erosion phase prior to the construction of the Level 5 buildings, possibly to be related to the destruction identified elsewhere at the site at the end of Phase L. On the basis of the pottery we believe the Level $2-3$ buildings belong to the period of Akkadian domination of the site, and that they are approximately contemporary with Area CH Levels 3-4 (Phase M).

Within the step trench in 1978 we had observed the pres-

Figure 40. Section of northwest, northeast $\left(B-B^{\prime}, C-C^{\prime}\right)$, and part of southwest sides of Area ST trench.


Figure 41. View of 1983 Area ST trench, looking down on the Level 12 terracing, with Level 13 walls in the foreground.
ence of massive brick terracing above and to the northwest of the Ninevite 5 deposits (unexcavated but visible in Fig. 38). In 1983 heavy terracing was also identified further up the trench (Level 12, ST 98, and Level 9/10, see section, Fig. 40). Unfortunately these terracing operations made it virtually impossible to achieve our objective of excavating well-stratified early third-millennium levels, although walls of 15 distinct building phases were identified, clearly demonstrating the occupation of the tell throughout a lengthy third millennium timespan. Unfortunately most of the material recovered consisted of various terracing and levelling fills, containing large numbers of out-of-context sherds, the Level 10 fill, for example, comprising largely fourth-millennium sherds.

Within the deep trench itself, however, some buildings were identified, despite the regrettably small area of excavation. Beneath the upper Akkadian
buildings lay a shallow layer, of which the main feature in the small area excavated was a large hearthlike structure (ST 105, Level 4), over 2 m in length and some 1.5 m in width, with a brick lining and filled with heavily burnt materials, including seeds and burnt wood. Two very large copper / bronze objects, apparently spearheads (metal $1 \& 17$ ), two pins including toggle pin 63 , four small upside-down pots (including 1197, $1234 \& 1319$ ) and a number of broken vessels were recovered from the hearth, the seeds providing one of our few deposits of lentils (p. 308). It is not clear whether the burning attested in this level represents solely the use of the hearth, or a more widespread catastrophe. Certainly there is no specific evidence for the latter, and we have dated this level to the phase of early Akkadian occupation identified elsewhere on the tell. It must remain a possibility that this phase in ST may correspond with the destruction level at the end of Phase L, but stratigraphically it seems more likely that the Level 5 'red libn building' marks the end of Phase L occupation. There is also much ash over the earlier cobbled level shown on the section, and which appears to correspond with the cobbling identified in Squares B-D. The most interesting Phase L building, a structure earlier in date than the red libn building, is that seen in the centre of the plan, with very well-built though heavily eroded walls and rebated doorways of the type generally associated with public buildings (also just visible in Fig. 38).

Above the Ninevite 5 structure dug in 1978 and visible at the bottom of the trench in Figure 38, are the Level 13 walls seen in the foreground of Figure 41, a photograph of the narrow slot which provides the connecting information for the section. The massive terracing that lay both above and below these walls was not further investigated. Six construction levels lay above the Level 13 walls, between them and the cobbling with ashy deposits identified across the section which we have rather arbitrarily equated with or just before the end of Phase L. Ninevite 5 sherds were found throughout this sequence, but nowhere in situ. The material dug in 1978, however, produced an orange-plastered floor (ST 1106, Level 14) associated with a quantity of early incised Ninevite 5 vessels, horse-shoe lugged cooking pots and flat lids of the type illustrated in Figure 468. Further Ninevite 5 material was found below this floor, associated with bevelled rim bowls, one of which was found upside-down on the floor (Level 15). The presence of 'ED I' material with in situ bevelled rim bowls is clearly demonstrated in Area TW (Iraq 53, 1991, 39), but the apparent association with

Ninevite 5 pottery in this very small area of ST may be fortuitous. In 1980 several sealings were found in association with the Ninevite 5 pottery, including a geometric, pseudo-guilloche pattern (DM 435) and a sherd with a ladder pattern ( $D M 58$; see also $D M 60$ ). Three Uruk 'flower pots' were found on an eroding floor several metres further down the wadi.

## D. Area FS

$\left.\begin{array}{ll}\text { Level } 1 & \text { post-Akkadian } \\ \text { Level } 2 & \text { post-Akkadian }\end{array}\right\} \quad$ Phase $N$

Levels 6-8 (sounding D)
Phase L
Area FS was excavated during ten seasons between 1983 and 1993. It has provided our most complete evidence for the sequence of occupation at Tell Brak from the Early Akkadian period, or conceivably the later years of the preceding, independent kingdom of Nagar, to the end of the third millennium. It occupies the northeast corner of the tell, with its highest point some 33 m above modern plain level, representing a long period of settlement. It is bounded on three sides by the steep slopes of the tell which are cut by wadis on the east and west, with the only easy approach from the south. Its position is significant, for it lies close to what we believe to have been the ancient north gate of the city, now represented by a deep ravine just west of Area TW.

## 1. Level 5

The buildings of this level are the earliest coherent structures so far excavated in this area. They form a monumental complex comprising a temple and its dependencies which we believe to have served as a way-station on Brak's northern trade route. Earlier walls have been exposed in Soundings B, D and E, and beneath passage 9 and the floor of Room 42, the antecella of the temple (Fig. 42). These sequences are not stratigraphically linked and can therefore only be said to precede Level 5, although in places they seem to anticipate its plan. The whole complex seems to have been abandoned and, after a relatively short interval, deliberately filled in. This operation clearly had a ritual character, for it was accompanied by deposits below, within and above the fill, including a number of donkeys as well as valuable objects and jewellery. Its implications are discussed below (p. 90).

The main entrance to the complex lay on the south and consisted of a long gate-chamber Room 1 (Fig. 43), measuring $6.60 \times 5.10 \mathrm{~m}$, entered through a doorway 1.80 m wide, with the emplacement of a doorsocket on the inner side of the west jamb. Outside the doorway was a porch with benches on either side and opposing piers which have no obvious structural function unless to support an arch, but their surviving stubs are too low to show evidence for this possibility. The interior of the gatechamber, and the west and south walls of Room 2 to the north, were lined with benches and, in the southeast corner of Room 1, two large bins, all of which suggest that one function of these two rooms was to receive, at least temporarily, deliveries of goods. It seems unlikely that Room 1 and its contents were open to the weather, but the problem of roofing here, as elsewhere, remains unsolved. At the time when it was filled in, fires were lit at seemingly random places in the room, marked by burning on the wall plaster, while beneath the fill in the northwest corner of the room were parts of four carbonized beams lying parallel with the west wall and on a shallow deposit of rubbish (Fig. 44). The wood has been identified as poplar, still the material most commonly employed for rafters in local houses, but poplar beams could not have spanned the length of the room unsupported and there was no trace of post-holes in the floor beneath them. We are unable to suggest a satisfactory explanation. A radiocarbon determination from these beams provides a date of $c .2580$ to 2465 cal $B C$, far earlier than the determinations from Area SS, discussed below (see also Chapter 15). Above the fill in the southeast corner of Room 1 we found the first of the ritual deposits that accompanied it, the skeleton of a hound closely resembling the modern saluqi, the hunting dog of Arabia (Fig. 338, p. 327).

The north doorway of the gate-chamber gives access to two small rooms ( $2 \& 13$ ), each opening to the north into the large courtyard which is numbered 5,6 and 7 for ease of reference to its different sectors. The north doorway of Room 2 is considerably wider, 1.50 m , than that of Room $13,90 \mathrm{~cm}$, suggesting that it was intended to permit the passage of bulkier objects, and perhaps of laden animals. It is also distinguished by single reveals on its outer face, usually a mark of relative importance. In the north doorway of Room 13 was found the skeleton of one of the donkeys referred to above (Figs. 45 $\& 343$ ). Both doorways are recessed into the thick south wall of the courtyard, and in the recess on the east side of the smaller doorway is a plastered bin. A similar bin is set into the wall some 2 m to the east.

Chapter 2


Figure 42. Area FS, plan of Level 5.


Figure 43. Level 5 gate-chamber (1) and well-room (3), from the south.


Figure 45. South side of Courtyard 5,7 from the north, with donkey skeletons 4,5, and human skull and leg bones.

Beyond Room 13 are two other interconnected rooms ( $4 \& 14$ ) which were entered through a doorway in the north wall of Room 14, now heavily eroded. The surviving jamb has no decorative reveal, and this small suite may have been the office or residence of some minor official. There were a number of complete small pots of a domestic character including several beakers in the rubbish immediately above the floor of Room 4, which was furnished with a large rectangular bin or bench in the southwest and a hearth in the southeast corner (the pottery included beakers 996, 1177, bowls 951, 1091, and jar 1301). Room 14 had benches against the south wall and in the southwest corner.

The Courtyard 5, 6 and 7 was cut by erosion at


Figure 44. Charred poplar beams lying horizontally above floor (in block of earth), Level 5 gate-chamber.
the eastern end, but the surviving length is more than 20 m and the width from north to south over 18 m . Its western sector (6) was marked off by two opposed piers, the east outer corners of which are decorated with single reveals. We can suggest no reason for the separation of this area, nor for the special status which the reveals seem to suggest. Its only other feature is a square platform, $c .40 \mathrm{~cm}$ high, on the end of the south pier, but this may not be original and probably had some mundane purpose. Certainly a late insertion was an L-shaped wall of flimsy construction against the west wall of the courtyard which looks like one side of an animal pen and may date from the interval between the abandonment of the complex and its final closure.

The larger sector of the courtyard $(5,7)$ is bounded on the north by the south wall of the temple and its courtyard. Its surface was covered by an irregular deposit of debris up to 35 cm thick and on this, $c .1 \mathrm{~m}$ north of the doorway of Room 2 , rested a second donkey skeleton accompanied by a scatter of human bones representing parts of dismembered corpses (Figs. $45 \& 344$ ). A second group of human


Figure 46. Rooms 10-12, north side of courtyard 6,7; overlying Level 3 visible on section; on right, outer niche in south wall of cella.


Figure 48. North façade of temple complex, from the east.


Figure 49. South façade of temple courtyard, from the east.


Figure 47. Donkey skeletons 1-3 in Room 10, Level 5.
skeletal components, including two skulls, lay some 5 m to the east. The presence of live donkeys in the courtyard is also attested, in one of our micromorphological sections, by the presence of herbivore dung and the outline of stakes of the type still used to tether donkeys at the present day (Fig. 366, p. 360).

The courtyard floor sloped up to the south wall of the temple, where a flight of five steps led up to the west. From the head of the steps, c. 1 m above courtyard level, one passage (9) turned north along the west wall of the temple while the second (8) continued westward between two blocks of buildings. An entrance on its north side gave access to a pair of connecting rooms ( $31 \& 32$ ) floored with juss, which appear to have been storerooms, although at this level no material contents were preserved. On the south, steps led down to a cellar-like range of three small chambers ( $10,11 \& 12$ ). The narrow cross-wall at the foot of the steps is probably in some way connected with the final filling of the building, which was accompanied by the deposit of three donkeys in Room 10 (Figs. 46 \& 47), but the more massive walls that
blocked access between Rooms 11 and 12, although also secondary, were probably inserted to reinforce the foundations of an upper storey which has now disappeared. It is perhaps interesting to speculate that from such an eminence not only could all activities in the courtyard be supervised, but a watch could be kept on the road approaching the city gate from the northwest. Beyond the northwest corner of Room 12 it is probable that passage 8 turned south, perhaps eventually connecting with the raised terrace (19) west of the gate-chamber. It would certainly have given access to another room (30), built against the west wall of the courtyard, again with its floor c. 1 m higher than the courtyard surface. This room is identified as a store-room by three plastered bins at its eastern end; the adjoining areas to the north and south have not been excavated to this level, but it seems unlikely to have stood in isolation and there were probably other such stores nearby.

The elements of the plan described so far, the main entrance, the great courtyard and the storerooms seem to represent the working and business areas of the complex. Its religious centre was obviously the temple and its courtyard, situated on the extreme north edge of the tell and protected from erosion by a double wall of large boulders built to retain the foundations of the north wall which, with its deeply niched façade, must have looked enormously impressive from the plain far below (Fig. 48). The same, probably symbolic, decoration is found on the south façade, which was pierced by a recessed doorway 1.65 m wide leading into the precinct from the great courtyard (Fig. 49). The east end of the temple courtyard is again eroded, but it was 10.70 m from north to south and more than 11 m long (Fig. 386, p. 388). A micromorphological section through its plastered surface provides information relevant to the abandonment of the building. Immediately overlying the plaster was a thin green ash layer of indeterminate origin, and above it a thin layer of reddish water-laid silty clay. These phenomena are described in more detail and their significance is discussed below (pp. 354 \& 389). These layers were covered by a thin deposit of trampled rubbish through which, in the corners of the courtyard and of the antecella, small pits had been dug, perhaps in search of foundation deposits before the temple was filled in. The juss plaster on the courtyard walls showed signs of heavy burning, also present in the antecella and obviously the result of local fires which, as in the gatechamber, seem to represent an early stage in the ritual closure. Thin-section examination revealed that on the courtyard walls the gypsum


Figure 50. Central core of silver jewellery and ingots contained within ritual deposit FS 1958 (see also Figs. $250,386, p p .235 \mathcal{\&} 390)$.
plaster had been covered with a thin coating of true lime plaster (p. 361, Fig. 363).

In the debris $c .1 .00 \mathrm{~m}$ above the floor, and also clearly associated with this event, was a deposit of copper/bronze sickles and other tools, standing almost upright and clearly reflecting the shape of the container in which they had been buried (Fig. 250). Enclosed by these larger objects was a collection of silver, gold and electrum jewellery, pieces of silver that may be ingots, carnelian beads and small lapis lazuli pendants (p. 225 and Figs. 50, 51 \& p. 234). The presence of the copper had obviously helped to prevent corrosion of the silver, which was in remarkably good condition. A short distance away were two other deposits including tools and weapons, one of which was associated with fragments of a bitumen-lined basket, while the other showed microscopic traces of finely woven cloth on the surface of an axe and a dagger (Fig. 323, p. 299). Another significant find in the 'trample' on the floor of the courtyard was a group of bullae bearing seal impressions (discussed on p. 120). Two bore inscrip-

b


Figure 51. Silver jewellery and ingots, electrum and gold jewellery from deposit illustrated in Figure 50. The reverse sides of the electrum discs are shown in order to illustrate their method of manufacture (see also Fig. 264).


Figure 52. Entrance to antecella, from the temple courtyard.


Figure 54. Interior of temple cella, from the north.


Figure 53. Temple courtyard, looking south, showing patches of burning and random 'post-holes', of which the function remains unexplained.
tions which were at first thought to include the name of the god Šakkan (Akkadian Šamagan), more recently and correctly read as anše.bar.an, a hybrid equid (see Chapter 10). These record deliveries of the famous kúnga equids to the FS complex, perhaps to the temple itself.

The temple was entered from the northwest corner of the courtyard (Fig. 52). It follows the same bent-axis plan as the temple in Area SS, but here the cella and antecella (Rooms 41, 42: Fig. 54, p. 74) are much narrower and of almost equal length, 5.00 and 4.80 m respectively. Each room had a niche in the west wall, and we found a square platform, 30 cm high, against the east wall of the antecella and a circular bin of juss-plastered clay in the southwest corner beside the entrance to the cella. There were apparently no other permanent installations, but it is interesting that the cella doorway was at some time narrowed, and that an unusual protruding flap of plaster was attached to the east jamb about 1 m above floor level (Figs. 54 \& 55), both seemingly intended to restrict the view from the antecella of some object or ceremony in the cella. The exterior of the north and west walls was finished with brown plaster as in other buildings of the complex, but the niched south wall, like the west wall facing the courtyard, showed patches of juss plaster. The internal wall faces in both rooms had four and the floors six layers of plaster in colours ranging from pink through brown to greenish grey. Ritual deposits in the temple consisted of a small pile of gazelle horns just above the floor of the antecella, along the west wall of which were a pig's skull, the bipronged tool 23 and a number of pots. On the north floor of the antecella was the same thin layer of green ash ( $2-6 \mathrm{~mm}$ thick) which covered the courtyard. The lack of reddening of the plaster under the ash suggests that, as in the courtyard,


Figure 55. Detail of plaster flap on interior of antecella-cella doorway.
there had been no in situ burning directly on the floor.

A collection of sickle blades and other tools had been deposited on the surface of the fill above the cella, together with two donkeys, one buried in a pit cut into the west wall of the temple and the adjoining fill, the other on the terrace north of the antecella. The former had apparently been covered over with reed matting, which survived as a series of layers of white phytoliths, many still articulated as reeds (locus FS 1886). Three braziers and two unbaked clay 'tripod' supports also lay above the west wall of the antecella, near the metal and donkey deposits (Fig. 56). The former must also have been associated with the ritual closure of the temple and seem to have continued in use for some time. A micromorphological sample from the burnt fuel of these braziers, discussed on p. 366, shows changes in the burning conditions which suggest an extended period of use. The braziers were associated with layers of densely packed stones which overlay the building at this point, beneath which were a series of hard plaster floors.

Two more sectors of the complex, on the south-


Figure 56. Braziers and tripod 'supports', ritual deposit above temple antecella.
east and southwest, remain to be discussed. On the southeast a single, almost triangular room (3) has been completely excavated (Fig. 43); our only other evidence for the character of this sector comes from Sounding E, some 4 m to the southeast. The only features of Room 3 were a platform enclosing the head of a well or cistern in the southeast corner, a bench against the east wall, and two large circular storage basins of unbaked clay, probably stands for water jars, on the platform near the well-head. The walls, floor and platform were all covered in juss plaster, obviously to protect them against water spillage, while carbonized fragments in the top of the well suggest that it had a wooden cover. The wellroom was not easily accessible from other parts of the complex and probably supplied water primarily to the adjoining area on the south and east.

Sounding E afforded a small but suggestive piece of evidence for the use of this area, for it uncovered a short stretch of a low wall or bench standing to a height of only 60 cm with, set into it, a heavily plastered trough which looked very much like a manger. Some 2 m to the west we found another donkey skeleton lying just above the floor. Its closeness to the 'manger' is obviously fortuitous, for the distribution of donkey deposits throughout the complex appears to be random, but it does provide another piece of evidence relevant to the process of filling in, because not only were the bones wellpreserved but the shapes of the stomach and intestines could be seen in the earth between them (Fig. 57). Nothing of the original flesh or the contents of the internal organs survived, but we were informed that the preservation of their decayed forms could
only be explained if the body had been covered by a considerable depth of fill immediately after its deposition. The equid remains are the subject of a specialist report by Dr Juliet Clutton-Brock (Chapter 13), but we may note here one interesting point. The marks of crib-bite on their teeth suggest that they were stabled and not kept in the open as they are at the present day. Since it is clear from the ritual deposits and the inscribed dockets that equids played an important role in the business of the complex, which we have suggested was a caravanserai, we may expect to find provision for their accommodation and their water supply. No other area in the FS complex meets these requirements and it seems not unlikely that the donkeys at least were housed in the southeast sector of the building. If this is so, there were almost certainly separate gateways on the now eroded east side through which the animals could be brought in from the outside or from the courtyard to the north.

Turning to the southwest sector of the complex, we observe first that the outer face of the west wall of the gate-chamber (1) was trenched into earlier occupation levels, cutting through a small buttressed wall which had been built to dam a previously existing gully. The Level 5 ground surface to the west (19) overlay these earlier levels, at a height of $c .1 \mathrm{~m}$ above the floor of the antechamber. Its southeast corner was supported by a curved retaining wall, abutting the wall of Room 1 on the east and turning west along the south side of the terrace. Here we do not know its exact course, since it was overlaid by later buildings, but we located a short stretch of the west retaining wall in Sounding C, and we have indicated on the plan the probable line of both walls to their junction at the southwest corner. There was no direct communication with the gate-chamber or with the main courtyard except perhaps by a very circuitous route, the path which ran at the same level past the storerooms 30 and 31,32, to the head of the north steps. There must have been a separate entrance, probably from the south, and it is clear that the terrace area served a purpose distinct from that of other parts of the complex.

There may have been rooms around the edge of the terrace but the only building we have been able to excavate, on the north side, is an obviously important suite of three rooms, including a large reception room (20) and two small ancillary rooms opening off


Figure 57. Donkey skeleton 6, on floor of southeast courtyard, showing preserved shapes of internal organs.
it on the east ( $21 \& 22$ ). There may have been a doorway leading into Room 21 from the terrace, but the evidence is uncertain. Room 20 could not be fully exposed because its cut-down walls had been used in part as foundations for another large chamber which replaced it in Level 3 and seems to have served the same purpose (Fig. 64), but it must have been at least 6.80 m long and about 5.70 m wide. It was entered from the terrace by a doorway of which one jamb was found near the southwest corner; between the two doorways at its eastern end was a podium rising some 35 cm above floor level. The approach to the dais was thus of the bent-axis type already observed in the temple and discussed below (p. 388), but this does not necessarily mean that the room had a religious function. We know nothing of the appearance of the south façade, which is buried under the south wall of the Level 3 building, but it would be interesting to ascertain whether it had the same deep niches as its successor. This scheme of decoration is primarily though possibly not exclusively associated with religious buildings for, although it occurs on the façades of the temple precincts in both Areas FS and SS, it is also found in Area CH on the boundary wall associated with the Naram-Sin Palace. However that may be, Room 20 was clearly of considerable importance, and it seems possible that it was the reception room of some high official responsible for a part of the affairs of the caravanserai that was distinct from the mundane concerns of donkeys, their loads and their housing. Above the floor of Room 20 was the usual layer of bricky debris on which lay three partly dismembered human skel-
etons, accompanied by a number of broken pots (Fig. 58 , and see p. 350). Like the donkeys the human skeletons represent some ritual act associated with the closure of the building, though if the abandonment of the complex was the result of human action, their presence might also be seen as an act of revenge on the people who had brought this about. Similar fragmentary skeletons together with isolated
skulls were found in Courtyard 5, and a single skull was found in association with Room 30 in the Area SS complex.

The need to preserve the standing buildings in Area FS has inhibited our exploration of their foundations and what lies beneath them, but stratigraphic investigations at three points, in the antecella (42), the passage (9) between the temple and the store-


Figure 58. Fragmentary human skeletons deposited on infill above floor in reception room 20, Area FS Level 5. house ( $31 \& 32$ ), and in Sounding D (Fig. 42) have produced important evidence for the sequence of construction in and below Level 5. Beneath the ante-cella we found a platform of mud-brick without mortar, 96 cm thick, on which the plastered floor was laid (Fig. 59). The platform rested on a rough levelling course between the tops of two cut-down walls on the same alignment as the east and west walls of the antecella, and almost certainly representing an earlier version of it. We refer to these walls, for ease of reference, as Level 6 although they have no direct stratigraphic link with pre-Level 5 features elsewhere to which we may give the same designation. The fill between the walls contained much burnt material and, in the absence of evidence for burning at any other time in the life of


Figure 59. Sections below antecella and passage 9, Area FS Level 5. Level 6 refers to probable equivalent in Courtyard 5, Sounding D (Fig. 60).
the temple, it is tempting to relate this to the conflagration in Area CH Level 6, which preceded the first Akkadian occupation. In the small area of the sounding, however, the evidence may indicate no more than a minor, local fire.

Between the west wall of the temple and the storehouse the section shows that the temple wall was here founded at the same level as the walls of the antecella, and the bottom of the plaster on its outer face coincided exactly with the first antecella floor. Beneath the temple wall could be seen the outer face of the platform, and below that were four courses of brickwork that must be part of the Level 6 building. On the west side of the passage the wall of the storehouse was founded some 80 cm above the base of the temple wall, and in the passage itself we observed three trodden surfaces, each resting on a layer of broken brick. The bottom level corresponded with the temple floor, the intermediate surface some 50 cm above represents an accumulation of debris, and the uppermost is contemporary with the building of the storehouse. From this we must infer that not only the storehouse but the block of three rooms $10,11,12$, at least in their final form, and almost certainly the storeroom 30 on the same higher level all belong to a later phase of construction than the temple, as does the flight of steps leading up to them from the courtyard. This would also suggest that the courtyard itself belongs to the earlier phase. Its layout, together with its west wall and the buildings on its south side, of which the entrance chamber forms an integral part, would obviously not have preceded the erection of the temple, but it seems likely that they formed part of the original plan. It is perhaps relevant that distinct building phases are also attested in the Area SS monumental complex.

Further evidence for the history of the courtyard area also comes from Sounding D, which exposed a sequence of three earlier structures, Levels 6 to 8 (Fig. 60). The plastered floor of Level 5 (815) was founded on a deposit which could be identified by sloping tip lines as deliberate fill (868). Beneath the fill was a surface of cobbles and potsherds (876) partly overlaid by a rough pavement of segmental baked bricks of the type used to line a well. We believe that this surface was a working floor for the Level 5 builders. The brick pavement was drained by a juss-lined channel cut into the surface of a lower wall (879, Level 6), while a large jar (898), sunk into the stub of a still earlier wall (881) with its rim flush with the cobbles may have served as a second drain or perhaps to hold water for use nearby. The face of wall 879 runs across the south end of the trench
about 65 cm north of and almost parallel with the south façade of the Level 5 courtyard. Most of it had been cut down to the level of the working floor, which abutted against it, and stood only two or three courses high, sealed by the same deliberate fill. The south side, however, seems to have been left standing to a greater height as a retaining wall for a hard packing of whole and broken mud-brick, stones and potsherds haphazardly laid, which served as a foundation platform for the Level 5 façade. Judging by the slope of the tip lines in the fill to the north, it was from this platform that it was dumped to provide the packing for the courtyard floor. The area of the courtyard was then given a final levelling of earth on which the plaster was laid (see also Fig. 366, p. 359), and the sill of the entrance to Room 13 was reinforced with a layer of small stones.

The stratigraphic position of wall 879 relative to the Level 5 buildings above it is thus identical with that of the Level 6 walls beneath the antecella, and it seems certain that they are contemporary. We recognize that absolute levels between features 25 m apart should be treated with caution, but it is interesting to observe that the tops of the cut-down walls in both soundings are within a few cm of one another. If this observation has any significance, it would reinforce our suggestion that the courtyard and its dependencies formed part of the original Level 5 plan.

Below Level 6 we identified two earlier building levels, 7 and 8. In Level 7 there was again an east-west wall (881) approximately on the line of wall 879. Abutting on it to the north was a second wall, L-shaped in plan and only 75 cm thick, suggesting that its north-south arm was an internal partition. Clearly at this time the area of our sounding was not part of a courtyard. Level 8 is again represented by massive walls (897) running east-west and north-south, with what appears to be a wide doorway in the angle between them. They stood to a greater height than the walls of Levels 6 and 7, though in the small areas we exposed it was difficult to determine at precisely what level they were founded. A floor (896) that may be associated with them was found at a depth of 3.50 m below the Level 5 courtyard surface, and there were apparently two later occupation levels of which the lower was floor 894 (Level 8b) some 75 cm above 896 . It was probably at this level that a small rectangular room (888) was built against the west wall north of the doorway. There seems little doubt that the major walls of Level 8 remained in use for a considerable period.

Some points of interest emerge from the Sound-


Figure 60. Plans and sections of Sounding D, beneath Courtyard 5, Area FS temple complex.
ing $D$ sequence. The massive character of the principal walls in all levels suggest monumental rather than domestic architecture, as indeed does the deliberate levelling of the successive buildings, with the large labour force that both demolition and construction must have required. We do not know whether these walls formed part of earlier versions of the temple complex, although it is interesting to note that the wall alignments in Level 8 approximate more closely to the axes of the temple precinct than do those of the existing Level 5 courtyard. Nor have we any evidence for the date of Levels 6 to 8 , although they must have spanned a considerable period and, if we are correct in suggesting (below, p. 389) that Level 5 may be ascribed, at the latest, to Naram-Sin or to one of his Akkadian predecessors, the earlier se-


Figure 61. Level 4 walls, Area FS; Level 1 circular building in background. The large jar 1289 was set in the floor of Level 2, and does not belong in Level 4.
quence must stretch well back into the time of the independent kingdom of Nagar. Certainly the powerful rulers of Nagar, attested in the tablets from Ebla and Tell Beydar, were a possible source of wealthy patronage and, if there was an earlier temple of Šamagan on the same site, an establishment linked with the caravan trade would have been a worthy and profitable object for their beneficence.

The buildings of Level 5 showed no signs of violent damage before they were deserted and, with the exception of the bullae in the temple courtyard, very little important material was found actually in situ on the floors. The abandonment of the complex, however, like that of Area SS discussed below, suggests an end to the peaceful prosperity of the countryside and probably a significant decrease in the caravan trade. The levelling of the walls and the deliberate filling in were often the prelude to a monumental reconstruction. Although it may have been intended, it was never put into execution here.

## 2. Level 4

The buildings of Level 4 consist only of a group of rectangular rooms overlying the southeast sector of FS Level 5 (Fig. 62:40-46). There were only two phases of construction, 4 a and 4 b , of which Level 4 b lay directly on the deliberate fill of the Level 5 buildings, while in Level 4a there was a rise in floor levels accompanied by some changes of plan. The walls were only $50-60 \mathrm{~cm}$ thick and had been cut down in both phases to a height of at most $25-30 \mathrm{~cm}$ (Fig. 61). Although the presence of bread ovens in Room 46
and a larger installation, possibly for cooking, in Room 42 imply some domestic functions, the buildings do not resemble a typical private house, which usually had smaller rooms and a less regular plan. Their relatively flimsy construction suggests that they were not intended to be permanent but were erected and, after a relatively short time, remodelled to serve some temporary need. However, their stratigraphic position between the filling of Level 5 and the more substantial buildings of Level 3 , to which they appear to be a prelude, is of considerable significance. Among the few finds in Level 4, sandwiched between the lower and the upper floors, was a group of 11 complete or fragmentary tablets (p. 114). These included a list of payments in silver coupled with the names of three towns in the region of Nagar, a record of workmen accompanied by the same placenames, records of the issue or receipt of garments and sheep, and a sealed bulla bearing the hitherto unknown name of Itbe-laba, an Akkadian governor of Gasur, later Nuzi near modern Kirkuk. The tablets obviously derive from an official archive or archives, but it seems unlikely that the Level 4 structures were part of an important administrative building and the documents may possibly have been brought from elsewhere on the site and used as packing below the 4a floor. We can, however, be certain that they pre-date Level 3, though probably not by a long interval. Their historical implications are discussed below (p.383), but we may note here that the script indicates a date no earlier than the later years of Naram-Sin, while the pointed numbers on texts 24


Figure 62. Plan of FS Akkadian Levels 4 and 3 (south of main east-west baulk).


Figure 63. Section, south sector, Area FS, east-west baulk. The area excavated by Mallowan extended both to the north and south of the baulk, and had removed here much of the upper levels, though leaving some of the upper walls in situ.

and 26 could have been written in the reign of Šar-kali-šarri or even later. Certainly these texts and the bulla provide an important chronological landmark.

## 3. Level 3 (plan, Fig. 62; section, Fig. 63)

The buildings of Level 3 present a conspicuous contrast with the impressive architecture of Level 5, but preserve nonetheless certain of its official functions. Room 1 is obviously a replacement for Level 5 Room 20, on which it is partly founded and which we have suggested was the reception room of some high official. Its importance is emphasized by the deeply recessed niches on its south façade

## b



AREA FS 1985
LATE AGADE BUILDING

AXONOMETRIC RECONSTRUCTION

5

Figure 64. Level 3 Akkadian building (reception room 1) with revealed doorways and deep inset niches in the south wall. The structure within the building is the remains of a brick tomb dug from Level 2.


Figure 65. Passage 6, west of formal reception room, showing secondary wall with arched niches on the right; heavy water damage is particularly visible on the left hand wall.
and the double reveals on its outer doorway (Fig. 64), which caused it to be referred to in notebook records as the Revealed Doors Building (RDB), but the room itself is somewhat smaller than its predecessor and has neither a podium nor, in its latest form, small subsidiary chambers. There was a doorway in the east wall leading into a long passage (5) and a second similar doorway facing it in the northwest corner. The latter we at first identified as a niche; it now seems that it originally opened into a second passage (6; see Fig. 65), but was later blocked by a secondary wall with arched niches and projecting piers that may have supported roof beams. The passage connected Courtyard 8 south of Room 1 with the area to the north through a door at its north end. At some stage a partition wall was inserted and the north doorway was narrowed, but the details of these changes are unclear because both the east and west walls of the passage were badly eroded and had been undercut by standing water, the result of heavy rains after the abandonment of the building.

Courtyard 8 and the rooms on its south side (2, $3 \& 4$ ) overlay the Level 5 terrace (19), but there was no longer a south terrace wall and the ground and floor levels were stepped gradually downwards. In Room 3 there was a large scatter of sherds in the southwest corner, while the rest of the room produced two large and two smaller jars, a bowl (910), two bottles (1344), a large urn and two theriomorphic vessels, one bearing a goat's head (383) and the other representing the rear end of a cow with two spoutlike teats (384). Another discovery, unexpected in this level, was the severed arm of a human skeleton.


Figure 66. Area FS Level 3 formal reception room (1) and, in foreground, storerooms 3 and 4, view from the south; photograph taken in 1987, before excavation north of the main Area FS baulk.

Against the east wall there was a mud-brick pedestal of unknown function which might indicate that the room had originally some formal character (Fig. 66), but at the time of its abandonment it was at least partly used for storage. Room 4 was certainly a storeroom, for it contained many large storage jars, two with mirror image incised marks on the shoulder (1271 \& 1284), a beaker (1127), and a dark grey Stone Ware bowl (100). A large jar was found lying on a bench against the south wall, and above it was an interesting architectural feature, the spring of an arch that originally spanned the room. The spring of a similar arch was found on the south wall of Room 9, and their purpose will be discussed in that context. The low north doorway of Room 3 was originally arched, with a rough pavement of stones and potsherds in front of the entrance and benches along the wall on either side (Fig. 67). Beside the northeast outer corner of the building we found a large block of limestone in the shape of an eye with a spiral pattern of punched holes on its dressed surface, occupying the position of the eyeball (Fig. 281, p. 267);


Figure 67. North door of storeroom 3, FS Level 3, with external benches and sherd pavement.
the back of the stone was only roughly shaped. Its weight would seem to preclude the possibility that it was built into the face of a mud-brick wall and any connection with the Eye Idols or the 'eye motif' on the walls of the Eye Temple seems remote, but we can offer no plausible explanation for the purpose of the stone or its presence here unless, as has been suggested, it was the board for some elaborate game. Near this stone were a fenestrated brazier (1602), a small awl or chisel, and two medium-sized jars ( $\mathbf{1 2 8 1}$ \& 1300) with a third jar set into the floor and plastered over.

Room 2, in the southwest corner of Courtyard 8 , was separated from Rooms 3 and 4 by a passage in which were found a number of goblets (including 1191, $1192 \& 1195$ ) together with the well-preserved bitumen impression of a basket (Fig. 321, p. 298). Room 2 was entered through a low doorway of which the mud-brick lintel was found intact, bearing the impressions of the small transverse timbers that originally supported it (Fig. 68). Against the west wall was a low bench, and the very low doorway suggests another storeroom, but nothing remained of its contents. From the northwest outer corner a wall, running north and resting in Sounding C on the Level 5 terrace wall, seems to define the original west side of Courtyard 8 ; it continues northward as the west wall of passage 6 . To the west the tell slopes steeply and there is a constant risk of gully formation, of which one example found in Sounding A (Fig. 42) cuts through a wall which cannot be related stratigraphically to our sequence, but probably predates Level 5. At an early stage of Level 3 this wall was cut down to form a terrace for the erection of


Figure 68. Small east door to FS Level 3 Room 2, with lintel still intact.
two buildings, respectively north ( $10 \& 11$ ) and south ( $9 \& 12$ ) of the old gully line. Another retaining wall with a central buttress was then built linking the two buildings below the level of Courtyard 8 (Fig. 69).

Each of the buildings below the terrace probably extended west of its surviving rooms and their function cannot be certainly determined. The west doorway of Room 11 has recesses on its south jamb, but since they are not repeated on the north side they may have had a practical function rather than a formal significance. Room 11 produced, in addition to eight large jars, a number of small and mediumsized vessels, including two further jars (1230), a small tripod jar (484), a bottle (1376), a bowl (1058) and an unusual fenestrated double bowl (1608) as well as a number of frit beads (p. 225) and part of the bitumen lining of a basket, all of which suggest the equipment of a private house.

The southern building ( 9 \& 13) yielded no informative finds, but an interesting architectural feature was the spring of a radial arch (Fig. 70) on its south wall, as in Room 4, and the trace of a corresponding projection on the north wall (see also Fig. 77). This arch can only have served as a reinforcing rib for a vault but would have been superfluous if the bricks of the
vault itself had been laid radially, and it seems likely that it was constructed by the 'pitched brick' method, in which sloping, fan-like rings of brickwork are laid across the long axis of the vault, each resting on its predecessor and thereby eliminating the need for timber scaffolding. Slightly later in the third millennium pitched-brick vaults were already being built at Tell al Rimah in a facile way that indicates an established technique, although there the vaults were too small to need additional reinforcement (Oates 1990, 401, fig. 6). There is admittedly no contemporary evidence for the use of such ribs, or indeed for roofing techniques in general, but they are found in later periods in betterpreserved vaults (Ward Perkins 1958, 91 ff.; Andrae \& Lenzen 1954, 27 ff.).

To the east of Courtyard 8 the surviving walls of Level 3 do not present a coherent pattern. We note the presence of four bread ovens, one enclosed in the north end of Room 42 and the others in an open space nearby, where several broken jars were also found (Fig. 71), including one almost complete example (1282). On the south side of this sector there was, however, a building of unusual type (Rooms 47 \& 48; Fig. 62). An arched entrance 2.20 m wide led into a small chamber 2.80 m wide but only 1.0 m deep from north to south. In the south wall was an arched niche 50 cm wide and 20 cm deep, about 90 cm above floor level. The second room (48) was clearly part of the same building but did not communicate directly with Room 47; it was not completely excavated and we did not locate the doorway. The east and west walls of the building were founded in part on the cut-down walls of Level 4a. The entrance arch had originally been symmetrically on the axis of the niche, but its east side had subsided inwards, forcing the west side into an almost vertical


Figure 71. Level 3 ovens and jars, in northeast of south sector, Area FS Level 3; Level 1 circular structure in the background.


Figure 69. Level 3 terrace wall with buttress, west side of Area FS.


Figure 70. Proposed reconstruction of vault and supporting radial arch in Area FS, Room 9, Level 3. The suggested profile of the vault is based on that of complete examples from Tell al Rimah, dated c. 2100 BC, approximately a century later.


Figure 72. Arched building, Area FS Level 3, Room 47: a) plan; b) elevation and section of associated floors.
position and causing the partial collapse of the west wall against which it abutted. Makeshift repairs left a distorted profile which must have corresponded closely to that shown in Figure 72b, for there is little evidence of further collapse before the building was filled in at the beginning of Level 2 . When the repairs were carried out, the floor level in Room 47 was raised by some 25 cm , and it was probably at this time that a short east-west wall was built at a
level above the original foundations abutting the east end of the façade, to which it would have served as a buttress. On a still higher ground surface at its east end, though possibly also contemporary with the repairs, we found a short stretch of a northsouth wall ornamented with a panel of small semicolumns moulded in plaster on its outer face and terminating in a door jamb at the north end (Fig. 73). This suggests the outer façade of a small courtyard
in front of the building, but no traces of other walls survived. The decoration, reminiscent on a small scale of the motifs that adorned the Level 5 temple in Area SS, together with the wide arch opening into Room 47 and the niche in its south wall, suggest that this was a small shrine. If so, it is the only known religious building in the later Akkadian levels of Area FS.

In the northern sector of Level 3 (Fig. 74) the only Level 5 buildings that were repaired or rebuilt on the same site are the formal storerooms 30,31 and 32. Any structures that may have overlain the temple and its courtyard have been too heavily eroded for identification, while the area of Courtyard 5,6,7 was occupied by private houses on either side of a sherd-paved street (21) running from east to west and then turning north. The walls of Room 30 had evidently decayed but were repaired on almost the same plan with a higher floor level, on which no material was found. Rooms 31 and 32 were reoccupied, raising the original walls and retaining the position of the doorway in the south wall, which was found with its flat lintel still preserved (Fig. 76 and section, Fig. 75). The level of the floors was raised and surfaced with mud plaster; two platforms were installed in Room 31 (Fig. 77), and a row of bins along the east wall of Room 32. There were also niches in the east, south and west walls of Room 31, which may have been features also of the earlier building. The only addition to the plan was a small courtyard (24) in front of the south doorway, which was entered from Street 21, and two rooms to the east, 28 and 27, which were entered by a doorway in the northeast corner of the courtyard and may have been living quarters for workers in the storehouse.

In the fill and on the floor of Room 31 there were many broken pig bones, and both rooms contained large quantities of pottery, almost certainly stored here for use elsewhere. In Room 31 there were twenty-four complete or almost complete vessels, including two imitation stone ware bottles ( 177 \& 178), bottle 1380, a double-mouthed bottle like 1431, nine jars ( $1233,1286,1296,1305 \& 1374$ ), a strainer (1651), an urn and a cooking pot (1672). Other objects included a frit bead, part of a large (?one-) wheeled vehicle (cf. Fig. 487:16), a shell ring, a basalt mortar and various rubbers. Room 32 yielded fourteen vessels, among them another cooking pot (1673), four beakers including imitation Stone Ware vessels ( $\mathbf{1 1 0} \& \mathbf{1 8 0}$ ), three bottles (1339), three jars, a bowl and two urns ( $1260 \& 1402$ ), together with eighteen small objects. The latter included the small statue base (clay 81), a lump of copper and three


Figure 73. FS Level 3 wall with panel of semi-columns moulded in plaster, associated with arched building (Fig. 72).
small tools (including metal 77), a number of polishers, two beads and a fragment of a polished stone axe.

The rest of the space north and south of the transverse street (21) was occupied by small houses of three or four rooms, 26, 29, 34 (Fig. 76) and 14, 15, 16, 17, each with an external courtyard, 23 and 19. There was much pottery in these houses reflecting the widespread destruction of the site at the end of the Akkadian occupation. In each courtyard was a bread oven; two more can be seen in the foreground of Figure 76 and, in more detail, in Figure 78 where the stokehole at the bottom of each oven can be seen. The courtyards were probably also used for keeping animals as well as for many domestic activities which, in this climate, are performed in the open air. An articulated skeleton was found associated with the uppermost floor in Room 29 (FS 1743, see Fig. 75). This is the only skeleton recovered from the Level 3 deposits and may possibly represent an individual killed in the destruction of the settlement. To the east and north of these houses no coherent plans could be recovered because the area had been disturbed both by ancient erosion and by excavation in the 1930s, of which no record survives.

In general, Level 3 shows a decline in monumentality, perhaps even prosperity, compared with
in front of the building, but no traces of other walls survived. The decoration, reminiscent on a small scale of the motifs that adorned the Level 5 temple in Area SS, together with the wide arch opening into Room 47 and the niche in its south wall, suggest that this was a small shrine. If so, it is the only known religious building in the later Akkadian levels of Area FS.

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In general, Level 3 shows a decline in monumentality, perhaps even prosperity, compared with


Figure 74. Plan of Area FS, Level 3, north sector.

Level 5, and a concern with practical rather than prestigious motives in its buildings, which may reflect conditions in the countryside. However, the replacement of the reception room and the construction of more modest storage facilities as well as the refurbishment of the carvanserai magazines all suggest that the northern trade was not entirely dead. The presence of the Late Akkadian tablets and bulla in Level 4, which we regard as a mere prelude to Level 3, implies that no long interval had elapsed since the abandonment of the Level 5 complex, and the major operation involved in its ritual closure must be ascribed to an authority at least kindred to that which had previously administered it. That Level

3 came to a sudden end is attested by the quantity of pottery left on its floors. As we shall see, Level 2 shows radical changes, but again there may have been no great lapse of time, for the more flimsy buildings of Level 3 would have decayed more rapidly than their monumental predecessors, and we must also remember that the reconstruction of the city was probably piecemeal and that the core of local residents would have remained much the same whatever the political authority. It is, however, important to note that the walls of Level 3 suffered during the interval from damage caused by heavy rain, an observation which does not support the suggestion of a dramatic change in rainfall patterns at this time.


Figure 75. Section, Area FS, north sector, east-west baulk (position $=B-B^{\prime}$, Fig. 74).


Figure 76. Area FS, 1990 excavations north of the main baulk, view from southwest. The doorway at the left leads into Room 31.

## 4. Level 2

Level 2 shows a marked change in the character of the buildings in Area FS. There is no longer any obvious formal or administrative element, and we see instead the presence of larger residential units. In the south sector (Fig. 79b) the walls of the large reception room of Level 3 and its associated smaller buildings were cut down and the whole area filled with debris, including broken mud-brick, to produce a gradual slope from north to south. On the west, where the steep edge of the tell had previously been terraced, a very large quantity of material, including much Uruk pottery clearly derived from earlier occupation levels at the foot of the tell, was used to create a new platform. This was heavily eroded and neither its original surface nor its limits could be defined, but it certainly extended as far as the


Figure 77. Northern half of storeroom 31, showing platforms and stub of an arch, perhaps supporting a pitched brick vault as in Figure 70.


Figure 78. Ovens in Courtyard 20, Area FS Level 3, showing stoking holes. The low, unexcavated door to Storeroom 31 is visible in the background.

b


Figure 79. Area FS Level $2 a$ plan: a) north of main east-west baulk; b) south of baulk.
westernmost surviving buildings of Level 3. A distinctive feature of the architecture of Level 2, seen most consistently in its final phase, was the predominance of grey mud-bricks faced with grey plaster, again obviously using occupation debris from the perimeter of the tell. The south sector building was thus known to us as the 'Grey Libn Building' (GLB), a term sometimes used in descriptions of provenance.

Almost the whole of the excavated area in the south sector served as the site of this single large house (Fig. 80), of which the plan developed gradually through three phases of occupation. Of the earliest phase, 2 c , only a few walls survived, mainly in the southern part of the house, but these reflect the later plan and in some cases were reused throughout the life of the building. In the second phase, 2 b , the house seems to have reached its full extent, measuring some 23 m from west to east and 15 m from north to south; its northern limit lay outside our original trench, but is almost certainly represented by a short stretch of wall face exposed by the collapse of part of the north section (Fig. 63). On the east it abutted on another building of which only parts of three rooms $(23,24 \& 25)$ have escaped erosion. The blocking of an original doorway in the west wall of Room 24 shows that these rooms were structurally earlier than at least the latest phase of the house. Phase $2 b$ ended with a disastrous fire which severely damaged Rooms 2, 3, 4 and 16, 17, 18. The wall plaster was heavily calcined and the walls in many cases badly cracked; the floors were littered with burnt debris including lumps of charcoal and of clay bearing reed impressions, from which we conclude that the building had been roofed, like many present-day village houses, with reed matting resting on wooden rafters and sealed by a thick layer of clay. The fire may have been accidental, but the presence of many complete pots on the floors of other, unburnt buildings of this phase suggests that the occupants were forced to leave hurriedly, although the abandonment seems to have been brief.

The other feature that must be mentioned is an empty mud-brick tomb chamber sunk into the Level 2 fill beneath the west end of Room 3, with its base somewhat below the floor level of the Level 3 reception room (Figs. 64a \& 81). No distinct grave-pit was observed, and it seems that a rectangular trench was dug, then paved with mud-bricks and lined with bricks set on edge to form the sides of the chamber; the north and south walls were carried higher than the sides to support the ends of a pitched-brick vault, parts of which can be seen in situ in Figure 82. The
north, west and south walls of the chamber lie almost exactly beneath the wall faces at the west end of Level 2, Room 3. The tops of the north and south walls seem to have protruded above the original Level 2 b floor, but must be approximately contemporary with it since the same floor is pierced by a robber shaft giving access to the chamber, and itself sealed by the floor of Level 2a. It seems likely that the robbery took place when the building was temporarily deserted after the fire, since quantities of ash were found in the upper fill of the shaft. Fourteen sealings of the same 'Brak style' seal (DM 262) were found in this fill, and another example (reg. no. 1240 ) in the debris nearby. These were largely door sealings and were rolled in the manner illustrated in Figure 162, with neat wedge-shaped triangles between the individual rollings. Interestingly, at the time of their original use several of these door sealings had been 'scrunched up' while the clay was still plastic. It must be emphasized that they were in deliberate fill and not in situ (contra Matthews 1997a, 137); one would not in any case expect a 'Brak style' seal in Level 2. Other discarded objects that may originally have come from this tomb include a wellpreserved yellow-fin bream (Chapter 13), a fine Akkadian cylinder seal and two copper/bronze objects recovered in debris of this date in the open space 58 (see p. 69). In the middle of Room 4, and probably contemporary with the tomb, was an oval pit c. 1.0 m across, with its rim surrounded by pebbles. Its purpose is unknown, but it contained some ash, much bone and a quantity of sherds, as well as a unique six-spouted, ring-based jar (Fig. 213, p. 182), miniature vessel 397, a plate (83.110), three basalt grinding stones and three small objects of frit, a pomegranate pendant (frit 56) and two cylindrical beads.

After the fire the damaged walls were rebuilt, some on a different alignment but without substantial change to the plan, shown in its latest form in Figure 79. The principal entrance lay at the end of a narrow street ( $32 \& 7$ ), running from west to east, and opened into a corridor (11) which turned north into a courtyard (13 \& 14). In Phase 2b this area had been paved with large irregular stone slabs, but was now surfaced with mud plaster, with a bench across the west end. This and the area 15 to the north formed a single open space in Level $2 b$, which was later subdivided to provide outer and inner courtyards, presumably to give more privacy to the rooms in the northern half of the house. Opening off the inner courtyard on the east was a single room (20) containing two bread ovens and, on the north, a group of four interconnected rooms ( $16,17,18$ \& 19) which


Figure 80. The Grey Libn Building from the northwest, with Room 19 in the foreground. Many of the 2 a floors and segments of the pipe drain were removed during the earlier excavations.


Figure 81. Tomb chamber of Area FS Level 2b, in the Level 3 reception room (1), from the northeast.


Figure 82. The tomb chamber during excavation, showing the pitched brick vault cut by the robber shaft.
look like living quarters. Very little was found on the latest floors to indicate their function, but in the burnt debris of Phase 2 b in Room 16 we recovered two beakers, a bowl and a jar (765), all of medium size and apparently domestic in character. On the west were three long intercommunicating rooms ( $2,3 \& 4$ ) with doorways at their eastern ends, a layout which is commonly associated with storerooms; beyond them the areas 29, 30,31 and 33 were very ill-preserved, and their purpose is unknown.

More precise functions can be assigned to the three rooms 12,6 and 27 on the south side of the house. Room 12 contained three bread ovens and can be identified as a bakery; it is the only room to be entered directly from the outer courtyard 13,14 , presumably reflecting the need to deliver supplies of grain or flour by the most direct route. Rooms 6 and 27 could be approached only from the inner courtyard through the southwest corner of Room 3 and a narrow passage (5). Room 6 was an ablution room in both Phases 2 b and 2a. In its earlier form it was floored with juss cement, funneled at the east end into a pot from which a terracotta pipe led under the east wall and discharged into a tall jar, 96 cm high and 38 cm in diameter, set into a pit in the southwest corner of Courtyard 13,14 . The top of the jar was carefully sealed with stones which could be removed to empty the effluent. It was incised with the cuneiform sign še (= grain, barley), upsidedown, together with an impressed number consisting of four double circles (p. 187), showing that it was reused as part of the drain; in shape it closely resembles a much larger storage jar found in a post-Akkadian context in Area ER (Fig. 34).

In Phase 2a Room 6 was largely repaved with cobbles (Fig. 83). The original outlet pipe was blocked and the effluent jar covered by the new bench at the west end of the courtyard. A new drain of terracotta pipes socketed into one another was laid from the funnel in the cobbled floor, passing diagonally across Courtyard 15 (Fig. 84) and under the floor of Room 19 to a vertical shaft set in a pit beneath Room 25. This shaft was originally formed of jars with their bases removed, of which one remained, and discharged into a horizontal row of similar jars which served as a soakaway (Fig. 85). Unfortunately much of the upper drain, and indeed the walls of the surrounding rooms, had been badly damaged by earlier excavations, but we were able to reconstruct its course. This type of drainage system


Figure 83. The ablution room 6 in Area FS, Level 2a, from the south.


Figure 84. FS Level 2 Courtyard 15 from the ablution room, showing the burnt floor of Level $2 b$ and a drain pipe running under the doorjamb of Room 19.


Figure 85. The vertical shaft and soakaway made of interconnected jars beneath FS Level 2b Room 25.
resembles, inter alia, that in the later Palace at Mari, where in Court 174 a horizontal drain, composed of large, tapered terracotta pipes just below the pavement, served as a main sewer discharging outside the Palace (Parrot 1958, figs. $44 \& 45$ ). In Room 65 a drain hole opened into a sediment jar, from which liquids were carried by a short pipe to a vertical soakaway, in this case lined with terracotta rings, while in Room 189 the drain hole was placed immediately above a more elaborate soakaway consisting of two terracotta rings over a stone-lined shaft (Parrot 1958, figs. $139 \& 80$ ). Complex drains are also to be found in the new Mozan 'palace', but we have as yet found no parallel for a horizontal pipe-drain discharging into a vertical shaft and thence into a horizontal soakaway.

At the east end of Room 18 was a well, 1.30 m in diameter and more than 5.20 m deep to the limit of our excavations. The top had been destroyed by the earlier excavations, but it was almost certainly of Phase 2 b , where a patch of cobbles visible in the section (Fig. 63) seems to reflect the need for a hard surface at this point. The uppermost fill obviously derived from Mallowan's excavation, since it contained many fragments of red mud-bricks characteristic of his Level 1 building. Some distance below this, however, down to $c .4 .30 \mathrm{~m}$ below the surface, was an undisturbed deposit containing much pottery, including late Stone Ware types 85 and 501, dark-rimmed orange bowl 272, bowl 929, and beakers 1099, 1106, 1134, which must date from the original use of the well in Phase 2b. The top of the shaft was exposed in 1983, but the lower part was not cleared until 1986 (visible in Fig. 44), and we unfortunately did not then identify it as part of the same well. This error has caused the vessels from its lower fill to be included, erroneously, among the drawings representing Akkadian pottery rather than with its contemporary postAkkadian types (locus FS 507); this has been noted on the relevant charts at the end of the volume. The lowest deposit in the well contained no informative material, but it is interesting to note that at a depth of 4.60 m to 4.70 m the shaft had cut through a cobbled floor which corresponds almost exactly in level with the earliest floor, Level 8, observed in Sounding D some 4 m to the northeast (p.51).

Room 27 was of even greater interest. It had two doorways, one from passage 5 in the
northeast corner and the second opening directly from the street on the south. On the east side, from the first doorway to the south wall, was a plastered bin, while the rest of the room was divided by a bench 90 cm wide and c. 60 cm high, built of rubble originally faced with a thin skin of mud-brick. In the top of the bench were set three containers, each one half of a globular jar split vertically (Fig. 86). Between the bench and the street door was a space 2.20 m wide and 55 cm deep, just room for two or at most three people to stand. In the larger northern part of the room a basalt mortar was sunk into the floor at the foot of the bench with itspestle nearby, and in the northwest corner was the base of a storage jar set in a low mud-brick pedestal, either a receptacle in itself or perhaps the stand for another jar. The plan and furnishings of Room 27 clearly identify it as a place where various goods were issued to people coming in from the street and, although we know of no parallel for it at this time, we cannot fail to remark its striking resemblance to a shop in any present-day suq. To this suggestion it may be objected that the bench is too low to have served conveniently as a sales counter, but it seems to us likely that the shopkeeper sat on the floor to conduct his business in the traditional Near Eastern manner.

The central and southwest areas of the north sector of Area FS were badly disturbed by earlier excavations of which no record survives. In the untouched area the main feature is a street running from west to east, almost exactly overlying the Level 3 street but more carefully constructed, with a pavement of potsherds and small stones flanked on both sides by gutters raised above street level to divert water from its surface. It is probable that, like its predecessor, the sherd street turned north at its western end. South of the street was a large house, of which the surviving plan shows an inner courtyard (46), with rooms opening off it on the east ( 47,48 \& 49 ) and on the south ( $51,52 \& 53$ ). The only entrance to the courtyard lay on the west, where there was apparently a larger open space, with a long room (50) on the south side and a small storeroom (34) opening off the northwest corner. The southern limit of this complex lay beneath our main east-west baulk; it must have abutted on the great house in the south sector described above, and may even have been part of the same establishment, a possibility that would seem to be supported by the presence of burnt material under the later floors of Rooms 52 and 53. Its large courtyards, however, indicate a different func-


Figure 86. View of the Area FS Level 2a 'shop' (Room 27) from the north, with a bin on the left, containers on the 'shop counter' and a mortar and pestle on the floor.
tion, perhaps the keeping of livestock, which would be appropriate to a largely agricultural community.

On the edge of the tell to the east of this complex was another structure of which only two rooms ( $55 \& 56$ ) and a courtyard (54) remain. Nothing of significance was found in the rooms, but the courtyard was clearly a working area. Here we found three querns and several grinding stones of basalt, a flint core, a local bivalve shell containing red pigment, and a quantity of sherds and bones. The area between the two buildings was very badly disturbed. On the south it seems to have been divided by illpreserved walls of Level 2a into two small units ( 58 on plan). Here, on the eastern side in Level $2 b$ debris, was found an Akkadian cylinder seal of soft stone, probably of serpentine (Fig. 180, p. 143). This was clearly not in its original context, but may have been an heirloom or a chance intrusion from an earlier level. More difficult to explain are three copper or copper alloy implements found near the north wall, including a shaft-hole adze and a sickle blade (metal $12 \& 15$ ), objects of considerable value which would not have been lightly discarded. At the west end, moreover, was the completely preserved skeleton of a fish. This has been identified as a yellow-fin bream by Professors Arturo Morales Muñiz and Eufrasia Rozelló Ozquierdo (p. 339), who state that it must have come from at least as far away as the Arabian Gulf, and that in Mesopotamia it is found only in graves, implying some ritual significance. The context in which both the metal tools and the fish were found has no apparent ritual association, but it places them stratigraphically in the brief inter-


Figure 87. Level 2 pottery kiln, Area FS northern sector.
val between the abandonment of Level $2 b$ after the fire and the rebuilding of Level $2 a$, that is, at the same time as the robbing of the vaulted tomb (p. 66), the only formal interment in Area FS and one of the very few found at Brak. These objects might conceivably have been removed from the tomb by the robbers (see above) but, whatever their immediate provenance, we cannot explain how they came to their final, apparently insignificant, resting place.

Beyond the sherd street the plan is a blank apart from a short stretch of wall along the street itself and, farther to the north, a group of five rooms (4044) and a courtyard (45), probably part of another house of which the walls survived to a height of only $20-30 \mathrm{~cm}$. The west wall of Rooms 42 and 43 had been trenched into the upper east face of the Level 3 storehouse 31,32 , and their floors must be assigned to Phase 2 b . On the floor of Room 42 was a large storage jar together with several pots of small and medium size, including three beakers, a jar and an urn ( $66 \& 825$ ). Just outside its north wall, on the edge of the tell where smoke would have been dispersed by the prevailing southwest wind, was the only pottery kiln found in Area FS (Fig. 87). It must originally have had two stages separated by a vented the north.


Figure 88. The northwest house in Area FS north, Level 2, from
platform on which the pots were placed, but only the firing chamber has survived. This was $c .2 .00 \mathrm{~m}$ long by 1.30 m wide and 1.20 m deep, with three sloping chutes for fuel on each of the long sides. Associated with the kiln was a trodden surface, into which was sunk a storage jar $c .20 \mathrm{~cm}$ in diameter and 45 cm deep, perhaps a container for water.

Five metres to the west was an undisturbed group of four rooms (35-38: Fig. 88), with an open area on the north containing three bread ovens and, to the west, a probable courtyard (39), cut by the eroded slope of the tell. The east wall of Rooms 35 and 36 was again trenched into the outer face of the Level 3 storehouse on this side. The entrance from the courtyard led into Room 38, where there was a pit in the southeast and an area surfaced with bitumen in the southwest corner, presumably for ablutions on entering the building. A very similar patch of bitumen can be seen in the Palace at Mari, in the corner of the 'Queen's Chamber' (Margueron 1982, 345,408 , room 43 ), which was provided with a drain hole and soakaway; it is possible that in our Room 38 water was merely allowed to run off into the nearby pit. The most unusual discovery here was a large cylindrical snake pot (Fig. 200, p. 168). Room 37 contained a single bin and Room 36 a low bench in the northeast and northwest corners respectively, while the western half of the innermost room (35) was occupied by a large bin divided into two compartments. A number of complete and broken vessels were found on the floors, together with a quantity of local mollusc shells in Room 35. An isolated but contemporary storeroom or workshop, 34 , some 6 m to the south, had been heavily burnt. It also yielded
a quantity of shells as well as worked stone and obsidian, loom weights, a sling bullet, a sandstone bowl with four animal head lugs (Fig. 278, p. 265) and five complete pots. Its floor level lay immediately above that of the tops of the surviving walls of Level 3, Room 30, just to the south, and Rooms 34-38 should probably be assigned to early Level 2 , as the Akkadian character of the snake pot from Room 38 would suggest (p. 167).

## 5. Level 1

The buildings of Level 1 are too damaged by erosion and earlier excavation to permit detailed analysis. Figure 89 combines the results of our own excavations with Mallowan's published plan (1947, pl. 62b), but where discrepancies occur we have preferred our own version; his numbering of the rooms has been retained as far as possible. The walls of this level were built of reddish-brown mud-brick, made from virgin soil outside the mound, but jointed with grey mortar, a distinctive combination which made even traces of eroded walls easy to recognize. It is interesting to observe that there is a marked continuity from the Level 2 structures to Level 1 in the function of different parts of the site. In the southern sector Rooms 1-4 and 15-17 are clearly domestic quarters (Fig. 89), and their outer walls on the north and east are founded directly on the walls of the Level 2 house, as is an inner wall that separates Rooms 4, 1, 15, 16 from 3, 2, 17. It is not unusual for builders to use earlier walls as foundations if these were still visible, but in this case it seems that the Level 1 building was, with some changes of plan, a deliberate replacement of its predecessor, although its more regular layout and substantial walls might suggest a superior status. A detail shown on Mallowan's plan is the use of square baked bricks to pave the bathroom (1). When we reopened the room we found only three in situ, but there was a jar sunk into the floor beneath the original drain hole, obviously to act as a soakaway. Of more general interest is the fact that this remains almost the only sizeable pavement of square baked bricks recorded in the thirdmillennium levels at Brak, although they were in common use on southern sites, either for paving or for wall revetments (see also Fig. 108). It is indeed surprising that so little attempt was made to seal surfaces exposed to water. Juss and cobbles, both locally available, were sometimes employed but the brick pavement in the principal courtyard of the temple in Area SS was made of thick, rectangular bricks laid in herringbone or ladder patterns, obviously reflecting a quite different tradition.

North and west of this residential unit the plan suggests, as in Level 2, one or more courtyards with rooms opening off them, but most of the walls exposed during the earlier excavations have disappeared and no coherent reconstruction is possible. Beyond the limits of Mallowan's trenches we found only traces of Level 1 walls, but there are significant additions to the overall picture in three places. On the west the site was bounded by a massive terrace wall, at least 1.50 m thick, of which a short stretch, 19 , was found near the southwest corner of our area, trenched into the top of the Level 2 fill but easily recognized by its characteristic brickwork. Although no further trace of it was visible, this wall must have extended some distance to the north, since the northsouth axis of the buildings around Courtyard 14 is exactly parallel to, and obviously dictated by, its alignment. In the northwest corner of our excavations we exposed flimsy and irregular walls surrounding a small area, 20, that looks like an animal pen with entrances on the north and east. The presence of other walls extending to the west suggests another courtyard or a small building, 21, while on the other three sides, $22,23,24$, there were apparently open spaces. The associated ground surfaces were paved in places with scattered potsherds but yielded no significant finds. It is interesting, however, that the fill above them produced a large number of clay sling bullets; the sling-shot is to this day the favoured weapon of Near Eastern shepherds. Our third isolated discovery in Level 1 lay about 1 m east of the northwest corner of the domestic quarters. It was an oval structure, about 5 m long by 4 m wide internally, with walls no more than 50 cm thick reinforced at four points by single-brick buttresses but standing nowhere more than $c .30 \mathrm{~cm}$ high, visible in Figure 71. A recess on the north side marks the probable position of the doorway, which was provided with a block of stone in the middle to serve as a step. There is no evidence to indicate the function of this unusual building but the apparent width of the doorway, 1.90 m , suggests that it was a storehouse for bulky objects, perhaps a granary.

The surviving buildings of Level 1 give the impression of an establishment which differs in building technique from its immediate predecessor but seems to inherit important elements of its plan and function, with indications of prosperity based largely on an agricultural economy. The transition from Level 2 was apparently peaceful, and the lack of material on the floors of Level 1 suggests that it too was abandoned without violence. There is no evidence for later buildings on the same site, but the presence

Chapter 2


Figure 89. Area FS Level 1 plan (Red Libn Building).


Figure 90. View from the south of the Area FS Level 1 house, taken in 1981. Mallowan's trenches can be seen in the background, beyond the line of what was to become the main east-west baulk. Rooms 16 and 17 are clearly visible; the walls in the immediate foreground belong to Level $2 a$.
of a few early second-millennium pottery types and a Cappadocian-type stamp (Brak 1, 47) suggest that occupation may have continued here, at least briefly, in now eroded buildings; we wonder too whether the faience tile found here (p.219) is of comparable early Middle Bronze attribution.

## E. Area SS

Level 1 post-Akkadian
Level 2 post-Akkadian
Phase N
Level 3 Akkadian
Level 4 Akkadian
Level 5 construction of monumental building
(?Phase L/M)
The distinct southwestern tongue of the mound (visible before excavation in the foreground of Fig. 1b) has been designated Area SS. Excavation here began as a continuation of one of Mallowan's trenches, of which unfortunately we had no records or information. It is not labelled on the Mallowan contour plan, but is clearly his Area HF ('two black rectangles between the 15 and 20 metre contours on the SW end of the mound': Mallowan 1947, 79 n. 3), one of several trenches not described in the original report. We began work here in 1983, with Dr Antoine Suleiman as site supervisor. At that time two new trenches, $5 \times$ 5 and $7 \times 5 \mathrm{~m}$, were opened on the highest point of Area SS and on the line of Mallowan's larger trench, in which the eroded remains of a mud-brick wall were still visible 40 years later. There was much broken red libn in the uppermost subsoil, a common feature of the latest surviving deposits over southern areas of the mound, not only in Area SS but also in $\mathrm{CH}, \mathrm{ER}$ and FS. As elsewhere, there were traces of house walls together with a number of ovens, plastered basins and other household appurtenances. Red libn walls were found at a depth of just over a metre and a cobbled surface at just under two metres, a pattern again approximating the building sequences in Areas FS and ER. Further work at the site now enables us to identify the material from these new trenches on the highest point of the Area SS tell as largely postAkkadian, the final Akkadian destruction level having been reached here only in the lowermost deposits.

The buildings here were not well-preserved and there was little coherent architecture. A number of interesting objects were recovered, however, including an unusual female figurine (Fig. 287) and a number of fine sealings (inter alia, DM 347). The
apparent lack of informative architecture led us in 1985 and 1986 to turn our attention to the important Mitanni buildings on Area HH. But at the end of the 1987 season we returned to SS, in the hope that excavation elsewhere in this western area would complement our existing knowledge of private residences of the later third-millennium occupation of the site, at that time derived largely from Area FS.

## 1. The Area SS ceremonial complex

When we reopened the eastern end of the Mallowan trench in 1987, we were surprised to discover that he had not fully excavated the exposed walls, presumably owing to his discovery of more important buildings elsewhere on the site. We were further surprised at the depth of the floors of the building then identified. In the one room we were able to excavate fully in 1987 (Room 1, Fig. 91), the plastered floor lay nearly 5 m below the ground surface. A narrow corbel-arched doorway in the west wall was still preserved to its full height of 3.3 m , and a small niche was found in the north wall, some 1.5 m above the floor. A smoke mark high on the west wall suggested that some sort of lamp had been suspended here. Indeed there can have been little light in this room, which measured only 3.80 by 2.50 m and had no visible windows, at least to a height of 5 m .

In 1988 our efforts were concentrated in Area SS where it soon became clear that, rather than private houses, we were excavating a major building complex that lay on a raised platform in a position of obvious importance facing the Naram-Sin Palace across the wide modern gully that probably represents the southern entrance to the ancient city (Fig. 101). In 1987 it had been established that the north and south walls of Room 1 were not bonded with its eastern wall, the outer face of which had been decorated with very shallow pilasters, each made of mud plaster with four vertical grooves formed apparently by the drawing of four fingers of the mason's hand down the surface of the plaster while it was still wet (cf. Fig. 119). This wall decoration, which had been covered with a white, gypsum wash, suggested the exterior of some formal building, which now became our first objective.

This proved to be a massive structure, $15.5 \times$ 6.8 m overall, with its long axis aligned approximately north-south. The outer walls are $c .2 .0 \mathrm{~m}$ thick on the long sides and 2.8 at the north and south ends. The structure is built of reddish-brown mudbricks, averaging 37 cm square with a course height of 10 cm and unusually wide lateral joints of $3-4 \mathrm{~cm}$; these match precisely the dimensions observed in

Figure 91. Plan of Area SS Level 5 monumental complex.


Figure 92. Area SS, antecella and cella from the north showing upper mud plaster floor.
the foundations of the Naram-Sin Palace. Although brick sizes are not in themselves a reliable dating criterion, the joints are in this case very distinctive. Both structures, of course, may reflect no more than the local practice in the construction of monumental buildings. Internally, the plan of Rooms 2 and 3 is that of a characteristic North Mesopotamian 'bentaxis' temple, entered from a large courtyard to the east (7) through a doorway 1.45 m wide with external and internal reveals (Fig. 91). The antecella is separated from the cella by opposing piers. Two floor levels were identified in these rooms. In the later phase there were low benches lining the walls of the cella and extending some 2 m into the antecella, where a separate small bench lined the wall opposite the entrance. A large jar was sunk into the floor in the northeast corner of the antecella. There was a step up from the antecella to the cella reinforced, as were the benches, with a foundation of re-used baked bricks (Fig. 92). Only an irregular mud-brick pave-


Figure 93. Area SS antecella viewed from the south, showing original brick pavement and large jar 1533 with brick surround, which had been sunk into the upper floor.
ment survives of the earlier level, at a depth of some 40 cm below the upper floor (Fig. 93). This appears to have been a foundation for a mud-plaster floor now largely lost. The fact that the floor did not survive suggests a brief period of neglect or abandonment before the refurbishment represented by the upper floor, and perhaps coinciding with the construction of the great ceremonial court to the south. An apparent depression in the middle of the earlier cella floor led into the antecella and may mark a drain. Burnt wood from the fill of the antecella provided a radiocarbon determination of 2275 to 2250 or 2205 to 1975 cal вс (BM-2687), while a charcoal sample from the lower floor (BM-2688) gave a reading of 2300 to $2140 \mathrm{cal} \mathrm{BC} \mathrm{(p.375)} .\mathrm{In} \mathrm{terms} \mathrm{of} \mathrm{conven-}$ tional dating the second determination covers the whole of the Akkadian dynasty, while the former falls within the reigns of Sargon's sons, a plausible reconstruction despite the uncertainty of so-called historical dates within this time frame.

The east courtyard (7), which provided access to the temple, measures some $17 \times 16 \mathrm{~m}$. The doorway to the antecella lies near its northwest corner. On the north is a massive, apparently exterior wall, over 3.5 m thick, with deep niches on its outer face. Beyond it was another large wall. On the former, faint traces of what may have been mud-plaster decoration similar to that on the west wall of the antecella were detectable in a raking light. A wall of the same thickness forms the south side of the court, interrupted only by the doorway, 2.15 m wide, which connects with the main ceremonial court (8). The mound slopes sharply at the eastern limits of the building, and here the east wall has been destroyed to pavement level. Both the north and south walls were broken by later pits near the east corners of the courtyard. The levels from which these pits were dug did not survive, but both pits seem to have contained a combination of Akkadian and postAkkadian material, most importantly the sealing which records the name of an official from Šehna (Tell Leilan, see p. 116).

The Courtyard 7 pavement consisted of three layers of carefully laid juss, the lowest of which was some 4 cm thick. This beautifully white pavement was excavated in only two areas, along the south wall and in the northeast corner where we found a curious feature consisting of several dark lines of black crumbly material separating the pavement from the foundation of the east wall and also outlining a rectangle 2 m long by 1 m wide at the northeast corner of the courtyard, within which were found


Figure 94. Part of the Area SS temple courtyard (7), showing the fine juss pavement and the black inset feature along the east wall.
traces of eroded mud-brick (Fig. 94). The black material has proved on analysis to consist of aggregates of black slag, heated to a temperature of at least $800^{\circ} \mathrm{C}$. It had not been burnt in situ since there were no traces of burning on the adjoining pavement or brickwork. The sample submitted for examination showed laminations suggesting that the deposit had been compressed (p. 363). We remain uncertain of the function of this feature, but it may have been a bedding course for a dado of some material, conceivably stone, set against the wall face and also surrounding a brick pier or some other corner feature. The material is sufficiently porous that it could have served for the drainage of liquids, though this seems less likely. As with so many aspects of this extraordinary complex, we know of no parallel.

Another unusual feature, originally thought to have been associated with the temple, is a third room to the south (6), with a solid central block of mudbrick $c .2 .0$ by 1.1 m . The walls of this room were additions to the original temple plan and had originally been intended as a stairwell, as its plan suggests, entered from Room 5 and providing access to the roof (Fig. 91). In its final form, however, it was clearly a lavatory. A large water jar stood beside the doorway in the northeast corner of Room 5 (visible in Fig. 101), and in the east passage, behind the central pillar, was a juss-plastered seat pierced by a slot with a juss-lined drain beneath. The associated floor was raised above the level of Room 5, presumably to accommodate the slope of the drain.

The ceremonial façade of Courtyard 8 has at present no parallel in Mesopotamian or any other architecture (Figs. 95-7). It lies at the northern end of a vast courtyard, described below, with a pair of towers projecting some 70 cm beyond the face of the wall (Fig. 99). In the recess between them is a shelf just over 1 m high, and above it a rectangular niche in the wall, offset somewhat to the west of the middle of the recess. At the foot of the recess is a large slab of Mosul marble, the alabaster later used for Assyrian palace reliefs, of which there are outcrops to the south and southwest of Brak. The slab is 17 cm high and nearly 3 m wide with a projection of 1.85 m and, like the niche above it, is not symmetrically placed in relation to the towers. The adjacent area of the courtyard is surfaced with juss


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Figure 96. Elevation of courtyard north façade.
plaster, which lips up against the slab and slopes gently down to the south and west. Below the juss is a complex baked brick pavement, laid in a very precise herringbone pattern (Fig. 98), of which the only other example of this date is the pavement in the 'palace' at Tell Beydar (Bretschneider \& Jans 1997a, fig. 12).

A white plastered dado 1.8 m high extends across the façade, above which the wall faces had been decorated with shallow engaged columns, formed in the mud plaster, 9 cm wide and 13 cm apart (Fig. 99). Two other, smaller stone slabs were found. One, slightly displaced, lay at the foot of the east tower, the other, just to the east of the wide gateway linking the two courtyards. A curious feature is a short pier projecting from the east end of the shelf, which is continued by a line of half-bricks running to the south and faintly visible beneath the latest juss pavement (Fig. 100). This was perhaps some form of low barrier, but it had been suppressed
before the last replastering of the court. We believe that this monumental complex, like that in Area FS, had been ritually closed. The evidence is discussed later in this chapter (p.90), since it is relevant to both monumental buildings, but for the moment we should mention the presence of a deliberate deposit of valuable materials in front of the dais: a large quantity of sheet metal weighing over 5.5 kg , beads and other objects (SS 545,549 ) just to the southeast of the dais itself. The function of a smaller deposit of conical cups, a 'grenade jar' (the squat type illustrated in Fig. 450) and half a small stone ring on the surface of the upper fill, 8.30 m south of the wall of the niche in which the stone dais was situated, is less certain.

The courtyard itself (8) is trapezoidal in shape, presumably reflecting the earlier contours of the mound; it measures some $27 \times 14.5 \mathrm{~m}$. One of its most interesting features is the tromp-l'oeil effect created by the use of elaborately rebated piers built into the courtyard corners, which have no structural func-


Figure 97. Courtyard 8 façade, viewed from the west, showing second stone dais and the area of the Naram-Sin Palace across the wadi to the east.



Figure 99. Detail of eastern pier of ceremonial court façade, showing the small decorative columns in the mud-plaster.


Figure 100. Detail of projecting pier and line of half-bricks at east end of niche, north façade of ceremonial court.

Figure 98. View from south of Courtyard 8 niche and stone dais, showing herring-bone baked brick pavement.


Figure 101. View of north wall of Room 5, from west, the lavatory (Room 6) beyond and, across the wadi, the remains of the Naram-Sin Palace.
tion but which must have been intended to conceal the fact that the angles are slightly less or more than $90^{\circ}$, an unexpectedly sophisticated architectural device at this early date.

Opening onto the north side of the court, and to the west of the monumental façade, was a large room (5) with a doorway some 5 m in width. All the internal wall faces of Room 5 and of the adjacent Room 6, the lavatory which opened off it, were decorated with shallow fluted pilasters in the mud plaster, again above a gypsum plaster dado (Figs. 101-4). In the north wall of Room 5 were two double niches separated vertically by a mud-brick shelf originally supported on undressed wooden beams, the impressions of which still survived in the soffits of the lower niches. The upper niche in each pair had a stepped base and rebated angles, and was also adorned with fluted pilasters, while the lower niche was a plain rectangle in plan and elevation. An iden-


Figure 102. Area SS Room 5, looking west.
tical pair of niches was set in the west wall of the room, with an originally arched doorway in the southwest corner leading into Room 13. In the northwest corner another doorway, with a corbelled arch, gave access to an area numbered 27 which we believe to have been an internal courtyard. A number of sealings were recovered from the floor of Room 5 to the south of this doorway, including Figure 173.

The west façade of the principal courtyard consists of three portals, each approximately the same width as the entrance to Room 5 ( 5 m ). They were too wide to have carried arches, and there is evidence in the doorways of Rooms 15 and 16 to suggest the presence of a central support, in the manner of a bit hilani. Midway between the jambs of both entrances were stone footings sunk into the floor to carry pillars, probably of wood, which supported the lintels. The lintels of Rooms 5 and 19, and indeed of other equally wide entrances to rooms around the

courtyard that have not been excavated to floor level, were presumably supported in the same way. In the case of Room 15 and probably Room 16 the stone footings had been exposed in a pit dug through both the first layer of bricky infilling and the trample on the floor, perhaps to extract the pillars or column bases on which they may have stood. The decoration of Rooms 19 and 15 is similar to that of Room 5, with double niches in the walls and fluted pilasters on the internal wall faces and doorjambs, the standard ornament in the more formal parts of the whole complex (Fig. 105). An interesting group of small bottles was found on the floor of Room 15 (1354-1357). It was not clear whether this group was in situ or reflected a deliberate deposit, but the fact that it rested on a thin layer of 'trample' suggests the strong possibility that it represents one of the many 'closure' deposits (see p. 90).

The southernmost room of the western side of the complex (16), although externally in balance with the rest of the façade, was in fact a porch leading into

Figure 104. North wall of Room 5 with stairwell 29 and, in the background, niches in the north wall of Room 28.

Figure 103. Elevation of north wall of Room 5 .



Figure 105. South wall of Room 15, decorated with double niches and fluted pilasters in mud plaster.


Room 18 , the focus of a three-room unit of which the third element is another porch (17). Room 18 was almost certainly roofed, despite the fact that its dimensions, some $10 \times 9 \mathrm{~m}$, are too great to have been spanned by unsupported beams and that careful cleaning of the plaster floor revealed no evidence of roof supports. This assumption is also supported by the results of soil micromorphology (p.357). The function of the large circular holes visible in Figure 106b remains unexplained: they are too low for roof beams and would appear to be excessively large to support mere porches around the room, though they might have carried hammer-beams supporting the roof. Benches along the west and north walls suggest the regular presence of a number of people, and the discovery on the floor of large numbers of sealed bullae and 'dockets' (p. 130) confirm the use of this room for some administrative purpose (Fig. 106 \& plan, p. 132). Groups of clay 'sling bullets' were found within the room and especially in the doorway, while some 2000 were found in the adjacent fill in 'porch' 16 ; the possibility that these objects may have provided raw material for the sealings and dockets is argued elsewhere (Oates \& Oates 1995, 495).

Further excavation beneath the floor of Room 18 provided evidence of the presence of a massive building preceding the surviving complex. Removal of the Room 18 floor plaster revealed a shallow packing of two courses of mud-brick, clearly a foundation for the floor itself (Fig. 107:10, and see $p .96)$. This abutted on the outlines of an earlier wall, 2 m wide, running from north to south on an alignment slightly different from that of the upper walls. We had hoped to find a floor at a lower level associated with this wall, but came immediately on the top of a mud-brick platform at least 2 m

Figure 106. Area SS Room 18: a) western half, showing the blocked western door and the deliberate fill within the north doorway, consisting of a lower bricky mass above which can be seen two phases of infilling; b) looking northeast; the doorways lead, respectively, to anterooms 17 to the north and 16 to the east.


Locus numbers in brackets
Figure 107. North-south section through Room 18.
deep and built against the wall. The platform thus represents the later of two phases of monumental construction preceding what we believe to have been the Akkadian walls. It would seem that at least this part of the SS complex was built on a massive mudbrick terrace, of which traces have been found not only beneath the building itself but extending to the south.

On the southern side of Courtyard 8 the walls of Room 11 are not parallel but their alignments focus precisely on the towers of the north façade. The walls of both Rooms 11 and 14 have niched recesses, but they do not survive to a sufficient height to determine whether or not the elaborate, rebated niches originally existed above these lower recesses. South of the building and to the west of Room 14 was found the paved gateway illustrated in Figure 108, almost certainly an entrance to an earlier monumental complex on the SS site, attested by earlier walls beneath Room 18 and the northeast corner of the south courtyard complex. As elsewhere, this earlier wall was overlaid by mud-bricks of the platform associated with the Level 5 complex.

On the east side of Courtyard 8, Rooms 10 and 30 have been wholly, and Room 9 partly, excavated.


Figure 108. Surviving bricks of paved gateway of the monumental building which preceded the SS Level 5 complex, southwest of Room 14.

Room 10 was the east gate-chamber leading into Courtyard 8, but the tell slopes sharply at this point and part of its east wall and the platform beneath are eroded, leaving uncertain the plan of the outer entrance, although it was clearly asymmetrical. The wide doorway that originally opened into the courtyard was found blocked by a relatively thin wall,


Figure 109. SS Room 10, looking south, showing partition wall and large Stone Ware jar, to the east (see also Fig. 189). The tip lines of the infill in Room 9, to the south, are clearly visible.
apparently inserted to retain the material with which the courtyard was deliberately filled (p. 90, below). It seems that Room 10 remained open after this filling operation, and the short, flimsy partition projecting from the south wall probably belongs to this time; its date is of considerable interest because, on the floor level associated with it in the southeast corner of the room, was found the largest complete Stone Ware jar we have ever seen (Fig. 109). The excavated part of Room 9 revealed no features of special interest apart from a baked-brick drain running from the courtyard under the floor and under the east outer wall.

Room 30 originally had a wide doorway opening onto the courtyard and, like the rooms in the western part of the complex $(18,21 \& 23)$ was furnished with benches along the east and south walls. At some time the entrance was almost completely blocked, restricting access to a narrow doorway with a very high sill approached by two steps on the outer and one on the inner face. The original function of this room remains unknown, but the lack of internal decoration and the presence of benches suggest some practical purpose. Excavation of the courtyard outside this room revealed that it was paved with baked bricks set in an elaborate ladder pattern, unlike the herring bone of the northern part of the courtyard (Fig. 110). The great depth of deposits within the courtyard made it impossible to determine where and why the pattern of the courtyard pavement changed. Just above this pavement one of our most important discoveries was made, the limestone human-faced bison illustrated on the cover and discussed in Chapter 9. Also of interest was the


Figure 110. Baked brick paving in Courtyard 8 outside Room 30; the cover of a drain leading into the courtyard is also visible.
presence of a human skull with no accompanying skeleton on the bottom step of the secondary doorway, suggesting at least the possibility that the blocking of the door was simply part of the infilling operation; why the steps should have been constructed is less clear, but both objects are almost certainly further examples of the ritual deposits associated with the filling operations attested elsewhere in the building. Room 31, in the southeast corner, is clearly a stairwell, but no traces of the stairs could be found. Traces of walls and a juss pavement on the slope to the east of Room 30 suggest the presence of a further formal courtyard to the east of Courtyard 8 , now lost by erosion.

## 2. The administrative and (?) industrial areas of the SS complex

At least two phases of construction have been identified within the western quarter of the SS complex. This is most clearly represented by Room 23, the original walls of which resemble those of the temple with their unusually wide joints. Here and elsewhere in this western sector, however, the original bricks are grey. This room was built in association with an early version of the western doorway (Fig. 114), while additions to the Room 23 walls were constructed at the same time that the level of the western gate was raised (see below). The east wall of Room 23 appears to block the external niches in the west wall of Room 17 (see plan), but detailed examination of the brickwork revealed that its east face had been cut back to permit the building of the unit that included Room 18 and presumably the associated Courtyard 8. It must be assumed that the niches were laid out at an


Figure 111. North portion of pisé wall showing slab construction; excavated in 1985, at that time designated Area DS.
early stage in the construction of the wall and, though at first concealed behind the earlier wall, were intended to be seen at a higher level above the roof of Room 23. Farther to the south the same wall continues as the west wall of Room 18 and was presumably niched along its full length, although to the south of the west door of Room 18 it is too eroded for certainty. Here the niches would have been visible to their full depth. Room 18 may have replaced the original official function of Room 23, the former now having its own and far less elaborate western extrance. The presence of these two rooms, with benches around their walls, together with the large quantity of administrative material recovered from Room 18, suggests that this aspect of the administration was focused around the unexcavated courtyard situated just to the north. Separate access was, moreover, provided by doorways from the west.

At the west end of Area SS we had previously discovered a stretch of pisé wall, c. 5.30 m wide and running from north to south (Area DS: Figs. 111 \& 112; and see Iraq 49, 1987, 180). It was built on a red libn foundation of 1-3 courses laid on ash (SS 1044) and bricky 'collapse' (SS 1045), suggesting the possibility that some kind of destruction or damage preceded its construction. It may in fact have served as terracing on the western slope of the tell, perhaps to counteract some slippage of the original building. Within the excavated area it was pierced by a corbelled opening, 95 cm wide, which appears to have been a passage for drainage.

Some 19 m to the east of this wall were two rooms, 20 and 21, the latter with a doorway opening


Figure 112. Detail of finger marks on pisé slabs (Fig. 111).
to the west. In 1992 a second stretch of the pisé wall was found, abutting on the doorway of Room 21 and continuing to the west (Fig. 113). The top of the pisé lay flush with the doorsill. The north and south faces of this wall were revetted with a single thickness of mud-brick, which rose above the surface of the pisé to form a parapet. At least part of the inner face of the north-south pisé wall was also reinforced with a mud-brick facing some 1.20 m thick. A sounding in the doorway of Room 21 (Fig. 114) revealed two phases of construction and showed that the doorsill and therefore the whole pisé structure belonged to the later phase. At the north side of Room 20, the Phase 1 floor was identified at a depth of 1.80 m below that of Phase 2; the western doorway associated with this earlier structure was wider than its successor. It is certain, however, that the Phase 2 walls represent a remodelling of the Phase 1 plan rather than a different building, since the plan of Room 20 remained the same in both phases. Moreover, the shallow grooved pilasters characteristic of the decoration of the internal walls in Phase 2 also appeared in Phase 1, not only on the wall surfaces in the deep sounding in the doorway of Room 21 but also on the short stretch of the outer face of Room 20 that we have exposed to this depth (Fig. 113). The

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Figure 113. View from west of pisé wall built against the Phase 1 western wall of Room 20, the fluted pilasters of which were partly concealed by the abutting wall.
use of this internal decoration (visible also on Fig. 114) suggests that the Phase 1 building may have continued westwards; indeed the upper wall surface appeared to be corbelled outwards suggesting that there may have been a doorway here.

Room 20 contained a plastered bin in the northeast corner; a pit beneath this bin contained a pig skull and articulated skeleton, perhaps a deposit associated with the reconstruction of the room. In the opposite corner a rough sherd pavement sloped down towards what appeared in the Phase 2 building to have been a low blocked arch in the south wall (Fig. 115). Further excavation showed this to have been an original south door, which at this point lay approximately a metre below the sloping Phase 2 floor and led perhaps to further rooms located to the south of the Phase 1 plan. On plan, Room 20 looks like a 'guard-room' adjoining the west doorway, which may then mark the outer limit of this part of the complex in its later phase. The corners of Room 21 were furnished with benches, while the walls of the room and the passage leading to the open area 22 bore the familiar juss dado with fluted pilasters above,


Figure 114. Sounding in doorway of Room 21 looking southwest, showing the two phases of construction of this part of the SS complex; the east-west section of the pise wall is visible in the background.
characteristic of the more public, 'ceremonial' areas of the building (Figs. 116 \& 117). A Stone Ware jar lay in the east doorway, with two beakers (including 70, a Stone Ware example, and TB 12236), a bottle (91.144), and carnelian, lapis and faience beads deposited, apparently deliberately, along the south wall and benches (Ch. 7), with two seals (Fig. 148b, p. 124 and $D M 426$, a heavily burnt example) in the northwest corner of the room. The calcite libation vessel (Fig. 483:8) was also found here.

To sum up, an original west entrance in Phase 1 was reduced in width, and perhaps in importance, in Phase 2 when it seems to have become a sort of postern gate giving onto the top of the pisé wall. The presence of the parapet seems to confirm that it was part of a raised roadway, perhaps an ascending ramp from a lower level, rendered necessary by the raising of the floor level of Room 21. The absence of similar parapets on the north-south pisé wall suggests that, although it was probably part of an outer terrace wall defining the western limit of the Area SS complex, it was not primarily a roadway. To the north the unexplored area west of the 'domestic' quarter is bounded by a wall on different alignments, with irregular and apparently undecorated buttresses.

These observations are relevant to the interpretation of the rooms that lie to the east. As we have seen, in its later and probably in its earlier form Room 21 was a gate-chamber leading to an irregular, apparently open, space ( $22 \& 24$ ). On the south and


Figure 115. Blocked arched doorway SS 1057, in the south wall of Room 20. The arrows mark the original Room 20 plastered floors; SS 1050 is bricky fill and packing beneath Room 20, while SS 1238 is the floor of the reconstructed room, contemporary with the latest phase of the complex.
entered from it lay Room 23 ( 10.10 m long and 7.10 m wide at the western end). Unusually large reveals at the corners of the doorjambs attest to the importance of the room (Fig. 118). Only the eastern half was excavated; here the walls were lined with benches with low steps in front of them. There were three plain rectangular niches high in the north wall, and the outline of another could be seen at the west end. An interesting structural feature was a horizontal slot $c .11 \mathrm{~cm}$ high on the inner face of the west doorjamb, 1.84 m above the floor. Wood grain impressions could be seen on its plastered surface, and it presumably served to support a lintel beam. The


Figure 116. Entrance chamber 21, looking east, showing the benches in the southeast corner.


Figure 117. South wall of the passage between Room 21 and Courtyard 22, showing its fluted pilaster decoration.
face of the door jamb survives to a height of 1.10 m above the lintel, leaving an opening over the door, presumably for light and ventilation. We have assumed that Room 23 was originally approached by means of an ascending path from the Phase 1 doorway of Room 21, no doubt reflecting the original slope of the mound. The raising of the Room 21 floor level in Phase 2 can then be seen as a terracing operation to bring the floors of these rooms to a consistent level, and the construction of the pisé ramp as a necessary consequence. By this interpretation Room 20 remained a gate-keeper's lodge in both phases. The mud-bricks of the original structure, as it survived in the original west entrance and the walls of Room 23 were grey, while the walls of the secondary phase were red with grey mortar, as in the monu-


Figure 118. The eastern half of Room 23, from the south, showing the horizontal slot on the western face of the doorjamb (the slanting slot is the work of a jerbil).


Figure 119. Unusually well-preserved fluted pilaster ornament on the upper west door jamb of Room 23 (before excavation of room).
mental courtyard complex (ranging from $34^{2} \times 8$ in the west wall of Room 17 to $36^{2}$ in the façade).

One further room should be mentioned in the context of the 'administrative' area, and that is Room 25 which lies at the northeast corner of the courtyard area 24 . The function of this room is unclear, but a secondary feature was the large stairway illustrated in Figure 120, with its (unexcavated) storage area beneath the stairs, as in a modern broom cupboard. The use of this stair may be associated with an upper floor in the northern part of the building (see discussion of Room 43, below). To the northeast of Room 25 was what appears to have been a more 'domestic' wing, although the associated 'domestic' activities were clearly on a monumental scale. This wing, the walls of which are not bonded to the temple walls, is built around a small courtyard (27); to the north is a row of 4 rooms, including the original Room 1, to the east, abutting the temple antecella. The mud-bricks here are 35 $\mathrm{cm}^{2}$, grey with red mortar and perhaps representing the latest additions to the monumental complex.

To the west of Room 1 lay Room 4, the main feature of which was a massive oven $(2.8 \times 2.15 \mathrm{~m})$, rectangular in shape and open at one end. Large quantities of ash lay on the floor within and around it, and there were marks of heavy burning on the interior. Two large jars had been installed on the floor in front of the oven. The entrance to the room from the south was covered by a corbelled half-arch (Fig. 121), while two other doorways leading east and west into Rooms 1 and 41 had, respectively, a corbelled arch and a flat lintel. There were plain rectangular niches in the north, west and south walls.

To the west of Room 41, of which only an outline plan has been recovered, we found one further room, 43. Its west wall proved to be the limit of this part of the complex and returned at an acute angle, running directly to the northwest corner of Room 25 . Rooms 43 and 42 are thus irregular in plan. Room 43 was cleared to floor level, but nothing of significance was found on the floor or in the fill. The walls, however, show two phases of construction the original room measuring $3.45 \times 4.50 \mathrm{~m}$ on the east and north sides, respectively, tapering to 3.85 m on the south where there was an unusually large doorway, $c .2 .65 \mathrm{~m}$ wide, opening from Room 42. Within the room secondary revetments had been added to the east
and west walls, with piers in the corners adjoining the doorway and corbelled projections on the upper parts of the walls in the northeast and northwest corners, obviously the supports for corbelled arches at both ends of the room. Even if the room itself had been vaulted, these arches would not have been a necessary part of the construction, and it seems that they, together with the revetments, were intended to make the walls thicker in order to carry a greater load, possibly an upper storey. It may be relevant that another secondary addition in this area is the stair along the north wall of Room 25 , which would have given access to the area above Room 43.

A corbelled doorway on the eastern side of the court led into Room 28 and the associated stairwell 29. As in Room 4 there were plain niches in the north wall (just visible in Fig. 104). There are two floor levels here, both of which we associate with Phase 2 of the building, since they both clearly postdate the temple. This contrasts with the more monumental rooms in which the original floors were carefully maintained. Sunk into the floor of Room 28 was a large rectangular oven, similar to but smaller than the one in Room 4. Little survived on the floors of Room 28, but the stairwell was of some interest (Fig. 122). Several mud-brick treads survived, rising from the original floor and presumably turning on timber supports around at least a further two sides of the central block of mud-brick. The space under the second and third flights was available for storage; here we found an extraordinary cache of clay 'sling bullets', which we stopped excavating when the count reached 15,000 and it was clear that there was a comparable number still to come. The stair in Room 29 may well have been a substitute for that in Room 6, which seems never to have been completed.

Room 4 provides us with one of the few instances of re-use of the monumental building after the filling in. Some 3 m above the original floor, the room is subdivided by a north-south wall, indicating that this area continued to be occupied, as was storey.


Figure 120. Room 25, staircase leading to the roof or, possibly, an upper


Figure 121. Area SS Room 4, looking south. A very large oven occupies the northern part of the room; the southern doorway appears to have been covered by a corbelled half-arch. (The stair on the left is not ancient but was cut by us for access.)
part of the eastern gate chamber (10). In Room 4 a short stretch of wall at a higher level, just below the present ground surface, was founded on the north wall of Room 1, and walls delineating parts of four small rooms were found at a corresponding level immediately to the west of the lavatory (Room 6) (Square 3: Fig. 129). Here, clearly, two levels of occupation survive subsequent to the monumental building, the earlier having come to an abrupt end. Pottery and a few fragments of tablets of Akkadian date


Figure 122. Room 29 staircase, showing surviving treads. Some 20-30,000 sling bullets were stored beneath the stairs.
were found here, one of which was part of an administrative document relating to the transfer of personnel (text no. 54, p. 114). These later levels are further discussed in section 5, below.

## 3. 'Closure' of the SS monumental building

The building had been deliberately and ritually infilled, after a brief abandonment. Thin-section analyses in Room 18, together with other excavation data, suggest the following sequence, similar to that in the FS monumental building: 1) a brick foundation; 2) a discontinuous charred surface; 3) orange plaster; 4) thin grey occupation deposit; 5) further orange plaster; 6) a compacted lens of occupation deposits; 7) a very thin water-laid crust on the plastered floor, suggesting a possible but brief abandonment; followed by 8), a thin layer of 'trample' consisting of 'unoriented aggregates' (that is, not a normal floor deposit), perhaps connected with the
clearing out of the building; 9) rapid infilling of the rooms and courtyards of the building, probably involving in the first instance the toppling of the upper walls, which seem to form a lowest layer of bricky fill; followed by 10) the laying of a hard red surface over the top of the building (SS only). The tip lines of the fill were very clear, the fill itself consisting of occupation debris including much pottery; the major rooms were filled to a height of 3-4 m , and the building was then capped by the hard red deposit. Ritual deposits were placed both on the floors of the building and on the top of the fill. In the case of Area SS, the latter were largely food offerings.

There is less evidence for ritual burning in Area SS than in FS, discussed above (p. 45), but it would appear that the pile of valuable materials mentioned above, including much metal, placed on the courtyard pavement about 2 m in front of the doorway to courtyard, had been burnt. This pile included 5.5 kg of heavily corroded copper/bronze, interspersed with a number of beads and other objects of Indian Ocean shell, faience, lapis, rock crystal, carnelian and a large bead of a black stone, possibly jet, the two latter beads certainly of Indus origin (p. 227). In the same deposit were over a hundred copper / bronze nails, together with fragments of gold leaf, a silver animal pendant (Fig. 481:158), several cylinder seals (DM 441, 450, 505, probably faience) and a number of fragments of a pale stone bowl (Fig. 277, p. 264). One of the most unusual items in this deposit were sting ray vertebrae (p. 344). Placed adjacent to the deposit were a number of sealings and bullae of an unusual type, discussed on p. 132. Undoubtedly the most important seal impressions recovered from this deposit are those of the Akkadian style Scribe's Seal, discussed more fully in Chapter 4.

Other floor deposits have already been referred to in the contexts of Rooms 15 and 30, the most important of which is the human-headed bison sculpture found in Courtyard 8, just outside Room 30. The food offerings on the top of the building include the group of goblets (SS 303) on the west wall of Room 17 (Fig. 123), a similar deposit on the Room 11 wall (below, p. 92), a Stone Ware jar and two inverted conical cups on the upper fill of Courtyard 8, and bowls of food above the monumental courtyard façade (Fig. 124). The relevance of these deposits is further discussed on pp. 389-90. We have suggested an Akkadian date for the final use of the SS monumental complex largely owing to the presence of impressions of the Scribe's Seal on the floors of the building, the discovery of the very Akkadian style statuette (Fig. 276) in Room 18, and the general simi-


Figure 123. Ritual deposit of goblets and beaker, in southern niche of west wall of Area SS Room 17 (see also Fig. 209).


Figure 124. Covered bowl presumably originally containing food, one of two ritual food deposits found above the courtyard façade (bowls 922 \& 928).
larity of the infill pottery to that from the later Akkadian levels in Areas CH and FS. This question is further investigated in Chapter 16.

## 4. Area SS2

At the end of the 1993 season the line of a large wall north of the open (?)court west of the 'industrial area' of the SS monumental complex was followed to the west. This investigation led to the identification of a massive mud-brick structure (red bricks $36^{2}$ $\times 8)$ at the far west end of the tell, Area SS2 on the tell plan (Fig. 13). The junction of two large external walls, one some 3 m thick, was identified, with an internal, rectangular mud-brick structure overlaid by a large limestone slab, 60 cm long and oval at one end and flat at the other. Heavily burnt deposits lying to the west, between this feature and the junction of the main walls (locus 1301), contained a very
large number of seal impressions, closely related to those used in the monumental building (p. 121). 52 different seal designs were identified here, including the 'chariot' sealings discussed in Chapter 10 (see also Matthews et al. 1994, fig. 13). As in the case of the main SS complex, structures of early thirdmillennium date (pre-Ninevite 5) were found beneath the SS2 monumental building (see p. 96), and evidence of second-millennium occupation lay above.

## 5. Small rooms to the south of the ceremonial court

These rooms were dug in 1992 during an investigation of the southern limits of the monumental building. Their walls were not bonded to the south wall of the Courtyard 8 complex, and indeed the south doorway to Room 11 had been blocked at the time of their construction (Fig. 125). This led us initially to consider these rooms as dating to a period later than the use of the building, that is, to the final phase of Akkadian occupation, an impression reinforced by the similarity of the collections of pottery preserved on the floors both here and in Area FS Level 3.

A close examination of the blocked doorway of Room 12, however, suggests that the construction of these small rooms, or at least their northernmost range, may actually have coincided with the infilling of the monumental building. Here the following sequence can be observed: 1) filling in of the southern doorway of Room 12; 2) building of north-south wall against infill within doorway; 3) filling in of the original doorway niches to either side of the new wall. Since three floor levels were identified within these annex buildings, their continuing use after the infilling of the monumental complex is clearly attested. The similarity of the pottery, and the deposits in general, with those found in FS Level 3 supports the view that the use of both sets of buildings came to an end at the same time, while the presence of Late Akkadian tablets in FS Level 4 (an early version of Level 3) lends credence to our interpretation of the Level 3 destruction as marking the end of Akkadian domination at the site. These matters are further discussed in Chapter 16.

The 'annex' rooms south of Area SS are relatively small, the largest (36) being only some $2.7 \times$ 3.05 m . The even smaller semi-circular structures would appear to be later additions to the original rooms. The room contents are as follows (see Fig. 125):

Room 32, northwest corner of excavated complex (floor $1=$ SS 1267). Elaborate rectangular structure in NW corner (SS 1281), built of libn and coated with white juss plaster. The sides resemble a buttressed façade; the top provides a carefully made plaster surface (Fig. 126). In the southeast corner of the room is a fire-


Figure 125. Plan of small rooms abutting the monumental complex to the south.
place of semi-octagonal shape (SS 1266); it had a red and white plaster frame and contained a succession of burnt plaster surfaces. Several complete vessels were found in situ, including two bowls (\#1 \& 2, cf. 942), beakers, two small jars including 473 (\#3), and a pierced stone weight (TB 13160). A piece of worked lapis (Fig. 475:92) and a copper pin fragment also came from this context.

Room 33 (floor 1 = SS 1277). Complete pots on floor: beaker TB 13295 (\#1); bowl 942 (\#2); beaker TB 13294 (\#3); a large urn with cable decoration, base plastered into floor, 92.220 (\#4, identical with 1420); fragmentary storage jar 1287 (\#5); at least two or three other large storage jars found in a very broken state. A leaf-shaped flint arrowhead was found on the floor, and compartmented vessel 1611 in the fill above the floor.

Room 34 (SS 1276). Pots on the floor include a beaker 92.217 (\#1); Stone Ware beaker 82 (\#2); small flask 1365 (\#3); footed goblet 1200 and another similar to 1186 (\#4); bottle 1367 (\#5); a double-mouth bottle similar to 1425 (\#6); three bottles 1325, 1365, 1371, a fragmentary cup, and the two large storage jars illustrated in Figure 128 (\#7,8); there were also two polishers, a pestle, a polished red stone spindle whorl (TB 3149) and a large number of sling bullets close to the floor surface.

Room 35 (floor 1 =SS 1274, juss-plaster floor, replastered with red and grey plasters. 15 more or less complete pots were identified on this floor, including beaker 1138, a jar with broken rim (\#1); a larger broken jar (\#2); beaker TB 13285 (\#3); bottle TB 13263 (\#4); beaker TB 13297 (\#5); two double-mouth jars, 92.132, a smaller version of 1430 (\#6), and 92.133, identical with 1431 (\#12); a broken Stone Ware jar (\#7); two beakers, one on top of the other ( $\# 8,9$ and see Fig. 127); bottle 1369 ( $\# 10$ ); 2 broken beakers (\#11, \#14); fenestrated stand 1604 (\#13); a small stone ring (\#15).

Room 37 (floor $1=$ SS 1286). This small annex contained a redplastered, mud-brick grinding platform with a large inset basalt grinding stone (\#3, $0.68 \times 0.4 \times 0.37 \mathrm{~m}$ ), a feature associated with all three floors. Found in the room were tall jar 1304 (\#1), small jar 467 (\#2), found beneath a fragmentary pot, double-mouth jar 1428 (\#4), bowl 93.33, similar to 942, and three other jars; a cubeshaped basalt rubber (\#6, reg. no. 5940) and a second basalt grinding stone (\#7) were found in the southeast corner of the room. A sounding in the northeast corner of Room 37 revealed a conical cup, upside-down against the platform on which the monumental building was constructed.

Room 36 and the other southern 'annexes' were not excavated, but in the area to the west of Room 37 a large storage jar was recovered. A tannur and upper burnt floors, almost certainly of post-Akkadian date, were found to the south of Room 36 , just below the modern ground surface.

Deposit 1259, which lay on the original building consisted of footed goblets 1186, 1187, a small red flask resembling 1351, a fragmentary bowl and sherds from a larger vessel.

## 6. Trenches overlying the monumental building

At the beginning of the 1988 season a number of trenches, numbered 1-8, were laid out on the east


Figure 128. Pottery on the floor of Area SS Room 34.
and south slope of the SS mound (Fig. 129). Over part of this area the tops of the walls of the monumental complex were soon discovered, just below the surviving surface (see Figs. $95 \& 102$ ). Elsewhere the walls of at least two phases of an overlying level (3) were identified. We have already remarked on the evidence for the re-use of parts of the monumental building immediately following the filling in. Room 4, for example, was subdivided some 3 m above the original floor. A short stretch of wall at a higher level, just below the present ground surface was also founded on the north wall of Room 1. Walls delineating parts of four small rooms were found at a corresponding level immediately to the west of Room 6. Here there were two phases of occupation subsequent to the abandonment of the monumental complex, the later of which came to an abrupt end. Pottery and a few fragments of tablets of Akkadian date were recovered here, including a fragment of an administrative document relating to the transfer of personnel (text 54). The surviving segments of Level 3 plans suggest an area of domestic architecture, with rectangular rooms around more open areas or courtyards, and separated by what appear to
have been relatively wide 'streets' (for example, Fig. 130). Some areas of these houses appear to have been devoted to food preparation, others to the use of tools such as the burnishing tools and whetstones found on floor SS 647, to the north of Level 5 Room 21. A few fragments of cuneiform tablets were found here, for example text 55 from the floor in Room 4, Square 3 (Fig. 130); a complete Akkadian tablet recording the issue of rations to workmen was found on the western surface of Area SS (text 53).

Further to the west and north, in Trenches A to F , far more of the late third-millennium occupation had survived, as in the original SS trenches, allowing us now to identify three major building phases postdating the monumental complex, while just west of the irregular northwest wall of the complex, parts of two rooms of an even later residential structure were excavated, with pottery closely resembling that of Isin-Larsa date in southern Mesopotamia. A small quantity of second-millennium pottery was found elsewhere among the SS surface soil deposits, largely of Mitanni date; pits of this period were also identified, for example pit SS 262 in Square 7.

The early second-millennium domestic structures were found only at the very end of the 1993 season, and were not fully excavated. The pottery from these rooms is discussed on p. 173; also recovered were a number of basalt grinding stones and limestone pounders, a macehead (Fig. 484:26), and a burnisher (reg. no. 7390). Thin sections taken of the floors suggest that one room, with a plastered grindstone installation, was kept remarkably clean, but in a second room multiple accumulations of charred plant remains had survived, together with a grindstone fragment. Certainly food preparation took place in this room, perhaps even its smoking (see p. 365).

As in the original Area SS excavations and throughout the southern reaches of the tell, compact red libn debris and cobbled floors characterized the uppermost surviving levels elsewhere in Area SS. The latest phase, designated Level 1, was ill-preserved and, owing to heavy erosion, absent from much of this area. It would seem marginally to predate the 'Isin-Larsa' occupation above the western end of the SS complex, possibly also attested by a number of door-sockets found above the Level 1 libn collapse (e.g. SS 600). Phase 2 was better-preserved, though again it was not widely present over this much-eroded site. The presence of a number of mudbrick 'supports' on floors of this date reminded us of similar household appurtenances from comparable contexts in Area ER (inter alia, on plaster floor SS 615). Perhaps the most interesting single installation

Chapter 2



Figure 130. Uppermost rooms in Square 3, Area SS (Level 3, Akkadian; see plan, Fig. 129); three phases of building are represented in the large eastern room 4, wall 234 being the earliest. The large jar found on floor 241 is Figure 445:1280. Photograph taken from the east.


Figure 131. South-facing sections, Area SS upper levels, Squares A and C (see Fig. 129). The Level 2 kiln (855), cut obliquely by the section, was set into the surviving Level 3 deposits; the kiln itself and the pit for the stoke hole, entered by steps in wall 893, were enclosed by hatched walls 892 and 893, which were renewed in a later phase. Dotted areas $=$ heavy ashy deposits; $a=$ animal hole.


Figure 132. Akkadian pottery and other objects on the Level 3 floors in Area SS Square D, looking west (loci SS 1210, 1222).
found in Level 2 was the kiln in Square C (Fig. 131), contemporary with the well-preserved kiln found in Area FS (Fig. 88).

We believe that Level 3, of which at least two building phases are attested, was of Akkadian date, and in the better-preserved areas, for example Square D, pottery vessels closely resembling those from the 'annex' rooms, south of the monumental complex, were found on the 'destruction' floor. In Squares AC, of course, these levels stratigraphically overlay the monumental complex. This latest Akkadian level did not survive above the heavily eroded southern and eastern quarters of the monumental building, but occupation of this date was found in most of the original trenches and in all of the more western squares opened in 1990 (A-F: Fig. 129). In general, coherent plans were not obtained and, given the restrictions on space in the present volume, we have deliberately chosen to concentrate on the more informative domestic architecture of Area FS and to do no more than illustrate the sequence identified in Area SS (see sample sections: Fig. 131). However, the complete locus information is available in the appendix (p. 609), and plans and sections are available
in the excavation records in Cambridge to anyone who wishes further information. The material objects recovered from these levels are published in full in the corpus of objects and pottery at the end of the volume; only selected deposits are listed in more detail in this chapter.

Two of the best-preserved Level 3 rooms (Fig. 132) were found in 1991 in Trench D (located above Area 22 of the monumental complex, see Fig. 129). In the eastern of the two rooms (SS 1210) were a fireplace in the southeast corner and, apparently associated with it, a plastered bench or low table against the east wall; a basalt grinding slab was set in the northeast corner. The following objects were recovered from the red-plastered floor: globular jar 1270, found leaning against the west wall of the room; a smaller jar 1297; bottle 778, and a further bottle against the north wall (91.100), both visible in the photograph; three beakers including 91.92 (type 710) and another similar to 698; a basalt mortar (reg. no. 5156), pestle (reg. no. 5157) and several querns. The room to the west (floor SS 1222) contained several broken jars and a broken basalt pestle lying on the floor.

These domestic buildings are dated by the presence of Isin-Larsa and Ur III pottery in the overlying levels, by the Akkadian attribution of the final use of the underlying monumental building, by the close similarities in the Level 3 destruction material from Areas FS and SS, in both cases following on after the ritual closure of the preceding monumental complex, and by the general similarity of the Level 3 pottery to that found in levels dated to the time of Naram-Sin and/or Šar-kali-šarri in Areas CH, ER and FS (see further discussion in Chapter 16).

## 7. Levels underlying the monumental complex

As can be seen from the plan (Fig. 91), the SS complex was heavily eroded to the east. A series of buildings lay below, also heavily eroded, and on a different alignment. In 1990 a sounding was carried out beneath Squares 6 and 8 , south of Courtyard 7 (see also Fig. 129). As elsewhere, the building itself lay on a platform of red mud-brick (cf. Room 18 section: Fig. 107), itself lost to erosion just to the east of wall 325, the wall of an earlier monumental building (Fig. 133). A still earlier wall (329) lay to the east of wall 325 , which was built of grey bricks with both grey and in places red mortar. Wall 329, which lay parallel to and co-existed with wall 325 , was possibly a boundary wall since it was abutted by a less substantial wall 330, which enclosed a small room, apparently more domestic in character. Wall 330 was
not well-preserved but appeared to show two phases of construction with grey bricks in horizontal courses at the base, capped by rectangular red bricks, $40 \times 20$ cm , laid vertically along the wall face and horizontally in the core, a technique not observed elsewhere. Within the room were two red-plastered floor levels, the lower of which (334), on the west side of the room, ran under a bench along the face of wall 330. On both floors were successive versions of a plastered bin (331), and on the earlier floor there was
also a tannur (326). The surface 354 , on which wall 330 rested, had originally been plastered with white juss, and the fill above it contained quantities of ash. Beneath this floor we found no recognizable structures or informative material except in a deeper sounding in the northeast sector of the trench where the lowest level yielded pottery like that of the early pre-Ninevite 5, 'ED I' levels in Area TW (see Iraq 53, 1991); as we have already noted, similar early thirdmillennium pottery was also identified associated
a


HR 4 m


Figure 133. a) Plan and b) south section of Area SS, Squares 6 and 8 (Fig. 129), showing four phases of plaster floors beneath the monumental building; $p=$ pebble surface, $p b=$ plastered bench, $p s=$ plastered surface.


Figure 134. Trench beneath Area SS monumental building (see Fig. 133).
with the lowest walls excavated in Area SS2. In both cases, these walls lie still many metres above the lowest occupation of the tell.

## F. Area DH

Area DH was opened in the 1984 season after the discovery of a small area of illicit excavation near the summit of the southern area of the tell where pottery resembling that from the Phase L destruction level was found lying on the surface. This small excavation produced material closely comparable with that from Area CH. An upper post-Akkadian level was identified, with two building phases of very regular rooms, below which were the Akkadian materials, overlying the Phase L remains. No coherent plans could be reconstructed in the limited area investigated. Undoubtedly the most important objects recovered were three well-preserved copper/bronze objects, a socketed axe (7), a large loop-shaped object of unknown function (165) and a fragment of a dagger blade (6). Their date is either Akkadian or postAkkadian; the uncertainty arises from the fact that unfortunately they fell from a collapsing section.

One of the most interesting observations in this area was the absolute height of the Phase L occupation level in contrast with that excavated in the adjacent Area CH , a difference of some 9 m owing to the terracing of these houses up the slope of the fourthmillennium tell. The implications of this observation for the height of the prehistoric tell are considerable.

## G. Areas AL and TT

Two small 'rainy day' soundings were carried out in 1984 on a long inner ridge of the tell, just to the
northeast of the excavation house (Area AL). One square produced the pit full of Old Babylonian pottery published in Volume 1. The other contained house walls associated with a destruction level containing pottery found elsewhere at the end of Phase L , that is, the so-called 'ED III destruction level'. A number of botanical samples were taken from these deposits (see Chapter 12).

Area TT describes a $9 \times 3 \mathrm{~m}$ trench opened in 1978, in which some 2 m of featureless wash were excavated. The trench was not further investigated in order to focus on the work in Area ST, and in 1981 this area, which had been abandoned as 'unproductive', was for this reason selected for the construction of the dig house.

## H. General comment

A glance at the tell plan (Fig. 13) only serves to emphasize the small portion of the tell that has been investigated, and even that rarely to a depth of more than six or seven metres. That is, although we have a greater degree of both extensive and stratigraphic evidence than is available for most sites, there is still a great deal to be learned about third-millennium Brak (see for example the monumental oval complex identified in 1998 in an area previously sounded by Mallowan but otherwise unexcavated: Emberling et al. 1999). We have also failed to find any evidence for the method of burial of the residents of the settlement; nor have we any idea where a cemetery might be located. Nor has it been possible, given the constraints of the volume - and no doubt the reader's patience - to provide detailed descriptions of every structure identified within the third-millennium excavations. We have tried to present the most important evidence with respect to dating and function, and to provide examples of the various types of buildings and deposits that have been encountered. As a picture of ancient Nagar this is obviously far from comprehensive, even in the context of the total work that has been done. Constraints of space have prevented us from providing even the shortest of summaries of all the combinations of material objects that have been recovered, though again we have provided a selection of the better-preserved deposits. With the use of the locus list at the end of the volume, however, it is possible for the interested reader to put together such assemblages from the charts accompanying the pottery and objects published in Figures 392-493. Further details can be obtained from the excavation records at present housed in Cambridge.

## Chapter 3

## The Third-millennium Inscriptions

Jesper Eidem, Irving Finkel \& Marco Bonechi

## Introduction: the city of Nagar

The ancient city represented by the mound of Tell Brak enters a wider historical framework with two dedicatory inscriptions of the Old Akkadian king Rimush (c. 2278-2270 вс) found by Mallowan, one of which came from debris of the Naram-Sin Palace (texts 1a-b, below; Fig. 383, p. 387). Extant sources provide no information on northern campaigns of this king, and all that can be said is that the inscriptions found at Brak could but need not indicate contemporary Akkadian control, a possibility perhaps strengthened by recent discoveries at Tell Mozan, in particular the sealings of a daughter of Naram-Sin (see Chapter 16). No earlier sources have yet surfaced at Brak itself, but given the near certain identification of the site with the famous ancient city of Nagar (Fig. 135, and see Matthews \& Eidem 1993; Eidem 1998) the slightly earlier history of the site may be illuminated by much information found in the pre-Sargonic archives from Tell Mardikh (Ebla), Tell Hariri (Mari) and Tell Beydar (ancient Nabada/ Nabatium?: see Sallaberger 1998b). In these sources Nagar appears as capital of one of the most powerful kingdoms in northern Syria, and is located in the Khabur region (Archi et al. 1993, 394f.; Bonechi 1993,


Figure 135. Clay bottle 'cap' with inscription recording an offering of oil to or from an unknown person or location in Nagar (Text 62 from Area SS Room 18).

253f.; Ismail et al. 1996, 104-6). We provide here a summary of this evidence, much of which has only become available in recent years. Even in the unlikely event that ancient Nagar may eventually be identified with a site other than Brak, its early history will certainly remain important for that of Tell Brak.

The general chronological context for this external material is the twenty-fourth century BC and the reigns of the three last rulers of Ebla, IgrishHalab, Irkab-damu and Ish'ar-damu, roughly contemporary with the three Mari kings Iplul-il, NI-zi and Enna-Dagan. According to current views the Ebla texts cover most of this period (Archi 1996a, 268), but it is possible that they in fact concentrate heavily in the last $10-20$ years before the destruction of Ebla Palace G (Michalowski 1985, 296). The relative chronology of documented events is also fairly tentative, and it therefore remains difficult to place references to Nagar in any secure diachronic framework, especially since most references do not specify the name of the involved ruler of Nagar.

## A. Texts from contemporary sites

Mari
The most ancient reference to Nagar probably comes from Mari. A statue found in the Inanna.za.za temple (Gelb \& Kienast 1990, 12) was dedicated to king Iplul-il of Mari and his queen Paba by one AMAR-AN/ dumu ur-dUTU.ŠA/[...] nagarki / lú A-PAMAH. Unfortunately interpretation of the inscription is not clear (Bonechi 1998, 221, n. 20; Sallaberger 1998a, 35 n. 59), but AMAR-AN may be identical with the king of Nagar, Mara-il (written ma-raAN), known from Ebla.

## Beydar

In the pre-Sargonic texts from Tell Beydar, some 45 km northwest of Brak, Nagar is well-documented. It is probable
that all references in the texts to an anonymous ruler (en) are to a king of Nagar, who was clearly the overlord of Beydar. This ruler paid frequent visits to Beydar, for instance to participate in an assembly (Ismail et al. 1996, no. 106) and for a number of cultic events (Ismail et al. 1996, nos. 80, 85 \& 96), including the annual festival of the god Šamagan, the lord of wild animals (Ismail et al. 1996, text 101). Paba, wife of Iplul-il of Mari, is possibly attested in one text (Ismail et al. 1996, text 23; Sallaberger 1998a, 36f.). Few kingdoms other than Nagar are mentioned in the texts from Beydar; series of toponyms are thought to refer to smaller centres near Beydar (Sallaberger 1998b).

## Ebla

By far the most important evidence comes from Ebla, where Nagar is mentioned dozens of times. The information from these texts concerns mainly the activities of the royal family of Nagar, the exchanges or purchases of various commodities, prominently equids (discussed in Chapter 10), and the presence at the Ebla court of large groups of people from Nagar, among them various kinds of performers.

## Historical events

As noted above, the name of a king (en) of Nagar is recorded as ma-ra-AN (to be read Maran or, more likely, Mara-il; Catagnoti 1998, 54) in a text which can be dated to the brief reign of NI- $\sim i$ of Mari (ARET VII 16). This Mara-il may be identical not only with the Nagar king mentioned at Mari but possibly even with the anonymous king of Nagar referred to in the texts from Beydar. He may further be the king involved in most of the other references from Ebla, assuming a relatively short period of time for these texts.

A document which records ten large shipments of silver from Ebla to the king of Nagar and to his vassal towns (see below) is dated to the 'very last years of the reign of Igriš-Halab or the first of Irkabdamu' (TM.75.1872+; quoted in Archi 1998, 5). The same document also mentions a large amount of silver for the purchase of kúnga equids for the Ebla king. This text may be related to a document which records a large amount of silver for the king of Nagar and other important people from northeastern Syria (ARET I 45). An unpublished text possibly records a victory by Ebla over Nagar, an event which took place in one of the first three months of the year (TM.75.2464, quoted in Archi 1996b, 83). It may be suggested that the conflict was between Irkab-damu of Ebla and Mara-il of Nagar. The same text men-
tions the conclusion of a treaty between Irkab-damu of Ebla and Enna-Dagan of Mari.

A treaty between Ebla and Nagar was concluded 'a few years after' the silver shipments recorded in TM.75.1872+ (Archi 1998, 5). It is reported in an unpublished text which mentions a present of many kilos of silver for an unnamed king of Nagar, for his sons, for the 'kings that with the king of Nagar went to swear at the temple of the divine lord (i.e. Dagan) of Tuttul', and for an individual named hu-ra-NE, perhaps the vizier of the Nagar king (TM.75.2465, quoted in Archi 1998, 5; see also Catagnoti 1997, 113-15). Presumably this event took place during the third month of that year (Archi 1996b, 85). According to the same document, prior to the seventh month $h u-r a-N E$ of Nagar went to $a-r u_{12}-g a-d u^{k}$, a famous cult place near Ebla for the storm god Hadda-ba'al (Fronzaroli 1997, 288f). During the same period the Ebla vizier Ibrium made a donation to Dagan of Tuttul (Archi 1996b, 85).

Presumably this sequence of diplomatic activity led up to the interdynastic marriage between the two kingdoms, which is recorded in documents dating to the beginning of the reign of Ish'ar-damu, the last Ebla king (Biga 1998). Tagrish-damu, supposedly a daughter of Ish'ar-damu and one of his secondary wives, married UL-TUM-HU-HU, the son of the king of Nagar. At Ebla this event was used to name the year as 'year of the departure of (the princess Tagrish-damu as) queen for Nagar' (Archi 1998, 5). Some texts provide details of the proceedings. In the third month of the year representatives of Ebla, Kish and Nagar, including the king of Nagar and his son, met at Armi in western Syria (Bonechi 1997, 508 ff .). While the Kish envoys went on to the town of NI- $a b^{k i}$ (seat of the cult of the god Kamish), the king of Nagar and his son went to Ebla, where presumably the details of the royal wedding were settled and costly garments presented to the king of Nagar and his retinue. A few months later the actual marriage ceremony took place when: 'UL-TUM-HU-HU, son of the king of Nagar, anointed the head .... of Tagrish-damu, daughter [of the king (of Ebla)]'. A text records the rich dowry given to the Ebla princess, which included costly garments, jewellery, other personal equipment and a group of personal attendants. Almost certainly another ceremony followed at Nagar since a text records a shipment of 42 jars of wine sent to Nagar 'on the occasion of the marriage of the king of Nagar' (Archi 1993, 23-6).

The relative chronology of all these events and how they relate to the broader canvas of international relations among the major kingdoms of north-
ern Mesopotamia in this period remain uncertain. The presumed war, the treaty and the royal marriage seem likely to have been events that took place in fairly rapid succession and not too long before the end of the period covered by the Ebla archives (and therefore, perhaps, also the destruction of late ED III Brak). Thus the Nagar king Mara-il may well be the only ruler attested in our sources, and therefore a figure antedating Akkadian control of Nagar/Brak by little more than a generation.

Unpublished texts from the Ebla Archive L. 2712 (which can be dated to the very last years before the destruction of Palace G) mention food rations for 40 and for 80 people from Nagar (Milano 1990, 211), and the shipment to Nagar of large amounts of typical Eblaite luxury items, such as perfumed oil (ARET IX 80; see also Fig. 135). The cultural importance of Nagar is illustrated by the large group of specialists from Nagar residing at the Ebla court. These were the húb (var. húb-ki) 'acrobats' (Catagnoti 1997) or 'horsemen' (Archi 1998, 11). Two documents record groups of 20 and 19 of these men. Later the Nagar group was apparently reduced to just two individuals ( $a-m u-r u$ and $z a-m a-a-r u$ ), who served at Elba as 'qualified teachers' for groups of some 20 húb of local origin (Catagnoti 1997, 568-70).

Eblaites travelling to Nagar are frequently mentioned. One text from the L. 2712 archive shows that the Ebla vizier Ibbi-zikir went to Nagar. Several times the purpose of journeys was the purchase of kúnga equids (Archi 1998, 8-10). The purchase of male asses (IGI-nita) is also recorded. Another coveted item from Nagar was the special 'wool of Nagar', and TM.75.2428 (Archi 1998, 8-9) documents a large purchase of kúnga equids, sheep and wool from Nagar for which the Ebla palace paid the important Nagar official ( $\mathrm{ur}_{4}$ ) NI-zi 200 jars of olive oil, possibly in the context of a diplomatic exchange.

In addition to the king Mara-il and the prince UL-TUM-HU-HU, two other princes of Nagar, gú-sa and $i b-l u l-N I$, are attested (Archi 1998, 5f.).

## B. The kingdom of Nagar

Several toponyms belonging to the region of Nagar are attested in the Ebla texts (Archi 1998, 7-8). Some of these places had a ruler designated as an en: $a$ - $\check{\text { s }} a^{\mathrm{ki}}$, $a-b \grave{u}-l i-u m^{\mathrm{ki}}, l u$-LUM ${ }^{\mathrm{ki}}$ and $\check{s} a$-bar-ti-um ${ }^{\mathrm{ki}}$. A text from Ebla (Archi 1998, 5) records shipments of silver to the king of Nagar and eight of his vassal cities, namely $g a-g a-b a-a k^{k i}, d a-t i-u m^{\text {ki }}, b a-n a-i-l u m^{k 1}$ (var. $b a-n a-i-u m^{k}$ ), ter ${ }_{5}-h a-u m^{\mathrm{ki}}, a-s a^{k}$, 5 sa-bar-ti-um ${ }^{\mathrm{ki}}, n a-b a-t i-u m^{k}$, and $z u^{!}(\mathrm{SU})-m u-n a-n i-u m^{\mathrm{k}}$. Other GNs mentioned are:
$b a-s a-h i-u m^{\mathrm{k}}, d u-n u^{\mathrm{ki}}, \mathrm{EN}-\mathrm{s}_{2} r^{\mathrm{ki}^{\mathrm{k}}}$ (var. EN-šar $\left.{ }_{x}(\mathrm{NE})^{\mathrm{ki}}\right)$, ga-zii-wa-ti-um ${ }^{k 1}$, hi-la-zi-um ${ }^{\mathrm{kj}}, l a-d a b_{6}-b i-u m^{k i}$, sag-gar ${ }^{\mathrm{ki}}$, su-du-ma-ank, zàr-'à-ni-um ${ }^{\mathrm{k}}$

While Nabatium is probably Tell Beydar, some of the other places can be identified with towns attested in the early second millennium (Archi 1998, 8): Datium (= Tâdum) is probably Tell Hamidi, some 20 km north of Brak (Wäfler 1995); Kakkabān can be located near modern Hasake (perhaps associated with the volcano Kaukab); Saggar is perhaps identical with later Saggaratum at the junction of the Euphrates and Lower Khabur; Abulium may be compared with Abi-ili, north of Brak; Ṣarhānum seems likely to have been located east of Brak. Several of these toponyms are also mentioned in the texts from Brak edited here (p. 114), which generally confirm their association with Nagar/Brak. Taking only the eight vassal towns into consideration we gain some impression of the territory controlled by Nagar, which must have encompassed at a minimum most of the southwestern quarter of the Khabur Basin. The slightly later Sargonic texts from Brak itself mention towns like Urkeš and Šehnā, not attested at Ebla, but no doubt already important centres. The most likely hypothesis which can be offered at the moment is that Nagar may have been one of several large Khabur kingdoms in late pre-Sargonic times, but the one which controlled the western portion and was thus in frequent contact with Ebla. It is also possible that changing power relations between the major Khabur kingdoms had made Nagar preeminent in the period covered by the Ebla texts.

A final observation from these late pre-Sargonic sources concerns the ethno-linguistic situation in the Khabur region at this time. No personal or geographical names of Hurrian derivation are encountered, and most can be analyzed as Semitic, although belonging to a tradition distinct from that found in western Syria and closer to that of Mari (Catagnoti 1997; 1998; Bonechi 1998).

## C. The Brak inscriptions

The extant corpus of late third-millenium inscriptions from Tell Brak is comparatively small, and its piecemeal publication has not served a better comprehension. We have therefore attempted to provide a complete overview of the material. Principally this includes the inscriptions found by Mallowan, mainly in the Naram-Sin Palace and in Trench ER, and those found in recent years in Areas FS and SS. To make the presentation complete we have added also the seal inscriptions published recently in the appendix


Figure 136. Mud-brick stamped with the name of Naram-Sin (Text 2, Mallowan photograph).
to the study of the glyptic evidence by D. Matthews (Eidem 1997). Some selected specimens of the Mallowan tablets were published by Gadd (1940); a more complete edition of the tablets and fragments in the British Museum was presented by Loretz (1969), while Finkel (1985) has provided some additional fragments together with photographs from the Mallowan archive of fragments in Aleppo, long believed to have been lost. Since then, these and other fragments have been rediscovered in the Aleppo Museum by Hamido Hammade; most of these have recently been recopied by Catagnoti while the British Museum texts have been collated by Finkel.

The inscriptions from the Oates' excavations have for the most part been published, and the presentation here reproduces the editiones principes by Finkel and Illingworth with some slight updating. The few inscriptions found in the most recent campaigns (after 1986) have been studied and recorded in the field by Eidem or by John MacGinnis. This corpus of inscriptions comes from different excavation areas. Some items are from fill or poorly stratified deposits and are either short or fragmentary. For these reasons the material can hardly support the kinds of historical or other reconstructions we should like to achieve, but some general comments can be made.

A first observation concerns the date of the inscriptions. With the possible exception of a few specimens from the modern excavations in Areas SS and FS, on sealings and bullae, the inscriptions are all younger than the tablets recently found at Tell Beydar, and most of them should certainly be dated
to the Old Akkadian period. This does not mean, however, that they all necessarily relate to the political and administrative control executed by Old Akkadian rulers at Brak, though this seems likely. As a main urban and political centre on the preAkkadian Khabur plains with ancient and important connections to southern Mesopotamia, officials at Brak would certainly have effected their own scribal activities prior to and during this period. That this is not mere speculation can be seen in the evidence of the tablets recently discovered at Tell Beydar. It is also possible that Akkadian control of Brak was relatively short-lived or perhaps witnessed interruptions, though recent archaeological evidence increasingly suggests a longer period of control. Certainly it was followed by a period of local autonomy, as witnessed by the inscription of Talpuš-atili, the Hurrian 'sun of the country of Nagar' (text 3 and Fig. 376, p. 382). Since evaluation of palaeographic and linguistic features is difficult in this scattered and fragmentary northern material, it is unfortunately impossible to separate all of the inscriptions according to precise historical contexts.

With this caveat in mind, however, it is clear that most if not all of these inscriptions must relate to period(s) of Akkadian control. This includes, possibly, the dedicatory Rimush inscriptions, obviously the Naram-Sin bricks from the Palace and, probably, the seal inscriptions which identify owners as servants of Naram-Sin ( $25 \& 36$ ). For the rest of the material more general criteria must suffice. Without exception all the actual tablets fit well into an Akkadian context (archaeological phase M). Although their contents do not provide much specific evidence, several features reflect this probability, among them the relatively high incidence of Akkadian personal names (cf. index below), the presence of lexical and school texts, and possible evidence for regional administrative control, such as the much-discussed list 14 (Fig. 137), which in geographical terms spans a large part of the Khabur plains. Other inscriptions, by contrast, especially among those on sealings, contain personal names which seem to belong more in a northern context (see Catagnoti 1998 for analysis of most of the PNs in the Brak texts). It is difficult or impossible to assign these individuals firm roles, though it would not be surprising to find such officials functioning within an Akkadian administration.

Another observation concerns the distribution of the texts and their relationship to the structures and other material excavated. While details of this must obviously be left to the excavators, a few re-
marks can be made. For the Mallowan tablets from the Palace site and Area ER, information on find spots is scant and, when available, difficult to evaluate. As far as material from the two trenches can now be separated, however, it seems clear that small remnants of an Old Akkadian administrative archive were found in the Palace, mainly in Courtyard 2. The tablets from ER, on the other hand, while including administrative notes, often pertain to scribal activities. The evidence includes several school or exercise texts and a bulla sealed by the scribe Ahu-ahi (10). It also includes a sealing with the name Iliš-takal (38), a name which recurs in the exercise(?) tablet (40), which may also come from ER. Thus it seems likely that the fairly substantial building in this trench was the residence of an important Akkadian official.

We are of course better informed on the archaeological context of the inscriptions from the modern excavations. The Old Akkadian tablets or tablet fragments found in Areas SS and FS come from fill deposits above the monumental buildings, on the floors of which are the oldest third-millennium inscriptions from the site, for the most part on bullae or sealings. In SS the evidence includes first of all the interesting possibility of two different seals belonging to the same individual, a certain Muriš, who is styled 'scribe', and may have fulfilled important official functions in the SS complex (Figs. $171 \& 172$ ). The two seals are in different styles, but were apparently used simultaneously. Bullae which mention groups of the expensive kúnga equids (cf. Chapter 10) were found in the FS monumental building, while a bulla of similar style was found in the SS complex (Fig. 138 and texts 64, 77-79, below). On purely epigraphic evidence these bullae belong rather in a late pre-Sargonic tradition but, as perhaps shown by the seals of Muriš, inception of Akkadian military and political control may not have caused an abrupt end to local styles, especially if this inception predated Naram-Sin. On present evidence it therefore seems imprudent to date these bullae before the early phase of Akkadian control, which may possibly have begun as early as the time of Rimush.

The tablets from Area FS are of importance with respect to the dating of the Akkadian occupation of the site. Both the seal of Itbe-laba and the form of the writing are of classic 'Late Akkadian' (Sargonic) style. Indeed the seal itself and the pointed rather than impressed numbers of tablets 74 (Fig. 139) and 76, below, suggest the possibility of a date as late as Šar-kali-šarri (cf. Gelb 1970, xix). The tablets themselves are pillow-shaped, with the obverse noticeably flatter than the reverse. Only 74 and 76


Figure 137. Reverse side of text 14, the well-known list of workmen and their cities of origin (Mallowan photograph).
differ by virtue of their very straight edges and their 'pointed' or incised numbers, a feature noted above and more characteristic of Ur III texts but found also on some documents of later Sargonic date (compare Foster 1982, 10, 36). This group of tablets was found in rubbish lying against a Level 4 wall, that is, in the level immediately succeeding the monumental Level 5 building. This tells us that both Level 4 and Level 3 in Area FS can be no earlier in date than Late Akkadian, a date suggested also by the seals and sealings recovered here; unfortunately it does not provide a precise date for either Level 4 or the underlying monumental building. These tablets are conceivably part of a single archive, though there is no specific evidence to confirm this. The texts include the receipt or issue of various items, including silver, garments and sheep. This at the moment is about all that the epigraphic evidence per se reveals, but the many inscriptions, scattered in various trenches, surely indicate that major archives from

## Chapter 3

a

b


Figure 138. a) Bulla 64, from the infill in the northwest corner of Room 21, SSTC. The initial numeral (?) is unique, and both the $\mathscr{S} U$ and $D A$ signs are written in the older, pre-Sargonic script, that is, they date from before the time of the administrative reforms under Naram-Sin. b) Bulla 77, from 'trample' outside the Area FS antecella door; the inscription records the transfer of 23 kúnga equids.


Figure 139. Tablet 74 from Area FS, Level 4; a list of items allotted to named individuals. Note the 'pointed' rather than 'impressed' numbers.
the late third millennium are likely to appear in the ongoing excavations at the site.

## a. Royal inscriptions

1. Rimush (Fig. 382, p. 387)
a) Vase fragment of banded calcite with part of standard three-line inscription of Rimush: 'Rimush, king of the world'. A great number of objects with this inscription has been found at sites in southern Mesopotamia (see Frayne 1993, 71f., no. 20; Gelb \& Kienast 1990, 71f., no. 6).
BM 127340, F.1152; Loretz 1969, no. 83; new copy in Potts 1989, 156, fig. 8.
b) Vase fragment of banded calcite, which preserves part of a standard dedicatory inscription: ‘To [the deity .....] Rimush, king of the world, when he conquered Elam and Parahšum, dedicated (this vase) from the booty of Elam'. This inscription is also found on numerous objects at various sites (see Frayne 1993, 65f., no. 16; Gelb \& Kienast 1990, 67f., no. 2). The better-preserved examples, coming mostly from the south, are dedicated to Enlil or Sin, but on the Brak piece one might perhaps expect a local deity. Present location unknown (same field number as a); found in 'debris of the Agade period, room 22 of Naram-Sin's Palace': Mallowan 1947, 197, pl. 50, 4.

## 2. Naram-Sin (Figs. 136 \& 381)

Many bricks in the famous 'Palace' were stamped with the name of Naram-Sin. As examples may be mentioned two of a number of pieces stamped with a two-line inscription: ${ }^{\mathrm{d}} \mathrm{na-ra-am} /{ }^{\mathrm{d}} \mathrm{en}-\mathrm{zu}$, and found
among bricks collapsing out of a wall in the palace after a rainstorm during the 1984 field season. Finkel notes that the two specimens published were made with different moulds. For further details, and a list of similar bricks from the Mallowan excavations, see Finkel 1985, 189-90.

## 3. Talpuš-atili (Fig. 376)

Sealing on flat clay strip. The seal-owner was Talpušatili, a post-Akkadian, Hurrian king of the country of Nagar. The inscription has been studied in detail in Matthews \& Eidem 1993.
Aleppo Museum 6773, NSP, DM 316 (late Akkadian style contest scene).

```
i tal-pu-za-ti-li
    dutu ma-ti
ii na-gàr r ' }\mp@subsup{}{}{\prime}\mp@subsup{}{}{`
    dumu [x x` [.....]
        Talpuš-atili,
        Sun (god) of the country
        of Nagar
        son of .....
```

4. Sealed bulla with remains of legend. The traces in 1. 2 seem to parallel 1.2 in 3 , and perhaps this piece is another royal sealing.
Ashmolean 1939.332:188, NSP Room 9, DM 324 (late Akkadian contest scene).

$$
1[x(x)]\left\lceil x{ }^{\top}[\ldots]\right.
$$

$$
2 \text { dutu" } m a^{?}[t i]
$$

5. Sealed bulla with legend of a scribe, servant of Naram-Sin.
Aleppo Museum 6774, NSP, DM 319 (late Akk. contest scene, cased inscr.)

6. Sealed bulla with remains of legend in two registers; servant(?) of Naram-Sin. Note that here the dingir sign before the king's name is omitted.
BM 126378, ER, DM 320 (late Akk. contest scene; cased inscr.)
```
i na-ra-am-
    den-[zu]
ii x}\\mp@code{[.......]
```


## b. Titled officials

7. Sealed bulla with legend of Pû-Mer, ensi of an unidentified locality.
BM 131750, FS, DM 318; Loretz 1969, no. 76.

| $1[b] u_{1+}$-me-er | Pû-Mer, |
| :--- | :--- | :--- |
| 2 ensí | ensi |
| $3[\mathrm{x}]-\mathrm{r}^{\urcorner}-\mathrm{b} /$ pum $^{\left\ulcorner\mathrm{k}_{1}\right\urcorner}$ | of ........-Bum |

8. Bulla with seal of Itbe-Laba, ensi of Gasur (Nuzi) (Fig. 160).
TB 8014, reg. no. 2204, FS 392; Illingworth 1988, 98f.; Frayne 1993, 240; DM 317 (late Akk. contest scene).

| 1 it-be-la-「ba` | Itbe-laba, |
| :--- | :--- |
| 2 ensí | ensi of |
| 3 ga-súr $r^{\text {ki }}$ | Gasur |

9. Sealed bulla with legend of a scribe.

BM 126365, NSP ctyd 3, DM 321.

| 1 | ir $r^{2}-d a-\mathrm{NI}$ | Irdani(?) |
| :--- | :--- | :--- |
| 2 | dub-sar | scribe |

10. Sealed bulla with legend of the scribe Ahu-ahī (Fig. 380, p. 385). In l. 3 one expects a patronym, which seems to contain the element-AM, found in other Khabur PNs (see Catagnoti 1998, 61).
BM 126379, ER, DM 373.

| 1 | $\ulcorner a\urcorner-h u-a-h i$ | Ahu-ahī |
| :--- | :--- | :--- |
| 2 | dub-sar | scribe |
| 3 | dumu"?BI/GA-AM | son of ..... |

11. Seal legend, possibly belonging to the scribe Muris (Fig. 172, p. 138). This difficult seal inscription was
discussed in Oates \& Oates (1991a, 137). A suggestion referred to there supposes the identity of the wheelshaped symbol as the sign AN, but disregarding this as a symbol we have the (reversed) signs mu-ríiš. Such a reading (interpretation unclear, but the name is probably of Semitic derivation) is supported by the occurrence of an identical PN at Ebla (Archi \& Biga 1982, no. 192, v. I, 1), and by inscription 12.
TB 12002, reg. no. 5265, SS 675, nine fragments from Room 5 floor (SSTC), including a door sealing; $D M$ 211, see also p. 137.
12. Fig. 171 (p. 137). The inscription on this important seal is difficult to read. That the owner is identified as a 'scribe' is clear (cf. Iraq 53, 135), but the rest seems to make the best sense if we assume that the inscription, like that of 11, is reversed. This indeed may yield the same PN, and if the reading should prove correct, it seems highly probable that we are dealing with two seals belonging to the same high official. The PN mu-rí-iš seems most likely to have been carried by a local figure. The legend is in any case rather awkwardly placed, and it may well have been added locally to a seal brought from the south. TB 10006, 10007, 10014, 10015, 11026, 14078; some twenty fragments from SSTC Courtyard 7 and from Room 18 floors; container and door sealings; $D M$ 346. The sealing is discussed in Chapter 4 (pp. 137 \& 144).

| 1 | $m u-$ | Muriš, |
| :--- | :--- | :--- |
| 2 | $-r i-i s^{? \imath}$ |  |
| 3 | dub-sar | scribe |

13. Sealed bulla with legend of Išar-mūpī, the cupbearer (Fig. 382, p. 385).
TB 1058, reg. no. 257, surface find, Area ER, DM 308 (late Akk. contest scene, cased inscr.).

$$
\begin{array}{llc}
1 & i \text {-šar-mu-b[i] } & \text { Išar-mūpī } \\
2 & \text { sìl[a].šu.d }\left[\mathrm{u}_{8}\right] & \text { cup-bearer }
\end{array}
$$

## c. Inscriptions from the Naram-Sin Palace

With the exception of the specimens 1-5 and 9, edited above, this section gathers all the inscriptions said to have come from Mallowan's excavations in the NSP site. The find spots are given, as far as they can be reconstructed from Mallowan's notes, but the information cannot be considered certain.
14. This is one of the best preserved and most important Old Akkadian tablets from Brak (Fig. 137). It is a list of workers or soldiers related to a number of
towns．The list may be headed by Nagar，Brak itself （though see comment below）．It includes 178 guruš （l．12）and，close to half that number， 90 people of a different，unspecified category．The purpose of the list is not clear，but it surely reflects Old Akkadian imperial control，capable of mustering personnel from －or in－major Khabur towns．

Those guruš not from Nagar are related to im－ portant Khabur towns：Urkeš has been identified with Tell Mozan，near modern Amuda（Buccellati \＆ Kelly－Buccellati 1998a）．Lilabšinum can be identified with Old Babylonian Nilibšinnum，a fortified town in the kingdom of Kahat，somewhere north of Brak （see Charpin 1990a，76）．Šehnā is firmly identified with Tell Leilan on the wadi Jarrah，and Hidar was a town near Šehnā（Charpin 1990c，119）．

The second category of personnel is related to four other towns．The first is Kakkabān，a locality near modern Hasake，possibly related to the volcano Kaukab（see Catagnoti \＆Bonechi 1992）and perhaps also mentioned in 70．According to the original edi－ tor of the text，the three last entries were later addi－ tions（Gadd 1940，60f．）．They concern men from Tādum，probably Tell Hamidi c． 20 km north of Brak， Taqdaš（also in 65），which is only attested at Brak （for the reading and a possible etymology see Bonechi 1998，221），and an unidentified town（1．15；Finkel suggests the reading ${ }^{〔} \mathrm{ga}^{\text {’ }}$ ；hab is not possible：pace Geller，in Michalowski 1993，80）．
BM 131738，F．1153，NSP Courtyard 2；Gadd 1940， 60f．（copy pl．V）；Loretz 1969，no．69．This text has been discussed in Catagnoti \＆Bonechi 1992；also Michalowski 1993，80f．（discussion and collations of ll． 2 and 15）．According to Finkel na－$x-x$ is possible in the second line；－hur is not possible：



15．List of various objects．The tentative translitera－ tion offered here assumes that the original edition confused obv．with rev．This provides a more logical sequel for the objects mentioned in ll． $4^{\prime}-5^{\prime}$ and fits better if there is a summary missing at the end．The objects listed include trays（1．1＇），chairs（1．2＇），leather objects（l．4＇the skin of the turāhu animal；1．5＇kuš－ GAN＝tukannu＇leather pouch（？）＇：see Archi 1986， 202），a container（l．6＇），garments（the garment in $1.7^{\prime}$ is otherwise unknown to us）；in $1.8^{\prime}$ we have a lam（a）huššu garment．
BM 131746，F．1160，NSP courtyard 2，floor，black ash；Loretz 1969，no． 73.

```
obv. break
    7 gišisilig
    8 gisgu-za
    [x] 'x x ` 2
    [x] `kuš`-dàra
r. 5}\mp@subsup{}{}{1}[x ku]š'-GAN
    1[d]a-nagar pa-pa
    1 túg nu-ru-um
    1 túg níg-lám
    [1 R]U?-ZI-GUR
        break
```

16．Fragment of administrative list with remains of four columns（Fig．140）．Quantities of barley mentioned several times．Rev．col．iv contains total；undated．
Aleppo Museum，F．1163，NSP courtyard 2；Gadd 1940，61．Copy by Catagnoti．

17．Fragment from a tablet which contained a list of gods．Probably a school text．
BM 131749，NSP courtyard 2；Loretz 1969，no． 75. This text has been discussed in Westenholz 1974－77， 105.

18．Small tablet fragment with remains of two lines． The sign SAG is preserved in both lines．Probably a school text．
BM 131752，NSP courtyard 2；Loretz 1969，no． 78.

$$
\begin{aligned}
& \text { line } 1^{\kappa}{ }^{「} \text { hur }{ }^{\top} \text {-sag }=\text { mountain } \\
& 2^{\prime}[K] A^{?} \text {-sag }
\end{aligned}
$$

19．Small fragment from the top of the reverse of an administrative document．Only one and a half signs preserved．
BM 125922，NSP courtyard 2；copy by Finkel 1985，


16


Figure 140. Copies of text fragments $16,22,40$, 41, Aleppo Museum.

201 fig． 9.
20．List of sheep，grain，and wine（？）．Mallowan 1947， 66.

BM 131739，F．1154，NSP Room 14；Loretz 1969，no． 70.

|  |  |
| :---: | :---: |
| $1 u^{\text {u }}$［ $x^{\prime}$［ $\mathrm{x} x$ ］ | 1 sheep |
| 2 se g［ur＇］ | 2 ．．．．．kor barley（？） |
| 2 dug g［eštin＇］ | 2 jars wine（？） |

21．Fragmentary tablet．No readable text preserved． Ashmolean 1939．332：194，NSP Room 14.

22．Fragment from left edge of an administrative document（Fig．140）．Numerals preserved in five lines． A note by Mallowan says：＇found underneath the palace，ought to be turn of Jamdat－Nasr－Fara pe－ riod＇，but as noted by Finkel the fragment is cer－ tainly of Old Akkadian date．
Aleppo Museum，NSP，tablet marked：＇Low down deep vault back of court＇；copy by Catagnoti（cf． Finkel 1985，no．16；photo pl．36a，top right）．

23．Short OAkk letter inscribed on sealed bulla．Ac－ cording to Mallowan $(1947,69)$ this piece was found ＇in a rubbish dump within the precincts of the late Palace＇，and was inscribed with the name of Ur－ Nammu，but as noted by Finkel（1985， 200 ad 11）this is not the case，though the context remains post－ Akkadian．An individual with the name $i$－lu－lu is also attested at Tell Mozan（Milano 1991）．
BM 131748，F．1164，NSP；Loretz 1969 no．84．Edited in Kienast \＆Volk 1995，198；copy by Finkel．

en－ma be－lí－a－bu $1_{14}$ $a-\ulcorner n a\urcorner ~ i ̀-l u-l u ~ a-h i ~ a-s ̣ e-\lceil h a ’-m i ̀$

From Bēlī－abu to Ilulu，my brother：＇as they say，＂very funny＂＇

The verb form aṣehhammi＝și＇āhu，＇to laugh＇，occurs regularly in Old A火kadian letters，often followed by danniš，or danniš danniš，＇very much＇，＇exceedingly＇， and is the subject of several discussions（Veenhof 1975－76，107－10；Hirsch 1982，115－16；Kienast \＆Volk 1995，153－4；Durand 1995；Sallaberger 1996a，405；and， perhaps most usefully，Edzard 1996）．

The English＇very funny＇provides a good equivalent，possessing both the literal meaning and its ironic opposite，depending on context and usage．

From use of the particle－mi，＇they say＇，and the nota－ ble frequency of the expression in Old Akkadian private correspondence，one might conjecture that it is an allusion to a well－known humorous story in which＇I am laughing heartily＇was，so to speak，the punch－line．
The sealing（ $D M$ 371）has traces of a single line legend：$[b e]-l i-\Gamma a-b u_{14}$ ？

24．Sealed bulla with legend of Šu－Adda．
BM 126368，F．757，NSP，found c． 2 m above floor in levelling fill of post－Akkadian restoration，DM 370 （flat lens－shaped bulla type，p．130）．
$1 \check{s i n}^{\mathrm{d}} \mathrm{d}^{\mathrm{im}}$
Šu－Adda
2 be－li－du ${ }_{10}$ Bēlī－ṭābu

25．Sealed bulla with remains of one line in legend． Cf． 26.
Ashmolean 1939．332：147，NSP Room 9，DM 331.

```
1 [\check{a]]r-ru-ni [(...)]}]
```

26．Sealed bulla with remains of two lines of legend． Cf． 25.
Ashmolean 1939．332：85，NSP courtyard 4，DM 340.

```
1 šar-ru-n[a'(-x)]
2 「x`[..............]
```

27．Sealed lentoid bulla with remains of legend（top of bulla sealed，partly cased inscr．）．Cf． 24.
BM 125908，NSP，DM 372.

$$
\begin{array}{lll}
1 & \text { 「ur'-sa }{ }_{6} \text { '-[x] } & \text { Ur-..... } \\
2 & \text { [dumu'] šu-ma-[ma] } & \text { [son(?) of] Šu-Mama }
\end{array}
$$

28．Sealing with remains of one line．A similar PN is attested at Ebla and Mozan（Catagnoti 1998，51）． Aleppo Museum 6766，NSP，DM 375 （cased inscr）．

## 1 ig－su－t［um＇］

29．Sealed bulla．For the inscription see Gurney in Buchanan 1966， 225 （no．416）．The preserved signs may be compared with the GN lu－rí－um ${ }^{\mathrm{ki}}$ in a text from Tell Beydar（Ismail et al．1996，no． 23 v 6）．
Ashmolean 1939．332：164，NSP Room 9，DM 305 （Akk． contest scene）．

$$
1[\ldots . . . . .] l u-r i ́-i m^{{ }^{\mathrm{k} i}{ }^{\top}}
$$

30．Sealed bulla with traces of two signs in field．

Ashmolean 1939.332:208, NSP Room 9, DM 329.

$$
1 \text { [........] }]^{\top} \times-h u
$$

## d. Inscriptions from site ER (also no. 13)

ER was the second major exposure in which Mallowan found inscriptions. For a discussion of the archaeological contexts, see pp. 32-6.
31. List of animals related to named localities and individuals (Fig. 378, p. 384). The purpose of the text is not clear, but given the small quantity of animals, mostly one or two in each entry, one could think of a festive or cultic occasion, and that the animals were brought or issued as meat for a banquet or some similar function. Like 14 the text may testify to the widespread local network of control exercised from Brak.

We can offer no good interpretation of the repeated sequence ZA-NE-ZU, which seems to be neither a PN nor a GN. The original editor suggested the reading za-bil-sú 'its bringer' (Gadd 1940, 42). The localities mentioned include some attested elsewhere: for Šehnā (Tell Leilan) and Lilabšinum, cf. above text 14. Ašamhul is known also from secondmillennium sources, and is possibly to be identified with Tell Mohammed Diyab, southeast of Leilan (Charpin 1990c). S Sarhānum is also attested in later sources (Charpin 1987b, 133). In 1.3 it is tempting to identify the town of Ilan-ṣura, which played an important role in the early second millennium and should be located west of Leilan (see Wäfler 1995), but the form with initial L is difficult to explain. Hilazum is also attested at Ebla and should be a fairly important town (cf. above, introduction). Several of the remaining entries are difficult to interpret, but one expects small villages near Brak among them. Aleppo Museum, F.1159, ER Room 5; Gadd 1940, 61 and pl. V; photo J.O.
obv. [1] udu $a-s \check{a} a-a m-h u-u l^{\mathrm{ki}}$ [1 u]du $\check{s} \grave{e}-e h-{ }^{「} n a^{k \mathrm{k}}{ }^{1}$ 1 más li-la-an- ${ }^{-} z u^{? 7}-r\left[a^{2 k i}\right]$
1 udu hal-ha-wi-is[ $\left.{ }^{\mathrm{ki} ?}\right]$
51 ùz za-NE-[zu]
1 máš la-te-[x]
1 udu $a-b i{ }^{`}-k u m\left[{ }^{\mathrm{k} i}\right.$ ]
1 udu li-la-ab-ší-núm ${ }^{\mathrm{ki}}$
1 udu $\mathfrak{s ̌ u}-[\mathrm{x}]-\mathrm{r}^{\mathrm{x}} \mathrm{k}^{\mathrm{k}}$
$10 \quad 1$ udu za- ${ }^{-} \mathrm{NE}^{7}-\mathrm{zu}$
1 máś <lá>-šè li-la-ab-šínúm ${ }^{k}$
1 udu su-a-a-laki
1 udu [(...)] 1 dug geštin
[1] sheep Azamhul [1] sheep Šehnā 1 goat Lilanṣura(?) 1 sheep Halhawiš
1 goat ZaNEzu 1 goat Late-..... 1 sheep Abikum 1 sheep Lilabšinum 1 sheep Šu-......
1 sheep ZaNEzu
1 goat Lilabšinum 1 sheep Šu'ala 1 sheep (..), 1 jar of wine

| ${ }^{\text {「 }}$ ¢ $a g u^{?}{ }^{7}-a b-\mathrm{x}-a^{\mathrm{ki}}$ |  |
| :---: | :---: |
| r. 15 [1] udu za-NE-[zu] |  |
|  | 1 udu-kur $b u-u ́ h-z a$ |
|  | 1 máš ku-un-sá-lim |
|  | 1 máš hi-la-zum ${ }^{\text {ki }}$ |
|  | 1 udu za-NE-zu |
| 20 | 1 udu șa-ar-'à-núm ${ }^{\text {ki }}$ |
|  |  |
|  | 1 máš ha-bi-ra-am |
|  | 1 udu bi-iš-šum ${ }^{\mathrm{ki}}$ |
|  | 2 udu šu-íd |
| 25 | 1 udu zu-mu-úh-dur ${ }^{\text {ki }}$ |
|  | 1 udu en-x-kum ${ }^{\text {ki }}$ |

from $\qquad$
1 sheep ZaNEzu
1 mountain sheep Buhza
1 goat Kūn-šalim
1 goat Hilazum
1 sheep ZaNEzu
1 sheep S Sarhānum
1 sheep Šu-Bēlum
1 goat Habiram
1 sheep Biššum
2 sheep Šu-Nārum
1 sheep Zumuhdur
1 sheep En-x-KUM
32. Mallowan noted: 'Post-Akkadian cuneiform tablet, a trial piece(?) found in the houses'. A postAkkadian context is likely though the text is Old Akkadian; it is an exercise in writing PN's, including puzur $_{4}-i l-a-b a_{4}(\mathrm{obv})$. A curious feature is two rows of

triangular impressions on the left edge - possibly also exercises, or just a doodle!
Aleppo Museum, F.1157, ER Room 6; copy by Catagnoti. Finkel 1985, no. 19 and pl. 36b.
33. Large portion of administrative text with remains of four columns. Although most signs can be read, little consecutive text emerges (cf. Gadd 1940, 42). In view of the totals on obv. ii 6'-7' the copy's obv. and rev. should be reversed. On obv. i 6 ' the Akkadian PN li-bur-be-lí is preserved, and other lines contain PNs (obv. i 7': ga-ri- $r a-p i^{{ }^{*}}$; obv. ii 2': $i$-ti-é-[a]).
BM 131745, F. 1158 (= F.1156, see Finkel 1985, 199, b2, ER Room 6; Loretz 1969, no. 72.
34. Lenticular school text. Only endings of lines are preserved, and although most signs can be read the nature of the contents is uncertain. Given the signs tum, lum, and bum ending 11. 2,5, and 7, the text was probably written in Akkadian.
BM 131740, F.1162, ER Room 6; Loretz 1969, no. 71. This text has been discussed in Westenholz 1974-77, 105.
35. Small tablet fragment. The text lists quantities; in 1. 4' read perhaps ba-ha-[xx].

BM 131751, ER; Loretz 1969, no. 77.
36. Small tablet fragment.

BM 131755, ER; Loretz 1969, no. 80.
37. Lenticular school text.

BM 131747, ER; Loretz 1969, no. 74. The text has been discussed in Westenholz 1974/1977, 105.
38. Sealing fragment with legend of Iliš-takal, son of Pūšu-kēn.
Ashmolean 1939.332:144, ER, DM 323.

| 1 |  | [ [ ] 1 ǐ̌-takal |
| :---: | :---: | :---: |
| 2 | [dumu $p$ ] $\grave{\text { - }}$-su-G[I] | [son of P]ūšu-kēn |

39. Sealed bulla with very fragmentary legend. The seal owner's profession may be preserved in line a 1', possibly 'snake-charmer' (at Ebla $=$ za-rí-um, cf. Krebernik 1983, 28, 740).
Ashmolean 1939.332:15, ER; DM 394.
a $1^{\prime}$
 2' muš-[lah ${ }_{4}$ ]
b 1"
[..........]-na

## e. Inscriptions from CH

40. School text, list of PN's, oddly shaped and clumsily written; palimpsest (Fig. 140). The original text, or perhaps several, has been removed in such a way as to create a 'frame' around the edge. Cf. 32. From the 'houses at the back of the palace'
Aleppo Museum 6292, F.1161, CH; copy by Catagnoti (cf. Finkel 1985, no. 17, photo pl. 36a, bottom left)
obv. $\times \times x$
MAŠ-tur
ì-lí-iš-tá-kál
rev. x-ìlí
ur- ${ }^{\text {d ŠE }}$
41. Small note concerning best-quality oil issued in the month of Halî (see Cohen 1993, 26) (Fig. 140). Rev. is broken, probably uninscribed.
Aleppo Museum, CH; copy by Catagnoti (cf. Finkel 1985, no. 18, photo pl. 36a, bottom right).
```
obv. ì-s[ag]?
    hu-ul-li
    è
```

    [it]i ha-lí-i
    
## f. Inscriptions from Trench WP (northeast of ER)

42. Small tablet fragment with remains of two lines, school text with PNs.
BM 131754; Loretz 1969, no. 79, collated by Finkel.

2': $[i-l] i$ i- $x-x$
43. Sealing on flat clay strip. Legend of Šu-Adda (?; cf. 9), son of Bēlī-kēn.
BM 125916, WP, DM 325 (late Akk. contest scene).

$$
\begin{aligned}
& 1 \text { [s] } u^{2}-\mathrm{AN}^{\Gamma}{ }^{\Gamma} \mathfrak{a}^{?}{ }^{?}-d a^{?}-u m \quad \text { [Š]u-Adda(?) } \\
& 2 \text { dumu be-lí-GI son of Bēlī-kēn }
\end{aligned}
$$

## g. Miscellaneous inscriptions from Mallowan's excavations

44. Lower left quarter of small round tablet, or bulla, with two columns of text; rev. uninscribed.
BM 131756; Loretz 1969, no. 81.
45. Fragment from a round tablet with note concerning wine(?).
BM 131757; Loretz 1969, no. 82.
$1{ }^{\text {「 }}$ mi-at ${ }^{\text {T }} / \mathrm{x}$ dug [geštin] ${ }^{\text {? }} 100 \ldots$.... jars? of [wine?]
46. Small flake with two lines of text.

BM 139751, F.1155; copy by Finkel 1985, p. 201 fig. 8.
47. Fragment from the left edge of a small lexical tablet with part of six lines.
BM 126500; detailed notes and copy by Finkel 1985, p. 201, fig. 10.
48. Fragment from fairly large tablet with remains of seven lines (Fig. 141). The repeated lú in ll. 4'ff. may indicate a lexical list of professions.
Aleppo Museum 6298; copy by Catagnoti.
49. Fragment with remains of 4 lines (Fig. 141), probably PNs.
Aleppo Museum; copy by Catagnoti.
obv. $i$-lí-EN [ $\qquad$ .]
[x]-bu-ra [..........]
$[x]^{「} x^{\top}-a\left[l^{3} \ldots \ldots . . ..\right]$
$[x x]^{\upharpoonright} x^{〔}$ a [..........]
50. Small fragment from tablet with two columns of text (Fig. 141). The few preserved signs are probably parts of PNs.
Aleppo Museum, from outside NSP, east side; tablet marked: 'FNP SE of wall complex'; copy by Catagnoti.
51. Six unnumbered fragments from Old Akkadiantype tablets, presumably from Brak, and with a few signs preserved. Not copied.
Aleppo Museum.

## D. Inscriptions from Area SS (also nos. 11 \& 12)

52. Fragment from left edge of administrative text with part of five lines; rev. broken (Fig. 141).

Aleppo Museum, marked: 'HF Brak' (= Area SS, Mallowan 1947, 79, no. 3); copy by Catagnoti (cf. Finkel 1985, no. 15; photo pl. 36a, top left).
53. Complete tablet listing barley flour for rations to 8 workers, delivered to the sukkal official.
TB 6003, tablet reg. no. 5, reg. no. 1242, west slope of Area SS; Finkel 1985, no. 5; copy by Finkel (at 1:1).

```
obv. 8 guruš 8 workers
    1.3.0 zíd-še gur
rev. a-na sukkal
    1 \text { gur 3 PI of barley flour}
for the sukkal
```

54. Tablet fragment listing rations or similar items to various personnel, including servants, a leatherworker and a smith (Fig. 141). The lower part and left edge missing and the preserved lower rev. is uninscribed. Two small unjoined fragments belong with the tablet; on one the sign géme 'maid' is preserved. Copy by Eidem.
TB 10001, tablet reg. no. 27, SS 250, Level 3, from Akkadian house above monumental building.
```
    [x (...)] géme
    [x (...)] dumu-nita
    [x (...) a]-na qá-ti
    [x (...)t]i'u-wa
51 [x (..)lú] ašgab
    [x (...)lú si]mug
    [x(..)] [x`
        break
```

55. Tablet fragment. Traces of four lines, but surface almost completely effaced. Not copied.
TB 10002, tablet reg. no. 27, SS 250 . Level 3, from Akkadian house above monumental building. With this tablet were found a number of small, uninscribed tablet fragments.



Figure 141. Copies of texts 48-52 (Aleppo Museum); 54, 56, from Area SS.


56．Fragmentary tablet．
TB 10005，tablet reg．no．32，SS 266，fill in oven（？Level 2／3）（Fig．141）．Copy by Eidem．

57．Fragment of school（？）tablet．This circular tablet with a few random signs must be an exercise．
TB 12000，tablet reg．no．45，SS 642，fill of tannur 641， Level 3.

58．Sealing on flat clay strip．
TB 10003，tablet reg．no．30，reg．no．3894，SS 544， from pit cutting façade wall，DM 282.

$$
\begin{aligned}
& 1 \text { [.....]-rx }{ }^{1} \text {-um } \\
& 2 \text { ir }{ }^{\top} x^{x}{ }^{1}
\end{aligned}
$$

59．Sealed bulla with fragmentary inscription listing shipment to or from Šehnā（Tell Leilan）（Fig．379，p． 385）．
TB 10004a，tablet reg．no．29，reg．no．3895，SS 544， from pit cutting façade wall，design $=$ DM 168．Copy by Eidem．


60．Sealing on flat clay strip．
TB 5083，reg．no．835，SS 95，Level 2，fill in Room A，

## DM 362.

1 da－ba－ba

## Dababa

61．Small fragment of bulla with a single cuneiform sign preserved（ $\mathrm{NI}^{\prime}$ ）．
TB 11027b，tablet reg．no． 43 ，reg．no． 4397 ，SS 816 ， Room 18 floor（SSTC）．

62．Bulla or bottle top with inscription recording an offering of oil to or from an unknown person or location in Nagar（Fig．135）．
TB 14077，tablet reg．no．51，SS 945，Room 18 floor （SSTC）．Copy by J．O．

63．Fragment of sealed bulla，same type as 59．Part of what must have been the last line of a short inscrip－ tion preserves a broken sign followed by the deter－ minative KI ，indicating a toponym．
TB 11027a，tablet reg．no．41，reg．no．4396，SS 815， Room 18 floor（SSTC），design＝DM 245 ．

$$
[\quad] x^{\mathrm{ki}}
$$

64．Bulla with remains of three lines of writing（Fig． 138a）．Both the ŠU and the DA signs are written in older script，that is，predating the administrative changes under Naram－Sin．
TB 13004，tablet reg．no．47，reg．no．5525，SS 1005， red fill of Room 21 （SSTC）．Copy by Finkel，design＝ DM 226.

$$
\begin{aligned}
& x^{?} 20 \mathrm{AN}-\mathrm{BA} \\
& \text { da-r[a'(-x)] } \\
& \text { 「šu-ba-ti「 }{ }^{1} \text { took }
\end{aligned}
$$

## E．Inscriptions from Area FS（also no．8）

65．Sealed bulla．The seal legend preserves a com－ plete Akkadian personal name．
Ashmolean 1939．332：202，from topsoil；DM 307.

$$
1 p u ̀-s u-\text {-du }_{10} \quad \text { Pūšu-ṭābu }
$$

66．Fragment of OAkk．administrative tablet．Only a few signs preserved（Fig．142）．
TB 7037，tablet reg．no．11，reg．no．1679，FS 1154，fill associated with RLB（Level 1）；Finkel 1988，no．9； copy by Finkel．

67．List of silver from various localities．
TB 8000，tablet reg．no．14，FS 392，Level 4；Illingworth 1988，no． 12.


68


5 cm

obv. $1 / 2$ ma-na kù ${ }^{1}$-babbar bi-ti-ir-sum ${ }^{\mathrm{ki}}$ 13 gín kù-babbar $b i-r u-a-a t^{\text {hi }}$
$5 \quad 10$ gín kù-babbar l.e. $e-r u-u m^{\mathrm{ki}}$
$1 / 2$ mina of silver (from) Bitiršum 13 shekels of silver (from) Biru'at 10 shekels of silver (from) Erum
68. List of men from various localities. TB 8003, tablet reg. no. 19, FS 392, Level 4; Illingworth 1988, no. 13.

| obv. ${ }^{\text {táq }}{ }^{\top}-d a-\left[a \check{s}^{\text {kid }}\right]$ | Taqdaš |
| :---: | :---: |
| tá- ${ }^{\text {d }}$ dum ${ }^{\text {ki }}$ | Tādum |
| $b i-¢ u^{\top}-a-a t^{\mathrm{ki}}$ | Biru'at |
| $e-\left\ulcorner r u^{\urcorner}-u m m^{\text {ki }}\right.$ | Erum; |
| 5 et-lu | men |
| rev. šu-ut | who (whom?) |
| uš-bi-ma |  |
| a-na uz-ga-e | for Uzga'e |
| $a-n a b u-n\left[a^{\text {? }} \ldots ..\right]$ | for Buna-.... |


$10 h u^{-\ulcorner } \times x^{7}$

69. TB 8004, tablet reg. no. 18, FS 392, Level 4; Illingworth 1988, no. 14.

70. Fragment of administrative text. The GN Kakkabān is perhaps mentioned in rev. l. 3': kà-kà-[ba-an $\left.{ }^{\text {ki }}(?)\right]$.
TB 8005, tablet reg. no. 16, FS 392, Level 4; Illingworth 1988, no. 15 (Fig. 142).
71. Fragment with only a few signs preserved.

TB 8006, tablet reg. no. 16, FS 392, Level 4; Illingworth 1988, no. 16 (Fig. 142).
72. Fragment. Account for silver. Two PNs preserved: $a-s \check{a}-r a$ (obv. 2), and $\check{s} u$-ma-[ma?] (rev. 1).
TB 8007, tablet reg. no. 20, FS 392, Level 4; Illingworth 1988, no. 17 (Fig. 142).
73. Fragmentary tablet. On rev. 1. 6 mention of a 'leatherworker' (ašgab).
TB 8008, tablet reg. no. 17, FS 392, Level 4; Illingworth 1988, no. 18 (Fig. 142).
74. Fragmentary tablet (Fig. 139). List of items allotted to named individuals: $l a-m[u-\ldots . .$.$] , p u ̀-i-l[i]$, ma$m a-h[i r], a-h u-\mathrm{d}\left[\mathrm{u}_{10}\right]$ and a foreman (nu-bànda). Note the 'pointed' numerals.
TB 8009, tablet reg. no. 21, FS 392, Level 4; Illingworth 1988, no. 19.
75. Account for sale or distribution of garments. TB 8010, tablet reg. no. 22, FS 392, Level 4; Illingworth 1988, no. 20.
obv. 2 túg gu gal $\ulcorner a-m u r\urcorner$ -dingir
$a-\ulcorner n a\urcorner$ dumu-munus -dumu-munus
20 ha-ab-a-za
20 iš-lu[l-d e]n-zu
55 be-lí-me-ni
rev. 5 el-[x]-bi
$5 \mathrm{a}-{ }^{〔} \mathrm{BU}^{\urcorner}$

2 ... garments to Amur-īlum for the daughters

20 (for) Hab'aza
20 (for) Išlul-Sîn
5 (for) Bēlī-menī
5 (for) $\mathrm{El} . .$. bi
5 (for) A-BU

The Third-millennium Inscriptions


Figure 142. Copies of texts from Area FS: 66, from Level 1; 70-73, Level 4.


|  | $\begin{aligned} & { }^{\ulcorner } 5 i ̀-l i ́-a^{\top}-z u \\ & \text { en-ma } k u-r u u^{\top}-u b-{ }^{\ulcorner } \mathrm{d} \mathrm{en}{ }^{\top}-\mathrm{zu} \end{aligned}$ | 5 (for) Ilī-aṣu Thus (reports) |
| :---: | :---: | :---: |
|  |  | Kurub-Sîn |
| 10 | $a-n a \begin{aligned} & \text { a-za-qa-ma-nim }\end{aligned}$ | to Azaqamanim |

76. Unbaked tablet. Surface largely destroyed. 4.9 (height) $\times 3.6($ width $) \times 2.1 \mathrm{~cm}$. Tablet apparently

records payment or receipt of a number of sums of silver (Illingworth 1988, 98).
TB 8011, tablet reg. no. 23, FS 392, Level 4; Illingworth 1988, no. 21.
77. Sealed bulla with remains of three lines of writing (Fig. 138). Records transfer of 23 kúnga equids. Cf. 64 and 78.
TB 13003, tablet reg. no. 49, reg. no. 5840, FS 1920. Copy by Finkel, design = DM 257; see Fig. 159:c.

$$
\begin{array}{ll}
23 \text { BAR-AN-anše } & 23 \text { kúnga equids } \\
{[r] a-b i i^{-1}} \\
-i[l] & \text { Rabi-il }
\end{array}
$$

78. Sealed bulla with remains of two lines of writing. Record of transfer of kúnga foals(?); see Ismail et al. 1996, 113. Cf. 64 and 77.
TB 13002, tablet reg. no. 48, reg. no. 5841, FS 1920.

 line ends with the sign BUR possibly the name of a smith (simug). We are unable to suggest any interpretation of the text.
TB 13005, tablet reg. no. 50, reg. no. 5839, FS 1920. Copy by Finkel, design = DM 183; see Fig. 159:b.
ha-la-bur
? simug

## Index of personal and geographical names

a-BU-75, 7
a-hu-a-hi-10,1
a-hu-du ${ }_{10}-71,5^{\prime}$
a-mur-dingir-75, 1
a-ša-ra-72, 2
a-za-qa-ma-nim -75, 10
be-lí-a-bu 14 $_{4}-23,1$ and seal
be-lí-GI-43, 2
be-lí-me-ni - 75, 5
be-lí-du ${ }_{10}-24,2$
bu-na-.... $-68,9$
da-ba-ba - 60, 1
da-r $[a(-\ldots)]-64,2$
el-[x]-bi - 75, 6
ga-ri-「ra-pí 7 - 33, obv. i $7^{\prime}$
ha-ab-a-za-75, 3
ha-bi-ra-am-31, 22
[i]-gi-gi - 69, 3
šu－${ }^{\text {d }}$ im 24,$1 ; 43,1$
šu－be－lum－31， 21
su－ma－［ma］－27，2；72，rev？ 1
šu－ÍD－31， 24
tal－pu－za－ti－li－3， 1
ur－${ }^{\text {d }}$ SE $-40,5$
ur＇－sa ${ }_{6}-\ldots \quad 27,1$
uz－ga－e－ 68,8
．．．．．－i－lí－40， 4
．．．．－um－58， 1

## Index of geographical names

a－bi－kum－31， 7
a－kà－dè ${ }^{k_{1}}-5,3$
a－ša－am－hu－ul ${ }^{k 1}-31,1$
bi－ru－a－at ${ }^{k 1}-67,4 ; 68,3$
bi－iš－šum ${ }^{k 1}-31,23$
bi－tir－sum ${ }^{\text {ki }}-67,2$
bu－úh－za－31， 16
en－x－kum ${ }^{\text {k1 }}-31,26$
e－ru－um ${ }^{\text {ki }}-67,6 ; 68,4$
「ga？- －bu－la－14， 15
ga－súr ${ }^{\text {k1 }}-8,3$
hal－ha－wi－iš［ $\left.{ }^{\text {ki＇}}\right]$－ 31,4
hi－dar ${ }^{\text {ki }}-14,10$
hi－la－zum ${ }^{\text {ki }}-31,18$
kà－kà－ba－an ${ }^{k i}-14,11 ; 70,3^{\prime}(?)$
la－te－．．．－31， 6
li－la－ab－ší－núm ${ }^{\text {ki }}-14,6 ; 31,8,11$
li－la－an－「zu？${ }^{?}-\left[\mathrm{ra}^{\text {？ki }}\right]-31,3$
lu－rí－im ${ }^{「 k i}{ }^{\mathrm{T}}-29,1^{\prime}$
na－gàr ${ }^{k_{1}}-3,3 ; 14,2 ; 62$
ṣa－ar－＇à－núm ${ }^{\text {kl }}-31,20$
šè－eh－na ${ }^{\mathrm{k}_{1}}-14,8 ; 31,2 ; 59,2$
šu－a－la ${ }^{k}$－ 31,12
tá－dum ${ }^{k 1}-14,13 ; 68,2$
táq－da－áškl $-14,14 ; 68,1$
ur－kiš ${ }^{\text {kı }}-14,4$
zu－mu－úh－dur ${ }^{k i}-31,25$
．．．．．－Bum ${ }^{\mathrm{k}}-7,3$
．．．．．－「× ${ }^{7 \mathrm{ki}}-63$

## Chapter 4

# The Evidence of the Sealings 

Joan Oates

ThThe seals and sealings from Tell Brak constitute not only one of the most important excavated collections but the largest published body of third-millennium material from northern Mesopotamia and Syria. Moreover, all third-millennium seal styles known in the north are represented at the site. The purpose of this chapter is not to republish these seals, which have been extensively treated in the volume by D . Matthews (1997a), but to focus on the evidence they provide both for the dating of the site and for its administration. There is below, in addition, a contribution by Candida Felli on two important groups of Akkadian style sealings, and in particular the socalled Scribe's Seal, not only the most splendid but unquestionably the most important Akkadian piece found at Brak and one that is crucial to the dating of the final use of the monumental buildings in Areas SS and FS. The illustrations published here include selected examples of the many styles represented at the site, and some general representation of the different uses to which such seals were put. A brief comment on the use of other possible clay items of administration concludes this first section.

Those seriously interested in discussions of style and the full catalogue of the third-millennium glyptic should consult the Matthews volume, which includes the seals and sealings found by Mallowan at Brak and Chagar Bazar as well as those from the recent excavations, for which the stratification is more secure. Of these, according to Matthews, 101 Brak designs are 'certainly Early Dynastic' in style (DM 80-180), and 134 are unquestionably Akkadian (DM 268-401), of which some 25 are 'definitely Early Akkadian'. These statements of course refer to the style of the seal, presumably reflecting the date and possibly the place of its manufacture, and not to the date at which we find the seal in use at the site. The seals themselves are poor guides to chronology, since they are easily removed from their original contexts. Seals can be re-used, even re-cut, and an Old

Babylonian letter tells us that the search of ancient sites for the semi-precious stones of which such seals were made was not uncommon even in the past (Oppenheim 1968, 87).

From the 1976-93 excavations a total of 581 register entries record sealings and seals of the third millennium; a further 277 sealings came from the SS2 rubbish pit, excavated in 1993 and 1994. In total these sealings represent over 500 separate designs. Of this total, 21 are actual seals; the rest are bullae and sealing fragments, some large, some small. The total number of individual pieces recovered is far greater than the total of register entries (over 480 sealings came from SS room 18 alone), since considerable numbers of sealing fragments, even complete bullae when impressed with the same seal, were often recorded under a single register number. It is the sealings, of course, that provide the best evidence for the actual use of the seal, though unfortunately for purposes of dating these are often found in rubbish or, even more misleadingly, in the packing that constitutes the make-up for well-prepared floors. Of particular importance for the dating of Brak are the sealings which were found in the 'trample' representing the clearing out of the monumental buildings in Areas FS and SS, in preparation for their ritual closure ( 37 designs in SS alone). The Area SS building has provided by far the largest number of seals and sealings from a single structure, representing some 95 different patterns (including those from rubbish in the large pit excavated in Area SS2 just to the west of the monumental building, which clearly contains material discarded from it, for example Fig. 313:2, found both in the pit and in the building). That a single inscribed sealing can alter historical interpretation is illustrated both by the Scribe's Seal, discussed below, and the seal of the Hurrian ruler Talpuš-atili (Fig. 375), discussed further in Chapters 3 and 16.


Figure 143. Fragment of fired steatite seal and impression, found out of context in packing of red clay surface, Area SS monumental complex (TB 6012).

## A. Types of seals and sealings

Stamp seals appear not to have been used at Brak in the third millennium, but the evidence for the use of cylinder seals represents a wide range of materials and styles. Among the earliest third-millennium seals and sealings are those in the largely geometric style common on seals made from glazed or 'fired' steatite (Figs. 143, $144 \& 152$; see Pittman 1994). Such seals are rare in Syria, and to the west of Brak neither they nor their impressions have as yet been recovered in any quantity. Well-known at Nineveh, in the Hamrin and along the eastern borders of Mesopotamia, this style would appear to have been associated with the exchange of goods along the eastern route represented by these sites; hence the 'piedmont' designation of the style. In the Hamrin, however, they were used on very friable, lightly fired, that is non-transportable, jars, which could only have served for local consumption (Ii 1988). At Brak as at Nineveh there is a preponderance of early third-millennium sealings on the more transportable medium of baskets. The glazed steatite, piedmont style, though up to now relatively rare at Brak, is found here both on clay sealings and on pottery (Fig. 144; DM 53-64). The concentration of this evidence in 'Early Dynastic'/ Ninevite 5 levels in Area ST and on the northwest ridge (Area HS: Matthews et al. 1994), both areas of limited lateral excavation, emphasizes the degree to which the small quantity of material recovered up to now may be unrepresentative of the earlier thirdmillennium levels at the site.

Other early third-millennium styles represented at Brak include a group of 'ritual' scenes depicting people waving on the roof of a building and others, within, engaged in wrestling or perhaps erotic activity (Fig. 145; cf. Amiet's 'rituel de haute Syrie' group, 1980, pl. 102). Among the geometric types are the diamond and dot, or dotted lattice, patterns, found (Fig. 220:4).


Figure 144. Impression of fired steatite seal (DM 53, seal ht. 2.3 cm ), peg sealing with no string marks, from disturbed pit fill, Area FS.
both in the ED III destruction level in Area ER (Fig. 146), in early third-millennium levels in Area TW (1997 season) and on the HS spur (Matthews et al. 1994, fig.4:9). Southern Mesopotamian styles are widely represented, especially among the so-called contest and banquet scenes, material discussed in detail by D. Matthews (1997a). The importance of the contest scene seals in the Akkadian administration is further discussed in Chapter 16, and by Candida Felli in the second part of this chapter. More unusual is a container seal impression of which both the style and design are closely reminiscent of a seal belonging to Barnamtara, the wife of Lugalanda of Lagash, with its very similar image of the 'terrible twins' with their wild hair style (Fig. 147). Lugalanda was an Early Dynastic ruler approximately contemporary with the Akkadian Sargon, and here we have but one of a large number of examples of close contact between southern Mesopotamia and the Khabur at this time. Local Brak styles are also known, illustrated by the seals seen in Figures 148 and 149; the awkward, sometimes apparently three-legged, heavy, stick-figure animals of one of the Figure 149 seals represent a type particularly characteristic of one local seal tradition, a style found even on the pottery

Classic Akkadian seals are represented in considerable numbers among the impressions at Brak. Indeed Brak has produced more Akkadian glyptic


Figure 145. Fragment of package sealing from large pit dug into Eye Temple terrace ( $2.3 \times 3.0 \mathrm{~cm}$, DM 87); both this and the second drawing (b, from near the NSP, DM 86) illustrate the 'Syrian ritual' seal type.


Figure 146. Bulla with 'diamond and dot' sealing ( $6.7 \times$ 4.9 cm DM 454), from ER Level 5, Room 44.


Figure 147. ED style sealing from Area CH , three rollings on a large bulla made around a large knot and thick string (DM 104). Pattern carved sideways.


Figure 148. Seals of 'local ED type' from the Area SS monumental complex: a) TB 14041, ht 2.4 cm , Room 18 'trample'; b) TB 14040, ht 2.8 cm, Room 21 floor (drawing, p. 395).

than the rest of the north put together (Matthews 1997a, 143), a fact which may reflect the importance of the site at this time, or simply the greater extent of excavation at Brak in this period. However, no actual Akkadian style seal has as yet been recovered from a context earlier than the final level of Akkadian occupation. A number of Akkadian sealings derive from inscribed seals, providing important administrative and political information, discussed further in Chapters 3 and 16. Faience seals in the 'provincial Elamite' style, sometimes described as 'Guti' (Dittmann's 'PostAkkadian B', 1994), are among the few distinctive styles to have been recovered from the post-Akkadian levels, though this does not necessarily date the manufacture of the seal (Fig. 236). They illustrate not only the maintenance of connections between the Khabur and eastern Mesopotamia in the later third millennium (see, for example, the new evidence from Tell Suleimeh, al-Gailani Werr 1992, seals 79-82), but the continuing international relevance of Brak's geographical position. Oddly, although there is clear evidence that Brak continues as a city of some size and importance in the postAkkadian phase, virtually no glyptic material of Ur III style has been recovered (the single possible exception is DM 401). One reason for this may lie in the deliberate use, or even re-cutting, of Ak-kadian-style seals by the immediately post-Akkadian Hurrian kings in the Khabur. At Brak this can certainly be seen in the important

Figure 149. Seals of local ED type: a) baked clay, TB 4003, from gully fill on the upper surface of Area ST (ST 15); b) steatite, TB 4004, from floor make-up, CH Level 6, Room 65.
'Akkadian style' sealing of the post-Akkadian, Hurrian ruler, Talpuš-atili, on which the inscription seems to have been re-cut (p. 393), and it may also be true of some of the sealings found at nearby Tell Mozan, Hurrian Urkesh. Even in southern Mesopotamia the Late Akkadian style is demonstrably still in use early in the Ur III period (cf. the seal of the wife of Ur-Nammu: Fischer 1992, fig. 5). Later Hurrian designs are clearly in the style of the Ur III presentation scene (Collon 1987, 36-7), an influence also visible among the Mozan Hurrian sealings but up to now absent at Brak. It is possible that at Brak the apparent lack of sealings in the Ur III style may reflect no more than the function of the areas excavated (the one possible example appears to come from the post-Akkadian reconstruction of the NaramSin Palace), or simply the continuing preference of its Hurrian rulers for Akkadian imagery.

Important at Brak is a group of sealings decorated in what has come to be termed the 'Brak style' since most of the known examples derive from the site (DM 180-263, and discussion; additional examples from the Area SS2 pit, further excavated in the 1994 season, can be found in R. Matthews et al. 1994, fig. 18). The Brak style seems, at least superficially, to have been associated with a very particular form of local administration both at Brak and nearby Beydar. This style, identified essentially by the component elements and by their disconnected composition, is found elsewhere, as far afield as Fara and Ebla Palace G (Martin 1988, seal 455; Matthiae 1980, fig. 14). The repertoire of 'detached' elements includes, most strikingly, the heads of lions and also of the bearded, human-faced bull or bison, also closely associated with Brak in the remarkable limestone statue found in the SS monumental complex from which, at present, most of the 'Brak style' sealings derive (frontispiece; cf. sealings, Fig. 167:1, DM 256, etc.). The use of animal protomes, guilloche bands, rosettes and other distinctive elements further characterizes these seals (Figs. 150; 159 \& 167:1-9); socalled banqueting scenes appear in the Brak style, but in general its participants seem to prefer tables (e.g. DM 220 from the SS2 deposit) to the drinking tubes of, for example, Figure 151.

At Brak the bulk of the Brak style sealings found up to now come from the actual floor debris or 'trample' of the monumental buildings in SS and FS , which there is convincing reason to date to the Akkadian period (p. 389). Up until the most recent season at Brak (2000), only a very few examples had been found in deposits which could possibly be dated to the earlier Phase L (late ED III) and of these only a


Figure 150. 'Brak style' (? box) sealing, with goat nibbling flower, SSTC Room 24 fill, $3.7 \times 3.5 \mathrm{~cm}$, TB 12003. Note the cloth impression on the lower part of the sealing.
single example, from the Level 6 building in Area CH (DM 184), was unequivocally dated to this period. The most recent season at Brak, however, has produced several examples of this type from the Phase L 'Oval' in Area TC. Other possible Phase L examples include sealings attributed by Mallowan to 'debris beneath the Naram-Sin Palace' and 'beneath the foundations of the Sargonid building in Area ER' (1947, pls. 23:11,12 \& 24:12) and, from the 1998 season, in the uppermost fill of the Area TC 'Oval' (Emberling et al. 1999, fig. 19:i). Brak style sealings have also been recovered from the Beydar Palace (for example, Teissier 1997, nos. 9 \& 10). Here this style, indeed virtually identical sealings, would also appear to be of late Early Dynastic date, at least on the basis of their apparent contemporaneity with the 'ED III' tablets recovered from the Beydar Palace (attributed to 'the youngest Palace level': Bretschneider \& Jans 1997a, 72-5). However, no sealings


Figure 152. Peg sealing, fired steatite style (DM 470); reverse shows wood or reed impressions. TB 7040, surface find. Width of sealing 7.9 cm .

Figure 151. Impression of sealing with drinking scene (DM 99); reverse shows cloth impression of a (?) bag, tied at the top and closed with a wooden peg. TB 9003, Area FS Level 4, ash floor 603; width of sealing 6.0 cm .
in this style were found in the private houses from which most of the tablets were recovered (Teissier 1997). Thus on current evidence their major period of use seems to have been from late in the Early Dynastic through the early Akkadian periods; we believe, moreover, that at Brak the style continued in use, pre-


Figure 153. Basket sealing, with traces of seal impression (DM 406) on obverse. Reg. no.612, TW 20, early ED fill, $5.5 \times 4.5 \mathrm{~cm}$.
sumably in the hands of local officials, as late as the time of Naram-Sin. Their distribution at Brak suggests an association with a particular form or area of administration.

One of the more entertaining features of the 'Brak style' is to be found in a small group of sealings that depict what appear to be ritual processions involving wagons/chariots drawn by teams of equids (Fig. 313:1-8, p. 290). These are discussed more fully in Chapter 10, in the context of the model clay chari-
ots and figurines. It is possible that the very similar sealings found at nearby Tell Beydar may even depict formal visits of the ruler of Nagar to one of his dependent cities. One of the oddities of the Brak style is that despite the very widespread use of such seals in the administration of the city (section C, below), the seals themselves are rare. Indeed no seals in this style have been recovered during the current excavations, nor have any been found as yet at Beydar.

## B. Seal function

A very wide range of sealing types has been recovered at Brak, discussed briefly in D. Matthews 1997a (173-83). Container sealings are by far the most common, representing a variety of packaging including jars, baskets and boxes (Figs. 151-3). A substantial number of door sealings has also been identified, though their recognition is not always straightforward. Door sealings, of course, identify the owner of the seal as a local official. A number of seals, including the Scribe's Seal (Fig. 171), the seals of the officials in SS Room 18 (Fig. 167:1,2), the chariot seals (Fig. 313:1-4) and, inter alia, DM 211, 241, 245, 262, 476 , which are found on more than one type of sealing, are also likely to be of local origin.

A variety of bullae have been found, usually rectangular in section and formed over the knot in a piece of cord or string which was attached to some form of container. Some bullae of this type also carry


Figure 154. 'Test strip' sealing, 'Brak style' (DM 261), from just beneath the red clay layer which sealed the infill of the SSTC; a second test strip of the same seal came from the east gate. TB 6024, TB 11037, $4.7 \times 3.2 \times 1.35 \mathrm{~cm}$. cuneiform notation, thus adding to the historical information they provide for example a bulla on which the inscription appears to identify an official of Šehna, nearby Tell Leilan (Fig. 379, p. 385; see also FS texts 77-79, p. 120). Other types of sealing found at Brak include the thin, baked clay strips usually identified as 'test strips', perhaps the ancient equivalent of speci-


Figure 155. Baked clay seal made by over-rolling another seal, leaving a totally muddled design (DM 213). TB 11020, ht. 2.9 cm, FS 1717, Level 3, floor of Room 28. men signatures (Figs. 154 \& 212). Most unusual are the impression on a model clay wagon (clay 17), and the seemingly useless baked clay cylinder formed by over-rolling another seal. Needless to say the resulting impression is virtually meaningless (Fig. 155).

In the pre-Akkadian levels at Brak we have found 16 seal impressions which had been rolled on pottery before the vessel was fired, a practice up to now better attested in western Syria. Such impressions are normally found on jars, but in two cases at Brak they occur on lids (Figs. 156 \& 468:1716; see also an unusual example, Fig. 377, p. 383 and a Ninevite 5 on an open bowl, Fig. 225:8). Their purpose is not fully understood. The crucial point is that they are integral to the pot. The most informative Brak example comes from the ED III destruction level in Area ER where we can identify both the context and the jar type (Iraq 44, 1982, pl. 17a, DM


Figure 156. Seal impression on flat pottery lid (DM 478). TB 1054, CH 89, Level 7.
a

b


Figure 157. Seal impressions on sherds: a) one of two early third-millennium sherds impressed with very large animals (sherd size $5.7 \times 5.4$ ), TB 3011; b) jar sherd found in surface scraping, Area SS (sherd size $8.27 \times 5.15 \mathrm{~cm}$, DM 502), TB 11041.
$147=$ Fig. 459:1545). Other examples are illustrated in Figure 157. Several sherds impressed with fired steatite or 'piedmont Ninevite 5' impressions have been recovered, inter alia, DM 58. Although in general such sealings are found on jars, except in the case of the unusual Hamrin examples referred to above, they are too infrequent to have been symbols of ownership or manufacture. One suggestion is that they may be in some way emblems of quality (Mazzoni 1984), but this seems unlikely for the same reason. Nor do we see these pottery impressions as 'aesthetic' or even 'casual' decoration (Matthews 1997a, n. 168). For one thing, they form part of the manufacturing process, and seals have very specific meanings; moreover, if they were purely decorative, one would expect to find far more such representations. We believe that it is more likely that they served some specific purpose, and a purpose that is widespread in the Khabur area as well as western Syria, such impressions having been found not only at Brak but at sites like Kashkashok and Mozan (DM 482, 500). The fact that four examples have come from the very limited excavations in Area ST also suggests their possible wider occurrence in levels of the first half of the third millennium, yet to be extensively excavated at Brak (see also R. Matthews 1995, fig. 2).

## C. Sealings and dating

Dating on the basis of style alone can never be absolutely certain, as we have already had cause to remark. In the case of both seals and sealings there is often a contradiction between assumed date of style
and archaeological context; inevitably the sealings, our most common form of glyptic evidence, reflect date of use and not the date of manufacture of the seal. Also inconvenient for dating purposes is the fact that sealings are all too often found in rubbish deposits. Fortunately, in the period represented by the late ED III and Akkadian levels reported here, the actual bulla shapes provide possible clues to dating, at least in the context of Brak.

The so-called 'ED III destruction level' was so designated after the 1980 season in which five complete bullae were found in a heavily burnt, residential building in Area CH, two building levels below the construction level of the Naram-Sin Palace (Fig. 15). The consensus of professional seal opinion attributed their style unequivocally to 'very late ED III' and to the south. This attribution has in a wider sense proved unfortunate, since little else from this level can be related to the Early Dynastic south. Moreover, since in terms of style the material culture of the time of Sargon cannot be distinguished from that of his 'Early Dynastic' contemporaries, we remained uncertain whether we were dealing with ED III in an absolute chronological sense or, conceivably, the earliest Akkadian occupation of the site, also of course 'ED' in a stylistic sense (see, for example, comment in Iraq 56, 1994, 167-8). Unfortunately, at that time, we had no evidence to establish the presence or absence at Brak of an Akkadian ruler(s) before the time of Naram-Sin.

The publication at that time of the large collection of well-stratified pottery from this 'ED III destruction level' (Iraq 44, 1982) has led to the


Figure 158. Elongated clay bullae from Area CH Level 6: a) TB 4017, Room 61 (DM 484); b) TB 3004, Room 63 (DM 180); c) TB 3000, Room 63 (DM 138). Length of $b=7.8 \mathrm{~cm}, c=8.1 \mathrm{~cm}$.
subsequent widespread use of this terminology as a very specific chronological reference. In this volume we offer an alternative and less contentious 'Phase $\mathrm{L}^{\prime}$ attribution (Table 1). At the same time the arguments presented elsewhere in this volume lead us now to conclude with a reasonable degree of certainty that the 'late ED III' designation remains correct as absolute chronology despite its otherwise inappropriate character. We have suggested elsewhere that the archaeological sequence in the main areas of late third-millennium excavation represents four phases: the 'late ED III destruction level' (Phase L), early Akkadian (Maništusu and possibly Rimush), late Akkadian (Naram-Sin and Šar-kali-šarri), and


Figure 159. Examples of the 'chunkier', squaresectioned bullae from the FS and SS monumental complexes (see also Fig. 138); those illustrated come from the 'trample' on the FSTC Courtyard 43 pavement.
Catalogue information can be found on pp. 120-21:
$a=$ inscr. $78, b)=$ inscr 79, $c)=$ TB $13001(D M 257)$.
post-Akkadian (Phase N) where, perversely, despite the absence of any Ur III style glyptic, the pottery
shows extensive connections with the south. We believe that the actual shapes of the bullae used throughout these periods lend further support to these chronological distinctions.

If one compares the shape of bullae from the two monumental buildings in Areas SS and FS with those from the Area CH Level 6 'ED III destruction level' residence, in both cases bullae which come from clearly stratified contexts, these differ strikingly not only in style but also in their actual shape. Phase L bullae are very elongated, with a pointed tip (Fig. 158), while those from both the Area SS and FS monumental buildings (and associated there with the so-called Brak style sealings) are relatively chunky (Fig. 159). On present evidence this difference remains chronologically consistent (see also bullae from Area SS, Fig. 166, contemporary with those from the Area FS temple courtyard, and DM 140, a surface find very much in the style of the CH Level 6 examples). It remains necessary to emphasize, however, the minimal area of Phase L excavation up to now and the possibility that the bullae from the monumental buildings may reflect some specific type of administration. A number of similar sealed bullae with cuneiform notations have recently been discovered at Tell Beydar, where they appear to be contemporary with the tablets both in terms of context and prosopography. It would appear also that these may be of the 'chunky' bulla type, though this cannot as yet be established with certainty (we are extremely grateful to Joachim Bretschneider for providing us with extensive information on these discoveries from the 1999 season). These recent discoveries also clearly demonstrate, perhaps not surprisingly, that such inscribed bullae are associated with a wider scribal recording system and that at least in some instances, for example when they refer to the delivery of animals as in the case of the Area FS bullae from Brak, such 'tags' must have served to label baskets which contained the fuller documentation of the tablets themselves (Sallaberger in press).

Also chronologically significant is the fact that a new 'official' bulla shape appears only in the latest Akkadian phase in Area FS and in the uppermost fill of, and above, the Naram-Sin Palace. These flat, lensshaped bullae are two-sided with a curving upper surface. Indeed the period from the time of NaramSin onwards saw the use of such 'flat bullae' specifically for official state purposes (Zettler 1977, 37), inter alia to accompany correspondence or goods carried between senior officials, as in the Brak example bearing the seal of the governor of Gasur, near modern Kirkuk (Fig. 160). Among the best-preserved ex-
amples of this bulla type elsewhere are those bearing seals belonging to the servants of children of Naram-Sin, for example Enmenanna and Šar-kališarri (Boehmer 1965, 248, 725; Zettler 1977, 36-7). Thus it would seem that the shapes of the bullae used in Phase L, in the post Phase L/earlier Akkadian (and perhaps also local?) administration of the monumental buildings in SS and FS, and the 'flat bullae' of later Akkadian administration provide a thin but suggestive strand of dating evidence which at least at Brak clearly, and helpfully, identifies the passage of time between these phases. Certainly there is up to now no evidence whatsoever for the use of either Brak style or 'ED' type sealings on the flat, lensshaped bullae (contra Matthews 1997a, 181; note that certainly DM 137 and 168 (Fig. 379), and probably 295, are of the more usual rectangular docket shape). The only certain examples of lens-shaped bullae from Brak are Figure 160 and two specimens from the Naram-Sin Palace (DM $370 \& 371$ ). The types of cuneiform notation used in Phase L and in the Akkadian period as represented by the SS and FS monumental buildings also differ significantly (compare Figs. 138, 159a \& 161).

Another peculiarity of sealing practice, apparent on many of what we have interpreted as door sealings in the SS monumental building, may also carry chronological or perhaps cultural significance, though this is far less certain. This involves the very careful rolling of the seal in order to leave a neat isosceles triangle of unmarked clay between rollings (as on Figs. 162, 169 \& 170). At Susa this practice is known at the time of Maništusu (Boehmer 1965, 10c; Frayne 1993, 304-5), contemporary with its usage at Brak where as yet we have no evidence for it on earlier ED sealings. Nor is it found at Beydar (Bretschneider pers. comm.). It is therefore possible that this sealing practice may provide another chronologically distinctive marker. Unfortunately we have no door sealings from the FS monumental building, so cannot provide further Early Akkadian examples for this practice.

## D. Administration - Area SS Room 18

In Chapter 2, Area SS Room 18 was identified as an administrative room (p. 82). This function is suggested not only because of the large number of sealings found on the floor of the room (just under 500 ) but in particular owing to the nature of an unusual group of bullae recovered there. This evidence has already been extensively discussed elsewhere (Oates 1993; Oates \& Oates 1995); the stratigraphic


Figure 160. Lens-shaped, flat bulla with sealing of Itbelaba, the ensi of Gasur. TB 8014, from the tablet deposit in Area FS, Level 4.


Figure 161. Clay bullae impressed with archaic 'oil' sign, from Area CH Level 6 Room 63, length 7.4 cm , design as Fig. 158c. TB 3003.


Figure 162. Three of thirty-nine door sealing fragments with the same sealing, from SSTC Room 18, 'trample' on floor; the door sealings from this deposit are rolled in the neat manner illustrated here. TB 14084 (Fig. 167:9).


Figure 163. Plan of Room 18, Area SS monumental complex.
sequence in the room is illustrated in Figure 107. Here we shall focus on the unusual bullae found on the floor and in the so-called 'trample' which represents the period of clearing out of the building before its ritual infilling.

The position of the sealings in Room 18 (Fig. 163) suggests that a number of the bullae had been contained in perishable bags, and that many of the discarded door sealings and other bullae had been piled up near the eastern doorway, presumably for the recycling of the clay (for further comment on
'recycling', see Oates 1996, 170-71). Indeed some of the bullae had been squeezed together before discard (Fig. 166, bottom row, a practice clearly attested also in the Late Uruk pits at Brak: Oates \& Oates 1997, 295; and see p. 137), though it cannot be determined whether this implies rapidity of use or, less likely in view of the quantities involved, rejection of below standard sealings. The presence of two very distinct types of bullae, identified in previous publications as Type A and Type B, sealed almost exclusively with only two seals (Fig. 167:1,2), strongly
suggests the association of their use with Room 18 itself. Type A is triangular in section and lacks string impressions; that is, such 'dockets' are complete objects in themselves, perhaps a form of token or entitlement to payment (Figs. 164 \& 165). Such 'sealings that do not seal' are rare in Mesopotamia and Syria; we know of only one other example in the Khabur area, a four-sided, 'Brak style' specimen from Chagar Bazar now in the British Museum (Curtis 1982, 81, BM 129370), while Amiet illustrates two from Susa (1988, pl.3:3,4). Type $B$ is the more usual bulla type, generally four-sided, which encloses cord or string (Fig. 166). At Brak both bulla types also bear what appear to be numbers, on Type A often bracketed by two vertical marks at either end of the number itself (Fig. 165). These numbers always consist of small impressed circles (' $10 \mathrm{~s}^{\prime}$ ). Unusually, both bulla types also bear other impressed marks (Fig. 168), either 'stamped' or individually inscribed over the seal impression. Such marks are not a backward substitute for writing since Room 18 also produced some half dozen fragmentary bullae or tablets with cuneiform signs, a tablet edge and the important clay 'bottle top' inscribed with the name of Nagar (Fig. 135). Moreover, cuneiform tablets of Early Dynastic date have been found at Tell Beydar, from a period when that site was under the administration of Brak-Nagar (published in Subartu II).

In Room 18 the two most numerous bulla types are Type A bearing sealing design 2 (Fig. 165; over 80 examples, some bearing marks $a, b$, or $d$, Fig. 168) Fig. 167). Room 18.


Figure 164. Type ' $A$ ' bullae, triangular section, from Room 18 (designs 3, 4, 1, 2,


Figure 165. Type ' $A$ ' bullae illustrating numerical and 'limiting' marks, Area SS


Figure 166. Type ' $B$ ' bullae, rectangular section with string holes, illustrating some of the impressed marks; note the 'scrunched up' bullae in the bottom row. Area SS Room 18.


Figure 168. Impressed marks found on the Room 18 bullae (scale 1:1, cf. Fig. 166).
near the stone dais (p. 90). Unusually, five Type A bullae bore design 1, as did three fragments of a large door sealing from a deposit in the north doorway of SS Room 5. Two examples of Type A bullae bore design 3 (Fig. 167), one from the ritual deposit in Courtyard 8, the other from Room 18. Eight Type $B$ bullae bore design 5, the complete examples, uniquely, bearing mark $e$ in combination with $b$ and / or a single impressed stroke. Two examples of the
chariot bulla (Type A, design 4; see also Fig. 164, upper right) came from Room 18, while more impressions of this and similar seals were recovered from the large rubbish pit in Area SS2, which almost certainly contained material discarded from the Area SS building.

In addition, Room 18 produced over 40 examples of each of three door sealings (designs 7-9). These are rolled in the manner described above, with carefully defined triangles of blank clay (Figs. 162, $169 \& 170)$. Sealing designs 7 and 8 are of interest in themselves, since the unusual pattern at the left of each drawing can possibly be read as the sign Nagar ('carpenter'), a homophone, perhaps a deliberate pun, of the name of the site (Fig. 169 and see also p. 379). Design 8 would appear to have been rolled from a broken seal (D. Matthews 1995). Three fragments of the Scribe's Seal (discussed below) and one of a similar but not identical impression ( $D M 345$ ) were also found in the Room 18 'trample', as were two examples of design 10 .


## 3



4


7


10 9


6


8

Figure 167. Designs of bullae and other sealings recovered from Area SS Room 18 floor deposits (scale 1:1, except 3, 4, 9 at 2:1).


Figure 169. The stack of table-like objects closely resembles the Sumerian sign nagar, 'carpenter', perhaps here a deliberate pun on the Semitic city name (design = Fig. 167:7). TB 14079.

Other items from the Room 18 'trample' include a small alabaster statue in Akkadian dress (Fig. 276), an attractive bone spacer bead (Fig. 492:20), a group of 19 conical cups, a number of sling bullets, including a large pile in the doorway, a number of larger, triangular-section sling-bullet-like objects (p. 275), items of copper / bronze including copper sheet and nails, a white marble cylinder seal (Fig. 148), a piece of worked lapis lazuli, a frit bead, and fragments of ostrich shell. Precise details of the distribution of the groups of bullae and their associated marks, and some of the objects, can be found in Oates \& Oates (1997, 500-504) and Oates (1993, 3035).

It seems incontrovertible that the bullae, and in particular those bearing seal designs 1 and 2, had actually been used in Room 18. Indeed, the north door lintel had collapsed, or been deliberately collapsed as part of the filling in, and its brick rubble lay directly over the most northern of the 1990 bullae deposits. Other bullae were found either directly on the floor or in the 'trample' which immediately overlay the floor and ran under the blocking of the western door which had presumably been inserted later


Figure 170. Fragment of door sealing with impressions of the Scribe's Seal (Fig. 171) rolled in the careful manner of the examples illustrated in Figures 162 and 169. From the Area SS Courtyard 8 floor near Room 30, $8.48 \times 6.1 \mathrm{~cm}$, TB 11026 .
to contain the large mass of deliberate infill. A low sill in the eastern doorway also overlay the 'trample' (see also pp. 82-3). The specific association of the door sealings with Room 18 is less clear; indeed their distribution makes it more likely that they had been collected here for recycling. The occurrence of large numbers of so-called sling bullets in association with possible evidence for recycling of the sealing clay suggests also the possibility that these objects may have constituted 'pre-formed' raw material for the bullae and other sealings, and perhaps also tablets of which, unfortunately, we have found only small fragments in Area SS. Although we cannot be certain of this raw material function, such a possibility is reinforced by the recovery of a minimum of 15,000 sling bullets, perhaps even double that number, stored beneath the stairs in Room 29 to the north. A large oven in the same room suggests the possibility that it could have served to assist in the drying of both Type A bullae and tablets.

Can we determine more of the purpose of Room 18 ? Certainly two kinds of bullae were in use. The stringless Type A presumably functioned as some form of token or entitlement. These Brak 'entitle-


Figure 171. Reconstructed drawing of the Scribe's Seal from the Area SS monumental complex (see also Figs. 182-84). Ht of seal c. 4 cm .
ments', which had been validated almost exclusively by a single official (seal design 2), may have been 'claimed' or 'exchanged' in Room 18, perhaps from the western outer door and (?) in association with the stand or 'table' attested just within that door (Fig. 163). That grain or some other food could have been involved in these transactions is possibly suggested by the conical cups, groups of which were recovered from Room 18 (for a better-attested example of the issue of food, cf. Arslantepe: Frangipane 1994; 1997; Ferioli \& Fiandra 1994). By contrast, the Type B bullae represent a different type of transaction; this could have been a guarantee of issue (from a storeroom) or receipt (?in Room 18) of goods used in payment, goods which, if this suggestion has any validity, may have been transported in some form of perishable container. Or, as Sallaberger suggests, the Type B bullae may have served as tags for baskets of tablets of which, regrettably, only small fragments have been found.

Whatever the administrative process in Room 18 , it would appear to have been controlled by only two officials. That they were local officials is demonstrated by the presence of what are almost certainly door sealings bearing design 1 and the scrunchedup sealing discards. We have suggested elsewhere that the marks on either side of the impressed circles, the latter presumably representing numbers and therefore the quantity of the entitlement, were 'antifraud' devices, and that the impressed geometric marks may represent either a second, sometimes a third, authorization or perhaps carry specific information about the type(s) of goods or the originating
institution or department. It is also possible that the seals themselves were institutional, the marks signifying individual officials. The latter seems less likely in view both of the lack of evidence for the system elsewhere and the fact that there exist in the SS complex contemporary seals bearing the written names and titles of officials.

This last comment leads to a consideration of one of the most fascinating aspects of the Scribe's Seal, the most important seal attested in the building, which bears the legend 'scribe' together with what may possibly be read as the probably Semitic name Muriš. What is almost certainly the same name occurs on a second group of Area SS sealings, bearing an impression in the local 'Brak style' (Figs. 171 \& 172). It is clear that both seals belonged to important officials, and both were apparently used to seal doors in the SS monumental building. Both seals seem to have been in use at the same time, since numerous impressions were recovered from the 'trample' and from deposits directly on the floors. The possibility that two important and contemporary officials bore the same name and functioned in the same building seems so improbable that we believe it likely that these sealings provide an unusual example of a local official who worked for the Akkadian administration and continued to use his personal, local seal along with a new and very splendid Akkadian seal, on which it would appear that his name has been either re-cut or added subsequently to the original cutting of the seal. The Scribe's Seal is discussed in more detail below, where it is suggested there that it was possibly the official seal
of the senior administrator of the SS complex (p. 147).
We have argued elsewhere for the early Akkadian date of at least the final use of the SS and FS monumental complexes, for the reconstruction of the grand ceremonial court (Area SS) by an Akkadian king, probably Naram-Sin, and for the obviously contemporary ritual closure of both buildings, also by an Akkadian king. At the same time the latest administration within the SS building involved officials using seals of the local 'Brak style' as well as the


Figure 172. Reconstructed drawing of a Brak style seal, possibly with the same Semitic name, Muriš, as that on the Scribe's Seal (see Fig. 173). Scale 2:1.


Figure 173. Tiwo of twelve fragments of door sealings from the Area SS monumental complex Room 5 floor: a) $5.0 \times 3.9 \mathrm{~cm}$, TB 12002; b) $6.9 \times 4.8 \mathrm{~cm}$. Reconstructed drawing, Figure 172.
finest Akkadian glyptic. We have already remarked that at Brak this dating places the use of the 'Brak style' seals rather later than their apparent context at Beydar, and that only a few fragments of the very distinctive design 1 sealings (Fig. 27) have been found in possibly pre-Akkadian contexts. A closer examination of the distribution of this design is of interest, since it too appears at Beydar. The Beydar example (Bretschneider \& Jans 1997a, fig. 11) shows precisely the same overall pattern as the seal used in the SS building, with vertical rows of animal heads, horizontally non-aligned. In this instance, the sealings from the two sites might possibly have come from the same original, although the beard length on the Beydar bulls' heads looks longer than on the Brak examples. The Brak seal seems to be very worn, however, and it is just possible that we have sealings of the same seal. Certainly the design is essentially the same. Interestingly, at least one other seal of this type existed at Brak, but with the rows of heads aligned horizontally as well as vertically. As far as we can determine, this seal is not represented in the SS building; however, this second version was found by Mallowan in the Naram-Sin Palace (1947, pl. 24:16) while another impression was associated with the hoard of jewellery found in a jar on the HS spur of the mound (Matthews 1994, fig. 4). The earliest, stratified example of this general type found up to now (Emberling et al. 1999, fig. 19:i) is from a very different seal, with a row of upright figures below the individual heads.

## E. Counting discs and other possible recording devices

Another type of clay object that may have been associated with book-keeping is the counting disc or tally, of which some nine examples have been recovered in third-millennium contexts at Brak. There are two types, one lensshaped, the other


Figure 174. Unbaked clay (?) counting discs, from a Level 3 house in Area FS (see clay objects 132 \& 133, Fig. 491).


Figure 175. Lens-shaped unbaked clay counting discs (see clay objects 136 \& 134, Fig. 491).


Figure 176. Counting discs from: a) the massive levelling fill in Area FS which contained large quantities of fourthmillennium pottery (Fig. 491:135); b) a 1.3 cm thick disc from an Area TW pit of early third-millennium date (reg. no. 5030).
thicker, often with a depression in the centre (Fig. 174). Only three examples of the latter type were found, two from the same floor in a heavily eroded Level 3 house at the east end of the main Area FS baulk, the other in fill which probably just postdates Level 3 (Fig. 176). Three examples of the lensshaped type (Fig. 175) came from an ashy deposit apparently associated with an early phase of the SS monumental complex, while 137 was in the ritual deposit in Courtyard 8, though whether its inclusion was deliberate or accidental cannot be established. The small number of these objects recovered over many years of excavation suggests that they may all
be out of context, and that they are likely to derive from earlier third-millennium levels as does Figure 176:6. Only further excavation will establish this with certainty. At Munbaqa two piles of 27 small clay objects, identified as Zählscheiben and identical with the types found at Brak, were recovered in what is said to be a Late Bronze context (Machule et al. 1988, 41 \& fig. 24). Despite their close association, these too must be in secondary deposits. Certainly the identical examples at Brak are from third-millennium contexts, and none have so far been found in secondmillennium levels. Whether the Brak objects are correctly described as tallies also remains to be estab-


Figure 177. Small pot with lead wire and enclosed small calcite token (Fig. 491:139).
lished, ideally by their discovery in more informative contexts such as that at Arslantepe, where clay 'counting boards' of generally similar appearance were found exclusively in association with discarded clay sealings. At Arslantepe these date to around 3000 BC , or perhaps earlier (Liverani 1983).

A number of small clay objects that fall within the category of 'tokens' have also been recovered in third-millennium levels. We believe that the majority of these must derive from mud-bricks or other much earlier materials, but the presence of at least one token that must have been used in an Akkadian context can be seen in the object illustrated in Figure 177. The miniature vessel, which came from Level 4 fill in Area FS, still retains, unusually, a lead wire attached to one lug. The token was of calcite, and the
small pot was carefully designed so that the token could not be removed. Another oddity in the thirdmillennium levels is a single sling bullet, deliberately marked with a geometric sign (142).

Other types of numerical tally from third-millennium contexts are known at Brak, Tell Atij and Raqa'i (R. Matthews 1995, fig. 3; Rouault \& MasettiRouault 1993, no. 179; Curvers \& Schwartz 1990, fig. 7). One 'third-millennium' example from Brak (found in the large pit in the doorway of SS Room 15) closely resembles Late Uruk numerical tablets from Jebel Aruda (Rouault \& Masetti-Rouault 1993, nos. 130, 131) and will therefore be published in Brak volume 3. Similar examples from Tell Bi'a would also appear to be in secondary contexts (Krebernik 1990, 86-7).

Thus at Brak a number of seemingly archaic record-keeping devices persist well into the third millennium. That such practices may be more widespread than the existing documentation suggests can be seen in similar evidence from Munbaqa and, in particular, Arslantepe, the other northern site with extensive a-literate evidence for book-keeping and other administrative procedures. We very much hope that the current programme of third-millennium excavations at Brak will resolve at least some of the questions raised here.

## Addendum

Since completing Volume 1, it has come to our notice that there is a seal impression (cretula) from Tell Afis which is virtually identical with the one published in Brak 1, fig. 65, which we had assumed was of second-millennium date owing to its similarity to contemporary Cappadocian material and to its presence on the surface of Area HH. Though its precise find place is uncertain, the Tell Afis example is thought to come from a building identified by Matthiae as a bit hilani. Mazzoni suggests that it is of Iron Age attribution (Mazzoni 1990, 218 \& pl. 59).

# Some Notes on the Akkadian Glyptic from Tell Brak 

## Candida Felli

Thelogical issues related to the Brak glyptic and to investigate some aspects of the broader questions of seal use and the meaning of seal imagery. It will focus on the Akkadian style seals, which range in iconography from 'contest scenes' to more complex and varied subjects, some of which can be grouped under the general label 'mythological scenes'. Special attention will be devoted to the most extraordinary piece of the collection, the so-called Scribe's Seal.

## A. Contest scenes

Contest scenes are not an Akkadian thematic innovation; they date back to the late fourth millennium (Collon 1987, fig. 940), but their floruit is undoubtedly in the Early Dynastic glyptic with the introduction of human figures. In ED III they become the favourite subject for royal seals. No royal seals of Akkadian kings have as yet been found, but Akkadian contest scene seals are widely attested nonetheless and appear, when inscribed, to have a limited distribution among officials of high rank. Regrettably, no inscriptions have been found on the examples from the SS monumental building, which are either of good-quality Early Dynastic tradition, possibly to be dated to the Early Akkadian period (for example, Fig. 167:10), or more ordinary examples in the 'angular style', including so-called 'Group of Five' specimens attested in FS (Fig. 178), ER and in the Naram-Sin Palace (DM 270). Since some of the latter occur in the form either of seals or multiple impressions (e.g.

DM 277 from ER, of which at least eleven sealings are attested), a local use seems likely. Unfortunately, a more precise dating within the Early Akkadian period is impossible.

The bulk of contest scene seals at Brak are of Late Akkadian iconography and come from the Naram-Sin Palace or from a residential building in nearby Area ER. No stylistically Late Akkadian contest scene seal or sealing has as yet been recovered from the SS and FS monumental buildings; they appear to derive solely from the overlying levels. Unfortunately, there is at present no means of establishing a firm date for the beginning of the socalled Late Akkadian style. We can only observe that


Figure 178. Akkadian 'group of five' contest scene seal, ht 2 cm. TB 11016.
in the course of the Akkadian period the number of figures involved in the contests tends to be reduced to two pairs of combatants at either side of the inscription case ('standard contest scene') which now play's a primary role emphasized by its central position, and that such development appears to have been accomplished by the reign of Naram-Sin. At Brak the majority of such contests involve heroes and full-face bull-men, whose arms are bent to form an acute angle downwards, fighting against lions in profile with the forepaw open in a very distinctive way and the tail turning out and upwards, or, less often, protecting rampant human-headed bulls (e.g. Fig. 376, p. 382 - DM 316). Stylistically they are close to the group of seals belonging to officials of Naram-Sin (e.g. Amiet 1976, figs. 68-70) and therefore consistent with the date of the construction of his Palace at Brak. Variants with human-headed bulls with their heads in profile, often turning back, are possibly to be dated a little earlier (DM 284 \& 287). At least two of the sealings from the Naram-Sin Palace bear legends mentioning that king (p. 106). In text 5, the king's name is preceded by the divine determinative, as on the Palace bricks, and is accompanied by the title 'god of Akkad'. This example belongs to a category of seals bearing the inscription type 'royal name, personal name, his servant', which Zettler argues were actually issued by the king (1977, 35 ff .). The majority of such seals bear a contest scene, as do the Brak examples, although the use of a specific imagery does not appear so exclusive in the Akkadian as in the Ur III period (Winter 1987a). Such seals are usually found on a type of flat bulla, which dates from the the reign of Naram-Sin onwards and may have been introduced at the time of the other administrative reforms by that king (see also p. 130). The other seal legends attested are usually of a simpler type, for example Figure 382 (p. 385 and text 13, p. 106) where the contest combines the open forepaw of the lion with the heads of both bullman and hero in profile; the hero's features resemble closely those on the seal impression from Tello of a servant of Lugal-ušum-gal, ensi of Lagash under Naram-Sin and Šar-kali-šarri (Boehmer 1965, 182).

At least two examples of the type of seal with the hero stepping on an upside-down animal (usually a water buffalo) are attested (DM 322 and possibly 323); the latter impression, which is ill-preserved, comes from Area ER and bears a legend mentioning a certain Iliš-takal, son of Pušu-ken (text 38, p. 111). The same name, without the father's name, appears also on a seal with similar iconography in the Bibliothèque National collection, unfortunately
unprovenanced, which Boehmer dates to his 'Akkadisch II' phase (1965, fig. 155). Such contest scenes are found during the time of both Naram-Sin (Boehmer 1964, pl.10:16) and Šar-kali-šarri (Amiet 1976, fig. 71). Other glyptic also suggests a post-Naram-Sin Akkadian presence at the site, as indicated possibly by the tablets recovered from FS Level 4 (p. 53). A sealing found with these tablets, bearing the impression of Itbelaba, an ensi of Gasur (Fig. 160), shows the same pair of combatants repeated, i.e. a lion, with head turned back, and a naked hero, of which only the lower part is preserved. The small lion under the inscription case, or according to Illingworth (1988) the two rampant lions, is evocative of the meaning of the name Itbelaba, either 'the lion has arisen' or 'he has arisen, he is a lion'. The style and the plastic rendering of the limbs of the figures is close to those on the interesting Talpušatili seal impression, on which again the same pair of combatants is repeated (Fig. 376). It has been observed that the inscription does not perfectly fit the case and could therefore be a later addition (Matthews \& Eidem 1993). Historical probability also suggests such a reconstruction (p. 393). The Hurrian name of the ruler seems to provide evidence for the adoption of a typical Akkadian iconography in a changed political context (for other examples, see Dittman 1994; Fischer 1996).

The iconography of seal impressions on two bullae retrieved from a pit dug into the SS monumental building is also of interest (Fig. 379). A two-line Akkadian inscription, added on one of the bullae, preserves the place-name Šehna (Tell Leilan). I would consider its late ED style contest scene as 'archaizing', that is, a local adaptation of out-of-date southern iconography (contra D. Matthews 1997a, 134). Mazzoni $(1992,29)$ has pointed out the circulation of archaizing seals throughout the whole of Syria at the very end of the Early Dynastic and beginning of the Akkadian periods (EB IVA). I would suggest this date for the engraving of the seal itself, although the context in which the sealing was used and discarded is of course later. From the same pit comes another contest scene sealing in pure Akkadian style (DM 282; cf. seals of Enheduana's servants, e.g. Boehmer 1964, figs. $1 \& 3$ ). All three sealings are on bullae with string holes, which had probably been attached to some type of commodity, as are the majority of the Late Akkadian contest scene bullae at Brak. I would suggest that this type of seal imagery is connected with officials occupying key positions within the administration of the Akkadian kingdom, both in its core and its periphery. The retrieval of such


Figure 180. Akkadian seal depicting the sun-god Shamash, enthroned before a procession of deities, $h t 3.27 \mathrm{~cm}$, from FS area 58, Level 2. TB 11015.
sealings seems limited to cities like Susa and Gasur, where the association with tablets and architectural evidence for substantial public buildings has indicated the existence of a major centre of Akkadian administration. They are not normally found at sites with only sparse Akkadian material, for example Chagar Bazar, which were probably under the control of more major centres. The retrieval of a text listing guruš from different localities of the Khabur area (text 14, p. 106), including Leilan-Šehna and Mozan-Urkesh, further emphasizes the importance of Brak within the Khabur area. It is my view that this explains the rarity, except at Brak, of Late Akkadian contest scenes among the glyptic of Syria (contra D. Matthews 1997a, 199, who attributes this to the low impact of Akkadian culture in the region). Foster's correspondence between 'levels of authority' and 'levels of documentation' in archives of the Akkadian period $(1993,34)$ can be adapted to this situation in the sense of a correspondence between 'levels of authority' and the means by which such authority is exercised, that is seals, but I must emphasize the provisional nature of this observation in view of the paucity of available data. Two Late Akkadian contest scene seals come, for example, from Mari (Amiet 1985, 481), where the actual nature of the Akkadian presence at the site has still to be determined (Charpin 1987a). The difference in the distribution of contest scene sealings between the SS and FS monumental buildings and the Naram-Sin Palace can be explained either in terms of their different functions or, perhaps more likely, in terms of chronology (pp. 390-91).

## B. Mythological seals: Šamaš

The sungod Šamaš features frequently on third-millennium seals. At Brak as elsewhere Šamaš is often depicted in scenes which may represent different aspects of the same myth or myths concerning this deity. One of the finest seals found at Brak depicts Šamaš enthroned before a procession of deities (Fig. 180). The first god is pouring liquid into a concavesided vessel with a plant in it. A similar vessel is found on a seal impression from the Akkadian building at Tell Bi'a, again featuring the sun-god (Strommenger 1993, fig. 12). A common motif involving Šamaš, found also at other northern sites such as Gawra (Speiser 1935, pl. 61:63) and Chuera (Orthmann et al. 1995, fig. 65:1), is the rising of the god between two gates. The standard of execution of these seals at Brak (DM 359-64) is low in comparison with other categories attested, possibly owing to their popularity. A Late Akkadian dating for all these sealings seems likely. Other sealings involving Šamaš include DM 376, from the Akkadian tablet deposit in FS Level 4. Steinkeller has recently emphasized the possibility that this third-millennium glyptic may reflect early Semitic mythology (1992a, 247, 256), while the apparent focus on the sun-god at Brak suggests the possible importance of this deity at the site (p. 387).

One of the most common mythological scenes documented on third-millennium seals depicts the sun-god in his boat. The motif of the human-prowed boat is also a common feature of Early Dynastic seals in northern Babylonia, the Diyala and Mari, whereas it is rare in southern Mesopotamia (Amiet 1980, 208). Usually, it is a god who is carried in the boat, in the

## Chapter 4



Figure 181. Reconstructed drawing of Scribe's Seal, Area SS monumental complex. Original seal ht 4.05 cm .

Akkadian period clearly the sun-god. However, a fragmentary door sealing from the courtyard floor west of Room 30 in the SS monumental building shows a human-prowed boat carrying a bull and a plant (DM 80). This Brak sealing provides an interesting variation to the common theme: the animal carried in the boat is not a lion (usually human-faced when discernible) but a bull. Recently, attempts have been made to connect the boat-god motif with the literary composition known as the Šamaš myth (inter alia, Steinkeller 1992a, 256 ff.), attested at Abu Salabikh and Ebla. In this composition an animal ÉREN $+X$ is mentioned, which, according to other Eblaite sources, should be an animal with horns and tail, a description which would fit the animal depicted on the Brak seal. One is reminded here of the possible connection between the Brak human-headed bison and the Area SS temple (p. 387), but it is likely that more than one story may actually lie behind the boat-god scenes.

## c. The Scribe's Seal

More than 20 impressions from the SS monumental building are of an extraordinary seal belonging to a scribe, as revealed by the inscription added after the engraving of the design (Fig. 181). I wish here to focus on the iconographic analysis of the scene and ultimately on its iconological interpretation (Panofski 1939). According to Zettler's estimation (1977, 35), approximately half of the Akkadian seals with the legend 'PN scribe' have the 'standard Sargonic animal combat', but other types of scene may occur, among them gatherings of deities and presentation
scenes (Boehmer 1965, figs. 377, 379 \& 381). The original design of our seal shows the theme of the 'battle of the gods' as complementary to another complex scene, of which the interpretation appears to be crucial to the understanding of the message conveyed by the seal. The battle of the gods has long been recognized as a typical Akkadian theme, often taken as an example of Semitic as opposed to Sumerian mythology (Frankfort 1939b; more recently, Steinkeller 1992a). Seals of this type usually depict several groups of fighting gods, as in the poorlypreserved seal impression from a pit in Area SS (DM 344); sometimes they can take the form of a standard Akkadian contest scene with just two pairs of combatants (Boehmer 1965, fig. 332), or be part of a larger composition, as in our seal. Among the deities involved in the battle are usually one or more gods, with rays springing from arms and shoulders, generally in a winning position; on our seal, a sun-god is shown defeating another god, whose only attribute is a broken mace. The following remarks reflect my personal re-examination of the relevant sealings in the Deir ez-Zor Museum in April 1999.

At first sight there is no clear relationship on the Brak seal between this contest and the scene which occupies the larger part of the seal, in which two male figures sit facing one another on stools supported on animals (?goat and gazelle), with hands extended towards rampant animals (?gazelle and equid). D. Matthews has interpreted the two figures as deities (1997a, 140), but only the head of the righthand figure is fully preserved showing the divine, horned crown, while at least two of the impressions clearly show that the left-hand figure is not wearing
any such regalia (Figs. 182 \& 183). I will return to this point. Apart from the similar dress the two figures differ from one another. The figure on the right holds his left hand facing upwards (probably not holding a mace as in Matthews' drawing) and sits on a stool apparently covered with a fleecy material; the stool rests on two standing animals (?gazelle). The left-hand figure is bearded, holds a conical cup and sits on a stool decorated with small circles and lozenges which alternate to form a very distinctive pattern; again, the stool rests on two animals, this time apparently kneeling. The rampant animals associated with the seated figures also differ; one appears to be a gazelle, while the other, associated with the god, is clearly identified by its tail as an equid (Fig. 184, left).

The cup can be held by both humans and gods, and in the Ur III period it becomes an attribute of the king on royal seals (Winter 1986). On the Brak Scribe's Seal, the figure facing right holds the cup close to his breast and not be-

Figure 182. Two photographs of the same container sealing fragment, sealed with the Scribe's Seal, from the Area SS Courtyard 8 floor deposit; note the cloth impression on the right side and lower edge of the lower photograph. TB 10014a.

Figure 183. Two fragments sealed with the Scribe's Seal: a) shows clearly the 'uncrowned' heads of the long-haired, standing and seated human figures; $b$ ) shows the left-hand god with rays coming from his shoulders, with the seated god, facing left, behind him; string and (?) cloth impressions on the back. TB 10014b, 10004a.



Figure 184. On left, door sealing with Scribe's Seal (see also Fig. 170); this photograph shows clearly the tasseled equid tail on the god's rampant animal; both sealings are from the Area SS Courtyard 8 floor, near Room 30. TB 10026.
fore him with his arm extended, as on the Ur III royal seals and the seal of Enmenanna (Boehmer 1965, 725). A similar pose can be observed in the upper register of the 'peace' side of the 'Royal Standard of Ur' where the ruler, facing right, holds the cup in the same way, unlike all the other participants, a pose which must carry some specific meaning.

A comparison for the right-hand seat can be found on an Early Dynastic seal, possibly from Umma (Amiet 1980, fig. 1358), where a principal deity with beard and long hair, identified as the moon-god (Winter 1987b, 196), sits on a stool also supported by animals (in this case, reclining bulls) and covered with a fleecy material. The pattern on the second stool resembles very closely that carved on the throne of one of the Maništusu statues from Susa, which the inscription tells us was taken as booty from Eshnunna. A similar piece is also known at Uruk (Boehmer 1996, pls. 6-10). In the first example at least, this type of seat is associated with a royal figure. Amiet $(1976,19)$ observes that the same type of seat occurs on two ED inlays from Mari (one from the Ishtarat and one from the Šamaš temple: Parrot 1953a, fig. 12; 1954, pl. XV.2) and on an Akkadian seal now in the British Museum (Collon 1982, fig. 210 ). If the seat depicted on the inlays is really com-
parable with that on the Scribe's Seal, it is of interest that in one example the seated figure has long hair and holds a cup in his hand. In Akkadian glyptic, moreover, rampant animals, though an uncommon feature, are usually associated with a seated male deity and are often depicted nibbling the branch held in his hand (Boehmer 1965, figs. 561-4: Ein Tiere fütternder Gott). In the case of the Brak seal it is not clear whether the figures are actually feeding the animals, since they simply extend their hands in a gesture which could equally indicate protection or benevolence. Such a gesture would be highly suitable if one of the figures were Šamagan, god of steppe animals, protector of the types of animals depicted on our seal (see also p. 387). Rampant animals associated with seated figures also occur on a few seals of the Etana group (Collon 1982, pl. XXII:154 \& 156). Here too the figures, at least in one case without the horned crown, do not clearly feed the animals. The animals, however, are bulls or lions, not caprids, although the latter appear on the Etana seals. Unfortunately, the identity of this god and his role within the Etana myth elude us. On an Early Dynastic seal from Fara a human figure (?female) seated opposite a horned deity also extends her hand towards a rampant caprid (Amiet 1980, fig. 1219; see also fig. 1145).

The motif of animal-supported thrones is not common in Akkadian glyptic. Ishtar's throne usually includes lions (Boehmer 1965, fig. 384), but here the animals are depicted crossed and encased within the throne itself; in at least one instance a lion is also placed below the feet of the deity (Boehmer 1965, fig. 387). An Early Dynastic seal from Sippar (al-Jadir 1986, fig. 1) shows two seated deities receiving a libation; they rest their feet on an animal (lion?), with a cup in one hand and a branch in the other. On another seal, a long-haired deity rests his feet on a small animal and receives the offering of a caprid (Amiet 1980, fig. 1218). Even rarer is the co-occurrence of similar rampant and throne-supporting animals, as on the Brak seal. Among the closest parallels are the Etana and Umma seals mentioned above. The evidence is admittedly meagre, but it would seem that animal-supported thrones occur in scenes where the deities are the focus of some ritual activity (see also Amiet 1980a, fig. 1357). In the Ur III period a high-backed throne flanked by lions is found on sealings from Ur, and Winter quotes an Akkadian inventory from Tello in which a 'lion-throne of gold' is listed (Winter 1986, 258, fig. 5). More common are examples in which animals are represented beneath the throne or stool, as on an ED plaque from Nippur, with a rampant caprid on the left and a man sitting on a stool beneath which is a small quadruped (Boese 1971, pl. 16.1). Geographically closer to Brak is the important seal of Tupkiš, endan of Urkesh, recently found at Mozan, where the king sits on a cubical stool with a reclining lion at his feet, the lion's body stretching across the frame of the seat (Buccellati \& Kelly-Buccellati 1995/6, fig.4a; 1996, 73). Thus, although no certain identification can be offered for either of the two figures on the Brak seal, there are some elements which might suggest that the right-hand figure could be the deity Šamagan, while it is now clear that the left-hand figure is a bearded human.

To turn to the other figures in the scene, the god with turned-up skirt and weapons is a warrior god, often shown frontally and with a bow and quiver, or holding a mace and fighting with another god (cf. Boehmer 1965, figs. 318, 346, 347, 390 \& 391). A similar god is found also on one of the seals of the endan of Urkesh (Buccellati \& Kelly-Buccellati 1995/ 6 , fig. $5, \mathrm{k} 4$ ), though without the long hair and holding a kind of harpé and resting his foot on an object no longer preserved in the impressions. The god with rolled-up skirt in Boehmer 390 carries a bow and quiver; the Brak impressions clearly show this god carrying a kind of axe, which can be clearly seen in Figure 182, upper photograph. A possible early
attestation of a similar god may be found on sealings from the Stampflehmgebäude at Uruk, dated by Boehmer to the time of Lugalzagesi (1991, pls. 21.1, 22.2 \& 23). These Uruk sealings bear the impressions of two different seals: in the first, the god holds a mace, in the second, two pointed weapons. The second god acts as attendant to the goddess Ishtar, who sits on a stool resting on two animals (facing lions or dogs). In both seals two human figures with long hair are also present, as on the Brak seal, where the human figure, standing with joined hands in what is probably a gesture of worship, is I believe male (contra D. Matthews 1997a, 271). The long robe with fringes along the edge and the bottom, which covers one shoulder leaving the other arm naked, is found in Akkadian glyptic as early as the seal of the scribe Kalki and is attested throughout the whole period as well as later (Collon 1982, 27-8 \& fig. 141); it is usually worn by humans, both men and women, but most frequently by men and is also found on deities (Collon 1982, fig. 160).

An alabaster statuette of a man with similar hair-do and robe, again with joined hands, comes from the SSTC Room 18 (Fig. 276). This type of small sculpture, when inscribed, is usually offered to a god by an individual, often for the life of someone (one's own, the king's). Such long-haired, beardless figures may denote a specific type of individual, possibly with cultic functions, but unfortunately the small Brak statuette is not inscribed. It is tempting to associate the human figure on the sealing with the owner of the seal, who is an important, perhaps the senior, official in the SS complex, and possibly with the small statue as well (Felli forthcoming). This is, of course, highly speculative and the fact that the title 'scribe' and possibly the name itself seem to be secondary additions to the original seal must be taken into account.

In Akkadian glyptic, with the exception of banqueting scenes, the depiction of two confronting seated figures is rare (see Boehmer 1965, fig. 507), although at Mozan, on one of the seals of the queen of Urkesh, the queen herself and presumably the king are seated facing each other (Buccellati \& KellyBuccellati 1995/6, fig. 6, q2). In the case of the Brak Scribe's Seal, since the left-hand figure is clearly not wearing the horned head-dress, we have here one of the few representations in which a human is allowed to sit in the presence of a god. Amiet has grouped three such examples under the heading 'banquet avec convives humain et divin' (Amiet 1980, figs. 1219-21); to these can be added an ED III seal from Mari (Amiet 1985, fig. 18) and an Akkadian seal from Ur (Boehmer

1965, fig. 550). I have already remarked on the close similarity between the seat of the left-hand figure on the Scribe's Seal and that of the Manistusu statues. By this I do not mean to raise again Barrelet's argument for the derivation of the Akkadian glyptic figurative repertoire from lost major works of art (Barrelet 1970) nor Amiet's response arguing the originality of seals (1980, 36-7). The ancient words alam/șalmu, meaning generally an image, a representation and not simply a statue (Winter 1992, 15), suggest the absence of a clear distinction in Mesopotamian perception among different types of representation. Moreover, 'identified by likeness, inscription, and name as the ruler [. . .], ritually consecrated to be the ruler, the image plays upon representation and manifestation, man-made and heaven-born' (Winter 1992, 34). I would like to suggest that this specific type of seat is charged with the value of a particular attribute of the figure depicted and propose that the representation is that of the king Maništusu himself. Certainly there is no evidence for a change in style of statuary until the reign of that king, while the presence of fragments of seated statues at Eshnunna and Uruk with similar 'thrones' supports the circulation of stereotyped images of the king in different parts of the kingdom (despite the uncertainties about the uninscribed Uruk fragment: Boehmer 1996, 145).
'The seated position indicates dominant status', however, 'and rulers in the presence of the deity are shown standing before the seated god' (Winter 1992, 25). If one considers the corpus of Maništusu statues, one sees that both seated and standing statues are preserved, suggesting that the different positions may indicate different functions, as in the case of the statues of Gudea. According to the inscription engraved upon it, Gudea's seated statue B, for example, was to be located in the ki-a-nag within the Ningirsu temple, a place where the dead received offerings. According to Winter's reconstruction, while Gudea's standing statues were placed in an attitude of worship before the divine image in the god's shrine, 'the seated figures would themselves have been the objects of cultic attention' (Winter 1992, 25-6). Records of offerings to the statues of dead rulers and members of the royal family occur along with offerings to deities in temples as early as Early Dynastic Lagash (Bauer 1969, 11; Kobayashi 1984; see also Foster 1989, 360). A cult of the ruler's throne is also attested in the Ur III period, possibly introduced after his death along with offerings in the ki-a-nag (Boese \& Sallaberger 1996, 31). One can only speculate whether the term ${ }^{8 \prime}$ gu-za refers simply to a throne or, metonymically, implies also the
image of the ruler seated on it. We know that dead kings were objects of a specific cult in Mesopotamia (inter alia, Bauer 1969), though little evidence is available for the Akkadian period (offerings to en-en at Adab: Zhi 1989, 185, A835; 194, A680; and certain onomastic evidence: Westenholz 1979, 111, n. 22). A seal was dedicated to the deified Manistusu, though probably in the Ur III period (Speleers 1917, 84, 116, no. 594; Edzard 1968/9, 17, no. 26.1) since it would appear from the Bassetki inscription that Naram-Sin was the first king to be deified during his life-time. Thus it would seem that the king could be represented seated in front of a deity as the object of posthumous veneration, while the different position of the animals under the seats of the two figures on the Brak seal (kneeling or standing) may hint at the differentiation in rank between them. Indeed, on the basis of glyptic imagery, a similar hypothesis of deification during the ruler's life-time has been proposed with respect to the rulers of Urkesh (Buccellati \& Kelly-Buccellati 1996, 75).

The other option is of course that no funerary meaning is to be read into the Akkadian seated statues. The introduction of kings' statues in temples might be due to other reasons (Goodnick Westenholz 1998, 52), especially in the context of the deified king. From the Elamite version of a treaty between Naram-Sin and the Elamite king Hita, we learn that effigies of the Akkadian king were erected by the latter in the temples of Susa as objects of veneration (Hinz 1967, 80-81, 95). As Foster suggests (1993) the imposition of a cult of deified kings on foreign populations may itself be an expression of political submission, a possibility that brings to mind the vast ceremonial court in the Area SS monumental building (p. 387).

However, there are not many, if any, representations of kings on Akkadian seals. If the seated human on the Scribe's Seal is a representation of a king, this must indicate not only a special relationship with the god but also a special relationship between the king and the official owner of the seal. I have suggested that the king might be Maništusu, on the basis of the comparison with his statue and for other stylistic reasons, but it is true that no other Akkadian king's seated statue has been recovered and one cannot rule out the possibility that another king was in fact depicted. David Oates has suggested the possibility that the seated king is more likely to represent Naram-Sin, arguing that only the assumption of divinity would explain the otherwise sacrilegious position of the king, if such he is, seated in the presence of the god. Some authorities, moreover,
would date the actual style of the seal to the time of Naram-Sin (below).

The fact that there is no attempt at narrative, apart from the fighting gods, seems relevant. Thus, since the left-hand seated figure is arguably human, what is depicted is likely to represent either the rite of installation of a statue or, perhaps less likely, a ritual of commemoration of the dead. The representation is clearly symbolic, the scene displaying 'a reciprocal act of recognition' (Winter 1986, 256) between the two figures, such as that found in presentation scenes. It is even tempting to locate the ceremony evoked in the seal within the SS building at Brak, with its temple and unique ceremonial court. It seems likely that the owner of the seal was an official in this building, possibly even its most important official. But it must be admitted that this reconstruction is entirely hypothetical.

As to the date of the cutting of the Scribe's Seal, different opinions have been expressed (summarized by D. Matthews 1997a, 140-41). Boehmer, followed by Matthews, favours an early Akkadian attribution based in part on the style of the horned crown (Boehmer 1967). My proposal that it dates from the time of Maništusu is based on the representation of the throne and the fact that the art style characteristic of the later part of the Akkadian period would seem to have developed during his reign. Moreover, the elongation which characterizes the figures on the Brak seal is to be found not only on the impression of one of the seals of Ešpum, ensi of Elam under Maništusu (Boehmer 1964, pl.10:9), but also on the standing statues of that king (Amiet 1976, figs. 14 \& 15). On the British Museum seal with vegetation deity referred to above, Amiet rightly noticed that the realistic indication of the ribs and rendering of the muscles of the figures recalls that on another fragmentary statue of Maništusu (Amiet 1976, 19, pl. $16 a-d)$. The same realism characterizes the figures on the Scribe's Seal.

As far as the manufacture of the seal is concerned, it is difficult to assess whether it is the product of a northern or a southern workshop, largely owing to the paucity of reliable information concerning the provenance of Akkadian seals, few of which come from actual excavations. It could be argued, however, that the quality of the seal suggests a major, possibly royal, workshop. Edith Porada (1995, figs. 40 \& 41) suggested a northern origin, indeed the same seal cutter as a seal in the Foroughi collection, although this suggestion has not been widely accepted. In my view some features of the Scribe's Seal (the shape of the large eyes and of the
shoulders shown frontally) are closer to the style of some of the seals in Boehmer's 'Akkadisch II' group (e.g. Boehmer 1965, fig. 327), the majority of which are unfortunately unprovenanced. With respect to the specific iconography, however, Porada's observation that the odd mixture of motifs is possibly the product of a cultural environment different from the Akkadian core is more convincing. The deities' thrones supported on animals together with the rampant animals, attested also on the Halawa stele (also dated to the Akkadian period: Orthmann 1985), are sufficiently reminiscent of later Syrian and even Anatolian iconography that it is tempting to explain the motif as northern, but we know too little of what 'northern' is in this period to draw any valid conclusions. The recently published glyptic evidence from Mozan shows the degree to which the artistic environment of a late third millennium Hurrian centre had in common with 'later traditions of Northern Mesopotamia and Anatolia' (Buccellati \& KellyBuccellati 1996, 82), and we have already had cause to mention the similarities with this Brak seal. The distribution of the 'battle of the gods' theme is itself revealing: mainly northern Babylonia and, although no such seals are known as yet at sites like Nuzi, Gawra or Sleimeh, they are nonetheless present in Syria, at Chagar Bazar (level 2: Mallowan 1937, fig. 14.5), at Selenkahiye (phase III: van Loon 1979, fig. 21), at Munbaqa (Machule et al. 1986, 123, fig. 30); at Tell Bi'a (gods fighting with an open-winged eagle, Strommenger 1991, 17-18, fig. 10; see also Steinkeller 1992a, 247).

## D. Conclusions

The glyptic evidence at Brak demonstrates the apparent contemporaneity of a variety of different styles, and it is clear that in the Area SS monumental building seals of the so-called Brak style are in use at the same time as the Scribe's Seal, which I have argued should be dated to the time of Maništusu or perhaps slightly later. A similar contemporaneity of many different styles is evident elsewhere, for example at al-Hiba in the late ED administrative building in Area C: 'one is struck first of all by the extraordinary number of design types and the wide range of styles' (Hansen 1987, 57). A number of Akkadian seals from Brak can be attributed stylistically to the Early Akkadian period, but by far the majority date from the time of Naram-Sin or later (D. Matthews 1997a). Following Zettler (1977), it is likely that the Akkadian contest scene seals were used by the official Akkadian bureaucracy, while the presence of
the mythological seals reveals the existence either of a northern origin or of a common cultural tradition within the areas of Akkadian control. Unfortunately we cannot judge the degree to which the broad diffusion of such themes may reflect purely oral traditions or the circulation of literary texts (see Michalowski 1990). I would suggest that the glyptic evidence at Brak reveals an Akkadian presence in the north earlier than Naram-Sin: indeed ShamshiAdad's ascription of the Emenue temple of Ishtar at Nineveh to Maništusu (Grayson 1987, 51 f.) no longer seems an isolated piece of evidence.

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## Chapter 5

# The Third-millennium Pottery 

Joan Oates

Owing to the massive number of sherds excavated each season at Brak (in a normal season from 100,000 to over 200,000 depending on the types of contexts excavated), the major part of their recording was carried out in on-site sherdyards. Sherds from most loci were recorded by the rough counting of fabric and vessel types and the sketching of potentially diagnostic rims and bases. The large number of complete profiles published here reflects the very considerable effort expended in the sherdyards in the reconstruction of excavated vessels. Preference in publication has deliberately been given to complete vessels, or at least complete profiles, on the not unreasonable argument that they are more likely than single sherds to represent the context from which they have been recovered. This is especially true at Brak with, on the one hand, the unusually reliable contexts provided by the heavy destructions of the site at the end of Phase L (ED IIIB) and at the end of the Akkadian period and, on the other, the massive third-millennium levelling and building operations in which, all over the site, material was transported out of its original context. An undoubted consequence of destruction levels is that intervening pottery is never as well-represented; indeed no tell site ever provides a complete sequence of material from any phase. It is our perhaps old-fashioned view that, given restrictions of space, to publish well-dated material is more generally useful than extensive sherd repertoires of which often neither the orientation nor the attribution is certain. As a general rule at Brak, sherds from obvious levelling fills were not recorded, but the sherd book records inevitably include some intrusive material. The ware and type percentages published here have been calculated on the basis of these records, though we have tried to eliminate mixed deposits.

During the excavations all complete vessels and sections were taken to the dig house for measured drawing and recording. It is for the most part these
vessels that are illustrated (Figs. 392-471); it should also be noted that the 'further examples' listed in the 'comments' section of the accompanying charts refer only to complete vessels or at least complete profiles. In other words, they do not record sherds. Nor for the most part do we illustrate sherds, although these are included when they represent distinctive or unusual vessel shapes for which we lack complete profiles. That very fact, of course, suggests that they are uncommon (or easily broken) types. Our purpose has been to provide as well-dated a compendium of pottery as possible, with information on frequency and distribution when it seems significant. In general, types other than the most common occur in small percentages of one per cent, which we have not generally calculated. For genuinely rare types the actual number of sherds or vessels is usually given. We have deliberately eschewed extensive comparanda except in the case of such uncommon types; this is largely owing to limitations of space but also, to a lesser extent, to the fact that the Brak pottery from the second half of the third millennium is itself unusually well-dated.

In the charts accompanying the illustrations 'register numbers' refer to the on-site record (register) of more or less complete vessels, usually of the order of 300-400 per season; for pottery only, this includes the year + register number, since only the objects were numbered sequentially from one season to the next. Catalogue numbers (TB + number) identify those vessels now in the Deir ez-Zor Museum.

## A. Stone Ware

The term Stone Ware is used at Brak as a general term for a dense, highly vitrified ceramic type that is the direct equivalent of dark grey, so-called Metallic Ware, that is, it includes what is elsewhere referred to as Metallic Ware, but at Brak the term Stone Ware

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Figure 185. a, c) Akkadian and Phase L Stone Ware sherds; b) Stone Ware and bichrome sherds; d) cross-stitch brittle orange ware, dark-rimmed orange bowls, combed-wash ware and unusual painted sherds (for locus numbers, see p.607).
includes also light grey and olive-coloured vessels of comparably dense fabric (Fig. 185). Although a large proportion of these vessels do not reach the
degree of low water absorption of true Stone Ware, the highly vitrified microstructure of their clay bodies is very similar and the densest of the third-mil-
lennium Stone Ware is directly comparable with modern vessels of this type (just under 10 per cent of the samples analyzed, defined by an absorption level of less than 2 per cent: see Schneider 1989, 48). All the Brak types from Akkadian and Early Dynastic contexts fall within Schneider's 'North Mesopotamian Stone Ware' (Kühne \& Schneider 1988; see also his comment on p. 201).

The chief characteristics of Stone Ware are the extremely dense, hard fabric, with few or no inclusions, and the slightly vitrified surface, which creates a dull lustre. This differs visibly from the highly burnished surface of the 'Imitation Stone Ware' discussed below. The Stone Ware fabric is sufficiently hard that 'flaked tools' were made of its sherds; at Brak we have found three examples of this practice including Figure 186. Analyses carried out by Gerwulf Schneider (below, p. 201) demonstrate that chemically there are two very distinct groups of Stone Ware, a noncalcareous and a calcareous variety. The former seems to include the majority of the large, dark grey jars and occasional red examples, which may have been manufactured from a clay source(s) somewhere north of the Khabur basin. Pots made of this clay were not suitable for cooking purposes (p. 209). The calcareous variety is of local manufacture, perhaps largely at Brak itself, and seems to include most if not all light grey and olive-green examples found at the site. Unfortunately such a visual division cannot be relied on without chemical analysis, since the calcareous Stone Ware occurs not only in pale olive or pale grey but can mimic the dark grey or red colours of the noncalcareous types (Schneider 1989, 39, and see below, pp. 215-16). Indeed at Brak it would appear that the majority of dark grey beakers and at least some bowls are of calcareous Stone Ware (Schneider 1989,39 ). This visual ambiguity is a major reason for our preference for the term Stone Ware for both the calcareous and noncalcareous varieties; a second and very simple reason is their resemblance to modern


Figure 186. Burin-like flaked tool made from a Stone Ware sherd from CH 189 (levelling fill for Level 5 building).

Stone Wares. Sherds of the 'metallic ware with horizontal stripes' known from sites such as Tell Chuera (Kühne 1976, figs. 86-90) have not as yet been found at Brak.

True Stone Ware of the noncalcareous variety (i.e. metallic ware) would appear to occur solely in ED III and Akkadian contexts. It is clearly present throughout the Akkadian levels at Brak (see, for example, the large Stone Ware jars 170, 172 and Fig. 189), although undoubtedly most common in Phase

L and early Akkadian contexts. The earliest forms of Stone Ware chronologically overlap the latest Ninevite 5 . This is most clearly illustrated in Mozan Tomb 0b1 (Milano 1991), but can be seen also at Brak in a small sounding excavated below the Phase L building in Area ER where a combination of bichrome stand and late Ninevite 5 was identified (p. 36). At Brak this phase has also been found on the northwest spur (HS) but has not been reached as yet in the more central areas of the mound. There is also at Brak, as elsewhere, a post-Akkadian Stone Ware, in both grey and green fabrics, in which the vessel shapes differ markedly from those of the Akkadian and earlier periods ( p .171 ). These different types of Stone Ware can be seen most clearly in the colour illustrations (Figs. $185 \& 205$ ).

The term Taya Ware seems now to be used for some of these post-Akkadian types. This is not a term used by the excavator of the eponymous site, nor by us at Tell al Rimah, where large quantities of similar pottery were excavated. The term has recently been applied without precise definition but apparently to the green, often pattern-burnished, light brown, and green and red-streaked bowls illustrated in colour in Curtis 1982, pl. 5 (see, for example, Wilkinson \& Tucker 1995, 96). At Brak identical bowls are found solely in post-Akkadian contexts (Fig. 205b). The so-called Syrian, ring-burnished bottles, discussed with Metallic Ware in the Chuera report, not only belong to a separate compositional group but are technically not Stone Ware (Kühne \& Schneider 1988, 118). Syrian bottles are discussed here with the grey wares of section B, below.

For the sake purely of visual convenience we have divided the Brak Stone Wares by colour into four 'fabrics': a) the classic Metallic Ware, a dark grey fabric and surface which is sometimes streaked with red, and may sometimes appear brown in colour, a common feature of the small ED jars; b) a much less common variety where both fabric and surface are red; c) a pale grey or blue-grey type, the latter often streaked with yellow; and d) a yellowgreen or pale olive variety. All these colours can be associated with the local calcareous clays although, by contrast with the noncalcareous clays, the former are less well-suited to the manufacture of Stone Ware. This is because in the calcareous clays the temperature range between extensive vitrification and breakdown by slumping and warping is very narrow (Fig. 231 and discussion below, p. 208). This fact accounts, at least in part, for our further category of 'near Stone Ware' where the fabric approximates Stone Ware but lacks the surface vitrification and density
of true Stone Ware. Some such vessels appear literally to be 'failed Stone Ware'; all are probably of the calcareous variety.

The production of red and black colours on the same vessel, like the production of the red Stone Ware itself, reflects slight differences in kiln conditions. Indeed one large Stone Ware jar found at Brak (171) was a dark grey on the whole of one side and bright red on the other, proof if it were needed of the identity of these superficially different fabrics. A bicoloured, ribbed effect, common in particular on Stone Ware bowls and beakers, would appear to have been deliberate, a fact emphasized by a unique Akkadian Stone Ware beaker from Brak on which narrow, yellow bands had been deliberately inlaid ( $64 \&$ Fig. 185c:1).

Sherd book counts indicate that the occurrence of Stone Ware sherds in the Akkadian levels ran at approximately two percent. This is an underestimate, since it does not include those vessels or sherds taken into the dig house for more detailed recording, for example the enormous Stone Ware jar 172, which had broken into a very large number of sherds. A much higher percentage of surviving Stone Ware vessels is recorded in the pottery registers (that is, the record of the more complete vessels), approximately 20 per cent of recorded Akkadian pottery, reflecting not simply the relatively large number of such vessels but the fact that the beakers and small jars in particular tend to survive better than comparable vessels made of less dense fabrics and were therefore more frequently represented among the more complete vessels. Large jars were far more common than the two complete examples illustrate. Hence our inclusion of a selection of rim sherds from such jars (Fig. 397).

Relatively little was excavated of Phase L (which ends with the so-called Late ED III destruction level). In 1980 only diagnostic sherds were counted for this phase, producing a Stone Ware percentage of 6.6 per cent. This figure would almost certainly have been lower had all body sherds of both Stone Ware and ordinary fabrics been counted, perhaps more comparable with the Chuera estimate of 2 to 4 per cent. When one calculates percentages of complete or near complete vessels, however, the figures are very much higher. In the same year, 57 per cent of the Phase L registered, that is relatively complete, pottery consisted of Stone Ware. It must be noted, however, not only that this came from a destruction level but that the occurrence of Stone Ware is very context dependent. This is strikingly illustrated in the contrast with the 1981 register fig-
ures of only 11 per cent of the total Phase $L$ vessels, despite the fact that precisely the same buildings were being excavated as in 1980.

## 1. Miniature Stone Ware vessels (Fig. 392).

A number of miniature Stone Ware bowls and beakers have been recovered in the Akkadian levels and the Phase L buildings. Most common among the Akkadian types are the small bowls which range from light grey to greenish-grey in colour. Dark grey examples are often streaked with red. We have included in the group of miniature hemispherical bowls two examples ( $\mathbf{1} \& 6$ ) which are not Stone Ware but represent a type often difficult to distinguish from the locally manufactured light grey variety of Stone Ware. When these are overfired, as in 4, they take on the superficial qualities of true Stone Ware. The bases of these shallow bowls are often but not always heavily cut. The small, shallow bowls tend to occur in groups, for example 5 and 6 , which were found together just east of the southern building in Area FS, Level 3. WD-XRF analysis of a bowl very like 10, from CH Level 6, showed, unusually, the presence of both calcareous and noncalcareous clays, demonstrating that both types of clay were in use in the same workshop (Fig. 232:e). This of course suggests the possibility that the noncalcareous clays themselves may have been imported.

## 2. Small bowls (Fig. 395)

Although a variety of shallow Stone Ware bowl sherds has been found, relatively few complete examples have survived. Bowls $85-88$ were not wellstratified and are almost certainly post-Akkadian; 86 is a very distinctive type, found in beautifully burnished brown and grey 'near Stone Ware'. Bowl 88 is reconstructed from one of the most strikingly beautiful Stone Ware sherds found at Brak. It is made of a very dense dark grey fabric, with a highly polished surface and neat yellow banding. It comes from an unsealed context and is an example of the 'recessbeaded' rim type, which at Brak is almost exclusively of post-Akkadian date (p. 171).

The jar-like bowls with neat rolled rims, 99 and 100, constitute a very distinctive late Akkadian type. The shape is also known in post-Akkadian contexts, but often with a ring or disc base. A further group of Akkadian shallow bowls is characterized by a neatly folded or sometimes rolled rim. This type is known also at Chuera and Ailun (Kühne 1976, 23, 80), where it would appear to be of Late ED III date. Several sherds of bowl 94 were found with the deposit of Akkadian tablets (FS 392, see p. 53). 107 is not other-
wise represented in the Akkadian levels. It is in fact the sole example so far recovered of this very distinctive, round-based 'ED III' type. Its closest parallel would seem to be from Chuera Steinbau 3 (Kühne 1976, fig. 20).

## 3. Medium to large bowls (Figs. 393-394)

A variety of Stone Ware bowls has been recovered at Brak, though not in such large quantities as the beakers and jars. The wide, flat-based, straight-sided bowls (25-28, 55-62) closely approximate the beakers in both shape and fabric; they occur in both Akkadian and earlier levels and are apparently not found in the noncalcareous dark grey Stone Ware. A number of bowls of the type illustrated in 25-30 were recovered from the Phase L destruction level, for the most part in an olive green 'near Stone Ware'. These are contemporary with the round-based bowls of similar fabric. A common feature of these bowls is a rough, worn band at the rim on the outside of the bowl, almost certainly owing to differing firing conditions as a result of stacking in the kiln (inter alia, 57, $59 \& 62$ ). Severe over-firing of the rim is also common, presumably again a factor of kiln conditions. Bowl 55 provides a very fine, light grey, Akkadian example of the flat-based, straight-sided type.

Round-based Stone Ware bowls (29-35) seem to occur exclusively in Phase L and earlier, and virtually all are of the calcareous, olive-grey/yellowgreen fabric. These also display heavily worn surfaces at the rim exterior. Bowl 33, though a very dark greenish-grey in colour, is almost certainly of the same fabric. Unusually, it is yellow-streaked and has a beautifully polished surface. A number of large, deep, rounded bases, of which we have no complete profiles, would seem also to be of Late ED III date. Also probably of Phase L origin are the heavily ribbed bowls 105 and 106. A number of kiln wasters of stacked round-based bowls of this dense yellowgreen fabric have been found, including one example from the same Late ED III pit that contained bowl 34. Similar kiln wasters were recovered in very large quantity at Tell Leilan, but apparently exclusively of the flat-based bowl which is found at Brak both in Phase L and in the early Akkadian levels (e.g. 25, 26, 60 \& 65). At Brak the bases of these bowls are well-finished, unlike the Leilan examples. It is proposed at Leilan that these mass-produced vessels are 'sila bowls' for the issue of rations to workmen employed by the Akkadian administration (Senior \& Weiss 1992), but it is clear that at Brak this type originates under the pre-Akkadian kingdom of Nagar. In fact, the only kiln wasters of this type recovered


Figure 187. Stone Ware footed chalice 104 from Area ER Level 5.
up to now at Brak are not Akkadian but come from Phase L deposits.

Grey Stone Ware bowls are less common than the olive-green varieties. Those recovered include a number of very dark grey examples. For the most part the latter consist only of rim sherds of simple bowls with concave or relatively straight profiles which are possibly of noncalcareous fabric. Type 71 occurs also in this presumably imported ware. The general lack of complete specimens of this type suggests that it may be of largely pre-Akkadian date. Certainly the heavily ribbed dark Stone Ware beaker 72 is a Phase L type, comparable with the beakers recovered from the Ob1 tomb at Mozan (Milano 1991; see also p. 192).

Most of the grey Stone Ware bowls of Akkadian date are of a lighter grey, presumably local fabric. Some have very dark grey exteriors with lighter grey interiors (for example, 89). Some of the light grey bowls are very highly polished, for example flatbased bowls 55 and 58, the very beautifully polished sherds of vessel 63, from an Akkadian level in Area CH , and surface sherd 68 . Examples of miniature light grey Stone Ware bowls are illustrated in Figures 392 and 395; the majority of these are also of Akkadian date.

Among the most elegant Stone Ware bowl types is the footed chalice (Fig. 187), discussed below, deliberately banded in red and black. These are uncommon at Brak and would seem to be exclusively of Phase L date, as are the similarly ribbed beakers / bowls 105, 106.

## 4. Yellow 'Stone Ware' (47-54) (Fig. 393)

From the point of view of fabric these vessels constitute a very distinctive group of open bowls, found
both in Late Akkadian and post-Akkadian levels ( p . 173). The colours range from Munsell $5 \mathrm{Y} 7 / 3$ 'pale yellow' to closely related yellow-grey ( $5 Y 7 / 2$ ) and pale olive $(5 \mathrm{Y} 6 / 4)$. The fabric is very fine and dense, but not in general a true Stone Ware, since it normally lacks the slightly vitrified surface. Some bowls, however, for example smaller versions of 54, closely resemble true Stone Wares.

## 5. Footed vessels (Fig. 395)

By far the most elegant is the Late ED III chalice from Area ER (Fig. 187). Other small, footed vessels include the dark grey bottle or goblet base from CH Level 7 (97), a type apparently not represented at Chuera. 105 is possibly from another cup or goblet; the sherd is from an Akkadian level but we have no other examples and assume, therefore, that it is likely to derive from an earlier level. Footed cup 96, found on the floor of SSTC Room 23, is also of dark Stone Ware. It is wheel-thrown but the foot has been added by hand. Dark grey sherds from slightly upturned footed bases similar to Chuera 75 have also been found. Some fragmentary examples of the chalice type lack the slightly upturned edge to the foot that is found in the illustrated example. Various olivegreen Stone Ware sherds, of similarly footed types, were recovered from post-Akkadian contexts. We assume that these too are likely to have originated in levels of Late ED date, since no complete examples have as yet been recovered from either Akkadian or post-Akkadian contexts.

## 6. Beakers (Fig. 394)

Dark grey Stone Ware beakers are common in the Akkadian levels at Brak, but are rare in the relatively limited area in which Phase L has so far been excavated (one clear late ED example is 72, with heavy ribbing and a relatively narrow base). Also among the small number of possibly late Phase $L$ examples are a few dark Stone Ware bases, almost certainly from beakers and probably of noncalcareous type, recovered out of context from the fill of the Area SS monumental building. These tend to have heavy, slightly convex bases by contrast with the flat-based Akkadian variety. Some of these dark sherds seem to belong to simple cup-like shapes. A very few have unusual, thin ribbing on the outer surface ( $75 \& 76$ ).

The dark Stone Ware beakers of Akkadian date are also often heavily ribbed, with a high surface lustre. The pale grey beakers, presumably locally made, tend to have a particularly high polish. At least some of the darker Akkadian beakers are also noncalcareous, especially the blue-grey variety which
often has yellow banding on the interior, and are therefore possibly also local products (Fig. 185). Such banding is very regular, producing an attractive alternation of yellow and grey. This effect may derive from 'wiping' as the pot was thrown, a technique which may also account for the red and black banding on the noncalcareous vessels, more often seen on the exterior surface of the vessel. This neat bicolour effect is quite distinct from the less regular 'wiping' found on some noncalcareous vessels, possibly of pre-Akkadian date (see Fig. 185:c5, and Schneider 1989, pl. 10). At Brak the regular banding is far more common, but this may reflect no more than the Akkadian date of most of our beakers. Beaker 64 is unique: a dark grey example with deliberately inlaid, shallow yellow stripes (Fig. 185c:1). The fabric of some of the finest blue-grey Stone Ware beakers is remarkably brittle and shatters easily, often fracturing into very narrow, tiny, curved, jigsaw-like pieces.

The olive-green Stone Ware beakers of Figure 393 closely to resemble the bowls and are only arbitrarily distinguished from them; tall beakers are uncommon in this fabric. Some highly polished examples are a very dark greenish-grey (Munsell 5GY 5/1). Among the Akkadian beakers 77 has an unusual string-cut base and 82 represents a very distinctive type with a relatively small base, an almost black, highly polished exterior and yellow banding on the interior, again suggesting a calcareous fabric despite its dark colour. The small base of type 78, also yellow-streaked and very 'black', is unusual.

With the exception of 66 all relatively complete Stone Ware beakers came from Akkadian or earlier levels, suggesting that the former had survived beyond its original context. In general the Akkadian beakers are more sharply straight-sided that those of Phase L. The heavy Stone Ware beakers are relatively unbreakable, and indeed constitute a high percentage of the registered pottery (complete or near-complete vessels). (For reasons of space, a large green Stone Ware beaker is illustrated in Fig. $397=$ 147).

## 7. Small Stone Ware jars (Fig. 185b)

One of the most common Stone Ware types, the small- to medium-sized, round-based jar, appears to have been manufactured largely but far from exclusively of noncalcareous clays. There is also a superficially similar group of 'imitation Stone Ware' (Figs. 188 \& 398), with dark grey surfaces heavily burnished to mimic the noncalcareous originals. A rare white Stone Ware jar (122) was found in the Phase L destruction level, in the fill of the bins from which the


Figure 188. Imitation stone ware jars: lugged, brown jar 143, from Area FS Level 3, Room 26; 180, from FS Level 3 Room 32, and TB 13227 (FS 2237, Level 3, Room 31), the first two highly polished, the latter with vertical burnishing.
'Late ED III' bullae were recovered (p. 28). A heavily encrusted yellow-brown Stone Ware jar was found in the same deposit (121). Indeed, of the small jars of this type, the majority came from Phase L, though large numbers of sherds were found in Akkadian contexts. Most of the Akkadian examples are dark grey, almost black, with a slightly vitreous surface (Munsell N 4/ to 3). These small jars are often markedly ribbed on the interior, which is commonly of a slightly lighter grey ( $\mathrm{N} 5 /$ ). Occasionally these jars have a brown cast ( $2.5 \mathrm{Y} 4 / 1$ to $4 / 2$, 'dark greyishbrown') and some are distinctly red, either streaked or with large patches of red. Many of the Phase L examples are brown (Fig. 185b:6). One jar from the fill of Room 4 in the Area SS monumental building (and therefore possibly a residual piece) is, unusually, of red fabric and surface, with a few patches of grey (Fig. 185b:7). Of the medium-sized round jars, 142 is also unusual in its red fabric and beautifully
polished red to reddish-brown surface.
The surfaces of some Stone Ware jar sherds display a very distinctive red and dark grey banded effect. On some, but far from all, the surfaces have been deliberately scratched, apparently to produce very fine lines of red (Fig. 185a:1). A number of sherds of this type have been found in post-Akkadian fills, but we lack complete examples of this date and assume, therefore, that their original contexts are likely to have been Akkadian or earlier. Jar 137 is a type not so far represented in earlier levels at Brak, but its closest parallel would seem to be from Steinbau 3 at Chuera, said to be an ED III context (Alexander Pruß pers. comm.; Kühne 1976, 38).

Double-lugged jars are a very recognizable feature of the Akkadian and slightly earlier levels. The lugs of true Stone Ware jars were attached as a single block of clay and literally cut to shape; the perforations were then pierced ( $3-7 \mathrm{~mm}$ in diameter among the recovered examples). Some, but not all, of the Late ED III lugged sherds from Brak are of a gritty grey fabric that is not Stone Ware, but the vessel surface has been very carefully cut to resemble the smooth surface of true Stone Ware. On one such Early Dynastic example from CH Level 6, the lugs had been applied, unusually, in two separate pieces. The majority of the Akkadian examples are made of true Stone Ware of the Metallic Ware type (for example, Fig. 185b, an early Akkadian example), but one from FS Level 3 would appear also to be an imitation (Fig. 188). This contrasts with the evidence from Chuera where no vessels of this type were made of true Metallic Ware (Alexander Pruß pers. comm.).

A small group of round and cup-like jars of Akkadian date includes 99-103, made of beautifully polished light grey fabric. Jar 102 is made of green 'near Stone Ware'. The olive / yellow spouted jar 138 is unusual; a similar, spouted fragment of dark grey Stone Ware was found at Chuera (Kühne 1976, 64).

## 8. Large jars (Figs. 189 \& 397)

These represent another very common Stone Ware type, and it would appear that most if not all are made of noncalcareous clays (cf. Kühne \& Schneider 1988, fig. 12:5). Sherds of a number of very large jars were recovered, with rim diameters averaging 24-28 cm . The exterior and interior surfaces were often chiselled, presumably to reduce the weight. Jar 172 (Fig. 189), the largest complete example found (with a body diameter of 68.5 , rim diameter 28 cm and average wall width 1.5 cm ), was certainly in use after the infilling of the Area SS monumental build-


Figure 189. Large Stone Ware jar 172 from Area SS, ht 83 cm (illustrated in situ, Fig. 109).
ing. Oddly, it seems to have been carefully installed on its side (Fig. 109). An even larger jar, unfortunately incomplete, had a rim diameter of approximately 36 cm .

The surfaces of these large jars tend to be a very dark grey, almost black (commonly Munsell N $3 /$ ). Like the smaller examples some displayed a combination of red and black colours. Indeed 171 was literally red on one side and black on the other. Other jars combine a very dark greyish-brown ( 10 YR 4/2) with a brighter red (Munsell 2.5 YR 5/6), either streaked across the body or occasionally neatly banded on the rim and upper body (for example, Fig. 185b:5). We have as yet found no complete example of the red-banded large jars and it is possible that they are for the most part of ED III date. Some rim and shoulder sherds are entirely red, for example one from an Area ER context of this date. The actual fabric of the large, dark grey jars is consistently a very light grey (Munsell N 6/). We suspected that this pale colour might have been a factor of firing time, since we had noticed that where such large jars had been heavily burnt in a fire, the surfaces had turned to a comparable light grey when
the original was clearly much darker. However, this suggestion has not been confirmed experimentally (Schneider, below p. 209). Refiring experiments indicate that the pale colour, which has only a slightly lower iron content than other samples, does not seem to be connected with either firing time or higher temperature, and Schneider suggests that the paler colour of some surfaces after a secondary fire is due to the burning out of carbon in an oxidizing atmosphere. These large Stone Ware jars were enormously heavy, and it is difficult to imagine how they were transported. One wonders, in fact, whether the clay itself may have been imported, a possibility also suggested by the vessel shown by WD-XRF analysis to have been made of both types of clay (p. 157, above). Some large Stone Ware jars had what appear to be cloth impressions on their surfaces, perhaps indicating how they were handled during manufacture. The rim sherds illustrated in Figure 397 provide but a small sample of the considerable variation in the rim and neck profiles of these very large jars.

The footed jar ( $\mathbf{1 5 4} \& 155$ ) is a less common type, as is the 'imitation' copy (191). Several examples were found in the Akkadian destruction level in Area TC (2000 excavations). Extant foot diameters vary from $8.5-13.5 \mathrm{~cm}$. The colour is normally dark grey, sometimes brown, occasionally red-banded. The surface of one vessel of the normal grey fabric had been heavily cut down, vertically, above the base, producing a reddish-brown surface (Munsell 5YR $4 / 2$ ). The re-used base 156 is unusual, ground down to form either a small bowl or some form of stand. There is a heavy deposit of bitumen in the 'bowl', which has overflowed onto the breaks.

## 9. Stone Ware bottles (Fig. 395)

These are uncommon, in particular the white Stone Ware examples, of which the only two specimens found are illustrated ( $117 \& 118$ ). The surface of these, and 122, closely resembles that of the polished juss plaster of one of the Phase L stone troughs (p. 264). Of the other bottles, both the rolled rim (112) and the cup-like upper neck (116) are illustrated from Chuera, but as sherds only (Kühne 1976, nos. 69 \& 70a). Bottle 116 may have only one handle; the second has been reconstructed. The so-called Syrian Bottles, with ring burnishing, differ from Stone Ware in fabric composition, and are discussed below.

## 10. Imitation Stone Ware (Figs. 188 \& 398)

Figures 188 and 398 illustrate a variety of so-called 'imitation Stone Ware', most of which was recov-
ered from Akkadian levels. For the most part these are jars, both large and small, with highly burnished, dark grey surfaces, polished in an obvious attempt to mimic Stone Ware vessels of similar if not identical shapes. The fabric is an ordinary gritty buff. In this the 'imitation Stone Ware' differs significantly from the 'near Stone Wares' which attempt to mimic both the Stone Ware fabric and its lustrous surface. Jars 179 and 181 come from Late ED contexts, as does the 'imitation Stone Ware' jar 124. Some of the bottles illustrated in Figure 399 are possibly to be placed in the 'imitation Stone Ware' category, in particular 205 and 206; see also jar 247 and 'imitation Stone Ware' bottle 490. The fact that these Stone Ware copies tend to be horizontally burnished has led in some publications to their confusion with ringburnished 'Syrian' bottles.

## B. Gritty grey and brown wares (Fig. 399)

## 1. 'Syrian bottles'

The so-called Syrian or ring-burnished bottle is thought to have originated in north Syria or southeast Anatolia. These vessels have been studied by Kühne (1976) and, more recently, by Tahsin Özgüç who suggests that they derive from metal prototypes such as the Eskiyapar silver flask $(1986,36)$. Özgüç mentions large numbers of unpublished Syrian bottles in the Gaziantep Museum, perhaps an indication of their general area of origin. They are also said to occur in great numbers at EB III Tarsus (Mellink 1989, 326). Elsewhere they are less common, and Brak has produced the only complete example as yet published from the Khabur basin (203; see also Melebiya: Lebeau et al. 1985a, pl. 4:4). Syrian bottles are often discussed in the context of Metallic/Stone Ware, but the gritty grey fabric differs compositionally as does the distribution of this distinctive type (Kühne \& Schneider 1988; Kühne 1976, map 2). Their relationship with so-called 'Euphrates Banded Ware', which is also characterized by spiral burnishing, remains unclear; the latter is normally a light orange-brown colour, and is sometimes painted with horizontal stripes. No such vessels have as yet been found at Brak.

Syrian bottles are found in two distinct types, round-bellied and the elongated alabastron. The round examples appear to be earlier and, on the basis of the evidence from Kültepe, Özgüç suggests that this type tends to be replaced by alabastra in the Akkadian and later periods. Both types are found at Brak, the alabastron 203 (Fig. 190) being slightly more rounded than the later, slimmer examples of EB III


Figure 190. 'Syrian bottle' 203 from the floor of the 'guardroom' of the western entrance chamber, SSTC; ht 20.1 cm .

Tarsus (Goldman 1956, fig. 268:614 \& 617). The finer (?genuine 'ring-burnished') examples are literally fluted, horizontally, with a small tool which leaves neat, shallow, polished grooves around the bottle. Grooves on the Brak bottles vary from 2 to 3 mm in width, implying a narrow 'burnishing' tool, perhaps of bone, of some 2 mm width. Such fluting can be seen clearly on the photograph, Fig. 190; see also, inter alia, the Syrian bottles from Tell Bi'a (Spanos \& Strommenger 1993, pl. 105), which closely parallel bottles 203 (Fig. 190) and 204 from Brak. According to the register descriptions Brak 197, 198 and 199 also appear to have been horizontally 'fluted'. Another feature of the alabastron type is the use of very distinctive double-, triple- and even quadrupleringed rims ( 194, from FS Level 3).

The illustrated bottle was found on the upper floor of Room 20 in the Area SS monumental building; fragments of several other ring-burnished alabastra also came from Akkadian contexts. Such bottles more commonly occur as funerary offerings


Figure 191. Early Transcaucasian jar with white inlay 229, from Area DS, extant ht 5.8 cm .
(for example, the Amarna cemetery, Gedikli and grave T6 at Tawi (Woolley 1914; Mellink 1989, 327; Kampschulte \& Orthmann 1984). Presumably their original function was to contain scented oil or some other cosmetic substance.

## 2. Other grey and brown wares

A number of grey ware jars and bowls have been recovered at Brak, in both Akkadian and Phase L (Late ED III) contexts. They are distinguished by their grey fabric, are often but not always burnished and constitute a very small percentage of the pottery, that is, a very small percentage of one per cent, in any given level. The brown-burnished hemispherical bowls (222-5) are all of Phase L date, as is the flat-based example 226. The simple hemispherical bowl 224, from the deep sounding in Area ER, is of even earlier third-millennium date. Small jar 210 is rare in this fabric, while the flared, everted-rim bowl 213 is unusual in Akkadian levels as is the rouletted base and pattern-burnishing of 217, characteristics more normally associated with post-Akkadian bowls. The latter came from the red libn capping of the SS monumental building, which explains its original Akkadian attribution, but this is an area where proximity to the surface may have left a mixture of Akkadian and post-Akkadian materials; indeed these types do not otherwise occur in Akkadian contexts. It should be noted that the 'grey ware' category deliberately excludes the 'imitation Stone Ware' vessels, of which the fabric is not grey.

The squat bottle types occur frequently in the more common gritty buff fabric; 209 is a less common type. The large jar fragment 211 and bowl 226 are unusual; both occur also in red-slipped, very dense fabrics ( $278 \& 261$ ).

## C. Black-burnished Early Transcaucasian (KuraAraxes) ware (Figs. 205b \& 191)

This very distinctive ware is represented from the current excavations by only 19 sherds, together with
the small jar with white inlay (229) from Area DS (Fig. 191) and the unusual cup-like vessel which only very generally resembles Transcaucasian types (243). A single sherd was found in a fourth-millennium context in Area TW. Eight pieces of unknown context from Mallowan's excavations are also illustrated, drawn by Helen McDonald in the British Museum (228, 231-2, 234-7, 240). Of the latter, all but 237 and 240 are inlaid with a white paste, as was 239 from Area ER. The few examples from the current excavations came equally from Akkadian and postAkkadian contexts. A tiny rim sherd with an everted rim of square section from FS, Level 2 , is unillustrated.

These vessels are highly burnished, often with an almost vitreous lustre (Fig. 205b:1, 2), according to Charles Burney recalling 'the Early Transcaucasian III graphite burnish found at Yanik Tepe'. The whitefilled decoration is typical of Yanik Tepe Early Transcaucasian II, and thus presumably of earlier rather than late third-millennium date (Burney 1980). Sagona ( 1984,277 ) also remarks that white-filled incised decoration is best-known among Northern Anatolian EB I pottery. Those inlaid examples that can be context-dated at Brak would seem to be Akkadian. However, far more examples of this type were found by Mallowan, yet remained unmentioned by him. This observation, considered together with the fact that the dates of homeland Transcaucasian examples are earlier, suggests an earlier attribution also for the inlaid Brak examples. Certainly it is possible that the Mallowan pieces come from preAkkadian contexts, though he dug very little of this date, while other examples from the Khabur area are dated to EDIIIA (Lebeau 2000; also Kühne 1976, pl. 39). It seems likely therefore that the inlaid examples from Areas DH and ER from the current series of excavations are residual pieces, while 230 from Area TW is unquestionably an earlier third-millennium piece.

Another argument supporting an earlier attribution for the inlaid pottery is provided by the remarkably close similarity between some of the Brak white-inlaid ETC pottery and Ninevite 5 types. Most striking is the small, straight-sided vessel 231, a Brak shape which is found in both Transcaucasian and Ninevite 5 examples (Fig. 470). The decoration of types 230 and 237 also has Ninevite 5 parallels at Brak, as does the shape of 238 and 239. At the same time, some of the Transcaucasian pottery illustrated by Sagona can be seen as 'Ninevite 5 -related', though this does not tell us where such influence originated (Sagona 1984, figs. 25:3, 35:3, 49:1,3 etc.; note that Sagona Transcaucasian Form 140 from Norşuntepe
is clearly a Stone Ware jar).
According to Burney, the Brak 'Transcaucasian' pottery is 'ETC-derivative', in the sense that most of the Brak types are not directly paralleled among the known ETC repertoire, yet the fabric and surface treatment are directly comparable. Certainly the handle of $\mathbf{2 4 9}$ is paralleled among Transcaucasian bowls (see also Fig. 205b, upper right), while the slight widening of the lower body with attached lugs of 243 is at least superficially comparable with a Transcaucasian type (Sagona 1984, fig. 32:3-5); the Brak cup, however, is wheelmade. Jar 247 bears the marks of vertical burnishing on the neck; jar 248 is also wheelmade, and its surface treatment more closely resembles that of the Syrian bottles to which group it probably belongs.

In the third millennium, Transcaucasian pottery constitutes the dominant pottery in Eastern Anatolia, Armenia and Georgia, from which it spreads to Iran and North Syria. The precise relationship with the almost certainly derivative Khirbet Kerak ware of Palestine remains to be established, while the small repertoire at Brak would seem to be even more removed in time and space from the ETC originals which inspired them. Certainly none of the Brak examples bears the elaborate relief decoration known in Eastern Anatolia. Nor is so-called RedBlack Burnished Ware, common in the Amuq, present at Brak. Nonetheless, the fabric and surface treatment illustrated in Figure 205b:1,2, is very distinctively Transcaucasian.

## D. Orange and brittle ware fabrics (Fig. 185d)

## 1. Dark-rimmed Orange bowls (270-77)

Orange bowls with dark rims are a characteristic if uncommon feature of Brak pottery throughout the second half of the third millennium. They constitute a very recognizable type, made of a fine, mineraltempered, Orange fabric, occasionally grey, which should not be confused with the coarser, bricky fabric of so-called brittle Orange ware (below), to which the Brak bowls are related in neither colour nor fabric. Orange bowls are covered, as the name suggests, with a bright orange slip (Munsell 5YR 6/6 to 6/8 'reddish-yellow', occasionally 2.5 YR 6/6 'red', see Fig. 185d:3, 6 \& 10). Always, and distinctively, there is a dark band at the rim exterior, almost certainly the result of a secondary firing. Occasionally the dark band extends also over the interior of the vessel (271). Some bowls of this type, from both Akkadian and post-Akkadian contexts, are made of a thin ('eggshell'), clinky fabric (for example, 271 and two ex-


Figure 192. Beaker of possibly Western Syrian type (267), from Area SS, post-Akkadian.
amples from ER Level 4); most, however, are slightly thicker-walled (up to 6 mm ). All are well-made. The bases are either round, sometimes slightly flattened, or, in the post-Akkadian phase, consist of large discs, often slightly concave (277).

Bowl 274 differs in having an overall thick brown slip and is highly burnished, producing a 'varnished' effect. Indeed, with its red and black polished surface 273, which came from a cobbled pavement at the summit of the high ridge between Areas ER and ST, was initially identified as Hellenistic, both because of its appearance and the fact that other late first-millennium material had been found in this general area (Brak 1, 68-9). Other 'brownvarnished' examples of Akkadian date, however, bore the same dark band at the rim that characterizes the Orange bowl category.

A total of less than 150 dark-rimmed Orange bowls was found in the course of 12 seasons, which would suggest that they were not manufactured at Brak. We do not as yet know their source, since few such Orange bowls have been published, but they have been found on the upper Tigris survey (Algaze) and at Tell Ziyaret, also on the upper Tigris (John MacGinnis pers. comm.). They are found at Mozan, and one bowl from a Tawi grave would appear to be of this type (Kampschulte \& Orthmann 1984, pl. 5:5).

At Brak dark-rimmed Orange bowls are most common in the post-Akkadian levels ( 70 per cent of complete sections and over half of the rim sherds), but they are also found in both Akkadian and earlier Phase L contexts (one rim sherd from CH Level 7 and one from Level 8). A complete, hemispherical example came from the 1998 Area TC excavations, clearly dated to Late ED III Phase L. Jars 261 and 262 are also made of a gritty orange fabric, with a thick apparently painted band at the rim.

Bowl 270, found in a context which contained Isin-Larsa pottery (p. 175), is unique. The distinctive shape, with its ring base and recess-beaded rim, is characteristic of the post-Akkadian levels (p. 173), but this is the only burnished orange example found up to now. The two beakers are also of interest. Type 268, of which several examples were found, resembles the dark-rimmed Orange bowl in its surface treatment, while 267 is unique at $B r a k$ and resembles the more corrugated beakers of western Syria (Fig. 192). A large Orange ware jar, with a highly polished slip (Munsell 2.5YR 4/8 'dark red' to 10R 4/8 'red') was recovered from Level 1 (FS 583).

## 2. Brittle Orange Ware (Figs. 185d:1, 2 \& 4; 402:283 \& 284)

This fabric is believed to originate in the IslahiyeGaziantep region, and is sometimes referred to as Gedikli ware (Mellink 1989, 322; Alkim 1969). It is rare at Brak, and is indeed represented by only two vessels, both decorated with the 'cross-stitched incised' patterns known at Mersin, Gedikli, Tilmen Höyük and, more rarely, in the Amuq. Brak 284 is made of the bricky orange, completely oxidized fabric that is particularly characteristic of Amuq Phase I whereas 283 , which closely resembles the footed vessels from Tarsus EB II and Gedikli Chamber Tomb M-I, has a grey core and a darker surface (Braidwood \& Braidwood 1960, fig. 310:17 \& 18; Goldman 1956, fig. 255; Alkim 1969, 286 ff.). The patterns are incised after firing (see also Fig. 185:d).

## 3. Euphrates banded ware

This west Syrian type, common at sites along the Euphrates, for example Tell Banat, but rare in the Khabur area, has not as yet been identified at Brak. The fabric is a light orange-brown colour, sometimes painted with thin orange bands (see also above, under 'Syrian bottles').
4. 'Combed' Wash Ware (Figs. 185d:bottom row, 193 \& 402:280-82)
This pottery is sometimes also referred to as
'Smeared' Wash Ware, but the latter refers, sensu stricto, to a type of pottery identified in the Amuq plain on which an orange-brown wash was carelessly applied and 'smeared', apparently with the fingers. On almost all the Brak examples, however, and indeed elsewhere in the Khabur region, a thick wash or slip is applied in which a 'reserve' pattern is produced by 'combing' with some form of multi-ple-toothed tool to form often complex straight and / or wavy patterns (see Figs. 193 \& 185d). At Brak the fabric is very gritty, with prominent small white grits and no visible mica; it varies from brown/ buff to a very dull red, occasionally overfired to a green-ish-buff, producing a vitreous shine on the 'washed' surface. The wash itself, perhaps better-designated a slip, generally covers only the shoulder of the vessel and is normally a dull red (Munsell 10R $5 / 3$ to $4 / 1$, 'weak red' to 'dark red-dish-grey'); on some examples the thick slip has run down the sides of the vessel (see 282). This very distinctive type begins in Amuq I and becomes common in Amuq J (some 20 per cent). In Amuq J 'pattern smearing', apparently with the finger, is found (Braidwood \& Braidwood 1960, 449-50), but only exceptionally were patterns drawn with a comb-like tool, the type generally represented at Brak and elsewhere in the Khabur and Balikh regions (Lebeau et al. 1987, pl. 14:4; Prag 1970, pl. 34B; referred to as Wellenware at Chuera: Kühne 1976, 95-6). In the Amuq it is suggested that Smeared Wash Ware may have been a substitute for Brittle Orange Ware, which it had totally replaced by Phase J.

Up to now only jars have been found among the combed wash ware from Brak, and those infrequently (a total of some 70 examples, not including the 4 sherds published in Mallowan 1947, pl. 43). Again, this would seem to be the pattern elsewhere in the Khabur where none of the bowl types found further west (Amuq, Harran) has so far been reported, though one example from Melebiya would seem to be a bottle (Lebeau et al. 1986, pl. 4:5). Nor is the very similar striped, painted ware of Chuera found at Brak (Kühne 1976, pl. 33), Figures 185d
lower left and 193 upper right providing the only similar examples. At Brak the 'reserve' pattern is drawn by a comb-like tool, usually with five, in one case apparently ten, very fine teeth; less commonly a single pointed tool seems to have been used. Only a very small number of sherds bear what may be finger wiping. Oddly, the two sherds we have seen from the Mallowan excavations are of a better-made fabric, with little visible temper (Mallowan 1947, pl. 43:2,4). Figure 193 upper right is unusual in displaying widely spaced, carelessly painted bands on the 'combed wash ware' fabric.

By far the bulk of the pottery of this type was of Akkadian date (over 65 per cent). None has so far been recovered from an unequivocal Phase L context, although three examples came from CH Level 5 (early Akkadian), two from the levelling of the site before the construction of the Akkadian buildings ( 281 and a sherd from CH 189) and one from levelling debris that included fragments of Level 6 vessels (CH 79). Some thirty per cent of the 'combed wash ware' total came either from the surface of the tell or from post-Akkadian contexts where the sherds may not have been in situ.

## 5. Painted jug with trefoil rim and eye motif (Figs. 194 \& 402:286)

This vessel, found within the lower fill of SSTC room 23 , is unique at Brak. The eye pattern below a trefoil


Figure 194. Fragment of painted jug with trefoil rim and eye motif (286), from lower fill of Room 23, SSTC.

in both Akkadian and postAkkadian levels. Again, the total number is very small. Red-slipped vessels range from miniature examples ( $250 \& 251$ ) and small bowls (253) to large jars (263, 278 \& 287). The fabric is usually gritty, and red to grey in colour. The jar with pierced lugs (265) is unusual in that it mimics both a Stone Ware type and the Orange bowl technique, with a darker band at the rim. The double lugs characteristic of Akkadian and earlier Stone Ware are usually made with a wide groove literally cut between the two sections (p. 158, and Kühne 1976, pl. 40). By contrast this unusual postAkkadian jar has only a narrow slit between the two sections of
rim, found largely in Middle Bronze contexts in northwestern Syria and Cilicia (Matthiae 1989b) and in the Cyclades, is uncommon at this early date. Among the very few contemporary parallels we have found are generally similar examples among the Amuq 'painted simple ware', especially from Phase J (Braidwood \& Braidwood 1960, fig. 344:2). Such jugs are said to 'make their debut' in Amuq I. Painted trefoil rims are also found at contemporary Tarsus (Goldman 1956, pl. 272:562). We are grateful to Lisa Schofield and Todd Whitelaw for information about this type in the Cyclades, where it is not found before the early second millennium and where such Middle Bronze vessels are not of the Brak shape. It would seem that the Brak example represents the earliest version of a very distinctive type which may have originated in Cilicia or the Amuq in the Early Bronze Age.

## 6. Other painted types

Figure 185:d illustrates two polychrome sherds for which we have no parallels, except that, extraordinarily, the bichrome decoration on sherd 9 is identical with that on a Middle Chalcolithic type known at Tel Zaf in the central Jordan valley (Garfinkel 1999, colour pl. III:7). The Brak sherd, however, appears to have been wheel-made.
7. Red-slipped bowls and jars (Figs. 401, 402:287 \& 288)

Like the dark-rimmed Orange bowls, these are found
the lug.
One large, open bowl with a deep purple slip (FS 1016, Munsell 2.5 YR 3/2 'dusky red' to 2.5/1 'reddish-black') and a variety of red-slipped bowls, often with a red/black colour shift, presumably the result of firing conditions (e.g. 252), have been found, more commonly in the post-Akkadian levels.

## E. Vessels with comb-incised and combimpressed ornament (Figs. 195-8 \& 403-6)

Although this is one of the most distinctive late thirdmillennium pottery types, it constitutes a very small percentage of the overall pottery in any given level, 0.114 per cent in the Akkadian and approximately twice that number in the post-Akkadian phase ( 0.216 per cent), the latter of course including levels contemporary with Ur III and early Isin-Larsa. At Brak this type is represented in the Akkadian levels in the form of very large urns, usually with additional cable ornament (350-52), a type attested also at Nineveh (McMahon 1998, fig. 10:7). Complex patterns of heavy diagonal lines are also characteristic of the Akkadian examples ( $345,350-52$ ). Several come from Phase L (e.g. 318 \& probably 343 ) but we lack extensive evidence for their distribution at this time, since up to now only relatively small exposures of this phase have been excavated. As noted above, the type is most common in the post-Akkadian levels, in particular vessels with the neat, regular, very distinctive wavy combing (e.g. 327 \& Fig. 195:4), known
also at northern sites like Nineveh, Tell al Rimah, Tell Fisna (McMahon 1998; Numoto 1988; Rimah pl. 27) and along the Euphrates. As a broad generalization, the combed decoration of Akkadian date tends to be more sharply angled, in contrast with the smoother curves of the post-Akkadian patterns. This post-Akkadian material is also well-attested at Mozan, where it also extends into the early second millennium (Marilyn Kelly-Buccellati pers. comm.). Similar wavy combing is found also in the south, such multiple combing continuing as late as the time of Sinkashid at Warka (Lenzen 1964, pls. 23,d; 24, g; see also van Ess 1988a,b). In the Old Babylonian/Middle


Figure 195. Phase $N$ rims and comb-impressed and comb-incised sherds (see p.607).

Bronze period decoration consisting of individual wavy grooves is more common (Lenzen 1964, pl.24; Rimah pl. 65; Brak 1, fig. 214).

In contrast with the regular, wavy combing which is characteristic of the post-Akkadian levels, groups of straight-combed bands, made with threeto eight-pronged tools, appear more frequently in the Akkadian and earlier periods ( 65 per cent of type). Wavy combing is found in Akkadian contexts but usually in combination with other patterns. Indeed there are virtually no well-stratified Akkadian or earlier examples of the simple, post-Akkadian combination of wavy and straight combing (Fig. 404; an apparent exception is 318 from CH Level 6 , with three-pronged combing; here the jar itself differs in shape from the later examples, as does the more angular combing; see also Fig. 196:3). Less frequently the combing follows a figure-of-eight pattern, as on 337 and 338. The 'unenclosed' wavy patterns of 314 and 315 are unusual in lacking the horizontal accompaniment; both pieces come from the Akkadian/ post-Akkadian boundary. Ten- and twelve-pronged 'combs' were used to incise the straight bands of parallel grooves on some of the post-Akkadian vessels (e.g. 326, 333 \& 336). In the post-Akkadian levels, from which most combed ware derives, two fabrics are used in the manufacture of these vessels, a distinctive and almost certainly local salmon to light brown fabric with a high mica content (ware
$6 b$ ), and the common buff fabric with mineral and sometimes chaff temper (ware 5).

Diagonally impressed comb marks also constitute a largely post-Akkadian type ( 65 per cent of combed/impressed examples), but such ornament does occur in Akkadian levels as well. Some of the finer vessels are decorated with short 'strokes' made by a comb-tool (Fig. 195; see also Reade 1968, pl. 84:3, a Taya sherd of 'pale green stone ware'); at Brak this often occurs in combination with hatched or chevron bands ( $289 \& 290$ ). Single rows of impressed comb marks occur also on fine ware bowls (298) and small jars. Jar 303 provides a particularly fine example. Such ornament is also found on an unusual jar of Ur III or slightly later date, which is possibly of Western Syrian origin (302; see also Fig. 196:2, 8). Another unusual and probably imported jar with appliqué snake ornament is also decorated with a single wavy incised line and comb-like marks, but the latter appear to have been individually impressed (356), that is, they are not made with a comblike tool (see also Fig. 195:1).

Among the most elegant late third-millennium decoration at Brak is a combination of finely incised combing with small black painted dots (294, 295 \& Fig. 197). Such sherds are rare at the site. The fabric of the pale grey example 294 (Fig. 197:1) approaches Stone Ware in density. Such small painted dots are


Figure 196. Sherds decorated with incised patterns (details on $p$.607).


Figure 197. Fine wares decorated with incised patterns; sherds 1, 3, 8, are also ornamented with small black painted dots (details on $p$. 607).
also found at Tell Taya (Taya pl. 5, Level 8; see also Reade 1968, pl. 84:13). In this same style are other
vessels with larger painted circles, sometimes in groups of three, for example 296 and 297 (also Fig. 198). The latter is of late Akkadian date, while the very fine examples appear to be post-Akkadian (cf. Nineveh: McMahon 1998, fig. 8:8). One of the most unusual jars of this type is 309, with two rows of large painted circles and diagonal comb impressions. This comes from a very late third-millennium, or possibly Isin-Larsa, context. Similar painted ornament is found at Warka in the Sinkashid Palace (Lenzen 1963, pl. 26:b). We have seen surface sherds of well-made jars with incised shoulder triangles and intervening painted dots as far east as Tepe Gawra; the coarser 'Isin-Larsa' examples are found also at Mozan.

Neither of the small buff ware jars with incised triangles and a chevron pattern on the shoulder are unambiguously stratified ( $300 \& 301$ ). They are either post-Akkadian or to be dated late in the Akkadian occupation of Brak. Grey ware examples of this type are rare but are probably post-Akkadian (493, 494 \& Fig. 205c, lower right); none has up to now been recovered from a good Akkadian context. Some of the more regularly incised shoulder triangles are found in very late Akkadian contexts, often in combination with other patterns common on post-Akkadian pottery (e.g. Fig. 197, lower left, with its neat chevrons and single lug). The large sherd illustrated in Figure 196, lower left, has a similar combination of large incised triangles, black painted dots, impressed circles and a late type of chevron pattern and incised wavy lines. These
sherds illustrate one of a number of types that appear late in the Akkadian repertoire and continue in the postAkkadian levels; that is, the pottery is made by local potters, at Brak or elsewhere, whose traditions do not necessarily change with the advent of new political authority. It should also be noted that the Akkadian incised triangles should not be confused with the superficially similar incised ornament found among the late Ninevite 5 repertoire ( 1743 \& 1781).

## F. Unusual types

1. Snake pots and other decorated vessels (Figs. 199, $200,407 \& 408$ )
Vessels decorated with appliqué snakes and scorpions are found infrequently but are very characteristic of the second half of the third millennium and continue into the early second millennium. Four examples of rectangular snake pots were found in the upper Akkadian building in Area ST (Fig. 199), but we have too little of the plan of this building to speculate as to their possible function (p. 37). However, the Mallowan trough in the Aleppo Museum and our examples (including Fig. 199) have small drainage holes in one corner of the base, suggesting a possible ritual function involving liquids (see also 374 and probably 373). The sides of the Aleppo vessel, like those of 364, are slightly convex, whereas 365 and Figure 199 are more straight-sided. The fabric is relatively fine, gritty with little chaff.

As a very broad generalization the round jars with such appliqué ornament are post-Akkadian ( 355 \& 356; Mallowan 1947, pl. 70:3-5), and the rectangular troughs Akkadian, in date. The impressed circles on the large Akkadian troughs are made with a reed or wooden tool with an end surface which leaves FS Level 2b, Room 13.


Figure 198. Akkadian sherd with incised decoration and painted black dots (Room 20 fill, SSTC = 297); post-Akkadian sherd of similar type from paved stone floor in


Figure 199. Akkadian snake trough from ST 12, $23.6 \times 33.3 \times 17.2 \mathrm{~cm} ; T B 4153$.


Figure 200. Snake pot 359, from the Level $2 b$ floor, Area FS, Room 38.
part of the vessel are more Akkadian in character, another example of continuation of style across political boundaries (see also an 'Ur III' example from Tell Taya: Reade 1968, pl. 86:24).

Further snake pots are illustrated in Figure 408, as are examples of incised ornament depicting other animal and bird figures. The most elaborate is sherd 366 on which occur the now damaged remains of an appliqué snake with, to the left, what is possibly an ostrich. Other snakes are illustrated on 367 , a unique fragment possibly of early third-millennium date, and 368 , an unusual Akkadian piece. Fish are illustrated on 373 and 377, the spiny fish depicted in Figure 354 (373), from the Akkadian public building in FS Level 3 (Room 1), according to Arturo Morales possibly representing either a Rabbit Fish (a poisonspined Siganidae) or a Porcupine Fish (a poisonfleshed Ostraciidae). Both are salt-water species, presumably originating in the Gulf. The association


Figure 201. Decorated trough from unstratified context $=374$, probably Akkadian or slightly earlier. Note the drainage hole in the corner of the vessel.
with a formal building is of interest, and such spines have been recovered elsewhere on the site (p. 344). 369 seems to depict a pig among other figures. Human figures are rare but include the 'fisherman' of 373; see also the stick figure on the Phase L fenestrated stand (1594). The trough fragment 374 (Fig. 201) comes from undifferentiated fill in the 'IsinLarsa' house at the west end of the site, and is almost certainly out of context since this type is not found elsewhere in post-Akkadian contexts; it too has a drainage hole in one corner of the base. 375 and 376 are possibly 'Late ED' types. Post-Akkadian jar 379 is unusual, flat on one side and decorated only on the other.

## 2. Theriomorphic vessels (Fig. 409)

382 and 383 are hollow vessels with the solid head of an animal and some form of attachment on the back. 383 almost certainly depicts a goat, the other, perhaps a cow (Figs. 202 \& 203). The latter comes from a Level 3 (Late Akkadian) context in Area FS, from one of the storerooms. 382 was found in fill in Room 16 of the earlier Level 2 house (in what is possibly Level 3 destruction debris). 384-5, respectively another cow and a bear (?), are also from Akkadian contexts, as is the rather indeterminate 386 . The function of these vessels would seem to involve liquids, the first two and the bear having some form of cup at the top. The teats of the cow are pierced, while the bear is pierced front, top and rear. Such figures are not common at the site; fragments of only four other zoomorphic vessels were found, including the (Stone Ware) ram's head spout illustrated in Figure 204. Their cultic role is explored in Cholidis 1989.


Figure 202. Hollow vessel with solid head of a (?) bovid =382; extant length 9.8 cm .

The large kernos ring 387 was found in a shallow pit which had been dug from the plastered working floors beneath the FS Level 4 building (p. 23); the remains of six cups survive. The ring constitutes a very different type from the lion's head version and the elaborate kernos 389, which come from postAkkadian deposits to be dated not long before or perhaps even slightly later than 2000 вс. The latter represent a similar concept, involving the possibly ritual use of liquid; here the tubular channel running around the rim of the jar was made using a heavy piece of rope, which then burned out during the firing of the pot. The surviving portions of 389 include a tulip-shaped cup and an appliqué animal on the jar exterior of which the head forms a spout pouring into the jar. No examples of this type of kernos were found in the Akkadian levels.

## G. Miniature vessels (Figs. 410-13)

A number of miniature Stone Ware vessels are illustrated in Figure 392. Many of these are small bowls, with round, flat or concave bases. These range from Late ED III to Akkadian in date. Bowl 8 was found in a post-Akkadian context, but the dark grey, redstreaked Stone Ware fabric is not normally a feature of post-Akkadian levels, and a similar vessel was recovered from within a bench in the FSTC, a locus suggesting an early Akkadian date at the latest. Within the range of the more common buff fabrics, however, there are very few miniature bowls with rounded profiles: $\mathbf{4 0 1}$ from topsoil, $\mathbf{4 2 9}$ from the infill of the SSTC, and a small, unillustrated bowl from the surface of the tell. In this group the miniature straight-sided bowls and those with more flaring sides (Fig. 411) are relatively common, the former largely from Akkadian and the latter from postAkkadian contexts. The straight-sided form is also


Figure 203. Hollow vessel with solid goat's head $=383$; from Area FS Level 3, Room 3; length 16 cm .


Figure 204. Ram's head spout of red Stone Ware, from an Area CH Level 4 wall (CH 171), TB 3042, ht 7.7 cm .
common among the light grey to olive-green Stone Ware. Possibly post-Akkadian 428 is unusual in its vertical pattern burnishing.

The small bowls illustrated in Figure 411 are wheel-made, whereas a number of the cruder vessels (Fig. 410) are handmade and often unbaked. It is unlikely that these were simply children's playthings; 414, for example, contained traces of a pink pigment, and the other small vessels may well have been used to contain small quantities of such items as pigments, medicines or spices. 406 and 407 are lids, 416-20 scrapers of a type known from the fourth throughout the third millennium. The drawings show the 'reconstructed' pottery disc from which the, scrapers were cut, usually in segments of $c .5-7 \mathrm{~cm} .415$, on the other hand, is genuinely a miniature potstand. Its most unusual feature is a seal impression, rolled vertically on the stand (pattern = DM 551). A number of other scrapers come from other third-millennium contexts and even from mud-bricks of Mitanni date.

The very fine sherd 408 , with impressed comb decoration, belongs with the post-Akkadian vessels illustrated in Figure 414, but is included here owing to its small size. Like the rest of the vertically-burnished group it comes from a post-Akkadian context. The decorated vessels 409 and 410 are both almost certainly of Akkadian date, while a further, crudely made and lightly baked miniature jar derives from a much earlier third-millennium context (ST Level 13, Phase J).

A number of miniature jars and bottles are illustrated in Figure 412. The jar types are especially common; they are illustrated also in Figures 413 and 423:762-3. Miniature bottles such as 446 are more common in the early third millennium (see examples from Area TW published in Iraq 53, 1991, fig. 8), a context in which one might also expect to find the unusual jar-on-potstand (453). The round-based small jars tend to be Akkadian, the flat-based are more evenly distributed between Akkadian and postAkkadian contexts. The large ring-base of 483 and the footed vessels 484-5 are unusual, as are the small beakers 487 and 488 .

## H. Post-Akkadian pottery (Brak Phase N)

Brak has produced an extensive and well-documented collection of post-Akkadian materials. The term post-Akkadian is used here for the late third millennium, in preference to the less specific EB/EJ terminology (Table 1) or 'Gutian' and 'Ur III' for which there is no historical evidence at Brak. Indeed it would appear that the post-Akkadian levels may reflect a period of Hurrian control (p.393). The latest pottery in this assemblage can be dated early in the second millennium; indeed there are some parallels with Isin-Larsa types in the south (p. 173). Thus Phase N encompasses post-Akkadian pre-Ur III material together with that from Ur III and early Isin-Larsa contexts. There is, in addition, evidence to suggest the presence of a few later second-millennium rubbish pits dug into the third-millennium surface of Area SS; this material has been published in Brak 1.

The Phase N pottery is of especial importance, since this time frame is at present ill-attested in northern Mesopotamia; indeed some would wish to deny its very existence throughout the Khabur triangle. Comparable pottery is, however, known at Nineveh, Tepe Gawra, Tell al Rimah, Tell Taya, Tell Mozan, Tell Beydar and Tell Chuera, and is recently reported from Chagar Bazar. That from Brak is by far the bestdated, especially in Area FS where a collection of Late Akkadian tablets, recovered from FS Level 4, provides an unequivocal terminus post quem for our
largest quantity of post-Akkadian pottery. In CH also there is an uncontroversial historical date in the identification of the construction level of the NaramSin Palace, which must fall sometime in the latter part of his reign (p. 384). The succeeding Level 3 in Area CH, and in FS and SS, and Level 2 in ER and ST represent the final Akkadian occupation, a level which ended with extensive evidence of burning and destruction. Pottery from the succeeding levels, i.e. Phase N, includes a number of very distinctive types exclusive to these post-Akkadian contexts, although, as one would expect since local potters usually continue to function whatever the political disruption, a number of pottery types continue throughout the sequence, for example the beakers with string-cut bases.

Especially characteristic of these late third-millennium levels at Brak are a very fine Stone Ware, both green and dark grey, in which the shapes differ from the classic Akkadian and Early Dynastic types (Fig. 205b). Unique to these levels is an equally recognizable fine ware, found also at Tell al Rimah and Tell Taya and sometimes referred to as 'Taya ware'. Associated with this type is a very distinctive pat-tern-burnishing, most characteristically that found on some of the bowls. The latter usually have small ring bases, but there are also examples of flat, disc bases and the slightly convex disc-base known especially at Rimah and Taya. A very dense, hard, brickcoloured, 'clinky' fabric, sometimes grey, with a well-finished red to orange-brown surface, is also found, though rarely, in post-Akkadian contexts, e.g. 498 (see below). This is a completely different type from the dark-rimmed Orange bowls, discussed in section D1, which are found in greater number in the post-Akkadian levels but are not exclusively of this date ( 70 per cent of the complete sections recovered are post-Akkadian).

Comb-decorated pottery is perhaps the most easily recognized post-Akkadian type, but only very specific types are characteristic of these levels. At Brak the regular combing of, for example, 324-7, without other ornament, would appear to be exclusively post-Akkadian. Other type fossils of this period include a very distinctive type of ribbed jar rim (Fig. 195:2; see also Oates \& Oates 2001); small, cuplike, low-footed bowls with convex profiles (Fig. 417); band-rim bowls and bowls with rolled or everted rims and slight shoulder carination (Fig. 418). Though rare, kernos type 389 and round jars ornamented with appliqué snakes and scorpions, by contrast with the large, Akkadian, snake-ornamented troughs, are also features of the post-Akkadian ceramic at Brak,
as are bowls with elaborately slashed-rib and her-ring-bone decoration (Figs. $206 \& 416$ ), which are probably of early second-millennium date.

## 1. Post-Akkadian Stone Ware and radial patternburnished bowls (Figs. 205a,b \& 414)

The post-Akkadian levels produced a variety of fine, dense Stone Wares but these differ significantly in vessel shape and fabric colour from the Akkadian and earlier Stone Wares discussed in section A, that is, including those types often referred to as Metallic Ware and their contemporary calcareous types. The surfaces of many of the post-Akkadian vessels bear a beautiful glossy sheen produced almost certainly by slight vitrification of the surface, as on the Akkadian and Early Dynastic Stone Wares. The lugged bowl 502 provides one of the most distinctive examples of this very glossy-surfaced, almost celadon-like fabric (Fig. 205b:5). Other post-Akkadian lugged bowls occur in a highly polished light grey (499-501). Both 500 and 501 have a darker grey band at the rim, while some polished grey examples from the uppermost levels in Area FS have a 'pink' interior and fabric (Munsell 2.5YR 6/2 'weak red'). The everted, rolled rim type represented on bowl 502 is found on a number of polished grey bowl sherds of postAkkadian date, though it cannot be determined whether all of these represent lugged vessels. The lugs themselves are small and triangular or rectangular in shape; in this they differ from the much larger double lugs of earlier Stone Ware. The only possibly post-Akkadian vessel that is made of a fabric comparable with the earlier dark grey Stone Ware is 492; there are no examples of this unusual vessel shape from clear Akkadian contexts.

Plain hemispherical bowls and cups are also found, in both a dark grey, often streaked, and olive green Stone Ware (Fig. 205b:8-12). The earliest stratified examples come from the Level $2 / 3$ boundary, for example 507 and a grooved, flat-based example of type 506. A comparable grooved base can be found on 499 . Both hemispherical bowls are far more characteristic of the post-Akkadian range; indeed this fabric has not been found in clear Akkadian contexts. Other late Stone Ware types include 85, 501 and the unusual bowl shape represented by 520 , found both with a streaked olive-green/yellow surface and in the more usual red-streaked dark grey Stone Ware; unfortunately both examples come from essentially surface contexts. A type 513 base of overfired dense mauve fabric (7.5R $5 / 2$ to $5 / 3$, 'weak red') with a vitreous, yellow-streaked, dark bluegrey surface came from Area ER.

There are also vessels of a very fine dense green fabric, some of which approach true Stone Ware; bowls of this fabric are often pattern-burnished. This again is a fabric sometimes referred to as Taya Ware. Among these green bowls is a rare though very distinctive type found also at Tell al Rimah and Taya, distinguished both by green and pink 'banding' and the use of radial pattern burnishing (Figs. 205a; 414; see Taya, pl. 5, bottom row, centre). At Brak this is unquestionably a post-Akkadian type, though not a common one. Even more rare are the occasional painted examples (Fig. 205a; see also Orthmann \& Pruß 1995, fig. 79:31). Similar pattern burnishing is known as far east as Gawra (Level VI). At Brak the bases of both the bowls and jars are also distinctive, especially the slightly convex disc base ( $517 \& 518$ ) found also at Rimah and Taya, and the sharply defined ring base (for example 515). (The small jar 513 is typical of the pale green 'Stone Ware' of Taya and Rimah despite its Munsell description of 'pale yellow'.) The very flat, open bowl shape of 514 is unusual. Some of the finer post-Akkadian green and grey fabrics are also ornamented with fine wavy incision and, occasionally, with tiny painted black dots (see Figs. 197 \& 403). An uncommon, dense orange, 'near Stone Ware' fabric, found only in the post-Akkadian levels, includes bowl 498 and examples of types 533 and 539 , the latter with two small grooves below the rim.

One of the most distinctive features of some of the pattern-burnished green Stone Ware and fine ware bowls is a rim-shape that is often described as 'beaded' though most characteristically it has a stepped-in, vertical character (e.g. bowl 516 and beaker 511). Certainly the rim is not 'beaded' in the sense of the tiny, rolled rims of Ninevite 5 type; hence our preference for the term 'step-' or 'recessbeaded' This type is found from the Balikh to northern Iraq, for example at Nineveh (McMahon 1998, fig. 7:9). The 'beaded-rim beaker with concave base' has been identified as a type fossil of the Akkadian period on sites to the west of Brak (Lebeau et al. 2000), but not a single example from Brak has been found earlier than the Level 3/2 boundary, while the only example published from Hammam et-Turkman also comes from an EB IVa, that is 'Ur III', context (Curvers 1988, pl. 119:28). Moreover, re-examination of the evidence from both Brak and Tell Chuera has led to a reassessment of the dating of Chuera Phase IE (Pruß pers. comm.), and it is now clear that at both these sites the bowl and the beaker with 're-cess-beaded rim' constitute one of the most reliable and easily recognized post-Akkadian type fossils.

Chapter 5


Figure 205. a) Pattern-burnished and painted post-Akkadian types; b) Early Transcaucasian sherds (p.160) and postAkkadian Stone Ware; c) Ninevite 5 incised and excised; d) Painted Ninevite 5 sherds (details on $p$. 607).

Vessels of this type were actually manufactured at Chuera (Palast F, Level 1: see Orthmann \& Pruß 1995, fig. 78). It should be noted also that this type is present in the 'Akkadian corbelled tomb' at Tell Beydar (Debruyne 1997, pl. 1; and see also Bretschneider \& Jans 1997b, pl. 1:8). At Tell al Rimah the 'recess-beading' of many of these fine ware bowl rims is unusually small, as in Rimah 527 (see also Oates \& Oates 2001). Such tiny recess-beaded rims are also found at Brak, though they are far less common than the types illustrated here; they occur both in the fine green and the streaked brown and cream ware common at Rimah (for example a rim from FS 213, Level 2a).

Very distinctive pattern-burnishing also occurs on the exteriors of small jars and some beakers ( 508 \& 513); the fabrics are like those of the rest of the 'Taya ware' group. 515 is a grey-burnished example of this very distinctive and generally post-Akkadian bowl type. See also the unusual burnished orange example ( $270 \&$ p. 164). 521 is another distinctive post-Akkadian bowl shape, more common among the plain buff fabrics.

Further examples of recess-beaded-rim, ringbased bowls can be found in Figure 415, largely of fine buff or grey-buff fabric, some beautifully finished (e.g. $525 \& 545$ ). These bowls are for the most part ring-based, but 534 has the concave base apparently more common on the western variants of this type. Some bowls of this general type have a neat circle or a disc cut out within the inner base ( 538 \& Fig. 205a:9), a feature also of Taya and Rimah examples. The wide beaker shape of 550 is unusual among those with 'recess-beaded rim', and may date to the very end of the Akkadian period. The concave-disc base of 517 is characteristic of post-Akkadian bowls in the finer fabrics at both Taya and Tell al Rimah.

## 2. Post-Akkadian decorated and burnished grey ware

This type is not common at Brak, but is well-illustrated by the small bowls 493 and 494 (Fig. 205b:13, 14), both of dark grey fabric, and the very pale grey 294 (see also Fig. 197:1, 2). The dark grey ware bowl with single pierced lug (504) is also a
post-Akkadian type. The light grey beaker with vertical burnishing (508) has a darker grey area at the rim in the manner of some of the lugged bowls. The very distinctively post-Akkadian, recess-beaded rim beaker 511 has a burnished grey to yellow surface. Note that bowl 626 is also horizontally burnished.

## 3. Post-Akkadian yellow 'near Stone Ware'

This very distinctive type is represented by 522-4. A similar fabric is found in Akkadian levels (p. 158). The upper portion of 'recess-beaded-rim' beaker 510 also resembles this yellow fabric.
4. Pottery from context SS 1096 ('Isin-Larsa') (Fig. 416) The pottery from SS 1096, 1097 and 1100 comes from two rooms of domestic character which constitute the latest preserved level at the westernmost end of the site, west of the SS Temple Complex and south of SS2. One room contained a plastered grindstone installation, comparable with those found in the very latest occupation phase in Area ER. Thin-section samples were taken from the floors of both rooms (p.365).

Several pottery types present in this house suggest a date after rather than before 2000 BC , including the long jar 556 and the bitumen-painted bowl 560, while both the flat, open plate 559 and the small bowl with slightly convex profile and low string-cut base (570) are very distinctive features of postAkkadian levels elsewhere on the site. Both the unique orange-burnished, step-beaded-rim bowl 270 and the unusual Anatolian vessel published in Brak 1: fig. 82 come from the same context, which also produced incomplete vessels resembling Strom-


Figure 206. Sherds of large bowls, often with appliqué inner ornament, of late third-learly second-millennium date.
menger 1962a, pl. 23:a and from the Sinkashid Palace at Warka. The small bowl with the dog's pawprint (557) is unusual, especially since it seems to have been fired despite the canine intervention. Further pottery from this context includes small jar 447, small bowls 570 and 571, a beaker generally resembling 740 but with a more sharply incurving rim, bottle 793, and possibly the decorated trough 374 (Fig. 201), though this resembles much earlier types.

Some vessel types from SS and DH subsoil contexts may also be of early second-millennium date, e.g. 309 and the large bowls with elaborate slashed rib and herring-bone decoration 566 and 567 (see also Fig. 206, and compare Finkbeiner 1991, pl. 107:35, from Warka). The surface of 566 is a deep, all-over orange-brown, whereas the other examples have, consistently, orange interiors and cream exteriors. At least some of these bowls also appear to have had unusual, appliqué protuberances on the upper inner bowl surface (just visible on sherd 1, Fig. 206, and found also on an identical sherd from Area DH, on which the 'protuberance' measured 4.8 in $\mathrm{ht} \times c .7 \mathrm{~cm}$ in width); no example of this applied ornament survived, though it could possibly have consisted of decorative animal protomes, while an unpublished faience bowl from Tell al Rimah has flowers attached to its interior surface. Generally similar rim types are known at Rimah and Nineveh in late third-, early second-millennium contexts (Rimah 506 \& 507). A sherd from a small, double-lugged jar, in similar fabric and similarly decorated, was also recovered from the surface of the site.

## 5. Other post-Akkadian bowl types

a) Small bowls with slightly convex sides: Fig. 417:570$7+$ illustrates one of the most distinctive postAkkadian bowl types, a small, cup-like bowl with slightly convex sides and a string-cut base, often forming a very low foot. These are found largely in the local gritty salmon fabric. These bowls do not occur in Akkadian or earlier contexts, the closest Akkadian version being much broader and deeper as in 577-9 and 1008, 1030, a type found at both periods. It is the more cup-like form that is postAkkadian. The square rims of 597-9 are also found on Akkadian bowls, while the hemispherical shape of 594 is found also in the yellow 'near Stone Ware'.
b) Band-rim bowls (609-13). Figure 418 illustrates a second very distinctive late third-millennium, postAkkadian type characteristic also of the Ur III period in southern Mesopotamia. Although the northern band-rim bowls lack the very broad banding of the
most distinctive southern examples (e.g. Gibson \& McMahon 1995, fig. 19:5; van Ess 1988a, fig. 3), an easily recognized version is found in 'Ur III' contexts both at Brak and at other sites in the north such as Nineveh (McMahon 1998, fig. 7:26-8) and Hammam et-Turkman (van Loon 1988, pl. 117:10); this variant is also a southern type (Gibson \& McMahon 1995, fig. 19:2,3). Band-rim bowls are also a feature of Mitanni and Middle Assyrian pottery, and so are not diagnostic in isolation.
c) Bowls with rolled or flared rims and very marked shoulders, illustrated in Figure 418:600-608, are also characteristically post-Akkadian. The bases are generally slightly concave, but occasional ring bases occur ( $605 \& 606$ ). 607, unusually, has very deliberate ribbing on the bowl interior, as does 618 .
d) A further group of bowls illustrated in Fig. 418:6239 , with everted rims and slight shoulder carination, would appear also to be of post-Akkadian date. Some examples are of a very sandy fabric, with an orangered to dark brown slip. On such bowls there is always a painted band on the rim interior and sometimes on the exterior, as on 629 where the lower exterior is a dark brown. A dozen examples of this type were recovered, but no complete bowl sections. Four examples came from an FS Level 2 sherd floor (courtyard? e.g. 628); a ring-based bowl in this same fabric and paint comes from Level 1. Small numbers of other painted jar and bowl rims were found in Levels 1 and 2 (less than .001 per cent of the total diagnostic sherds).

Painted bowls 627-9 bear a superficial resemblance to a common Mitanni type, but the latter are both better-made and more neatly painted, and lack the heavily cut exteriors of the post-Akkadian bowls.
e) One of the most common post-Akkadian types is the open plate or bowl, illustrated by 635-40. A similar type is found also in Akkadian and Late ED levels (Fig. 435), but the latter are often of deeper profile. Plate types 657-9 have been found in both post- and very late Akkadian levels (see also van Ess 1988a, fig. 2). Some 44 complete examples of plate type 635 were found, including the three stacked on the floor illustrated in Figure 207. A group of miniature plates is illustrated in Figure 411:438-42.
f) Other post-Akkadian bowl types are illustrated in Figures 419 \& 420. The folded and inverted, rolled rims are found also in Akkadian contexts (p. 178), but the types can generally be distinguished, often
by their overall proportions and / or their bases. Bowls 66067 have all been recovered from uncertain contexts, but are probably post-Akkadian. The very open bowl type 657-8 is found in both Akkadian and post-Akkadian contexts. One example of this type was used as the lid of bowl 1035, one of several food offerings placed on the red capping of the SS monumental complex, both bowls in this case unequivocally of Akkadian date. A number of large post-Akkadian bowl types are also illustrated in Figure 420, together with several deep urns, a type further illustrated in Figure 451. Three post-Akkadian 'basins' are illustrated in Figure 435:1037-9. Post-Akkadian miniature vessels are illustrated in Figures 410-13.

Included in Figure 416 are three bowl types of unknown attribution. All come from what are possibly post-Akkadian contexts but since the vessels themselves are so far unique at Brak, we cannot be certain that this context represents their true date. Certainly they are not characteristic of the pottery from Phases M and L, while 563 can be compared with a similar bowl from Warka attributed to a late third-millennium context (Finkbeiner 1991, pl. 106:12). 565 finds a parallel at Sweyhat (Holland 1977) and 564 at Gawra (Speiser 1935).
6. Post-Akkadian cups and beakers (Figs. $421 \& 422$ )

One of the most distinctive post-Akkadian types is the beaker with recess-beaded rim (716-21 \& 723). As already noted in the context of the bowls of comparable rim form, at Brak this type is found virtually exclusively in post-Akkadian contexts. Only one example would seem to have come from a very late Akkadian context (an unpublished beaker from FS 1778, cf. 719), while 718 was repaired with bitumen in antiquity, suggesting at least the possibility of a slightly earlier date of manufacture than its postAkkadian find spot. 683 cannot be certainly dated. However, not a single example has been found in a secure Akkadian floor deposit, and all other recessbeaded rim beakers are from deposits which are unequivocally post-Akkadian. The bases are usually slightly concave, but small disc and ring bases are
also found, as on the related bowls and especially among the latest examples. Beakers 724 and 725 are also impossible to date; they come from a pit which contained almost exclusively post-Akkadian pottery but also the sealings Figure 379 and DM 282, which may have originated from deposits overlying or even within the monumental building, through which the pit was dug. Thus these heavier beakers with larger, rolled rims ( $724 \& 725$ ) could be late Akkadian precursors of the step-beaded rim variety; other rolledrim, concave-based examples, however, are from clear post-Akkadian contexts. An example of the classic recess-beaded-rim type (718) was, moreover, found in the same pit. Another related type is the beaker with slightly flared 'beaded' rim (726-9). Again, these come from sub-surface deposits or disturbed surface fill in the monumental building (729); none has been recovered from an Akkadian floor.

A second very distinctive post-Akkadian type is the beaker with inner, bevelled rim (707-15), in southern Mesopotamia often attributed to Late Akkadian levels, e.g. at Umm el-Jir (cf. Gibson 1972, fig. 34), or even earlier contexts, for example in the Diyala (Delougaz 1952, pl. 149). At Brak this is largely a post-Akkadian type; only 714 is possibly from a Late Akkadian context. The classification of these vessels as beakers is in fact misleading, since the bevelled lip would render them inconveniently impractical as drinking cups. We have wondered whether they were used as lids or covers of some


Figure 208. Pottery from Area CH locus 132, including bowl 637, beaker 740, one of a set of three stacked in the southeast corner (Fig. 207) and jar 833.
('multiple grooved') constitute perhaps the most distinctive post-Akkadian type (Fig. 423). They are widely known both elsewhere in the north, for example Tell al Rimah (Oates \& Oates 2001), Nineveh (McMahon 1998, fig. 9) and perhaps Mohammed Diyab (Lyonnet 1990, fig. 29:3; cf. Brak 756); to the west, for example at Kurban Höyük and Sweyhat (Algaze 1986, fig. 25; Holland 1977, fig. 9) and in the south in both Ur III and Isin-Larsa levels. Jars with rims like 302 constitute another 'Ur III' type attested at Brak (also paralleled at Mohammed Diyab: Lyonnet 1990, fig. 29:1). More elaborate versions of this ribbed rim type
sort, or even some kind of support. The beaker with slightly concave sides (e.g. 696-8) is also characteristically post-Akkadian, though not unknown in Akkadian contexts.

Footed goblets are more characteristic of Akkadian and earlier levels but 701-4 were recovered from good post-Akkadian contexts. Beaker 704 was found in Area CH, under the floor of a Level 1 room together with two copper/bronze cups and a strainer (162-4). The beaker contained a magnetite burnisher and a number of frit beads. The shoulder beakers 551 and 552 are unusual at Brak, and must date to the very end of the third millennium (cf. Taya 7: Reade 1968, pl. 85:14; van Ess 1988b, fig. 3:4).

Figure 422 includes several post-Akkadian beaker types which closely resemble Akkadian examples, especially the tall, relatively slender versions and beakers 740-42, two of which were part of a stack of beakers on a Level 2 floor in Area CH (Figs. $207 \& 208$ ). Such beakers have string-cut bases, as do their Akkadian counterparts. Of this general type, only beaker 732 has been found in a possibly Akkadian level. It should be noted that beakers 1099, 1106 and 1134 come from the Level $2 b$ well (FS 507, see p. 68) and are therefore of post-Akkadian attribution. 681-90 constitute a group of uncertain context; they are likely to be but are not certainly of post-Akkadian date.

## 7. Post-Akkadian jars (Figs. 423-5)

The jars with horizontal ribbing on upright rims
can be seen in Figure 424:793 \& 794, both of which seem to date early in Level 2, or on the Level 3/2 boundary; there are no clear Akkadian examples. The bowl-like jars 747 and 749 are easily recognizable post-Akkadian types; 750 is known also in southern Mesopotamia. Horizontally ribbed rims do not appear at Brak before levels contemporary with the Ur III period.

Another very distinctive post-Akkadian type is the round jar with light ribbing on the body, especially the shoulder (Fig. 425). The bases of these jars are generally either flat or rounded, occasionally with drainage holes. This light shoulder ribbing is not a feature of Akkadian pottery. Another very distinctive jar type, well-known in southern Mesopotamia, is the tall jar with sharply-ribbed shoulder and ring base (813-19). Often identified as Akkadian or even earlier (Delougaz 1952, pl. 176; Gibson 1972, fig. 34) and clearly found in Akkadian contexts at Nippur (Gibson \& McMahon 1995, fig. 26:2, but see also the Ur III example, fig. 19:8), there is little evidence for this type at Brak during the period of Akkadian hegemony. With the exception of 819 (Akkadian) which has a much more rounded profile than the other more or less complete examples, those illustrated on Figure 425 all come from well-stratified, post-Akkadian contexts.

The spouted jar 820 comes from a room associated with Mallowan's 'Ur III houses', and is related to another southern Ur III type (Gibson \& McMahon 1995, fig. 19:13), as is 822 . The jar illustrated with the
latter (821) is, however, from a clear Late Akkadian context (see also Gibson \& McMahon 1995, fig. 18:20). All seem to have been made of local Brak fabrics. What is surprising is the degree to which the postAkkadian jars reflect south Mesopotamian types, at a time when there is no political connection, just the reverse of the Akkadian situation for which 821 and 819 provide rare 'southern' examples.

Figures 426 and 427 illustrate a variety of late third-millennium, post-Akkadian jars. These are both round- and flat-based, globular or elongated. 833 was found in situ on a Level 2 floor in Area CH (Figs. $207 \& 208)$. The jar itself had been very carefully cut or sawn off at the base, so that it would have rested flat on the floor. The jars with lugs for suspension ( $826 \& 827$ ) may have been water jars. 830 and 831 bear the types of pot mark common in Akkadian levels; both are from early post-Akkadian contexts. 823 and 824 have drainage holes in the base, a not uncommon feature, while 847 had been broken at the base to form the head of a drain sunk into a Level 1 b floor. Note that 848 was erroneously included in Figure 427; it is Akkadian in date and is discussed on p. 182.

## 8. Post-Akkadian bottles (Fig. 424:779, 789-91, 795- <br> 800)

Bottles are not widely represented in the postAkkadian levels. Long-necked bottles have sometimes been regarded as an Akkadian-type fossil, but it should be noted that at Brak a few long-necked examples have been found well-stratified in postAkkadian contexts (in particular 796, $798 \& 800$, see also 1347). Certainly such bottles are more common in Akkadian levels (Figs. $448 \& 449$ ), but they are a far from reliable Akkadian-type fossil.

The squat bottle type 769-78 is common, however, in the post-Akkadian levels at Brak, type 778 occurring in both Akkadian and post-Akkadian contexts. In general these post-Akkadian bottles have simple flared rims (as does Akkadian type 1382); the 'grenade jars', with sharp, double carinations (7768), are rare in Akkadian contexts ( 778 and 1381 are the only possible examples, and the latter lay just beneath the topsoil). Other Akkadian bottles of this general type lack the sharp carinations (Fig. 450).

## 9. Cooking vessels (Fig. 427)

Round-based cooking pots are characteristic of the post-Akkadian levels, including 841 to 845.

## 10. Urn-like vessels (Fig. 428)

This is an easily recognized flat-based open form that is common in both Akkadian and post-Akkadian
contexts. The Akkadian examples are often grooved on the rim interior, a feature generally lacking in the post-Akkadian period. Thus 857 seems out of place, but its context in a heavily burnt room in FS Level 2a is secure. At this time the use of cable and ribbed ornament is more common; indeed the ribbed examples are distinctively post-Akkadian (854, 858-61). Some urns have drainage holes in the base ( 856 \& 858). Urn 861 was one of three large vessels which had been cut in half to form a storage feature in the FS Level 2a shop (Room 27; Fig. 86); 348, an urn with impressed comb ornament, and jar 864 make up the rest of the 'sales counter'

## 11. Large storage jars (Fig. 429)

The preserved examples are all flat-based and have a tendency to be tall and relatively thin-bodied. 872, the largest complete storage jar yet found at Brak (ht 115 cm ), was found in situ but re-used, set in mudbricks, in Area ER (Fig. 34); it has circular pot marks on the shoulder and neck and is perforated near the base. 864 was one of the three vessels cut in half to form the shop counter in FS Level 2a; 865 formed the head of the soakaway in the cobbled bathroom (6) of the southern sector Level 2 house (Fig. 83). 869 was one of five complete pots found on an ancient ground surface outside the Area SS monumental building, and is possibly late Akkadian.

A number of groups of post-Akkadian pottery have been found in situl, for example, on an 'Ur III' floor associated with one of Mallowan's houses in Area CH (beaker 692, bottle 800, large jar 832 and 705; locus CH 8). These were associated with the fallen wall beneath which the copper/bronze vessels 162-4 were found. The uppermost level in ER also produced a large group of post-Akkadian pottery, including 806, 809, 812, 829 and 671 , together with an unpublished globular jar with wavy combing.

## I. Akkadian pottery

## 1. Bowls

a) Round-based bowls and cups (Figs. $430 \& 432$ ). In general Akkadian bowls have flat or slightly concave bases; round-based 879-85 were recovered from Akkadian contexts but some may of course represent residual examples. The larger round-based bowls 948-50 are certainly early Akkadian; further Akkadian examples include 955,958 and 959 . The fine, green fabric of 884 (and its context) suggests that it may be post-Akkadian. The round-based cups are also uncommon in Akkadian levels; they too may be late Phase L or perhaps early Akkadian in origin,
despite their later contexts. 886 and 887 are unusual, and we believe them both to be Akkadian despite the Level 2 context of 887 . Both are well-made, with beaded rims which differ from those of the postAkkadian 'recess-beaded' variety; 887 is also burnished. Bowl 888 with its flange rim is unique at Brak. Some Akkadian bowls have very slightly rounded bases, as in 916-20, 931 and 951.
b) Flat-based bowls with rounded sides (Fig. 430). This is a common Akkadian type, examples like 889, 890 approaching the straight-sided bowl and beaker types (Figs. $433 \& 434$ ). Bowls 1090, 1094 and 1095 provide further examples, only arbitrarily classified with the beakers.
c) Flat-based bowls with inturned, rolled rims (Fig. 431:907-10): a very distinctive Akkadian type. Simple, inturned rims, as on 911-17, 951, are also wellattested; these are sometimes square-ended (914-18).
d) Bowls with inturned rims and concave bases (Fig. 431:921-8). This type includes several with very distinctive inturned, rolled rims ( $926 \& 928$; the latter contains one of the food offerings found on the red capping of the SS monumental complex, Fig. 124).
e) Bowls with everted rims (933-47,955). These include rounded, flat, concave and ring bases; the folded rim, ring-based type 938 is early Akkadian.
f) Flat-based, beaker-like bowls (Figs. 433 \& 434). These, together with type $g$, constitute the most common bowl-type from the Akkadian levels, in which we have recovered some 80 more or less complete examples. 982 illustrates the very similar type found in Phase L contexts.
g) Beaker-like bowls with low, disc-like bases (Fig. 434:984-5, 992-1007). Some 80 more or less complete examples were recovered from the Akkadian levels, that is, the frequency of this type is remarkably like that of the flat-based type, above (f).
h) Low-footed small bowls (Fig. 434:1009-16). 1016 is of Phase L or early Akkadian date, but is illustrated here with 1015, which comes from an Akkadian conte\t (outside the large pisé wall in Area SS). Both may be residual Phase L types.
i) Shallow bowls/plates. This type is more common in the post-Akkadian levels, but a greater variety of examples has been found in Akkadian contexts, e.g.

971, 1017-35. In general the Akkadian examples tend to be deeper than those of post-Akkadian date; a number have flaring sides. Bowl 1035, which had been placed on the red capping of the SS monumental complex, contained a food offering; it was covered by a bowl generally resembling 1028 but rather broader. An unusual group of four of these shallow open bowls was found on a platform of late secondmillennium date just below the survey point at the top of the mound; these unpublished examples resemble 1023, 1024 and 1028, and we have no explanation for their presence in such a late context other than their chance discovery and re-use by the Middle Assyrian inhabitants of the site. Certainly they resemble Akkadian bowls more closely than the few late second-millennium bowls of this shape (Brak 1, fig. 181:6 \& 7).
j) Medium-sized bowls with folded rims (Figs. 436 \& 437). These tend to have flat or low-footed bases, and are most common in the latest Akkadian level.
k) Basins. Large basins of both post-Akkadian and Akkadian date are illustrated in Figures 435 and 436. This is a more common type than the illustrations would suggest, especially in the Akkadian levels. They were seldom found complete, presumably owing to their size. The most common rim is the flared type illustrated in Figure 436. 1053-4 illustrate a less usual variation with projecting base, and 1079 and 1080, a less common type, with cable decoration. A Phase L example is illustrated in Figure 460:1573.
l) Large open bowls. These are generally either round or flat-based (Figs. $436 \& 437$ ). The open bowls with lug-like handles (e.g. 1059) are more common in Phase L (cf. Fig. 455). Some examples have large drainage holes in the base, of the order of $6-7 \mathrm{~cm}$ in diameter (1061-3).

## 2. Drinking vessels (Figs. 437-41)

a) Small cups. Figure $438: 1086-8$ illustrates a small number of examples which differ from the usual beaker shape, illustrated on the following figures.
b) Beakers/conical cups. This is by far the most common single pottery type in the Akkadian levels, to some extent at least reflecting their relative unbreakability. Here this type is only arbitrarily distinguished from the beaker-like bowls. We have tried to isolate as beakers those vessels that are no wider than they are tall, but some more bowl-like examples have slipped onto the 'beaker' figures, for ex-
ample, 1129 and 1130. Most Akkadian beakers/conical cups are more or less straightsided, type 1124 being the most common, with a further 50 complete or near-complete examples. Figure 438 illustrates a small number of examples with convex sides, while Figure 439 continues with further examples of this type, together with more straight-sided versions which themselves continue in Figure 440. Figure 440 also illustrates the great variety of beakers with heavy and/or disc-like bases. Some of the most distinctive, indeed most common, examples of this general type have a heavy shoulder-like 'bulge' near the base (e.g. 1139, 1142 \& 1144). Most Phase $\mathrm{L}-\mathrm{N}$ conical cup bases are string-cut.
c) Footed goblets (Fig. 441:1184-201). Figure 441 illustrates a single footed goblet (1201) from what is probably a Phase L context in the street between the walled precinct beneath the Naram-Sin Palace and the late 'Early Dynastic' buildings to the east; 1198 is from a possible Phase L context, while 1197, with a very similar base, comes from the earliest Akkadian level in Area ST. With the possible exception of $\mathbf{1 1 8 4}$ and 1185, which come from a context that is probably but not certainly post-Akkadian, the other footed goblets illustrated here are of Akkadian date. Many were found in ritual deposits, in particular on the 'closure' surface of the Area SS monumental building. These include 1186 and 1187 which were found together with a bottle (reg. no. 92.128) above the southeast corner of Room 11, and the five goblets and beaker illustrated in Figure 123 and 209 (all of type 1188). Some of these goblets are not particularly wellmade, and it is possible that they may have been manufactured especially for the closure rituals. 1229 is a footed jar from the construction level of a Late Akkadian house. Similar footed jars are better-known among the Stone Ware (Fig. 397), but the shape of the rim differs. Further hollow-footed goblets, largely of Early Dynastic date, are illustrated in Figure 456.

## 3. Akkadian jars

a) Small jars (Figs. 396, 413, 441:1202-17 \& 442). These are largely flat-based, often with everted or flared


Figure 209. Goblets from the closure deposit in the southern niche of the west wall of SSTC Room 17 (see Fig. 123).
rims; 1213 has a deliberate drainage hole in the base, as does 1245. 1222-8 represent a round-based group, which has close parallels among the Stone Ware. Three of these are spouted.
b) Wide-mouthed jars, medium-sized (Figs. 442-3). The rounded, generally flat-based, wide-mouthed jars with flared, everted rim constitute one of the most common Akkadian jar types, found also in the postAkkadian levels (Fig. 428). The most typical rims are slightly thickened as in $\mathbf{1 2 4 5}$, flat as in $\mathbf{1 2 4 0}$ or slightly concave as in 1235. 1258, 1259 and 1261 have deliberate, single drainage holes. 1254 is an uncommon type, of which we have only a small number of examples. Many of the surviving profiles are from Late Akkadian contexts, and the type itself may originate in the south (e.g. Delougaz 1952, pl. 180:C.525.550).
c) Wide-mouthed jars and urns (Figs. 451-2). The 'urns' are differentiated from the wide-mouthed bowls/ jars simply by their more straight-sided profile and narrower proportions. Many are very large. Drainage holes in the base are common, and have sometimes been found with a bitumen plug. With the exception of $\mathbf{1 4 1 8}$ the Akkadian examples lack the double rim of some post-Akkadian forms (e.g. 85860 ); single bands of cable ornament are well-attested in both periods (1417-22). A very large, unpublished urn from Level 3 in Area ST (rim diam. 52 cm ), with a very square rim, had two rows of cable ornament on the body, 5 cm apart. The groove on the inside of the rim (presumably to secure a lid), visible for example on 1394, 1402, 1406, 1408, 1410-12, is a typi-


Figure 210. Early Akkadian jar 1562, found set into the floor of SSTC Room 25; the strainer near the base is unique at Brak, ht of jar 50.3 cm .
cally Akkadian and Phase L feature (see Fig. 460). The flared rim with sharp angle at the lower edge ( 1413 \& 1414) is very characteristic of Phase L, but is found also, as here, in the Akkadian period. Certainly 1413 with its breast-like decoration was found in situ on a Late Akkadian floor in Area ST. 1414 contained two jars and a food 'offering' (lamb stew), almost certainly associated with the closure of the SS monumental complex. On the very large example 1408 the single drainage hole is, unusually, at one side of the base; see also 1414. A unique example from FS Level 4 (FS 519) also has a drainage hole just above the base, but with a u-shaped exit, open at the top; this is one of the sherds that ICPAES analysis suggests may be an imported piece (no. 44, Table 3). The bases of these urns are for the most part flat, sometimes slightly rounded.

The distribution of complete specimens of these vessels shows an unusually high concentration in Area ST, especially in the fragmentary Level 2 building excavated in 1978. Unfortunately only the north
edge of this building was preserved, the rest having been eroded by the wadi which runs through it, and we remain uncertain of the reason for this concentration other than the fact that some form of storage is represented. The remaining wide-mouthed urns are illustrated in Figure 458.

Figure 460:1562, an unusual early Akkadian jar which had been set into the floor of Room 25 in the SS monumental complex, is unique in having a circular, presumably spouted, strainer in its lower wall (see Fig. 210). Its position, sunk into the floor of the room, suggests that it must have served some drainage function, at the same time serving to strain the liquid itself.
d) Globular jars (Figs. 444, 445 \& 446:1289-92). The globular jar is another widely attested Akkadian (and post-Akkadian) type, $\mathbf{1 2 6 2}$ appearing more commonly among the Stone Ware. A number of the variations of this type are short-necked. The large jar 1271, with the pot mark on its shoulder ( ht 95 cm ), is one of the very large storage vessels recovered from the southern storeroom in FS Level 3 (p. 57); 1284 is another and even larger example (ht 120 cm ). The similarity of the pot marks, and indeed their slight difference, is of interest. It is possible that they represent different stored materials, or different owners/institutions using the same small storeroom (or that the potter was dyslexic!).

The very squat 'globular' jars illustrated on Figure 446 are unusual; $\mathbf{1 2 9 2}$ is from the FS Level 3 southern building. 1289 is almost certainly a postAkkadian jar; it was set into a Level 2 floor, but was unfortunately recorded in Level 4, where in Figure 61 (p. 53) it misleadingly appears to belong.
e) Elongated jars with rounded bases (Figs. 444:1274 \& $1275,445 \& 458: 1533-6$ ). Less common than the globular jars, the more elongated type is nonetheless wellrepresented in the Akkadian levels. The very large example 1533 was found set into the upper floor in the northwest corner of the Area SS antecella (Fig. 93). Unusual is the rim of the large jar 1284 from the FS Level 3 storeroom.
f) Flat-based jars. Both tall- and short-necked versions are illustrated in Figures 446 and 447. 1296 was one of a number of jars found on the floor of FS Level 3, Room 31, together with an example of type 1299 and a variety of other pottery.

## 4. Akkadian bottles (Figs. 447-50)

The Akkadian levels produced a large number of
bottles, including the range of attractive small vessels illustrated in Figure 449:1348-60; these are especially common among the ritual deposits in Area SS (see below), possibly because they were made to contain valuable oils or perfumes, or that they were simply mass-produced for this ritual purpose. Figures 447-8 illustrate a range of globular bottles, some with relatively straight, others with more flared necks. Those with small everted rims are more common than the flask-like type 1335-6; the latter came from the final Akkadian destruction level. A number of bottles with unusually long, thin necks are illustrated on Figure 449. A most unusual specimen 1386 has one side flattened to form a 'base', remarkably like a modern hospital bottle.

The squat bottles known also in the postAkkadian levels are widely attested (1372-83); the Akkadian versions tend to have everted rims in preference to the usual, simple, flared rim of the postAkkadian variety (Fig. 424). Note that 778 and 1381 are late Akkadian examples of the double-carinated type more common in the post-Akkadian levels. 1384 is the only elongated, spouted bottle; the shape of 1385 is unusual (cf. post-Akkadian 792). There are relatively few large globular bottles of the type illustrated by 1390-91, but one can imagine that this type of bottle was easily broken. 1387-9 illustrate twohandled versions.

A number of bottles come from what may have been ritual deposits in the Area SS monumental complex, for example 1352, 1362 from the main courtyard, and 1323, 1348, 1354-7 from the lower fill of Room 15 where a Stone Ware jar and two inverted conical cups had also been deposited on the top of the fill. Bottles were also particularly common on the floors of the apparently residential structures and storerooms destroyed at the end of the Akkadian occupation ( $\mathbf{1 3 4 9}, 1359 \& 1360$ ); a number were also found in the same destruction level in the small rooms abutting the south side of the SS complex (e.g. 1325, 1365, 1367, $1369 \& 1371$ and a further example of type 1323; see p. 91).

## 5. Double-mouthed bottles (Figs. $211 \& 453$ )

The majority of the third-millennium doublemouthed bottles found up to now at Brak are of Akkadian date; only 1433 (Fig. 211) comes from a Phase L context. The short neck and the shape of the spouts on this bottle differ from the longer-necked Akkadian examples, but we lack an adequate sample of the Late ED III type. Indeed the apparently Phase L example found in 1998 (Area TC: Emberling et al. 1999, fig. 22:a) closely resembles 1429, a prob-


Figure 211. Double-mouthed bottle 1433 from Area ER, Level 5, Room 43, ht 18.4 cm .


Figure 212. Seal impression showing two seated figures drinking from what may have been a two-mouthed bottle resembling Figure 211, from Area CH Level 3 street fill (DM 98).
ably Early Akkadian version which came from fill in front of the Area SS monumental façade. The six-

## Chapter 5


spouted, ring-based jar from Area FS is unique (Fig. 213). Two very small double-mouthed examples (1423-4) are both pierced for suspension through a small lump of clay added where the spouts join. An incomplete spouted jar, slightly larger than 1423, was recovered from the fill of SSTC Room 25 ; it was carelessly made and unusual in having two adjacent spouts on one shoulder. This would appear to be a crude copy of an unpublished Northern Middle Uruk type (a comparable NMU bottle but with spouts on opposing shoulders is illustrated in Iraq 55, 1993, fig. 51:18).

The purpose of the double-spouted jars is uncertain, but one is tempted to speculate that they must have served some formal or ritual purpose, as illustrated on the Akkadian sealings (Fig. 212). The occasion that demanded six participants served by jar $\mathbf{1 4 3 2}$ requires rather more imagination!

## J. Phase L pottery including that from the so-called 'ED III destruction level'

Pottery of this date has been recovered in good contexts from Area CH (Levels 6 \& 7) and Area ER (Level 5). It was also identified in Areas ST, DH and AL. In Areas FS and SS, unfortunately, the construction of the monumental buildings seems to have destroyed all traces of the Phase L floors, unless of


Figure 213. Unique six-mouthed jar from a large pit in the middle of Area FS Level 2 Room 4.
course the earliest phases of these buildings were themselves constructed at this time. The arguments for and against such a reconstruction are presented on pp. 389-92. The massive walls identified beneath each of the 'temple complexes', however, were almost certainly built at this time, that is, under the Late ED III kingdom of Nagar; unfortunately the associated material consists largely of extensive levelling fills. No Phase L material seems to have been identified on the northwest ridge (Area HS), but it was otherwise present over the whole of the main mound. Some pottery of this date from both CH and ER was published in 1982 (Iraq 44); it is included here for purposes of completeness, together with the rest of the pottery found in these levels up to and including 1993. Some Phase L pottery appears in earlier sections of this text, especially among the Stone Ware jars and bowls. These types are commented on in the relevant sections of this chapter.

## 1. Bowls (Fig. 454)

Round-based bowls are common among the Phase L types (1434-7 and the larger examples, 1465, 14857), in contrast with the Akkadian bowls where flatbased types predominate. By far the most common flat-based late ED III bowls are also of rounded profile (e.g. 1441-6). Another well-attested type is the straight-sided bowl with slightly rounded or flat base (1450-53), common also among the calcareous Stone Ware of this date (Fig. 393) and apparently identical
with the so-called 'sila bowls' from Leilan. The inverted, rolled rim (1448) is found also in Akkadian contexts (see also the examples from the CH cistern, $1469 \& 1470$ ).

The flat, open plates 1460-62 are most common in post-Akkadian contexts, but this group came from fill within the casemate of the Late ED III boundary wall in Area CH. It is just possible that they may in some way have been intrusive; we have not as yet found them elsewhere in Phase L levels, but they are known in earlier contexts at sites like Abu Salabikh (Moon 1987).

The large bowls from the Phase L destruction level are for the most part hemispherical in section, with either rounded or slightly flattened bases (1483$8 \&$ 1491). Large open bowls with four lug handles are common among these. The large lugged bowl 1486 and cooking pots 1676 and 1679 came from the storage area in the ER Level 5 building; 1573, from ER Room 43, represents a Phase L version of a type far more common in the Akkadian levels.
2. Bowls and beakers from the Area CH well/cistern (CH 93) (Figs. $19 \& 455$ )

These vessels are deliberately separated from the rest of the Akkadian and Phase L assemblages, since the presence of the well was not immediately recognized in the excavation of the small room through which it was dug (shown on the section, Fig. 19). Thus there was almost certainly some mixing of the pottery from the well itself with that from the small room which clearly pre-dates its construction (see p. 20). The well was dug in the Akkadian period, before the construction of the NaramSin Palace. The much earlier small rooms seem to have contained a large number of beakers (including Fig. 214), which added to the difficulty in distinguishing the two deposits. Thus there is Akkadian pottery illustrated here (for example the straightsided beaker 1481, and almost certainly 1479 and 1480) but others like that illustrated in Figure 214 are stylistically earlier. Type 1477 and the bowls with thickened and inturned rims are also known in Akkadian contexts, but the
thickened bases are not generally an Akkadian feature; they occur in post-Akkadian contexts, here stratigraphically impossible, as well as earlier levels. The pottery is clearly mixed, but we publish it here for the sake of completeness. The large quantity of pottery recovered from the well and the small room through it was cut can be seen in Figure 215.

## 3. Phase L goblets

Several small cups have been found in late ED contexts, e.g. 1499 and a number of tall-footed goblets. The only complete example, 1503, comes from the


Figure 214. Beaker from small room cut by cistern CH 93 (see $p .20$ ).


Figure 215. This photograph illustrates the more or less complete pottery, including many drinking vessels, recovered from the Akkadian well or cistern CH 93.
destruction level in Area CH, while 1505, which we believe to have been a footed goblet, comes from a much earlier 'Ninevite 5' level and 1507, from the level beneath the SS monumental complex. The context of 1508 is of interest; this goblet came from Level 9 in a deep sounding in Area ER, from a grey ash layer underlying the level in which a bichrome stand was recovered (see 1790).

Several incomplete examples of high-footed goblets from Akkadian contexts are published. No complete Akkadian examples have been found, however, and we believe that these fragmentary pieces may be residual, that is, that the high footed goblets are in general of Early Dynastic date (see also the Area TW examples published in Iraq 53, 1991, fig. 8). Both plain and painted Ninevite 5 chalices with ribbed pedestals are also attested at Brak (cf. Fig. 205d). An early third-millennium example from TW is published in Oates 1986, fig. 4:59. (The TW pottery will be published in full in Brak Volume 3.)

## 4. Bottles

Many of the Phase L bottles are indistinguishable from their Akkadian counterparts (for example, the well-known Stone Ware shapes 1511 and 1515 , while it is clear that the long-necked bottles, often thought to be especially characteristic of the Akkadian period, are found here as well ( $1524 \& 1525$ ). More characteristic of this earlier phase is the rather bagshaped type, for example 1526. Far more spouted bottles have been recovered from Phase L deposits than from Akkadian and later levels (1492-7). 1510 comes from a deposit on the western ridge of Area FS, and must be dated sometime in the earlier part of the third millennium.

## 5. Jars

Figures 458 and 459 illustrate a group of openmouthed, round and tall-neck jars from the Phase L destruction level in Areas CH and ER. The round jars are not unlike those from Akkadian contexts; as in the Akkadian period, a number of the widemouthed jars have drainage holes at the base (1538). One of the most distinctive Phase L rim shapes is illustrated by 1548 (see also 1547 \& 1558); 1563 represents another very distinctive type. The very squat shape of 1568 is also well-attested in this period.

A number of the Phase L jars have pot marks on the shoulder of the vessel. Jar 1545 also bears a seal impression (Iraq 44, 1982, pl. 17:c; DM 147). 1559 with its 'kilroy' mark came from levelling fill above the destruction level; a similar pot mark was found in 1998 in the Area TC Oval Building (Emberling et
al. 1999, fig. 21k). The pot marks themselves are discussed below, but one of their most unusual features should be mentioned here, the drilling of two very distinctive circular marks to a depth of about 0.5 cm on the interior of the vessel. Three examples come from ER Room 43 (1569-71) and one from Room 45 (1548). Their function remains unexplained.

The contexts of these jars are of interest, especially those from the small storage area in ER. These are summarized in Chapter 2.

## K. Less common third-millennium types

## 1. Strainers and colanders (Figs. 464-5)

Strainers are a very common feature of the thirdmillennium levels at Brak, in contrast with their relative rarity in second-millennium contexts at the site. Their precise function(s) elude us, though it seems obvious that many were used either for dry-sieving or for the purpose of straining liquids through cloth, perhaps soaked or cooked foods or beer, wine or other beverages. Careful measurement of the diameters of the pierced holes, carried out by Mike Charles during the 1984 season, led to no positive conclusions with respect to possible sieving of dry foods. The densely pierced sherd illustrated in Figure 216 is unusual.

The miniature strainers may have operated as 'tea-strainers' but 1623, which is rather crudely made and only lightly baked, is more likely to have been a child's toy or perhaps even some form of token. See also the miniature strainer 436. The purpose of the rim notches on 1625 remains unclear, as does the function of the large jar with strainer holes in the lower body (1656) found in the Area FS Level 5 Temple courtyard. 1654 was found next to a tannur (see also 1562, Fig. 210). The very large strainer 1655 is of earlier third-millennium date; another similar vessel also came from a Ninevite 5 (Phase J) context in Area ST. Post-Akkadian examples are also illustrated on Figure 465.

## 2. Stands

a) Fenestrated stands (Fig. 462). These are a very distinctive feature of the Early Dynastic levels, found also in Akkadian contexts; $\mathbf{1 5 9 9}$ comes from a Ninevite 5 level. The fenestrations consist either of long, narrow v -shaped slits with half a Maltese cross at the top (1595) or triangular shapes like those on 1594. The orientation of many stands remains uncertain, but the triangular windows would appear to have been cut with the point both up and down (1594). Some fenestrated stands of Mitanni date
closely resemble those from the third-millennium levels (Brak 1, fig. 217, cf. 1603 \& 1604, the latter from good Akkadian contexts). Indeed the presence on the floor of the Mitanni Palace of a complete stand with the long ' $v$ ' / Maltese cross fenestration (Brak 1, stand 691) strongly suggests that pottery from earlier contexts was copied by later potters at the site.

The cartoon figure on 1594, from the Phase L destruction level in Area CH, is unusual. Brazier 1606 is one of two examples found in a ritual closure deposit above the Area FS monumental building (Fig. 56). The fenestrations on 1607 and 1616 may have been cut to facilitate lifting. Sherds of a variety of tall fenestrated stands are illustrated in Figure 216.
b) Other stands. A number of examples of the more usual type of potstand was also recovered (Figs. 462, 463 \& 465), although such stands were far more common in second-millennium levels, perhaps because many third-millennium jars were actually set in the mud-plastered floors. Some third-millennium stands display a type of piecrust decoration usually considered characteristic of Mitanni and Middle Assyrian levels. The stands published here, on which the 'piecrust' is only very casually indicated, are unquestionably of third-millennium date, for example $\mathbf{1 6 1 5}$ from the fill of Room 5 in the Area SS monumental building. The rather elegant stands 1610 and 1611 may be of early Akkadian date; the orientation of 1611 is uncertain. Post-Akkadian examples include the unusual $\mathbf{1 6 6 0}$, which may possibly have served as a funnel.
c) Bichrome stands. Because these are exclusively of Phase K date, and are found in association with late Ninevite 5 pottery, they are discussed below (p. 192).

## 3. Other fenestrated vessels of possibly ritual function

The open, fenestrated bowl ( 1608 \& Fig. 217) is unique. It came from what appears to have been an Akkadian private residence in Area FS where there


Figure 216. Sherds illustrating a densely pierced strainer and a variety of tall fenestrated stands (for contexts see p. 608).


Figure 217. Fenestrated double bowl 1608, from Room 11, Level 3 Akkadian house in Area FS.
are no clues to its original function except for the presence of a number of jars, one containing a large
number of frit beads. Also unusual are the presumably ritual vessels recovered from the formal Akkadian building partially excavated in Area CH (vessels $1688 \& 1689$ ). These were found among the furnishings from its final phase, in a deposit lying above the higher, southern end of a two-stage platform (Fig. 21). They consist of three long terracotta boves with rounded ends. Their sides were pierced with rounded, triangular fenestrations and, unusually, at least one of them was partially covered over, forming a rather pipe-shaped section (1688). Whether this trough-like vessel was completely covered remains uncertain, but it is clear from the surviving finished surface at the upper left-hand corner of $\mathbf{1 6 8 9}$ that at least part of the latter vessel was not similarly enclosed. The sides of the latter trough are much more upright than those of 1688 , however, which leaves the possibility that the whole of 1688 was 'enclosed'. The third vessel was poorly preserved; it was even larger (width 24 cm ), with square corners. The kernos ring 387 was found in a pit dug from the NSP working floor in the same area (p. 23).

## 4. Compartmented vessels (Fig. 463)

These are rare in third-millennium contexts, if indeed any are to be attributed to this date. The example illustrated in Figure 463 is from topsoil in Area SS and, like some other vessels found here, could conceivably be of second-millennium date. A similar compartmented vessel was found in FS 1651, another surface context. Both, however, are of the same general type as that published from Chuera (Kühne 1976, pl. 32:2). Another example, also from SS topsoil (TB 9194), is probably of third-millennium date given its similarity to the Akkadian alabaster example illustrated in Figure 484:13. This too superficially resembles a second-millennium type (Brak 1, vessel 539). The only pottery example from Brak which is unequivocally stratified in a third-millennium level is a broken fragment from Room 34 in the Grey Libn Building, Area FS (FS 729).

## 5. Cooking vessels (Fig. 465)

The most common cooking pot is that illustrated by 1665 and 1666, with triangular lug handles at the rim. Evidence from Brak and other sites suggests that this was characteristic of the late Ninevite 5 and Akkadian periods. The large, globular cooking pots illustrated in Figure 465 are also well-represented at Brak. Earlier third-millennium cooking vessels with 'horseshoe-shaped' lugs (see Oates 1986, pl. 6) will be published in Volume 3, together with the fourthand early third-millennium pottery from Area TW.

Cooking pot fabric is normally orange-brown to dark grey with mica and heavy grit temper. The vessels are often heavily burnished. Detailed analyses of Brak cooking vessels from the second to the fourth millennia by Gerwulf Schneider will be published in Volume 3.

The small cooking pots with loop handles (1668 \& 1669) are unusual, as is the Level 1 tripod vessel 1667.

## 6. Large trays and platters (Fig. 467)

These form a common feature of the kitchen repertoire throughout the fourth and third millennia. Those illustrated on Figure 467 represent a selection from a great variety of simple shapes, varying in both height and profile; the great majority were apparently oval. The internal lugs on 1701 are unusual. 1696 is from the Phase L destruction level in Area ER, while $\mathbf{1 7 0 2}$ is from a Ninevite 5 deposit in Area ST. The fabric of these large trays is generally heavily tempered with chaff.

The function of the deep squarish vessels with single pouring taps at the base ( $1703 \& 1704$ ) remains to be determined. Both of these 'sinks' or 'tanks' were found in open spaces or courtyards and both are of post-Akkadian date.

## 7. Lids (Fig. 468)

It is often difficult to identify lids, but several reasonably certain Akkadian types are illustrated here; in general these resemble the lids from Chuera (Kühne 1976, figs. 285-97). Of particular interest are the small lids with steam holes (1707-10), ranging from an early third-millennium context (1710) to a post-Akkadian example (1708). Another very distinctive type is the large flat variety with loop or rectangular handle (1713-16), found both at Brak and elsewhere in association with Ninevite 5 material; knob-shaped handles were also found. 1711 and 1712 are pierced to facilitate lifting. See also the miniature lids 406 and 407. Two of the early third-millennium flat lids bore seal impressions (Fig. 156, and 1716; the latter pattern closely resembles a sealing on a large, handmade vessel, possibly a jar, recovered from the packing of a Level 1 tannur, SS 609).

## 8. Lamp-shaped vessels (Fig. 408:15 \& 16)

Only two lamp-shaped types have been found. Neither shows any sign of burning on the interior. 15 was conceivably used as a ladle. The function of 16 remains undetermined.

## 9. Drain pipes (Figs. 218 \& 463)

The Akkadian and post-Akkadian houses excavated
in Areas ER and FS were served by impressive drainage systems which involved the use of interlocking ceramic pipes (Figs. 33, 80, $84 \& 85$ ). Fig. 463 illustrates the types of individual pipe involved, the rather elegant shapes of $\mathbf{1 6 2 1}$ and 1622 from the Akkadian house in ER and 1618 to 1620 from the post-Akkadian Grey Libn Building in Area FS, and the associated soakaway. Such pipes were narrowed at the end for insertion into the adjacent pipe. Of especial interest is 1619 (Fig. 218), which was found with part of its right-angle pipe (1618) still slotted in. We recovered no actual drain pipes in Phase L, but far less of this phase was excavated. It would appear that the common drain type in these earlier levels consisted of interlocking jars, with their bases removed (e.g. Fig. 20); large jars were also often used as 'sumps' at the end of the drain. Jar 1562 (Fig. 210) is unusual in having been set into the floor, presumably as a drain, but with its own 'filter'.

## 10. Pot marks (Figs. 219 \& 461)

Incised pot marks are rare in the post-Akkadian levels. 1574 is one of a very small number of examples. In the Akkadian period it was not uncommon to mark large storage jars with a še (barley) sign together with small impressed circles, the latter apparently representing some form of measure (Fig. 219). One of the most complete examples was a very large jar, re-used as a drain in FS Level 2a, which bore the še sign and four double circles. In shape this example closely resembled 872 , which had been set within brick supports in ER Level 1 (also post-Akkadian). Such marks were made before the pot was fired. A number of sherds bear the circular 'measure' signs only (15759 ). Sherd 1580, probably a Phase L example, bears a slightly different form of 'grain' sign. The marks used on the very large storage jars in the FS Level 3 storeroom are of interest, in that they appear to be mirror images (1271, 1284, and Fig. 219:6 \& 15). Pot marks of generally similar types are found on jars from Akkadian and Phase L contexts (1540, 1587 \& 1588). Inverted ' $v$ ' and
cross-shaped marks are also common in these levels ( $1278,1545,1582,1583 \& 1586$ ). The type of mark illustrated by 1590 and 1593 is unusual. Further Phase L pot marks are illustrated in Figure 459, including the unusual 'Kilroy' face ( $\mathbf{1 5 5 9}$; see also p. 184).

A further group of pot marks from vessels of which we do not know the form are illustrated in Figure 219. In general this type of mark is found on large storage jars. The small bowl 1574, the two cooking pots ( 1577 \& 1581) and the fenestrated stand 1585 are exceptions. Also unusual is the marked bot-


Figure 218. Drainpipes 1619 from the Level $2 b$ GLB in Area FS (see Figs. 80 \& 87) and 1622 from an ER Level 2 house (Fig. 33). The scale is marked in 25 cm units.


Figure 219. Miscellaneous sherds from large jars bearing pot marks (for contexts see p. 608).
tle from the Phase L destruction in Area ER (1520). The unexplained, drilled marks found on the insides of jars from the ER Phase $L$ residence are noted above (p. 184).

## L. Ninevite 5 and related types (Figs. 468-71)

At present we lack a full stratigraphic sequence of Ninevite 5 pottery at Brak, although it is clear that several phases of Ninevite 5 development are wellrepresented. During the seasons of excavation published in this volume, little was actually excavated of these levels, since our major focus was the more accessible, later third millennium. We have, however, recovered in situ Ninevite 5 pottery in several areas, including a small sounding in Area ER, the uppermost level in Area TW, the Area ST deep trench and, possibly, in the earliest third-millennium levels excavated in Area CH (for example, $1788 \& 1789$ ). In Area TW, with the exception of plain Ninevite 5 bowls from Level 1 and a small cup from levelling fill for Level 2 with the type of feathered cable ornament common in both the earlier phases at Mohammed Arab, the Ninevite 5 pottery recovered up to now comes from large pits and levelling fills of which we do not know the date, except that the latter lie above the stratified sequence of fourth and early third-millennium materials. Indeed substantial quantities of Ninevite 5 pottery have been recovered within later levelling fills all over the site. Ninevite 5 levels have also been identified on the northwest and southeast spurs of the mound (Matthews et al. 1994; Matthews 1995), and it is clear that the whole of the main mound was occupied throughout at least part of the period characterized by this very distinctive pottery. The relevant time frame, however, remains inadequately, or perhaps one should say controversially, attested, especially within the Khabur region, and it is partly for this reason that we publish here a selection of the largely unstratified examples found within the levelling fills (other photographs of Ninevite 5 sherds from Brak can be found in Oates 1986). Our purpose is to attempt to identify the general chronological range of Ninevite 5 occupation at Brak, at least in relation to other sites. We must emphasize that with the exception of the small amount of material from Areas ER, ST and TW, the Ninevite 5 pottery published here has no meaningful context.

Identification of the range of Ninevite 5 types which occur at Brak, however, has wider significance in terms of the origins and distribution of Ninevite 5. What is well-attested at Brak is the pe-
riod between 'Jamdat Nasr' and what is generally identified as the earliest genuine painted Ninevite 5. This 'proto-Ninevite 5' or 'Transitional' phase (Rova 1988) has been found at other sites, especially in the area of the Eski Mosul dam in Iraq; it is particularly well-attested at Mohammed Arab (MA 1: Roaf n.d.) and at Karrana 3 (Wilhelm \& Zaccagnini 1993). The material of this date from Brak, which derives at present largely from Area TW, from Level 5 onwards, but has been identified also in Area SS, will appear in Volume 3; a preliminary publication of a selection of the most distinctive pottery can be found in $\operatorname{Iraq}$ 53, 1991, figures 7 and 8, where figure 7 in particular identifies several 'proto-Ninevite 5' types. Of the sherds published here Figure 220:1 (= Fig. 205:d9) is almost certainly of this type. What is not well-represented at Brak is the painted phase of Ninevite 5, although sherds have been found that must belong to this phase (Figs. $205 \& 220$ ). Interestingly, a number of painted sherds would appear to have been imported to the site (p. 200).

Our preference for the term 'proto-Ninevite 5' for the earliest phase of painted ware is to avoid the implications of the 'Late Uruk' designation employed for this material at many sites, since at Brak it is clear that this so-called 'Late Uruk' material is in date contemporary with 'ED I' in southern Mesopotamia and, more importantly, that there is a long gap between it and true Late Uruk. This is clearly demonstrated in the TW sequence where ED I types are found in the levels producing the so-called 'Late Uruk' painted and incised pottery. That this material substantially post-dates the true Late Uruk material found in situ in Area TW (Levels 11, 12; see Iraq 55, 1993; 54, 1994; Oates \& Oates 1997) is also incontrovertible, leading us to conclude that much of the so-called 'Late Uruk' found at sites like Mohammed Arab and Karrana 3 is not merely 'provincial' (Rova 1993, 108) but that it is significantly later in date.

There remains also considerable disagreement as to the characteristics of this 'proto' or 'Transitional' Ninevite 5, and especially whether it constitutes two discrete chronological as opposed to stylistic stages; indeed in a very detailed study of the content and form of the painted patterns Numoto (1991; 1992) suggests yet a further chronological division of an 'Intermediate' phase, for which there is as yet no chronological evidence whatsoever (see also Rova 1993, 43). Certainly the Brak evidence does not as yet resolve these problems, but it does provide good stratigraphic evidence for the earliest or 'proto' Ninevite 5 phase in relation to both ED I and Late Uruk. This subject will be considered in more
detail in Volume 3; we present here briefly the Ninevite 5 sherds themselves because most of them represent periods in the third millennium later than the chronological limits of Volume 3.

## 1. Plain fine wares

A number of very fine greenish, buff and light brown bowls and small beakers have been recovered, some in good archaeological contexts, including the flat-based type 1721 and 1722 from late ED levels in Area ST (see also the decorated example 1789). Much of the Brak plain fine ware cannot be precisely dated, however, for example that from the foundations of the massive Old Babylonian walls in Area TW. The straight-sided examples in particular resemble vessels from early levels at Karrana 3 (Rova 1993, pl. 30), while at Mohammed Arab it would appear that the rounded and ring-based types fall, as at Brak, within the 'proto-Ninevite 5 ' range, and that the very characteristic pointed bases are slightly later. Ridged or ribbed bowls appear in both phases, though the shapes differ, the more straight-sided beakers (e.g. $1732 \& 1771$ ) tending to fall within the true Ninevite 5 range. That ridged bowl type 1729 and $\mathbf{1 7 3 0}$ falls within the earlier 'proto-Ninevite 5', as do more open forms like 1728 is, however, clear. These early fine wares tend to be buff or light brown, sometimes green, the characteristic grey Ninevite 5 being a relatively late development (Roaf n.d.). Interestingly, two sherds of type 1728 were analyzed by ICPAES; the results show that at least one of these, and possibly both, were imported to the site.

1726 and 1727 come from the so-called Ninevite 5 house in Area ST, as do 1763, 1765, 1766 and 1771 (see also material published in Oates 1986). The decorated pottery from this locus includes finely incised types, occasionally combined with early forms of excision (see below). In general this pottery proves to be of local origin. $\mathbf{1 7 2 3}$ comes from a small tell southeast of Brak (T-2), from which the most commonly found pottery is of Northern Middle Uruk


Figure 220. Painted sherds of early third-millennium date (Ninevite 5: sample nos. $1-3,7,8 ; 9$ bichrome; the others are of unknown attribution), for contexts see p. 608.
date. 1733 and 1734 were found in a surface scraping exercise along the western ridge of Area FS; they cannot in themselves be dated but they were associated with pottery of 'proto-Ninevite 5 ' attribution.

## 2. Painted ware

Some 40 sherds of Ninevite 5 or Ninevite 5-related painted pottery have been found at Brak (Figs. 205 \& 220 ), but the incised types, of which over 600 examples have been recovered, are clearly far more common among the deposits we have excavated. Whether this observation has any significance remains to be established, since we have not as yet investigated levels of classic painted Ninevite 5 date. Certainly this type is well-represented in the graves at Tell Leilan (Weiss 1985b, 23). ICPAES and WD-XRF analyses show that a number of the Brak sherds may have been imported, in particular samples 1,3,4,9,13 (Figs. $226 \& 227$ ). Only one more or less complete painted vessel has been recovered (1737, unstratified, from Area SS), but there are certainly several examples of classic Ninevite 5 painted types (Figs. 205d, 220 ). Whether the unstratified 1737 should be considered of 'proto-Ninevite 5 ' or true Ninevite 5 attri-


Figure 221. Sherds of fine incised Ninevite 5, for contexts see p. 608.
jars, with paint and surface colours which are more within the brown range, are found in probably Akkadian contexts; such sherds are extremely rare (an example is Fig. 185d:9). Also rare is the painted vessel represented by two probably imported sherds from ST 9, a late ED context (Fig. 227:5); the only parallel we have found is from Halawa (Orthmann and Meyer 1989, fig. 41). Even earlier in the third millennium are the unusual sherds illustrated in Figure 220:5, 6 , which are very unlike Ninevite 5 in appearance; unfortunately they come from a disturbed context. For the single sherd with the finely
bution cannot be established on the basis of the evidence at Brak, although it should be noted that the vessel shape is also found in early Ninevite 5 contexts, as in the incised examples 1735,1736 and 1739. The very characteristic Ninevite 5 festoon pattern (concentric semi-circles or arcs, suspended below the main painted pattern) appears on vessels which have been classified as 'Transitional', for example at Karrana 3 (Rova 1993, pl. 20), though it is found more commonly on classic Ninevite 5 types. The latter, however, tend to be tempered with chaff while the 'Proto-Ninevite 5' vessels are usually tempered with a fine grit, as is this Brak example; the two types would appear to have been at least partially contemporary, however, and at Brak some of the classic painted Ninevite 5 has no (Fig. 205d:11), or very little (Fig. 205d:1), chaff. Figure 205:9, a small bowl in shape similar to 1737 but with a larger rolled rim is almost certainly an example originating from the 'Proto-Ninevite 5' horizon. Material of this 'Transitional' date has also been recovered from a large pit on the northwest spur of the tell (HS2, phase 1, Matthews et al. 1994, fig. 5:1-10; note, however, that in general the pointed bases tend to be slightly later).

A variety of other third-millennium painted sherds, which we are unable to identify, has been recovered both from the surface and from thirdmillennium contexts. Probably related to Ninevite 5 are the very fine sherds illustrated in Figure 205d, $4-$ 6; the paint colour is the brilliant scarlet (Munsell 10R $4 / 6$ red) found also in Figure 205:7. Other painted
painted equid leg (Fig. 205d, lower left), from a late ED context and a possibly imported piece, we have found no parallel. Also puzzling are the polychrome sherds (Fig. 185d:7, 8, and see p. 164). Most distinctive are the bichrome stands, discussed below, which are found both at Brak and Mozan in association with the latest varieties of excised Ninevite 5.

## 3. Incised ware (Fig. 221)

Figure 469 and Figure 471 illustrate a variety of incised Ninevite 5 bowls and beakers from Brak. These are closely paralleled at sites like Leilan, Mohammed Arab, Telul eth-Thalathat etc. We are uncertain of the date of 1741; although similarly crude incising seems to be present at Telul eth Thalathat (e.g. Fukai et al. 1974, pl. 24:6) and the patterns are said to be found among the early incised Ninevite 5 types (Numoto 1993, fig. 75), this could be an Akkadian piece. 1738, 1739, 1747, 1748, 1772, and 1773-5 come from the Ninevite 5 'house' in Area ST, together with 1750 and 1751, early examples of the combined incised and excised examples illustrated in Figure 470. No examples of what we have identified as 'Late Excised' were found in this ST context. Base sherd 1748 with its subtle ogee curve is typical of both the plain, often ridged and the incised Ninevite 5 beakers of this phase at Brak (see also 1751 \& 1769). Vessels of the same type as those found in the ST residence have also been recovered on the HS spur, again from a pit (Matthews 1995, fig. 13, though the excised example fig. 13:12 looks like a later intrusion).

The small beaker 1762 almost certainly has no connection with the Ninevite 5 incised group, but probably represents a rare type of 'late ED III' incised, the patterns being comparable with those found on the Phase $L$ fenestrated stands.

## 4. Excised ware (Figs. 223-5)

The earlier excised patterns are often combined, as noted above, with fine incised decoration. One of the finest examples is 1749 (Fig. 205:c2), unfortunately without informative context. 1750 and 1751 come from the ST house. 1754, with its alternating panels of incision and excision is typical of the later types of 'combined' ornament, as are the very distinctive, semi-flat-based small bowls 1759-61. At the very end of the Ninevite 5 period one finds vessels of the shapes of 1758 and 1779-83, often with entirely excised patterns (see also Fig. 224). The most common Late Ninevite 5 pattern in the Khabur area is illustrated by 1784-6 (and Fig. 225). This pattern is either uncommon in the Tigris valley or underrepresented in the publications; it is certainly found at Mohammed Arab (Roaf n.d). The very flat bowl shape of 1778-881 and the jars 1781-2 are also characteristically late types. This late phase of Ninevite 5 is widespread at Brak, identified stratigraphically in Areas CH and ST and on the HS spur (Matthews 1995, figs. $14 \& 16$ ); both later phases of Ninevite 5 have also been identified on the northeast spur at Brak (Matthews 1995).

## 5. Lids

A number of the large flat lids common elsewhere in levelling fill in Area SS.


Figure 222. Early types of incised and impressed Ninevite 5 sherds, largely from


Figure 223. Excised Ninevite 5 sherds (for contexts see p. 608).


Figure 224. Late Ninevite 5 sherds (for contexts see p. 608).


Figure 225. Late Ninevite 5 excised sherds; note the seal rolling on sherd 8 (for contexts see p. 608).
fragmentary seal impression, possibly of the fired steatite type (see p. 122).
6. Bichrome stands (Figs. 185:b1, 3 \& 471:1790)

These stands are published from Mozan, Chuera,

Raqa'i and Bderi (Milano 1991, fig. 8:f; Moortgat \& Moortgat-Correns 1976, fig. 28b; Orthmann et al. 1995, fig. 30:99); Schwartz \& Curvers 1992, fig. 7:17), and are known also from Beydar and Chagar Bazar. They are decorated with geometric patterns outlined in black and infilled with either black or a fugitive scarlet pigment which closely resembles that of the considerably earlier Diyala Scarlet Ware. Three examples have been recovered at Brak: 1790 (Fig. 205b:3) from a Phase L deposit in Area DH, a sherd from a sounding beneath the Phase L destruction level in Area ER (Fig. 205b:1) and an out-of-context sherd from an Akkadian deposit in Area FS. ICP-AES analyses suggest that all three were locally made. The fabric of 1790 is orangebrown with a dark core (surface $=$ Munsell 5YR 6/3 to 5/ 3 'reddish-brown'). The ER stand is of a gritty buff fabric; the FS piece is of the equally common, gritty, salmon-coloured fabric. The example from Mozan Tomb Ob1 is of considerable chronological significance, since it is found together with early forms of Stone Ware and the very latest forms of Ninevite 5. The ER sherd from Brak was also found together with the latest type of Ninevite 5 excised decoration. Beaker type 1752 and 1757 is important in this context, since it is present in a grey ware bowl in Tomb Ob1 at Mozan, together with the same type of Ninevite 5 decoration (Milano 1991, fig 8:e) and heavily ribbed, bellshaped cups (types very similar to 72 ; see also 106), a Stone Ware jar with a flared rim like 137, Stone Ware jars similar to the small and medium types illustrated in Figure 396 and, most importantly, the
bichrome stand. The evidence from Area CH suggests that these types are contemporary with ED III in southern Mesopotamia, though we cannot prove this. Certainly the evidence from Area ER indicates that they are unlikely to be significantly earlier than the Brak 'ED III destruction level' / Phase L. Unfortunately the length of (non-Ninevite 5) Phase L has yet to be determined with certainty. The Mozan tomb group is of the greatest importance in demonstrating the contemporaneity of these various types, and we are very indebted to Giorgio Buccellati and Marilyn Kelly-Buccellati for their very generous invitation to examine this material at Tell Mozan.

A very worn but comparable scarlet paint was found on a large sherd from a heavily ribbed fenestrated stand, unfortunately from the surface of the tell. The fabric was a very gritty buff with large white inclusions, unlike the brown, slightly chaffy, dark-cored stand 1790. Also from Brak are two surface sherds of decorated jar shoulders that closely resemble Scarlet Ware from the Diyala.

## M. General comments

The third-millennium excavations at Brak have enabled us not only to publish some 1780 pot types but also to identify wider repertoires of pottery at three very specific points in time: 1) an extensive destruction level possibly but not certainly associated with the earliest Akkadian presence at Brak-Nagar but undoubtedly to be dated no later than sometime very late within ED IIIB in south Mesopotamia (end of Phase L = CH Level 6, ER Level 5); 2) the destruction level which almost certainly marks the end of Akkadian rule in the Khabur (CH, FS and SS Level 3, ER Level 2); and 3) a period of at least two levels of post-Akkadian, late third-millennium occupation associated with a very distinctive range of pottery ( CH , FS, SS Levels 1,2; ER, ST Level 1). The emphasis in publication has been on complete vessels because we believe that these best represent the levels from which they are recovered; certainly they provide reliable groups of associated pottery. More detailed data are available in the sherdbooks held in Cambridge.

The Phase L material includes a range of bowls, jars and beakers many of which are not easily distinguished from pottery from the level that we now believe represents the earliest Akkadian presence at the site (CH Level 5, ER Level 4). This is not surprising, since the local potters are more than likely to have survived the change of political authority. This pottery includes large numbers of noncalcareous

Stone Ware jars, large and small, calcareous 'near Stone Ware' bowls, both round and flat-based and reminiscent of the mass-produced 'sila bowls' of Tell Leilan, fenestrated stands and, among the stone objects, a number of unusual rectangular troughs with two lugs at one end. An earlier repertoire, though still we believe within the 'ED III' temporal framework, includes bichrome stands, early noncalcareous Stone Ware bowls and jars, and late Ninevite 5, including the very flat jars with widely everted rims, pointed beakers and the latest forms of excised decoration. The clear presence of the sila bowl' type in Phase L at Brak demonstrates that these 'ration bowls', if that is their purpose, cannot be an Akkadian introduction.

Pottery from the Akkadian/Phase $M$ levels includes a variety of tall-necked flasks, though this type is not exclusive to these levels, and largely flatbased bowls and beakers, including dark and light grey Stone Ware types, many of which are of the calcareous variety; classic noncalcareous Stone Ware jars are also found throughout the Akkadian levels, although less frequently than in Phase L and in the earliest Akkadian level. The only convincingly stratified examples of 'combed wash wear' appear to be limited to Akkadian levels. The pottery from the late third-millennium, post-Akkadian levels is especially distinctive, at Brak characterized by fine beakers and bowls with recess-beaded rims, the latter with ring or disc bases and the beakers generally with concave bases. Very distinctive pattern or radial-burnishing is also characteristic on some of the fine ware bowls. Beautiful grey Stone Ware occurs here, but in shapes differing from the Akkadian and Phase L types. Horizontally ribbed jar rims and bowls with heavy slashed rib and herring-bone decoration are also found late in the third and early in the second millennium. This range of pottery is clearly attested from Chuera in the west (Palace F, Level 1: Orthmann \& Pruß 1995, figs. 78-83, but note that the Isin-Larsa types are not found at Chuera), Tell al Rimah (Oates \& Oates 2001), Tell Taya and Nineveh to Tepe Gawra in the East (Speiser 1935, Level VI). Similar recess-beaded rim vessels are found also along the Balikh (Bi'a, Hammam et-Turkman).

Comb-incised pottery occurs throughout this sequence, but is rare in Phase L. In general the Akkadian decoration of this type tends to be multipatterned while the later third-millennium material is much simpler, often with little more than very regular, neat combing. Orange bowls with dark rims also occur throughout the sequence, but are more common in the latest levels. Triangular-lugged cook-
ing versels are also ubiquitous. With respect to the generalizations made in the publication of the 1998 Beydar colloquium (Lebeau et al. 2000) it should also be noted that at Brak string-cut bases continue throughout the Akkadian and post-Akkadian levels, and that at Brak band-rim bowls, recess-beaded rims and ring-based bottles are a feature of post-Akkadian contents. The latest third-millennium phase at Brak (Phase N) has long remained largely unrecognized in the Khabur plains, and we hope that the unique, well-stratified and well-dated evidence produced here will help not only in the further identification of sites of this date but also in a greater understand-
ing of a period in which Hurrian kingdoms make their appearance.

Relevant to wider archaeological reconstructions is the fact that in the period of Akkadian domination virtually no South Mesopotamian pottery can be identified at Brak, whereas during the following, possibly Hurrian-dominated phase, the pottery displays many connections with types known in the south. Moreover, mass-produced pottery types, widely represented in the fourth millennium, are clearly present at Brak during the time of the preAkkadian kingdom of Nagar, that is, they are not an Akkadian innovation.

# Stone Ware and Ninevite 5: Notes on Composition and Technology of Pottery from Tell Brak 

Gerwulf Schneider \& Malgorzata Daszkiewicz

Plain sherds, Ninevite 5 and Stone Ware from Tell Brak have been chemically analyzed in order to obtain information on local and imported products. North Mesopotamian Stone Ware has already been studied in an earlier paper to gain insight into early stoneware technology (Schneider 1989). These and new studies are summarized here. Chemical, mineralogical and technological studies were done also of various pottery of fifth- to first-millennium $B C$ date from other excavated sites in northeast Syria and the adjacent part of Turkey, including Tell Rad Shaqrah, Tell Arbit, Tell Shaikh Hamad, Girnavaz, Tell Bi'a and Munbaqa. These results are also used here. Up to now from the about one thousand analyzed sherds, only a few short papers have been published (Schneider 1994; Daszkiewicz \& Schneider 1996; Daszkiewicz \& Bobryk 1998; 1999; Daszkiewicz \& Smogorzewska 1999). Laboratory analyses of pottery from northeast Syria which can be used for comparison have been carried out by Klenk (1987), Blackman et al. (1993) and Le Mière \& Picon (1987; 1994). Ninevite 5 pottery from five sites in northern Iraq was analyzed by Campbell (n.d.) but there are too few elements for comparisons with our series. Other projects have tended to be meth-
odologically limited (Jamieson 1990) or are still in the planning phase (Argyropoulos 1995).

From Tell Brak a series of plain wares and Ninevite 5 pottery was analyzed by ICP-AES (inductively coupled plasma atomic emission spectroscopy), by Jacqueline Selby in co-operation with Dr J.N. Walsh of the Royal Holloway and Bedford New College, London (Selby 1991); samples from the Uruk period were also included. Twelve of these samples have been reanalyzed by WD-XRF (wavelength-dispersive X-ray fluorescence) to establish the extent to which the ICP-AES analyses are comparable with the data bank in Berlin. The samples for ICP-AES have been taken by drilling, the samples for WDXRF were taken as fragments of about two grams and, after removing the surface layers and cleaning in an ultrasonic device, were powdered in an agate mill. A more detailed description can be found in Kühne \& Schneider (1988, 99). Both methods of chemical analysis are able to determine the concentrations of major and trace elements in ceramics with a generally high precision. Some trace elements can be determined only with low precision; these differ in ICP-AES and WD-XRF. The results of 81 analyses by ICP-AES (Table 2) and 59 analyses by WD-XRF
(Table 4), including four samples from clay and mudbricks, are presented here as an objective basis for discussion. Of this series no thin sections have been made. A larger petrographic study of Late Uruk pottery from Tell Brak (Siriol Mynors, unpublished report) and new thin section and technological studies will be discussed in Tell Brak Volume 3, together with the ICP-AES data of the relevant samples.

For North Mesopotamian Stone Ware (Metallic Ware) there exists now a data base of 366 analyses by WD-XRF and 98 thin sections of sherds from various third-millennium sites. A large part of the sherds represents surface finds but excavated sherds from Tell Brak, Tell Chuera, Tell Bderi, Tell Atij, Tell Rad Shaqrah and Tell Arbit are also included. The results will be summarized here without presenting the whole data set which may be obtained by writing to the authors. An important question is how the compositional and technological groups correspond with the colour groups of North Mesopotamian Stone Ware distinguished by J. Oates: dark grey, red, pale grey, and olive-green fabric (cf. Figs. $185 \& 205$ ). The common pottery from Brak is generally buff or salmon-coloured; low-fired varieties may be reddishbeige, high-fired sherds yellow to olive-green. Sherds of high-fired Fine Ware and of Stone Ware of both calcareous and noncalcareous composition are often difficult to classify macroscopically. Without chemical analysis the two different compositional groups of noncalcareous Stone Ware cannot be distinguished at all. Such analytical studies are therefore essential to establish the true classifications of Stone Ware sherds.

## Plain ware and Ninevite 5 pottery

Local and imported pottery can be distinguished by chemical analysis if the local pottery forms a homogeneous group and non-local pottery differs significantly from this group. This is the first condition. The second condition is that securely identified local pottery must be available for comparison. These two conditions are only partly satisfied in the case of North Mesopotamian pottery and the pottery of Tell Brak. Owing to the relatively homogeneous geological situation, clay samples from various sites in the Syrian Jazira differ very little either chemically or in their mineral inclusions, and this is true also of the pottery (Schneider 1994). This means that the chemical composition of a series of clay samples from the immediate environment of a site varies within the same limits as the composition of samples taken from a much larger region. In this case it is not possible to
distinguish locally- and regionally-made wares on the base of raw material composition. The possibility of comparing clay samples with pottery is also limited when the raw materials have been prepared in different ways by mixing with temper or by levigation. Workshop finds and potters' tools are not as yet available. Even overfired sherds, so distorted that the vessel could not have been used, are no secure indication of local production because they may have been overfired in a later fire and therefore cannot unequivocally be regarded as kiln wasters. Thus only the frequency of sherds can be used as an argument to determine which chemical group may be identified as local.

If the chemical variation of sherds from one site is large because the series includes imported sherds and if we do not have more specific evidence for identifying local composition, we have no alternative but to take the plain wares and then the chemical group which remains as a more homogeneous core group after removing deviating samples. It is this method that we have had to use for the Ninevite 5 samples at Brak. In this situation the study of thin sections would help very much to support the chemical grouping and to confirm aberrant compositions, e.g. by the identification of inclusions less typical for the pottery of the site.

The analyses by ICP-AES presented in Table 2 come from dry samples, whereas the data from WDXRF (Table 4) are valid for ignited samples. Using the ignition losses given in Table 4, the analyses by WD-XRF in Table 2 have been calculated on a dry basis so that the data can be compared directly. This indicates that the results of the two analytical techniques generally agree. Systematic shifts can be observed in $\mathrm{Ti}, \mathrm{Al}, \mathrm{Fe}, \mathrm{Cr}$ and can be corrected. Some of the Zn values by ICP-AES seem to be much too high, the Zr values generally are too low. These two elements, and Cu and Ce , are omitted in the interpretation owing to the lack of precision compared with the small level of variation within the whole series. The original ICP-AES data include some elements which are either not or only imprecisely determined by XRF. These are $\mathrm{Li}, \mathrm{Sc}, \mathrm{Co}, \mathrm{Nb}, \mathrm{La}, \mathrm{Nd}, \mathrm{Sm}, \mathrm{Eu}, \mathrm{Dy}$, Yb . These elements, however, did not help to provide a clearer picture than was obtained by using the more precisely analyzed elements $\mathrm{Ti}, \mathrm{Al}, \mathrm{Fe}, \mathrm{Mn}$, $\mathrm{Mg}, \mathrm{Ca}, \mathrm{Na}, \mathrm{K}, \mathrm{V}, \mathrm{Cr}, \mathrm{Ni}, \mathrm{Sr}$ and Ba .

Strontium is the element which varies most within the series published in Table 2. This trace element is correlated to the major element calcium but in differing ratios depending on mineralogical composition. High ratios of Sr to Ca may be due to

Table 2. Analyses by ICP-AES (Selby) and repeated analyses by WD-XRF (Schneider), for samples on a dry basis.

|  | Sample no. | $\mathrm{TiO}_{2}$ | $\mathrm{Al}_{2} \mathrm{O}{ }_{3}$ | $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | $\mathbf{M n O}$ | MgO | CaO | $\mathrm{Na}_{2} \mathrm{O}$ | $\mathrm{K}_{2} \mathrm{O}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$ | V | Cr | Co | Ni | Cu | Zn | Sr | Y | Zr | Nb | Ba | La | Ce |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 1 SS540 | 0.67 | 13.85 | 7.83 | 0.12 | 8.63 | 7.60 | 0.88 | 3.61 | 0.24 | 157 | 243 | 27 | 270 | 75 | 499 | 383 | 19 | 57 | 10 | 236 | 26 | 42 |
|  | 2 FS1524 | 0.66 | 14.26 | 7.59 | 0.16 | 6.93 | 13.24 | 1.33 | 2.35 | 0.21 | 148 | 159 | 24 | 113 | 77 | 847 | 640 | 24 | 35 | 9 | 295 | 24 | 46 |
|  | 3 ER1 | 0.58 | 11.29 | 6.16 | 0.10 | 6.80 | 18.06 | 0.51 | 2.21 | 0.21 | 138 | 310 | 26 | 234 | 28 | 70 | 1273 | 19 | 53 | 8 | 341 | 8 | 46 |
|  | 4 SS | 0.52 | 11.54 | 6.03 | 0.08 | 4.00 | 17.54 | 1.07 | 2.05 | 0.25 | 224 | 229 | 23 | 107 | 32 | 77 | 1730 | 20 | 31 | 6 | 659 | 12 | 34 |
|  | 5 TW3A | 0.54 | 10.13 | 5.10 | 0.09 | 4.10 | 20.81 | 0.56 | 2.14 | 0.33 | 119 | 191 | 21 | 114 | 29 | 76 | 1616 | 19 | 50 | 9 | 356 | 5 | 34 |
|  | 6 CH96 | 0.62 | 13.35 | 707 | 0.09 | 4.55 | 10.86 | 1.30 | 2.45 | 0.28 | 192 | 322 | 22 | 132 | 31 | 90 | 696 | 20 | 43 | 9 | 262 | 23 | 38 |
|  | 7 TW127A | 0.65 | 11.22 | 5.60 | 0.12 | 435 | 20.08 | 0.75 | 2.08 | 0.30 | 118 | 172 | 23 | 142 | 33 | 239 | 588 | 24 | 63 | 11 | 341 | 11 | 40 |
|  | 8 TB | 0.65 | 1198 | 6.42 | 0.12 | 4.84 | 15.18 | 0.72 | 2.33 | 0.47 | 134 | 242 | 25 | 207 | 27 | 74 | 413 | 23 | 56 | 10 | 564 | 18 | 40 |
|  | 9 TT | 0.66 | 12.45 | 6.56 | 0.11 | 8.50 | 19.60 | 0.71 | 1.28 | 0.21 | 125 | 291 | 27 | 271 | 44 | 819 | 473 | 23 | 90 | 10 | 347 | 7 | 28 |
|  | 10 DS | 0.69 | 11.40 | 5.85 | 0.10 | 400 | 18.09 | 0.80 | 1.89 | 0.24 | 110 | 195 | 23 | 154 | 47 | 669 | 1355 | 25 | 72 | 10 | 342 | 13 | 38 |
|  | 11 TBA | 0.81 | 14.04 | 7.50 | 0.15 | 5.37 | 12.75 | 0.98 | 2.35 | 0.25 | 154 | 218 | 26 | 176 | 27 | 104 | 1288 | 28 | 87 | 15 | 385 | 27 | 56 |
|  | 12 STD9 | 0.62 | 10.96 | 5.62 | 0.07 | 4.36 | 14.46 | 0.37 | 1.91 | 0.39 | 110 | 184 | 21 | 139 | 71 | 606 | 1197 | 38 | 71 | 12 | 255 | 24 | 47 |
|  | 13 TW19 | 0.66 | 13.94 | 7.55 | 0.12 | 6.42 | 11.79 | 0.77 | 3.76 | 0.25 | 124 | 245 | 27 | 268 | 46 | 93 | 452 | 19 | 58 | 9 | 434 | 22 | 38 |
|  | 14 HH478 | 064 | 13.38 | 6.93 | 0.10 | 5.29 | 16.94 | 1.33 | 2.61 | 0.21 | 128 | 258 | 26 | 263 | 34 | 128 | 2688 | 21 | 86 | 10 | 299 | 11 | 36 |
|  | Nimevte 5, ribbed |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 16 AL25 | 0.81 | 14.32 | 7.00 | 0.08 | 7.98 | 9.62 | 0.80 | 2.45 | 0.23 | 191 | 228 | 24 | 177 | 30 | 123 | 1282 | 26 | 79 | 15 | 335 | 31 | 54 |
|  | C006 (XRF) | 0.889 | 14.76 | 7.32 | 0.085 | 8.28 | 9.25 | 0.89 | 281 | 0.233 | 184 | 293 | 22 | 177 | 28 | 106 | 1290 | 26 | 202 | 12 | 349 | 24 | 52 |
|  | 17 ST1103A | 0.75 | 14.84 | 7.63 | 0.13 | 5.29 | 14.25 | 0.59 | 250 | 0.36 | 139 | 215 | 27 | 202 | 33 | 105 | 579 | 26 | 80 | 13 | 347 | 25 | 51 |
|  | C007 (XRF) | 0.836 | 15.01 | 7.77 | 0.135 | 5.31 | 14.38 | 0.74 | 2.60 | 0.404 | 134 | 233 | 26 | 192 | 18 | 103 | 626 | 26 | 172 | 12 | 350 | 33 | 67 |
| ৮o | Nincoite 5, incised and plain |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 15 TWC11 | 0.64 | 12.03 | 5.97 | 0.09 | 5.12 | 19.16 | 0.54 | 2.40 | 0.45 | 141 | 231 | 25 | 148 | 29 | 88 | 1477 | 24 | 75 | 11 | 284 | 11 | 38 |
|  | 18 ST51 | 0.76 | 13.33 | 6.90 | 0.12 | 4.59 | 14.73 | 0.62 | 2.60 | 0.28 | 156 | 214 | 25 | 179 | 26 | 80 | 752 | 27 | 85 | 13 | 340 | 23 | 48 |
|  | 19 SS300 | 0.85 | 13.54 | 7.09 | 0.13 | 4.81 | 17.54 | 0.66 | 1.98 | 0.51 | 168 | 242 | 28 | 182 | 26 | 85 | 798 | 33 | 103 | 14 | 478 | 20 | 50 |
|  | 20 TW116 | 0.74 | 13.44 | 6.53 | 0.10 | 4.57 | 14.12 | 0.69 | 2.52 | 0.37 | 130 | 206 | 23 | 154 | 33 | 93 | 554 | 26 | 76 | 14 | 350 | 24 | 51 |
|  | 21 CH702 | 0.78 | 13.96 | 7.16 | 0.12 | 4.98 | 16.72 | 0.48 | 2.60 | 0.75 | 148 | 225 | 25 | 170 | 50 | 164 | 820 | 29 | 87 | 14 | 353 | ${ }^{21}$ | 49 |
|  | 22 ST1104A | 0.79 | 12.46 | 6.44 | 0.12 | 4.73 | 18.33 | 1.06 | 1.18 | 0.33 | 131 | 224 | 25 | 168 | 31 | 80 | 672 | 30 | 106 | 13 | 326 | 17 | 45 |
|  | 23 TWA20A | 0.98 | 14.26 | 7.54 | 0.13 | 4.85 | 17.42 | 1.18 | 1.38 | 0.27 | 140 | 216 | 28 | 174 | 36 | 76 | 702 | 27 | 151 | 14 | 381 | 20 | 50 |
|  | 24 ST1103 | 0.76 | 13.98 | 6.98 | 0.11 | 5.72 | 17.35 | 2.17 | 0.78 | 0.45 | 140 | 206 | 25 | 181 | 33 | 79 | 763 | 25 | 140 | 13 | 172 | 18 | 46 |
|  | C008 (XRF) | 0.805 | 13.84 | 7.07 | 0.113 | 5.67 | 17.30 | 2.17 | 0.76 | 0.529 | 135 | 249 | 20 | 171 | 22 | 83 | 771 | 22 | 184 | 12 | 163 | 20 | 60 |
|  | 25 ST1101 | 0.69 | 13.37 | 6.51 | 0.12 | 6.40 | 18.61 | 1.18 | 1.57 | 0.22 | 127 | 188 | 24 | 156 | 28 | 84 | 507 | 28 | 106 | 13 | 338 | 15 | 41 |
|  | 26 TW133 | 0.78 | 14.22 | 7.19 | 0.12 | 5.45 | 17.64 | 1.44 | 1.19 | 0.33 | 135 | 210 | 27 | 198 | 42 | 99 | 369 | 30 | 126 | 14 | 314 | 19 | 47 |
|  | 27 ST144 | 0.70 | 12.90 | 6.56 | 0.12 | 5.06 | 16.85 | 1.30 | 1.75 | 0.60 | 125 | 191 | 23 | 178 | 38 | 85 | 632 | 27 | 92 | 13 | 292 | 17 | 43 |
|  | 28 TW3 | 0.73 | 13.79 | 6.94 | 0.11 | 5.27 | 16.03 | 1.64 | 1.85 | 0.53 | 125 | 197 | 24 | 175 | 44 | 138 | 518 | 26 | 92 | 13 | 292 | 20 | 47 |
|  | 29 ST1104 | 0.69 | 12.93 | 6.51 | 0.11 | 5.73 | 17.00 | 1.82 | 1.45 | 0.74 | 128 | 189 | 24 | 169 | 43 | 113 | 813 | 24 | 105 | 13 | 277 | 16 | 43 |
|  | 30 TW | 0.81 | 12.66 | 6.59 | 0.11 | 4.98 | 21.28 | 0.71 | 1.58 | 0.22 | 124 | 205 | 25 | 161 | 37 | 85 | 729 | 28 | 145 | 13 | 340 | 10 | 39 |
|  | 31 TW127 | 0.88 | 14.52 | 7.19 | 0.12 | 5.34 | 16.92 | 1.96 | 0.88 | 0.28 | 145 | 227 | 27 | 190 | 31 | 93 | 426 | 26 | 128 | 13 | 379 | 20 | 50 |
|  | 32 FIII5/2 | 0.76 | 13.19 | 6.56 | 0.11 | 6.73 | 19.25 | 0.76 | 1.92 | 0.22 | 126 | 203 | 25 | 172 | 26 | 55 | 592 | 28 | 143 | 13 | 308 | 14 | 41 |
|  | 33 TW123 | 0.90 | 13.37 | 6.99 | 0.12 | 5.16 | 19.55 | 1.31 | 1.04 | 0.28 | 139 | 224 | 28 | 167 | 36 | 99 | 595 | 32 | 162 | 15 | 343 | 16 | 43 |
|  | C009 (XRF) | 0.955 | 13.70 | 7.42 | 0.128 | 5.27 | 19.01 | 1.32 | 1.06 | 0.285 | 139 | 287 | 25 | 167 | 27 | 92 | 525 | 26 | 194 | 15 | 326 | 25 | 65 |
|  | 34 TW122 | 0.61 | 10.50 | 5.53 | 0.10 | 4.20 | 20.44 | 0.67 | 2.31 | 0.40 | 129 | 223 | 23 | 137 | 48 | 212 | 777 | 22 | 64 | 11 | 307 | 8 | 32 |
|  | 35 TW20 | 0.65 | 12.19 | 6.02 | 0.12 | 5.59 | 17.01 | 0.62 | 2.34 | 0.32 | 132 | 187 | 23 | 141 | 26 | 91 | 1896 | 24 | 70 | 12 | 496 | 16 | 43 |
|  | 36 ST | 0.69 | 14.13 | 6.78 | 0.12 | 6.25 | 15.79 | 0.68 | 2.36 | 0.34 | 124 | 182 | 23 | 161 | 32 | 85 | 945 | 26 | 77 | 14 | 445 | 22 | 47 |
|  | 37 TW116A | 0.75 | 13.46 | 6.82 | 0.12 | 4.63 | 16.64 | 0.49 | 2.36 | 0.30 | 147 | 228 | 26 | 167 | 33 | 90 | 585 | 26 | 75 | 14 | 340 | 21 | 48 |
|  | 38 ER243 | 0.70 | 11.45 | 5.88 | 0.11 | 4.01 | 19.95 | 0.70 | 1.90 | 0.32 | 101 | 193 | 29 | 143 | 180 | 1178 | 782 | 26 | 74 | 11 | 351 | 13 | 38 |
|  | 39 SS812 | 0.72 | 13.40 | 6.61 | 0.12 | 4.62 | 16.64 | 0.83 | 2.86 | 0.84 | 130 | 216 | 23 | 159 | 31 | 76 | 1002 | 27 | 82 | 13 | 361 | 20 | 46 |
|  | C010 (XRF) | 0.754 | 12.42 | 6.13 | 0.112 | 4.21 | 17.93 | 0.83 | 2.75 | 2.73 | 117 | 233 | 19 | 138 | 24 | 86 | 1273 | 24 | 184 | 12 | 329 | 23 | 49 |
|  | 40 SS580 | 0.72 | 11.82 | 6.23 | 0.12 | 4.08 | 18.08 | 0.81 | 2.26 | 0.23 | 121 | 239 | 23 | 151 | 31 | 70 | 667 | 25 | 76 | 11 | 334 | 16 | 42 |
|  | C011 (XRF) | 0.838 | 11.93 | 6.30 | 0.119 | 4.15 | 17.94 | 0.80 | 2.32 | 0.233 | 103 | 340 | 21 | 139 | 21 | 74 | 587 | 25 | 198 | 12 | 311 | 23 | 60 |

Table 2. (cont.).

|  | Sample no. | $\mathrm{TiO}_{2}$ | $\mathrm{Al}_{2} \mathrm{O}_{3}$ | $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | MnO | MgO | CaO | $\mathrm{Na}_{2} \mathrm{O}$ | $\mathrm{K}_{2} \mathrm{O}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$ | v | Cr | Co | Ni | Cu | Zn | Sr | Y | Zr | Nb | Ba | La | Ce |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Plain wares (early ED to Akkadian) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 41 CW11 | 0.65 | 12.12 | 6.14 | 0.11 | 4.70 | 15.69 | 0.85 | 2.11 | 0.23 | 164 | 272 | 23 | 146 | 28 | 85 | 1228 | 25 | 68 | 11 | 413 | 19 | 41 |
|  | 42 FS653 | 0.63 | 13.03 | 6.05 | 0.10 | 4.22 | 14.59 | 1.27 | 2.46 | 0.26 | 125 | 163 | 23 | 123 | 46 | 715 | 549 | 24 | 58 | 10 | 286 | 20 | 41 |
|  | 43 ERC232 | 0.64 | 11.66 | 5.79 | 0.10 | 4.33 | 16.83 | 0.81 | 2.45 | 0.74 | 149 | 185 | 23 | 137 | 33 | 151 | 1041 | 22 | 60 | 11 | 289 | 16 | 37 |
|  | C012 (XRF) | 0.721 | 12.34 | 6.09 | 0.103 | 4.55 | 13.51 | 0.92 | 3.07 | 1.081 | 147 | 236 | 20 | 128 | 21 | 99 | 986 | 23 | 166 | 10 | 298 | 9 | 46 |
|  | 44 FS519 | 0.72 | 12.56 | 6.47 | 0.15 | 4.79 | 14.94 | 1.25 | 1.97 | 0.83 | 148 | 217 | 24 | 148 | 35 | 100 | 109 | 29 | 84 | 12 | 306 | 21 | 45 |
|  | 45 FS1719 | 0.56 | 10.71 | 5.40 | 0.09 | 5.74 | 14.32 | 0.84 | 2.57 | 0.63 | 163 | 220 | 21 | 125 | 28 | 100 | 1878 | 20 | 55 | 10 | 304 | 17 | 39 |
|  | 46 SS211 | 0.59 | 11.04 | 5.51 | 0.10 | 4.02 | 19.75 | 0.52 | 2.24 | 0.34 | 108 | 167 | 22 | 126 | 45 | 152 | 1669 | 21 | 64 | 11 | 501 | 8 | 36 |
|  | C013 (XRF) | 0.712 | 12.04 | 6.10 | 0.105 | 4.14 | 18.22 | 0.62 | 2.53 | 0.331 | 113 | 273 | 19 | 129 | 27 | 84 | 1649 | 22 | 178 | 10 | 644 | 20 | 49 |
|  | 47 SS113 | 0.63 | 10.98 | 5.45 | 0.11 | 5.17 | 22.21 | 0.87 | 1.26 | 0.25 | 138 | 167 | 22 | 137 | 26 | 77 | 867 | 26 | 88 | 11 | 293 | 5 | 32 |
|  | 48 TW144 | 0.65 | 12.91 | 6.32 | 0.10 | 4.57 | 13.39 | 1.23 | 2.74 | 0.46 | 154 | 223 | 22 | 131 | 32 | 126 | 1372 | 23 | 64 | 12 | 307 | 22 | 46 |
|  | 49 TW140B | 0.61 | 11.52 | 5.64 | 0.10 | 4.14 | 19.13 | 1.39 | 1.67 | 0.73 | 132 | 183 | 22 | 123 | 32 | 78 | 2424 | 25 | 79 | 10 | 308 | 9 | 38 |
|  | 50 ST85 | 0.64 | 11.00 | 5.57 | 0.10 | 4.76 | 19.89 | 0.55 | 1.99 | 0.22 | 105 | 189 | 24 | 152 | 76 | 1580 | 1092 | 23 | 68 | 11 | 314 | 10 | 36 |
|  | 51 FS1248 | 0.57 | 11.19 | 5.30 | 0.09 | 3.85 | 18.30 | 1.07 | 2.03 | 024 | 116 | 165 | 22 | 112 | 83 | 738 | 1499 | 20 | 57 | 9 | 338 | 10 | 32 |
|  | 52 FS1450 | 0.58 | 10.98 | 5.38 | 0.08 | 4.22 | 21.41 | 0.84 | 2.31 | 0.58 | 127 | 156 | 23 | 129 | 49 | 757 | 1654 | 23 | 69 | 10 | 281 | 5 | 31 |
|  | 53 TW48 | 0.67 | 12.67 | 6.29 | 0.09 | 4.85 | 14.88 | 0.79 | 2.95 | 0.34 | 160 | 269 | 25 | 151 | 33 | 87 | 1702 | 23 | 67 | 11 | 382 | 19 | 44 |
|  | 54 FS1650 | 0.60 | 11.47 | 5.72 | 0.10 | 4.00 | 19.47 | 0.86 | 1.92 | 0.21 | 125 | 172 | 22 | 136 | 34 | 82 | 545 | 22 | 54 | 9 | 428 | 8 | 30 |
|  | 55 TW140A | 0.61 | 12.31 | 5.65 | 0.09 | 4.34 | 16.61 | 1.10 | 2.50 | 0.60 | 121 | 150 | 23 | 126 | 95 | 983 | 1169 | 23 | 60 | 10 | 303 | 17 | 42 |
|  | 56 TWB32 | 0.69 | 12.38 | 6.07 | 0.08 | 5.07 | 19.97 | 1.43 | 1.35 | 0.44 | 125 | 196 | 23 | 142 | 32 | 83 | 1174 | 28 | 107 | 12 | 239 | 12 | 39 |
|  | 57 SS88 | 0.65 | 12.48 | 6.34 | 0.10 | 4.81 | 17.44 | 0.81 | 2.56 | 0.32 | 145 | 253 | 24 | 171 | 28 | 87 | 667 | 23 | 65 | 11 | 275 | 16 | 39 |
|  | C014 (XRF) | 0.710 | 12.75 | 6.50 | 0.104 | 4.87 | 17.41 | 0.93 | 2.68 | 0.408 | 128 | 291 | 24 | 160 | 19 | 90 | 662 | 23 | 154 | 11 | 285 | 12 | 43 |
|  | 58 FS677 | 0.62 | 11.44 | 5.71 | 0.10 | 4.57 | 17.83 | 0.58 | 2.53 | 0.31 | 113 | 161 | 23 | 139 | 114 | 1057 | 812 | 23 | 67 | 11 | 280 | 14 | 38 |
|  | 59 ST1104B | 0.61 | 11.41 | 5.74 | 0.09 | 4.80 | 18.70 | 0.86 | 2.45 | 0.51 | 161 | 209 | 22 | 133 | 26 | 85 | 1937 | 22 | 62 | 11 | 267 | 11 | 38 |
|  | 60 TW132 | 0.57 | 11.43 | 5.72 | 0.09 | 3.99 | 13.82 | 0.75 | 3.21 | 0.32 | 123 | 199 | 22 | 137 | 32 | 86 | 1407 | 21 | 62 | 11 | 509 | 19 | 41 |
|  | Northern bichrome (ED III) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| \% | 87 DH10 | 0.64 | 10.07 | 5.31 | 0.09 | 5.00 | 17.40 | 0.66 | 2.47 | 0.21 | 137 | 175 | 21 | 136 | 35 | 148 | 838 | 25 | 61 | 11 | 215 | 15 | 35 |
|  | 88 ER241 | 0.61 | 9.68 | 5.19 | 0.09 | 5.79 | 20.54 | 0.57 | 1.88 | 0.24 | 141 | 217 | 22 | 125 | 40 | 212 | 942 | 23 | 59 | 9 | 189 | 6 | 26 |
|  | 89 FS1476 | 0.79 | 12.92 | 6.75 | 0.11 | 4.82 | 15.11 | 0.75 | 2.39 | 0.24 | 129 | 193 | 25 | 154 | 35 | 194 | 1703 | 29 | 77 | 13 | 332 | 22 | 52 |
|  | surface find, | ware (?) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 90 TB4 | 0.69 | 12.05 | 6.75 | 0.10 | 4.11 | 14.61 | 0.84 | 2.05 | 0.51 | 134 | 201 | 23 | 147 | 31 | 130 | 1260 | 23 | 67 | 12 | 667 | 21 | 44 |
|  | Uruk types |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 70 BRK01 |  |  | 5.85 5.59 | 0.10 0.095 | 4.03 4.04 | 15.108 | 1.26 | 2.40 | 0.184 | 101 | 169 | 18 | 114 | 21 | 73 | 581 | 19 | 146 | 8 | 286 | 9 | 46 |
|  | C015 (XRF) 71 BRK76 d | 0.656 0.48 | 11.63 9.94 | 5.59 4.44 | 0.095 0.09 | 4.04 2.55 | 15.98 15.21 | 1.19 | 2.79 | 0.484 0.42 | 110 | 119 | 19 | 99 | 26 | 87 | 1521 | 17 | 47 | 7 | 613 | 13 | 30 |
|  | 72 FS1169 | 0.56 | 12.36 | 6.16 | 0.09 | 3.85 | 10.94 | 1.29 | 2.61 | 0.20 | 123 | 147 | 21 | 128 | 44 | 119 | 726 | 20 | 44 | 8 | 254 | 22 | 38 |
|  | 73 FS1253 | 0.63 | 11.90 | 4.96 | 0.09 | 4.15 | 17.11 | 0.93 | 214 | 0.23 | 116 | 179 | 24 | 148 | 115 | 553 | 1157 | 22 | 64 | 12 | 297 | 16 | 38 |
|  | 74 CH768 | 0.68 | 9.09 | 5.27 | 0.06 | 3.61 | 21.50 | 0.57 | 1.51 | 0.21 | 95 | 171 | 21 | 118 | 34 | 106 | 505 | 21 | 57 | 8 | 173 | 5 | 24 |
|  | 75 CH 764 | 0.49 | 10.14 | 4.82 | 0.08 | 2.86 | 14.50 | 0.75 | 1.84 | 0.31 | 119 | 231 | 17 | 116 | 26 | 75 | 247 | 19 | 44 | 7 | 252 | 15 | 30 |
|  | 76 CH775 | 0.65 | 14.00 | 7.38 | 0.10 | 4.87 | 12.14 | 114 | 2.21 | 0.23 | 154 | 175 | 25 | 148 | 84 | 300 | 1409 | 23 | 43 | 8 | 259 | 23 | 42 |
|  | 77 FS1450 | 0.63 | 10.02 | 5.09 | 0.10 | 364 | 23.33 | 0.57 | 1.76 | 0.22 | 119 | 158 | 21 | 122 | 30 | 125 | 1267 | 22 | 58 | 11 | 373 | 2 | 31 |
|  | 78 FS393 | 0.61 | 12.21 | 5.85 | 0.09 | 4.24 | 17.99 | 0.83 | 2.14 | 0.45 | 129 | 167 | 22 | 130 | 182 | 435 | 1154 | 22 | 62 | 10 | 330 | 13 | 34 |
|  | 79 TB3 | 0.54 | 11.17 | 5.46 | 009 | 4.35 | 16.95 | 0.79 | 2.60 | 0.73 | 130 | 192 | 21 | 130 | 27 | 73 | 6373 | 21 | 59 | 10 | 291 | 8 | 46 |
|  | 80 F1169A d | 0.54 | 11.04 | 5.24 | 0.10 | 3.76 | 20.57 | 1.15 | 2.28 | 0.34 | 115 | 150 | 22 | 112 | 72 | 218 | 1595 | 21 | 55 | 10 | 521 | 6 | 30 |
|  | G443 (XRF) | 0.632 | 11.36 | 5.26 | 0.096 | 3.86 | 20.22 | 1.25 | 2.24 | 0.350 | 125 | 174 | 18 | 85 | 33 | 71 | 1327 | 22 | 144 | 8 | 416 | 12 | 37 |
|  | 81 CH607 | 1.12 | 10.95 | 8.44 | 0.14 | 5.70 | 10.27 | 0.82 | 2.60 | 0.45 | 160 | 304 | 32 | 296 | 40 | 91 | 428 | 28 | 79 | 19 | 197 | 29 | 47 |
|  | 82 TW30 | 0.52 | 10.16 | 5.01 | 009 | 4.52 | 20.13 | 0.71 | 2.73 | 0.60 | 115 | 161 | 21 | 116 | 207 | 740 | 1932 | 19 | 56 | 9 | 292 | 6 | 31 |
|  | 83 TW130 d | 0.60 | 12.28 | 579 | 0.08 | 4.50 | 15.42 | 0.91 | 2.34 | 0.59 | 122 | 163 | 21 | 127 | 57 | 1201 | 1212 | 22 | 61 | 11 | 308 | 17 | 44 |
|  | C017 (XRF) | 0.688 | 12.62 | 6.05 | 0.084 | 4.56 | 15.61 | 0.95 | 2.45 | 0.756 | 122 | 199 | 19 | 120 | 29 | 102 | 1198 | 21 | 162 | 10 | 269 | 10 | 52 |
|  | 84 CH 641 | 0.57 | 10.18 | 5.24 | 0.10 | 4.12 | 16.95 | 0.65 | 2.45 | 0.37 | 96 | 156 | 21 | 138 | 31 | 229 | 1021 | 21 | 64 | 10 | 405 | 14 | 34 |
|  | 85 FS1155 | 0.54 | 9.46 | 4.84 | 0.09 | 4.18 | 20.06 | 0.45 | 2.73 | 0.37 | 84 | 148 | 20 | 126 | 29 | 84 | 500 | 20 | 58 | 9 | 196 | 7 | 29 |
|  | 86 FS1194 | 0.53 | 9.76 | 4.96 | 0.09 | 4.96 | 15.96 | 0.74 | 3.44 | 0.41 | 108 | 154 | 19 | 116 | 28 | 85 | 847 | 19 | 58 | 9 | 256 | 14 | 32 |



Figure 226. Dendrogram of the ICP-AES analyses of Ninevite 5 and plain wares from Tell Brak and of four clay and mud-brick samples analyzed by WD-XRF (Euclidean distances of logarithms of concentrations of Ti, Al, Fe, Mn, Mg, $\mathrm{Ca}, \mathrm{Na}, \mathrm{K}, \mathrm{V}, \mathrm{Cr}, \mathrm{Ni}, \mathrm{Ba}$; average linkage).

Table 3. Ninevite 5 sherds analyzed by ICP-AES and represented in dendrogram Figure 226.
'Group' refers to the dendrogram; individual numbers refer to the sample number, the innermost list of numbers on the dendrogram. ICP-AES nos $1-40$ include 39 Ninevite five sherds and an unusual painted sherd, colour Figure 185d:9 (sample 4). Note that no samples from either Area SS or FS have meaningful contexts. Some of the sampled sherds are illustrated in Figure 227.
$1=$ in colour Fig. 205d:7, SS 540; Group 4
$2=$ in colour Fig. 205d:8, FS 1524; Group 3
3 = carinated shoulder of a jar (Fig. 227), brown surface, purple-brown paint, salmon fabric, grit and some mica, Group 4; ER 1 (out of context)
4 is not Ninevite 5 but a rare painted type, at least at Brak, colour Fig. 185d:9; Area SS; second example from SS825; Group 4
5 = chalice pedestal, in colour Fig. 205d:11, TW 3, unsealed pit; Group 1
$6=$ sherd with painted equid design, in colour Fig. 205d:10, very gritty, mica, pale cream slip, CH 96, Level 7 (Phase L); Group 3
7 = sherd with painted 'hanging semicircles', Fig. 227, lower part of the bowl of some form of footed vessel, TW 127, mixed material from cleaning operation; Group 1
$8=$ classical Ninevite 5 type with hanging semi-circles, Fig. 227, purple-brown paint, chaff; Group 1
$9=$ a small fragment of the pedestal and bowl of a painted chalice (Fig. 220), dark buff fabric, fine grit temper, purple-brown paint, Area TT; Group 4
$10=$ painted sherd with pattern similar, Area DS; Group 1
$11=$ sherd from flat jar shoulder, Fig. 227, purple-brown paint, cream slip, wheelmade; Group 3
12 = painted sherd (Fig. 227), bricky fabric, grey-brown surface, brown to purple-brown paint, 2 sherds from ST 'sump', ST 9; Group 1
13 = a sherd of a possible tab-lug jar, Fig. 227, cf. Iraq 53, 1991, fig. 7:6, fabric simılar to no. 9, heavily burnished, TW 19, unsealed level associated with uppermost 'ED I walls'; Group 4
14 = painted sherd, Fig. 227, cream slip, purple-brown paint, chaff; Group 3
15 = plain greenish, grey, gritty, heavy beaded rim bowl, TW 11, unsealed kiln debris; Group 1
16 = pale grey ribbed cup, general type represented by 1771, AL 25, Phase L; Group 4
$17=$ sherd similar to 16, ST 1103 , Group 1
$18=$ sherd from greenish-grey jar, incised punctate design, ST 51; Group 1
19 = 1774; see also colour Fig. 205b:6; Group 1
$20=$ grey, incised and excised, broken chevrons/feathering, TW 116, upper fill in pit 122, mixed Ninevite 5; Group 1
21 = incised sherd, Fig. 227, light grey, CH 702; Group 1
22 = incised sherd, light grey, ST 1104; Group 2
$23=1728$, TW 20, Old Babylonian fill; Group 2
$24=$ bowl similar to 23 , more rounded sides, greenish, chalky fabric, ST 1103; Group 4
25 = base of bowl similar 23, yellowish grey, ST 1101; Group 2
$26=$ very fine green fabric, very fine incised decoration, TW 133; Group 2
$27=$ light greenish fabric, incised, Fig. 227, ST 144; Group 2
$28=$ light yellow-green fabric, incised, TW 3, unsealed pit; Group 2
$29=$ fine greenish fabric, incised, sherd from vessel 1739, ST 1104; Group 2
$30=\mathbf{1 7 5 8}$; Group 1
31 = excised, very chalky fabric, Fig. 227, TW 127, material from cleaning operation; Group 3
32 = Mallowan excavations, excised; Group 1
$33=$ excised, Fig. 227, TW 123, large unsealed pit; Group 2
$34=\mathbf{1 7 3 6}$, TW 122, large pit, mixed material; Group 1
$35=\mathbf{1 7 7 7}$, TW 20, Old Babylonian fill; Group 1
$36=$ late excised, light brownish cream, ST; Group 1
37 = fine grey fabric and well-smoothed light brown surface, excised, TW 116, upper fill in pit 122, mixed Ninevite 5; Group 1
$38=$ light brown, late excised, ER 243, mud-brick wall in sounding, Level 10; Group 1
39 = greenish, late excised, SS 812; Group 1
$40=$ light brown, large white grits, late excised, SS 580; Group 1
Group 1 is assumed to represent local production, and includes 5 painted sherds of 13 tested (including 7, 8 \& 12). Among the plain and incised Ninevite 5 vessels illustrated on the pottery figures, $1736(34), 1758(30), \mathbf{1 7 7 4}(19)$ and $1777(35)$ are also of local manufacture. Altogether a total of 7 of 9 excised, 5 of 10 incised, and 4 of 7 plain Ninevite 5 samples fell within this local group.
Group 2 contained an unusual number of fine, incised Ninevite 5 vessels but included none of the painted sherds analyzed, nor any of the plain wares, that is, all 8 sherds in the group were Ninevite 5 types. Illustrated examples include the plain beaded rim bowl 1728 from Area TW (23) and a sherd from bowl 1739 (29) from the Ninevite 5 house in Area ST. The other Group 2 samples are from either ST or TW; one unusual excised sherd falls within this group, Fig. 227 (33).
Group 3 includes two ordinary grit-tempered light buff sherds that we had assumed to be local, a large bowl or jar with a drainage hole (44) and an early third-millennium sherd with incised decoration (56) (Fig. 227). The other sherd in this group that we had also assumed to be local was from a small cup of an orange-brown, gritty fabric, with noticeable mica, which was common at Brak in the late fourth and early third millennium. It is conceivable, therefore, that Group 3 is, in fact, a local group, reflecting either an earlier clay source or a different clay preparation. Certainly large numbers of these orange-brown cups were found in 'ED I' contexts in Area TW (for example, Iraq 53 , 1991 , Fig. 8:24, 25, from TW Level 6; sample 48 is slightly later in date, from TW Level 2, also 'ED I'). The Ninevite 5 sherds in this group include 3 painted examples ( 2,11 \& 14 ) and an unusual excised piece (31).
Group 4 includes most of those sherds described on p. 200 as of 'obviously differing compositions', that is, they represent almost certainly imported vessels. These include 3 painted sherds ( 1,9 \& 13), a light grey ribbed bowl (16), a plain bowl with rolled rim similar to 1728 (24), and excised sherds 31 and 33 , from Groups 3 and 2 , respectively. Also in Group 4 is another painted sherd (3) (Fig. 227). Sherd 4, illustrated in colour Fig. 185d:9, represents a third-millennium painted type that is extremely rare at Brak.
coelestin $\left(\mathrm{SrCO}_{3}\right)$ which can be a trace constituent of the marls. By comparison with some thousand analyses made from North Mesopotamian pottery and clays, very high values of Sr , above about 600 ppm , seem to be typical for the pottery and clays from Tell Brak, but are not found exclusively at this site. The high Sr contents of Tell Brak samples can also be seen from the analyses of sealing clays given by Rothman \& Blackman $(1990,45)$. But this is not an unequivocal characteristic sufficient to distinguish local and imported wares. It is, however, striking that the presumably local plain wares include more samples with high Sr than the series of Ninevite 5 pottery. The possibility that the Sr contents are secondary and dependent on special burial conditions cannot be excluded, but no correlation with firing temperature (porosity of the sherds) was detected.

Multivariate hierarchical clustering techniques were used to create dendrograms for the tentative chemical grouping of the data. In such dendrograms the samples are ordered according to their chemical similarity, but the clusters depend to a great extent on the elements used for the calculation. The dendrogram of the ICP-AES analyses (Fig. 226) is made by using mean Euclidean distances and the average linkage procedure (Brookhaven Data Handling Programs: Sayre 1975). Strontium is not taken into account here, but adding it to the series of elements results in minor changes only. Inclusion of the WD-XRF data (Table 4), moreover, does not change the general picture.

The first large group in Figure 226 comprises most of the plain wares and very probably represents the local composition. The analyzed clay samples from the Jaghjagh and from mud-bricks from Tell Brak also fall within this group, which comprises Early ED and Akkadian plain wares, half of the Ninevite 5 samples and all three samples analyzed of northern bichrome (p. 192). From the painted Ninevite 5 sherds analyzed, only five of thirteen samples fall within this local group, together with 7 of the nine excised sherds, five of ten incised and four of seven plain Ninevite 5 samples (Table 2 and cf. Fig. 227).

A further cluster at the same level of similarity includes two subgroups ( $2 \& 3$, Fig. 226). One of these comprises largely fine incised and plain Ninevite 5 samples (Table 2); one unusual excised sherd falls within this group (33, Fig. 227), but none of the analyzed painted sherds. The second subgroup consists of three plain wares, which closely resemble other local types, and one excised and three painted Ninevite 5 samples together with the unusual painted sherd illustrating an equid (Fig. 205:d10).

One of the plain, grit-tempered, light buff sherds, which the excavators had assumed to be local, is illustrated in Figure 227; the third was from a small cup of an orange-brown gritty fabric with noticeable mica, a fabric which was common at Brak in the fourth and early third millennia. It is conceivable, therefore, that Group 3 is a local group, reflecting either an earlier clay source or a different clay preparation. The Ninevite 5 samples from this group include three painted examples ( 1,11 \& 14 ) and an unusual excised piece (31).

The rest of the samples do not fall within clear groups (Fig. 226: 'group 4') and almost certainly represent imports from various sites. These include four painted Ninevite 5 sherds, one unusual painted sherd illustrated in colour Figure 185:d9, and samples from a plain, light grey and a plain greenish cup. None of these 'imported' painted examples is chaff-tempered. All the Ninevite 5 samples analyzed from Brak are listed in Table 2. Analyses made in the course of other projects include a small series of samples of Ninevite 5 pottery from other sites: Girnavaz, Tell Shaikh Hamad and, in northern Iraq, Tell Rijim and Tell Karrana 3. These analyses are distinguished from each other and from all pottery from Tell Brak, showing both that the Brak imports are not from these sites and that pottery from larger distances can be chemically identified.

The samples which are not included in the local group in the dendrogram clearly differ from the average local composition in characteristic elements ( $\mathrm{Ti}, \mathrm{Fe} \& \mathrm{Mg}$ ), but at the same time many of these samples have high Sr contents. The deviations show that these samples have not been made from the same raw material as the local plain wares, but the characteristic high Sr contents may indicate that the raw materials were from the same region. Among the obviously differing compositions, the following samples of Ninevite 5 sherds may indicate pottery imported at Brak: 1, $9,13,16,24,31,33$ (see Figs. 226, 227 \& Table 2). Using Mahalanobis distances as a measure of similarity an even larger number of Ninevite 5 samples has a probability of less than 1 per cent to belong to the core group of all plain wares: $1,2,3,4,6,8,9,12,13,14,16,23,24,25,26,28$, 31,33 and 36 . These samples include three painted sherds which are not Ninevite 5 in style $(4,6 \& 12)$. In this sense further chemically deviating samples are: a 'scarlet ware sherd' 90 , Uruk types $71,73,74$, 75 and 81 (which are not regarded here in detail) and probably non-local calcareous Stone Wares 4457, 4554,4557, G992 and G993 (Table 4). This calculation of probabilities is certainly too rigorous and cannot
exclude the possibility that this pottery was made at Tell Brak. A more secure decision can only be made by including additional information on composition, e.g. from petrographic studies, firing behaviour, heavy mineral analysis and, possibly, from a larger series of trace elements by using other techniques of chemical analysis (ICP-MS, NAA).

Obviously only a small proportion of the Ninevite 5 material from Brak has been analyzed, but since the sherds were selected without prior knowledge of their origin, they may be assumed to provide a rough representation of the Ninevite 5 pottery at the site. No complete vessels could be analyzed. The other samples of particular interest among the


Figure 227. Selection of 'possibly imported' sherds sampled by ICP-AES (sample nos.: 31, 21, 27, 33, 12, 3, 13, 7, 56, 14, 11, 8; cf. Table 2 \& Fig. 226; 56 is a sherd of fabric 5 from TW 32).
third-millennium material are those of the bichrome stands, samples $87-89$, and the polychrome sherd 90 , from the shoulder of a jar which closely resembles Mesopotamian scarlet ware. These all fall more or less within the parameters of the local or regional groups. The stands are illustrated in colour in Figure 185b (and see vessel 1790).

## Stone Wares

Chemical analysis of a series of sherds identified as Stone Ware or Metallic Ware showed that different compositional and technological groups may be distinguished and it may therefore be considered whether specific labels can be assigned visually (Kühne \& Schneider 1988). Not all sherds, however, can be attributed macroscopically to these groups. For this reason we prefer to designate all these wares North Mesopotamian Stone Ware (or North Mesopotamian Metallic Ware), including the various calcareous groups, the low calcium 'Metallic Ware' from Lidar Höyük and, above all, the two unequivocally noncalcareous groups A and B (but not the 'Metallic

Ware painted in horizontal stripes' or 'Euphrates group': Kühne \& Schneider 1988, 118). Thus the term Stone Ware should not be limited to the calcareous groups but should remain synonymous with Metallic Ware, as used in this volume. The latter term, however, must not be confused with other wares unfortunately bearing the same name, and in particular with a very different third-millennium pottery in Palestine (laboratory analyses by Esse \& Hopke 1986; Greenberg \& Porat 1996).

Of the total of 366 sherds analyzed from a variety of sites, 93 belong to the calcareous Stone Ware groups, including the Metallic Wares from Lidar, 87 to the noncalcareous group A and 186 to the noncalcareous group B. Because the sherds, generally, were selected without knowledge of the group to which they proved to belong, the sampling should approximate randomness and thus reveal meaningful identifications for the area from which the samples came (Fig. 228).

## Calcareous Stone Wares

The composition of the calcareous Stone Wares shows

Table 4. Amalyses by WD-XRF of pottery from Tell Brak for samples ignited at $880^{\circ} \mathrm{C}$ (major chements normalized to a sum of 100 per went, offermes a bether basis for comparison of compositions) ( $L O I=$ ignition loss, major clements normalized to a constant sum of 100 per cont, origimal total gieven in last (ollımil).

|  | sample | $\mathrm{SiO}_{2}$ | lio, | $\mathrm{Al}_{2} \mathrm{O}_{3}$ | $\mathrm{He}_{2} \mathrm{O} \mathrm{O}_{3}$ | MnO | MgO | CaO | $\mathrm{Na}_{2} \mathrm{O}$ | $\mathrm{K}_{2} \mathrm{O}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$ | $v$ | Cr | Ni | (Cu) | Zn | Rb | Sr | Y | Zr | (Nb) | Ba | Ce | (Pb) | (Th) | 101 | Iotal |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ( hay sumpld thion Werli lustuagh |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2 tan | 5384 | ${ }^{1.748}$ | 12.117 | 591 | 0113 | 5.17 | 18.4 .3 | 0.58 | 221 | 0872 | 122 | 288 | $12 \times$ | 35 | 104 | 74 | 64.3 | 24 | 176 | $\stackrel{8}{ }$ | 345 | 51 | 15 | $\stackrel{8}{8}$ | 1414 | 44.35 |
|  | +145 | +983 | 0865 | 14.4 | 7.52 | 0.127 | 536 | 1876 | 0.55 | 2.04 | (120) | 142 | 236 | 181 | 41 | 114 | 83 | 230 | 29 | 165 | 1.3 | 321 | 71 | 4 | 15 | 17.7\% | $4 \times 17$ |
|  | Muathonh frime Till Brak |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | + +100 | 49.85 | 0.771 | $11 \%$ | $6(10)$ | 0114 | 524 | 22.36 | 0.79 | 2.50 | 0428 | 126 | 350 | $1+3$ | 30 | 99 | 64 | 778 | 23 | 178 | 8 | 314 | 44 | 1 | 12 | 18 to | 47 nl |
|  | +40\% | 5173 | $0)$ tst | 10 sy | 5.41 | 0.102 | 524 | 20.89 | 087 | 3104 | 1138 | 124 | 285 | 134 | 61 | 121 | 60) | 470 | 11 | 138 | 1 | 4110 | 5 s | 7 | 11 | 1771 | 4551 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 747 | 5207 | (0)14 | 1315 | 0.68 | 0.136 | 4 st | 1882 | 0.73 | 2.33 | 10318 | 122 | 292 | 158 |  | 77 | 119 | 1368 | 28 | 185 | 11 | 49 | 25 | 15 | 9 | nd. | 10901 |
|  | C010 | 50.1 | 0784 | 12.90 | 6. 37 | 01161 | $+37$ | 186.3 | 086 | 2 sm | $2.8+1$ | 122 | 24.3 | $1+3$ | 25 | 910 | 70 | 1323 | 25 | 191 | 12 | 342 | 51 | 14 | 11 | 3.79 | 49 (1) |
|  | C011 | 52.17 | 10898 | 12.77 | 6.75 | 0.1280 | 444 | 1422 | 086 | 248 | (1)250 | 110 | $3 \mathrm{n}+$ | 149 | 22 | 79 | 62 | 629 | 27 | 212 | 13 | 333 | n4 | 18 | 11 | bob | 11010 |
|  | C012 | 5184 | 10768 | 1314 | 649 | 0.1099 | 484 | 17.39 | 098 | 327 | 1151 | 157 | 251 | 136 | 22 | 105 | 0.3 | 1050 | $2+$ | 177 | 11 | 318 | 49 | 15 | 8 | 614 | $44^{48}$ |
|  | C013 | 51.78 | 0.767 | 12.45 | 650 | 0.1130 | 4.45 | 1961 | 1106 | 272 | 0356 | 122 | 294 | 139 | 29 | 90 | 66 | 1775 | 24 | 142 | 11 | (1)4 4 | 53 | 18 | 10 | 7.11 | 44.63 |
|  | COL4 | 50.97 | 11751 | 1348 | 6.87 | 01104 | 515 | 1840 | 0.98 | 2.83 | 0.431 | 135 | $30 \%$ | 169 | 20 | 95 | 64 | 700 | 24 | 163 | 12 | 301 | 45 | 16 | 9 | 5.41 | 10014 |
|  | probably | not local |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | C01\% | 5428 | 19913 | 1516 | 7.51 | 0.0870 | 850 | 950 | 091 | 288 | 0.239 | 189 | 301 | 182 | 29 | 109 | 83 | 1325 | 27 | 207 | 12 | 358 | 53 | 17 | 13 | 265 | 10147 |
|  | Cula | 52.4 | 11.84 | 1515 | 7.84 | 0.1362 | 535 | 14.52 | 0.75 | 202 | 10408 | 135 | 235 | 14. | 18 | 114 | 84 | 632 | 26 | 174 | 12 | 353 | 68 | 21 | 10 | 049 | 101.14 |
|  | Colls | 5016.3 | 0823 | 14.15 | 722 | 0.1159 | 581 | 1764 | 2.22 | 0.78 | 0.541 | 138 | 255 | 175 | 22 | 85 | 31 | 789 | 22 | 188 | 12 | 167 | 61 | 11 | 10 | 224 | 10077 |
|  | C009 | +9. 42 | 0.983 | 14.10 | 703 | 0.1314 | 542 | 1456 | 1.35 | 1.08 | 0293 | 143 | 295 | 172 | 28 | 95 | 25 | 540 | 27 | 200 | 15 | 336 | 67 | 12 | 9 | 286 | 101.12 |
| No |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 793 | 40.94 | 0747 | 1315 | 670 | 0.121 | 0.4 | 2289 | 0.56 | 2.14 | 0265 | 14n | 266 | 197 | 19 | 80 | 71 | 662 | 26 | 142 | 9 | 494 | 45 | 2 | 7 | 0.77 | 100.34 |
|  | 744 d | 4720 | 0.785 | 13.52 | 680 | 0.115 | 650 | 2164 | 0.56 | 2.31 | 0521 | 205 | 277 | 170 | 81 | 64 | 70 | 1102 | 25 | 149 | 10 | 430 | 52 | 1 | 1 | 1.21 | 99.78 |
|  | 795 | 47.71 | 1174.4 | 13.82 | 703 | 0.110 | $\bigcirc 59$ | 2074 | 0.43 | 2.31 | $0.52+$ | $18+$ | 249 | 202 | 59 | 82 | 76 | 846 | 27 | 140 | 11 | 353 | 32 | 12 | 6 | 096 | 100.18 |
|  | 3353 d | 49.7 | 0950 | 15.42 | 835 | 0111 | 5.71 | 17.01 | 028 | 2.01 | 0.278 | 166 | 281 | 177 | 50 | 103 | 84 | 540 | 28 | 194 | 15 | 385 | 71 | 7 | 13 | 0.19 | 9486 |
|  | 3356 | 5100 | 0876 | 14.50 | 7.58 | 0.118 | 588 | 17.16 | 103 | 163 | 0242 | 144 | 277 | 167 | 20 | 94 | 62 | 978 | 29 | 198 | 11 | 424 | 73 | 1 | 7 | 0.27 | 100.03 |
|  | 4457 d | 5314 | 1117 | 13.82 | 8.41 | 0.113 | 10.75 | 951 | 0.33 | 204 | 0204 | 153 | 314 | 197 | 68 | 109 | 70 | 561 | 19 | 143 | 29 | 178 | 63 | 3 | 10 | 1.55 | 9918 |
|  | 4552 d | 5124 | 0967 | 1403 | 7.39 | 0.162 | 599 | 1708 | 0.81 | 207 | 0274 | 155 | 331 | 172 | 43 | 96 | 73 | 433 | 31 | 209 | 22 | 377 | 69 | 11 | , | 1.04 | 4911 |
|  | 4553 d | 52.95 | 0.963 | 1614 | 8.24 | 0.153 | 5.01 | 12.85 | 0.56 | 287 | 0256 | 165 | 268 | 182 | 43 | 111 | 93 | 362 | 32 | 206 | 24 | 44. | 77 | 12 | 12 | 0.56 | 99.36 |
|  | 4557 d | 4803 | 0736 | 13.52 | 7.19 | 0.117 | 8.49 | 19.10 | 0.72 | 179 | 0.257 | 143 | 252 | 193 | 36 | 101 | 64 | 497 | 22 | 144 | 23 | 330 | 43 | 1 | 7 | 1.67 | 97.95 |
|  | B757 | 52.55 | 0992 | $14+7$ | 7.85 | 0.163 | 5.33 | 15.69 | 0.76 | 194 | 0228 | 151 | 288 | 186 | 13 | 111 | 69 | 398 | 32 | 199 | 13 | 366 | 66 | 10 | 10 | 0.00 | 100.68 |
|  | G992 d | 50.02 | 0747 | 1491 | 7.99 | 0.112 | 701 | 16.88 | 0.87 | 1.27 | 0.167 | 147 | 275 | 233 | 30 | 94 | 58 | 370 | 26 | 136 | 15 | 301 | 45 | 28 | 9 | 0.27 | 100.14 |
|  | G993 d | 49.64 | 0088 | 14.16 | 9.26 | 0.106 | 903 | 1304 | 0.67 | 324 | 0.145 | 149 | 317 | 313 | 30 | 98 | 87 | 404 | 21 | 108 | 12 | 216 | 36 | 26 | 12 | 0.01 | 98.85 |
|  | 4554 d | 44) 89 | 0.700 | 14.69 | 9.55 | 0.099 | 9.26 | 11.78 | 0.51 | 3.36 | 0.150 | 176 | 327 | 333 | 34 | 103 | 97 | 343 | 18 | 111 | 15 | 144 | 55 | 15 | 7 | 0.11 | 99.43 |
|  | samples from other sites, mentioned in the tevt |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 2524 d | 50.00 | 0.902 | 13.84 | 7.09 | 0146 | 487 | 19.93 | 0.75 | 2.25 | 0.225 | 136 | 282 | 158 | 34 | 87 | 70 | 624 | 28 | 189 | 9 | 1402 | 71 | 5 | 12 | 6.96 | 100.04 |
|  | 2685 d | 5912 | 1.067 | 17.54 | 9.63 | 0144 | 484 | +59 | 0.25 | 2.68 | 0.149 | 169 | 331 | 168 | 43 | 100 | 94 | 182 | 21 | 184 | 12 | 407 | 55 | 12 | 8 | 1.32 | 100.71 |
|  | 4448 | 55.65 | 1.048 | 14.22 | 7.90 | 0.093 | 642 | 11.86 | 0.30 | 2.22 | 0.283 | 155 | 246 | 150 | 49 | 104 | 72 | 441 | 22 | 145 | 29 | 165 | 76 | 5 | 11 | 1.91 | 99.07 |
|  | 4452 d | 5641 | 1.035 | 1714 | 9.05 | 0.138 | 4.78 | 8.79 | 0.20 | 2.36 | 0.103 | 152 | 311 | 161 | 54 | 100 | 82 | 177 | 23 | 182 | 21 | 470 | 57 | 6 | 9 | 2.35 | 99.32 |
|  | 4467 d | 5323 | 1.001 | 13.06 | 7.49 | 0.095 | 5.62 | 1088 | 0.40 | 2.02 | 0.212 | 148 | 213 | 154 | 49 | 108 | 72 | 530 | 25 | 140 | 31 | 114 | 58 | 1 | 7 | 0.18 | 99.13 |
|  | MW02d | 58.31 | 1.026 | 14.85 | 7.42 | 0.083 | 4.84 | 1049 | 040 | 2.33 | 0.226 | 128 | 173 | 144 | 68 | 93 | 74 | 360 | 21 | 142 | 31 | 94 | 75 | 17 | 10 | 2.62 | 100.61 | which more than three

 but their significance is clustering techniques groups can be distin-
guished by multivariate groups can be distinatmospheres. oxidizing and reducing higher temperatures in changes to greenish at

 causes yellowish colours of iron with diopside
 cates (diopside, anorthite
and, in fewer cases, tion with calcium-silitypical phase composiabout $850^{\circ} \mathrm{C}$, create a marly clays which, at firpottery is made from studied here. All this tion of the ordinary pot-
tery in the region also reflects the variaother elements (Table 5) has less than 10 per cent
CaO . The variation in which, however, rarely
has less than 10 per cent pottery in the region similar to the ordinary per cent CaO and is thus about 7 per cent to 25 a large variation with
calcium contents from

Table 4. (cont.)

| Sample | $\mathrm{SiO}_{2}$ | $\mathrm{TiO}_{2}$ | $\mathrm{Al}_{2} \mathrm{O}_{3}$ | $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | MnO | MgO | CaO | $\mathrm{Na}_{2} \mathrm{O}$ | $\mathrm{K}_{2} \mathrm{O}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$ | v | Cr | Ni | (Cu) | Zn | Rb | Sr | Y | Zr | ( Nb ) | Ba | Ce | (Pb) | (Th) | LOI | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Noncalcareous Stone Ware |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tell Brak, group A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4549 d | 64.44 | 1.324 | 24.35 | 4.76 | 0.011 | 0.95 | 1.66 | 0.16 | 2.24 | 0.108 | 122 | 114 | 35 | 21 | 43 | 80 | 172 | 34 | 278 | 29 | 248 | 97 | 8 | 12 | 1.26 | 98.82 |
| 4551 d | 60.76 | 1.200 | 21.07 | 5.38 | 0.021 | 1.49 | 7.10 | 0.17 | 2.69 | 0.119 | 123 | 110 | 42 | 37 | 51 | 83 | 1350 | 26 | 245 | 23 | 256 | 87 | 6 | 10 | 3.38 | 98.76 |
| Tell Brak, group B |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2674 | 60.74 | 1.142 | 22.64 | 7.58 | 0.011 | 1.19 | 1.49 | 0.11 | 4.99 | 0128 | 163 | 105 | 36 | 5 | 71 | 166 | 188 | 32 | 216 | 17 | 531 | 119 | 12 | 22 | 1.05 | 100.30 |
| 2675 d | 61.36 | 1.123 | 22.09 | 7.84 | 0.011 | 1.09 | 1.43 | 0.14 | 4.81 | 0.113 | 135 | 104 | 32 | 13 | 37 | 174 | 292 | 27 | 245 | 15 | 482 | 97 | 15 | 18 | 0.74 | 100.41 |
| 2676 | 60.54 | 1.212 | 22.56 | 8.08 | 0.011 | 1.24 | 1.93 | 0.13 | 417 | 0.132 | 158 | 114 | 33 | 41 | 52 | 191 | 195 | 64 | 199 | 19 | 521 | 141 | 18 | 21 | 0.84 | 99.12 |
| 2745 | 65.71 | 1.228 | 20.46 | 6.55 | 0.008 | 0.92 | 0.56 | 0.16 | 4.31 | 0.095 | 131 | 106 | 24 | 1 | 34 | 153 | 170 | 34 | 256 | 16 | 497 | 121 | 14 | 19 | 0.94 | 101.00 |
| 4548 | 60.47 | 1.215 | 22.80 | 7.85 | 0.011 | 1.33 | 1.50 | 0.05 | 4.60 | 0.115 | 144 | 104 | 37 | 4 | 49 | 168 | 239 | 35 | 212 | 13 | 549 | 100 | 16 | 23 | 0.74 | 100.54 |
| 4550 d | 6299 | 1.219 | 21.16 | 6.76 | 0.013 | 1.13 | 1.86 | 0.17 | 4.61 | 0.087 | 148 | 98 | 34 | 17 | 58 | 154 | 117 | 40 | 242 | 25 | 499 | 124 | 13 | 18 | 0.86 | 98.81 |
| 4555 | 66.19 | 1.171 | 20.74 | 5.70 | 0.017 | 1.18 | 0.70 | 0.14 | 4.05 | 0.107 | 125 | 95 | 34 | 31 | 56 | 148 | 176 | 38 | 297 | 26 | 450 | 118 | 16 | 22 | 0.85 | 98.97 |
| 4556 | 65.37 | 1119 | 19.58 | 6.29 | 0.012 | 1.15 | 2.24 | 0.06 | 3.99 | 0.191 | 120 | 94 | 28 | 14 | 42 | 122 | 163 | 27 | 306 | 24 | 340 | 103 | 11 | 18 | 0.75 | 98.16 |
| 4558 | 59.94 | 1168 | 21.70 | 6.63 | 0.013 | 1.23 | 5.66 | 0.06 | 346 | 0.143 | 148 | 105 | 24 | 15 | 50 | 126 | 660 | 21 | 229 | 24 | 430 | 76 | 14 | 22 | 4.11 | 98.85 |
| 4559 | 62.21 | 1169 | 21.91 | 8.38 | 0.013 | 1.08 | 1.81 | 0.08 | 2.97 | 0.378 | 192 | 113 | 41 | 45 | 51 | 119 | 321 | 35 | 293 | 24 | 427 | 111 | 2 | 15 | 1.14 | 98.78 |
| 4560 | 63.73 | 1.230 | 21.06 | 6.76 | 0.018 | 1.30 | 2.22 | 0.06 | 3.49 | 0126 | 129 | 116 | 40 | 12 | 47 | 134 | 218 | 29 | 258 | 28 | 418 | 95 | 11 | 22 | 0.84 | 99.13 |
| 4561 | 58.39 | 1.163 | 25.10 | 7.93 | 0.023 | 1.37 | 1.35 | 0.08 | 44 | 0153 | 149 | 119 | 55 | 22 | 81 | 179 | 297 | 88 | 192 | 25 | 594 | 188 | 9 | 17 | 1.08 | 98.81 |
| 4567 d | 65.02 | 1.266 | 22.26 | 5.59 | 0.021 | 1.38 | 0.65 | 0.16 | 3.54 | 0.122 | 143 | 104 | 34 | 17 | 54 | 133 | 244 | 35 | 275 | 15 | 414 | 98 | 10 | 18 | 0.62 | 100.20 |
| 7999 | 56.96 | 1.124 | 24.69 | 8.22 | 0.046 | 2.17 | 1.85 | 0.16 | 4.59 | 0.184 | 162 | 127 | 89 | 65 | 101 | 167 | 232 | 39 | 179 | 13 | 572 | 123 | 11 | 18 | 1.10 | 99.96 |
| 8000 | 60.63 | 1.182 | 22.32 | 7.29 | 0.015 | 129 | 212 | 0.08 | 4.89 | 0.169 | 133 | 91 | 42 | 37 | 60 | 180 | 348 | 42 | 205 | 14 | 555 | 114 | 16 | 17 | 0.98 | 99.53 |
| samples from other sites, mentioned in the text group A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3640 | 67.33 | 1.277 | 21.48 | 5.11 | 0.007 | 0.76 | 1.37 | 0.09 | 2.50 | 0.083 | 100 | 113 | 28 | 7 | 27 | 91 | 161 | 28 | 273 | 19 | 245 | 112 | 24 | 16 | 1.65 | 100.61 |
| 4498 | 63.19 | 1.320 | 25.26 | 5.65 | 0.008 | 0.99 | 1.27 | 0.03 | 2.20 | 0.073 | 115 | 105 | 31 | 12 | 44 | 90 | 117 | 30 | 280 | 33 | 288 | 79 | 8 | 21 | 0.81 | 98.94 |
| 4521 | 71.45 | 1.212 | 18.08 | 4.33 | 0.010 | 0.84 | 1.61 | 0.04 | 2.35 | 0.074 | 96 | 92 | 24 | 17 | 30 | 71 | 151 | 25 | 332 | 26 | 294 | 93 | 11 | 15 | 0.04 | 98.63 |
| B093 | 6113 | 1.303 | 26.27 | 5.96 | 0.019 | 0.97 | 2.36 | 0.05 | 1.79 | 0118 | 125 | 105 | 41 | 8 | 39 | 78 | 122 | 36 | 274 | 17 | 301 | 88 | 10 | 16 | 0.43 | 100.50 |
| MW08 d group B | 72.11 | 1.400 | 1741 | 4.96 | 0.007 | 0.54 | 1.11 | 0.17 | 2.16 | 0091 | 100 | 73 | 31 | 24 | 13 | 81 | 122 | 35 | 341 | 32 | 195 | 121 | 18 | 20 | 1.26 | 100.90 |
| 4450 | 6606 | 1.206 | 19.83 | 4.78 | 0.015 | 1.11 | 2.21 | 0.10 | 4.57 | 0.112 | 133 | 106 | 67 | 36 | 46 | 140 | 179 | 39 | 304 | 26 | 554 | 96 | 11 | 16 | 1.48 | 99.03 |
| 4469 | 6461 | 1193 | 21.53 | 5.98 | 0010 | 1.19 | 1.34 | 0.07 | 402 | 0.068 | 116 | 96 | 35 | 29 | 45 | 145 | 121 | 36 | 275 | 32 | 502 | 101 | 3 | 16 | 1.06 | 98.88 |
| B091 | 66.65 | 1.171 | 19.68 | 5.74 | 0.015 | 0.97 | 1.79 | 0.11 | 3.70 | 0.160 | 115 | 85 | 30 | 25 | 37 | 129 | 137 | 27 | 283 | 14 | 477 | 83 | 10 | 15 | 1.08 | 99.76 |
| B098 | 60.14 | 1.193 | 21.88 | 7.42 | 0.016 | 1.34 | 3.00 | 0.08 | 479 | 0.128 | 147 | 97 | 34 | 9 | 54 | 193 | 384 | 42 | 210 | 15 | 531 | 145 | 11 | 18 | 2.54 | 96.20 |
| MW07 d | 59.85 | 1.267 | 23.52 | 7.87 | 0.013 | 1.46 | 1.75 | 0.14 | 4.00 | 0.109 | 132 | 106 | 52 | 19 | 47 | 160 | 200 | 57 | 186 | 30 | 426 | 119 | 25 | 23 | 0.89 | 100.73 |
| MW30 d | 63.25 | 1.217 | 22.18 | 6.17 | 0.009 | 1.05 | 1.66 | 0.14 | 4.20 | 0.099 | 135 | 93 | 39 | 18 | 44 | 147 | 149 | 36 | 227 | 25 | 463 | 100 | 29 | 21 | 0.82 | 99.61 |
| subgroup with high magnesium |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MW03 d | 59.00 | 1.137 | 22.11 | 7.80 | 0.056 | 2.79 | 244 | 0.58 | 3.91 | 0165 | 146 | 115 | 63 | 30 | 107 | 153 | 181 | 32 | 181 | 24 | 580 | 114 | 29 | 22 | 0.68 | 100.18 |

7Sisuojui feymauos 'si dno.8 xepit
 passnosip saxe $M$ auołs snoaxeopeo -uou aцt jo uo!t!soduos әчt woxf chemically and microscopically,
 CaO , the composition is not really contents between 3 and 7 per cent Stone Wares. With low calcium than other North Mesopotamian a red and typically coarser fabric (sample 2685). These sherds have probably belongs to this group Abdul Aziz in the Khabur area from Mu'azzar, south of Jebel and from nearby Samsat on the
Euphrates (Fig. 228). One sample eighteen samples from Lidar Höyük Stone Wares analyzed comprises A subgroup of the grey and red Metallic wares from Lidar sented in Group 2. this pottery, in particular as reprecial clay source was exploited for mains possible, of course, that a speprobably not made at Brak. It reviation of Ninevite 5 samples from those used for establishing the deand, if we take the same criteria as that used for the ordinary pottery been made from different clays from Mg . These vessels have obviously Fe, and four samples also by higher of calcareous Stone Ware from Brak,
however, differ by higher Al and from Brak. The remaining samples lar to that of the ordinary pottery bowls ( $793,794 \& 795$ ) is very simithree samples of small Stone Ware ous Stone Ware samples from Tell
Brak (Table 3). The composition of can also be seen among the calcareLarge variation in composition guished from each other. neous, they are clearly distin$\&$ Schneider 1988, 86). Although
these groups are not very homogebe regarded as Stone Ware: Kühne
\& Schneider 1988, 86). Although ware, however, may not generally Arslantepe and all six samples of
'clinky ware' from Tell Leilan (this


Figure 228. Map of the area from which North Mesopotamian Stone Ware is known, indicating archaeological sites from which samples have been analyzed (revised version of Schneider 1988, fig. 1). The numbers of the samples for the compositional groups are given in brackets (group A/group B/calcareous Stone Ware/low calcium Lidar group): 1) Lidar Höyiik/Samsat (-/1/12/18); 2) Tell west of Diyarbakr (-/1/-/-); 3) Tell south of Diyarbakr (1/-/-/-); 4) Tell east of Diyarbakr (-/4/-/-); 5) Girnavaz (-/4/1/-); 6) Abdülmam (1/5/2/-); 7) Ebukatar (3/2/-/-); 8) Boğaziye (1/2/-/-); 9) Amir (-/1/-/-); 10) Ailun (4/5/3/-); 11) Mozan (5/5/1/-); 12) Chagar Bazar (-/2/-/-); 13) Brak (2/17/13/-); 14) Leilan (1/3/6/-); 15) Beidar (-/2/-/-); 16) Bati (-/4/-/-); 17) Effendi (-/1/-/-); 18) Hassake (1/3/-/-); 19) Bderi (3/24/1/)-; 20) Knedij (1/4/1/-); 21) Huweish (1/1/-/-); 22) Šaddada (3/2/-/-); 23) Manakh (4/1/-/-); 24) Jalal (1/3/-/-); 25) Shaikh Hamad (2/3/3/-); 26) Malhat ed Deru (5/9/3/-); 27) Ras et Tall (-/1/-/-); 28) Mu'azzar (4/2/-/1); 29) Mabtuh-West (1///-/-); 30) Magher (1/2/-/-); 31) Mabtuh-East (1/-/-/-); 32) Abu Sahat (1/1/-/-); 33) Khanazir Abu Jahaz (-/-/1/-); 34) Chuera (14/4/2/-); 35) Hajj al Kabir (-/-/1/-); 36) Dehliz (1/2/2/-); 37) Hammam et-Turkman (1/-1//-); 38) Halawa (-/-11/-); 39) Tell Blaibis (1/-/-/); 40) Khatuniya (1/-/-/-); 41) Tall Bi'a (1/1/1/-); 42) Jazirat as-Sati (-/1/1/-); 43) Rad Shaqrah (7/6/-/-); 44) Abu Hafur/Djassa al-Gharbi (2/11/2/-); 45) Atij (5/7/2/-); 46) Arbit (4/7/6/-); 47) Hamoukar (-1/4/-); various sites within the triangle between the Khabur, the Jaghjagh and the Turkish border (3/20/-/); not in the map: Ashara (-/-11); Tepecik (-/1/-/-); Arslantepe (-/-/4/-); Uruk (-/1/?/-).
ently, classified as a subgroup of the calcareous wares.

Other Stone Ware sherds from Lidar, with higher calcium contents up to 19 per cent CaO , are distinguishable from the low calcium group. Klenk (1987) has argued, both from her analyses and from geological survey, that all Metallic Ware from Lidar is not local. Its true provenance, however, remains unknown.

Noncalcareous Stone Wares
The composition of the noncalcareous North Mesopotamian Stone Ware is very different from all other pottery and clay samples as yet analyzed from Mesopotamia. This is mainly but not only because of the low calcium content, which is typically less than 2 per cent CaO . Higher contents of calcium, found in only a few sherds, are due to varying marly inclusions in the raw materials or to secondary calcite

Table 5. Compositions of the major groups of North Mesopotamian Stone Ware (std $=$ standard deviation, $\mathrm{CV}=$ coefficient of variation in $\%$ ).

| Major elements (weight per cent) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\mathrm{SiO}_{2}$ | $\mathrm{TiO}_{2}$ | $\mathrm{Al}_{2} \mathrm{O}_{3}$ | $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | MnO | MgO | CaO | $\mathrm{Na}_{2} \mathrm{O}$ | $\mathrm{K}_{2} \mathrm{O}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$ | LOI |  |  |  |  |  |
| Group A ( $\mathrm{n}=83$ ) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| average | 66.9 | 1.30 | 21.5 | 5.25 | 0.010 | 0.87 | 1.56 | 0.09 | 2.25 | 0.090 | 0.94 |  |  |  |  |  |
| std $\pm$ | 2.6 | 0.06 | 2.1 | 0.74 | 0.005 | 0.14 | 0.63 | 0.05 | 0.34 | 0.022 | 0.37 |  |  |  |  |  |
| CV per cent | 3.9 | 4.5 | 9.6 | 14.2 | 52.5 | 16.2 | 40.7 | 54.8 | 15.2 | 24.3 | 39.9 |  |  |  |  |  |
| Group B ( $\mathrm{n}=179$ ) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| average | 62.8 | 1.22 | 22.1 | 6.86 | 0.013 | 1.16 | 1.59 | 0.13 | 4.01 | 0.12 | 1.15 |  |  |  |  |  |
| std $\pm$ | 2.3 | 0.06 | 1.5 | 0.89 | 0.005 | 0.21 | 0.86 | 0.06 | 0.63 | 0.04 | 0.47 |  |  |  |  |  |
| CV per cent | 3.6 | 4.6 | 6.6 | 12.9 | 42.2 | 17.8 | 54.2 | 45.7 | 15.6 | 33.1 | 40.9 |  |  |  |  |  |
| Low calcium Lidar group ( $\mathrm{n}=18$ ) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| average | 61.0 | 1.03 | 16.6 | 8.62 | 0.12 | 5.02 | 4.72 | 0.62 | 2.11 | 0.15 | 1.24 |  |  |  |  |  |
| std $\pm$ | 2.1 | 0.06 | 1.1 | 0.82 | 0.05 | 0.51 | 1.23 | 0.38 | 0.49 | 0.06 | 0.73 |  |  |  |  |  |
| CV per cent | 3.4 | 5.6 | 6.7 | 9.6 | 39.1 | 10.1 | 26.1 | 60.5 | 23.4 | 36.3 | 58.7 |  |  |  |  |  |
| Calcareous Stone Wares, range ( $\mathrm{n}=75$, without low calcium Lidar group) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| min. | 47.0 | 0.69 | 12.0 | 5.94 | 0.06 | 3.4 | 7.1 | 0.07 | 0.69 | 0.10 | 0.1 |  |  |  |  |  |
| max. | 61.2 | 1.12 | 18.3 | 9.73 | 0.19 | 10.7 | 25.5 | 1.95 | 3.43 | 0.57 | 13.2 |  |  |  |  |  |
| Trace elements (ppm) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | V | Cr |  | Ni | (Cu) | Zn | $\mathbf{R b}$ | Sr | Y | Zr | (Nb) | Ba | (La) | Ce | (Pb) | (Th) |
| Group A 100 ( 113 ( ${ }^{\text {a }}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| average | 113 | 100 |  | 32 | 20 | 30 | 84 | 155 | 31 | 285 | 22 | 286 | 41 | 102 | 15 | 18 |
| std $\pm$ | 15 | 11 |  | 8 | 9 | 8 | 17 | 31 | 7 | 32 | 6 | 57 | 11 | 19 | 6 | 4 |
| CV per cent | 13.3 | 11.4 |  | 245 | 47.0 | 26.4 | 19.8 | 20.0 | 22.6 | 11.1 | 27.4 | 20.0 | 26.7 | 18.6 | 40.5 | 19.4 |
| Group B |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| average | 135 | 103 |  | 36 | 18 | 47 | 150 | 172 | 35 | 245 | 21 | 463 | 43 | 105 | 13 | 19 |
| std $\pm$ | 14 | 10 |  | 9 | 11 | 11 | 21 | 38 | 9 | 31 | 6 | 70 | 15 | 18 | 6 | 3 |
| CV per cent | 10.3 | 10.0 |  | 25.7 | 62.0 | 23.9 | 13.9 | 22.1 | 24.3 | 12.8 | 26.3 | 15.0 | 34.4 | 17.0 | 46.9 | 13.7 |
| Low calcium Lidar group |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| average | 176 | 432 |  | 85 | 34 | 101 | 81 | 230 | 25 | 195 | 13 | 432 | 22 | 67 | 11 | 12 |
| std $\pm$ | 15 | 109 |  | 19 | 10 | 14 | 10 | 65 | 4 | 16 | 4 | 72 | 6 | 7 | 4 | 3 |
| CV per cent | 8.3 | 25.2 |  | 10.4 | 28.4 | 13.5 | 11.8 | 28.1 | 16.2 | 8.0 | 26.8 | 16.6 | 26.6 | 9.9 | 33.7 | 24.3 |
| Calcareous Stone Wares, range |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| min. | 119 | 136 |  | 04 | 13 | 69 | 25 | 162 | 18 | 108 | 7 | 82 | 17 | 32 |  |  |
| max. | 205 | 472 |  | 33 | 82 | 123 | 106 | 2600 | 34 | 225 | 31 | 1400 | 40 | 81 |  |  |

deposited in the pores of the sherds during burial in the calcareous soils. Also typical are low magnesium and sodium contents and, among the trace elements, low chromium and nickel. Based on analyses of pottery from the Halaf to the Islamic periods in northern Mesopotamia, it would appear that these very special, indeed unusual, raw materials were used only during a limited time span in the third millennium, and specifically to make North Mesopotamian Stone Ware. The only other pottery to have been made from noncalcareous clays are Roman to early Islamic 'Brittle Wares' (Bartl et al. 1995), but geochemically these do not resemble the clays used for the third-millennium Stone Ware.

Two compositional groups can be distinguished among the noncalcareous North Mesopotamian Stone Wares, mainly by the potassium and geochemically related rubidium contents (Table 5). Because of a large variation in other elements such as calcium, strontium and iron, this division into two groups is not always unequivocally confirmed by multivariate statistical tests. Various subgroups in each of the two groups may be defined, but these may reflect no more than the variation within a single clay source.

The higher $\mathrm{Si}, \mathrm{Zr}$ and lower $\mathrm{Al}, \mathrm{K}$ contents of three samples of group A are, for example, clearly connected to higher silt contents (quartz, $\mathrm{SiO}_{2}$ ). Four samples with - for noncalcareous Stone Ware exceptionally high Mg contents of 2.3 to 3.0 per cent MgO may represent a third compositional group similar to $B$.

The geographical distribution of groups $A$ and $B$ may provide a clue to their origins. The noncalcareous Stone Wares from Tell Brak, like those from the region northeast of a line connecting the Upper Khabur with, roughly, Tell Knedig (Fig. 228), belong mainly to group $B$, the ratio of the numbers of group B to group A being higher than three. The samples from Tell Chuera and sites southwest of the line include more sherds from group $A$; here the ratio of groups $B$ to $A$ of all analyzed sherds is less than one. Despite the clear dominance of group B at Tell Brak and Tell Bderi, the sites from which larger numbers of sherds have been analyzed, all noncalcareous Stone Ware sherds at these sites must be regarded as non-local as long as matching geological clay samples have not been found.


Figure 229. a) Dilatometric curve of sample MW02 from Abu Hafur (light brown with grey patches, calcareous group with 10 per cent CaO ): equivalent temperature in air $1123^{\circ} \mathrm{C}$; b) Dilatometric curve of sample MW07 from Tell Djassa al-Gharbi (light grey, group B): equivalent temperature in argon $974^{\circ} \mathrm{C}$. The big changes between $400^{\circ}$ and $600^{\circ} \mathrm{C}$ are due to the content of quartz and its expansion/shrinkage effect at $573^{\circ} \mathrm{C}$. c) Dilatometric curve of sample MW08 from Tell Djassa al-Gharbi (pinkish-grey with red surface, group A): equivalent temperature in air $1152^{\circ} \mathrm{C}$; d) changes in apparent density in oxidizing (■) and reducing (כ) firing of sample MW30 from Tell Djassa al-Gharbi (grey, group B): original firing temperature between $1000^{\circ} \mathrm{C}$ and $1050^{\circ} \mathrm{C}$. (All four samples are described in Daszkiewicz $\mathcal{E}$ Smogorzewskir 1999.)

## Technological studies

Since the original raw materials were not available for experiment, a series of sherds of all compositional groups was refired systematically at increasing steps of temperature, with a heating rate of $200^{\circ} \mathrm{C} / \mathrm{h}$ and 1 h soaking time at the peak temperature. In this way thermal behaviour and changes of colour and ceramic properties (apparent density, water absorption, open porosity) and micromorphology (SEM), which start after the original firing temperature is reached, can be observed. This was carried out using small fragments cut from the sherds and heated in
an electric kiln in oxidizing or reducing atmosphere according to the original colour. For the refiring of samples an oxygen-absorbing material was put into the kiln (kryptol, consisting of graphite which does not release carbon into the atmosphere and thus prevents blackening of the samples by carbon). Information on the original firing temperatures or, more precisely, the equivalent temperatures, was also derived from dilatometric curves following Tite's method (Tite 1969). Argon was used to measure grey sherds in a non-oxidizing atmosphere.

The three examples of dilatometric measure-


Figure 230. Changes in microstructure of sample MW03 from Abu Hafur (grey, Mg-rich subgroup of B) as seen in the scanning electron microscope, left side: refiring in air, right side: refiring in argon atmosphere; upper row: $1000^{\circ} \mathrm{C}$, lower row: $1150^{\circ} \mathrm{C}$.
ments demonstrate the large variability of firing temperatures (Fig. 229:a-c). The first sample (MW02) is from a light brown calcareous jar sherd, apparently fired in an oxidizing atmosphere. The original firing temperature of about $1100^{\circ} \mathrm{C}$ is determined from the temperature at which the sample starts to shrink owing to sintering after exceeding the original firing temperature. A few steps further in the experiment, the heating is stopped and the sample cools down (lower curve). In spite of its high firing temperature, compared with other Stone Ware sherds with a similar calcareous composition, this sample has a high
porosity (open porosity 23.7 per cent, water absorption 12.3 per cent, apparent density $1.92 \mathrm{~g} / \mathrm{cm}^{3}$ ). A slightly higher firing temperature of $1150^{\circ} \mathrm{C}$ reduces the open porosity strikingly to 2.2 per cent.

The second example (MW07) is a from a light brownish-grey noncalcareous Stone Ware jar of group B. Because it was originally fired in a more reducing atmosphere, the dilatometric curve was measured in an argon atmosphere. The original firing temperature was between 950 and $1000^{\circ} \mathrm{C}$, but its porosity and density are similar to the previous, higher-fired, calcareous sample (23.4 per cent/12.0 per cent/1.95


Figure 231. Thermal behaviour observed in the high temperature microscope: a) calcareous Stone Ware (795
b
 from Tell Brak), breakdown is very sudden at about $1200^{\circ} \mathrm{C}$; b) noncalcareous Stone Ware group A (4549 from Tell Brak), bloating starts at $1270^{\circ} \mathrm{C}$, melting (semi-sphere point) at $1540^{\circ} \mathrm{C}$, flowing point $1560^{\circ} \mathrm{C}$.
$\mathrm{g} / \mathrm{cm}^{3}$ ). These properties are within the range of water absorption of North Mesopotamian Stone Wares, which varies between 1 and 15 per cent (Schneider 1989, 44). Refiring of the sample at $1150^{\circ} \mathrm{C}$ under reducing conditions results in a water absorption of less than 1 per cent (below the 2 per cent limit of modern stoneware). This corresponds to an apparent density of $2.32 \mathrm{~g} / \mathrm{cm}^{3}$ which is the maximum achieved among noncalcareous Stone Wares.

The firing temperature of the third example (MW08), a pinkish-grey bowl of group A, was about $200^{\circ} \mathrm{C}$ higher. Therefore in this sample, in contrast to the previous one, the mineral mullite was observed in X-ray diffraction (XRD). This mineral is the most typical phase of modern stoneware. The higher firing results in a denser body ( 18.7 per cent/ 8.9 per cent $\left./ 2.09 \mathrm{~g} / \mathrm{cm}^{3}\right)$. The actual difference from the previous sample MW07, however, is not very great, because sample MW08 was fired in more oxidizing conditions which resulted in a less dense body. For the same reason, oxidizing refiring at $1150^{\circ} \mathrm{C}$ reduced the water absorption of this sample to only 4.9 per cent.

That the thermal behaviour differs in oxidizing and reducing atmospheres is demonstrated in Figure 229 d , using the changes in density of a grey group B sample (MW30). As in the dilatometric curves, the first changes appear after the temperature to which the sherd was originally fired is reached. With increasing temperature, sintering (increase of density) continues. Owing to the high iron content of the material, the apparent density increases much faster in a reducing than in an oxidizing atmosphere. The development of a secondary poros-
ity, observed as a sudden decrease in density above $1100^{\circ} \mathrm{C}$, occurs earlier in a reducing atmosphere. This is illustrated in Figure 230, showing the changes of the microstructure of another noncalcareous Stone Ware sample (MW03) in the SEM. At $1000^{\circ}$, approximately the original firing temperature, the typical advanced vitrification is observed, both in oxidizing and in reducing atmospheres. At $1150^{\circ} \mathrm{C}$, the sample refired in a non-oxidizing atmosphere shows the beginning of a secondary porosity (bloating). This behaviour is also clear with respect to the ceramic properties: the original open porosity of 28.1 per cent decreases to 9.7 per cent (water absorption from 15.4 per cent to 6.3 per cent) but this low open porosity, here owing to the closed pores resulting from bloating, corresponds to a very low density of only $1.55 \mathrm{~g} / \mathrm{cm}^{3}$. Without bloating, the density should be above $2.1 \mathrm{~g} / \mathrm{cm}^{3}$ as can be seen from other sherds. Extreme bloating can sometimes be seen as bubbles on the surfaces of high-fired, grey, noncalcareous Stone Ware sherds and also on overfired calcareous beakers from Brak.

The differing thermal behaviour of sherds of different compositional groups can be observed in the high-temperature microscope (Fig. 231). The size of a cube of 4 by 4 mm , cut from a sherd, changes with temperature and is measured from the photographs of which a selection of the whole series is shown in the illustration. Sample 795 (calcareous Stone Ware) keeps its shape up to $1100^{\circ} \mathrm{C}$, when slight bloating starts. Above $1200^{\circ} \mathrm{C}$ the sample melts down very suddenly (Fig. 231a). This behaviour differs from that of the noncalcareous material of groups

A and B, illustrated in Figure 231b by a noncalcareous group A sample (4549). The original firing temperature was between 950 and $1000^{\circ} \mathrm{C}$, detected from the beginning of sintering. Sintering ends at $1210^{\circ} \mathrm{C}$ which for this material is the maximal temperature to obtain an optimal-fired ceramic body. Bloating begins at $1270^{\circ} \mathrm{C}$ and continues up to $1420^{\circ} \mathrm{C}$; the melting point is $1540^{\circ} \mathrm{C}$.

A few samples were checked for their functional properties. Water permeability is measured as the volume of water which, under constant pressure, passes through the body of the sherd and its two preserved surfaces (calculated to the same thickness) during 24 hours. Water permeability, because of the differing effects of the surfaces, is only partly dependent on the porosity and water absorption of the body. The three tested samples of group A, two samples of group B (water absorption between 7 and 12.5 per cent) and one calcareous Stone Ware sample ( 21 per cent CaO , water absorption 2.0 per cent) remained impermeable up to 24 hours, when the measurement was stopped. Thermal shock resistance was tested to determine whether Stone Ware vessels were suitable for cooking. Changes in the velocity of longitudinal ultrasonic wave propagation, depending on micro-cracks, was measured after the sherds had been heated ten times to $420^{\circ} \mathrm{C}$ and then rapidly cooled in water of $20^{\circ} \mathrm{C}$. The noncalcareous samples were not thermal shock resistant. This means that pots of noncalcareous Stone Ware (e.g. Fig. 233:3, 4) could not have been used for cooking. Unexpectedly, the very dense high-fired calcareous sherd proved to be thermal shock resistant.

Colours of calcareous and noncalcareous Stone Wares Grey as well as red sherds may been fired at low or at high temperatures. The grey colours, in the samples studied by thermogravimetry (TG, DTG), were associated only with the presence of iron(II), mostly in hercynite, and did not derive from carbon; the only exception in our analyzed series may be sample 4549 (Fig. 232). To produce sherds with grey cores and with grey surfaces from a reducing firing, the kiln must be completely closed at peak temperature and kept closed during cooling; any leakage will turn the sherds to red. The surfaces and those parts which are less dense and so more permeable for oxygen are the first affected. This process is described elsewhere in more detail (Schneider 1988, 45).

Calcareous Stone Wares have compositions similar to those of the ordinary pottery and therefore develop similar colours depending on firing. Moreover, in thin section and in phase composition
detected by X-ray diffraction (XRD), these Stone Wares closely resemble the very fine calcareous wares when fired at similar conditions. Therefore, the grey colours of cores, and more rarely of surfaces, produced by reducing firing, may provide the only secure distinction between calcareous Stone Ware and highly fired fine wares (cf. pp. 153-4) which, like all ordinary wares, have been fired in an oxidizing atmosphere. On the other hand, not all the analyzed Stone Ware sherds have grey cores.

The sherds with reddish and brownish cores or surfaces, which constitute about half of the analyzed samples of calcareous Stone Wares, including the low calcium Lidar group, are very similar in appearance to many of the sherds of the noncalcareous Stone Ware groups. Some examples are discussed below, to demonstrate both the large variability of colours and the difficulty of determining compositional groups by the simple expedient of using colour. The analyses of these examples, discussed below, are found in Table 5; typical and less typical vessel shapes are also discussed below and on p. 155. Munsell Soil Color Charts are used to describe the colours, which are also illustrated in Figure 232a-c.

Dark grey calcareous Stone Ware (samples 4554 \& G993; Fig. 185c). Compared with the ordinary pottery the calcareous Stone Wares tend to have higher iron contents. The highest content of iron is found in two dark grey body sherds from small beakers or bowls of different shape (4554, Munsell N4/, and G993, Munsell N4/ to $5 \mathrm{Y} 4 / 1$ with streaks $5 \mathrm{Y} 7 / 3$ ). These two exceptional calcareous Stone Ware samples are nearly identical in composition and certainly originate from the same workshop. The dark grey colour is due to hercynite which is observed in XRD together with diopside, anorthite and a small amount of quartz, the typical mineral phases of high-fired calcareous pottery. The black mineral hercynite $\left(\mathrm{FeAl}_{2} \mathrm{O}_{3}\right)$ is common in grey, noncalcareous Stone Wares but can be found also in pale olive calcareous sherds.

Pale grey calcareous Stone Ware (samples 2524, 4553, B757 \& G992; colour Fig. 185c). These sherds have somewhat higher calcium and lower iron contents than the two dark grey sherds; colours of the cores are light grey (Munsell N6/) with a slight tendency to yellow. Chroma of these sherds are less than 1, but hue is clearly more similar to 5 Y than to any Munsell chart with a red component. Yellowish to greenish colours sometimes appear only as slight patches on the surface or as streaking, usually on the inside but not unknown on the exterior, of otherwise pale or

b


Figure 232. a) Refiring in air of grey samples of noncalcareous Stone Ware ( 4549 \& 4567) and calcareous Stone Ware (-95 \& 2524). b) Photomicrograph of sample 2524 of grey calcareous Stone Ware (XPL); above: the vitrified surface zone, with inclusions of quartz only; below: the zone with recarbonized calcite. The yellow colours are from iron compounds deriving from the decomposed carbonates. c) Photomicrograph of sample 4457 of a pale brown calcareous
dark grey vessels (e.g. samples G992 \& G993). These colours clearly characterize calcareous wares. Sample G992 was studied by XRD. Interestingly, both the grey body and the pale yellow surface streaks (Munsell 5Y7/4) show the same phase composition, with diopside (hedenbergite?), fassaite, little augite, anorthite and very little quartz. With the exception of fassaite and augite, no minerals responsible for the dark grey colour were detected, that is, no hercynite, magnetite, wuestite, fayalite. From refiring it was clear that the dark grey colour was not due to carbon. After refiring in air at $1150^{\circ} \mathrm{C}$ the colour of the whole sherd becomes light yellowish-brown (Munsell 2.5Y6/4) and, therefore, the yellow streaks nearly disappear.

Pale olive calcareous Stone Ware (samples 795, 3353 \& 4467; colour Fig. 185a:5). Two examples show that colours depend on firing and not only on the iron and calcium contents; these are samples 3353 and 4467, with iron and calcium contents similar to the pale grey samples B757 and G992, but with grey cores and pale olive surfaces (Munsell $5 \mathrm{Y} 6 / 3$ ), the characteristic colour of high-fired, or overfired, calcareous pottery. This colour is due to the iron contents of the vitreous phase and of calcium silicates formed as new phases in the high-fired ceramic. Salt contents in the clay and reducing firing enhance such yellowish and greenish effects. Diopside is the typical mineral phase found not only in calcareous Stone Wares but also in high-fired ordinary wares

Figure 232. (cont.) Stone Ware (XPL). In the vitrified matrix many red inclusions of haematite can be seen. The small inclusion in the lower part is from basalt, the white layer on the irregular surface of the sherd (and in the pore filling left of the basalt fragment) is from a deposition of calcite during burial in the soil. d) Photomicrograph of sample 2685 of a grey/red Stone Ware, similar to the low calcium Lidar group (XPL). e) Photomicrograph of sample 4551 of noncalcareous Stone Ware from Tell Brak (group A) showing a large inclusion of calcareous clay surrounded by a gap caused by the different shrinkage (polarizers are not fully crossed and pores therefore bluish-grey). The surrounding fabric, typical for noncalcareous Stone Ware of groups $A$ and $B$, shows the high content of fine quartz (white inclusions) of up to $50 \mu \mathrm{~m}$.
f) Photomicrograph of sample 4550 of a grey noncalcareous Stone Ware group B (as in e, polarizers are not fully crossed) fired at a high temperature (1100$1150^{\circ} \mathrm{C}$ ) at which round pores are developed owing to beginning of bloating. White inclusions are quartz.
with calcium contents above about 7 per cent CaO . The presence and amount of other calcium silicates such as anorthite and gehlenite depend both on calcium content and on firing temperature. Within the whole series of Stone Wares, yellow to greenish colours were not observed on Stone Ware sherds with calcium contents below about 11 per cent CaO . For other calcareous pottery from the region this limit with respect to yellowish to greenish colours seems to be lower. A Ninevite 5 sample (Table 2:16) with only 9 per cent CaO and a light grey, but slightly greenish colour (Munsell 5Y7/1) provides a further hint that this calcareous clay differs from that used for calcareous Stone Wares.

Red calcareous Stone Ware (samples 2685, 4457 \& MW02). Stone Wares with less than 11 per cent CaO are red or brown. Grey sherds have a tint which is clearly more reddish than yellowish. Oxidizing refiring of such samples turns the grey colours to reddish brown, that is, to about the same colour as that of refired samples of noncalcareous Stone Wares of groups A and B. This is due to the presence of haematite which, because of a too low ratio of calcium to iron, cannot react fully with the calcium silicates (e.g. sample 4457; Fig. 232c). Therefore, iron oxides, or iron-rich silicates, are detected in XRD in addition to diopside. In an oxidizing atmosphere this is the red mineral haematite; in reducing atmospheres these are the black minerals hercynite or fassaite. Therefore the colours of these calcareous Stone Wares, and of the sherds of the low calcium Lidar group, vary between red (Munsell 2.5YR5/6), light reddish-brown (Munsell 5YR6/4) and grey.

Red noncalcareous Stone Wares (samples 2745, 3640, 4469, MW08, colour Fig. 185b:7). Examples of red Stone Wares which also have a red core from oxidizing firing are the exceptions to the rule of reducing firing. Such sherds were fired at lower temperatures and do not contain mullite, the typical mineral of high-fired grey noncalcareous Stone Wares. The red colours, however, are for the most part just thin surface layers on grey cores, the result of reoxidizing after reducing firing. These red colours vary from red (Munsell 2.5YR5/6 to 6/8) to reddish-yellow (Munsell 5YR7/6 to 6/4; even Munsell 7.5YR7/6 and 10YR6/4 are found among the analyzed sherds of groups A and B). These colours are identical with those of some red calcareous wares. XRD shows mainly quartz, plagioclase, K-feldspar and haematite. Red varieties are clearly more abundant in group A than in group B.

Dark grey noncalcareous Stone Wares (samples 4550, +551, \iV03, MW07 \& MW30). Grey is the most typical colour of the noncalcareous Stone Wares of group B. Many sherds, however, show a reddish tint on the surfaces or red surface layers on, or between, grey layers (cf. Fig. 232:e \& f). Refiring of sherds yields the same reddish-brown colour as do refired red varieties. The only black mineral detected in XRD is hercynite. Mullite, and in some samples also cristobalite, are the typical new phases of the highfired sherds.

Pale grey noncalcareous Stone Wares (samples 4549 \& 4567 ). Pale grey colours seem to be less common than dark grey colours. The pale grey colour is not connected with a different composition, however, but with different firing. The surfaces of the two examples used to demonstrate the technique and interpretation of the refiring experiments described below fall between Munsell 10YR7/1 and N4/. Both samples have unusual light grey cores (about Munsell 10YR7/1), very similar to the core colour of the calcareous sample 4553, though with a tendency to Munsell 5Y7/1. This latter, greenish colour was also found as the surface colour of an exceptional pale grey sherd, which clearly belongs to noncalcareous group B. It is possible that this greenish surface colour on the noncalcareous sherd is a secondary effect of weathering.

The colour changes associated with rising temperature can best be studied in refiring experiments. Figure 232a shows four sherds of different compositional groups refired at $600,800,1000$ and $1150^{\circ} \mathrm{C}$ in air (oxidizing atmosphere). These are two pale grey sherds of noncalcareous Stone Ware (samples 4549 $\& 4567$ ) and two calcareous Stone Wares (samples 795 \& 2524) with surface colours between Munsell $5 \mathrm{Y} 6 / 1$ and $5 \mathrm{Y} 7 / 3$.

Between $800^{\circ}$ and $1000^{\circ} \mathrm{C}$, three sherds showed pink to pale brown colours (Munsell 7.5YR7/4 to $10 \mathrm{YR7} / 3$ ) similar to that of the body colours of many Stone Ware sherds and of ordinary fine wares. Only calcareous sample 795 did not produce this reddish colour because of its high original firing temperature of around $1100^{\circ} \mathrm{C}$. At $1000^{\circ} \mathrm{C}$ the noncalcareous sherds turn to red or reddish-brown (2.5YR5/6 to $5 \mathrm{Y} 4 / 3$ ), whereas the calcareous sherds develop olive yellow to olive colours ( $5 \mathrm{Y} 6 / 6$ and $5 \mathrm{Y} 5 / 6$ ). Only at $1150^{\circ} \mathrm{C}$ do the colours of all four samples change dramatically to reveal the different body compositions: the noncalcareous samples of groups A and B turning to reddish-brown (Munsell 2.5YR5/4 to 5 Y (t/3), the calcareous samples to light olive brown (Munsell 2.5Y5/4).

## Thin-section studies

A large variation of the original firing temperatures was also detected from thin-section studies. A typical cross-section of the grey, highly calcareous sherd 2524, is shown in Figure 232b. The original firing temperature was between 950 and $1000^{\circ} \mathrm{C}$ and, because of a relatively short firing time, only a thin surface zone became vitrified and therefore isotropic in the polarizing microscope. The tiny white inclusions are from quartz. This outer zone fabric is typical of most of the high-fired calcareous pottery of the region. In the core of the sherd part of the decomposed calcite is recarbonized and can be seen in the photomicrograph as yellowish to white areas. In addition to quartz, the newly formed calcium-silicates, diopside, anorthite and some gehlenite can be detected by XRD but not determined in the microscope. The fabric and the phase composition of this sample is typical also for ordinary pottery fired at similar temperatures.

A sherd of the red calcareous Stone Ware group (sample 4457), because of its different composition and firing, is more extensively vitrified (Fig. 232c). Its pale brown colour is due to haematite, which is observed as red particles in the matrix and is also detected by XRD along with quartz, anorthite and diopside. A $200 \mu \mathrm{~m}$ grain of basaltic rock in this thin section gives an indication of possible regions of manufacture; basalt, however, is very common within the whole area regarded here. The white layer on the surface seen in the micrograph represents a secondary deposit of calcite.

Figure 232d shows the grey (10YR5/1) and red (2.5YR5/6) surface zones of a Stone Ware sherd with a low calcium content (sample 2685), probably belonging to the low calcium Lidar group. The many inclusions of this sherd are from quartz and from decomposed calcite aggregates (pores with brown rims). A tiny red inclusion of hornblende points to a raw material very different from that of the noncalcareous Stone Wares of groups A and B shown in the following figures. The red surface zone is derived from a reoxidizing stage during cooling and is not a slip, which has never been found on Stone Ware sherds, at least up to now. The dark greyishbrown surface colour of the sherd (about 10YR4/2) is due to a very thin dark layer on top of the red zone; in the photomicrograph this thin dark layer is barely visible.

With lower magnification, Figure 232e (sample 4551, a sherd from a small two-handled bottle) shows, unusually, a large calcareous inclusion within a silty noncalcareous matrix typical for all noncalcareous

Stone Wares. This sample is attributed to group A of the noncalcareous Stone Wares in spite of higher Ca and Mg contents. The gap between the inclusion and the rest of the sherd is caused by a different shrinkage. Inclusions of marly clay of various sizes can be seen in most of the sherds of noncalcareous Stone wares studied in thin section but rarely as large as here. In high-fired sherds such inclusions leave only small greenish isotropic areas in an otherwise anisotropic matrix. The marly grains prove that the noncalcareous clays used for Stone Ware of groups $A$ and $B$ are in some way related to calcareous clays. It is even possible that they actually originate, geologically, from such clays or that calcareous raw materials were also available in the potters' workshops.

Thin sections of very low-fired examples show that noncalcareous Stone Wares are made from silty micaceous clays. Typically, mica, quartz, plagioclases in groups A and B, K-feldspar, sometimes as microcline, mainly in group B, fall below $100 \mu \mathrm{~m}$ in size, with only a few grains, mostly of quartz, up to $300 \mu \mathrm{~m}$. In many sherds varying amounts of marly inclusions are responsible for part of the variation in calcium; the other part derives from secondary deposits of calcite in open pores. This composition is confirmed by XRD. The phase composition of high-fired sherds does not contain mica but mullite. Grey sherds contain hercynite which, together with mullite, is the characteristic phase of the noncalcareous Stone Wares. Figure 232 f shows a high-fired grey Stone Ware sherd of group B (sample 4550, a miniature bowl very similar to Fig. 392:9 (pottery illustrations); core N5/, surface 10YR5/1). The round pores are typical of secondary porosity (compare with Fig. 230). The original firing temperature was between 1100 and $1150^{\circ} \mathrm{C}$.

## Vessel shapes of Stone Wares

Many of the analyzed specimens are body sherds, but for some the vessel shapes can be reconstructed. Some drawings for the first analyzed series are published in Kühne \& Schneider (1988), for samples from Rad Shaqrah, in Daszkiewicz and Smogorzewska (1999). Some of the vessels analyzed in the new series are illustrated in Figure 233. Within the analyzed series no clear correlation between chemical group and vessel shape was found, although vessels of the most typical large jar shapes (Figs. 233:1, 2 \& 397; also Kühne \& Schneider 1988, 132-7) seem to be from the noncalcareous groups A and B. Moreover, less common jar types (such as Figure 233:3, 4), have not as yet been detected among the calcareous Stone

Wares. Small jars, however, such as the example of group B from Tell Brak (Fig. 233:5) may belong to either compositional group: for example, 6 is from group A, while 7 comes from Lidar and is calcareous Stone Ware. The small bowls and beakers (Fig. 233:813) seem for the most part to belong to the calcareous Stone Ware groups. However, at least two examples of such vessels, found at the same sites as the calcareous equivalents, belong to group B (Fig. 233:12 \& 13).

## Conclusions

Plain wares, Ninevite 5 and Stone Wares from Tell Brak were analyzed in order to obtain information on local and non-local products. A large data base of analyses of the extraordinary North Mesopotamian Stone Ware from various sites was used to discuss technological questions and the relationship of colour to composition group.

The analyses of Ninevite 5 and plain wares, carried out by Selby for her thesis using ICP-AES, were compared with analyses by WD-XRF and grouped using multivariate statistical techniques. When the ordinary plain wares are considered to be local products, a large part of the Ninevite 5 pottery, including many of the painted varieties, deviates to such an extend that these examples are unlikely to have been made at Tell Brak and represent imports. However, they cannot be attributed to any existing reference group of analyzed sherds from the few sites sampled in northern Iraq and southeast Turkey. To answer the question whether the deviating samples were made nearby or whether they were imports from more distant sites needs more information, e.g. from thin-section studies and from a larger number of analyzed samples from other sites for comparison. The fact that some plain wares selected by the excavator as probably local products fall within a group (3) which contains also several of the Ninevite 5 painted sherds analyzed, might suggest the possibility of a second local clay source, or a source nearby, but we cannot be certain of this. It is also noticeable that Group 2 contains a high proportion of the fine incised Ninevite 5 sherds analyzed.

North Mesopotamian Stone Wares (including Metallic Wares) comprise several compositional groups. Two groups represent sherds made from noncalcareous clays, another group with low calcium contents seems to be typical for the sites of Lidar Höyük and Samsat, and various groups of calcareous Stone Wares with calcium contents between 7 and 25 per cent CaO can be distinguished.

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Figure 233. Vessel shapes of some analyzed Stone Ware. 1) B098 Tell Mozan, group B; 2) B093 Ailun, group A; 3) 4498 Abdülmam, group A; 4) B091 Ailun, group B; 5) 4558 Tell Brak, group B; 6) 4521 Tell Chuera, group A; -) 44 I2 Lidar Höyïk, calcareous Stone Ware, reddish-brown with grey core; 8) 4557 Tell Brak, grey calcareous; 9) 4553 Tell Brak, grey calcareous; 10) 4448 Lidar Höyük, pinkish-grey calcareous; 11) 4467 Ailun, greenish calcareous; 12) 4469 Ailun, group B; 13) 4450, Lidar Höyük, group B. (Original drawings courtesy of H. Kühne.)

The geographical distribution of these groups may give some indication of the as yet unknown places of manufacture. On the basis of geological arguments the noncalcareous clays must almost certainly be looked for outside Northeast Syria. The noncalcareous group B, characterized by high potassium contents, is the more abundant variety. Northeast of a line drawn along the Upper Khabur in the direction of Tell Knedig, group B (Tell Brak group) is three times more abundant than group A (Tell Chuera group); the latter group is marginally dominant southeast of this line. There is also a tendency towards technological difference, group A including far more samples with colours and firing not corresponding with the dark grey, high-fired standard of group B. Other characteristics pertain to both groups, such as the tiny inclusions of marly clays and low trace contents of chromium and nickel, much lower than in all other analyzed Mesopotamian pottery or clay samples.

Technological studies, refiring of samples, determination of ceramic properties, dilatometric measurements and observation of thermal behaviour in the high temperature microscope show that the typical calcareous and noncalcareous Stone Ware samples had been fired between about $1000^{\circ}$ and $1150^{\circ} \mathrm{C}$, mostly in a reducing atmosphere, yielding dense stoneware-like pottery. The upper limit of optimal firing lies at about $1150^{\circ}$, at which temperature the material starts bloating, which can be observed on some grey noncalcareous Stone Ware sherds. The characteristic phase composition of the high-fired noncalcareous Stone Wares, besides quartz, plagioclase and K-feldspar, are mullite and hercynite, the latter being responsible for the grey colours. Red varieties contain haematite, very rarely mullite, and some are fired at temperatures below $1000^{\circ} \mathrm{C}$. The red-dish-brown colours of samples refired in air at $1150^{\circ} \mathrm{C}$ have not as yet been observed on original sherds.

The low calcium Lidar group, with calcium contents between about 3 and 7 per cent CaO , includes among the samples so far analyzed only one vessel found in northeast Syria and must probably be regarded as a regional group of the upper Euphrates around Lidar Höyük and Samsat. Other Stone Wares from Lidar and Samsat consist either of a few imports from group B or are calcareous. In the Keban area, the only analyzed import of noncalcareous North Mesopotamian Stone Ware is from group B.

The most technologically challenging variety of North Mesopotamian Stone Wares is the calcareous type because to produce a stoneware-like pottery, firing has to be very near to the melting point of the calcareous clay. Even more than for the reducing
firing of noncalcareous Stone Wares, the firing technology of the calcareous clays needs a thorough control of the kiln because only about $50^{\circ} \mathrm{C}$ above the typical firing temperature of around 1100 to $1150^{\circ} \mathrm{C}$, the material suddenly melts. Overfired kiln-stack wasters have been found at Brak, but it is not absolutely certain whether these derive from calcareous Stone Wares or ordinary pottery, which because of a similar major element composition have a similar behaviour. The excavators believe, however, that some may come from the firing of calcareous Stone Ware types similar to Figure $393: 27,29,30$.

Calcium contents between 7 and 25 per cent CaO and high trace contents of chromium and nickel are typical for the calcareous Stone Wares just as for the ordinary pottery of the region. Wasters from the firing of ordinary pottery also have the same phase composition as calcareous Stone Wares with diopside, anorthite and, because of the high temperature, only minimal remaining quartz, which is not dissolved in the vitreous phase. The differences between the Stone Wares and ordinary high-fired fine wares lie for the most part in the reducing firing atmosphere of the Stone Wares and slight but characteristic shifts in composition. Calcareous Stone Wares and ordinary high-fired fine wares are found throughout the area where North Mesopotamian Stone Ware is found. On the basis of chemical analysis and thin-section studies many compositional groups can be distinguished indicating many places of manufacture. Because of their different composition and different technology, however, other third-millennium black wares ('Euphrates group of Metallic Ware': Kühne \& Schneider 1988, 118) or high-fired fine wares (e.g. clinky ware) should not be confused with North Mesopotamian Stone Ware.

Colours of sherds, as the most obvious feature to distinguish groups, cannot be used unequivocally. When the ratio of calcium to iron is not sufficient to prevent the formation of haematite, both noncalcareous Stone Wares and calcareous Stone Wares with calcium contents below about 12 per cent CaO are coloured between grey and red. The grey then tends to have a reddish tint. The alternating layers of grey and red, rare on calcareous Stone Wares, are explained by reoxidizing stages during cooling in the kiln and differences in density or composition of sherd surfaces (Schneider 1988, 45). In view of the varying colours of the surfaces and bodies of all 366 analyzed sherds, it would appear that not all of the Stone Wares were fired in fully reducing atmospheres or at very high temperatures; thus these criteria are insufficient to characterize these wares. Yellow to

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green colours and grey colours with a yellowish tint develop only at calcium contents above about 11 per cent CaO , with iron not more than about 8 per cent $\mathrm{Fe}_{2} \mathrm{O}_{3}$. These colours unequivocally characterize calcareous Stone Wares, as they do the high-fired ordinary wares.

General rules, however, are difficult to establish. The high-fired dark grey sherds are mostly of group B, but may also be of group A or even calcareous varieties with high iron contents; such dark grey calcareous Stone Wares at Brak often show yellow streaking. The red Stone Ware sherds can be noncalcareous or calcareous with calcium contents below 11 per cent CaO . The reddish colours of ordinary wares, often described as salmon-coloured or buff, are due to firing at temperatures below or around $1000^{\circ} \mathrm{C}$. At higher temperatures these colours will change to yellow and to olive. The generally highly calcareous ordinary wares, however, never develop the brick red colours of the low calcium or noncalcareous Stone Wares. Yellowish or olive-green colours clearly indicate calcareous composition. Thus pale grey Stone Ware sherds may be attributed according their slightly reddish or yellowish tints. In
many cases, however, a secure distinction between noncalcareous and calcareous Stone Wares can be made only by chemical analysis or thin section. Refiring and X-ray diffraction do not allow unequivocal differentiation between calcareous sherds with low calcium and the noncalcareous Stone Wares. To distinguish between Stone Wares and high-fired fine wares one has to consider all the arguments with respect to chemical and phase composition, firing atmosphere, grain size, slips and vessel shape.

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## Chapter 6

# Third-millennium вс Glass, Frit and Faience Objects 

Joan Oates

## A. Glass

With the exception of two multi-coloured glass beads from the WF sounding at Nippur, no objects of Akkadian glass have as yet been recovered anywhere in the Near East. According to Pamela Vandiver the Nippur glass, yellow and blue in one case and green and white in the other, was an unintentional byproduct of smelting or some other metallurgical process, that is, glass was not being produced deliberately. (I am indebted to Augusta McMahon for this information.) The two pieces of Akkadian 'glass' from Brak may also constitute evidence of a period of experimentation. The most unusual is Figure 234, which seems to have been used as a burnisher and has been analyzed both in Corning by Robert Brill and in Cambridge by Colin Shell; their reports appear below. The piece comes from Level 5 a in the lane between the Area FS monumental complex and the formal storehouse to the north (locus FS 1826). That is, it is early Akkadian or even earlier in date. It
would appear to represent an attempt to glaze, perhaps even to vitrify, a carefully shaped piece of quartz. The glaze derives from the constituents of the ash in which the object was fired. We know of no comparable object.

The second piece has a very 'plastic' appearance, and would appear to be a colourless droplet of waste glass, with the remains of a drawn-off thread protruding from one end (Corning analysis 1238). It contains a large inclusion of black material, trapped within the glass by the folding over of the same, softened end. It too is from Area FS, and from the same level - from the fill of the monumental building east of the east wall of Room 1 and beneath the Level 4 walls. Both the non-coloured nature of this piece and its chemistry suggest that this may not be an ancient piece, but it is equally difficult to explain it as modern. According to Robert Brill, 'the glass probably was at a temperature of $1000^{\circ}$ or greater for at least several minutes and probably longer'. It was found in a layer of fill consisting of lenses of ash and clay (FS 561).


Figure 234. Photographs of small 'glazed quartz' object 5 (reg. no. 5280): a) mottled dark grey glazed surface; b) thermally cracked fracture surface of the chalcedony body. (Photographs courtesy of Corning Glass.)

## B. Frit and faience

As in Volume 1, we follow here customary if technically incorrect archaeological terminology for a group of man-made substances closely related in chemical composition. Both frit and faience consist of a sintered quartz body, distinguished from glass by virtue of its crystalline nature. The difference between them lies in the fact that the surface of faience has been glazed, producing a discrete surface layer of glassy material. Several methods of faience production are attested in antiquity, including direct application of the glaze, and 'self-glazing', either by efflorescence or by cementation (Moorey 1994, 184). The body of a faience object is often white; frit objects are often coloured and can be distinguished from faience by the fact that the colour is consistent throughout the object. We consider these two closely related materials together, because a number of the third-millennium examples are sufficiently worn that the presence or absence of a surface glaze is often difficult to establish. On the other hand, a considerable number of the faience objects, especially from the ritual deposit in the courtyard of the Area SS ceremonial court, remain covered in a very thick green glaze. EDXA qualitative analysis in the SEM of the core material of the body showed it to be a high-purity finely ground quartz.

Over 530 objects of frit or faience were recovered from third-millennium contexts at Brak. Of these 518 are beads, discussed in Chapter 7. Among the remaining objects, perhaps the most interesting are the fragments of vessels and the cylinder seals.

## 1. Frit and faience vessels

The most unusual example is a fragment of a polychrome frit bowl (Fig. 235) from ST 92, the original floor of the large Akkadian building excavated at the top of the step trench. The body colour is buff and it would appear that black and white triangular segments have been inserted into the outer surface. It is possible that these segments were originally glazed, but at the time of excavation it was certainly our impression that this was a frit vessel.


Figure 235. Fragment of an Akkadian frit bowl, with alternating black and white (?blue) colours, extant ht 5.0 cm (Fig. 471:1), TB 9025, ST 92.

Figure 236. Frit
cylinder seal and impression,
'Prozincial Elamite style', Phase N, from disturbed fill ahoue FS Level 2, Rooms 26 and 29, TB 6011, FS 1002.


We are less certain of the composition of the bowl base 2; it was found in the first season and is described in the register as turquoise frit, but with a 'flaking surface' on both the interior and exterior, suggesting that this vessel was almost certainly faience. Another frit vessel was found in the 1998 season, in Area TC (Emberling et al. 1999, fig. 23:e). Two bichrome frit objects, possibly 'spouts', were also recovered ( $9 \& 10$ ). Both were decorated with alternating spirals of colour, in one case blue and dark brown, in the other, white and black. These could equally well have been beads, but if so, were not only unusually large but were the only bichrome examples recovered. Object $\mathbf{1 0}$ was found in a CH Level 2 low-footed goblet (704) together with 12 frit beads and a haematite burnisher.

## 2. Cylinder seals

Three 'composition' cylinder seals are listed in the excavation register, but only one of these is certainly frit/faience (Fig. 236). This was found in a Level 2 context in Area FS. It belongs to the so-called 'provincial Elamite style' and is important as the only example of this style so far recovered in Syria (D. Matthews 1997a, 146). Several impressions in this style have come from the 1930s excavations in Areas ER and CH. The other two seals originally identified as probably frit (DM 506, TB 11019a \& DM 489, TB 14071) come from the SS monumental complex. It was not possible to determine on site whether the first was made of frit or some soft white stone, while the latter is almost certainly made of calcite which has become heavily water-soaked and weathered.

## 3. Other objects

One of the most unusual faience objects found was a glazed tile from the Red Libn Building in FS Level 1 (3). The glaze is a pale blue, and was unfortunately not among the objects analyzed. No other examples were found at the site, though a small, white, glazed, tileshaped fragment was found in Area SS, also in Level 1 (reg. no. 788). Another unusual piece is the fragment of a glazed object with braided relief (9), from FS Level 3.

A single faience wagon wheel (Fig. 240, centre) was found in an Akkadian context in Area SS; similar wheels and their wagons have been found at Tell Bi'a (Strommenger et al. 1987, fig. 28). Several frit and faience buttons have been recovered at Brak, as well as small tokens or gaming pieces (Fig. $243 \& 6-$ 8). The ritual deposit in the Area SS ceremonial courtyard contained a number of faience objects including beads and small amulets (some are illustrated in Fig. 241). The bright green glaze is unusually thick, and


Figure 237. Akkadian faience and frit beads. Top row: assorted green-glazed faience beads from deposit SS 549 (TB 11014) including 51, 24 and 23. Brown frit fluted beads, TB $11012 b$ from SS 565, 27 and 41.
unusually well-preserved, perhaps owing at least in part to the large quantity of copper/bronze in the deposit. Analyses of this glaze and that on the wheel can be found below. Two small duck amulets ( $\mathbf{1 2}$ \& 13) come from the uppermost levels in Areas CH and FS and are of very late third- or early secondmillennium date.

Another unusual piece is a sherd of a pottery vessel with appliqué ornament in the form of a snake (367) on which the eyes are inlaid with a white 'paste' which is possibly frit.

## 4. Beads (Figs. 237 \& 240)

487 Akkadian and 31 post-Akkadian frit or faience beads were recorded. These are discussed in detail in Chapter 8. Of the small number of beads so far recovered from Phase L, up to now only one is frit. This is no more than an accident of excavation, since frit objects and beads are well-attested at the site in the fourth millennium. The third-millennium beads are found in a great variety of shapes, including elongated, ribbed examples and melon beads. The glaze colours run from white to pale blue to green, purple and brown; most unusual is the bright red, almost vermilion colour of bead 40 , but it remains uncertain whether the surface is actually glazed. A small number of spacer beads have been found, including 57 and 58 from topsoil, and a lapis example (17).

Of particular interest is a necklace of some 311 small blue and white frit beads recovered from a pot in Room 11, Area FS 1451. This is the room in which the unusual fenestrated vessel illustrated in Figure 217 was also found.

# Analyses of the Akkadian 'Glass' Objects from Tell Brak 

Robert Brill \& Colin Shell

As well as the programme of laboratory investigation of the later glass and metals from Tell Brak by Brill and Shirahata (Brak 1, p. 89-94), two interesting pieces of earlier date were analyzed by the Corning Glass Museum (Table 6a). The implications of the analysis of a rare early glass droplet (FS 561, CMG analysis no. 1238) have been discussed above ( p . 217). Here we report the study of a small blackglazed object shaped from fine-grained / cryptocrystalline quartz recovered from locus FS 1826 (CMG analysis no. 1239).

## Description

The piece, from the evidence of the surviving fragment, appears to have been shaped by grinding to a roughly circular cylinder that tapers from 24 to 22 mm in diameter in the 20 mm length that survives. The outer surface (Fig. 234a) is covered by a thin dark-grey to black mottled coating about 0.15 to 0.25 mm in thickness. The body of the object itself (Fig. 234b) has an appearance, with its crazed fracturing, that could suggest the piece had been made from a now completely weathered white glassy material, the surface of which has been coloured by the application of the grey-black vitreous coat. The top surface of the piece is a radially fractured smooth surface, almost certainly caused by thermal stress failure initiated at an imperfection in the centre of the object. From this we can see that the thin layer of glaze (Fig. 239d) was intentionally applied and not a result of accidental firing.

At the narrower end, the dark-grey coating has been removed by subsequent grinding of the edge to a smoothly curved surface, reducing the diameter further to $14-16 \mathrm{~mm}$ over a length of $4-5 \mathrm{~mm}$ (Fig. 239a). In addition to this grinding, the flat end is highly polished, probably from its use as a burnishing tool (Fig. 239c). The traces of dark material engrained in the polished surface (Fig. 239d) are similar to those revealed in an area on the side of the piece where the glazed surface coat has spalled away. This suggests the use-polishing of the end, and any prior grinding there has removed little more than the thickness of the surface coat (c. 0.25 mm ) that also originally covered this part of the object. No trace was observed of the material that may have been proc-
essed. The piece itself is comparable in size to a number of small haematite burnishing tools from Brak (see p. 265, and for example Fig. 279, lower right).

## Analysis

The initial Corning semi-quantitative analysis of the body of the piece (Table 6a, CMG no. 1239), shows it to be composed of high-purity silica with other elements only detected at trace levels, near the limits of detection of the emission spectrographic technique employed. The high purity of the silica (probably greater than 99 per cent) was confirmed in the en-ergy-dispersive X-ray analysis (EDXA) in a scanning electron microscope (SEM) in Cambridge. Figure 238a shows the x -ray spectrum from the centre of the body.

X-ray diffraction analysis at the Corning Museum showed the material to be crystalline silica in the form of alpha-quartz. X-ray powder diffraction analysis at Cambridge confirmed this, with the additional observation of the broadening of the X -ray peaks owing to the fine-grained nature of the quartz. This pointed to the identification of the material as a form of fine white chalcedony, a compact variety of silica composed of minute crystals with submicroscopic pores (Deer et al. 1992, 468). Chert and flint are less pure forms of chalcedony. The apparent glassy nature of the body relates to the fine-grained nature of the stone. The fracture pattern and fissures are comparable to those of fire-cracked flint and chert, and result from the heating of the stone during its glazing. The material is too fine-grained and too pure for it to have been formed by the near perfect fusing of a pure quartz frit, a process that would have needed sustained temperatures well in excess of $1500^{\circ} \mathrm{C}$.

The initial analysis at Corning was able to detect only a higher iron level in the black surface layer. Thermal analysis of a small sample suggested it began to fuse at temperatures above $950^{\circ} \mathrm{C}$. Examination of a polished section of a fragment of the surface layer in the scanning electron microscope by Jianjun Mei in Cambridge, showed the surface layer to be heterogeneous, consisting of a thin layer of fused particles (Fig. 239e). EDXA analysis of the layer in the SEM (Fig. 238b, Table 6b) revealed alkali and other metal traces consistent with the formation of the fused layer by the high temperature interaction of the surface with a plant ash based glazing material. Optical microscopic examination of the surface showed relict air bubbles trapped in a glassy phase

Table 6a. Analyses undertaken for the Corning Museum of Glass (CMG) of two glass-like objects. Analyses are a combination of quantitative ICP values and semi-quantitative emission spectrographic values. $\mathrm{SiO}_{2}$ d was estimated by difference from 100 per cent; $P_{2} \mathrm{O}_{5}$ was not sought. The analyses were conducted by Dr Brandt Rising and his co-workers at Umpire and Control Services, Inc., West Babylon, NY. Reduced compositions are calculated by normalizing the oxides shown at 100.00 per cent.

| Locus | FS 561 | $\begin{aligned} & \text { reg. no. } 5280 \\ & \text { FS } 1826 \end{aligned}$ |
| :---: | :---: | :---: |
| CMG analysis no.: | 1238 | 1239 |
| analytical technique: | quantitative | semi-quantitative |
| $\mathrm{SiO}_{2} \mathrm{~d}$ | 72.12 | Major |
| $\mathrm{Na}_{2} \mathrm{O}$ | 14.5 | 0.0X |
| CaO | 9.05 | 0.0X |
| $\mathrm{K}_{2} \mathrm{O}$ | 0.05 | 0.0x |
| MgO | 2.08 | 0.00x |
| $\mathrm{Al}_{2} \mathrm{O}_{3}$ | 1.67 | 0.0x |
| $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | 0.16 | 0.0x |
| $\mathrm{TiO}_{2}$ | 0.03 | 0.00X (low) |
| $\mathrm{Sb}_{2} \mathrm{O}_{5}$ |  |  |
| MnO | 0.01 | 0.0X (low) |
| CuO | 0.005 | 0.000X |
| CoO |  |  |
| $\mathrm{SnO}_{2}$ | 0.003 |  |
| $\mathrm{Ag}_{2} \mathrm{O}$ | 0.001 |  |
| PbO | 0.05 |  |
| BaO | 0.01 | 0.00X |
| SrO | 0.01 |  |
| $\mathrm{Li}_{2} \mathrm{O}$ | 0.001 |  |
| $\mathrm{B}_{2} \mathrm{O}_{3}$ | 0.01 | 0.0X (low) |
| $\mathrm{V}_{2} \mathrm{O}_{5}$ | 0.005 |  |
| $\mathrm{Cr}_{2} \mathrm{O}_{3}$ | 0.005 |  |
| NiO | 0.005 |  |
| ZnO | 0.072 |  |
| $\mathrm{ZrO}_{2}$ | 0.1 |  |
| $\mathrm{P}_{2} \mathrm{O}_{5}$ |  |  |
| Total | 27.827 |  |
| Total - T = d | 72.173 |  |
| M | 99.683 |  |
| Reduced compositions |  |  |
| $\mathrm{SiO}_{2}{ }^{*} \mathrm{~d}$ | 72.4 |  |
| $\mathrm{Na}_{2} \mathrm{O}^{*}$ | 14.55 |  |
| $\mathrm{CaO}^{*}$ | 9.08 |  |
| $\mathrm{K}_{2} \mathrm{O}^{*}$ | 0.05 |  |
| MgO* | 2.09 |  |
| $\mathrm{Al}_{2} \mathrm{O}^{*}$ | 1.68 |  |
| $\mathrm{Fe}_{2} \mathrm{O}_{3}{ }^{*}$ | 0.16 |  |
| Total ${ }^{*}$ | 100.00 |  |
| $(\mathrm{Na}+\mathrm{K})^{*}$ | 14.60 |  |
| $(\mathrm{Ca}+\mathrm{Mg})^{*}$ | 11.17 |  |
| $(\mathrm{Si}+\mathrm{Al}+\mathrm{Fe})^{*}$ | 74.24 |  |
| ( $\mathrm{Na} / \mathrm{K}$ ) | 290.00 |  |
| ( $\mathrm{Ca} / \mathrm{Mg}$ ) | 4.35 |  |

Table 6b. Energy dispersive x-ray analysis (EDXA) in a Philips XL30-FEG scanning electron microscope equipped with a LinkIsis EDX spectrometer using SEMQuant software. Accelerating voltage $=20.00 \mathrm{keV}$.
a. Analysis: no. 5280, locus FS 1826 - surface glaze

Polished sample: average analysis of a 15 micron by 7 micron area in the centre of the heterogeneous fused surface coating (Fig. 239 and EDXA spectrum Fig. 238).

| Element | Element \% | Sigma \% | Atomic \% |
| :--- | :---: | :---: | :---: |
| O | 48.25 | 0.37 | 66.16 |
| Mg | 1.77 | 0.09 | 1.59 |
| Al | 3.38 | 0.09 | 2.75 |
| Si | 20.14 | 0.18 | 15.74 |
| P | 2.22 | 0.07 | 1.57 |
| Cl | 0.61 | 0.05 | 0.38 |
| K | 5.27 | 0.09 | 2.96 |
| Ca | 11.6 | 0.13 | 6.35 |
| Ti | 0.45 | 0.06 | 0.21 |
| Fe | 3.05 | 0.12 | 1.2 |
| Zn | 3.25 | 0.2 | 1.09 |
| Total | $\mathbf{1 0 0 . 0 0}$ |  | $\mathbf{1 0 0 . 0 0}$ |


| Relative percentag |  |
| :--- | ---: |
| Oxide | $\%$ |
| MgO | 0.34 |
| $\mathrm{Al}_{2} \mathrm{O}_{3}$ | 0.17 |
| $\mathrm{SiO}_{2}$ | 59.64 |
| $\mathrm{P}_{2} \mathrm{O}_{5}$ | 2.97 |
| K 2 O | 5.61 |
| CaO | 24.06 |
| $\mathrm{TiO}_{2}$ | 0.80 |
| $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | 2.27 |
| ZnO | 4.13 |

b. Body material adjacent to surface

Polished sample: analysis of a 15 micron by 7 micron area, 15 microns from the glaze interface (see Fig. 239e and EDXA spectrum Fig. 238a).

| Element | Element \% | Sigma \% | Atomic \% |
| :--- | :---: | :---: | :---: |
| O | 52.81 | 0.18 | 66.35 |
| Mg | $-0.03^{*}$ | 0.03 | $-0.02^{*}$ |
| Al | $-0.76^{*}$ | 0.03 | $-0.57^{*}$ |
| Si | 47.16 | 0.18 | 33.76 |
| P | 0.48 | 0.04 | 0.31 |
| Cl | 0.06 | 0.03 | 0.03 |
| K | 0.17 | 0.03 | 0.09 |
| Ca | $0.05^{*}$ | 0.03 | 0.09 |
| Ti | $-0.02^{*}$ | 0.03 | $-0.01^{*}$ |
| Fe | 0.13 | 0.05 | 0.05 |
| Zn | $-0.05^{*}$ | 0.09 | $-0.01^{*}$ |
| Total | $\mathbf{1 0 0 . 0 0}$ |  | $\mathbf{1 0 0 . 0 0}$ |

*not significant, value less than 2 sigma.
Atomic ratio $\mathrm{Si}: \mathrm{O}(33: 66=1: 2)$ is that of $\mathrm{SiO}_{2}$.
Relative percentages of principal oxides

| Oxide | $\%$ |
| :--- | ---: |
| MgO | 0.00 |
| $\mathrm{Al}_{2} \mathrm{O}_{3}$ | 0.00 |
| $\mathrm{SiO}_{2}$ | 99.34 |
| $\mathrm{P}_{2} \mathrm{O}_{5}$ | 0.46 |
| $\mathrm{~K}_{2} \mathrm{O}$ | 0.13 |
| CaO | 0.00 |
| $\mathrm{TiO}_{2}$ | 0.00 |
| $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | 0.07 |
| ZnO | 0.00 |



Figure 238. X-ray fluorescence spectra from the energy dispersive $x$-ray analysis of Figure 234: a) general spectrum from the centre of the body showing the silicon and oxygen peaks of high purity silica, $\mathrm{SiO}_{2} ;$ b) average spectrum of the glazed surface layer.
interspersed with detrital ash fragments.
XDRA analysis of an area just below the surface layer (Table 6b) revealed evidence of the penetration of traces of the glazing material. The mottling of the vitreous surface itself corresponds to the macrostructure of the underlying chalcedony. The strong grey-black appearance of the glaze is probably due not only to the level of iron in the plant-ash glaze noted above, but also to the presence in the surface of relict carbon, introduced during firing by the charring of organic phases that had been absorbed into the porous surface structure of the chalcedony. A parallel for this type of colouration is known in the production of Tibetan $t z i$ beads, where a piece of chalcedony, which had been treated with an organic substance (e.g. honey), was heated to char the organics and produce a black appearance through the carbon trapped within the porous surface.

To our knowledge this piece is a very rare example of an early attempt to glaze a highly refractory material, chalcedony, by firing it in the presence of a plant-ash-based coating.

## Analyses of the Third-millennium Glazes

## Julian Henderson

The range of objects from Tell Brak, mainly from twenty-third-century $B C$ contexts, displays the following characteristics which suggest that it can be classified as faience: the material has a granular core and is covered by a layer of glass or weathered glass. In the archaeological literature the use of the word 'frit' to describe material akin to faience has led to confusion, since there is no clear scientific or technological distinction that can be drawn between faience and frit. As noted above, strictly speaking 'frit' is the partially fused primary raw materials used in the manufacture of glass (silica and alkali); until scientific analysis of faience-like material is carried out, there is no way of knowing whether the material is frit. For the purpose of this report, faience is considered to be a material which consists of a silica-rich core with or without an interstitial vitreous phase and with a thin surface glassy layer. A further technological characteristic of faience is the sporadic occurrence of mineral inclusions which may eventually lead to a means of characterizing the production

centres involved (Henderson 2000, 54).
In considering the removal of microsamples of the third-millennium $B C$ faience from Tell Brak it was noted that many beads were in too poor a state to attempt such sampling. The two which were chosen for sampling were, in the end, dictated by their state of preservation.

The techniques used for chemical analysis of the Brak faience were energy dispersive X-ray


Figure 239. Glazed object from FS 1826 (Fig. 234): a) ground curved surface between the glazed side (left) and polished facet (right), scale bar $2.0 \mathrm{~mm} ; b$ ) penetration of glazing material into the surface of the chalcedony, scale bar 0.5 mm ; c) polished end facet from use as a burnisher, with reflections from bright field illumination, scale bar 0.5 mm ; d) end facet showing in dark field illumination the remains of dark glaze material that had penetrated the surface prior to its grinding/ polishing, scale bar 0.5 mm ; e) scanning electron microscope image of a polished section of Figure 234, with the dark grey inhomogeneous glazed coat at the centre, the chalcedony body to the right and specimen mounting material to the left, scale bar 10 microns ( 0.01 mm ).
fluorescence analysis and electron-probe microanalysis. The former technique only was used for the analysis of the bead with the red surface (40) which was, unsurprisingly, found to be coloured with an iron-rich pigment.

## Results and discussion

The electron-probe microanalysis of the two faience

Table 7 . Electron probe microanalyses of faience samples from Tell Brak.

| Reg. no. | 5304 | 4663 |
| :---: | :---: | :---: |
| NaO | ND | 0.1 |
| Mg() | 0.1 | 0.3 |
| AlO, | 0.3 | 0.7 |
| $\mathrm{SIO}_{3}$ | 72.6 | 89.7 |
| PO | ND | ND |
| $\mathrm{SO}_{3}$ | ND | ND |
| Cl | ND | ND |
| $\mathrm{K}_{2} \mathrm{O}$ | 0.1 | 0.3 |
| CaO | ND | 0.3 |
| TiO, | ND | ND |
| $\mathrm{Cr}_{2} \mathrm{O}_{3}$ | ND | ND |
| MnO | ND | ND |
| $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | 0.2 | 0.3 |
| CoO | ND | ND |
| NiO | ND | ND |
| CuO | 1.2 | 0.6 |
| ZnO | ND | ND |
| $\mathrm{As}_{2} \mathrm{O}_{3}$ | ND | ND |
| $\mathrm{SnO}_{2}$ | ND | ND |
| $\mathrm{Sb}_{2} \mathrm{O}_{3}$ | ND | 0.1 |
| BaO | ND | ND |
| PbO | ND | ND |

ND = Not detected.
${ }^{2}$ Typical levels of detection in p.p.m. (95.5\% probability level) are:

| $\mathrm{Na}_{2} \mathrm{O}$ | 760 |
| :--- | :--- |
| $\mathrm{~K}_{2} \mathrm{O}$ | 250 |
| CaO | 170 |
| $\mathrm{Fe}_{2} \mathrm{O}_{3}$ | 640 |
| CuO | 1200 |
| PbO | 200 |

* $5304=$ fragment of faience chariot wheel from SS 935. $t 603=$ fragment of small faience object from ritual deposit SS 549 .
samples from Tell Brak is for a combination of the vitreous phase and the silica-rich core. When this technique is used, the electron beam is defocused to 80 microns in diameter so that it is significantly larger than the silica crystals and also includes a glassy component. The results are therefore dominated by silica but at the same time include low levels of other element oxides which would be present mainly in the glassy component. These oxides consist of magnesia ( MgO ), aluminia $\left(\mathrm{Al}_{2} \mathrm{O}_{3}\right)$, potassium oxide $\left(\mathrm{K}_{2} \mathrm{O}\right)$, and calcium oxide ( CaO ). It should be noted that the levels are low because the glassy component in both cases was weathered; the alkali levels in particular would be reduced significantly by weathering.

The balance of the components in the faience can be attributed to the presence of colourant oxides - cupric oxide ( CuO ) and antimony oxide $\left(\mathrm{Sb}_{2} \mathrm{O}_{3}\right)$. The antimony trioxide levels found in both samples analyzed using the electron microprobe were probably introduced with the silica, though they may also have been an impurity in the colourant mineral used. It is no coincidence that copper is the principal component present in the faience. As noted in the glass reports by Brill and Henderson in Brak 1, the most common colourant found in early glass was also cupric oxide (though in this case the Brak glass is some $800-900$ years later than the faience).

## Chapter 7

# Third-millennium Beads and Pendants 

Helen McDonald

A total of 1090 beads, pendants and buttons have been found in third-millennium levels at Tell Brak (1976-93 seasons). These divide by material as follows: frit/faience 536 , stone 219 , gold 6 , silver 137 , copper/bronze 1 , shell 136 , bone 15 , clay 39 and bitumen 1 . The closure deposits in the courtyards of the monumental complexes of Areas FS and SS account for 38 per cent of the Akkadian beads (Tables $18 \& 19)$. The large number of beads on the floor of Room 21 in the Level 5 SS complex also suggests these were deliberately deposited (Table 20).
A. Frit and faience beads (Figs. 240, 241, 472 \& 473; Tables 8 \& 9)

Apart from those beads listed from the closure deposits there were two other groups of frit beads. A jar in FS Level 3 Room 11 produced 311 frit disc beads, 156 in white and 155 in blue frit (TB 8220). A

Table 8. Frit beads by type and phase.

| Shape | Phase K/L | L | M | M/N | N | Unstrat. | Totals |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| disc |  | 1 | 391 |  | 14 |  | 406 |
| cylinder |  |  | 3 | 1 | 5 | 1 | 10 |
| barrel | 1 |  | 13 |  | 2 | 1 | 17 |
| sphere |  |  | 4 |  |  | 1 | 5 |
| hemisphere |  |  | 2 |  |  |  | 2 |
| biconical |  |  | 1 |  |  |  | 1 |
| disc rosette |  |  |  |  | 1 |  | 1 |
| melon/rosette |  |  | 2 | 1 | 2 | 1 | 6 |
| segmented |  | 3 | 7 |  |  |  | 10 |
| flat cyl/ovoid |  |  | 1 |  | 1 |  | 2 |
| crosshatch cyl. |  |  | 2 |  |  |  | 2 |
| striped cyl. |  |  |  |  | 1 | 1 | 2 |
| rectangular |  |  | 3 |  |  | 2 | 5 |
| tear-shaped |  |  | 2 |  | 1 |  | 3 |
| spacer |  |  | 1 |  |  | 1 | 2 |
| duck |  |  |  |  | 2 |  | 2 |
| button |  |  | 1 |  |  | 2 | 3 |
| no type |  |  | 8 |  |  |  | 8 |
| Totals | 1 | 4 | 441 | 2 | 29 | 10 | 487 |

tear-shaped bead in blue frit (shape as 57) and a stone disc bead were found with them. The second group of beads was found in a post-Akkadian goblet in Area CH (pot 704), which contained 12 white frit disc beads (16), a striped cylindrical bead (11) and a magnetite burnisher (reg. no. 425).

Of the third-millennium frit beads counted in Table 8, there were 281 white, 166 blue, 30 black, grey or brown (possibly discoloured or burnt), 5 green, 3 yellow and 2 with stripes of two colours ( $\mathbf{1 0}$ \& 11). It is possible that many of the white frit beads may once have been another colour, now faded. The greater variety of shapes in frit / faience than in stone is presumably due both to ease of manufacture and the possibility of producing brightly coloured beads.


Figure 240. Faience wheel 4, Akkadian and postAkkadian frit and faience beads. Top row, left to right: frit 57; TB 12208, TP 51 (fourth millennium); postAkkadian green frit bead with granulated surface, TB 12254, SS level 1; faience bead 48. Middle row: frit melon bead 30; white frit spacer bead 58; faience wheel 4 ; frit bead 19; frit bead reg. no. 4712, floor of SS Room 18. Bottom row: post-Akkadian spherical frit bead TB 12250, SS level 2; green frit head 49; fly-shaped bone beads 21 and TB 12148, floor of SS Room 21.

The majority of the faience beads had a green glaze ( $n=41$ ), three had a yellow glaze on a white or yellow body (20), one had blue glaze (34), two had brown glaze on a white body (48, Fig. 240) and one button had a purple glaze on a white body (6). Most of the green-glazed beads came from either the FS or the SS courtyard deposits. The faceted barrel bead 40 has a red deposit (?glaze) on the surface.

Table 9. Faience beads by type and phase.

|  | Phase |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Shape | $\mathbf{M}$ | $\mathbf{N}$ | Unstrat. | Totals |
| disc | 2 |  |  | 2 |
| cylinder | 12 |  | 1 | 13 |
| barrel | 4 |  |  | 4 |
| hemisphere | 1 |  |  | 1 |
| sphere | 5 | 1 |  | 6 |
| biconical | 9 |  |  | 9 |
| melon/rosette | 6 |  |  | 6 |
| segmented | 1 |  |  | 1 |
| fluted cyl. |  | 1 |  | 1 |
| ridged | 1 |  |  | 1 |
| hubbed | 1 |  |  | 1 |
| flat diamond | 2 |  |  | 2 |
| bull head | 1 |  |  | 1 |
| button | 1 | 2 | 1 | 49 |
| Totals | 46 | 2 |  | 1 |
|  |  |  |  |  |

Apart from the 155 blue frit disc beads from FS Level 3 Room 11, most of the disc beads were white. The two faience disc beads are green-glazed ( $17 \&$ TB 10092). The hemispherical beads occur in white frit ( $18 \& 19$ ) and yellow-glazed faience (TB 12246, SS 1235). Five of the cylindrical frit beads are white, three are pale blue and two green-glazed (33). One of the latter has a granulated surface (TB 12254, Fig. 240). The faience cylindrical beads are green (32) except for one from ER in very pale blue (34). Frit barrel beads are predominantly white ( $n=10$ ), but there are also three blue (including $35 \& 38$ ), three brown/black (including $37 \& 39$ ) and one yellow. The faience barrel beads are all green and of the smaller variety, with one yellow-glazed exception (reg. no. 5327, SS 1238). Frit spherical beads are brown/black except for one in green (22). There are four green-glazed faience spherical beads, one with a brown glaze (the only post-Akkadian faience bead) and one with a particularly thick, glassy, yellow glaze (20). A variation on the spherical shape, with a collar at one end, occurs in white frit (21). The faience biconical beads are green-glazed (52, Fig. 241); the frit example is black (53).

The frit melon beads are brown, grey or black except for one white example (26). They vary in size from 0.35 to 1.5 cm in diameter and have from 8 to 21 flutes ( 26 30). Two come from post-Akkadian levels ( $26 \& 27$ ). The faience melon beads have diameters of $0.6-0.7 \mathrm{~cm}$ with 7 to 11 flutes, are green-glazed and come from the closure deposits (23-5). The rosette disc in yellow-green frit (31) has flutes and a raised centre on one surface with an indented flower shape on the other (for photograph see Brak 1, 102, fig. 134). Similar frit beads were found by Mallowan in fourth-millennium levels (1947, pl. 20). The segmented frit beads are mostly white (42-5), with one each in brown (41) and blue (46). The number of segments varies from 2 to 16 . The only faience segmented bead is greenglazed and incomplete (Table 19). The faience bead with large ridges resembles a toggle, although if it had been used as one it would not have required its perforation (48). The flat diamond (51) and hubbed
beads (47, Fig. 241) occur only in green-glazed faience. The latter is incomplete and may have had hubs at both ends. There is also a green-glazed faience bead in the shape of a bull's head (15, Fig. 241).

The remaining bead shapes have been found only in frit. A single fluted cylinder of green frit is post-Akkadian (49, Fig. 240). The two ovoid beads are light green and grey (50; reg. no. 1471, DH 2 ). Rectangular beads like 54 and 55 occur in brown ( $n=$ $3)$ and white $(n=2)$. The tear-shaped beads are all pale blue, two are perforated through the body ( 57 \& TB 8220, FS 1451), the other has the remains of a loop on top (56). The white spacer bead with two perforations is from topsoil (58, Fig. 240). The only other frit spacer bead is a fragmentary yellow example, which had at least three perforations and possibly four (59). The two post-Akkadian duck beads are of greybrown (13) and blue frit (14). They resemble early second-millennium types, and in fact the shape continues as late as the Neo-Babylonian period (Limper 1989, 32).

The two post-Akkadian striped cylinders have been included in the figures in Table 8, although there is a possibility that they may not be beads. The smaller of the two (11) is broken at both ends and has a white (originally blue?) body with a spiral stripe of black frit. The other larger example is blue frit with a spiral stripe of dark brown (10). It is broken at the wider end only and could have been the spout of a frit vessel. Another possibility is suggested by similar, but complete, objects from Kish in which the perforations do not completely pierce and which Mackay suggests may be decorative handles (Mackay 1929, 133-4, pl. 13:2).

The other two large 'beads' are the very black (burnt) frit cylindrical beads with cross-hatch decoration from the SS courtyard deposit ( $\mathbf{1 2} \&$ reg. no. 3151). The more complete example has an extant length of 7.5 cm . It is possible but less likely that they may have been cylinder seals (DM 449 \& 450). Decorative handles or parts of some other composite object are also possibilities. There are three buttons in white frit and one in purple-glazed faience (6). The few buttons have been included in the figures in Tables 8 and 9 .

## B. Gold, silver and copper/bronze beads (Fig. 481)

Beads of gold, silver and copper/bronze are discussed in Chapter 8 (p. 245). Five spherical gold beads and a gold ring pendant came from the FS 1958 ritual deposit, as did 137 silver beads (Fig. 266). The only metal bead not from the FS 1958 deposit
was a copper/bronze cylindrical bead from fill under the large, Level 1 post-Akkadian wall in Area CH (reg. no. 95 ).

## C. Stone beads

Carnelian beads and Indus valley types (Figs. 241 \& 474; Table 10)
Over three-quarters of the Akkadian carnelian beads came from the ritual closure deposits ( 26 from FS courtyard 43 and 21 from SS Courtyard 8: Tables 18 \& 19). All have highly polished surfaces. The carnelian disc beads vary in shape; three from the FS 1958 deposit have a flanged profile (62), as do two beads from the SS Courtyard 8 deposit and a bead from the floor of SSTC Room 20. Others have concave surfaces (60) or chamfered perforations (61). Eleven of the FS deposit beads are a shape that could be described as either a truncated bicone or an angled sphere ( $63 \& 64$ ). Two of the beads from the SS courtyard deposit are imports from the Indus valley: the very long carnelian barrel bead ( 69 , length $=5.3$ cm ) and the long rectangular jet bead ( $73,8.9 \mathrm{~cm}$ ). The jet bead is the longest so far found at Brak. Long barrel beads from the Indus are also known from Kish and Ur (Chakrabarti 1990, 31). The rest of the carnelian barrel beads, of which there are eight from the FS courtyard deposit, are shorter types (with lengths of between 1.7 and 3.1 cm ) and are not Indus imports ( 67 \& 68). We are grateful to Dilip Chakrabarti for confirmation of the identification of the Indus types.

Lapis beads and pendants (Figs. 242, 244 \& 475; Table 11)

The majority of the Akkadian lapis beads also come from the ritual deposits (Tables 11, $18 \& 19$ ). The more elaborate theriomorphic pendants came from Area FS (108-10). The lapis bull pendant (110) has close parallels with those from the Royal Cemetery

Table 10. Carnelian beads by type and phase.

|  | Phase |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Shape | L | $\mathbf{M}$ | $\mathbf{N}$ | Unstrat. | Totals |
| disc |  | 33 | 7 | 1 | 41 |
| cylinder |  | 2 |  |  | 2 |
| barrel |  | 6 | 2 |  | 8 |
| long barrel |  | 5 |  |  | 5 |
| sphere | 1 |  |  |  | 1 |
| biconical |  | $\mathbf{1 4}$ |  |  | 14 |
| flat diamond |  |  | 1 |  | 1 |
| eye or tear | 1 |  |  |  | 1 |
| Totals | $\mathbf{2}$ | 60 | $\mathbf{1 0}$ | $\mathbf{1}$ | 73 |



Figure 242. Lapis pendants from the deposit in FS Courtyard 43 (locus FS 1958). Lady pendant 109 ( $l .=2.1$ ), bull pendant $110(l .=1.4)$ and fly-shaped bead $108(l .=1.1)$.

Table 11. Lapis beads by type and phase.

|  | Phase <br> Shape |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| $\mathbf{L}$ $\mathbf{M}$ $\mathbf{N}$ Unstrat. | Totals |  |  |  |
| disc |  |  |  |  |
| cylinder |  | 2 |  | 3 |
| barrel |  | 1 |  | 1 |
| sphere | 2 |  |  | 2 |
| biconical | 3 |  |  | 3 |
| rosette | 1 |  | 1 | 2 |
| triangular | 1 |  |  | 1 |
| flat diamond | 2 |  | 1 | 3 |
| tear-shaped | 2 |  |  | 2 |
| spacer |  |  | 1 | 1 |
| figurines | 3 |  |  | 3 |
| Totals | 15 | 3 | 3 | 21 |

(Woolley 1934, pl. 142, U.8033) and the Tell Asmar jewellery hoard (Frankfort 1934, figs. $28 \& 29$, some with silver heads). In the grave of $\mathrm{Pu}-\mathrm{abi}$ at Ur a lapis bull and a bearded bull pendant occurred as the terminal elements in a short string of beads (Woolley 1934, pl. 143:a, d). Such short strings of beads and pendants could also have been suspended from toggle pins (Maxwell-Hyslop 1971, 12). This could explain the vertical position of the perforations on the Brak and Ur bull pendants which, if threaded on a necklace, would have been placed sideways (see also the olivene bull pendant, Fig. 275, p. 263).

The lady pendant (109, Fig. 242), from the FS
deposit, has loose hair down her back and a fulllength robe, part of which is drawn over her left shoulder, covering her left hand and arm. There seems to be no exact parallel for this piece, although there is a lapis pendant in the shape of a human head from Tell Asmar (Frankfort 1934, fig. 29, 2nd row, extreme left). Fly-shaped beads like 108 are widespread in both time and space, and at this date they also occur in lapis at Ur, Kish and Warka (Maxwell-Hyslop 1971, 12, 127; Mackay 1929, pl. 60:60; Limper 1989,33). The lady, fly and tear-shaped bead / pendant could have been elements attached to some object like a diadem or parts of a necklace.

The spacer from JJ 3 (a surface scrape east of $E R$ ) is a distinctive shape that is found in ED and Akkadian levels at other sites (104). These occur in lapis in the 'A' Cemetery at Kish (Mackay 1929, pl.60:32) and in frit from the archaic Ishtar temple at Assur (Andrae 1922, 82, fig. 61e). Collar-like necklaces with alternating lapis and gold or silver spacers of the same shape occur at both Ur and Tell Asmar (Woolley 1934, pl. 145, with gold spacers; Frankfort 1934, fig. 29, 3rd row; Delougaz et al. 1967, 245, As.32:878, with silver spacers As. 32:879).

The cup-shape of rosette bead 102 is unusual (Fig. 241). It could perhaps have been fastened to cloth by passing thread from the back through its perforation, then threading on a small bead, threading back through the perforation and then sewing the thread to the cloth. This method would show the bead shape to better advantage than simply threading it on a necklace. It could equally have been fastened to wood, although the attaching nail or pin would have had to have been very fine. The other rosette bead 103 is from the surface, but is probably of third-millennium date (Fig. 244). The triangular object $\mathbf{1 0 5}$ is either a bead or a piece of inlay with a dowel hole for attachment.

Rock crystal and other beads (Fig. 474; Tables 12 \& 13) In addition to the 73 carnelian beads, 21 lapis beads and the jet bead, the following types of stone were visually identified: 17 rock crystal, 4 steatite, 1 obsidian, 1 olivene, 1 serpentine, 2 possibly granite, 3

Table 12. Rock crystal beads by type and phase.

|  | Phase |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Shape | $\mathbf{L}$ | $\mathbf{M}$ | $\mathbf{N}$ | Unstrat. | Totals |
| disc |  | 12 | 2 | 1 | $\mathbf{1 5}$ |
| sphere |  | 1 |  |  | 1 |
| diamond |  | 1 |  |  | 1 |
| Totals |  | $\mathbf{1 4}$ | $\mathbf{2}$ | $\mathbf{1}$ | $\mathbf{1 7}$ |

Table 13. Other stone beads by type and phase.

| Shape | L | M | Phase M/N | N | Unstrat. | Totals |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| disc | 4 | 45 | 4 | 12 | 7 | 72 |
| cylinder |  | 8 |  |  | 1 | 9 |
| barrel |  | 4 |  | 1 | 2 | 7 |
| sphere |  | 1 | 1 |  |  | 2 |
| biconical |  |  |  | 1 |  | 1 |
| hemisphere |  | 1 |  |  |  | 1 |
| ridged | 1 |  |  |  |  | 1 |
| ovoid |  | 2 |  | 1 |  | 3 |
| rectangular |  | 2 |  |  |  | 2 |
| square | 1 | 2 |  | 1 |  | 4 |
| pendant |  | 5 |  |  |  | 5 |
| spacer |  |  |  |  | 1 | 1 |
| Totals | 6 | 70 | 5 | 16 | 11 | 108 |

marble and 4 alabaster or calcite. Of the remaining 91 beads, 44 were white, 21 grey, 12 black, 5 pale brown, 5 green, 3 red-purple or pink and 1 tur-quoise-blue with micaceous flecks. The white, grey and pale brown beads are possibly limestone or marble. The majority of the rock crystal beads are discs and came from Akkadian levels. There is one from each of the large closure deposits (Tables 18 \& 19). As can be seen in Table 13 the overwhelming majority of the stone beads are also disc-shaped. The one obsidian bead, a disc, came from Phase L (77). The cylindrical bead with incised decoration is made from a similar glassy stone (78). Steatite beads include the ridged cylindrical bead with an incomplete perforation (79, phase L), two ovoid beads with incised patterns ( 80 , post-Akkadian and reg. no. 4879, Akkadian) and a small tear-shaped bead from an Akkadian level (85). The diamond-shaped spacer bead (83) is from the surface, but the same shape occurs at both Kish and Warka in the third millennium (Mackay 1929, pl. 60:30; Limper 1989, 29, F334). The olivene, serpentine and granite pendants are discussed below.
D. Shell, bone, clay and bitumen beads (Figs. 492 \& 493; Tables 14-16)

The shell beads are commented on in Chapter 11; those from the deliberate deposits are listed in Tables $18-20$. The more elaborate bone beads (Table 15) are all from Akkadian contexts. The two fly-shaped beads are from the floor of Room 21 (bone 21, Fig. 240) and the spacer bead from Room 18 of the SS monumental building (bone 20). The narrow pendant (bone 19) is from FS Level 4.

Of the clay beads counted in Table 16, eight are unbaked; there are three long barrel-shaped beads,


Figure 243. Assorted beads from the 1983 season. Top row, left to right: frit beads, 43, TB 5043 (Ninevite 5), TB 5042 (post-Akkadian). Middle row: lapis bead, 98; frit button, TB 5042 from surface; stone and shell beads, TB 5046, 5042 (post-Akkadian), reg. no. 1030 (phase L), TB 5050, surface. Bottom row: post-Akkadian unbaked clay beads, TB 5041 and 47.


Figure 244. Akkadian lapis beads and inlays. Top row: rosette bead 103, surface; TB 11062, lapis beads from the SS Courtyard 8 deposit (SS 549). Middle rove: lapis inlays, 91 and TB 11062 also from SS 549. The right-hand object is 1.5 cm in ht. Bottom rowv: lapis inlays 97 and 96 .
four ovoid beads (including 47, Fig. 243) and a bead with triangular section (42). The decorated oval bead 40 is from a post-Level 1 pit in Area FS (FS 673). The si入 segmented baked clay beads (46) came from the Phase L destruction and were found on the same
floor as the silver casing 159 (ER Level 5 Room 41). In relation to the number of examples, there are

Table 14. Shell beads by type and phase.

| Type | Phase |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | J |  | M | N | Unstr | otals |
| cowrie |  |  | 2 |  | 1 | 3 |
| dentalium | 1 | 1 | 6 | 1 |  | 8 |
| striped (Nassa serta) |  |  | 15 |  | 1 | 16 |
| Arcularia |  | 10 | 2 |  |  | 12 |
| knobbly (Mitradae) |  |  | 11 |  |  | 11 |
| sea-snail (?nerite) |  |  | 30 |  |  | 30 |
| other |  | 2 | 2 | 1 | 1 | 6 |
| pendant |  |  | 1 |  |  | 1 |
| disc |  | 21 | 17 | 2 | 6 | 46 |
| barrel |  |  | 1 | 1 |  | 2 |
| Totals | 1 | 34 | 87 | 5 | 9 | 136 |

Table 15. Bone beads by type and phase.

|  | Phase |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Shape | $\mathbf{L}$ | $\mathbf{M}$ | $\mathbf{N}$ | Unstrat. | Totals |
| disc | 4 | 3 | 1 | 1 | 9 |
| cylinder |  | 1 |  |  | 1 |
| barrel |  |  | 1 |  | 1 |
| pendant |  | 1 |  |  | 1 |
| spacer |  | 1 |  |  | 1 |
| fly |  | 2 |  |  | 2 |
| Totals | $\mathbf{4}$ | $\mathbf{8}$ | $\mathbf{2}$ | $\mathbf{1}$ | $\mathbf{1 5}$ |

Table 16. Baked and unbaked clay beads by type and phase.

|  | Phase |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Shape | $\mathbf{J}$ | $\mathbf{L}$ | $\mathbf{M}$ | $\mathbf{M} / \mathbf{N}$ | $\mathbf{N}$ | Unstrat. | Totals |
| disc |  | 2 | 3 | 1 | 1 |  | 7 |
| cylinder |  |  | 1 |  | 1 |  | 2 |
| barrel | 1 |  | 2 |  | 2 |  | 5 |
| sphere |  |  | 1 |  | 1 | 2 | 4 |
| biconical |  |  | 3 |  |  |  | 3 |
| segmented |  | 6 |  |  | 2 | 3 | 6 |
| ovoid |  |  | 1 |  | 2 |  | 1 |
| rectangular |  |  | 1 |  | 1 |  | 3 |
| pendant |  |  | 2 |  | 1 | $\mathbf{1}$ | 2 |
| wheel |  |  |  |  | 1 | 2 |  |
| Totals | $\mathbf{1}$ | $\mathbf{8}$ | $\mathbf{1 4}$ | $\mathbf{1}$ | $\mathbf{9}$ | $\mathbf{6}$ | $\mathbf{3 9}$ |

Table 17. Simple bead shapes in all materials.

|  | Material |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Shape | stone | frit/faien. | metal | shell | bone | clay | bitumen | Totals |
| disc | 132 | 408 | 45 | 45 | 9 | 7 |  | 646 |
| cylinder | 12 | 24 | 74 |  | 1 | 2 |  | 113 |
| barrel | 18 | 29 | 10 | 2 | 1 | 5 |  | 65 |
| sphere | 4 | 11 | 5 |  |  | 4 | 1 | 25 |
| Totals | $\mathbf{1 6 6}$ | $\mathbf{4 7 2}$ | $\mathbf{1 3 4}$ | $\mathbf{4 7}$ | $\mathbf{1 1}$ | $\mathbf{1 8}$ | $\mathbf{1}$ | $\mathbf{8 4 9}$ |

Table 18. Beads from the FS courtyard deposit (FS loci 1958/ 1957).

| FS 1958 container |  | Description (ill. no.) | No. of examples |
| :---: | :---: | :---: | :---: |
| Description (ill. no.) | No. of | green-glazed faience |  |
| silver |  | disc (17) | 2 |
|  |  | cylinder (32) | 8 |
| disc (147) | 45 | barrel | 2 |
| cylindrical (146) | 68 | sphere | 3 |
| short cyl. (148) | 6 | melon (23 \& 24) | 4 |
| cyl. casing (139) | 1 | biconical (52) | 9 |
| barrel (145) | 10 | segmented barrel | 1 |
| melon (149) | 1 | hubbed barrel (47) | 1 |
| quadruple-spiral (141 \& 142) | ) 3 | flat diamond (51) | 1 |
| double-spiral (143) | 1 | bulls head (15) | 1 |
| flat-winged disc (140 \& 144) | 2 | faience total | 32 |
| gold |  | frit |  |
|  |  | cylinder, green | 1 |
| sphere (151) | 4 | barrel, white | 1 |
| melon (152) | 1 | barrel, brown | 1 |
| ring pendant (153) | 1 | rectangular, brown | 1 |
| green-glazed faience |  | cross-hatch cyl. (12) | 2 |
| cylindrical | 1 | spacer, yellow (59) | 1 |
| melon (25) | 2 | frit total | 7 |
| flat-diamond | 1 | carnelian |  |
| frit |  | disc | 19 |
| barrel, white | 1 | biconical | 1 |
| sphere, green | 1 | long barrel (69) | 1 |
|  |  | carnelian total | 21 |
| disc (60-62) | 5 | lapis |  |
| cylinder (65-6) | 2 | short cylinder | 1 |
| barrel (67) | 4 | barrel | 1 |
| long barrel (68) | 4 | biconical | 1 |
| bicone (63-4) | 11 | triangular (105) | 1 |
| carnelian total | 26 | flat-diamond (101) | 1 |
|  |  | rosette (102) | 1 |
| lapis |  | lapis total | 6 |
| pendant bull (22) | 1 | rock crystaldisc |  |
| fly-shaped (20) | 1 |  | 1 |
| oval pendant (18) | 1 | jet |  |
| rock crystal |  | long rectangular (Fig. 474:73) | ) 1 |
| disc | 1 | other stone |  |
| other stone |  | disc | 1 |
| disc | 1 | cylinder | 2 |
|  |  | square | 1 |
| shell |  | foot pendant (Fig. 474:84) | 1 |
| Arcularia | 1 | shell |  |
| FS locus 1957 |  | striped Nassa serta | 12 |
| carnelian bicone | 1 | white sea-snail (?nerite) | 14 |
| shell disc | 1 | Mitradae | 1 |
| dentalium cyl. | 1 | dentalium | 2 |
| Bead total | 184 | discs | 3 |
|  |  | shell total | 32 |
| example from an Akkadian level |  | Bead total | 105 |

Table 19. Beads from the SS courtyard deposit (SS loci 545/549).
in Area FS is the only complete example of this shape (bone 19). The fragment in shell (Fig. 493:38) may have been of similar shape when complete. The gold ring pendant from the FSTC

Table 20. Beads from the floor of Room 21, SSTC (SS loci 1238, 1240).

| Description (ill. no.) | No. of <br> examples |
| :--- | :---: |
| frit |  |
| disc, white | 75 |
| sphere, black | 1 |
| segmented, white (42) | 2 |
| biconical, black (53) | 1 |
| frags, brown |  |
| frit total | 8 |
| stone <br> large cyl. (Fig. 474:88) <br> shell <br> knobbly (mitradae) <br> sea-snail (?nerite) <br> bone <br> fly-shaped (Fig. 492:21) | 87 |
| Bead total | 1 |
| courtyard closure deposit is the only |  |
| metal example (metal 153 ). |  |

## F. Small lapis objects (Figs. 241, 244 \& 475)

Thirty-five small lapis objects and fragments, other than beads, were recovered during the 1976-93 seasons. They are considered here because they are illustrated with the beads. Of these, 28 come from Akkadian levels, 1 is post-Akkadian and 2 are from topsoil. The SS courtyard deposit produced 26 of the Akkadian pieces, including 5 triangular objects with a spiral at the apex and incised lines on the upper surface (lapis 90 \& 91). We are uncertain of the purpose of these objects but they may have been used as inlay, or even as stamps; nor is it clear what they are supposed to represent (see also Iraq $51,1989,202)$. Other fragments in the SSTC deposit include 4 rectangular pieces (including 93), 5 irregular fragments with incised lines on one face (TB 10121), the 'eyebrow' inlay (97), a roughly rectangular fragment perforated through one corner and 10 other chips or lumps. Other pieces of inlay come from the floors in the SS monumental building (92, $94 \& 96$ ). Another rectangular piece of inlay is from

Area SS, Level 3 (reg. no. 4880, SS 633). The only fragment from Area FS is an unworked chip from the lower fill of the temple cella, Room 42 (reg. no. 5593, FS 1899). The only post-Akkadian lapis frag-
ment is another unworked chip (reg. no. 5706, SS 758). The presence of unworked chips and lumps of lapis such as those in the SS deposit indicates that lapis was worked on site.

## Chapter 8

## Third-millennium Metalwork

Helen McDonald, John Curtis \& Rachel Maxwell-Hyslop

One of the interesting aspects of the large collection of third-millennium metalwork from Tell Brak (some 859 items) is that virtually none of it derives from graves. This is in contrast with most other sites with large collections of third-millennium metalwork such as Ur and Kish in Sumer, Syrian sites such as Til Barsip and Ras Shamra, and those in the Amuq plain; the site of Susa is one of the few exceptions. The main concentration of metal objects at Brak occurs in association with the deliberate infilling of the monumental buildings in SS and FS . These ritual closure deposits account for approximately 37 per cent of all third-millennium metal objects published here (based on numbers of items rather than metal weight). They differ in their nature and intention from the hoards found elsewhere on the site, for example by Mallowan in Areas CH and ER , in that hoards are buried with the intention of recovery.

## A. Deliberate deposits of metal

This section includes both the relatively few metal hoards found at Brak and the ritual 'closure deposits' from the monumental buildings (see also discussion of metal deposits in Bjorkman 1994).

## 1. Ritual closure deposits associated with the Area FS monumental building

The ritual deposits in and above the FS Level 5 complex account for some 50 per cent of all the FS copper/bronze items, 98 per cent of the FS silver and all the FS gold. Deposit FS 1883 was found on top of the fill of the temple cella near its eastern wall (Fig. 245 \& p. 48). It consisted of the following copper / bronze items (Figs. 245-7): a mirror (168), three sickle blades, two of which are folded together, five toggle pins (47, 48 \& 49, TB 13032, identical with 49 and TB 13023; which has lost its head), three chisels ( $67 \& 68$, and TB 13028 which is incomplete), two awls ( $75 \&$ 76), a tool similar to 74 but incomplete (TB 13031)
and nine fragments with no discernible shape (reg. no. 5809). The unusual spanner-like object 23 (Fig. 248 ), found in the lower fill of the temple antecella (Room 42), came from the deliberate fill of the build-


Figure 245. Closure deposit FS 1883, resting on top of the deliberate fill of the FS temple cella, near the ritual group in Figure 56. Figures 246 and 247 illustrate the metal objects from deposit FS 1883.


Figure 246. Copper/bronze objects from deposit FS 1883. Sickle blades TB 13030, 13018 and mirror 168.


Figure 247. Copper/bronze toggle-pins, chisels and awols from deposit FS 1883. Left to right: tool TB 13048; chisels 67 and 68, toggle-pins TB 13023, 48, 49, TB 13032 and 47; awls 75, 76 and TB 13031.


Figure 248. Copper/bronze two-pronged fork 93 and spanner-like tool 23.
ing.
A number of ritually deposited collections of metal were found in the southwest corner of the temple courtyard. Here the building had been briefly abandoned and later extensively burnt, possibly as part of the closure ritual. It was then deliberately filled in (p. 45). The metal deposits had been placed within the deliberate fill about a metre above the courtyard floor as part of the infilling process (locus FS 1957). As far as we can tell the objects had been grouped within various types of container, including the basket fragments visible in Figure 249. The most interesting deposit was a group of silver and copper / bronze objects which had been contained in a cloth or leather bag (FS 1958, Figs. $51 \& 250$ ). It comprised 2 electrum disc pendants ( $136 \& 137$ ), a silver disc (138), 137 silver beads (139-49), 5 gold beads (150-52), a gold pendant (153), a length of


Figure 249. Closure deposits in the southwest corner of FS temple courtyard (43), locus FS 1957 (see also Fig. 386). Left to right: gouge 22 with dagger 3, flat axe and sickle blade TB 14170; bitumen basket (reg. no. 7194) with chisel 69 and tool 19; pot 93.123; sickle blade 13 with the lower half of small dagger blade 4.
silver chain (Figs. $50 \& 51$ ), 9 silver rods or ingots with a combined weight of $74.5 \mathrm{~g}(\mathbf{1 3 1}-5), 2$ corroded fragments from what may be a tenth ingot (TB 14130), a group of copper / bronze rings (111), possibly also ingots, spirals 116 and a collection of carnelian, lapis and faience beads (p. 231). These objects were surrounded by copper/bronze tools standing upright in the soil, reflecting the shape of the container. The latter included seven sickle blades (Fig. 251), a large tool (21), toggle pin 50 and a tool shaft fragment (reg. no. 7443). Two of the sickle blades had traces of mineralized organic material, not woven textile but some kind of fibrous substance, possibly reed, which could have been part of the original binding material.

The remaining objects in the locus FS 1957 deposits fall roughly two into groups. The first was located 50 cm to the north of the FS 1958 group and consisted of gouge 22, which lay on a sickle blade beneath which were dagger blade 3 and a flat axe identical with 18 ; the latter three objects had corroded together (left side of Fig. 249). The under sides of the dagger blade and the axe had mineralized textile on their surfaces (Fig. 323 ), indicating that the group had either rested on or been wrapped in a piece of cloth.

The second group of objects from locus FS 1957 was associated with a bitumen-lined basket (reg. no. 7194 ) and a beaker ( 93.123 , cf. 1120). Immediately to the north of the basket lay tanged sickle blade 13 beneath the lower half of dagger blade 4. Resting within the remains of the visible basket was the awllike tool 19 which still retains the mineralized remains of a wooden haft/handle (Fig. 252), a chisel
(69) and a carnelian bead (TB 14010). Other objects in the vicinity of the basket include a tool (20), a rod or pin fragment (reg. no. 7191), a tool shaft fragment (TB 14121), a triangular fragment of copper sheet (reg. no. 7537), and four fragments of silver sheet (TB 14121 \& 14271). There were also beads of rock crystal, carnelian and dentalium shell (p. 231), a piece of ostrich shell and further basket fragments to the west. Flat axe 18 marked the southernmost extent of the FS 1957 deposits, with mirror 167 at the northern limit, together with a flat axe identical with 18 (TB 14120). Jar 1263, found nearby, contained the upper half of dagger blade 4 .
2. Closure deposits in the Area SS monumental building Two major deposits containing metal were found on the floors of the monumental building in Area SS. The first was a deliberately deposited collection of material on the floor of Courtyard 8 , south of the façade and near the dais (SS 545 \& SS 549). This consisted of a large quantity of very corroded copper/bronze (over 5.5 kilos in weight) in addition to more than one hundred nails (including $101 \& 102$ ). Owing to the large quantity of relatively formless copper/bronze and the 'contained' materials, this metal was at first thought to have been the remains of a metal-covered box, a view subsequently revised in the absence of any evidence that the material had ever constituted a single object. Among the copper/ bronze mass the following individual objects were found: a silver animal pendant (158), a corroded mass of silver rings (TB 11124), fragments of gold sheet (154-6) and, in copper / bronze, a ring with two prongs attached (TB 10151), an awl (TB 11149), a rod or handle of a tool (reg. no. 4689) and seven ring fragments. There were also jet, carnelian, faience, lapis and shell beads and inlay fragments (Fig. 241), three cylinder seals (DM 441, 489 \& 505), a group of sealings (Iraq 51, 1989, pl. 27) and a decorated stone bowl (Fig. 277). The second deposit consisted of a group of five sickle blades (including 14) placed against the eastern wall and on the floor of the doorway of Room 20 before it was filled in.

The majority of the tools in the ritual deposits were complete and still usable, although this seems not to have been a necessary requirement. Daggers 3 and 4 were broken when they were deposited, and two of the sickle blades were folded (i.e. they were no longer in a usable form). The use of what seems to have been scrap metal in the SS courtyard deposit underlines the fact that it was the metal as a valuable substance that was 'sacrificed'. Not all tool and weapon types, however, appear in these deposits. Hoe blades, for example, are not included; nor are there any projec-


Figure 250. Closure deposit FS 1958 in situ. The shape reflects the original container, perhaps a cloth or leather bag (see also Fig. 50, p. 45).
tile points (but note that these are absent also in other Akkadian contexts). Thus the selection of certain types may have followed some specific convention.

## 3. Hoards and other 'collected' groups of copper/bronze objects

No metal hoards contained within pottery vessels were recovered during the excavations reported in this volume. Four were found by Mallowan, largely in post-Akkadian contexts, and a further Akkadian example comes from the 1994 season (see below). Hoards in the sense of objects hidden beneath the floor were identified, including three copper / bronze vessels (162-4) beneath the floor of a Level 1 house in Area CH . These are the only third-millennium metal vessels so far found at Brak, although numerous fragments of sheet, some of which may once have been parts of vessels, have been recovered. The socketed axe 7, dagger blade 6 and the loop 165 from Area DH (Fig. 253) were also found together in the sense that they fell simultaneously from a collapsed section. They are probably from an Akkadian context and may originally have constituted a hidden deposit, that is a hoard, since there was no evidence of heavy destruction in the relevant area.

Several metal objects were found in situ in destruction debris on the floor of ER Level 5, Room 41 (locus ER 233, Phase L). These include the narrow
spearhead 2, silver casing 159, a sickle blade (TB 3025, as type 14 but with two perforations), an awl (TB 3041, similar to 75), and a narrow square section tool or pin (TB 3041, very similar to 25). Another group of metal objects came from an Akkadian level in ST (Level 4) where only a relatively small area was excavated, revealing what may have been the corner of a courtyard. An associated, brick-lined, oval feature (ST 105) contained a quantity of heavily burnt material including carbonized lentils (p. 306), several pots ( $\mathbf{1 1 9 7}, \mathbf{1 2 3 4}, 1319 \& 1329$ ), a stone vessel (stone 22) and several copper/bronze objects (the spearheads 1 and 17 , toggle pin 63, an awl (reg. no. 904 , similar to 76 ), and a fragment of sheet (reg. no. 903). A pin fragment (reg. no. 901) came from the associated floor (ST 100). A socketed adze (15), tanged sickle blade 12, and a small awl/chisel (TB 11134) were found together in Area 58 near the large Level 2 house in Area FS (Figs. $79 \& 254$ ). The same locus also produced marine fish remains (pp. 69-70).

A group of metal tools and an associated weapon was found by Mallowan at the west end of Area CH, not far below the surface and apparently unrelated to any architectural features (1947, 165-7, pl. 31). It included a dagger almost identical with 3 , having the same wide groove and pair of incised lines down the centre of the blade. Details of Mallowan's objects appear in a surviving dig register. As well as the dagger (F435), there were two sickle blades (F433 \& F434: Mallowan 1947, pl. 31:1), a further object ( F 437 ) of which the dimensions ( 7.0 $\times 3.5 \mathrm{~cm}$ ) suggest that it is part of a flat axe similar to 18, a tanged saw (F436, illustrated in the schematic section of the mound in the Sargonid level, Mallowan 1947, pl. 64) and a fragment of an awl or similar tool (F438). The attribution of a complete flat axe F425 to the cache would appear to be a mistake for F437; the register makes it clear that F425 came from the uppermost level in CH and was not found with the cache. It is of interest that the Mallowan cache contains a selection of exactly the same types of objects (dagger blade, sickle blades, tools) that occur in the FS ritual deposits.

Four concealed hoards of jewellery hidden in pottery vessels were also found by Mallowan (all references below to Iraq 9, 1947): one in Room 14 of the Naram-Sin Palace (jar illustrated on pl. 65:1, containing beads, gold earrings and a gold foil cap illustrated on pl. 36), a second in 'sub-surface soil' above CH Room 12 (jar pl. 65:5, its mouth sealed with mud-plaster, containing gold and silver jewellery illustrated on pl .35 ), the third from a heavily destroyed open area east of CH Room 6 (jewellery
illustrated on pl. 36, contained in a open-mouthed, ring-based jar, pl. 75:6 - not a 'black-burnished cup' as erroneously described in the text) and the fourth from Area ER, above the cuneiform tablets found in Room 6 and beneath the overlying cobbled pavement. It is this hoard, illustrated on plate 33, that spills from the 'grey-burnished cup' on plate 34 of the Mallowan report. A further hoard of jewellery and silver bullion was found beneath an Akkadian floor on the HS spur (Matthews et al. 1994). The material in this hoard closely resembles the jewellery and bullion recovered in the FS 1958 ritual deposit, discussed below, but the nature and purpose of the two collections differ fundamentally.

## B. Copper/bronze objects (Figs. 476-80 \& 482)

## 1. Weapons (Fig. 476)

Spearheads (1, 2, 5 \& 17): Spearheads with a square section blade and tapering 'poker butt' tang are widespread in the Near East in the third millennium. This is Woolley's type 1 at Ur, where a variation on the main type has bevelled angles which give an almost octagonal section like that of spearhead 1 (Woolley 1934, 303, pl. 227) and Philip's spearhead type 9 with a distribution in Syria and Palestine (Philip 1989, 73-$4,328-32$ ). The form is also found at Susa (Tallon 1987, ii, no. 207). Such weapons are concentrated in ED III tombs in the Royal Cemetery but are absent in later contexts at Ur; in North Syria the type persists until the end of the third millennium (Philip 1989, 74). The similarities in certain types of metal weapons between Sumer and Northern Mesopotamia in this period have been discussed by Watkins (1983).

The spearhead with chisel-like blade (17), which was found with 1 (photograph in Iraq 47, pl. 29:a,b), seems to be related to Philip's spear type 10 (see also the incomplete spearhead 2). This form is defined as having a square section blade and a blunt butt with no distinct tang (Philip 1989, 77, 303). Philip lists three examples of this type, one from Tell Kara Hasan in the neighbourhood of Carchemish and two from graves at Carchemish itself; it is the latter two that have chisel type blades (Woolley \& Barnett 1952, $222, \mathrm{pl} .60: \mathrm{A}, \mathrm{C}$ ). A further example similar to 17 was found in a deposit of metalwork in a wall of the round building at Tell Gubba in the Hamrin (Jamdat Nasr/ED1 in date; Ii 1989, 197, fig. 11). Philip mentions the possibility that these may be tools rather than weapons, or possibly unfinished versions of his spearhead type 9. The Carchemesh objects, however, measure 14.5 and 17.1 cm in length, the Gubba example has a length of 18.2 cm and Brak 17, 26.6 cm .

At that length 17 is unusually long and would have made an unwieldy chisel. Indeed one wonders why any tool would have required such length for a relatively narrow blade, since it seems not unreasonable to assume that the makers of such functional tools did not use more metal than was necessary. The association of 17 with 1 is possibly an argument that both are spearheads. The graves at Carchemish and Tell Kara Hasan produced several of Philip's type 9 spearheads as well as the more unusual type 10 examples, so there may be some association between the two forms (Philip 1989, 78). Thus it seems more likely that 17 is a spearhead despite its unusual blade form.

With regard to spearhead 5 which has two slots on the blade, there is a wide variety of such objects from Anatolia where they have a distribution from the mid-third to the first half of the second millennium (Stronach 1957, 107, 110-11, figs. 5-7; Philip 1989,82 ). The slots are thought to be used to fix the blade to the haft. The tangs of this type are often short and sometimes end in a hook. Since 5 is missing the end of its tang, we do not know if it shared this feature, although it is clear that it had a longer tang than some examples of this type. In this respect it is more similar to examples from Til Barsip (Thureau-
had a single line of centrally placed rivets, probably 2 or 3 originally though only one is now extant. It is possible that 3 had a similar arrangement of rivets. Daggers with this tang shape and arrangement of rivets are found at Ur (Woolley 1934, pl. 228, 7a \& b) and constitute Philip's type 35 (1989, 482-5). Incised lines are found on some ED III daggers from Kish (Mackay 1929, 162, pl. 62:17) and on Philip's type 3 daggers, although both have a different configuration of rivets and the latter have differently shaped tangs (1989, fig. 28). There are two parallels which share the same tang shape, rivet formation, incised lines and wide groove down the centre of the blade. These are from the nearby site of Melebiya (Lebeau et al. 1986, 42, pl.V:2) and a grave at Warka (Boehmer et al. 1995, 2, Taf. 2:6); both are said to be of ED date.

Dagger blade 4 was in two pieces, having been broken either deliberately or accidentally before deposition. Although corrosion makes it difficult to be precise, it is possible that the end of the tang is also broken. Even if incomplete, it is unlikely to have been much longer than it is at present. This blade is related to Philip's dagger type 36 which is defined by its small size ( $\mathrm{l}=14-17 \mathrm{~cm}$; $\mathrm{w}=3.5-3.6$ ) and rivet formation (one in each shoulder and one in a short Dangin \& Dunand 1936, 107, pl. 31:4) and Ras Shamra (Schaeffer 1948, 37, pl. X.I) than to the one from Tell Judaideh (Braidwood \& Braidwood 1960, 470, fig. 371:5). The slotted spearhead is less common inSyria than in Anatolia and may have been imported (Philip 1989, 81). No examples have up to now been found in Iraq; thus the Brak example seems at present to be the southeasternmost example of this type.

Dagger blades (3, 4 and possibly 6) (Fig. 249): Although dagger blade 3 lacks its tang, it is clear from the sharp right-angle shoulder at the end of the blade that it probably had a rectangular tang like the very similar blade F435 found by Mallowan (1947, pl. 31:2). Enough of the tang of the latter survives for it to be clear that it

Table 21. Metal objects by type and phase.

| Copper/bronze types | H | J | K | K/L | L | Phases |  | M/N | N | Unstrat. | Totals |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | L/M | M |  |  |  |  |
| weapons |  |  |  |  |  |  | 7 |  |  |  | 8 |
| projectiles |  |  |  |  |  |  |  |  | 3 |  | 3 |
| large tools |  |  |  |  |  |  | 9 | 1 | 1 |  | 11 |
| sickle blades |  |  |  |  | 1 |  | 19 |  | 1 |  | 21 |
| small chisels |  |  |  |  | 2 |  | 12 |  | 4 | 5 | 23 |
| small awls |  |  |  |  | 3 |  | 24 | 1 | 10 | 8 | 46 |
| cosmetic | 1 | 1 |  |  | 1 |  | 8 |  | 4 |  | 15 |
| miscellany |  |  |  |  |  |  | 21 | 1 | 10 | 2 | 34 |
| pins |  | 1 | 1 | 1 | 4 | 3 | 24 |  | 12 | 7 | 53 |
| toggle pins |  |  |  |  | 2 |  | 34 |  | 7 | 3 | 46 |
| needles |  |  |  |  |  |  | 3 |  | 6 |  | 12 |
| nails |  |  |  | 1 | 1 |  | 93 | 2 | 4 | 3 | 104 |
| rings |  |  |  |  | 1 |  | 20 |  | 9 | 2 | 32 |
| sheet objects |  |  |  |  |  |  | 11 |  | 3 | 2 | 16 |
| Object totals | 1 | 2 | 1 | 2 | 16 | 3 | 285 | 5 | 74 | 35 | 424 |
| pin fragments |  |  |  |  | 2 |  | 83 | 1 | 30 | 20 | 136 |
| tool fragments |  |  |  |  |  |  | 21 |  | 6 | 6 | 33 |
| lumps |  |  |  |  | 1 |  | 36 | 1 | 6 | 13 | 57 |
| sheet fragments |  |  |  |  |  |  | 4 |  | 1 | 2 | 7 |
| Copper/bronze totals | 1 | 2 | 1 | 2 | 19 | 3 | 429 | 7 | 117 | 76 | 657 |
| gold |  |  |  |  |  |  | 14 |  |  |  | 14 |
| silver |  |  |  |  | 1 |  | 154 |  | 2 | 1 | 158 |
| electrum, silver, copper | ronze |  |  |  |  |  | 3 |  |  |  | 3 |
| lead |  |  |  |  | 4 |  | 13 | 1 | 2 | 6 | 26 |
| iron |  |  |  |  |  |  | 1 |  |  |  | 1 |
| Totals all metal | 1 | 2 | 1 | 2 | 24 | 3 | 614 | 8 | 121 | 83 | 859 |
| stone moulds |  |  |  |  |  |  | 4 | 1 | 4 |  | 9 |



Figure 251. Sickle blades from the FS Courtyard 43 deposits. TB 14168 from FS 1958 and 13 from FS 1957.
tang). The only difference between 4 and the type 36 daggers is that the latter usually have a flat or flat lozenge-shaped section, whereas 4 has a well-defined mid-rib. The type 36 daggers listed by Philip are all from north Syrian grave contexts and where datable seem to belong approximately in the middle of the third millennium (the hypogeum at Til Barsip, Halawa grave 70 and graves at Tell Tayinat, Habuba Kabira and Amarna: Philip 1989, 486-8). Some of the smaller daggers from a mid-third-millennium tomb at Tell es-Sweyhat may also fall within type 36 (Zettler ct al. 1997, 55 \& 57). As Philip has pointed out, the small size of these daggers means that they could not have been serious weapons but would have been useful as 'side arms' or 'pocket-knives' (Philip 1989, 129).

The corroded and incomplete state of blade 6 makes identification uncertain; we believe that it is probably a dagger blade rather than a spearhead.

Socketed axe (7, Fig. 253): Plain shaft-hole axes are found widely but examples with multiple ribs on the socket are rare. Axe 7 fits Maxwell-Hyslop's axe type 21 and Philip's shaft-hole axe type 2 (Maxwell-Hyslop 1949, 113, pl. 35; Philip 1989, 59, 303-6). In thirdmillennium Syria two of the axes most similar to 7 are from the hypogeum at Til Barsip (ThureauDangin \& Dunand 1936, 106, pl. 29.6) and Byblos (Dunand 1939, 347, pl. 98). A ribbed axe from Room 47 of the Anten temple at Chuera does not have the cut-down socket of 7 (Moortgat \& Moortgat-Correns 1975, 32, fig. 16). Axes decorated in this manner are also found in mid-second-millennium contexts (Philip 1989, types $3 \& 4$; Curtis 1983). Second-millennium axes, however, tend to have elliptical shaft-holes, in preference to the circular shaft-holes of the third millennium, and a rectangular projection at the base of the blade which is sometimes


Figure 252. Copper/bronze tools, rings, toggle-pin and a mirror from closure deposits FS 1957, 1958. Left to right: tool 19; flat axes TB 14120 and 18; large awl 21; toggle-pin 50; tool 20; mirror 167; chisel 69; rings 111; and below gouge 22.
flanged (Philip 1995, 131; Maxwell-Hyslop's type 18, 1949, pl. 35; Curtis 1983, 80, fig. 3). It is possible, of course, that the apparent break in their occurrence in Syria between the late third and the middle of the second millennium is no more than a reflection of the paucity of evidence here for the early second millennium (Philip 1995, 131).

Moulds for the manufacture of these ribbed axes have been found in western Syria at Ras Shamra (Philip 1989, 66) and in Anatolia at Alçadağ (Belli 1993, 608, Abb. 2). Although no actual axes of this type (with multiple ribs and cut-down sockets) have as yet been found on sites in Sumer, in either the third or the second millennium, similar axes are represented on the Stele of the Vultures and must thus have existed in the third millennium (MaxwellHyslop 1998, pls. 10 \& 37).

Projectile points (8-10, Fig. 255): No projectile points have as yet been recovered from Akkadian or earlier third-millennium contexts at Brak. Three projectile points have, however, been recovered from postAkkadian levels. This contrasts markedly with the relative abundance of projectile points in the Mitanni levels (Brak 1, fig. 232). Projectile point 8 may be a light spear or javelin point rather than an arrowhead (Martin 1985, 14). The small socketed spearhead 10 was formed from a single piece of sheet metal (Fig. 255). The top half became the blade while the rectangular bottom half was folded to form the socket,


Figure 253. Socketed axe 7 and a heavy loop-shaped fitting of unknown purpose 165 .
thus producing the asymmetric position of the blade in relation to the socket when in profile. Philip believes this to be the earliest form of socketed spearhead, which was replaced in the Middle Bronze age by types with more substantial sockets (Philip 1989, 97), a view perhaps supported by the late third-millennium date for 10.

## 2. Large tools and

 related items (Figs. 251, 252, 256 \& 476)

Figure 255. Post-Akkadian projectile points 8 and 10 (not to scale: $8=10.8 ; 10=8.0$ ).

Flat axes like 18 are multipurpose tools found throughout the Near East. Object 11 is very similar but, unless a large portion of the original has been lost, its smaller size probably means it should be classed as a chisel rather than an axe. Sickle blades are the most commonly occurring large tool, owing simply to their frequent inclusion


Figure 254. Socketed adze 15 and tanged sickle blade 12 from open area 58 in Area FS Level 2a (Fig. 79).


Figure 256. Copper-bronze saw blade 16, found on a post-Akkadian surface in Area FS.
in deliberate deposits (Fig. 250). In fact all of the complete blades are from such deposits with the exception of TB 3025 from ER Level 5. Those with perforated tangs (seventeen examples) are more common than those with folded tangs (two examples; see Fig. 251).

There are few published examples of the gouge type 22 (Fig. 252, bottom of photograph), possibly because such tools are less common in graves than weapons such as daggers and axes. (An exception comes from an ED/Akkadian grave at the nearby site of Tell Khazne: Munchaev et al. 1990, 12, fig. 4:2). Most other clearly-provenanced examples are either from deposits like those at Byblos, where a similar gouge (no. 2193) was found together with large awllike tools similar to 20 and 21 (Dunand 1939, pl. 69), or in hoards like the one from Tell Taya where three 'long shafts with scoop ends' (?gouges), a flat axe and a pot containing silver ingots and beads were buried beneath a late third millennium house floor (Reade 1968; 248). There would appear also to be at least one example from Ur dating to the third millennium (Childe 1954, 158, fig. 88).


Figure 257. Akkadian and post-Akkadian copper/bronze pins and a needle from the 1990 season. Left to right: TB 11144, 51, 52 (post-Akkadian), TB 11142, 54, TB 11143, needle TB 11144 (post-Akkadian); pin 32 (Akkadian).

The post-Akkadian socketed adze 15 (Fig. 254) is a basic and widespread tool in Mesopotamia and Syria (Woolley 1934, pl. 229 type 3). A similar adze was found in a hoard with copper/bronze vessels beneath the floor of a non-residential building of ED III date at al-Hiba (Hansen 1973, 69, fig. 13). The preservation of the wooden haft of tool 19 is unusual (Fig. 252, left). Its curved shape is that of the metal tang within, which protrudes at the end of the haft. This object bears a resemblance to the marlin spike, a tool used by sailors to loosen knots in rope (D. Oates pers. comm.)

I know of no other example of a tool like 23 (Fig. 248). In the present day it would be a spanner for loosening nuts and the handle would serve to apply extra leverage to the head. It is possible to envisage it being used to hold the neck of vessel, while a hook or wire could have been fitted through the loop and held by the other hand if the contents of the vessel had been too heavy for one hand and/or too hot for the hands to have been closer.

## 3. Vessels (Fig. 482)

The three vessels 162-4 were found together below a floor in a Level 1 house in Area CH. It is possible that they constitute a set used for some particular purpose, since a similar set of two bowls and a strainer are a feature of an Akkadian grave at Warka (Boehmer et al. 1995, 3, Taf. 3). Strainer 164 differs from many contemporary strainers found in Sumer in that it lacks the wide ledge rim that would enable it to rest within a bowl (Müller-Karpe 1993, 206-14, Taf. 131-5). The shape of 162 also occurs in pottery (Fig. 440:1173).

## 4. Pins (24-42 \& 116) (Fig. 257)

The plain pin with globular head is the most common type of unperforated pin (fourteen examples 26-8 and a further eleven in Table 22); most come from Akkadian levels. The roll-headed pins are found throughout a wide chronological range, from late Ninevite 5 to post-Akkadian (37-9 and Table 22), as well as occurring in second-millennium levels at the site (Brak 1, 115). This type is made by hammering flat one end and then rolling it round to form the head. The wide-headed variety ( 37, TB 8061 \& reg. no. 1064) is less common than that where the rolled head is no wider than the shaft. Mallowan found a pin like 30 in a third-millennium grave at Arbit, together with a socketed adze like 15 and a dagger blade with a rectangular tang and three rivets (Mallowan 1937, 127, figs. 12:10, 11 \& 13:3). Pins like 40, with heads no wider than their shafts and separated by a groove from the shaft, are common at Susa (Tallon 1987, ii, nos. 907-31). 41 is one of the few pins found in association with Ninevite 5 pottery. It is not clear whether the bent shaft is intentional or accidental. There are pins at other sites where part of the shank is looped over and wrapped around to form a head (Speiser 1935, pl. 58:13; Klein 1992, Taf. 129), while pins at Susa have bent shafts and flattened terminals. Where the latter have a provenance, however, they date to the late fourth rather than the late third millennium (Tallon 1987, ii, nos. 881-3). There are parallels for 42 from Amuq Phase G (Klein 1992, type II.9B, 179, pl. 162:8-10).

It is possible that the double spiral 116 (Fig. 258) is the head of a pin. Pins with double spiral heads are known elsewhere in the third millennium, for example at Ras Shamra and Alaça Höyük (Huot 1969 , nos. $51 \& 61$ ). A pin with a double spiral head has also been recovered at Arslantepe (Frangipane pers. comm.) and double-spiral pendants in gold were found in the Royal Cemetery at Ur (Pittman 1998, 110, 122).

## 5. Toggle pins (43-65) (Figs. 257, 259 \& 260)

It has been suggested that the Akkadian term 'tudittum', once thought to mean pectoral, might in fact refer to toggle pins (Klein 1983). Reference to tudittu in the texts show that they are worn, often in pairs, on the breasts of both goddesses and mortal women. They can be made of ivory, copper/bronze, gold or silver (Leemans 1952, 6). A number of artistic depictions show the use of two pins, one at either shoulder, to hold in place the corners of a cloak (Klein 1992, pl. 192-5). On a shell inlay figure from Mari a string of beads(?) and a cylinder seal(?) are
shown suspended by a string from the pin's perforation (Parrot 1962, pl. 11:2). Two of the Brak toggle pins ( $47 \& 48$ ) have mineralized (?)cloth in association with their perforations; a further three (TB 7007, TB 7010 \& TB 6084) have wires through the perforation.

Plain, robust, toggle pins (43-5) are the most common type (twelve examples); again most come from Akkadian levels, as do those like 46. Pins with domed heads, such as those found in the FS closure deposits (48-50), are widespread in the later third and the first half of the second millennium (Klein 1992, 94, pl. 105). One was found in a hoard at Tell Munbaqa dated to the Akkadian period (Heinrich et al. 1974, 34, fig. 48). Pins with fluted heads and grooves on the shaft, like the unstratified 61, are apparently a second- rather than a third-millennium type (Klein 1992, 107-8, pl. 113: 6-12 \& pl. 114:4); the Brak pin, however, comes from a spoilheap in Area ST where no other second-millennium material has been found. A pin similar to 63 was found in a grave at Abu Salabikh (Martin 1985, 216, fig. 144, Gr. 61:77). The flat-disc-headed pins 51 and 52 are both postAkkadian, as are 55,57 and 58. Pins similar to the latter are known from Kara Kozak and Tawi, also dating to the late third millennium (Klein 1992, 116, pl.


Figure 259. Akkadian copper/bronze toggle-pins and small tools from the 1987 season. Left to right: togglepin 46; small tools 71, TB 9028, 9032; ring 108; togglepin TB 9026.

119: 7-9). Pins 57 and 65 (Fig. 260) seem to be unique.
6. Small tools and related items (66-79, 117) (Figs. 252 \& 249)
None of the small tools come from what can be identified specifically as workshop contexts. Some were found in the ritual deposits ( $67-9 \& 75-6$ ). They were probably multi-purpose and could have been used on materials such as wood, stone, bone and ivory. The very small tools 70-73 may have been used as gravers, punches or small chisels, while the larger awls 74-6 may have been used as punches on sheet metal or leather. $\mathbf{7 9}$ is probably a small gouge, and 117 may be part of a cutting blade. 77 and 78 remain enigmatic, although the latter may be some kind of weaving or sewing tool, since it resembles a crochet hook.

Figure 258. Copper/ bronze double-spiral 116 from the FS 1958 deposit, width 1.7 cm .


Figure 260. Copper/bronze pins. Akkadian toggle-pin 65 from the Naram-Sin Palace, 1.9 .4 cm ; pin with fluted conical head (TB 10127, SS 553, surface clearance, l. 13.0 cm ); late Phase L toggle pin with melon-head 62, l. 7.8 cm .

Forked implements similar to 93 have been found at a number of sites in the third millennium (listed in Tallon 1487, 151). Theories explaining their function range from notches with which the butt ends of arrows or javelins are fixed into throwing thongs (Zettler \& Horne 1998, 166), animal goads (Watelin \& Langdon 1934, 24) or alternative weapon points (Martin 1985, 14). The smaller of the two Brak examples (reg. no. 1426 from DH 2) is very like that from Ur illustrated by Zettler and Horne. Similar objects are associated with chariot burials at Kish and are depicted on the Stele of the Vultures in a quiver with arrows. However, the larger example ( 93 , Fig. 248) differs from the others in a number of respects and would seem to be too substantial to have been usefully fitted to the butt end of a projectile. It seems more likely to have been a hand-held tool similar to pliers and could, for example, have been used to bend the edges of sheet metal.

## 7. Cosmetic tools ( $80-88,167 \mathcal{E}$ 168)

The delicate blades on $80-84$ would presumably have been useful for applying eye paint or some other cosmetic. The tweezers $85-7$, small spoons $88-9$ and spatula 90 are likely also to have had a cosmetic function. At other sites such objects are often found in graves. At Brak most came from levelling fill or brick debris. The exceptions are the tweezers (85) which were found in pot 803, applicator 80 from a Level 2 floor in Area FS, and the two mirrors ( $\mathbf{1 6 7}$ \& 168) which were part of the ritual deposits.

## 8. Needles and related objects (94-7) (Fig. 257)

94 is one of the largest needles and, given the size of its eye, must have been used on extremely coarse cloth or perhaps net; 96 and 97 could also have been used on net, or perhaps leather, since their blunt ends would have made use on even the most coarse cloth difficult. Without its blunted end 97 would resemble a roll-headed pin; it is conceivably part of something like a hinge.

## 9. Nails (99-106)

The majority of the Akkadian nails found at Brak are similar in size and shape to 102 and 103 and come from the SS courtyard ritual deposit. There are also single examples, for example 99, 100 and 104. One of the largest nails, perhaps some form of spike (TB 10125b) was found in the SS courtyard deposit still attached to a fragment of wall plaster (Fig. 261).

[^0]been finger rings, but they could have been hair or ear-rings ( $\mathbf{1 0 7 - 1 0} \& 114$ ); most have terminals, that is they are not completely circular. 112 is the most substantial example and may have had a non-jewellery function. Rings 108-10 are of the same type as the silver ingots 131 and 32 (Fig. 51).

## 11. Miscellany (Figs. 479 \& 480)

The clawed hooks 91 (Fig. 262) and 92 are unusual and up to now seem particular to Brak, though there are plain s-shaped suspension hooks from EB II levels at Tarsus (Goldman 1956, pl. 118, 120 \& 125). 119 may be some kind of buckle but is too corroded and incomplete for certain identification.

Given the proximity of the Wadis Radd and Jaghjagh it is perhaps strange that 115 is one of only two fishhooks found at Brak, but unless complete they are difficult to recognize. In any case fishing can always be done using nets rather than line, and fish are still caught in the Jaghjagh using metal 'clunks', long and heavy rods with which the fish are literally struck.

The oval plate with two perforations (118) bears a superficial resemblance to a piece of scale armour. Armour of this type, however, is thought not to become common until the middle of the second millennium (Moorey 1994, 263). This piece comes from a Level 2 floor in Area FS. Other pieces of flat plate with rivets were found, for example 122 , which were probably fittings for wooden furniture or boxes. These are usually broadly rectangular or triangular when unfolded, unlike the oval shape of 118. A fragment of charred wood with attached copper/bronze sheet was found in the FS Level 3 Revealed Doors Building (reg. no. 1422). It is possibly a fragment of metal-covered furniture similar to examples found in second-millennium levels at the site (Brak 1, 117).

The female figurine (Fig. 263) is a copper / bronze piece from the Area CH surface; it may date to either the late third or the very early second millennium. It is related in very general terms to representations of naked females or goddesses found at this time in both terracotta and lead (Emre 1971, 147, pl. 10:1), of which one example has also been found in Area FS (see below). The CH figure is possibly cast, although the corroded nature of the reverse makes it difficult to be certain. See also the cast copper / bronze figurine found by Mallowan in the Naram-Sin Palace (1947, pl. 32:b).

## C. Gold and silver (Figs. 50, $51 \& 481$ )

All of the third-millennium gold and virtually all the silver objects from the 1976-93 excavations came from


Figure 261. Large copper/bronze spikes from the SS Courtyard 8 deposit with gypsum plaster attached (TB 10125).
the closure deposits in the FS and SS monumental buildings, more specifically in courtyards FS 43 and SS 8 (131-56 \& 158). The only other third-millennium silver objects are an earring from ST Level 4 (157), the casing fragment from ER Level 5 (159), a toggle pin from FS Level 1 (TB 11123) and a plain pin from FS Level 2 ( $\mathbf{1 6 0}$ ). Of the objects described below, all are from the FS 1958 deposit unless otherwise attributed. Other jewellery and bullion were recovered in various hoards found by Mallowan, and by Matthews in 1994.

## 1. Silver bullion (131-5)

The use of silver rings and coils as 'currency' is discussed by a number of scholars, including Powell who identifies the Sumerian HAR/Akkadian šewirum as meaning not only 'rings' in the usual sense but also a 'coil of metal used for monetary purposes' (1978, 212). Such items provided convenient storage of silver in a form that could be used either by cutting off suitable weights for purposes of 'payment' or by melting for manufacturing purposes. It is of interest that the Cruciform Monument of Maništusu (an Old Babylonian forgery) mentions a votive offering of silver and gold HAR (Powell 1978, 219). The Brak bullion is found not only as rings and coils, but also as bent pieces of heavy silver wire ( $\mathbf{1 3 3} \& 134$ ). Broken pieces of silver (šibirtum) are also found in pot hoards at Khafajeh and Munbaqat (Delougaz et al. 1967, 45; Machule et al. 1989, 76-7, fig. 12). At Brak two pieces of scrap silver of this type have been found in courtyard deposit FS 1957 (TB 14117 \& 14271) and a number came the hoard found in 1994 (Matthews 1994, fig. 8).


Figure 262. Copper/bronze clawed hook from Room 15 in the SS ceremonial complex (91), l. 7.7 cm .


Figure 263. Late third-millennium copper/bronze female figurine from Area CH (TB 69, ht 3.8 cm ).

## 2. Jewellery discs (Fig. 264)

The electrum discs 136 and 137 were made by hammering sheet over a ring of silver (136) or copper/ bronze (137). Each disc is decorated with concentric circles of repoussé dots hammered from the obverse and has a single perforation for suspension or attachment to cloth. The latter is more probable, given the long tradition of metal-ornamented clothing in Mesopotamia (Oppenheim 1949). The 'dish' shape is unusual.

The edges of the large silver disc 138 (Figs. 51 \& 387) have also been folded over a copper/bronze


Figure 264. Electrum discs 136 and 137 from the FS 1958 deposit.
ring. The general shape of the boss and concentric ridges was formed by repoussé from the reverse, while the concentric circles, radiating lines and zig-zag pattern around the central boss were added by engraving on the obverse. The multiple perforations, two sets each of eight perforations on opposite edges of the disc and a further two perforations between these two groups, were made after the engraving of the pattern and again suggest that this object was intended to be attached to cloth. The decoration possibly represents a sun motif. Close parallels in silver come from cemetery A at Kish (Mackay 1925, 51-2, pl. 4:18, 20-23; 1929, 177), where 15 graves from a total of 154 produced similar objects. In undisturbed graves the disc was positioned near the pelvis ( $n=5$ ) or near the neck, shoulder or breast ( $n=5$ ), perhaps indicating how they were worn. Owing to poor bone preservation the excavators relied on the nature of the gravegoods to indicate gender and thus considered the presence of an axe in one of the graves to indicate that such discs were found in the graves of men as well as women (Mackay 1929, 177). Certainly they were also found in the graves of children (Mackay 1925, 51). The Brak disc is larger than those from Kish; a silver repoussé disc from Ur with an electrum central boss is larger still ( $\mathrm{d} .=9 \mathrm{~cm}$ ) (Woolley 1934, 545, pl. 219, U.9365). Although some of the Kish discs have folded edges, there is no indication that any are folded over a ring in the manner of 138.

## 3. Silver clain (Figs. 51, 265 \& 387)

Two lengths of silver chain were found in deposit FS 1958 , one with a length of 16.7 cm comprising 60 links and one with a length of 14.3 cm with 43 links. There were in addition 17 loose links, which if added to the shorter chain would have made the two chains of similar length with an equal number of links. Our conservator, Fiona Macalister, has observed that the two lengths are made from wire of slightly different


Figure 265. Two lengths of silver chain from FS 1958 deposit (see also colour Fig. 51).
gauge, with the longer length a slightly thinner gauge. Both were in a fragile condition, but were remarkably well-preserved owing to their enclosure within the copper objects in the deposit (Fig. 250).

The chain is more complex than a simple series of interlocking rings in that each link consists of a loop bent over the adjoining loop and soldered to itself. Fine jewellery chain is rare in the Near East, especially in silver, a metal which does not survive well. Most of the comparable material comes from the Royal Cemetery at Ur, where chains in both gold and silver were recovered. Usually these were part of a type of male headband which Woolley referred to with the Arabic brîm or agal. Each Ur headband consisted of two or three long cylindrical or dateshaped beads in lapis, gold, silver or carnelian, interposed with two to four smaller beads with a length of chain at either end (Woolley 1934, 243, pl. 146). Woolley describes the formation of the chain links as being crochet-like (1934, 531, U.8306), and close scrutiny of a photograph of chain from Ur published by Zettler \& Horne $(1998,101)$ indicates that the Ur and Brak chain links were made in the same manner. At Ur 13 graves produced a total of 43 lengths of gold chain, while 8 graves contained fragments of silver chain. Whether the Brak chains and the carnelian beads that were found in the deposit were ever part of such a headband cannot be determined.

Two other pieces of silver chain of similar date are known. One was a badly corroded length recovered from burial 93 at Kish (Mackay 1929, 182, pl. $43: 2304$ ); the other was found in a pot with other items of jewellery buried beneath a floor in the northern palace at Tell Asmar (Frankfort 1934, fig. 29, bottom left; Delougaz et al. 1967, 245, As. 32:884). If
the piece has been illustrated at the same scale as the filigree disc from the same hoard, the length of the Tell Asmar chain is around 16 cm . Its appearance is at least superficially consistent with the manufacturing technique used at Brak.

## 4. Quadruple- and double-spiral beads (141-3) (Fig. 266)

 The three silver, quadruple-spiral beads have spirals that are drawn out of the central tube; there is no sign of a join between the spirals and the tube. The spirals of type 141 are formed from heavy round wire, while those of type $\mathbf{1 4 2}$ are made of flat sheet (these differences are visible in Fig. 266). A silver quadruple-spiral bead similar in manufacture and size to 141 was found by Mallowan in a cup buried beneath a floor in ER 'room 6' (1947, 74, 171-5, pl. 32:8).The majority of quadruple-spiral beads from other sites are gold rather than silver (Huot et al. 1980; Curtis 1984, 4). Of the silver examples those from Brak are among the earliest. Other third millennium silver quadruple-spiral beads come from a tomb at Selenkahiye, dated to 2100-2000 вс (Huot et al. 1980, 124) and from the Eskiyapar hoard, dated between 2200 to 2000 вс (Özgüç \& Temizer 1993, fig. 18); 18 examples come from the first-millennium site of Tepe Nush-i Jan in Iran (Curtis 1984). At Eskiyapar and Nush-i Jan the technique of manufacture is identical with that used for Brak 141. At Selenkahiye the technique differs in that the spirals are formed of wire which has then been soldered longitudinally to the exterior of the central tube (Maxwell-Hyslop 1989, 219, pl.45:6). This method of manufacture is also found on an early second-millennium gold bead from Kültepe (Huot et al. 1980, fig.1:10).

The earliest of the quadruple-spiral beads in gold are probably those from the Alaça Höyük tombs now dated to around 2700-2500 (Özgüç \& Temizer 1993, 628); beads from Troy and Poliochni may be of similar date (Curtis 1984, 4), suggesting that this bead form almost certainly originated in Anatolia (Özgüç \& Temizer 1993, 623). Unusual quatrefoil pendants with conical spirals, made from heavy gold wire, are found in the Royal Cemetery at Ur (Pittman 1998, 110-11). The occurrence of the quadruple-spiral motif in seal designs has been studied by MaxwellHyslop (1989). Examples from Brak include a prehistoric steatite stamp seal from Area TP (the area of the Eye Temple platform, TB 8025), a Jamdat Nasr stamp amulet (Mallowan 1947, pl. 19:15), and an outsize quadru-ple-spiral before a seated figure on a third-millennium cylinder sealing (Mallowan 1947, pl. 24:8; DM 208). A quadruple-spiral pattern is also found on an Uruk sealing from Jebel Aruda (van Driel 1983, no. 35).


Figure 266. Reconstructed silver necklace from FS 1958.

The double spirals of $\mathbf{1 4 3}$ are also made of rolled sheet. The only other examples of the double spiral with tube are from Tepe Hissar and Nush-i Jan (Schmidt 1937, pl. 55, H.2389; Curtis 1984, pl.2:2-5). These, however, have spirals that join the tube centrally, rather than having been drawn out of either end of the tube as in the Brak example. Other dou-ble-spiral pendants have either a central stem (Eskiyapar in gold: Özgüç \& Temizer 1993, figs. 11 \& 12) or consist of a single piece of wire, twisted in the middle to make a stem and loop (Ur in gold and silver: Woolley 1934, pl. 134, U.9656; Curtis 1984, 2). The stem can also be bent into an omega-like loop (Tepe Hissar in copper/bronze: Schmidt 1937, pl. 54). The Eskiyapar double spirals are of a similar size to the Brak examples, but most of those from other sites are larger (Ur 1.6-2.27 cm; Tepe Hissar $4.4-6.6 \mathrm{~cm}$ : Curtis 1984, 2). Thus 143 is more similar in form to the quadruple-spiral beads than to dou-ble-spiral pendants elsewhere. This might seem to suggest that it is a quadruple-spiral bead that has lost two of its spirals. While this remains a possibility, it might be expected that the break with that part of the tube from which the missing spirals were drawn would still survive. Since there is no such break, it remains likely that this example is complete, that is, a double-spiral bead formed in the same manner as a quadruple-spiral bead but with only two spirals drawn out of the central tube.

## 5. Flat-winged disc beads ( $\mathbf{1 4 0} \mathcal{E} \mathbf{1 4 4}$ ) and other silver beads ( $\mathbf{1 3 9}$ \& 145-9)

These objects are all from the FS 1958 deposit. The Brak disc beads are formed by hammering two pieces
of sheet either side of a tube made of rolled sheet. This seems to be a more elaborate method than that used at other sites. At Ur for instance there seems to be no inner tube and the sheet pieces appear to have been kept apart by a rod or pin which was subsequently removed (Maxwell-Hyslop 1971, 10, type 16; see also beads from Troy: Maxwell-Hyslop 1971, it; and Tepe Hissar: Schmidt 1937, pl. 66). The association of flat-winged, disc beads with quadruplespiral beads, as at Brak, is often noted (Maxwell-Hyslop 1971, 34, 71 fig. 46 c ).

Other silver beads from this deposit include 10 barrel-like beads (145), with a clear line where soldering has taken place, and 68 smaller cylindrical beads (146), some of which are formed from rolled sheet but not soldered. The largest of the barrel beads is formed from sheet that has been rolled round twice. There are also 45 disc beads (147) and 6 that vary between a thick disc and a short cylinder (148). The Eskiyapar hoard contains silver beads like 145 and 147 (Özgüç \& Temizer 1993, figs. 22-6, 31).

Flat-winged, disc bead 140 was found attached to one line of five and one of six cylindrical beads by intrusive (and preservative) copper corrosion. Bead 144 was similarly found with two rows of small silver disc beads, one composed of sixteen beads and the other of seventeen. The double spiral 143 was also found in a body of corrosion that included two lines of barrel and cylindrical beads (immediately to its left in the photograph: Fig. 266; see also Fig. 50, p. 45). These observations formed the basis of our restringing, with two lines of the smaller beads together with the larger spiral and flat beads at intervals. The gold beads were found loose in the soil; thus their original positions are not known, and they have been threaded together at one end of the reconstructed string.

The manner in which the very thin sheet is folded at either end of 'bead' 139 suggests that it was formed around some organic material, perhaps wood, that has since decayed. Object 159, however, is probably some kind of casing rather than a bead. Certainly there are no parallels for beads with such applied ribs. Small animal pendants like 158 from the $S S$ deposit are unusual in silver. Several examples from Ur and Tell Asmar are made from lapis, gold or a composite of lapis with gold or silver (Woolley 1934, pl. 142; Frankfort 1934, fig. 29). Silver zoomorphic pendants in the form of a tortoise and a dog were found in a third-millennium grave at Tepe Hissar (Schmidt 1937, fig. 134:H2387); the Brak HS hoard contained an unperforated silver (?equid) figure ( I latthews et al. 1994, fig. 13:1).

## 6. Gold beads and other objects (150-56)

The small gold beads from deposit FS 1958 (150 \& 152) are similar to those found in the Eskiyapar hoard. The ridge on 151 is unusual, although collars do occur on some of the Eskiyapar beads (Özgüç \& Temizer 1993, figs. 31, $35 \& 39$ ). 153 differs from gold ring pendants on the headdress of Pu -abi at Ur in that the latter have longer suspension loops (Woolley 1934, pl. 129). The only other pieces of gold from third-millennium Brak are the sheet and wire fragments from the ritual deposits in Area SS (154-6), and the gold jewellery recovered from the various hoards listed above.

The silver found at Brak is likely to originate in Anatolia, where a number of sources have been identified. There is as yet, however, no geologically identified source of gold on the central Anatolian plateau (de Jesus 1980, silver 64-9, gold 82-3). Preliminary analyses of gold jewellery from Ur and from Mallowan's excavations at Brak, undertaken in the British Museum laboratory, have provided evidence for the use of placer gold deposits where osmium, iridium and ruthenium inclusions occur with the absence of platinum (Maxwell-Hyslop 1977, 85), but such a source has yet to be identified.

## D. Lead objects (Fig. 480)

Lead items make up only 2.78 per cent of all thirdmillennium metal objects reported here. The majority of lead objects are rod, pin and ring fragments (Table 22). The most interesting objects are the elaborate (?cosmetic) tool 123, plumb bob 127 and the dish-shaped object 126. The mould illustrated in Figure 267 would have been used to form trinkets, possibly using lead as well as gold and/or silver (see also the generally similar lead disc found in the Mitanni Palace, Brak 1, fig. $234: 59$ and the cast lead figures found by Mallowan: 1947, pl. 32:1,3).

A Cappadocian-type lead figurine found on the surface of Area FS was published in Brak 1, fig. 163, as a probably early second-millennium piece. We are very grateful to Piotr Bielinski for the unpublished information that a very similar lead figurine was found in a 'terminal ED III' deposit at the site of Tell Jaassa el Gharbi, near the new dam north of Hasake, suggesting not only an earlier date for the Brak figurine but also one that would accord with its recovery in Area FS.

## E. Iron (Fig. 480)

Only one possible third-millennium iron object was found, a wire (130) looped through the handle of a


Figure 267. Fine limestone trinket mould and latex impression, mould found on the surface, Area FS, but probably Akkadian in date (TB 7049, $10.3 \times 7.1 \times 2.4 \mathrm{~cm}$ ).


Figure 268. Sandstone mould, with mould impressions on all surfaces, from fill of SSTC Room 15 (TB 11118, $26 \times 26$ $\times 11.5 \mathrm{~cm}$ ).
pot. It has not been analyzed but was examined microscopically by the conservator, Fiona Macalister, who identified it as iron. The wire, a dull grey in colour, was rusty and lacked any evidence of copper corrosion products.

## F. Stone moulds for metal objects (Figs. 267-9 \& 482)

The majority of the moulds recovered were broken by the time they were discarded. They came largely from levelling fills, particularly in open areas such


Figure 269. Akkadian sandstone mould for manufacture of disc-shaped ingots (TB 6075, DH 2, dimensions $13 \times$ 17, diameter of disc 7 cm ).
as courtyards in which they may have been used. Apart from the trinket mould, which is a fine-grained limestone, they are made of sandstone. The mould illustrated in Figure 268 (and possibly also 169 \& 170) has depressions for flat axes like 18. There are dies for tanged spearpoints on moulds 169 and 170 , for narrow awls on 170 and Figure 268, and for undifferentiated rectangular objects (probably bar ingots) which would probably have been hammered after casting to form other objects (reg. nos. 4671, 7382 and possibly reg. no. 2051). A T-shaped depression in Figure 268 could be the head of a hammer. The Brak tool moulds are generally similar to other open stone moulds found in northern Syria and Mesopotamia at this date, such as those from Gawra (Speiser 1935, pl. 47), Chagar Bazar (Mallowan 1937, 100, pl. 18B) and Til Barsip (Thureau-Dangin \& Dunand 1936, 87, pl. 24). These moulds are more common in the north than in Sumer, where sand-casting and clay moulds may have been used owing to the relative shortage of stone (Moorey 1994, 268-9).

The two moulds illustrated in Figures 269 and 270 are for the manufacture of similar-sized discs bisected by a cross, possibly ingots (approximately seven centimetres in diameter). Moulds from sites north and west of Brak have similar bisected discs. A comparable mould comes from a late third-millen-


Figure 270.
Akkadian sandstone mould of the same type as Figure 269, burnt by the molten metal (TB 11118, SS 373, Courtyard 8 fill).
nium workshop at Arslantepe, while one from Tarsus dating to the Middle Bronze Age has dies for two such discs with diameters of 7.6 and 5.3 cm (Goldman 1956, 305, pl. 436:2). The Arslantepe die is more rectangular, with very rounded corners; it is also larger (approximate dimensions l. 8.4, w. 6.0: Palmieri 1973, 135, fig. 46:8). The substantial cylindrical form on the upper surface of 169 may represent yet another type of ingot. Yet another ingot shape from Brak may be represented by a copper/ bronze object shaped like the segment of an orange, from a post-Akkadian floor surface in Area DH (TB 6092, 1. 6.5; w. 4.5).

The fine limestone trinket mould (Fig. 267) came from the surface of Area FS. Its probable Akkadian date is demonstrated by an almost identical mould from Assur level G (Wartke 1980, 226, fig 3); we are indebted to Dr Evelyn Klengel for information about the Assur mould in the Staatliche Museen. The Brak specimen has moulds for two pins, a circular disc with concentric and radiating lines, three horned animal figures, a naked female, a ?dancing figure and a double-headed bull. The female figure displays many of the features of the lead figurine recovered in the same area; see also Emre's 'naked goddess' types (1971, pls. $1 \& 2$ ). The only differences are the slightly more schematic facial features and the unusual antenna-like hair. Two cast lead figures, a bearded bull and a bird, were found by Mallowan in the upper levels of Area CH (1947, pl. 32:1, 3; see also the silver disc, pl. 32:7).

## Third-millennium Metalwork

Table 22. Additional metal objects and moulds (fragments not included).

| Copper/bronze objects |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Plain pins, without heads, all apparently complete, similar to 24. |  |  |  |  |  |
| TB cat. no. | Reg. no. | Locus | Level | L. | max. D |
| 58 | 15 | CH 3 | 1 ? | 21.0 | 0.3 |
|  | 697 | CH 471 | 6 | 7.5 | 0.15 |
|  | 1244/49 | DH 39 |  | 4.1 | 0.45 |
| 1066 | 202 | ER 24 | 3 | 7.8 | 0.4 |

Simple spherical- or globular-headed pins, similar to 26-8.

|  | 1729 | CH 2 | 1 | 4.0 | 0.2 |
| :--- | :--- | :--- | :--- | :--- | :--- |
|  | 902 | CH 476 | 6 | 5.5 | 0.5 |
| 8064 | 2115 | FS 376 | 3 | 5.2 | 0.8 |
|  | 7020 | FS 2303 | 2a | 3.7 | 0.25 |
| 5072 | 899 | FS 217 | 2b | 7.2 |  |
|  | 7245 a | FS 2331 | 2b | 3.8 | 0.4 |
|  | 4287 | SS 803 |  | 1.4 | 0.9 |
|  | 4751 | SS 825 | 4 | 4.2 | 0.8 |
|  | 4464 | SS 815 | 5 | 3.0 | 0.2 |
|  | 7502 | SS 1098 |  | 3.2 | 0.4 |
|  | 997 | ST 106 | 5 | 3.8 | 0.5 |

incomplete, point lost, small head, as 27
incomplete, point lost, larger head, as 26
incomplete, point lost, larger head
incomplete, point lost, small head bent over complete, larger head
incomplete, point lost, small head incomplete, point lost, larger head incomplete, point lost
incomplete, point lost, small head incomplete, point lost, small head incomplete, point lost, larger head
Roll-headed pins, similar to 37-9

| TB cat. no. | Reg. no. | Locus | Level | L. | W. head |
| :--- | :--- | :--- | :--- | :--- | :--- | Comments | complete |
| :--- |
| 7193 |

Flat- or disc-headed pins, similar to $32 \mathcal{E} 33$

| TB cat. no. | Reg. no. | Locus | Level | L. | D. head | Comments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5873 | FS 1908 | 5 | 6.6 | 0.9 | incomplete, point lost |
|  | 7245b | FS 2331 | 2b | 1.8 | 0.6 | incomplete, point lost |
|  | 3851 | SS 259 | 3 | 4.6 | 0.5 | incomplete, point lost, could this be a nail? |
|  | 3335 | SS 254 |  | 2.6 | 0.4 | incomplete |
|  | 3333 | SS 254 |  | 1.6 | 0.8 | point lost, possible nail |
| Pins with squ | uare pyrami | al heads, si | $r$ to 34-6 |  |  |  |
| TB cat. no. | Reg. no. | Locus | Level | L. | W. head | Comments |
| 11142 | 4649 | SS 825 | 4 | 12.0 | 1.2 | ?point lost |
|  | 'S21' | surface |  | 12.0 | 0.8 | complete |
| Pins with he | mispherical | nical head | milar to |  |  |  |
| TB cat. no. | Reg. no. | Locus | Level | L. | max. D | Comments |
| 4020 | 585 | FS 4 | 1 | 11.8 | 1.4 | ?complete |
|  | 4749 | FS 0 |  | 1.9 | 1.2 | incomplete, head \& top of shaft only |
| 10127 | 4106 | SS 553 |  | 13.0 | 1.4 | conical, incised head, incomplete point lost |
| Other |  |  |  |  |  |  |
|  | 1524 | CH 583 | 7/8 | 3.3 | 0.8 | globular head said to be decorated, but corroded, incomplete, square section shaft |

Plain, robust toggle-pins, similar to 43-5

| TB cat. no. Reg. no. | Locus | Level | L. | max. D |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 6082 | 1372 | DH 40 | $1 / 2$ | 10.3 | 0.3 |
| 7010 | 1659 | DS 2 |  | 13.0 | 0.3 |
| 7009 | 1662 | DS 11 |  | 14.4 | 0.4 |
|  | 2743 | FS 1539 | baulk | 12.0 | 0.4 |
|  |  |  |  |  |  |
| 9055 | 3028 | FS 1539 | baulk | 11.9 | 0.2 |
|  |  |  |  |  |  |
| 10144 | 3913 | SS 240 | 4 | 11.2 | 0.5 |
|  | 5009 | SS 605 | 4 | 1.8 | 0.7 |
| 5062 | 1066 | SS 153 | 3 | 16.5 | 0.6 |

## Comments

complete
complete, wire in perforation
complete
incomplete, probably fits in this group but as the top of the head
is missing it is not possible to be certain
incomplete, probably fits in this group but as the top of the head
is missing it is not possible to be certain
incomplete, point lost
incomplete, head only, bent
incomplete, probably fits in this group but as the top of the head is missing it is not possible to be certain

Table 22. (cont.)

| TB cat. no. nlist | Reg. no. 1517 | $\begin{aligned} & \text { Locus } \\ & \text { SS } 175 \end{aligned}$ | Leve <br> 4 |  | $\begin{array}{ll}  & \max \\ 0 & 2.5 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Plain \&f wery thin toggle-pins, similar to 46 |  |  |  |  |  |
| TB cat. no. | Reg. no. หчร | Locus CH 519 | Level <br> 6 | $\begin{aligned} & \text { L. } \\ & 4.1 \end{aligned}$ | $\begin{aligned} & \max . \mathrm{D} \\ & 2.5 \end{aligned}$ |
| 7007 | 1660 | DS 4 |  | 10.0 | 0.2 |
| 7005 | 1654 | DS 11 |  | 10.4 | 0.2 |
| 8072 | 2334 | FS 1452 | 3 a | 4.0 | 0.2 |
| 9033 | 2758 | FS 1536 | 4 | 9.2 | 0.3 |
| 11144 | $4+59$ | FS 1640 | 2a | 7.6 | 0.2 |
|  | 7503 | FS 2351 |  | 10.7 | 0.15 |
|  | 5005 | SS 651 | 2 | 7.9 | 0.15 |
| 13037 | 5773 | SS 1003 | 3 | 8.5 | 0.15 |

Toggle-pins with hemispherical/conical heads, similar to 48-50
TB cat. no. Reg. no. Locus Level L. max. D

| 13032 | 5784 | FS 1883 | 5 a | 15.9 | 1.15 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5878 | SS 722 | 4 | 11.3 | 0.6 |
| Toggle-pins with undefined heads |  |  |  |  |  |
| TB cat. no. | Reg. no. | Locus | Level | L. | max. D |
|  | 3008 | surface |  | 9.2 | 0.5 |
| 13023 | 5789 | FS 1883 | 5a | 12.0 | 1.2 |
| $111+2$ | $46+8$ | SS 809 | $+$ | 11.3 | 0.6 |


| Necdles, similar to 94-5 |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| TB cat. no. | Reg. no. | Locus | Level | L. | max. D |
| 7006 | 1655 | CH 662 |  | 6.0 | 0.15 |
| 8068 | 2384 | CH 698 |  | 7.9 | 0.2 |
| 5174 | 696 | FS 111 | 2a | 7.9 | 0.2 |
| 8069 | 2332 | FS 466 | 2 | 11.5 | 0.2 |
|  | 1217 | FS 1002 | $1 / 2$ | 2.4 | 0.4 |
| 7178 | 1955 | FS 1350 | 3 | 8.3 | 0.3 |
|  | 7508 | FS 1943 | 3 a |  |  |
| 11144 | 4288 | FS 1622 | $2 / 1$ | 8.8 | 0.3 |
|  | 413 | ST 1 | 2 | 6.6 |  |

Nails, similar to 101-3, 105 \& 106

| TB cat. no. | Reg. no. | Locus | Level | L. | max. D |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 58 | CH2 | 1 | 1.5 | 0.7 |
|  | 101 | CH6 | 2 | 0.95 | 0.7 |
| 9025 | 2749 | FS 532 | 4/3 | 4.2 | 0.9 |
| 12140 | 5081 | FS |  | 5.8 | 3.1 |
| 10149 | 7309 | FS 2335 | 2b/3 | 1.8 | 0.4 |
|  | 3334 | SS 254 |  | 2.6 | 0.4 |
|  | 4129 | SS 501 |  | 2.8 | 0.7 |
| $\begin{aligned} & 10125 a \\ & 10125 b \end{aligned}$ | 4024 | SS 545 | 4 | 8.3 | 1.3 |
|  | 4024 | SS 545 | 4 | 11.9 | 1.8 |
|  | 4116 | SS 549 | 4 | 2.5 | 0.4 |
|  | 4695 | SS 549 | 4 | 1.5 | 0.6 |
|  | 4692 | SS 565 | 4 | 0.9 | 1.05 |
|  | 4907 | SS 603 | 4 | 1.85 | 0.4 |
| 13047 | 7016 | SS 945 | 4 |  |  |
|  | 5868 | SS 1045 | 6 | 1.05 | 0.6 |
|  | 3917 | SS 540 | 4 | 2.2 | 0.4 |
|  | 4906 | SS 884 | 2 | 1.8 | 0.4 |

Rings with overlapping terminals, similar to 107

| TB cat. no. | Reg. no. | Locus | Level | D. |
| :--- | :--- | :--- | :--- | :--- |
| 6093 | 1243 | FS 1001 |  | 2.4 |
| 6095 | 1305 | FS 1020 | $2 a$ | 1.5 |
| 6094 | 1304 | FS 1028 | 2a | 2.0 |

## Comments

point lost
complete, wire through the perforation
bent, top of head lost
point lost
complete
point lost
seems complete
top of head lost
seems complete

## Comments

complete, identical to 5718
head \& perforation intact, rest lost

## Comments

shaft splaying out to form head but actual head is lost head lost, but shaft is spreading as if to support a head head corroded ?exact shape, Fig. 257

## Comments

incomplete, point lost
complete
complete
complete, bent
incomplete, point lost
complete
seems complete, very corroded
complete (Fig. 257)
incomplete

## Comments

Trench E, complete, circular head \& section, similar to 103 point lost, circular head \& section, similar to 103
large flat head, circular section shaft, similar to 101
largest nail, very large circular head, circular section shaft, incomplete, point lost, similar to 101.
complete, circular section \& head, similar to 103
seems complete, oval head, square shaft
incomplete, point lost, circular head, square section,
similar to 106
fragment lacking head, associated with wall plaster (Fig. 261)
fragment lacking head, associated with wall plaster (Fig. 261)
nail associated with a plate fragment; also listed with sheet
complete, small tack, circular head \& section, similar to 103
incomplete, point lost
complete, bent over head
complete, circular head \& section
complete, small tack, circular head \& section
complete, small tack, circular head \& section, similar to 103
lacks head

## Comments

complete
complete
complete

## Third-millennium Metalwork

Table 22. (cont.)

| TB cat. no. | Reg. no. | Locus | Level | D. | Comments |
| :--- | :--- | :--- | :--- | :--- | :--- |
|  | 3029 | FS 604 | 3 | 1.5 | complete |
|  | 7509 | FS 2331 | 2 b | 1.5 | complete, wire loops |
| 10145 | 3844 | SS 250 | 3 | 1.9 | complete, wire loops |
| 10152 | 4057 | SS 501 |  | 1.3 | complete |
|  | 4114 | SS $545 / 9$ | 4 | 1.2 | complete |
|  | 4692 | SS 545 | 4 | 0.8 | complete |
| 11346 | 4656 | SS 813 | 4 | 5.6 | complete |

'Snake'-rings (i.e. rings with terminals that become wider $\mathcal{E}$ flatter before coming to a point, similar to 108-10

| TB cat. no. | Reg. no. | Locus | Level | D. |
| :--- | :--- | :--- | :--- | :--- |
| 1068 | $\mathbf{2 5 0}$ | CH 76 | 5 | 1.0 |
| 13056 | 5882 | SS 1080 | 5 | 1.75 |
| 13057 | 5883 | SS 715 | $3 / 2$ | 2.0 |

## Comments

incomplete, similar to 108
complete, v . similar to 109
complete, v. similar to 109
Miscellaneous rings

| TB cat. no. | Reg. no. | Locus | Level | D. | band |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 107 | 35 | CH 10 | 2 | 1.3 | 0.4 |
|  | 1307 | FS 354 | 3 | 1.7 | 0.3 |
|  | 3934 | SS 253 | 3 | 1.9 | 0.3 |
|  | 4747 | SS 825 | 4 | 1.9 | 0.6 |
|  | 4114 | SS 545 | 4 | 1.2 | 0.2 |

## Comments

?earring fragment
complete, terminals meet complete, terminals do not meet
incomplete
incomplete
Sickle blades, similar to 14

| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. | Comments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3025 | 409 | ER 233 | 5 | 21.5 | 4.0 | 0.2 | complete, 2 perforations |
| 9050 | 3007 | FS 604 | 3 | 10.0 | 3.6 | 0.4 | both ends broken |
|  | 5884 | FS 821 |  | 16.2 | 3.1 | 0.3 | incomplete |
| 14170 | 7460 | FS 1957 | 5 | 25.0 | 4.5 | 0.35 | corroded group of objects, includes a complete sickle blade |
| 14168 | 7445 | FS 1958 | 5 | 21.5 | 3.7 | 0.65 | complete, 2 perforations (Fig. 251) |
| 14168 | 7446 | FS 1958 | 5 | 24.5 | 3.5 | 0.25 | complete, 2 widely spaced perforations |
| 14168 | 7447 | FS 1958 | 5 | 20.9 | 3.2 | 0.25 | complete, 2 perforations |
| 14168 | 7448 | FS 1958 | 5 | 21.6 | 3.1 | 0.3 | complete, 4 perforations \& organic fibrous remains |
| 14168 | 7449 | FS 1958 | 5 | 22.9 | 3.6 | 0.3 | complete, 2 widely spaced perforations |
| 14168 | 7450 | FS 1958 | 5 | 20.4 | 2.9 | 0.3 | complete, 2 perforations |
| 14168 | 7451 | FS 1958 | 5 | 22.0 | 3.5 | 0.3 | complete, 2 perforations |
| 13018 | 5808 | FS 1883 | 5 | 18.3 | 3.8 | 3.0 | 2 folded sickle blades corroded together, 1 has 2 perforations; the other has only 1 perforation |
| 13030 | 5747 | FS 1883 | 5a | 14.4 | 4.2 | 0.2 | incomplete, point lost, 2 perforations |
|  | 5876 | SS 722 | 4 | 4.3 | 2.5 | 0.2 | point intact, rest lost |
| 11132 | 4658 | SS 816 | 5 | 10.7 | 4.2 | 0.25 | fragment, pointed end only |
| 12259 | 5347 | SS 1238 | 5 | 20.0 | 3.9 | 0.25 | complete, 2 perforations |
| 12260 | 5348 | SS 1238 | 5 | 21.2 | 3.8 | 0.25 | complete, 2 perforations |
| 12261 | 5349 | SS 1238 | 5 | 20.7 | 3.6 | 0.2 | complete, 2 perforations |
| 12262 | 5350 | SS 1238 | 5 | 19.4 | 3.1 | 0.2 | complete, 2 perforations |


| Large tools |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. |
| 14120 | 7412 | FS 1957 | 5 | 15.3 | 4.5 | 0.8 |
| 14170 | 7460 | FS 1957 | 5 | 18.4 | 5.0 | 0.8 |

## Comments

flat axe blade (Fig. 252)
group of corroded objects includes an axe which is almost identical in size \& shape to 18 (Fig. 249)

## Small tools

| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. | Comments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12141 | 4989 | FS 796 | 3/4 | 8.2 | 5.0 | 5.0 |  |
|  | 5921 | FS 1875 | 2 | 2.5 | 0.25 | 0.25 | complete |
|  | 3103 | SS 220 |  | 3.65 | 0.5 | 0.4 | incomplete |
| 11140 | 4458 | SS 303 | 4 | 7.1 | 0.7 | 0.5 | incomplete |
| 10135 | 3330 | SS 501 |  | 4.9 | 0.4 | 0.4 | incomplete |
|  | 3197 | SS 342 | 8 | 2.5 | 0.5 |  | possibly complete |
|  | 4753 | SS 411 | 3 | 3.4 | 0.3 |  | incomplete |
| 14272a | 7478 | SS 1096 | 1 | 6.9 | 0.4 | 0.4 | complete |

## Chapter 8

Table 22. (cont.)

| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. | Comments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 7190 | 1923 | surface |  | 4.4 | 0.35 | 0.25 | complete |
| 9045 | 3009 | FS 604 | 3 | 1.7 | 0.35 | 0.35 | complete |
| 11134a | 4615 | FS 689 | 2b | 3.1 | 0.3 |  | complete |
| 13034 | 5791 | FS 816 |  | 5.6 | 0.35 | 0.3 | complete |
| 6085 | 1370 | FS 1088 | 3 | 4.5 | 0.4 |  | complete |
| 9032 | 2755 | FS 1525 | 3 | 2.8 | 0.3 | 0.3 | complete |
| 14272b | 7479 | FS 2313 |  | 4.0 | 0.3 | 0.3 | complete |
| 10139 | 3848 | FS 254 | 2c | 4.8 | 0.3 | 0.3 | complete |
| 12135 | 5083 | FS 1726 | 3 | 3.8 | 0.3 |  | complete |

Small awls with a distinctive swelling $2 / 3$ of the way down the shaft before it begins to narrow to a point, similar to 72-3

| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. | Comments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1092 | FS 308 | 2b | 3.2 | 0.3 | 0.3 | ?complete |
| 12132 | 4995 | SS 858 |  | 3.5 | 0.3 |  | complete |
| 11149 | 4688 | SS 549 | 4 | 4.1 | 0.4 |  | ?complete |
| 12133 | 4994 | SS 878 | 5 | 3.5 | 0.3 |  | ?complete |
|  | 767 | ST 95 | 3 | 3.4 | 0.3 | 0.3 | complete |
| 12136 | 5137 | ST |  | 2.8 | 0.4 |  | incomplete |

Small awls (straight shaft and pointed at one end)

| TB cat. no. | Reg. no. | Locus | Level | L. | W. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 11134 c | 4613 | FS 136 | 2b | 3.5 | 0.35 |
|  | 1930 | FS 1284 | 3 | 4.2 | 0.2 |
|  | 5007 | FS 733 | 3 | 4.7 | 0.3 |
|  | 1308 | SS 175 | 4 | 3.5 | 0.35 |
| $14269 b$ | 7475 | SS 1096 | 1 | 3.8 | 0.5 |
|  | 4285 | surface |  | 2.3 | 0.4 |

## Comments

?complete complete, section varies circular to square complete seems complete, circular section ?a pin? seems complete seems complete
Awls, similar to 75 \& 76

| TB cat. no. | Reg. no. | Locus | Level | L. | W. |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 149 | ER 10 | 2 | 8.4 | 0.4 |
| 1065 | 301 | ER 39 | 5 | 8.1 | 0.3 |
| 3041 | 488 | ER 233 |  | 9.1 |  |
| 3024 | 415 | ER 233 | 5 | 11.5 |  |
|  | 1002 | CH 513 | 5 | 3.3 | 0.3 |
|  | 1090 | FS 308 | 2b | 2.3 | 0.3 |
| 8059 | 2458 | FS 505 | 3 b | 13.2 | 0.5 |
|  | 1514 | FS 1067 | 3b | 3.0 | 0.3 |
|  | 1216 | FS 1002 | 1/2a | 4.7 | 0.15 |
| 11134b | 4657 | FS 627 | 2a | 5.6 | 0.4 |
| 13046 | 5792 | FS 816 |  | 3.3 | 0.2 |
|  | 5184 | FS 1818 | 5 | 4.3 | 0.4 |
| 13028 | 5723 | FS 1883 | 5a | 6.8 | 0.5 |
|  | 7442 | FS 1953 | 4/5 |  |  |
| 13049 | 5874 | FS 2243 | 3 | 4.4 | 0.3 |
| 13048 | 5871 | FS 2248 | 3 | 3.1 | 0.35 |
|  | 1001 | SS 135 | 3/2 | 2.7 | 0.3 |
|  | 3331 | SS 501 |  | 3.2 | 0.25 |
|  | 1063 | SS 129 | 2 | 5.3 | 0.6 |
| 6079 | 1094 | SS 169 |  | 8.4 | 0.4 |
| 10128 | 3332 | SS 501 |  | 5.4 | 0.7 |
| 12137 | 5182 | SS 915 | 4 | 3.1 |  |
| 12257 | 5352 | SS 936 |  | 11.2 | 0.3 |
| 13052 | 5886 | SS 1083 | 4 | 6.6 | 0.6 |
|  | 5360 | SS 1240 | 4 | 3.1 | 0.4 |
|  | 904 | ST 105 | 4 | 8.3 | 0.3 |
| 8066 | 2457 | FS 505 | 3 b | 6.3 | 0.3 |
| 7004 | 1629 | FS 1124 | 2/1 | 11.0 | 0.6 |
| 13031 | 5782 | FS 1883 | 5a | 10.6 | 0.9 |

## Comments

seems complete seems complete seems complete seems complete incomplete incomplete seems complete incomplete seems complete incomplete incomplete incomplete ? incomplete broken into 2 pieces complete incomplete incomplete incomplete seems complete complete incomplete incomplete seems complete complete incomplete ? incomplete incomplete, shape as 74
incomplete, shape as 74
incomplete, shape as 74
Cosmetic items

| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. | Comments |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 9021 | 2748 | FS 554 | 5 | 5.5 | 0.9 | 0.3 | tweezers, incomplete, small, similar to 87 |
|  | 5212 | SS 915 | 4 | 0.8 | 0.8 | 0.3 |  |


| 5212 | SS 915 | 4 | 0.8 | 0.8 | 0.3 | tweezers, incomplete, small, similar to 87 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  |  |
| bowl |  |  |  |  |  |  |

## Third-millennium Metalwork

Table 22. (cont.)

| Miscellany |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. | Comments |
|  | 1426 | DH 2 |  | 5.8 | 1.0 | 0.4 | 2 pronged fork, similar to 93 , incomplete, the ends of the 2 prongs are lost |
| 6092 | 4284 | FS 661 |  | 6.5 | 4.0 | 2.7 | prongs are lost <br> metal loop, ends twisted together <br> both ends looped, circular section shaft <br> both ends looped |
|  | 4651b | FS 675 | 2 | 3.2 | 0.25 |  |  |
|  | 4113 | SS 240 | 4 | 5.0 | 0.2 |  |  |
| 10156 | 4056 | SS 545 | 4 | 6.8 | 1.9 | 1.9 | ring with 2 associated prongs |
| 6092 | 1493 | DH 39 | 1 | 6.5 | 4.0 | 2.7 | ?ingot, shaped like a thick orange segment <br> folded fragments of wire <br> folded length of wire <br> intriguing fragment, rectangular item, broken at both ends, section is T-shaped ?part of a tool |
|  | 7514 | SS 949 | 4 | 0.9 | 0.4 | 0.25 |  |
|  | 7421 | SS 951 |  | 2.5 | 0.7 | 0.7 |  |
|  | 4704 | SS 316 | 4 | 10.5 | 0.4 | 0.4 |  |
|  | 4689 | SS 549 | 4 | 11.6 | 1.6 | 1.6 | ?tool handle, circular section, there is a broken area at one end which may have once had the tools working end joining it at right angles |
|  | 95 | CH 4 | 1 ? | 2.4 | d. $=0.9$ |  | Trench E, cylindrical bead, complete disc, incomplete, may have been applied to some convex circular object female figurine, incomplete, lacks head \& feet (Fig. 263) |
|  | 5133 | FS 769 | 1 | 3.5 |  | 0.15 |  |
| 69 | 'S20' | surface |  | 3.8 | 1.7 | 0.5 |  |
| Sheet/metal plate type items |  |  |  |  |  |  |  |
| $\begin{aligned} & \text { TB cat. no. } \\ & 10154 \end{aligned}$ | Reg. no. | Locus | Level | L. | W. | Th. | Comments <br> plate with assoc. nail (which is already listed in the nails table), perforation for another nail, identical to 122 |
|  | 4116 | SS 549 | 4 | 2.0 | 1.2 | 0.3 |  |
|  | 3940 | SS 272 | 3 | 2.5 | 1.8 | 0.35 | thick plate with a socket in one edge, upper housing level. |
|  | 1250 | FS 316 | 3 | 2.8 | 2.3 |  | ?armour plate, incomplete |
|  | 7432 | SS 945 | 4 | 9.0 | 7.2 | 0.4 | rectangular, incomplete, associated with a plaster feature, one of the largest pieces of thick plate |
|  | 4654 | FS 675 | 2 | 1.9 | 1.1 | 0.05 | rectangular plate |
|  | 2750 | FS 1452 | 3a | 3.4 | 1.5 | 0.3 | rectangular plate |
|  | 5906 | FS 1869 | 2 | 2.7 | 2.2 | 0.35 | rectangular plate |
|  | 7534 | FS 2337 |  | 2.6 | 2.1 | 0.6 | rectangular plate |
|  | 1220 | DH 2 |  | 10.1 | 0.7 | 0.15 | rectangular strip |
| 8063 | 2224 | FS 1450 | 2 | 5.6 | 1.0 | 0.1 | rectangular strip |
| 11013 | 4661 | SS 415 | 3 | 2.0 | 0.9 | 0.2 | rectangular strip |
|  | 903 | ST 105 | 4 | 3.0 | 0.5 | 0.25 | rectangular strip |
|  | 7537 | FS 1957 | 5 | 2.2 | 1.45 | 0.35 | triangular fragment |
|  | 7539 | SS 949 | 4 | 2.0 | 2.4 | 0.1 | 2 ? disc-shaped fragments |
|  | 5363 | SS 684 |  | 2.3 | 1.4 | 0.15 | irregular shaped fragment but has a clear V-shaped excision |
|  | 896 | ST 95 | 3 | 3.0 |  | 0.2 | disc with central perforation, incomplete |
| Additional | lead obje |  |  |  |  |  |  |
| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. | Comments |
| 8084 | 2172 | FS 1460 | 3 a | 5.7 | 0.4 | 0.4 | straight pin |
| 11138 | 4281 | surface |  | 7.8 | 0.8 | 0.4 | straight pin with bent over \& twisted head, ?bar weight, date dubious |
|  | 5289 | SS 1238 | 5 | 1.7 | 0.25 | 0.25 | tool, square section shaft, bent pointed end |
|  | 998 | CH 515 | 6 | 3.6 | 1.1 | 0.3 | bent pin or earring?, seems complete |
| 6097 | 1253 | DH 38 | 1 | 1.8 | 1.4 | 0.2 | bent pin or earring?, seems complete |
| 3027 | 406 | ER 110 | 4 b | 1.7 | 1.5 | 0.3 | earring |
|  | 1616 | FS 1171 | 2 | 7.1 |  | 0.2 | bent pin or earring?, seems complete |
| 13035 | 5785 | FS 1875 | 2 | 2.3 | 1.7 | 0.15 | rod looped into a ring |
| 8065 | 2562 | FS 1476 | 3/2 | 3.4 |  | 0.2 | 3 fragments, 1 bent like a fishhook |
| 5035 | 715 | SS 38 | 1 a | 2.5 | 1.8 | 0.3 | earring, identical to 128 |
|  | 3198 | SS 501 |  | 1.0 | 0.4 |  | $\times 3$ pin/rod fragments. L. other fragments 1.6 and 1.8 |
|  | 1542 | surface |  | 1.3 |  | 0.2 | looped fragment ?earring |
| 12118 | 4905 | SS 632 |  | 4.0 |  | 0.2 | disc, seems complete |
|  | 897 | ST 85 | 2 | 3.5 | 2.6 | 0.4 | rectangular sheet folded in half |
| Additional | silver obj |  |  |  |  |  |  |
| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. | Comments |
| 11123 | 4699 | FS 1680 | 1 | 6.9 | 0.45 |  | toggle pin, complete |
|  | 4055 | SS 545 | 4 | 3.0 | 0.3 |  | pin/rod fragment |
| 14130 | 7420 | FS 1958 | 5 | 5.4 | 0.6 |  | bent ?rod, incomplete, fragments of an item ?similar to 131 |

Table 22. (cont.)

|  |  |  | Level | L. | W. | Th. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| TB cat. no. | Reg. no. | Locus | LS 549 | 4 | 5.4 | 2.5 |
| 11124 | 4701 | SS 49.3 |  |  |  |  |
| 13050 | 5875 | SS 1081 | 4 | 2.7 | 1.75 | 0.3 |
| 11122 | 4702 | SS 549 | 4 | 3.2 | 1.7 |  |
| 14004 | 7252 | FS 1958 | 5 | 6.25 | 0.5 | 0.25 |
| 14004 | 7256 | FS 1958 | 5 | 6.6 | 0.5 | 0.25 |
| 14114 | 7258 | FS 1958 | 5 | 6.8 | 0.5 | 0.25 |
| 14004 | 7259 | FS 1958 | 5 | 6.0 | 0.5 | 0.25 |
| 14001 | 7321 | FS 1958 | 5 | 31.0 |  | 0.3 |
|  |  |  |  |  |  |  |
| 14117 | 7414 | FS 1957 | 5 | 1.6 | 1.0 | 0.1 |
| 14271 | 7471 | FS 1957 | 5 | 2.1 | 2.35 | 0.05 |


| Additional stone moulds for metal objects |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TB cat. no. | Reg. no. | Locus | Level | L. | W. | Th. |
| 6075 | 1259 | DH 2 |  | 15 | 13 | 5.5 |
| 11118 | 4491 | SS 373 | 4 | 11.8 | 12.0 | 7.4 |
| $70+4$ | 1900 | FS |  | 10.3 | 7.1 | 2.4 |


| 2051 | FS 1402 |  | 16 | 12.5 | 4.5 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 7382 | FS 2354 | 2b | 19.0 | 8.3 | 7.2 |
|  | 4671 | SS 585 | 4 | 18.5 | 13.0 | 10.0 |
| 11118 | 4668 | SS 825 | 4 | 26.0 | 26.0 | 11.5 |

## Analysis of the Metalwork from Tell Brak

J.P. Northover

Thirty-four samples of metalwork from Tell Brak were analyzed: four were of silver (one incorporating a silver solder joint), one was of lead and the remainder copper or copper alloys. All were small fragments of heavily corroded metal. All analyzed samples were removed by cutting with a fine jeweller's saw, then hot-mounted in a carbon-filled thermosetting resin, ground and polished to a $1 \mu \mathrm{~m}$ diamond finish. Analysis was by electron probe microanalysis with wavelength dispersive spectrometry. Thirteen elements were analyzed as detailed in the accompanying table; limits of detection were $100-200 \mathrm{ppm}$ for all elements except gold at 300-400 ppm and arsenic at 0.20 per cent. This last was because of the means used to avoid the well-known interference between the strongest lines in the lead
Comments
mass of corroded rings
earring? complete
rod looped into a ring
rod/ingot, same shape as $131, \mathrm{wt}=4 \mathrm{~g}$ (Figs. 50 \& 51 )
rod/ingot, same shape as 131, $\mathrm{wt}=4.5 \mathrm{~g}$
rod/ingot, same shape as $131, \mathrm{wt}=4 \mathrm{~g}$
rod/ingot, same shape as $131, \mathrm{wt}=4.5 \mathrm{~g}$
chain with very fine links, 120 links in all, 2 lengths totalling
31 cm of chain plus 17 loose links (Fig. 265)
disc fragment
cut sheet

Comments
light brown stone mould, rectangular with mould for disc with
a cross bisecting it into quarters; disc d. $=7.0$ (Fig. 269 )
as previous but incomplete, sandstone mould, disc d. $=6.5$;
depth $=0.8 ;$ fill in Courtyard 8 (Fig. 270 )
fine-grained ?limestone trinket mould, moulds for 2 straight
pins, a disc, female figurine \& animal figurines or pendants;
FS surface (Fig. 267 )
incomplete ?sandstone mould with depressions for 2
rectangular objects, ?ingots ?adze blades; these are $11.2 \times$ w.
of $2.0-3.3 \times 2.5$; and $10.9 \times 1.7-2.0 \times 1.2$
sandstone, incomplete, all four faces have depressions in them
but all are very incomplete, they seem to be for rectangular
objects ?ingots or flat axe blades
sandstone, incomplete, 1 face has 5 rectangular channels,
another faces has 2 such channels, 1 of which is complete,
flat axes?
sandstone, almost complete, 1 face has 7 rectangular
channels, 2 more similar channels on another face, 3 flat axe
blade-shaped depressions on 3 different surfaces, \& a
depression for a T-shaped object, ?the head of a hammer
(Fig. 268 ) (Fig. 268)
and arsenic spectra; a more sensitive routine for the analysis of arsenic does exist but was not thought necessary here. After analysis the samples were examined metallographically in both as-polished and etched states; the results of this study will be discussed in Volume 3.

The lead fragment analyzed was associated with the silver in ritual deposit FS 1958 and contains small amounts of copper and silver. A fragment of a silver link and a small piece of silver wire from the deposit were of considerable purity, approaching 96 per cent, alloyed with copper and with lead, arsenic and gold as impurities. The gold impurity is relatively low compared with the better-studied area of Iran to the east. A link from a silver loop in the chain (Fig. 265) was closed with a silver solder made from the same silver but with a higher copper content.

Of the remaining analyses only three were of bronze, the small fragments examined not being typologically well-defined; with the exception of the
fourth-millennium $\overline{\text { BC small nails from the Eye Tem- }}$ ple platform (Area TP), a single sample from an early fourth-millennium level in Area TW (sample TB31), and a single fragment of copper wire from the second millennium (sample TB 25), all were from third-millennium вс contexts. With the exception of the three bronze fragments, the rest were defined as either arsenical copper or copper; in some cases the identity of the metal is obscured by corrosion. For comparison there exist the writer's own analyses from Tell Beydar and Tell Mozan, both in the course of publication, and material from the Upper Euphrates region now in the Woolley collection in the Ashmolean Museum, Oxford. These data allow us to perceive some interesting regional trends, even though the picture is obscured by the effects of corrosion and the somewhat different time periods represented at each site. For example it is quite clear
that the excavation collection at Tell Brak does not extend significantly into the period in which bronze use had become common, with only ten per cent of analyses having more than 3 per cent tin, as opposed to 19 per cent in the Woolley collection, 21 per cent at Tell Mozan and as much as 30 per cent at Tell Beydar. A further difference is that there are no low to intermediate bronze compositions at Tell Brak, 16 per cent tin, whereas they are present at all the other locations. These low tin alloys were probably made by the mixing of copper or copper scrap with already made bronze. As this process developed with time the average content of tin in the bronze increased, an evolution that was possibly quite extended. This metallurgical phase appears to be absent at third millennium Brak, but only one of the bronze fragments analyzed (TB9) can be later than Akkadian in date.

Table 23. Analysis of metalwork.

| Sample | Area locus/reg. no. | Object | Fe | Co | Ni | Cu | Zn | As | Sb | Sn | Ag | Bi | Pb | Au | S |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TB1 | SS 958/7313 | lump | 0.00 | 0.00 | 0.01 | 57.25 | 0.00 | 0.22 | 0.01 | 0.01 | 0.02 | 0.02 | 0.05 | 0.04 | 0.04 |
| TB2 | FS 1866/5872 | flat tang | 0.43 | 0.00 | 0.35 | 97.96 | 0.00 | 0.64 | 0.08 | 0.03 | 0.03 | 0.00 | 0.03 | 0.05 | 0.38 |
| TB3 | SS 700/5920 | square-section wire | 0.14 | 0.00 | 0.17 | 98.34 | 0.02 | 0.74 | 0.12 | 0.16 | 0.05 | 0.01 | 0.18 | 0.00 | 0.05 |
| TB4 | SS 769 \& 780/5907 | strip | 0.31 | 0.01 | 0.28 | 98.02 | 0.00 | 0.89 | 0.03 | 0.01 | 0.05 | 0.05 | 0.03 | 0.00 | 0.32 |
| TB5 | SS 180/5922 | tang | 0.25 | 0.01 | 0.22 | 49.89 | 0.01 | 0.05 | 0.01 | 20.63 | 0.00 | 0.00 | 0.03 | 0.02 | 0.17 |
| TB6 | FS 1875/5921 | square wire, chisel end | 0.09 | 0.00 | 0.53 | 97.33 | 0.01 | 1.42 | 0.15 | 0.10 | 0.08 | 0.02 | 0.04 | 0.02 | 0.19 |
| TB7 | SS 719/5915 | pin | 0.30 | 0.03 | 0.40 | 94.81 | 0.00 | 2.03 | 0.14 | 0.66 | 0.25 | 0.02 | 1.06 | 0.03 | 0.27 |
| TB8 | SS 722/5876 | flat | 0.66 | 0.03 | 0.07 | 96.28 | 0.00 | 0.51 | 0.01 | 0.01 | 0.05 | 0.00 | 1.07 | 0.02 | 1.28 |
| TB9 | SS surface/7538 | exfoliated square rod | 0.21 | 0.01 | 0.11 | 60.12 | 0.00 | 0.39 | 0.00 | 10.70 | 0.02 | 0.02 | 0.04 | 0.00 | 0.19 |
| TB10 | SS 700/5879 | round wire, chisel end | 0.36 | 0.00 | 0.27 | 97.05 | 0.04 | 1.55 | 0.14 | 0.02 | 0.09 | 0.04 | 0.19 | 0.02 | 0. 23 |
| TB11 | FS 1953/7442 | ?square split tang | 0.00 | 0.00 | 0.01 | 15.50 | 0.00 | 0.50 | 0.02 | 0.00 | 82.78 | 0.21 | 0.63 | 0.27 | 0.08 |
| TB12 | FS 2315/7506 | ?square tang | 0.12 | 0.00 | 0.22 | 98.00 | 0.00 | 0.78 | 0.09 | 0.01 | 0.08 | 0.05 | 0.11 | 0.02 | 0.52 |
| TB13 | SS 1079 | twisted wire | 0.09 | 0.00 | 0.01 | 68.10 | 0.00 | 0.55 | 0.00 | 0.04 | 0.02 | 0.00 | 0.03 | 0.01 | 2.26 |
| TB14 | SS 1267/5914 | pin frag | 0.45 | 0.06 | 0.56 | 96.80 | 0.03 | 0.53 | 0.03 | 0.02 | 0.10 | 0.06 | 0.00 | 0.11 | 1.26 |
| TB15 | TP 76/7189 | nail | 0.01 | 0.00 | 0.05 | 55.67 | 0.00 | 0.14 | 0.00 | 0.00 | 0.06 | 0.01 | 0.02 | 0.03 | 0.06 |
| TB16 | TP 76/7189 | nail | 0.17 | 0.00 | 0.02 | 97.03 | 0.00 | 2.22 | 0.14 | 0.01 | 0.27 | 0.03 | 0.02 | 0.05 | 0.03 |
| TB17 | TP 76/7189 | nail | 0.10 | 0.01 | 0.38 | 97.31 | 0.01 | 1.60 | 0.16 | 0.00 | 0.31 | 0.01 | 0.07 | 0.02 | 0.04 |
| TB18 | TP 54 \& 55/5135 | sheet | 0.01 | 0.00 | 0.25 | 60.36 | 0.00 | 1.35 | 0.02 | 0.00 | 0.02 | 0.03 | 0.21 | 0.02 | 0.07 |
| TB19 | TP 54 \& 55/5135 | sheet | 0.01 | 0.00 | 0.15 | 45.47 | 0.00 | 1.37 | 0.02 | 0.01 | 0.01 | 0.00 | 0.15 | 0.05 | 0.04 |
| TB20 | FS 1958/7321 | silver link | 0.02 | 0.01 | 0.01 | 2.71 | 0.01 | 0.43 | 0.00 | 0.00 | 95.98 | 0.09 | 0.55 | 0.19 | 0.01 |
| TB20 | FS 1958/7321 | silver solder | 0.00 | 0.00 | 0.01 | 7.05 | 0.01 | 0.00 | 0.00 | 0.00 | 92.25 | 0.09 | 0.39 | 0.17 | 0.03 |
| TB21 | FS 1958/7321 | silver wire | 0.00 | 0.01 | 0.01 | 2.00 | 0.01 | 0.32 | 0.01 | 0.00 | 95.97 | 0.60 | 0.93 | 0.13 | 0.00 |
| TB22 |  | lead | 0.00 | 0.01 | 0.01 | 2.76 | 0.43 | 0.28 | 0.02 | 0.05 | 0.85 | 0.02 | 95.57 | 0.01 | 0.00 |
| TB23 | FS 1830/5138 | pin | 0.08 | 0.00 | 0.07 | 77.26 | 0.03 | 0.91 | 0.06 | 0.93 | 0.01 | 0.00 | 0.03 | 0.00 | 0.40 |
| TB24 |  | silver alloy | 0.00 | 0.01 | 0.03 | 3.47 | 0.02 | 0.12 | 0.02 | 0.00 | 95.92 | 0.00 | 0.34 | 0.02 | 0.05 |
| TB25 | HH 251/2906 | pin /wire | 0.22 | 0.01 | 0.23 | 97.34 | 0.00 | 1.77 | 0.06 | 0.19 | 0.05 | 0.04 | 0.10 | 0.00 | 0.00 |
| TB26 | SS 306/4650 | pin | 0.52 | 0.01 | 0.08 | 98.73 | 0.03 | 0.35 | 0.03 | 0.00 | 0.06 | 0.00 | 0.06 | 0.05 | 0.07 |
| TB27 | FS 1792/4992 | pin/wire | 0.74 | 0.03 | 0.25 | 96.89 | 0.00 | 1.86 | 0.02 | 0.00 | 0.04 | 0.01 | 0.02 | 0.05 | 0.09 |
| TB28 | FS 578/2944 | pin | 0.33 | 0.00 | 0.42 | 97.59 | 0.00 | 1.13 | 0.14 | 0.02 | 0.09 | 0.00 | 0.06 | 0.00 | 0.22 |
| TB29 | SS 850/5006 | toggle pin? | 0.25 | 0.03 | 0.30 | 98.16 | 0.00 | 0.85 | 0.12 | 0.17 | 0.04 | 0.00 | 0.04 | 0.00 | 0.04 |
| TB30 | FS 1958/7443 | awl | 0.37 | 0.01 | 0.08 | 98.76 | 0.00 | 0.57 | 0.08 | 0.00 | 0.07 | 0.00 | 0.01 | 0.02 | 0.03 |
| TB31 | TW 817/7875 | frag of flat tang | 0.28 | 0.00 | 0.02 | 79.95 | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 2.47 |
| TB32 | TP | nail | 0.26 | 0.01 | 0.02 | 97.26 | 0.00 | 2.14 | 0.08 | 0.01 | 0.05 | 0.05 | 0.06 | 0.03 | 0.03 |
| TB33 | SS 310/4681 | ? tang | 0.48 | 0.01 | 0.05 | 72.79 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.01 | 0.20 | 0.02 | 0.02 |
| TB34 | SS 722/5876 | fragments | 0.67 | 0.01 | 0.29 | 87.48 | 0.03 | 0.84 | 0.01 | 10.37 | 0.13 | 0.00 | 0.12 | 0.02 | 0.04 |

Note: analyses in italics indicate analysis of corrosion products.

Among the copper and the arsenical copper we can consider a number of impurity patterns based on different combinations of arsenic, antimony and nickel. Possibly the most distinctive of these is antimony. The antimony contents at Brak are low, at or below 0.16 per cent. This is in contrast with 23 per cent above 0.16 per cent at Tell Beydar, 33 per cent at Mozan and 43 per cent in the Woolley collection. In the latter group the higher antimony contents were closely associated with a specific type of toggle pin. Also, this copper type did not survive the adoption of bronze, the highest associated tin content being about 3 per cent. Our interpretation is that the production of this copper type is localized and associated with specific artefact types and then in the course of distribution and trade is re-cycled and increasingly diluted with other copper types. This copper with antimony is associated with particular sites in the Woolley collection, especially the cemetery of Serrin. The distribution visibly falls off away from this area, with, apparently, Tell Brak the furthest down stream. The other impurity patterns, with either just arsenic or nickel and arsenic, are distributed across the whole area and throughout the third millennium. The fourth-millennium analyses from Tell Brak (Area TP) show both these varieties and they continue into unpublished second-millennium bronze analyses made by the writer on samples from Tell Leilan.

The recycling and mixing trend cited for antimony can also be measured by iron. The copper typically emerging from the smelters might contain $1-2$ per cent arsenic and as much as 1 per cent iron
(e.g. TB27). As the metal is re-melted, mildly oxidizing conditions tend to remove arsenic, iron, sulphur and possibly antimony as well. A level of low iron content was arbitrarily set at 0.2 per cent, and 37 per cent of the analyses from Tell Brak fall below this, 31 per cent at Tell Beydar and 14 per cent at Tell Mozan. The figures rise to 26 per cent again in the Woolley collection but there are local variations within the collection area and the bronzes are also associated with lower iron contents.

In summary, the copper-based metal-working at Akkadian and immediately post-Akkadian Tell Brak is dominated by copper with arsenic only or arsenic and nickel impurities, and this is so throughout the period of the metal analyzed. There is some admixture of another copper type with antimony, but Tell Brak must be at the extreme end of its distribution. There is little to suggest much input of freshly smelted copper, so the site must have relied on secondary sources. Finally, on the basis of the small types of object fragments analyzed, it would appear that the activity represented by the third-millennium metal had effectively ceased before bronze had any significant impact. A fuller comment on the Brak analyses will appear in Volume 3.

## Acknowledgement

We would like to thank the Directorate-General of Antiquities and Museums in Damascus for their helpful permission to export the small metal fragments which have made possible these analyses.

# The Reclining Human-faced Bison Sculpture from Area SS 

Donald P. Hansen

Important for the history of Syrian art is a statue of a reclining human-faced bovine (frontispiece and Figs. $271 \& 272$ ) found during the 1990 season in the grandiose Akkadian architectural complex of Area SS. The sculpture has been published several times, notably by the Oates in Iraq 53 , pls. 26-7, and CAJ 1, 1991. Many of the comparanda already cited in these articles are repeated here. Excellent colour photographs of the entire sculpture and a detail of the head accompany a catalogue entry by J. Oates in Rouault \& Masetti-Rouault 1993, cover, pp. 293 \& 447.

The sculpture was not found in situ, but was retrieved from the earth about 30 cm above the pavement of the south courtyard, not far from the doorway to Room 30 (Fig. 91). The sculpture must have been discarded almost intact at the time of the final and deliberate filling of the building after its abandonment during the Late Akkadian period (see p. 389). Thus the find spot offers little information as to where the bull was originally situated in the building. The suggestion that it might have been set beside a doorway associated with a temple or shrine, much like the later and larger lion and bull-man sculptures in Mari, Tell al Rimah and southern Mesopotamia, seems reasonable (CAJ 1, 133). A possible
position is the recessed ledge on the western side of the doorway into the Area SS temple courtyard (Fig. 384, p. 387). Even if it were not a portal sculpture, it could easily have had a similar meaning or significance, and since the statue is relatively small, it might well have been placed elsewhere in an appropriate architectural setting. Nor does the find spot allow for a precise date. It cannot date after the Akkadian infilling, but it could have been created considerably earlier.

The statue is made of limestone, possibly quarried locally south of Tell Brak. The sculpture is complete in itself; there are no sockets or dowel holes that could have been used for attachment to another object. The dimensions are: length 41.5 cm , width 16.5 cm and height 28.2 cm . The body of the bull or bison faces left with the head turned out at a right angle toward the viewer. The bull's left legs are visible; they stand out in high relief and are conceived as being tucked beneath the body. The hooves are clearly articulated, but the legs are smooth except for a single arrow-shaped groove at the hock of the left rear leg. The right rear leg must be imagined as also drawn up beneath the body, but the bent front right leg with the cloven hoof placed on the ground is awkwardly twisted to the side so that the front of


Figure 271. Front and rear views of human-faced bison sculpture; ht 28.2, length 41.5 cm .


Figure 272. Close'up of Figure 271.
the leg is clearly seen by the viewer. A raised band midway between the knee and hoof suggests a rather large tuft of hair extending beyond the back of the leg, but such tufts are not in evidence on the other legs. The tail curves down and passes between the legs. The switch, decorated with an incised chevron pattern, appears on the flank above the left rear leg.

Covering the shoulders and chest of the animal like a short cape is an area raised slightly above the rest of the body; the cape's edge disappears into the fabric of the stone in the rear of the sculpture. The most reasonable explanation for this raised area is that the sculptor intended to suggest the dense, shaggy mane on the shoulders and chest of such bovine animals as the bison. A heavy beard covers most of the chest of this human-faced bull. It is clearly set off from the face by the fact that the plane of the surface of the beard is slightly higher than that of the face. The reverse is true in the region of the sharp chin. Texture is given to the beard by a series of parallel incised zig-zag lines. This pattern is sharp and angular on the sides of the beard, but the rhythm becomes less abrupt and more gentle on that part of the beard falling down on the chest. The design of the incised lines is continuous from one side of the beard to the other without the expected break in the middle, in order to render each side of the beard


Figure 273. View of top of head.
symmetrical.
Broken by the rather small sharply projecting ears, the pattern of incised parallel lines is further continued across the brow in order to form a series of pointed locks of hair framing the upper part of the face. A columnar crown of hair caps the head. On the top surface of this crown is another group of slanting incised parallel lines suggesting locks of hair parted in the middle (Fig. 273). Encircling the crown are a pair of bovine horns that emerge from the back of the cranium.

The human face is executed with a minimum of detail in a style that is decidedly un-naturalistic. The nose, probably of a basic geometric form, was unfortunately broken in antiquity, so that the present expression of the face is perhaps somewhat misleading. The cheekbones are very pronounced so that the eyes appear deeply set and the lower part of the face sunken. The eyes are surmounted by two arching brows, simple incisions filled with black bitumen for emphasis. The identification of the black substance as bitumen is based solely on a visual examination. The eyes themselves are made of ivory rather than shell. They are almond-shaped ovals with pointed ends and are set into bitumen so that bands of black serve as eyelids. The pupils are black holes piercing the ivory. Today, the eyes with these small pupils command the viewer's attention. This was undoubtedly true in antiquity, but then the total expression of the sculpture might had been different, for attached to the eyeballs were irises almost certainly of a different colour. The discolouration on the ivories, best seen on the frontispiece, indicates where these iris attachments were set. It is tempting to consider that the irises were made of thin pieces of lapis lazuli; lapis would probably not have stained the ivory except through fading, but the adhesive might have.

The use of an attached iris surrounding a small pupil is something rarely found in ancient Near Eastern sculpture. Blue lapis lazuli insets in shell eyeballs, representing the iris and pupil, occur regularly in many fine sculptures of the third millennium as, for example, in the statue of Ebih-il of Mari (Strommenger 1964, pl. 20). Yet, the iris and pupil are differentiated in the eyes of the ED IIIA silver lion head from the Royal Cemetery at Ur (Zettler \& Horne 1998, 51,1, and cover). The startling contrast of eyeball, iris and pupil may have been alleviated originally by the use of bright coloured paints on other parts of the sculpture, although no traces of paint are preserved except on the beard which was undoubtedly black.

Below the once sharply defined nose appears the mouth, set in a recessed area between the high cheek bones and the slightly projecting chin. The upper lip is thin in contrast with the thick, protruding, curved lower lip. Even though the chin is markedly pointed, there is no pronounced jaw in this very sunken lower face; the jaw bone is virtually buried in the fabric of the stone. Consequently the mouth appears as an appendage, a surface addition to a very structure-less head. The total effect is that of a very flat face emerging from a mass of hair and beard.

This human-faced bull, or more properly male bison, is a mythological creature known as the kusarikku or gud-alim and, as Steinkeller has indicated, may well be the image ÉREN +X of the Ebla texts (Steinkeller 1992a, 259 ff.; for the kusarikku see also Wiggerman 1992, pp. 174-9; Ellis 1989; and for the bison, Boehmer 1978). This composite being appears to have been associated with the sun god, and in the Akkadian seal of Figure 274 two kusarikku with heads en-face and bended knees replace the normally depicted eastern mountains from which Shamash in ascendant posture rises. Since ÉREN $+X$ is associated with Shamash in the late third-millennium Ebla texts (Steinkeller 1992a, 259), it seems reasonable to assume that the Brak sculpture is also to be connected with the sun god. It is illogical to think that two such closely related and important urban centres as Ebla and Nagar had different meanings for the same image. Indeed, as argued on p. 387, at least part of the Akkadian ceremonial complex may have been associated with the sun god.

Just as the meaning that lies behind the image of the human-faced bull or bison stems from Mesopotamia proper, the iconography of this particular sculpture is also taken over from southern Sumerian prototypes. Some elements of the iconography appear first in the Protoliterate period, while others first occur in the following Early Dynastic phases.


Figure 274. Akkadian seal impression showing the sungod Shamash rising from two kusarikku or humanfaced bison. (After Boehmer 1978, fig. 1.)
Among the glyptic images of animal files in the Uruk and Jamdat Nasr periods, it is rare to find representations of animals in profile with the head turned out at a right angle. Nor is this found regularly on the small amulets and miniature sculptures of stone in these periods (Behm-Blanke 1979, passim). Notable exceptions are the reclining ram and the bull from the Uruk III hoard (Orthmann 1975, pls. 15a \& 14b). The latter is a remarkable composite sculpture that shares sculptural qualities with the Proto-Elamite lioness demon. In the final analysis it may well be that this Uruk bull is also Elamite. In relief sculpture examples exist where the body of the animal is in relief while the head is turned out and sculpted in the round. The steatite or chlorite bowl found in an Achaemenian house at Ur, but on the basis of style clearly dating to the late fourth millennium, is one such fine example, as is the vase with relief decoration from Uruk III where the bulls and lions sculpted on the body of the vase are similarly treated (Orthmann 1975, pls. 71a \& 70). Like the bull in the round, this particular vase is also related to ProtoElamite art by the style in which the body is segmented (Hansen 1975, 181; Porada 1976, 1-4).

The pose of the recumbent animal with one leg tucked beneath the body and the other raised and bent at the knee, with the hoof or foot on the ground, is one that animals assume when rising from a lying down position. It imparts a sense of life and activity to the image different from the totally pacific, fully recumbent posture often assumed. Rare examples show that the pose first appears in Uruk and Jamdat Nasr glyptic. It is clearly represented, for example, on a seal of the pig-tailed lady type in the Morgan collection and on an Uruk style seal in the Newell collection (Amiet 1980, $312 \& 602$ ). It is favoured in Proto-Elamite seal designs (e.g. Amiet 1980, 511, 513, $530,551 \& \mathrm{pl} .38, \mathrm{G})$, some of which are contemporary with ED I, a period when the use of this posture
is widespread. ED I seals from the lower Diyala region, Fara and the Seal Impression Strata at Ur, for cample, show this pose in depictions of bulls, cervids and even lions (Amiet 1961, 743, 746, 747, 752A, 758, $70 \& \pi()$. In the same period the human-faced bull or bovine en-face without a body is introduced, appearing at Ur on a sealing of complex design from the SIS (Amiet 1980, 1260; Legrain 1936, 498). The composition of this sealing is unique, yet the contest group in the upper register and the reversed slain enemy in the lower register clearly belong in the ED I repertoire.

A somewhat problematic, but particularly important, ED I seal, formerly in the Moore collection but now in the Metropolitan Museum of Art (Eisen 1940, pl. III, 17; Amiet 1980, 748), shows the shaggymaned bison with the body in profile, raised foreleg and head turned out to the viewer. This is apparently the earliest two-dimensional representation of the bison in this pose, which is found often in the later part of the Early Dynastic period. Although the bison is described as having a human face, careful consideration of the actual seal and a recent impression indicates that this is not the case. The head is definitely animal and has, perhaps, a band across the snout to support the beard. By ED III the couchant human-faced bull or bison-man in identical pose was prevalent in the south as well as in the Diyala region (e.g. Amiet 1980, 1268 Ur, 1452 T. Asmar; see also 1359 Berlin).

In relief sculpture of the Early Dynastic period the bent-knee pose is found on a variety of objects, including a relief plaque from the Single Shrine of the Abu temple at Tell Asmar as well as the base of the largest of the male statues in the great hoard (Frankfort 1939a, pl. 106, 6 a). Four bulls assume this recumbent posture on a decorated ED IIIA cosmetic vessel from the Inanna temple at Nippur (BehmBlancke 1979, pls. 29 \& 157). Their tails, like the tail of the bull of the Brak statue, pass between their legs and the ends appear on the animals' flanks. Fine ED IIIB examples from Girsu are the small calf in the middle register of the votive plaque of Dudu and animals in the upper register of the silver vase of Enmetena (Orthmann 1975, 88, 120). The frontal head, the tail position and the bended knee appear also in the relatively large copper relief from the ED IIIB temple of Tell al-'Ubaid (Hall \& Woolley 1927, pl. 29).

In a discussion of the background of the Brak carving, several sculptures in the round and some partially in relief as well as in the round need be mentioned. Two examples of bearded bulls from Khafajah are recorded as found in Nintu VI, a level dated by the excavators to ED II. One is a small sprightly recumbent bull with the head turned out to the left (Frankfort 1943, pls. 46-8). Although, un-
like the Brak bison, all four legs are tucked up beneath the body, the tail similarly passes between the legs and reappears on the flank. The beard is sup. ported by a band that passes over the snout like that on several bull heads from the Royal Cemetery, sug. gesting to some that an applied false beard is intended. The set of the head accompanied by the relatively large horns and the bold linear patterns of hair, eye, beard and tail switch imbue this bull with an alertness and vitality not often found in Diyala region sculpture. A second piece is a protome or animal forepart, perhaps forming an attachment for furniture (Frankfort 1943, pls. 49-50). This originally horned, human-faced animal, resting on both bended knees, has a very heavy mane suggesting that the representation is that of a bison. Like the bull from the same level, the face is surmounted by scalloped forelocks executed by a series of simple parallel incisions. The style of this bison's face is very different from that of the bull and very close to works dated later from Lagash and Ur. There are also recumbent bearded bulls or bisons from the Royal Cemetery. Gold examples are found on the so-called 'diadem' of Puabi (Zettler \& Horne 1998, 93, 30), while an amulet, also from Puabi's tomb, provides a lapis lazuli example (Zettler \& Horne 1998, 96, 33).

Several stone carvings from Sumer, with applied bulls or bisons in the form of pouring vessels, have been interpreted as lamps. The bodies of the bulls or bison are carved in relief with the heads turned out and carved in the round, continuing the tradition already established in Uruk and Jamdat Nasr times. One example is in the collection of the Louvre (Caubet \& Bernus-Taylor 1991, 22 top); three from the Royal Cemetery have been attributed to graves PG 871, PG 134 and PG 1266 (Zettler \& Horne 1998, p. 68f., 14; Woolley 1934, pl. 182, pp. 172-3, no. 579). PG 134, a grave late in the sequence of Early Dynastic burials, is dated late in ED III. The PG 831 example is from the fill and its association is not clear; however, it is probably to be dated in the ED IIIB/Early Akkadian range. The published photographs do not do justice to these pieces. The Ur examples, at least, have the bent front leg emerging from the fabric of the vessel. The leg is then twisted to the side and appears behind the head of the hu-man-faced bison. In the photographs of the PG 831 piece in Zettler \& Horne $(1998,69)$, the leg is partially seen behind the animal's head; however, the entire leg, head and body of the PG 1266 example is shown in the photograph in Quarantelli 1985, 304. Such a construct is the result of attempting to show the iconographically meaningful and necessary gesture of the rising mythological creature on an object
which, although carved in the round, is perceived basically two-dimensionally. Although this might appear awkward, it is one solution to a difficult visual problem and is used on these carvings that are artistically and technically fine works of late Early Dynastic art. When such a device is used on sculptures in areas outside Sumer, it cannot always be interpreted as owing to provincial bungling and misunderstanding.

Since Mari was so culturally allied with southern Mesopotamia during ED III, it is not surprising to find the human-faced bison as part of the religious iconography of this Euphrates city. Close to Sumerian prototypes is a small gypsum amulet from the Ishtar temple (Parrot 1956, pl. VIII, p. 57). The particularly square head and beard, the manner in which the eyes are delineated, the enormous size of the tail switch in relation to the rest of the body are a few characteristics that might be attributed to the style of Mari; however, the image is essentially Sumerian. Similarly, either via Mari or by direct contact with the Kish region, the human-faced bison is found in several guises among the art works retrieved from Palace G at Ebla.

Thus far, most of what is known about the art of north Syria during ED III is derived from this palace (Mardikh II B1), a building possibly destroyed by Sargon of Akkad (discussion and bibliography cited in Matthiae 1989a, 26-9; Schwartz \& Weiss 1992, 23840). There has been considerable discussion concerning the overlap between early years of Sargon and ED IIIB; accepted here is the almost certain thesis that the reign of Sargon and the beginning of the dynasty of Akkad coincide with the later part of ED IIIB in Sumer, probably after Enmetena. Such a suggestion makes more comprehensible the role played by the art of such centres as Ebla in the formation of Classic Akkadian art (Naram-Sin and perhaps Maništusu).

Works in different media at Ebla lack a consistent style either because they belong to different chronological phases of development within the time frame designated II B1, or because they demonstrate different artistic responses and adaptations to stimuli from various regions of contact outside the domains of Ebla. The human-faced bison is found on several limestone inlays in an antithetical composition that includes the lion-headed bird grasping bison in its talons, an iconography perhaps peculiar to Syria (Matthiae 1989a, pls. III, IV \& VI, p. 39 ff.; Matthiae et al. 1995, 278, $305 \& 306$ ). Nevertheless, the eagle bodies, the lion head, and the bodies and many details of the bison are ultimately derived from southern Mesopotamia, either directly or via Mari. The subdued bisons stand with the bearded heads turned out and have small sharply projecting ears, curved
horns probably meant to emerge from the back of the head, hair in the form of forelocks on the brow, huge almond-shaped eyes with a small iris or pupil, a sharply demarcated cape of the mane on the shoulders, and tufts of projecting hairs at the knees and hocks. The style of the very flat raised relief and the incised drawings of the details of body and hair is sharp, angular, and essentially geometric.

Another human-faced bull or bison from Ebla is an extremely small ( 5 cm long) amulet, found in fragments. It is composed of gold foil over a wooden core with a carved beard made of steatite. Although compelling because of the contrast of gold and steatite, it is not a particularly fine work and seems crude when it is reproduced on a large scale (Matthiae et al. 1995, 329; Weiss 1985a, 177). The large eyes, originally inlaid but now lost, are surmounted by arching, darkened brows that meet in the centre on the bridge of the nose. Noteworthy is the fact that the bent front left leg is twisted forward towards the viewer in the manner of examples cited from southern Mesopotamia and just like the leg treatment of the Brak sculpture.

In summary, both the iconography and the meaning of this sculpture from Brak are clearly derived from Sumerian prototypes, but it is not an import from Sumer or Akkad. Assuming that the sculpture is a product of the important urban centre of Nagar, the sculptor might have been inspired by other works at Brak about which we know nothing, or he could have been exposed to those artistic influences reaching the Khabur from centres such as Ebla or Mari or even directly from the south. The iconography could have been derived from precisely such small portable cult objects as the pouring vessels or lamps cited above. It is an iconography based rather closely on southern prototypes, taken over in toto, presumably owing to the fact that no visual imagery existed in the earlier traditions of north Mesopotamia or Syria that could serve to express this very specific idea of the kusarikku, this part human, part bison, mythological creature associated with Shamash. It is primarily the iconography that suggests an ED III B / Early Akkadian date for the statue.

From the Khabur region itself, there are other images of the human-headed bison or bull either contemporary with or slightly later than the Brak sculpture. A small shell amulet of a human-headed bull was found in Level 6 of Area CH at Brak, a level possibly contemporary with the carving of the sculpture (Fig. 317). Of Akkadian or post-Akkadian date, the seal of the nurse Zamena of Urkesh is particularly noteworthy; beneath the inscription is a recumbent bison in a position identical with that of the Brak sculpture

## Chapter 9

(Buccellati \& Kelly-Buccellati 1995/96, 22, h1-2).
Certain aspects, such as the way in which the beard is defined with a series of parallel zig-zag lines, may well be a reflection of a southern Mesopotamian stylistic feature, for this is found, for example, on certain sculptures from the Diyala region (Frankfort 1943, passim). It existed also in roughly contemporary Syria in the badly eroded sculpture in the round from Jebelet el Beda (Moortgat-Correns $1972, \mathrm{pl}$. XI). This statue is over life size and wears the southern tufted garment. Neither the iconography nor such a minor stylistic feature as that of the beard, however, accounts for the Brak sculptor's style nor the manner in which he chose to depict this kussariku.

In writing of Early Dynastic glyptic in Syria Matthews (1997a) demonstrates that while the glyptic of Mari is essentially southern, cylinder seal impressions from other sites such as Chuera, Brak and Ebla show different responses to southern Early Dynastic influences, responses that graft these influences onto local north Syrian styles. Additional material, such as very recent sealings from Brak and the very rich trove of sealings from Tell Beydar will help to clarify the proposed chronological implications. Something similar can be expected in sculpture.

The Brak bison is a fine work executed by a highly skilled sculptor and was undoubtedly commissioned by a temple or an official of high status. Since it is an accomplished work and has a truly distinctive style, it should be possible to see how the style fits into the history of ancient Near Eastern art. The same geometric approach to the three-dimensional image coupled with a very similar treatment of the face as found in the Late Bronze Age statue of king Idrimi from Alalakh (Strommenger 1962a, pls. 174-5) places the Brak sculpture at the beginning of a series of North Syrian sculptures related by a similar aesthetic that permeates much of North Syrian sculpture of the second and early first millennia.

The style of a basalt head from Ebla, found associated with the Temple P2 of the lower city, is certainly related to that of the Brak bison's head. Whether the Ebla head is much older than its find spot or represents a continuation of style into a later period is not entirely clear (Matthiae et al. 1995, 392). Other early second-millennium sculptures from Ebla, such as the statue of Ibbit-Lim with his beard delineated by' a series of zig-zag parallel lines (Matthiae et al. 1995, 408) or the en-face divine figures on the stone basin from Temple N in the lower city (Matthiae et al. 1995, 192; Matthiae 1979, pl. XI) clearly lie within the stylistic orbit which begins with the Brak sculpture in the late third millennium and lasts until Idrimi in the second. This same aesthetic persists into the
later art of north Syria; the similarities between the total approach to image and the details of the human head of the Brak kusarikku and certain sculptures from Zincirli, Carchemish and Tell Halaf are obvious (Orthmann 1971, pls. 13; 62c, d; 76d, f).

When first publishing the sculpture, D. and J. Oates (1991a, 135) stated that in light of the present evidence we cannot determine whether the Brak bison is representative of a North Syrian or a North Mesopotamian style. The question still cannot be answered with ease. Although we know something about the very important cities of Ebla and Nagar in the latter part of the third millennium, the significance of the art produced at that time in Nineveh is unknown; indeed, the style of this sculpture might well be more at home originally in north Mesopotamia than in north Syria. But whether we choose to call this general late third-millennium style North Syrian or North Mesopotamian, a few other works of art should be mentioned. Another example of sculpture from Brak itself is the nude female ivory figurine found in an Akkadian building in Area ST (Fig. 315). The style, however, reaches beyond Nagar. Belonging within the same stylistic orbit, but dating perhaps a little earlier than the bison, is the metal nude figurine of a deity with enormous inlaid eyes from the treasure of Mari (Orthmann 1975, pl. 39 b; Parrot 1968, 15). Despite the fact that this hoard contained the lapis lazuli bead bearing the name of Mesanepada of Ur, the style of this figurine is decidedly non-Sumerian and would seem to relate to a northern tradition. Moreover, among the several styles in the art of palace $G$ at Ebla, the simple cutout incised drawings of the lion-headed eagle and the human-faced bisons cited and described above are also stylistically related to the Brak sculpture

It is difficult at present to trace this style further back into periods dating earlier than the Brak bison. Our knowledge of the glyptic traditions is too insecure or meagre to outline a development that can elucidate a history of sculpture; nevertheless, it is clear that this same aesthetic or predilection for a particular set of stylistic values already existed in the sculpture from the Brak Eye Temple which dates over a thousand years earlier (Fig. 316; Mallowan 1947, pls. 1, 2.) The Eye Temple heads come from the grey stratum of the temple platform, which must now be dated to Northern Middle Uruk, c. 3500 в C (Iraq 56, 1994, $170 \& 173$ ). Although they were found in robber tunnels, the chances are that they actually came from the grey stratum. Comparable are the basic geometric approach, the arching brows, the shape of the large eye with tiny pupil, the emphatic cheeks, the recessed lower portion of the face, and
the lips simply attached to the surface. Such an approach is quite the opposite from the naturalism that governs the early sculpture of Sumer. This is most evident, of course, in the female limestone head from Uruk III (Strommenger 1962a, pls. 130-31) with its totally different natural and sensitive treatment of the lower part of the face. A considerable period of sculptural development must have preceded the Warka sculpture, but for the very long phase comprising Middle and Early Uruk in the south we know almost nothing about art save for a few glyptic examples. How the tantalizing fragmentary large head from Susa fits into the history is not clear (Harper et al. 1992, 50, fig. 27). Its style is much like that of the

Brak heads and perhaps points to the already-known strong link that existed between Susa and the upper Euphrates via the Piedmont and the Tigris (Pittman 1994, 243-64).

This kusarikku from Brak, found in an Akkadian architectural complex and apparently dating a little earlier than its find spot, is a sculpture of excellent quality focusing attention on a period when a great deal of the iconography and meaning was derived from southern prototypes. With roots reaching back into the fourth millennium, it is carved in a wellarticulated style representative of an aesthetic that was to govern a great deal of north Syrian sculpture for many centuries to come.

# Third-millennium вс Stone Objects 

Joan Oates

The most important stone object recovered at Brak is of course the human-faced bison, discussed by Donald Hansen in the previous section. A small flat piece of olivene, carved on both sides, also depicts a bull image with its foreleg turned back under the body in the conventional pose (Fig. 275). Only one other piece of third-millennium stone sculpture has been found, a small statuette of a beardless male, recovered from the 'trample' on the floor of the administrative Room 18 in the Area SS monumental complex and, therefore, possibly part of the original contents of the room (Fig. 276). Unfortunately we cannot be certain that this was its true context, since it could have been dropped during the clearing out of the monumental building. The statuette is made of a cream-coloured limestone; its surviving height is 8.6 cm . A dowel hole at the base, with a transverse hole for a 'locking' pin, suggests that it was mounted


Figure 275. Fragment of olivene bull pendant $89(1.9 \times 1.65 \times$ 0.35 cm ). on some form of stand. The style of the dress, fringed at the edges and worn over one shoulder, is 'Akkadian' and is not uncommon on the seals of this period. The hair is worn in a long plait at the back; unfortunately the head is missing. As Candida Felli points out (p. 147), the pose of
the figure and the style of dress resemble those of the standing figure with clasped hands on the socalled Scribe's Seal (Fig. 171), who is also beardless and long-haired. Whether there is any connection between the two cannot, of course, be established, but at this period the title 'scribe' usually signals a senior official.

## A. Stone vessels (Figs. 483-5)

By far the most beautiful piece is the bowl decorated with rosette patterns, recovered in fragments from the Area SS Courtyard 8 ritual deposit (Figs. 277 \& 484:9). Unfortunately we did not have a microscope on site in 1988, and at the time of its discovery there was considerable disagreement among the dig staff as to whether this elaborately decorated bowl was made of a very soft stone or very fine pottery. The evidence of cut marks on the body, visible in Figure 277, perhaps tips the balance in favour of limestone but the rosette pattern could have been cut on pottery in the green-hard stage and the presence of a pierced lug and a broad, 'gravy boat' pouring lip (not illustrated) suggest a ceramic body. Although the pattern is very regular, the bowl was not moulded as were some generally similar, single-lugged pottery vessels of ED III date at Abu Salabikh (Moon 1987, 25).

The lugged rectangular troughs, of which 15 examples have been found (cf. 11), presented similar problems with respect to the identification of their fabric(s). Although it remains difficult to establish with certainty the composition of the complete vessels, some of the broken fragments are unquestion-


Figure 276. Small alabaster statue of male figure 6, Akkadian, from SSTC Room 18; ht 8.6 cm .


Figure 277. Bowl 9 from ritual deposit in SS courtyard; a sherd with a wide pouring lip from the same vessel was also recovered, but could not be joined to the surviving bowl fragments (?limestone). $D .=15 \mathrm{~cm}$.
ably made of a finely grained but fairly soft limestone, in at least two cases with a highly polished lime plaster surface deliberately applied to the stone itself, a technique we have not seen elsewhere. This vessel type is found almost exclusively in Phase L contexts (visible on the floor of Room 610: Fig. 30); four fragmentary examples came from early Akkadian fills but could have originated in Phase L. Their specific purpose remains unknown but one from Room 610 was full of grassy materials which remain unidentified by the palaeobotanists (?perhaps medicines or drugs). A similar vessel is illustrated from Tell Chuera (Kühne 1976, fig. 377), but the type is not otherwise reported in the Khabur area. The majority of the surviving Brak vessels measure c. $20-25 \mathrm{~cm}$ in length, the smallest example, 14 cm . Interestingly, the latter was found in two joining pieces from widely separated though contemporary contexts, one from the floor of the SSTC courtyard, the other from the fill sealing the building (SS 545 \& SS 374).

Figure 278 illustrates an unusual and heavily burnt bowl found in storeroom 34, FS Level 2; a similar vessel, in alabaster, is reported from Halawa (Orthmann \& Meyer 1989, fig. 52:2). Unique at Brak is the alabaster chalice (8), from wash immediately overlying the Area SS monumental complex; alabaster object 45 came from the same deposit. Over 40 vessels of the local (true) alabaster were found, a number with the well-known concentric circle or circle and dot pattern, common on the rim of the
bowl as well as on the body ( $16 \& 46$ ). Most of these vessels were simple open bowls and are largely of Akkadian date. The geometric decoration on bowl 15 is unusual. Compartmented and tray-like vessels were also made of the local alabaster ( $13 \& 49$ ); the function of the elaborately-decorated, box-like container 47 is unclear. Unusual patterns have also been carved on 17 and 48 , the latter bearing a remarkable resemblance to a very distinctive type of fluted decoration found on Mitanni core-moulded glass vessels (e.g. Brak 1, figs. $123 \& 218: 6,7$ ). The small alabastron 12 is unusual; it comes from a secure Akkadian context.

Five miniature marble bowls or their fragments were found ( $51 \& 53$ ); these include a creamy marble and coloured marbles of grey and white, black with white veins and white with black veins. Sherds of two larger vessels of a creamy marble include one with highly polished, fluted decoration (resembling a large shell). The base of a thick-walled bowl of pink-banded creamy marble from SS 1070 is possibly a fourth-millennium piece of Egyptian origin (reg. no. 5826). A single rim sherd of a chalcedony bowl was found in an Akkadian context in Area FS (reg. no. 5196). Several limestone vessel types are illustrated in Figure 484. Both mortars and grinding stones are also made of limestone, and occur in large numbers. The mortars are often re-used as door sockets. A small, open, black stone bowl, highly polished on the interior, came from the uppermost level in FS .

Eight soft stone vessels in serpentine, steatite


Figure 278. Heavily burnt sandstone bowl with animal head lugs, Akkadian (see Fig. 483:7).


Figure 279. Haematite burnishers (see $38 \mathcal{E} 39$; the other example comes from SS 75, Phase N).
structure. Both are ferrimagnetic. Most of the haematite polishers are from Akkadian levels (72 per cent); at least one is from Phase L, the rest postAkkadian, at least in context. An unusual piece of haematite (reg. no. 777) seems to have been shaped by pecking and an attempt made to drill through the hard stone, longitudinally, presumably in an unsuccessful effort to produce a bead.

A small number of highly polished stone objects are possibly weights, especially those with incised marks ( $34 \& 35$ ). We were able to weigh some of these
and chlorite were also found, including miniature bowl 50 and beaker 19; the interior of the latter shows clearly the marks of the drill used to remove the central core. A fragment of a carved chlorite bowl decorated with the well-known 'hut pattern' came from the Area FS spoil heap (reg. no. 674), unfortunately without context. Sherd 52 is unusual, from a bowl that was almost certainly inlaid; the style is reminiscent of the Transcaucasian pottery with white inlay illustrated in Figure 400 (esp. sherd 238). The large bowl 25 is made from a grano-diorite; three other grano-diorite vessel fragments were recovered, one each from Phase M, L and J. Fragments of large vessels of various types of gabbro were also found.

One of the most unusual 'vessels' is a soft reddish sandstone tray, which had been roughly cut into a wedge shape in order to fit an orange-plastered 'corner shelf' in the Akkadian building in Area CH , perhaps for a lamp although there was no sign of associated burning (CH 301).

## B. Weights and burnishers (Fig. 485)

A number of haematite burnishers have been found (27 are recorded in the excavation registers). Both the sides and end surfaces of these tools are ground flat and highly polished from use (Figs. 279 \& 283, right). An analysis by x-ray powder diffraction, carried out by Colin Shell, of the polisher found with a group of frit beads in beaker 704, identified the mineral as the iron oxide maghemite $\left(\delta-\mathrm{FE}_{2} \mathrm{O}_{3}\right)$. This is of the same composition as the more well-known mineral haematite $\left(\alpha-\mathrm{Fe}_{2} \mathrm{O}_{3}\right)$, but with a different crystal
with a high degree of accuracy in the gold suq in Hasake, but the results, given in Figure 485, are not particularly informative. For example, the two Akkadian weights with five and three marks give a single unit of 9.38 and 8.34 g , respectively, not the level of accuracy one would expect if the marks are actually indicative of weight. A few hemispherical stone objects may also have been weights, e.g. 36, with a weight of 10.81 g .

## C. Semi-precious stone

One of the most unusual small pieces of stone from third-millennium Brak is a single tiny fragment of turquoise from the SSTC Room 20 floor; this presumably came from eastern Iran or Afghanistan (perhaps via the Indus, the source of the large carnelian and jet beads with which the small piece of turquoise is contemporary). This is the only turquoise to have been recovered from the site from any level. The lapis lazuli is discussed with the beads and amulets in Chapter 7; a number of uncut pieces were found on the site, suggesting that at least some of the stone was imported and worked at Brak. Several pieces of raw rock crystal were also found, including one from the area of the deposits of jewellery in the FS Level 5 temple courtyard.

A tubular piece of worked chalcedony ( $\mathrm{d} .=11$ mm , reg. no. 3430) was found, perhaps intended for a large bead. Large pebbles of jasper were also present, up to 6 cm in length, but none as large as the massive piece found in association with glass ingots in the Mitanni Palace storeroom (Brak 1, 29).

## D. Beads, studs, toggles, gaming pieces

The stone beads are discussed in Chapter 7; other small stone objects are illustrated in Figure 485. These include toggle-like objects (Fig. 280), studs and labrets ( $32 \& 44$ ), inlay and possible gaming pieces. The spherical object with slightly flattened base (37) is unusually beautifully crafted, the dark circle at the top originating in the natural colouring of the stone. Eye inlay occurs in fine white limestone as well as shell. A number of small geometric tokens may derive from fourth-millennium levels, although the piece illustrated in Figure 491:139, with its lead 'string', seems almost certainly to be of Akkadian date. The function of many of the small stone objects is difficult to establish, for example a beautiful, highly polished, elongated oval object in brown and black serpentine (reg. no. 4476), from the SSTC construction level.

## E. Stone gaming board (?)

One of the most unusual stone objects is illustrated in Figure 281. It is a large and extremely roughly cut, heavy, eye-shaped piece of limestone, $62 \times 38 \times 26 \mathrm{~cm}$, with a series of small circular depressions around a cup-like depression in the middle. The small depressions form a spiral around the centre, hence our suggestion that this large object may be a gaming 'board'. It was found on the brick pavement outside the southern building in Area FS (Fig. 61), that is, east of Room 3.

## F. Querns, mortars and grinding stones (Fig. 482)

By far the most common stone objects are the very large numbers of querns, grinding stones, polishers, pounders and mortars found at the site. Many of these are made of basalt, though limestone rubbers and grinders are almost equally common. The querns were generally saddle-shaped, the largest examples found approaching $80 \times 40 \mathrm{~cm}$ in surface area. The small rubbers were either spherical or cuboid in shape. One basalt mortar contained a deposit of red ochre, while a quern from Area CH had clearly been used to prepare bitumen. Many of these were reused as door sockets, in drains (for example, lining the sides of Akkadian drain 361 in Area CH) and as wall foundations. In Phase L mortars or other stone vessels were often found set into grinding pits, for example the limestone mortar at the bottom of the grinding pit in Area CH Level 7 Room 73 (Fig. 27) and another, of basalt, in the Area CH, Level 6, Room 63 pit (Fig. 28); a pottery jar (1543), perhaps used as a 'dipper', was also found in the latter pit. In the later levels the querns were more often set on mud-brick


Figure 280. Steatite toggle 30, alabaster toggle 31, the former of Late Phase L date; and Akkadian perforated knob 42, which had been attached to some other object both by a dowel hole and transverse piercing.
supports (as illustrated, for example, in Area ER, Fig. 33).

Most of the querns were too large and heavy to carry back to the excavation house without transport and were therefore recorded only in the site supervisors' notebooks. In addition to the querns, a further 202 basalt objects were recorded in the dig register; these included 74 vessels, largely mortars, 66 rubbers and polishers. A number of basalt objects have been analyzed by Nancy Lease; the results will be published in Volume 3 since only one of the analysed samples from Brak is of third-millennium date. The latter piece originates from the Ard-es Shaikh plateau source, along the Khabur near Hasake, and in this conforms to the general pattern of third-millennium samples from a range of rescue sites south of Hasake.

Large numbers of querns were often found in the same room or courtyard, for example a collection of twelve querns and grinding stones found in Area ER Level 5 Room 43, two of which were over 60 cm in length. A number of such groups are illustrated in the excavation photographs, especially in the CH Level 6 destruction level (Figs. 29 \& 30) and, inter alia, in CH Level 2 (Fig. 207), where five black basalt querns, a large lump of red jasper $(10 \times 8 \times 5 \mathrm{~cm})$ and a basalt mortar were found in situ.

## G. Gypsum and limestone

Limestone was used for a number of types of object, from the small male statuette described above to the large gaming-board. It was also used for querns, mortars and rubbers, in approximately equivalent
numbers to those made of basalt. One of the most unusual pieces is an off-cut of fine-grained, yellow limestone, cut at a right angle, with fine saw marks clearly visible on the two right-angle surfaces (Fig. 282). The piece measures 11.4 cm in length, the cut sides each having a maximum width of 3.2 cm . It came from an Akkadian or slightly later level in Area SS (reg. no. 5432). Another carefully cut piece of fine-grained limestone came from below the 'platform' in Area ER. This bore carefully cut recessed rectangular decoration (reg. no. 400, $10.2 \times 5.75 \times$ 4.45 cm ) and was conceivably an architectural model.

Several natural calcite crystals have been found, two from FS Level 3 Room 25, the larger measuring $3.7 \times 1.8 \times 1.7 \mathrm{~cm}$. Gypsum crystals are far more common at the site. Although they look deliberately cut, these translucent yellow crystals occur naturally in slender oval shapes, perhaps deriving from natural 'desert rose' formations. The main use of the sulphate stone is in the form of alabaster, which is also found locally.

## H. Ground stone tools and other objects (Fig. 283)

A small number of celts ( $n=11$ ) have been found, but it remains unclear whether these are tools of earlier date which have simply been picked up and re-used, or whether some are genuinely of thirdmillennium date (e.g. Fig. 283, upper right). Perforated axes are rare (two basalt and six in other stones), but are found in both Akkadian and post-Akkadian levels. Ten stone spindle whorls are also recorded, three of alabaster. Seventeen flat stone objects appear to have been palettes, of which eight are Akkadian and two are from Phase L. Over forty objects may have been whetstones, two-thirds of which are Akkadian (see Fig. 283), while there are also a number of large perforated rings (equal numbers in basalt and in other stones). Four examples of grooved stones of the type often described as 'bead polishers' were found.

A rectangular piece of sandstone with heavy mica, from a Mallowan trench, had been used as a polishing tool (reg. no. 6060). Heavily micaceous schist is also occasionally used for small objects, including a flat, rectangular piece of which the narrow end had been used as a polisher (reg. no. 4194).

Maceheads were not common, only some 20 to 25 possible examples having been found. Of these only one is illustrated (26), since most were little more than broken fragments. Approximately half were of limestone, the rest of alabaster, marble and basalt. Undoubtedly the most beautiful was made of a highly polished light olive-green stone streaked


Figure 281. Large limestone object roughly cut in the shape of an eye, with a spiral of small circular depressions leading to a cup-like depression in the middle. Possibly a large gaming board. $62 \times 38 \times 26 \mathrm{~cm}$.


Figure 282. Broken off-cut piece of fine-grained, pale yellow limestone, showing clear saw marks on two surfaces. Original length of piece 11.4 cm . From an upper level in Area SS.
with black (?serpentine, reg. no. 2676, from an Akkadian context in FS).

## I. Basalt potters' wheel (Fig. 484:29)

From a technological point of view one of the most interesting stone objects is the upper part of a handturned potters' wheel or tournette, that is, the actual turntable. The knob, which would have rested in a much heavier stone base (see an example from Tell Ahmar dated c. 2000 BC, Rimini cat. no. 132), was very smooth and polished. Both the knob and the surface of the wheel were also heavily striated. The Brak example came from a late Akkadian level in Area SS, from a possibly courtyard context in which


Figure 283. Ground stone tools from Akkadian contexts: two polished celts, three whetstones and a burnisher (see p. 608).
there were also a number of burnishers and whetstones (SS 647) together with haematite weight 35.

## J. Inscribed stone

There are only four fragments of stone inscriptions from Brak. Two limestone vase inscriptions of the Akkadian king Rimush were found by Mallowan (p. 107), while a small green stone inscribed fragment from Area FS is possibly of very early second-millennium date (Finkel 1985, fig. 7). An inscribed fragment of an alabaster vessel, possibly an Old Babylonian dedication to the Lady of Nagar, is published in Brak 1, fig. 164.

## K. Moulds

These are discussed in Chapter 8 together with the metal tools and ingots produced from them (pp. $247-8$ ). With the exception of a small trinket mould made of fine-grained limestone, the moulds are made of sandstone. Such trinket moulds were used for the manufacture of small lead female figurines of the type illustrated in Brak 1, fig. 163, a surface find which we now believe to be of late third-millennium date.

## L. Pigments

Haematite pigment is found throughout the site, but only infrequently from informative contexts. The largest quantity came from Area FS Level 3 Room 10, while the largest single piece $(5.0 \times 2.8 \times 2.5 \mathrm{~cm})$ was found in an ash layer against the large pisè wall in Area SS . The flat bases of pottery beakers were often trimmed down to form palettes, while both red and black (?cosmetic) pigments have been found contained in shells (p. 297).


Figure 284. Akkadian tanged and leaf-shaped arrowheads (TB 12196-12200).


Figure 285. Tabular obsidian from the fill of the Area SS monumental building; the larger piece weighs 346.69 g . Maximum width of left object $=9.5 \mathrm{~cm}$, right object $=$ 9.0 cm .

## M. Chipped stone

For reasons of space, the chipped stone tools from both the third-and fourth-millennium deposits will be published in Volume 3. We illustrate here only a few of the very attractive pressure-flaked arrowheads found in the Akkadian levels at Brak (Fig. 284) and two large pieces of 'tabular' obsidian, recovered from the fill of the Area SS monumental building (Fig. 285). The larger piece weighs 346.69 g . Of particular interest, and to be published in Volume 3, is a lunate microlith of PPN date (reg. no. 4343), found in FS Level 2 in a deposit of fallen mud-brick, one of which had presumably contained this prehistoric tool. Other out-of-context PPNB tools have also been recovered from Area TW.

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## Chapter 10

# Third-millennium Clay Objects 

Helen McDonald

## A. Anthropomorphic figurines (1-11, 127-9, 79, 80)

 (Tables 26 \& 32)From the 1976 to 1993 excavations there are 32 anthropomorphic figurines and figurine fragments of which 3 are unbaked (6, 128 \& reg. no. 1129, AL 1). These have been divided into the following very general types according to morphological features and size.

Type 1. Standing females with short arms (2-5 \& 7) (Figs. 286-8)
This group of figures is largely, if not entirely, female ( $3,5,7$ and almost certainly 4 , female, 2 indeterminate), with short, outstretched arms, legs (in contrast with the cylindrical base of Types 3-5) and an estimated height of around $11-12 \mathrm{~cm}$. Short outstretched arms are a widespread feature of Syrian Bronze Age figurines (Badre 1980, région d'Oronte type MAI 2, région de l'Euphrate type MAV 3). At

Brak, figurines of Type 1 would appear to be of postAkkadian date. Figurines 4, 5 and 7 represent a closely related group, with heavy necklaces, a deeply incised line down the back, and joined legs. Figurine 5 is the most elaborate of this group with coffee-bean eyes, a collar-like necklace, applied ?earrings or ?curls either side of the face and a high hairstyle, with central parting, on the back of the head. This fan-like hairstyle is perforated horizontally either for suspension or, more likely, to attach further ornament. Three figurines with heads identical with Figure 286 (5) have been found at Tell Chuera in third-millennium levels (Orthmann et al. 1995, 255, fig 99: head Type 5.5, pp. 244-7, nos. 55, 133 \& 137; Moortgat \& Moortgat-Correns 1975, 51, fig. 24 a-c). Other parallels come from Palace F, Levels 1 and $1 b$ (Orthmann et al. 1995, 130-31, fig. 66:16-18 \& 21). Figurine 3 represents a variation of Type 1, both in its style, with separated legs, its less elaborate headdress and


Figure 286. Type 1 figurine 5, Area SS topsoil, extant ht 6.9 cm .


Figure 287. Type 1 figurine 4 , ht 7.8 cm, Area SS Level 1.


Figure 288. Type 1 figurine 3, separated legs, burnished surface, ht 7.8 cm , Area SS, probably post-Akkadian.
lack of a necklace or pectoral, and in its manufacture. It is made of a coarser clay with visible chaff, is fired at a lower temperature, and its black surface is highly burnished (Fig. 288).

## Type 2. Seated

 figurine on chair (1) This single figurine seated on a chair or stool may be early second millennium in date (cf. Fig. 416 for pottery from the same context). Such figurines are rare in Badre's typology, where most of the seated figurines are chairless (1980, 61, 97). A few from Alalakh are Middle Bronze II in date but these, in contrast with the separate seat and legs of Brak 1, have simply a lower body split into three 'legs' (Badre 1980, pl. 11:43-5).Type 3. Charioteers (10 E 11) (Fig. 307)
These figurines with outstretched or forward-reaching arms are probably 'charioteers'. 10 and another example (TB 4052) are both seated, with a concave base, short legs and incised decoration indicating clothing. 10 has a necklace, three-strand belt and apron. Figure 307 has a fleecy cloak over one shoulder and pronounced male genitalia (p. 285). Mallowan found an undecorated figurine with a similar posture in the vicinity of the Naram-Sin Palace (1947, 183 , pl. $38: 5$ ). 11 is a slightly simpler figure with the same concave base, but without legs or incised deco-

Table 24. Baked clay model vehicles by type and phase.

|  | Phase |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Type | ED | $\mathbf{J}$ | L | $\mathbf{M}$ | $\mathbf{M} / \mathbf{N}$ | N Unstrat. Totals |  |  |
| two-wheeled | 1 |  |  | 9 | 2 | 8 | 1 | 21 |
| four-wheeled |  |  | 2 | 5 | 6 |  |  | 13 |
| covered wagons | 3 |  | 1 | 8 | 1 | 6 | 2 | 21 |
| notype |  | 1 |  | 7 | 3 | 4 | 3 | 18 |
| rehicle front fragments |  |  | 8 |  | 3 | 2 | 13 |  |
| large items like 16 |  |  |  | 7 |  | 3 |  | 10 |
| Totals | $\mathbf{4}$ | $\mathbf{1}$ | $\mathbf{3}$ | $\mathbf{4 4}$ | $\mathbf{1 2}$ | $\mathbf{2 4}$ | $\mathbf{8}$ | 96 |



Figure 289. Small, lightly baked Akkadian ?figurines/ gaming pieces (SS 825, SSTC Room 15, reg. no. 4596; two from FS 1834, FSTC, Courtyard 6 (TB 12069 \& reg. no. 5282).
ration. Its perforated shoulder would have allowed it to 'carry' a spear; some of the Selenkahiye figurines have arm-stumps perforated for a similar purpose (Liebowitz 1988, pl. 15:5, 7). It is perhaps relevant that all the Type 1 figurines came from Area SS, all from upper levels or fill, while virtually all of the 'charioteers' were found in Area FS.

Type 4. Other ?male figurines ( 6 \& 8)
The group contains only two figures which have no obvious gender but are perhaps male. Neither is like the 'charioteer' figures. Torso 6 is an unbaked piece with a finely modelled left hand and something, possibly a ?cup, in the right hand. Torso 8 is fired, and has separate legs but no distinguishing features; when complete it may have been similar in height to the Type 1 figures.

Type 5. Schematic standing figures (127)
On these figures the cylindrical torso ends in a splayed base. The (extant) heights of the figures vary between 5.6 and 7.2 cm and, when complete, would have been unlikely to exceed 8 cm in height. 127 is the only example which survives with its head and part of its arms intact. Both Type 5 and 6 figurines are predominantly Akkadian (Table 26).

Type 6. Small, schematic figures (128 \& 129) (Figs. 289 \& 491)
Very similar to the previous group but smaller, with heights of between 3 and 5.5 cm , these figurines are of a size that could have been used as gaming pieces. Simple Type 6 figurines are probably more widespread in the third and fourth millennia than the published examples would suggest. The incomplete

Table 25. Baked and unbaked clay model wheels by type and phase.

|  | Phase |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Type | $\mathbf{J}$ | $\mathbf{K}$ | $\mathbf{L}$ | $\mathbf{M}$ | $\mathbf{N}$ | Unstrat. | Totals |
| baked plain | 1 | 1 | 4 | 121 | 72 | 51 | 250 |
| baked decorated |  |  | 1 | 9 | 8 | 3 | 21 |
| baked totals | 1 | 1 | 5 | 130 | 80 | 54 | 271 |
| unbaked |  |  |  | 3 | 3 | 1 | 7 |
| Totals | $\mathbf{1}$ | $\mathbf{1}$ | $\mathbf{5}$ | $\mathbf{1 3 3}$ | $\mathbf{8 3}$ | $\mathbf{5 5}$ | $\mathbf{2 7 8}$ |

Table 26. Baked and unbaked clay anthropomorphic figurines and gaming pieces by type and phase (Figs. $486,490 \mathcal{E} 491$ ).

|  | Phase |  |  |  |  |  |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| Type | Nos. | $\mathbf{M}$ | $\mathbf{M} / \mathbf{N}$ | $\mathbf{N}$ | Unstrat. | Totals |
| 1 | $\mathbf{2 - 5 , 7}$ |  |  | 5 |  | 5 |
| 2 | $\mathbf{1}$ |  |  |  | 1 | 1 |
| 3 | $\mathbf{1 0 , 1 1}$ | 2 |  | $\mathbf{1}$ |  | 3 |
| 4 | $\mathbf{6 , 8}$ |  | 1 |  | 1 | 2 |
| 5 | $\mathbf{1 2 7}$ | 4 |  | 2 | 1 | 7 |
| 6 | $\mathbf{1 2 8 , 1 2 9}$ | 6 |  | 2 |  | 8 |
| $\mathbf{7}$ | $\mathbf{9 , 7 9 , 8 0}$ | 3 |  | 2 | 1 | 6 |
| Totals |  | $\mathbf{1 5}$ | $\mathbf{1}$ | $\mathbf{1 2}$ | $\mathbf{4}$ | $\mathbf{3 2}$ |
| bases | $\mathbf{1 3 1}$ | 6 |  | 7 | 3 | 16 |
| gaming pieces | $\mathbf{1 3 0}$ | 6 |  | 1 | 1 | 8 |

cylindrical bases (131) may have been either bases for the Type 5 figurines or the bases of gaming pieces like 130. Six of the bases are unbaked, three are fired with a black, heavily burnished surface (131).

## Type 7. Figurines of larger size ( 9,79 \& 80)

This type covers fragments of larger figures, including female torso 9 , head 79 and the genderless lower torso TB 3044, with estimated figure heights of around $15-20 \mathrm{~cm}$. The foot $80(\mathrm{l}=4.6 \mathrm{~cm})$ is from a still larger figure, possibly as tall as $25-30 \mathrm{~cm}$ if the rest of the figure is in proportion. Two additional torso fragments listed in Table 32 probably belong in this group, since both seem to be from larger figures but are too fragmentary for height to be estimated (reg. nos. $264 \& 4757$ ).

## Miscellaneous (Fig. 490)

Figurine base (81): With respect to size, foot 80 would have fitted base 81. Foot 80 does not, however, have the dowel holes in the soles of the feet that would have been needed for attachment. The figurine supported by 81 could have been of metal, wood or a composite of materials.

Statue fragment (82): The eye socket 82 is the only terracotta piece of a composite statue recovered up

Table 27. Baked clay zoomorphic figurines by type and phase.

|  | Phase |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Type | $\mathbf{J}$ | $\mathbf{K}$ | $\mathbf{L}$ | $\mathbf{M}$ | $\mathbf{N}$ | Unstrat. | Totals |
| equid |  |  | 5 | 99 | 48 | 39 | 191 |
| sheep |  |  |  | 22 | 5 | 3 | 30 |
| wheeled sheep |  |  |  | 4 | 3 |  | 7 |
| goat |  |  | 1 | 10 | 4 | 4 | 19 |
| bull |  |  |  |  | 1 |  | 1 |
| pig |  |  |  |  | 1 | 2 | 3 |
| lion/dog |  |  |  |  | 1 |  | 1 |
| bird |  |  |  | 4 | 1 | 4 | 9 |
| unidentified | 1 | 1 | 9 | 128 | 63 | 27 | 229 |
| wheeled indist. |  |  |  |  | 3 | 1 | 4 |
| frags |  |  | 1 | 13 | 5 | 4 | 23 |
| Totals | $\mathbf{1}$ | $\mathbf{1}$ | $\mathbf{1 6}$ | $\mathbf{2 8 0}$ | $\mathbf{1 3 5}$ | $\mathbf{8 4}$ | $\mathbf{5 1 7}$ |

to now. It is made from a hard-fired, pale green, well-levigated fabric (similar to ware 5a of the pottery corpus). Eye inlay is also found in shell, bone and ivory (p. 296) but this is the only socket recovered. Socket 82 could have come from a statue of the size of the human headed bull (frontispiece).

## Anthropomorphic figurines: general remarks

Given the volume of earth excavated in the thirdmillennium levels at Brak the number of anthropomorphic figurines seems to be relatively modest, particularly when compared with the numbers from other third-millennium sites (e.g. Tell Chuera, 312: Orthmann et al. 1995, 242-53; Selenkahiye, 171 plus 118 fragments: Liebowitz 1988, 1-15; the Abu Salabikh ashpit, 46 figurines, all of the simple, schematic variety: McAdam 1993, 84). Why Brak should have produced such a small number of anthropomorphic figurines compared with the large number of zoomorphic examples is an interesting, but at present unanswerable, question, perhaps related to the contexts excavated.

## B. Zoomorphic figurines (Fig. 489:53-77, Table 27)

At Brak 37 per cent of the baked clay zoomorphic figurines are equids, 7.2 per cent sheep, 3.6 per cent goats, 0.6 per cent are pigs, 1.35 per cent are birds and 44.3 per cent are indistinguishable as to species (Table 27). The high proportion of equid figurines compared with other species is a pattern found also in building AK at Mozan (Hauser 1998, 64). Equids were also the most common zoomorphic figurine recovered from the second millennium levels at Brak (Area HH, Brak 1, 131). Since, however, the number of figurines from HH was relatively small (48 in total), this may not be a very instructive comparison.


Figure 290. Baked clay zoomorphic figurines. Top row, left to right: equid head, SS 254, topsoil (reg. no. 3298); equid, SS 506, Level 3 (TB 11073); bird figurine, FS 1676, Level 3 (reg. no. 4398); middle row: ram 68 and ram from SS 825, Level + (reg. no. 4527); bottom row: iquid, SS 37t, Level 3 (TB 11072); torso showing strapped genitalia, SS 417, SSTC fill including Phase N pit (reg. no. 4595).


Figure 291. Baked clay zoomorphic figurines. Top row: SS 1202, topsoil (TB 12083); equid, FS 801, Level 3/4 (TB 12082); equid, FS 1787, Leiel 4 (TB 12081); bottom rowe: goat 66, post-Akkadian; equid, FS 801, Level 3/4 (TB 12085); wheeled ram 51, Akkadian.

Equids (53-64) (Figs. 290-92, 308-12)
Of the 191 equid figurines, 19 have some indication of an (appliqué) halter, bridle or harness (53-5, Fig. 308), one also has remains of a possible load or rider on its back (61). Fifty-three have perforated manes, five are perforated through the muzzle and six with


Figure 292. Baked clay zoomorphic figurines. PostAkkadian hollow bird-pipe 75; equids from FS 1361, Level 4 (reg. no. 1891) and FS 1267, Level $2 a$ (reg. no. 1724); bull figurine from FS 1184, Level 1 (TB 7075); equid from FS 1352, Level 3 (reg. no. 1910).
both mane and muzzle perforations (Fig. 310). Twelve figurines have a short diagonal perforation at the top of the rump where a tail would attach. The mane and rump perforations may have been used to fasten on tassels for greater realism. On forty examples male genitalia can be identified; five of these were strapped (p. 289, Fig. 311), three had a single circular impression on the rear (?anus ?female genitalia), but only one had clearly modelled female genitalia (reg. no. 2692, FS 532). Five equids have an area of incised 'fringe' on the front of the chest (cf. Orthmann et al. 1995, fig. 70:45). One of this fringed group is perforated vertically from the centre of the back, perhaps for suspension (reg. no. 3224, SS 532). The use of impressed circles across the shoulders and down the spine, as on 64, is found on only one additional fragment (reg. no. 5492, FS 847). (See p. 279 for further discussion of the equids.)

Sheep and goats (65-72, 47, 48, $51 \mathcal{E} 52$ ) (Figs. 290, $291 \& 293)$
The 37 baked clay sheep figurines comprise 17 rams with horns (including 67-71, Fig. 293), 1 ewe or lamb (72), 7 wheeled figurines ( 47,48 \& 51, Fig. 291; 52, and reg. nos. 4768 , SS $607 ; 4782$, FS $729 ; 5043$, FS 1804) and 12 headless figurines with incised decoration suggesting fleece. The latter are identified as sheep because intact figurines decorated in this manner are always sheep (68, Fig. 290; 69 \& 51). Eight of the ovis figures have male genitalia ( 4 of the horned rams and four of the headless fleecy figures). Eleven of the figurines have only the front of the body preserved.

The smaller number of goats compared with sheep may be due, in part, to the fact that headless goats are more difficult to recognize, since they lack the fleecy coats of the sheep figurines. Five goats


Figure 293. Akkadian ram figurine $\mathbf{7 0}$, ht 10.6 cm , length 16.2 cm .
have male genitalia, but another seven survive only as heads or front fragments of the body. In the case of sheep/goat figurines gender is indicated by the possession of horns just as effectively as modelled genitals. None of the figurines identified as sheep or goat has strapped genitalia, a feature apparently associated exclusively with the equid figures. There occur also theriomorphic vessels with ram/goat heads/spouts (Fig. 409).

## Pigs (74)

The hollow figurine 74 is the only definite pig (or possibly hedgehog) from third-millennium Brak. Two other possible examples are reg. no. 1039, SS 140 and reg. no. 5345, SS surface. In general figurines of pigs are less common in the third millennium than representations of other domesticates, a pattern found also at Selenkahiye, Chuera or Mozan where there are no published examples from third-millennium contexts. The few pig figurines that do occur are often hollow and well-made (cf. McAdam 1993, 86), a tradition which continues with the 'pig-pots' of the second millennium. The significance of this pattern of pig representation (rarer, but more carefully made) remains to be explained, although there are some indications that pigs had some ritual significance and McAdam has suggested that some of the hollow pig figurines may have been used as rattles in rituals $(1993,86)$.

## Bull (Fig. 292)

Only a single example of a bovid figurine has been found in third-millennium levels during the 1976-93 seasons (TB 7075). Why cattle figures should be so


Figure 294. Open-mouthed lion or dog figurine, ht 5 cm; SS 37, Level 1 (TB 5022).
rare in this period at Brak is another unanswered question, especially since the bull is so widely depicted in glyptic and other art in this period. In a study of some 60 zoomorphic figurines from Ur dating from the Uruk to Ur III periods a similar dearth of bull/cow figurines (only 1 or 2 possible) compared with sheep/goat (19 examples) was noted (McAdam 1993, 89).

Lion (or dog) (Fig. 294)
The open-mouthed animal figurine (TB 5022, Fig. 294) may be a lion (?lioness, it lacks a mane) or possibly a dog; bones of both species are present at Brak (p.348). The only other open-mouthed figurine is equid 62 (cf. also the lion-headed spout, vessel 388 ).

## Birds (75-7) (Figs. 290 \& 292)

There are seven baked clay bird figurines and two bird-headed spouts. Two of these may be musical instruments, discussed below. These include 75 and another hollow figurine with a solid head from SS Level 4. Two incomplete solid bird figurines with incised decoration are possibly prehistoric, since the fabric (brown/black, well levigated and burnished) differs from the buff, gritty fabric of the rest of the third millennium figurines (reg. no. 4398, FS 1676, Fig. 290 \& reg. no. 7436, SS 1101). Two solid bird heads came from the topsoil and surface of Area SS (reg. nos. 3299 \& 1258). The latter is a duck head with painted decoration and may be of second-millennium date. Bird 77 could be either a head from a hollow figurine or, more probably, a spout from a bird-shaped vessel. A duck-headed spout from ER level 4 has a perforation through the top of the head
and down through the neck, which joins another perforation at right angles running to the bill (reg. no. 331, ER 221). Bird figures with a solid body and pedestal like 76 are known in third-millennium levels at Chuera (Orthmann et al. 1995, fig. 70:49) and at Sclenkahiye where they are the most common type of zoomorphic figure (Leibowitz 1988, pl.29:1, 2).

## Unidentified figurines and fragments

The majority of these lack heads or legs. Forty-five have male genitalia, of which six are strapped, six have only a circular impression on the rear (?anus ?rulva) and one has two such circular impressions on the rear (female, reg. no. 4723, SS 362). Akkadian figurine 73 is only example decorated with zigzags, ladder patterns and dots. A headless and legless figurine covered in circular impressions came from SS 362 (reg. no. 4723). The fragments in Table 27 comprise 12 legs, 4 horns, 5 heads, 1 tail and 1 bridle fragment.

## Unbaked clay zoomorphic figurines

As well as the baked clay figurines listed in Table 27, there are an additional ten unbaked zoomorphic figurines: one equid, one sheep/ goat with male genitalia (both Akkadian), one leg (post-Akkadian), one horn (from topsoil), five unidentified torsos (two Akkadian, two post-Akkadian, one unstratified) and one bird with a solid pedestal and outstretched wings. The latter was found in a locus which also contained Uruk pottery and is therefore possibly of fourthmillennium date (reg. no. 1738, FS 1285).

## Wheeled figurines (Fig. 488)

The wheeled figurines listed in Table 27 include both solid and hollow examples. This table does not include those hollow, wheeled figurines with bodies formed from thrown pots ( $49,50 \&$ reg. no. 1746, FS 1154 ), which are more closely related to other theriomorphic vessels (Fig. 409). Where these can be assigned to a species, the wheeled figurines (both hollow and solid) tend to represent sheep ( $47,48,51$ \& 52, reg. nos. $4768,4782 \& 5043$ ) and come from both Akkadian and post-Akkadian levels. Both sheep and goats are found among the theriomorphic vessels. One of the unidentified wheeled figurines has a cavity in the neck indicating that either the now lost head was hollow or, conceivably, of composite construction (reg. no. 1200, FS 1019).

## Zoomorphic figurines: general comments

Among the figurines, equids seem to be over-represented and pigs and cattle under-represented com-
pared with their presence in the faunal record. It is possible that the large number of equid figurines is related to either the significance at the site of the model vehicles or of the equids themselves, or both. Twelve of the zoomorphic figures had been mended with bitumen in antiquity (four equids, two goats, one sheep and five unidentified). This indicates not only that their use-life must have extended over a period of time (i.e. long enough for them to have become broken), but also that there was some reason for not disposing of them when broken. The fact that the vast majority of animal figurines were baked also suggests that a long use-life was envisaged. Most are hard-fired and of a buff gritty fabric (sometimes with chaff), similar to wares 5 and $5 b$ of the pottery corpus.

## C. Musical instruments (Figs. 489 \& 490)

Two clay rattles have been recovered ( $95 \& 96$ ), one from an Akkadian and one from a post-Akkadian context, while a bird-shaped rattle was found by Mallowan in the Area ER sub-soil (1947, pl. 54:4). Two possible examples of so-called bird-pipes/flutes have also been found, one from an Akkadian context with a single hole in its back, just above the tail. The more common position is just below the tail; in both cases the lower lip rests against the side of the body. The illustrated example (75) is of particular interest; it has two holes, one in the back and one in the conventional position below the tail. The lack of a handle indicates that it is not a rattle but that the second hole may have been used to alter the tone. We are grateful to Graeme Lawson for confirming this possibility. As at Tell Chuera, where more of these instruments have been found (Pruß 1999), the Brak examples would appear to date to the Akkadian and post-Akkadian (Phase N) periods.

## D. Other clay objects (Figs. $490 \& 491$ )

Tokens, counters and gaming pieces (112, 130, 137, 138-43) (Tables 26 \& 31)
Several possible counting discs were found in Akkadian levels (132-6, Figs. 174-6, discussed p. 139). Object $\mathbf{1 3 8}$ may be a simple 'tally'; $\mathbf{1 4 2}$ and $\mathbf{1 4 3}$ are shaped like the sling bullets $\mathbf{1 1 4}$ and $\mathbf{1 2 0}$, while $\mathbf{1 4 3}$ also resembles the (somewhat smaller) sealed dockets found in SSTC Room 18 (p. 133). The miniature pot 139 was formed around the contained stone disc in such a way that the neck of the jar is too narrow for the counter to be removed (Fig. 177). Objects 137, 140 and 141 are all possible tokens. The disc 124 is
similar to 141 and may have been a larger counter (although it is also sufficiently large to have served as a lid). Some of the simple geometric shapes listed in Table 31 may derive from levels earlier than the third millennium in that such small objects can easily come from bricks or levelling fill. The smaller pot discs were probably used as counters (see below and Table 31).

Eight gaming pieces similar to $\mathbf{1 3 0}$ were found (Table 26) with either two, three or four projections on top or, in one case, a row of circular impressions (reg. no. 377, ER 103). The oddity with two impressed 'eyes' (112) may also be a gaming piece.

## Spindle whorls (85-91) (Table 28)

There were five broad types of spindle whorl: planoconvex (Type 1, 85), hemispherical (Type 2, 86 \& 87) conical, sometimes with a recessed base (Type 3, 88), domed with a pointed top (Type 2/3, 89), biconical (Type 4,90) and Type 5 in the shape of a thick disc (similar to 91). The hemispherical and conical are the more common shapes. The majority were undecorated. The only unpublished decorated example is a fragment from FS 804 (reg. no. 5172) which was decorated with both impressed dots (like 91) and slashes around the base (like 87). Of the seven unbaked clay spindle whorls listed in Table 28, 4 were Type 3 and one each were Types 2, 4 and 5. It is possible that some of the perforated pot discs may have functioned as spindle whorls.

Sling bullets (114-22) (Fig. 295 \& Table 29)
Nine types of sling bullet shape are found in the third-millennium levels. Type 1, a general ovoid shape (114), Type 2, oval with pointed ends (116), Type 3, spherical (115), Type 4, ovoid with triangular section (120), Type 5, rectangular with triangular section (121), Type 6, biconical (similar to Type 2 but shorter) (119), Type 7 a sausage shape (117), Type 8, as Type 4 but with a groove on each face (122) and Type 9, an egg or pear shape (118).

In general the counts for the clay sling bullets in Table 29 are serious underestimates, since only complete examples were counted. The substantial deposit in the ST wadi of Type 7 was not excavated and thus no count was made. Room 29 in SSTC produced an estimated 15,000 bullets of Types 1 (114) and 2 (116) before digging ceased, but the room may have held as many again. The well or cistern in CH Level 4 contained 7 zambils (baskets) of Types 4 (120) and 5 (121). Depending on size a zambil can hold from 220 to 300 bullets of Types 1 and 2. Since Types $4 / 5$ are twice the size of Types $1 / 2$, this gives an


Figure 295. A selection of third-millennium 'sling bullets'.

Table 28. Baked and unbaked clay spindle whorls by type and phase.

| Type | Fig. $\mathbf{4 9 0}$ <br> ill. nos. | $\mathbf{L}$ | $\mathbf{M}$ | $\mathbf{N}$ | unstrat. | Totals |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
|  | $\mathbf{8 5}$ |  | 1 | 3 | 1 | 5 |
| $\mathbf{1}$ | $\mathbf{8 6 , 8 7}$ | 1 | 20 | 9 | 8 | 38 |
| 2 | $\mathbf{8 9}$ | 1 | 4 | 4 | 3 | 12 |
| $2 / 3$ | $\mathbf{8 8}$ |  | 13 | 15 | 2 | 30 |
| 3 | $\mathbf{9 0}$ |  | 9 | 2 | 4 | 15 |
| 4 | $\mathbf{9 1}$ | 1 | 2 |  |  | 3 |
| 5 | 1 | 3 | 1 | 3 | 8 |  |
| no type |  | $\mathbf{4}$ | $\mathbf{5 2}$ | $\mathbf{3 4}$ | $\mathbf{2 1}$ | $\mathbf{1 1 1}$ |
| Totals |  |  |  |  |  |  |

Table 29. Unbaked clay sling bullets by type and phase.

| Types | Fig. 490 |  | Phase |  |  | unstrat. Totals |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | ill. nos. | . J | L | M | N |  |  |
| 1 | 114 |  | 4 | 8762 | 126 | 75 | 8967 |
| 2 | 116 |  | 1 | 9167 | 138 | 94 | 9400 |
| 3 | 115 |  |  | 81 | 33 | 1 | 115 |
| 4 | 120 |  | 10 | 502 | 133 | 19 | 664 |
| 5 | 121 |  |  | 356 |  |  | 356 |
| 6 | 119 |  | 1 | 29 | 128 | 9 | 167 |
| 7 | 117 | ST wadi |  | 1 | 1 | 3 | 5 |
| 8 | 122 |  |  | 1 |  |  | 1 |
| 9 | 118 |  |  | 35 | 6 | 2 | 43 |
| no type |  |  |  | 180 | 74 | 6 | 260 |
| Totals |  | hundreds | 16 | 19,114 | 639 | 209 | 19,978 |

estimated 100 per zambil of Types 4 and 5 , giving a conservative total of 700 for the CH deposit (in the table divided equally between Types 4 and 5 , see also p. 278). Thus the figures for Type 7 and for

Phance 11 Types 1, 2, 4 and 5 in particular are serious underestimates. Other loci with large numbers of sling bullets include the deliberate fill of the following rooms in the Area SS complex: Courtyard 8 (2000 bullets), Rooms 33-35 ( 332 bullets) and Room 16 ( 135 bullets). In post-Akkadian levels in Area FS, locus 447 produced 100 bullets and Room 1 in the level, 40. The fill of the lintel building in FS level 3 (Room 2) produced some 30 examples of the spherical Type 3 which varied in diameter from 3.5 to 13 cm . Other 'cannonball' Type 3 come from FS 1129 (d. $=10 \mathrm{~cm}$ ) and FS $1185(2$ with $\mathrm{d} .=8 \mathrm{~cm})$. While Types $1-3,6$ and 9 have excellent aerodynamic properties, it is less clear that Types $4,5,7$ and 8 would have made effective projectiles. One possible use for the Type 7 sausage shapes has been suggested by a find of similar-shaped objects in an Iron Age level at Lachish. They have been identified as possible kiln furniture, by analogy with medieval practice in Iran. Their postulated use would have included insertion into the wall of a kiln on which to hang small vessels during firing (Wright 1983). The Brak examples, however, are all unbaked and those from the ST pit were much to friable to have supported any weight. For a possible function of Type 5 (121), see pp. $24 \& 278$ below.

As well as the unbaked sling bullets documented in Table 29, there are 31 baked clay sling bullets: Type $1(n=8)$, Type $2(n=17)$, Type $3(n=3)$ and one each of Types 5 and 9 .

Jar stoppers and lids (123-6) (Fig. 296 \& Table 30)
Three broad types of jar stopper were found in both baked and unbaked clay. A mushroom shape (Type 1, 123), a flatter, lid-like shape (Type 2,125 ) and a conical variety (Type 3, 126). Of the Type 1 stoppers with a surviving diameter, 21 measured between 3 and 5 cm , the remaining 6 from 5.2 to 16 cm . Three of the Type 2 stoppers measured between 3 and 4.5 cm , 8 were between 5 and 10.5 cm . Seventeen of the Type 3 stoppers had diameters between 5 and 12 cm . Thus in general the Type 1 stoppers tended to be smaller than Types 2 or 3. The largest concentration of stop-

Table 30. Baked and unbaked clay jar stoppers by type and phase.

| Type | Fig. 490 <br> ill. no. | $\mathbf{L}$ | $\mathbf{y}$ | Phase | $\mathbf{N}$ | Unstrat. |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: | Totals



Figure 296. Selection of jar stoppers, catalogue detäls, p. 608.
pers came from a pit in SS level 2 (SS 92 \& 63; 8 of Type 1, 2 of Type 2). There are also baked clay discs (124) that may have served as lids (or possibly large counters), and sherd discs that may have been used for a similar purpose (see below). (For jar sealings, see Matthews 1997a, 178, 180; for pottery lids, cf. Figs. $410 \& 468$ ).

Pot discs and other modified sherds (104 \& 105) (Table 31)

Potsherds trimmed to discs may have served as lids or palettes. 21 of the discs listed in Table 31 are cutdown pot bases and would have been ideal for either of these uses. A number retained red pigment, indicating their use as palettes (including reg. no. 3879, SS 254). (A terracotta object from FS locus 1124 (reg. no 1596) is probably also a palette/mortar d. $=$ 7.4 ; $\mathrm{ht}=3.6$, shallow depression in upper surface.)

Table 31. Pot discs and baked and unbaked clay counters or tokens by type and phase.

| Phase <br> Type | J | K | L | M |  | nstr | Totals |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| sherd discs d. >4 |  |  | 3 | 52 | 17 | 15 | 87 |
| sherd discs d. <4 |  | 1 |  | 12 | 13 | 4 | 30 |
| sherd discs total |  | 1 | 3 | 64 | 30 | 19 | 117 |
| sherd square |  |  |  | 1 |  |  | 1 |
| disc |  |  |  | 14 | 4 | 3 | 21 |
| sphere |  |  | 1 | 7 | 5 | 3 | 16 |
| cone |  |  | 1 | 2 | 3 | 2 | 8 |
| hemisphere |  |  |  | 3 | 1 |  | 4 |
| other |  | 2 |  | 2 | 1 | 1 | 6 |
| counter total |  | 3 | 2 | 41 | 27 | 13 | 86 |

The counter total includes the smaller sherd discs.

Smaller sherd discs may have been counters. Of the pot discs with central perforations, four have diameters of less than 4 cm and nine have diameters greater than 4 cm . The smaller examples could have been counters threaded on a string or may have been used as spindle whorls. The larger perforated discs may have been weights. Other modified sherds include eight scraper/burnisher sherds on which broken edges have been worn smooth by use (including 105), several Stone Ware sherds that have been flaked in the same manner as flint (Fig. 186) and a lug that has been filed for use as a stopper (104).

## Rectangular objects (92-4)

An additional 16 objects similar to 92 and 93 may be model bricks. The only decorated example is postAkkadian (92). The smallest of the possible model bricks (TB 11079, $2.6 \times 2.6 \times 2.0$ ) came from the floor of SS Room 18 and could have been a cuboid gaming piece. The largest is from ER locus 202 (reg. no. 402; dimensions $10.5 \times 5.7 \times 3.0$ ). As well as the five examples found in a pit with 93 , a further two have similar proportions. A total of seven bricks resemble 92. Of the possible model bricks, eleven came from Akkadian levels, three were post-Akkadian and four unstratified. There are a further three slab-like objects like 94 which may have been palettes or rubbers for fine surfaces.

## Grooved rectangular objects (98, 107 \& 108)

There are eight objects similar to 107 and 108, of which only two are complete. Five are from Akkadian levels, two from post-Akkadian levels and one from the surface. Only one has grooves on different faces (reg. no. 4213, locus FS 1627), the others have a single groove. As well as the illustrated examples, three others have incised decoration; a row of dots (reg. no. 3082, SS 223), a ?še sign (reg. no. 3081, SS 223) and a sign similar to that on 108 (reg. no. 1264, surface). Similar objects in stone (p. 267) are often interpreted as bead polishers. The very smooth surfaces of these terracotta examples, however, would hardly have been sufficiently abrasive to polish beads or even wood. Lightly baked 98 is a superficially similar though less well-made object.

## Weights ( $97 \& 103$ )

97 has one end pinched and perforated and could have been used to weigh down a cord. Of the perforated spool-shaped cylinders of Type 103, twenty-seven have been found, two in Phase L, ten in Akkadian levels, seven in post-Akkadian levels and eight unstratified. They also occur in
fourth-millennium levels at the site where they have been identified as possible tokens and in phases G and H on the Amuq sites (Braidwood \& Braidwood $1960,244)$. We remain uncertain both of the function of the objects and whether the third-millennium examples are in situ.

## Spools and bobbins ( $\mathbf{1 0 9} \& \mathbf{1 1 0}$ )

A further four examples of spools similar to $\mathbf{1 1 0}$ have been found in Akkadian levels in Area FS. Object 109 is the only item of this shape so far found at the site.

## Unbaked clay supports (Fig. 56)

Two unbaked clay supports, each with three horns, were found with three braziers (vessel 1606) in a ritual closure deposit above the FS monumental complex (Fig. 56). Five unbaked clay horns that may have come from similar supports have also been recovered (three in Akkadian and two in postAkkadian levels). One of them displays the same finger smoothing as the complete examples (reg. no. 5948 , FS 2248). Two smaller cylindrical stands with a shallow depression in the upper surface may be domestic rather than ritual items (reg. no. 1367, FS 1090, ht 9 cm \& reg. no. 1179 , FS 1002, ht 8.7 cm ). (See also the unbaked clay dish with cylindrical stand, vessel 1617.)

Oddities ( $83,84,98,99,100,106,111 \& 113$ )
Phallic object 99 may be part of a figurine or pot. Although hollow it is not perforated and is thus not a spout. Mallowan found a hollow ithyphallic figurine in a grave at Germayir, which contained a bowl type that is also found in the Phase L destruction level at Brak (1937, 128, fig. 9:18; for the bowl 1936, fig. 9:12). There is also a solid terracotta phallic object from a post-Akkadian level (reg. no. 1800, locus FS 1194). Phallic spouts have been found on the surface (reg. no. 179, which incorporates two modelled hands) and in an Akkadian level (reg. no. 2217, locus FS 390).

113 is composed of two slabs joined at right angles. One of the sides is perforated diagonally, the other has at least one trian-


Figure 297. Akkadian terracotta rattle 95 , extant ht 5.5 cm .

## Chapter 10

Table 32. Additional baked and unbaked clay anthropomorphic figurines.

| Further examples of type 5 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TB no. | Reg. no. | Locus | Level | Phase | Ht; w.; th. | Comments |
| 5042 | 530 | CH 418 | 5 | M | 6.7; 3.5; 2.4 | Head \& arms lost, cylindrical body, splayed base. as previous <br> Head lost, arms outstretched \& incomplete, cylindrical body, flat base Unbaked, head and arms lost. <br> Two fragments of the same figurine, base \& torso fragments with possible arm stump. Schematic in the extreme. <br> Head and arms lost, base intact, schematic. |
|  | $2+12$ | FS 505 | 3 b | M | 6.3; 3.6; 2.8 |  |
|  | 5676 | FS 858 | 5 | M | 7.0; 4.2; 3.2 |  |
|  | 1129 | AL 1 |  | - | 5.9; 3.9; 2.3 |  |
|  | $446 / 7$ | SS 67 | 1 | N | 5.6; 3.9; 3.5 |  |
|  | 949 | ST 92 | 3 | M | 6.1; 3.5; 2.8 |  |
| Further examples of type 6 |  |  |  |  |  |  |
|  | 4762 | FS 1727 | 3 | M | 5.5; 3.12 .7 | Arms lost, circular impression in top of head, cylindrical body, base concave. Lightly baked. |
|  | 4784 | SS 607 | 1 | N | 4.5; 2.7; 2.1 | Headless torso, broken at waist. Two cylindrical impressions on chest to hold spear or similar object. |
| 12069 | 5281 | FS 1834 | 5 | M | 4.5; 2.7; 2.7 | Head intact but featureless (Fig. 289). |
|  | 5282 | FS 1834 | 5 | M | 4.0; 2.4; 2.4 | Head lost, arms reaching forward (Fig. 289). |
|  | 4596 | SS 825 | 4 | M | 2.8; 2.3; 2.3 | Featureless beak-like head, arms outstretched \& incomplete. |
|  | 6091 | SS 944 | 4 | M | 4.4; 2.2; 1.35 | Featureless beak-like head, base and arms lost. |
| Further examples of type 7 |  |  |  |  |  |  |
| $311+4$ | 348 | ER 217 | 4 | M | 7.0; 8.0 | Lower torso only, waist to mid-thigh. Legs apart and featureless, no indication of gender. |
| Further torso fragments, probably type 7 |  |  |  |  |  |  |
|  | 264 | CH 41 | 4 | M | 6.2; 4.6; 2.0 | Head \& arms lost, broken above waist, decorated with black stripes on front. |
|  | 4757 | SS 580 | 4 | M | 6.0; 4.0; 2.5 | Part of torso with arm stump. |

gular fenestration and possibly part of a second. It may be a corner fragment from a large terracotta stand with triangular and rectangular fenestrations. (The finished edge at $A^{\prime}$ on the illustration may be part of an incomplete rectangular fenestration rather than the edge of the object.)

The function of the perforated tube on the rim of bowl 144 (Fig. 491) can only be guessed at. It may be that it was a means of strengthening the rim at the point where the intention was to pierce it for suspension. Perhaps just thickening the vessel wall was thought to make exploding air pockets too likely, hence the tube which effectively gives the vessel a double wall at that point and spreads the load.

There are a number of objects of which the purpose is by no means clear. The triangular section objects 83 and 84 are particularly intriguing. Both are finger-pinched along the apex and decorated on the sloping sides ( 83 , zigzags; 84 , fingernail marks). 83 has three circular indentations along the apex (which do not pierce) in the manner of 143 and 84 has a single circular indentation on its broken surface (which again does not pierce). Whether these are related in any way to the triangular section objects $120 \& 121$ or to the sealed dockets found in the SS complex (p.133) is a question we cannot answer.

The precise use of stud 145 is also unclear. Nor
can we identify the reason for the small cup-like indentation at one end of $\mathbf{1 0 0}$. The unusual unbaked clay tube 111 contains a charcoal deposit, which is interesting since it indicates that the tube came into contact with burnt material but was not heated sufficiently to become baked. Object 106 is spoon-like, while 146, in a grey burnished fabric with impressed circles, resembles a stopper.

# Micromorphology of a Type 5 'Sling Bullet' (Fig. 490:121) 

Charly French

## Description

A single columnar piece of unknown identification about 10 cm in length and 3 cm in diameter was made into a thin section using the technique of Murphy (1986) and described using the terminology of Bullock et al. (1985).

The object was composed of one predominant fabric ( $1 ; c .80$ per cent) in a heterogeneous mixture with a subordinate fabric ( 2 ; c. 20 per cent). Fabric 1 is predominantly composed of micro-sparite and
micritic calcium carbonate with minor amounts of very fine to fine to medium quartz sand included. It also contains some very small fragments of bone and charcoal. The whole fabric fluoresces and is therefore strongly phosphatized. Fabric 2 is a clay loam which exhibits a striated to very weakly reticulate striated fine groundmass of oriented pure clay. This fabric is also stained brown with amorphous organic matter, and is found in irregular zones and partially intermixed with fabric 1 . One surface of the object is composed of small irregular aggregates of fabric 1 material in a $c .3-7 \mathrm{~mm}$ linear band.

## Interpretation

An easy or straightforward interpretation of this mystery object' is not possible, at least through thinsection analysis alone.

Both fabric types comprising this object are found locally at and around the site (Brak 2, chapter 1; Brak 1, chapter 11). The clay loam is a natural soil fabric occurring in the vicinity, and the calcareous sand fabric is found eroding off the mound today. But the object looks as if it has been made into a columnar shape by human hands. The highly phosphatic nature of the whole of the calcareous sand fabric suggests that it derives from something like a cess pit. The phosphatization of fabric 1 must have occurred before the making of the object as fabric 2 is not phosphatized. On balance, fabric 1 must derive from cess-type material, and have been chosen for some reason to be mixed with some natural soil material and made into this object. Unfortunately this does not solve the function of this 'mystery object'.

## Detailed thin-section description

Structure: apedal, massive; heterogeneous mixture of two fabrics; Porosity: $<15$ per cent irregular to subrounded vughs, $<2 \mathrm{~mm} ;<5$ per cent very fine channels, vertical to irregular, only defined in some zones of fabric $1,<250 \mu \mathrm{~m}$ wide, $<4 \mathrm{~mm}$ long; Components: fabric 1: $<1$ per cent medium and $<5$ per cent fine quartz sand, $100-250$ um, sub-rounded to sub-angular; $<2$ per cent very fine quartz sand, $50-100 \mu \mathrm{~m}$, sub-rounded to sub-angular; $<2$ per cent silt; $>88$ per cent micro-sparite to micritic calcium carbonate, $2-$ $50 \mu \mathrm{~m}$; yellowish brown (CPL/PPL), pale grey (RL), yellow (UV); c. 80 per cent of total groundmass; inclusions : very rare ( $<1$ per cent) fragments of bone, $<2 \mathrm{~mm}$; rare iron phosphatic aggregate, sub-rounded, $<500 \mu \mathrm{~m}$; whole groundmass weakly stained with amorphous sesquioxides; whole fabric strongly phosphatized; fabric 2: in irregular zones; whole fabric exhibits amorphous organic staining; 20 per cent fine and 10 per cent very fine quartz sand, $50-250$ um, sub-rounded to sub-angular; $<10$ per cent micrite; 30 per cent silt; 40 per cent clay, very pale yellow (CPL), moderate birefringence, striated to very weakly reticulate striated; yellowish grey (CPL), greyish brown (PPL), greyish white (RL); not phosphatized; c. 20 per cent of total groundmass.

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# Equid Figurines and 'Chariot’ Models 

## Joan Oates

The Area FS monumental complex has provided unique evidence for a public establishment in some way associated with the use and/or breeding of equids. Information from the inscribed bullae found here, which record the delivery of young hybrids (anše.BAR.AN = kúnga-'mules', p. 120), together with evidence for the deliberate deposition of complete donkey skeletons throughout the building, in what we have interpreted as its ritual closure (p. 389), and herbivore dung and stake holes in the central court-
yard (p. 357 \& Fig. 366), have led us to describe this complex as possibly an early kind of caravanserai or way station, a type of establishment for which there is cuneiform evidence elsewhere at this time (see Heimpel 1994). Cuneiform texts also record that both donkeys and the hybrids were used as draught animals in the late third millennium, while the documents from Ebla and Beydar tell us of the importance in northern Syria at this period of the kúnga-hybrid. From Ebla comes the additional information that


Figure 298. Four-wheeled Akkadian 'battle car' 12, undecorated.
such hybrids were expensive and that Brak-Nagar was an important source of this animal. Indeed a high proportion of the Ebla supply seems to have come from Nagar. It is the purpose of this section to look more closely, in this wider context, at the evidence of the equid figurines, the model wheeled vehicles, and their possible depiction on the sealings from Brak and Beydar.

## A. Terracotta model vehicles (Figs. 487 \& 488)

Both two- and four-wheeled vehicles are found throughout the third millennium: as funerary vehicles, a ritual usage up to now attested only in Early Dynastic southern Mesopotamia, for example in the Early Dynastic tombs at Ur and Kish (evidence summarized in Zarins 1986), as clay models found at all third-millennium sites, and as representations on cylinder seals. Brak has yielded an unusually large number of such clay models, a total up to now of 102 third-millennium vehicles. Our comments on these small objects will in general follow the classification established by Mary Littauer and Joost Crouwel (1979), to whom we are also grateful for comments on our possible 'straddle cars'. They distinguish three basic categories of wheeled vehicle: 1) the fourwheeled 'battle car', epitomised on the 'Standard of Ur', and two types of two-wheeler; 2) the 'platform car', essentially a two-wheeled version of the fourwheeled 'battle car'; and 3) the 'straddle car', on


Figure 299. Top view of Akkadian 'battle car' from Area CH, Level 3; front shield and rear of seat decorated as on 31. Note piercing of seat and rear step, and at corner of front shield (?spear-holder) (TB 3010).
which the rider sits or stands astride the body of the vehicle, a type best-illustrated by the copper model from Tell Agrab. A fourth type of vehicle is the fourwheeled tilt wagon, at least superficially comparable with the covered wagons of the American West.

Of the 102 model vehicles or their fragments found at Brak, 19 can be unequivocally identified as four-wheelers and another 22 are clearly two-wheelers. There are in addition four fragments of tilts, with no surviving lower bodywork. The remainder of the terracotta models are too fragmentary for certain identification as to type. A small selection of the Brak models is illustrated in Figures 298-303. The purpose of such models remains obscure, although in the cuneiform texts there is a strong emphasis on their ritual usage (Civil 1968). Certainly some of the more elaborate examples must have served a ritual purpose (for example, the 'cult wagons' of the Diyala: Delougaz 1952, pls. 82-3), an elaboration not as yet identified at Brak, but it would seem that a large proportion of the more ordinary models may have functioned as 'a bridge between the real chariot and the mythical one' (Civil 1968, 3), despite their often domestic contexts. Their presence in a child's grave at Tell Bi'a emphasizes the other end of the spectrum of possible function (Strommenger et al. 1987, 49), though here too their presence may in some sense have been ritual. The Lagash archives record food offerings to the sacred chariots or at the place of the chariots (ki-8is gigir: Civil 1968); such offerings continue under the Ur III and Isin kings, and it is clear that both royal chariots and those of the gods were elaborately decorated with precious stones and


Figure 300. Group of model vehicles: 28; 31; 'platform car', reg. no. 5437, FS Level 2, shown resting on front shield to illustrate decoration on back of seat; 14; 'battle car', reg. no. 5517, from topsoil in Area SS.
metals. An interesting text fragment, published by Molina, refers to large numbers of chariots deposited in an official 'household', perhaps but not necessarily a 'temple'. The inventory includes 'old' chariots belonging to both the king and queen, presumably actual vehicles, together with those which have been interpreted as 'votive models' owing to the large numbers enumerated (a total of 51, with 45 listed in one entry: Molina Martos 1992, 92; I am grateful to Walther Sallaberger for further comments on this text).

Seal impressions of the late Early Dynastic III and early Akkadian periods from both Brak and Beydar depict wheeled vehicles of various types in what seem to have been ritual contexts (discussed below, p. 289). In the north such ritual would appear to have been associated with the living in contrast with the funerary usage of wagons attested in southern Mesopotamia, although equids themselves have been found in northern burials ( $E$. asinus, Halawa A, grave H-70, late third millennium: Orthmann 1981). Of course, wheeled vehicles would obviously have been of more practical value in the northern landscape which lacks the endlessly criss-crossing canals of the south, but wagons are similarly used for ritual in both areas, as the appropriate means of transport for the ruler and for the gods, and may equally have been used for local agricultural transport in the south.

## 1. Four-wheeled version (Littauer and Crouwel 'battle car') (12-15)

The most common four-wheeled wagon consists of a rectangular body with a high front and handrail, low side screens and usually a box- or bench-like seat at the rear (Figs. 298-99). The floor projects to the rear forming a step or low platform on which, on the seal impressions at least, a second individual is
often shown standing, clutching the shoulder of the driver (Fig. 313:1-4). Model 12 (Fig. 487) provides a classic example of this type, while the more seat-like 'bench' of $\mathbf{1 5}$ is less common (see also the twowheeled version 32). On some models the seat is pierced for some form of peg attachment, presumably to secure a model driver (Figs. 299 \& 300, third from left); in Figure 299 the rear step is also pierced, possibly for the attachment of the standing 'companion'. According to Littauer \& Crouwel (1979, 32), the high screen at the front is not so much for protection in battle, despite the designation 'battle car', but is literally a 'dashboard' serving to shield the driver against flying stones and gravel flung up by the hooves of equid teams moving faster than the slower bovids first used as draught animals for such vehicles and widely attested in southern Mesopotamia. On the clay models this shield can be either round at the top with a central depression for the reins (43) or shaped like a 'fish-tail' (42); a variant model type is simply rounded at the top (12). Double apertures, near the top of the 'dashboard', are often illustrated, both on the models ( $19,20,42-5$ ) and on the sealings. 'Battle car' models are commonly decorated with incised patterns, both front and back, on the front shield most often depicting crossed battens, to which hide or other material, perhaps wicker, was attached (incomplete on models $14 \& 15$ ); a number of decorated models also display such battens on the back of the vehicle, that is, on the back of the seat (Fig. 300 , reg. no. 5437). Impressed circles are a common form of decoration on such models, as on Akkadian pottery (fragments 44 and Fig. 302, right); models of Early Dynastic date more often bear incised tree-like patterns (cf. Emberling et al. 1999, fig. 23:d). The latter and model 13, both of Early Dynastic attribu-
tion, have pierced extensions at both front and back more in the manner of the tilt wagons (below). For purposes of illustration on the sealings, the protective shield is often depicted next to the side of the wagon, that is, lacking perspective, with front and side shown side-by-side. On some of the seal impressions the 'fish-tail type' can appear as a pair of 'eves' (Brak seal, Figs. 313 \& 314).

Many depictions of 'battle cars', for example on the Stele of the Vultures, show a spear sheath or quiver attached to the front corner of the vehicle; on the Brak models these would appear to be represented by holes pierced in the corner of the protective shield (for example, Fig. 299; see also 27). The presumably wooden axles would have passed beneath the floor of the vehicle, ending in a linch pin used to secure the wheel. It is not possible to determine whether the axles of the vehicles themselves were fixed (probably the earlier but slower form) or revolved with the wheels. Certainly there is no evidence for an articulated, swivelling front axle on any of the actual 'battle cars', a lack which would have made them not only difficult but dangerous to turn.

All ancient traction was provided by pole-andyoke harness, paired animals being yoked together and attached to the vehicle by the pole. Representations show a single draught pole rising either straight from the floor of the vehicle to the yoke or abruptly from the front of the wagon to a level above the rumps of the draught animals and curving from there to the yoke. This 'high arching' version would have made steering easier. Both the illustrations and the texts suggest teams of four animals, two 'polers' and two 'outriders'. The animals applied traction by pushing against the harness, which then transmitted the pulling force to the vehicle by means of the pole (Littauer \& Crouwel 1979). In the early representations equids appear to have been controlled by single lines to nose rings, a more suitable method of harnessing bovids, the earliest of the Mesopotamian draught animals. Such reins are often shown passing through a double terret ring set on the pole. We have found no model yokes, but such objects are reported from Abu Salabikh (McAdam 1993, nos. $402 \& 403$ ); two animals are often attached to each other using neck straps under the yoke.

It is impossible to judge the intention or the accuracy of the modelling, but the perforation angles of the Brak models, if they have any validity, suggest that the four-wheeled wagons were for the most part drawn by means of oblique draught poles, yet the high-arching type is often shown on the seal impressions. Several Brak four-wheelers would ap-
pear to have been pierced for both types of pole (including Fig. 300: reg. no. 5517). The greatest number of both models and illustrations seem to represent four-wheelers, but in other cases it is not clear whether two or four wheels are intended (even on the well-known wagon illustrated on a scarlet ware jar from the Diyala, where both wheels are drawn at the front of the vehicle (Delougaz 1952, pl. 62). One of the oddities among the Brak wagon models is illustrated by 16 , which has a large wheel hub on one side of the body only. At least three examples of this type have been found, the unpublished examples being of Akkadian date. All are massive, and only lightly fired. We have no explanation for this strange design.

## 2. 'Platform cars'

As already remarked, these are simply two-wheeled versions of the four-wheeled 'battle car', with the axle under the front shield, low sides, a bench seat for the driver and the floor extended to the rear to provide a step-platform. Figures 301 (27) and 300, left (28) provide classic examples, the former decorated with a representation of the crossed battens also common on the 'battle cars'. A high arching draught pole is clearly indicated on at least one of the 'platform cars' (Fig. 300:reg. no. 5437). The presence of a pierced shaft at the upper right hand corner of the protective shield of 27 may have been intended to represent a sheath for carrying spears (see also the 'pierced charioteer' 11). At least 11 'platform car' models were found at Brak, of which over 70 per cent were post-Akkadian. Littauer \& Crouwel (1979) remark that this type is rare among both mod-

Figure 301.
'Platform car' 27, found in access shaft to burial vault within RDB (Fig. 81, p. 67); postAkkadian context.

els and seal depictions. Clearly they are not uncommon at Brak, and a possible reason for their alleged rarity may lie in their predominantly late third-millennium date (Phase N); certainly there are a number of examples from other sites, for example Tepe Gawra (Speiser 1935, pl. 34:c4), and they are the common early second-millennium form (Stone 1995).

## 3. 'Straddle cars'

The straddle car is another two-wheeled version which is the most efficient of the third-millennium vehicles, being the lightest and best-balanced, and therefore the most easily controlled; it is perhaps best-illustrated in the Ur stone plaque fragment, with its skin-draped, high cantle (Woolley 1934, pl. 181). In the case of the straddle car the driver sits or stands astride the body of the vehicle, directly above the axle which occupies a central position by contrast with the forward position of the wheels of the platform car. Aided by the presence of a high arching pole, the type of draught pole usually shown on such vehicles, the straddle car would have been ideal for fast couriers, and their occasional illustration accompanied by dogs suggests a possible hunting usage (Strommenger 1976, pl. 64, third row; Amiet 1961, 1215). Unfortunately all the possible straddle car models found so far at Brak are incomplete, often rendering the angle of the body of the vehicle difficult to determine. We believe, nonetheless, that at least eight can be identified as 'straddle cars', of which 29 is a good example (Fig. 302, left). One unpublished Brak model closely resembles in shape a 'straddle car' from Halawa A (TB 14068 from FS 2337: cf. Meyer 1989, fig. 12:7); 30, 31 and 33 probably also belong in this group, though the occasional presence of what seems to be a rear 'step' is puzzling (see also Mallowan 1947, pl. 54:16, also from Area SS). Equally puzzling is 34, of similar shape and lacking the rear step but with the axle at the front. It would seem either that the types of two-wheeled vehicle were much more varied than has previously been assumed, or that exact modelling was unimportant. The fast-moving two-wheelers with their central axles are a possible prototype of the true chariot, with its even more manoeuvrable rear wheels. Indeed on one Brak example from an Akkadian level in Area CH (reg. no. 141) the two wheels are actually situated at the rear of the car (cf. also Speiser 1935, pl. 78.2).

## 4. Wagons with tilts: 'covered wagons'

Wagons with tilts, possibly removable, constitute a second four-wheeled type. The earliest examples at


Figure 302. Left to right: Akkadian 'straddle car' 29; 'platform car' TB 7073 from Area DS; and fragment, seat (?) of a model wagon decorated with small, overlapping impressed circles (reg. no. 1796). A further fragment of a similarly decorated protective shield (44) was found with it.


Figure 303. Akkadian tilt wagon 25 from Area ST.
Brak come from Area TW and can be dated early in the third millennium (21, 22, Phase J/K); Figure 303 (25) is Akkadian, while 26 comes from a deliberate deposit in the SS monumental building, some 6 m directly south of the Courtyard 8 limestone dais (together with a number of conical cups). Two further fragments of what were possibly decorated tilts were also recovered. Not enough is preserved of 18, 23, and $\mathbf{2 4}$, from post-Akkadian contexts, to identify them as covered wagons, but the decoration on 23 is suggestive of the common 'wickerwork' tilt. A number of the tilt wagons lack any indication of the method


Figure 304. Wheel 39 showing tripartite plank and clamp construction, and wheel 35 with possible indication of tyre; both are Akkadian in date.


Figure 305. Model whels from Area HH and Area FS, Leicl 1 (TB 7072 \& TB 7071).
of attachment of the draught pole (for example, Fig. 303). On many examples there are three pierced projections at the front, sometimes combined with the front axle housing as on 23 but probably more correctly represented on 24 , where these forward projections clearly have a distinctly separate function. An example from Tepe Gawra (Speiser 1935, pl. 35:a2) has two such pierced projections on the edge of the tilt and clearly distinct from the axle.

The general lack of ancient illustration of such wagons, in contrast with those shown in Figure 313, may reflect no more than their use for more domestic in contrast with ritual transport (as in the amusing graffito from Raqqa, illustrated by Strommenger $1990, \mathrm{pl} .102$ ). The presence of a seal impression on 17 is unusual, however, and may suggest some more esoteric function, as does the presence of possible tilt wagons on a number of the Beydar sealings which
appear to portray ritual scenes (Fig. 313:7, 8, $10 \& 11$, and see commentary in Jans \& Bretschneider 1998). The sealed wagon fragment from Brak was a surface find, but the style of the sealing suggests an Early Dynastic date. A moulded or possibly 'sealed' faience wagon has been recovered at Tell Bi'a in a child's grave (Strommenger et al. 1987, fig. 28).

## 5. Terracotta wheels (Fig. 488)

278 terracotta model wheels were recovered from third-millennium contexts at Brak, with an additional seven unbaked examples. Unfortunately none was recovered in association with a vehicle. Only hubbed wheels were counted, to eliminate any possible confusion with spindle whorls. Hub shapes vary from tapered to rounded to spool-like with raised edges. No examples have as yet been found in northern Mesopotamia of the type of chariot burial known at sites like Kish (Moorey 1978), and therefore no fullsize wheels. But the model wheels from Brak suggest their manufacture in similar fashion to the 'tripartite' plank wheel known in the Early Dynastic south ( $\mathbf{3 6} \& 39$; for comparison, see also the wheeled vehicles on the Ur 'Standard'). Such wagon wheels were made of three planks (36, and see below), the central planks being either lentoid or straight. Tyres are sometimes indicated, occasionally with 'hobnails', the latter as yet not identified among the Brak examples. Such tyres would have served to protect the wheel as well as hold it together. Tripartite wheels can be secured by dowels within the wheel or by external clamps, as suggested by Brak 39 (Fig. 304).

Most of the Brak wheels are plain (Fig. 305) indeed only 21 of the 278 model wheels show any indication of manufacturing detail, but this is likely to represent deliberate omission of detail since single plank wheels are technologically unlikely. Tyres are widely attested on the actual wheels that have been recovered from burials, but are rarely indicated on the Brak models (exceptions are 41, 35 Fig. 304, and possibly 37 , though the latter may be no more than a badly drawn tripartite example). The significance of the markings on 40 remains unclear, while the perforations on 38 suggest a deliberate effort to lighten the wheel. It is possible that 37 represents the cross-bar wheel, considered to have been a precursor of the spoked wheel, which appears in the late third millennium and at Kültepe early in the second millennium (Littauer \& Crouwel 1977, 99-100 \& fig. 24). It is also tempting to see 41 as a very early spoked wheel; it comes from a Level 1 (post-Akkadian, approximately 'Ur III') context in Area FS. Mul-
tiple-spoked chariot wheels are widely attested early in the second millennium (for example on seal impressions from Mesopotamia and Anatolia, inter alia: Collon 1987, 160; and in the Andronovo warrior burials: Kuzmina 1994, 434, fig. 434). Similarly 'spoked' wheels have been found at Tell Bi'a in faience, together with an example indicating the more usual plank construction (Strommenger 1990, 100). Only one model wheel found up to now at Brak is made of faience (240); it suggests, however, the presence also of wagons of this material (as in the faience tilt wagons from the child's grave at Tell Bi'a referred to above). Two unpublished wheels from Brak were painted with concentric rings which seem to represent a tripartite wheel with tyre, in one case, unfortunately, a surface find and therefore undatable. The second came from the uppermost level in Area ER (ER 10, reg. no. 171). The plain wheels vary considerably in size ( 10.2 to 2.8 in diameter), profile and hub shape (Fig. 306).

## B. 'Charioteers' (Fig. 486:10 \& 11)

One of the most interesting human figurines found at Brak is the driver illustrated in Figure 307. He is shown with some form of garment thrown over one shoulder, but otherwise naked, the genitals emphasized. The base of the figurine is deliberately shaped to fit over a rounded wagon or car seat. A very similar figurine was found at Tell Taya (Reade 1971, fig. 25f). Some chariot models have pierced bench seats, probably to allow the attachment of such a driver figure with a (?wooden) peg (see Fig. 299).

Human figurines $\mathbf{1 0}$ and $\mathbf{1 1}$ would appear also to be model drivers; $\mathbf{1 0}$ wears a necklace and some form of belt, while 11 is pierced as though he were carrying a spear in his left hand. The base is rounded as in the Figure 307 example.

## C. Wheeled animals (Fig. 488:46-52)

A small number of such wheeled objects, both hollow and solid, have been found; they come from both Akkadian and post-Akkadian levels. Where the animals can be identified, they appear generally to be woolly sheep, both ewes and rams ( $47,48,51 \&$ 52); these can be either solid or hollow. The hollow


Figure 306. Graph illustrating variation in model wheel diameters.


Figure 307. Seated terracotta 'charioteer', ht 9.4 cm. TB 5021, from FS 211, a soak-away dug from FS Level $2 a$.
fragments with large rounded bodies are more likely to have represented bovids, or even pigs/hedgehoge as in the second millennium (Rimah pl. 20:d; Brak 1:601; Starr 1939, pls. 104-6). Fragment 46 seems more likely to have been part of a wheeled animal than a vehicle. An additional eight fragments of wheeled animals were found (see also p. 274; for further discussion of this type see Cholidis 1989).

## D. Equid figurines (Fig. 489:53-64)

The third-millennium вс cuneiform terminology for the various equids, both wild and domesticated, is now reasonably well-established (Postgate 1986; Zarins 1986). At third-millennium Brak we are concerned largely with three types: 1) the ass or donkey (Equus asinus), at Beydar and Ebla anše.igi (=anie.libir), often simply anše, widely used as a generic term for 'donkey' or, more generally, simply 'equid'; 2) E. hemionus/onager, the 'ass of the desert', anše.eden.na; and 3 ) and of especial importance at Brak, anše.BAR.AN, the kúnga-equid or mule-like hybrid. Theoretically there is also the possibility of domesticated horse ( $E$. caballus), identified at this time among the fauna at Tell Leilan (Zeder 1995, 29), anše.zi.zi in the Ur III texts, later anše.kur.ra, 'the ass of the mountains' (Akkadian sist̂).

The Persian onager - the wild 'stilt-legged equid of the Asian deserts' - is an animal of the flat plains, noted both for speed and stamina, up to 70 $\mathrm{km} / \mathrm{h}$ with remarkable staying power, but it is of wild temperament and generally untameable (Groves 1986). Indeed no onagers are specifically mentioned in any cuneiform text as engaged in any type of 'domesticated' labour (Zarins 1986, 188). The socalled Syrian onager, E. hemionus hemippus, is a smaller animal, at least at the present day; according to Uerpmann $(1986,250)$, the 'earliest possible identification of that animal' is in the hunting scenes on the Assyrian reliefs, where a similar small equid is illustrated. Hemiones reported in the Syrian Jazirah in recent times would appear to be of this smaller hemippus type (inter alia, Layard 1853, 270 and Hilzheimer 1941, both of whom report such animals along the Khabur). Among the archaeological sites in the Jazira, the most important evidence comes from seventh-millennium вс Umm Dabaghiyah where 79.6 per cent of the total bones are of a mid-dle-sized hemione which falls within the size range of the Persian onager (Bökönyi 1986, 315) but is more likely to represent a larger ancestor of hemippus (Hans-Peter Oerpmann pers. comm.). Certainly the onager available to the inhabitants of Brak-Nagar
not only in the third but also in the fourth millennium was a larger animal than the modern hemippus (Weber, in Brak 3, forthcoming).

The Syrian onager occupies a steppic habitat and has been identified in the Khabur area at least as early as the seventh millennium вС (Kashkashok II: see Zeder 1995). Here it was presumably hunted for meat and hides as at Umm Dabaghiyah. Of particular interest at the latter site are wall paintings which possibly depict the hunting of onagers by the use of nets, a practice certainly known in later periods and even as late as the nineteenth century. Evidence for this practice in the third millennium comes from an Old Akkadian text from Umma describing the manufacture of netting or ropes for the capture of hemiones (Foster 1979), while a slightly later hymn commemorates Šulgi, the famous Ur III king, with the following boasts: 'Like a wild ass I will throw him fiercely into a prepared trap and net' (Šulgi D, 1. 169: Klein 1981). See also Civil's translation in Zarins $(1986,188)$ :

> For the hemione I do not lay out a net, I do not dig a trap, I do not shoot any arrow. Like a worthy rival I chase him until his legs give out. Its young I place with the domestic ass.

Our interest in the onager lies in the fact that BrakNagar was noted for its equid hybrids, now believed by most authorities to have been the onager $x$ donkey cross. Unlike the wild onager, the hybrid could be tamed and was both far stronger and more attractive than the donkey, at that time the predominant beast of burden in the Khabur as elsewhere in the Near East. According to third-millennium texts these hybrids were the preferred animals for the pulling of wheeled vehicles, especially the four-wheeled 'battle wagon' widely illustrated in the south and on the sealings from both Brak and Beydar (section E, below). Brak's paramount position in the breeding of the BAR.AN or kúnga-equids is clearly revealed in the texts from Ebla (Archi 1998), with constant requests for these animals which cost up to 40 times the price of a donkey. Their upkeep, as recorded in the Beydar ration lists, was also more expensive than that attested for equids in the Mesopotamian south (Sallaberger 1996a, 11). Ebla's supply seems to have come almost exclusively from Nagar.

The problem at Brak has been to find physical evidence of these famous kúnga-mules. Despite the cuneiform information that these animals were bred at Brak, or at least in its hinterland, as yet no unequivocal skeletal evidence has been recovered, even in the Area FS 'equid building' (p. 345), and we are left searching among the animal figurines and the


Figure 308. Heads of Akkadian equid figurines with decorated headstalls (53 E 54).
seal impressions for actual hints of their presence. During the first 14 seasons of excavation, 191 equid figurines were identified from third-millennium contexts, a minimum of some 37 per cent of the total number of animal figurines ( $n=517$ ), further indication of the importance of equids at the site. Yet it remains difficult to identify the hybrids, at least with any certainty, among either the figurines or the seal images. One obvious difficulty is our ignorance of the purpose of the figurines, and whether there was any need or intention to create accurate representations. Nor are we entirely certain of the physical appearance of the third-millennium hybrid (modern illustrations can be found in Clutton-Brock 1992). $E$. caballus, however, has shorter ears than the ass or onager and a mane which lies flat, while both donkeys and hemiones possess upright manes, as does the Przewalski horse. Horse tails are full and long by contrast with those of donkey and onager which end in a 'tasseled' tuft (as on the rampant animal before the god on the Scribe's Seal: Fig. 171).

Following these criteria, many of the third-mil-


Figure 309. Three equid figurines from the 1980 season, including a Phase L example with decorated harness, frontal 'fringe' and pierced, standing mane (TB 4048). The small, donkey-like example has strapped genitals (TB 4049 and 4048, ST 9, 'sump'; TB 4050, CH 416, Level 5).
lennium figurines from Brak depict long-necked equids which to our eye seem more caballine than ass-like. These often bear appliqué elements of sometimes decorated harness, including both headstalls and nosebands (Fig. 308 and 53-5). Since horses are only rarely attested in northern Mesopotamia and Syria before the second millennium when they replace the hybrids as the preferred animal for pulling wheeled vehicles, especially the true chariot, it is possible - even probable - that at least some of these harnessed third-millennium figurines represent the famous hybrid. It is perhaps significant in this respect that the harness depicted on early sec-ond-millennium horses seems to consist solely of a nose-ring and reins (Littauer \& Crouwel 1979; Oates forthcoming). At least four of the Brak figurines would appear to have carefully-indicated, flat manes (for example, 55; see also the possible horse figurine from Taya: Reade 1971, pl. 25e; and from Tell Mozan: Buccellati \& Kelly-Buccellati 1988, pl. 1). Upright manes are more common, however, often formed as a pinched ridge, sometimes with incised stripes as


Figure 310. Equid figurines with pierced manes and muzzles (reg. no. 1395, from FS 1114, Level 3 Akkadian; on right, TB 6184, post-Akkadian from FS 1037).
on the Ur Standard, and often pierced, perhaps for the attachment of some type of artificial mane (at least 25 per cent of the equid figurines; see Fig. 310). It is even possible that the animals represented were largely donkeys, which we know to have been similarly harnessed (see again the Ur Standard) and which are the only equid identified up to now among the ritual deposits in the FS monumental complex (pp. 329 ff .). More convincing as donkeys are the shorternecked, long-eared figurines, for example 59, 61, 62 and the lower equid in Figure 309.

Although the hybrid seems the more likely intention for the long-necked-harnessed specimens, it is not implausible that horses should be found at Brak given their faunal identification at Tell Leilan and references to these animals in Ur III texts (see, most recently, Owen 1991; also Oates forthcoming). But claims made on the basis of figurines generally lack conviction. A further type of evidence at Brak lies in the representation of the hind leg of an equid, probably a donkey, on a 'Ninevite 5 ' painted sherd (Fig. 205d). The carefully drawn hoof and the feathering of the fetlock are very caballine, yet both the leg and the tail seem too short for a horse. The sherd itself was found in CH Level 7, but probably derives
from an earlier context; it is possibly an import ( p . 200) and must date to sometime well before 2400 вс.

We are very grateful to Mary Littauer for a number of helpful comments on both the harness and the equids represented at Brak. She has seen drawings and photographs of a small selection of these and remarks, inter alia, on the very caballine nature of some of them. The figurines with the most elaborate harness would seem for the most part to be of Akkadian date, but we have relatively few Phase L examples, almost certainly owing to the relatively small area of excavation up to now of the latest 'Early Dynastic' phase. One from the 'sump' in Area ST, of almost certain late ED date (Fig. 309), has a decorated, appliqué headstall, together with a standing pierced mane and a decorative fringe incised on the front of the body (see also a similar figurine from Chuera: Orthmann \& Pruß 1995, fig. 70:45). At Brak a further four of the 'harnessed' figurines, of Akkadian and later date, also wear long fringes, incised below the head. Similar decorative fringes are often illustrated on the sealings, possibly in association with the hybrids (below, and Fig. 313:1,2,6).

The appliqué elements of harness representation are of interest, and again we owe the following details to Mary Littauer. On some of the nosebands an 'unusual broad strap drops from the noseband over the nose to the mandible, almost like a muzzle' designed to stop the animal biting (for example 54 \& 55). Remnants of straps on the lower neck ( $53 \& 63$ ) are thought to represent 'straps that held a yoke on'. She also suggests that the holes in the muzzle, a very common feature (Fig. 310; 54, 58, 63, etc.), 'must have been for a cord (?) bit'. A further variation in the decoration of the figurines can be seen on 64 , where the elaborate impressed ornament may possibly represent not only the bridle but the reins running along the back; this relatively uncommon type is found in both Akkadian and post-Akkadian contexts.

One of the most unusual features of a small number of equid figurines is the strapping of the genitals to prevent mating (Fig. 311, and see also Fig. 290, lower right). Since the male onager $x$ female donkey hybrid is said to have been bad-tempered (Gray 1972), and the preferred cross in the third millennium would appear to have been the male donkey $x$ female onager, these strapped equids may possibly have been intended to represent onagers, the mating of which would in any case have been difficult to control. As far as we can judge, none are shown wearing harness with the single exception of one with a 'collar' around its neck quite unlike the normal harness (reg. no. 5091, FS 1818, found just


Figure 311. Equid figurine with strapped genitalia (56).
north of the 'equid courtyard' in the Level 5 complex). The small donkey-like figurine (Fig. 309) was similarly strapped, though this too could have been intended as a hemione (a very similar equid from Mozan is identified as a 'horse', National Geographic October 1998).

Also unusual is 61 , the only Brak figurine which shows any sign of the presence of a rider or perhaps some other form of load. This seems to have been a more common feature at Selenkahiye, where several examples of equid-with-rider figurines have been found, none of which antedate the 'Ur III levels' but which are apparently of Ur III date (Liebowitz 1988; donkeys qualified as $u_{5^{\prime}}$ 'to ride', are also noted in the Ebla texts by Archi $(1998,12)$ ). At least some of the Selenkahiye animals are long-eared with erect manes; the riders sit side-saddle, a common Near Eastern practice in riding a donkey at the present day. Load-bearing donkeys appear to be attested much earlier in Palestine (Epstein 1985), while at Brak the bones of the Akkadian donkeys show evidence of load-bearing and the teeth demonstrate both bit-wear and the practice of crib-biting, the result of confinement within a limited space (p. 336). Although there is no firm evidence at any site for the riding of horses at this time, it must be admitted that difficulties in the identification of depictions of the equids themselves makes any such identification virtually impossible. David Owen has published an Ur III seal impression with the suggestion that it represents the earliest horse-rider (Owen 1991, fig. 4), but even this example cannot be identified with absolute certainty. Although the domestic horse is attested in Mesopotamia by the end of the third millennium, it is unlikely that it was widely ridden, its primary function


Figure 312. Equid figurine (60) with short ears (= horse), standing mane (= donkey or hybrid), short neck (= donkey), long tail and elongated head (= hybrid or horse), illustrating the difficulty of identifying such figurines as to equid type.
at this time having been as a pack animal and ultimately for the drawing of the lighter vehicles which now begin to appear. The often quoted Old Babylonian letter clearly reveals the contemporary preference for the donkey as the appropriate animal to ride and the low 'social' status of the horse at that time in Babylonian eyes (Oates 1986, 65; recent translation by Sasson in Owen 1991, 267, n. 12). Nonetheless, evidence for the existence of rapid horse transport exists by the eighteenth century $B C$ (see OBTR, letter 85 , which suggests the existence already of a prototype 'pony express'), and horses are increasingly in demand as draught for 'chariots', especially in royal and/or ritual contexts (Oates forthcoming).

To return to Brak - although an unusual number of equid figurines has been found at the site, their evidence leaves us little wiser about the contemporary distribution there of equid types, and especially the elusive hybrid. Also odd is the relative absence of donkey bones other than in the ritual deposits (p. 345). It is likely that the slower tilt wagons may have been drawn by bovids, but bovids are rare among the Brak figurines as are cattle among the domesticated fauna, again suggesting the greater social and possibly ritual significance of the equids.

## E. The evidence of the sealings (Fig. 313)

A dozen sealings from Beydar and Brak depict scenes involving four-wheeled wagons either drawn by equids and associated with some form of conflict, or lacking draught animals but part of obviously cultic


1


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scenes, or both. The four from Brak come from the SS monumental complex or from a large rubbish pit into which material from the monumental complex was discarded (SS 2: Fig. 13). These sealings (Fig. $313: 1-4$ ) are in the so-called 'Brak style', as is no. 7 from the 'Palace' at Beydar, with its distinctive, single detached heads. Figure 313:5 is a very fragmentary impression from a jar sealing that closely resembles Brak no. 4, although the pattern is in reverse. Figure 313:1-5, 7, 9, illustrates wagons of the standard 'battle car' type with central depressions for the reins and apertures in the dashboard, on which both the 'fishtail' (4) and 'eye-like' (3) patterns appear, as on the model wagons.

The unusual group of sealings from Beydar illustrate what appear to be ritual processions involving rather different types of wagon; 'ritual combat' is also depicted. Sealing 8 combines a ritual drinking scene and (?tilt) wagon with a combat scene in the lower register. The processions with waving figures ( $6,7,9-11$ ) are reminiscent of seals from Brak (Fig. 145), Amiet's Rituel de Haute Syrie, a type not so far recovered from the Brak monumental complexes. By far the most unusual is no. 6 , found on door sealings and therefore the property of an official functioning at Beydar and, presumably, an official also of the kingdom of Nagar. The significance of the unique procession with its strange carts remains unclear, though again it appears to combine combat and cult. The wagon and wheeled tower on 11 are also unusual. Indeed it will be interesting to see whether this

Figure 313. (On left.) 'Chariot' sealings from Brak and Beydar: 1) Battle car drawn by long-eared equid with elaborate frontal fringe; reg. no. 7548, from Area SS 2 rubbish pit, DM 200; 2) Battle car drawn by long-eared equid; TB 13010; SS 1070, Room 23, upper fill, DM 202; 3) SS Room 18 triangular-section docket (see Fig. 314); DM 201; 4) Battle car with 'fishtail' shield, longeared equid with frontal fringe; TB 13010, Area SS 2 rubbish pit, DM 203; 5) Beydar sealing with pattern resembling Brak 4 (Teissier 1997, no. 8); 6) Beydar door sealing, ritual scene with unusual wheeled vehicles (Teissier 1997, no. 6; Jans \& Bretschneider 1998, Bey. 1); 7) Beydar sealing, 'Brak style' (Bretschneider \& Jans 1997, fig. 9); 8) Beydar sealing, 'single banquet' and covered wagon (Teissier 1997, no. 7; Jans \& Bretschneider 1998, Bey. 2); 9) Beydar sealing, 'battle car' drawn by equid, waving figures (Jans \& Bretschneider 1998, 180, Bey. 8); 10) Beydar sealing with unusual wagons (Jans \& Bretschneider 1998, Bey. 4, 179); 11) Beydar sealing with unusual (?tilt) wagon and wheeled tower (Jans \& Bretschneider 1998, Bey. 7).
remarkable group of sealings is in any way paralleled in the Late ED building now under excavation at Brak in Area TC (Emberling et al. 1999). Certainly the Phase L sealings from Area CH are largely of a very different (southern) style (Fig. 158). Another ritual procession from Beydar depicts wagons with crossed battens (?on high sides) but without the other features generally associated with the 'battle cars' (sealing 10). It is possible that the wagons with curved superstructures represent tilts composed of matting or wickerwork on rigid hoops.

The Beydar texts, discussed below, tell of the en of Nagar visiting Beydar with large numbers of equids and, one assumes, a retinue of 'chariots'. The reasons for these visits include religious festivals (text 101) and participation in the assembly (text 106). It is tempting to see in the Beydar sealings illustrated here some representation of one or more of these cultic occasions, but this is pure speculation. Walther Sallaberger (1998c) also suggests that the


Figure 314. Sealed bulla from Area SS, Room 18, Brak pattern 3, Fig. 313.
prevalence of wagons on the Beydar sealings reflects the importance of the local official(s) who dealt with the business of the way station (see below). It is tempting to identify the equids on these sealings with the famous hybrids, known for their importance in 'drawing the chariots of the nobility and the gods' (Heimpel 1994, 10-11), though the animal on sealing 7 has a more ass-like bearing, and the dropped croup and bent hind legs, especially on nos. 1 and 2 with their decorated fringes, are far more caballine.

## F. Epigraphic evidence

As already emphasized, the texts from Ebla and Beydar provide important evidence concerning not only the equids of Nagar but also the wider use of equids in the Khabur, or at least within the kingdom of Nagar. The Beydar documents deal specifically with the distribution of grain as fodder for animals, especially donkeys and oxen, though relatively few of the latter are enumerated. There is no mention of horse in the texts. A number of texts refer to 'equids' of the en (the ruler of Nagar), unfortunately using the very general term anse which leaves us uncertain which specific animal is intended. These texts record issues of grain (fodder) to the equids of the en, often in substantial quantities. Indeed Sallaberger remarks on the constant drain on the local economy of such 'state visits'. The single issue of 2700 sila of grain ( 1 sila $=c .1$ litre) for 19 teams of the en's donkeys over only 3 or 4 days (text 101) was the equivalent of a month's grain ration for 45 men or 90 women (Sallaberger 1996a, table 5; 1996a, 11). On three visits totalling only 9 or 10 days, fodder was issued for 45 teams, i.e. 180 of the en's equids, totalling some 5940 sila (texts $89,101 \& 109$ ). Although in the Ur III period the road system was a royal obligation, it would appear that the earlier 'way station' at Beydar was a local responsibility and that local officials were obliged not only to feed the ruler of Nagar and his servants but also the large number of equid teams with which he travelled. One tablet differentiates 'fodder for donkeys for expeditions' (še ku iš kaskal), presumably 'pack-asses', and 'for wagons' ( ${ }^{81 \mathrm{sig}} \mathrm{gigir}_{2}$ ).

The Beydar texts also specifically document anše BAR.AN, the kúnga-hybrid for which the kingdom of Nagar is noted. They possibly demonstrate that onager were kept for breeding purposes, enumerating 'persons in charge of' such onagers (šu anše.edin: Ismail et al. 1996, text 57), a feature also of Ur III texts although, as Sallaberger points out to me, it is not made clear whether these are live animals. Both male
and female hybrids are recorded, but like mules, these were sterile. Beydar text 26 refers to an amar BAR.AN, however, which van Lerberghe (1996b, 113) translates 'foal of a BAR.AN equid', citing zoological authority that it is not unknown for mules to produce foals in the first generation. A similar comment with respect to the female hybrid is also made by Juliet Clutton-Brock (1992, 42). Sallaberger suggests, however, that since amar in Sumerian is normally qualified by the type of animal and not its parents, amar BAR.AN could be translated as 'foal of the kúnga-type', that is, simply a 'young hybrid'. Although third-millennium texts make it clear that in general the hybrids were the preferred draught animals for wheeled transport, in southern Mesopotamia the hybrids were also used for ploughing, especially the female (Maekawa 1991, 209). These animals seem also to have been (?deliberately) blinded, presumably to make control easier.

The Ebla texts are the most informative about both the status of Nagar and of the hybrids. To Nagar were sent not only those people charged with buying the famous mules, but also the (Ebla) king's 'superintendents of the charioteers' and those responsible for the raising of the equids (Archi 1998, 10). Another text records an official travelling to Nagar to buy 'he-asses', possibly for breeding purposes, suggesting again the preference for the male ass x female onager cross.

Perhaps the most interesting feature of the BAR.AN texts from Ebla is the evidence they provide for the extraordinarily high prices paid for hybrids from Nagar, commonly as much as 5 minas $(2.35 \mathrm{~kg})$ of silver for a single animal ( $1 \mathrm{mina}=60$ shekels $=0.47 \mathrm{~kg}$ of silver). Equally striking is the contrast with the cost of other animals. Oxen at Ebla, for example, range from 2.4 shekels up to, in one instance only, 1 mina (Archi 1984, 56). Moreover, provision for the messenger sent to Nagar to procure the equids was only 5 shekels (Ebla text TM.75.G.2428: ' 10 minas of silver, price of 2 mules, EN'a-damu has delivered to Nagar; 5 shekels of silver is the provision for his journey': Archi 1998, 9), while in the south the price of a donkey ranged from 4 to 7 shekels (Zarins 1986, 185; Heimpel 1987-90, 604). It is not entirely clear why the Nagar mules should have commanded such high prices, but one must suppose that suitable onagers were either rare or unobtainable west of the Euphrates. Only some such advantage can explain Ebla's persistence in obtaining mules from distant Nagar, and willingness to pay such high prices for them. Indeed, although

Ebla obtained most of its BAR.AN from Nagar, local needs were such that in one letter to the even more distant city of Hamazi, beyond the Tigris, Ebla offered to send 'decoration for wagons' in exchange for 'good hybrids' (Archi 1998, 10).

Payment was not necessarily literally in silver. Value is expressed in silver which served as the medium of exchange, that is, the 'exchange rate' was always expressed in silver. The actual transactions were often more in the nature of direct or possibly 'ceremonial' exchange:

[^1](TM.75.G.2428, Archi 1998, 8-9)
Here it would appear that 'payment' was made in high-quality olive oil. Again the BAR.AN are valued at just under 5 minas each. We are uncertain what were the duties of the the ur ${ }_{4}$ official. Clearly he was a man of some standing, and it is possible that he was in some way responsible for relations with Ebla.

We have as yet no cuneiform texts from Phase L (late ED) Brak, though the discovery of tablets of this date at nearby Beydar, within the kingdom of Brak-Nagar, leaves little doubt that cuneiform records constituted a major component of local administration at this time. The few Akkadian tablets found at Brak focus on the human work force and the receipt of goods from outlying settlements, and at present we lack archives pertaining to equids and other forms of transport. The two inscribed dockets found in Area FS, and almost certainly of early Akkadian date, not only add substantially to our knowledge of the possible function of this complex but also directly attest the presence of the hybrids at Brak. The transfers of these animals (texts $77 \& 78$, p. 118) include one group of 13 foals. It is also relevant to the wider historical picture that the official, Rabi-il, who is associated with these deliveries, bears a southern (Akkadian) name.

Another interesting feature of the Beydar texts is the unusually high number of cartwrights. These include 1-4 dumu (children) in addition to the 5-8 cartwrights themselves, a total without parallel even within the specialized and state-controlled south Mesopotamian caravanserais (Sallaberger 1996a, 99;

1998c, 174). It would appear that Beydar was a way station where wagons could be repaired by special craftsmen and where fodder was provided for the animals. There is considerable evidence for the presence of such road stations in the Ur III period (discussed in Heimpel 1994), and earlier at Abu Salabikh there is reference to a 'house of the equid teams' (é bir anše: Biggs 1974, 503, l. vii.2). The presence of the way station at Beydar seems to have been an important component of the local economy, and we believe that the monumental complex excavated in Area FS at Brak provides not only the physical remains of an important institution associated with equid management but that its presence at the north gate of the city suggests also its possible importance in relation to the caravan routes passing through Brak.

## G. Summary

This section has examined the evidence of the terracotta model wagons, the equid figurines, the seal impressions and the Ebla, Beydar and Brak cuneiform evidence with respect to the types and use of equids and associated 'transport' at Brak. This evidence is further discussed in Chapter 16, in the context of the Area FS monumental complex, a public institution which we believe to have been in some way connected with at least the employment if not also the breeding of equids, specifically the BAR.AN hybrid. Indeed the surviving evidence from Brak appears perversely contradictory given the overwhelming textual attestation of the hybrid and yet the apparently exclusive presence of donkeys among the ritual deposits in the FS complex, where we know deliveries of the hybrid to have been made. It is possible of course that the hybrids were too valuable to sacrifice, even at Nagar. What is certain is that the breeding of an extremely expensive and much sought-after hybrid was focused at Brak-Nagar and that donkeys there were used for breeding, loadbearing and traction. The fact that the FS equid complex seems to go out of use during late Akkadian times (see Chapter 16) suggests either that the demand for these animals was reduced or that there was some obstruction to the normal trade routes. The fact that the domestic horse first appears in the last century of the third millennium, and almost certainly in association with the Hurrians, is not irrelevant. The function(s) of the terracotta models remains unclear, given their overwhelming presence at Brak in essentially domestic contexts.

## Chapter 11

# Organic Materials 

## Joan Oates

## A. Ivory

Ivory objects are rare at third-millennium Brak, in sharp contrast with the period of the Mitanni city (published in Brak 1, ch. 9). Nor did Mallowan find ivory at the site. There is, however, one object of very considerable interest from a third-millennium context, a 6 cm high statuette of a naked woman with lapis and mother-of-pearl inlay (Fig. 315). This was found in an Akkadian building excavated in 1981 in Area ST. Unfortunately it was possible to investigate only a very small corner of this building (p. 37), but the adjacent building to the south produced several large pottery troughs decorated with appliqué snakes (Fig. 199) and a large number of storage 'urns' (p. 180). Both buildings had unusually thick outer walls, but too little is known of the plans to judge whether these are public buildings or relatively prosperous private houses. The presence of the snake troughs


Figure 315. Ivory figurine, ht $6 \mathrm{~cm}, T B 4005$, from Akkadian building in Area ST.

suggests at least the possibility of some cult activity within the more southerly of these buildings.

As far as we know, the ivory figure is unique. The eyes were inlaid with mother-of-pearl with pupils of lapis lazuli set in bitumen; the inlay of the eyebrows, which joined at the bridge of the nose, was missing. The nipples and navel had also been inlaid with lapis of which one inlay survived (right breast). It is likely that the circular holes drilled in the small of the back were similarly filled with lapis. The pubic triangle had also been deeply cut for inlay, and a groove above the breasts suggests some form of inlaid pectoral. The head had clearly borne some form of wig or head-dress, with side 'curls' set in the grooves beside the ears which seem also to have been pierced for inlay. The back was flat with slightly rounded buttocks.

The style is of considerable interest, with the very long 'Egyptian' right arm and the unusually flat profile, rather in the manner of the later Idrimi of Alalakh and the faceless Mitanni seated figure from Brak (Brak 1, fig. 41; it should be noted that the drawing of the back of the Brak sculpture, fig. 227, has unfortunately been reversed in the production of the volume). The face of the Brak ivory lacks the more rotund features of contemporary sculpture from Ebla and the Mesopotamian south, and is especially striking in its general similarity to the well-known alabaster head from the Eye Temple, some thousand years earlier (Fig. 316 and Mallowan 1947, pl. 1). The fourthmillennium head has a more prominent nose and cheekbones, but the overall similarity suggests at least the possibility of a specifically north Mesopotamian sculptural style (see


Figure 316. Profile of ivory figurine and fourthmillennium BC stone head from Eye Temple platform (ht 17 cm; Mallowan 1947, pl. 1).


Figure 317. Mother-of pearl human-headed bull pendant, $5.6 \times 5.25 \mathrm{~cm}$. From debris of Phase $L$ de'struction, Area CH (TB 3018).
also the remarks of Donald Hansen in Chapter 9, with reference to the Brak human-faced bison sculpture, and especially the remarkably similar fourthmillennium human head from Susa).

The eye inlays of the human-headed bull (frontispiece) are, unusually, of ivory. Among the other ivory pieces is the handle of some form of tool (Fig. 492:7). Two similar bone handles (Fig. 492:8 and reg. no. 4554 ) and three burnt fragments of an ivory bowl


Figure 318. Shell rings and cowrie pendant, from ritual deposit in SSTC Courtyard 8.
(reg. no. 4729) came from the ritual deposit SS 549, in front of the monumental courtyard façade in the Area SS complex. No other ivory objects were identified in the third-millennium levels.

## B. Shell

51 shell objects appear in the excavation object register, excluding the beads described in Chapter 7. In addition, 26 tiny Indian Ocean shells (?beads) were recovered from the ritual deposit SS 549 on the Courtyard 8 pavement in Area SS. Of the shell objects, by far the most important is another 'humanheaded bull' with drilled concentric circles forming the eyes as well as decoration on the body (Fig. 317). It was found in the Area CH Phase L destruction debris east of Room 63 (plan, Fig. 28). The back of the piece has been left plain except for what appears, perhaps accidentally, to have been a wing lightly carved across it (Iraq 44, 1982, pl. 12:b). A single hole was drilled vertically through the body, presumably for suspension. Mother-of-pearl 'human-headed bulls' are known elsewhere in the Khabur area (Tell Atij, Rimini 174; Knedig, MDOG 128, 1996, fig. 9), perhaps further accentuating the importance of this symbolism at Brak-Nagar. A fragment of a similar object was recovered from a Mallowan spoil-heap in Area FS (reg. no. 7060). A much larger example has recently been found in a temple deposit at Qara Quzaq on the Euphrates; the deposit included many shell rings and beads, also with concentric circle ornamentation (Aleppo Museum).

Two pierced objects cut from gastropods may possibly have been intended as stamps, one from CH Level 4, which had been pierced for suspension, and the second from upper fill in SS Room 18 (Fig. 493:24 \& 25). Ten shell rings and two cowrie shell pendants have been recovered (Fig. 318); three of the rings came from the ritual closure deposit in front the SSTC courtyard façade (SS 549). Other shell objects from this deposit include three pieces of mother-of-pearl eye inlay and a number of small shells cut and pierced as beads: a dozen very attractive Rock

Shells, an Indian Ocean type (Nassa serta, max length 1.5 cm : Fig. 493:33), 14 tiny sea snails (perhaps some form of nerite, max width 0.25 cm ), a fragment of a tiny dentalium (d. 0.25 cm ) and 1 small mitre shell (mitridae). The association in the same deposit of these marine shells with Indus type beads of carnelian and jet serves to emphasize Akkadian maritime connections with the Indus as attested in the well-known Sargon inscription. Two further objects of probable Indian Ocean origin, the two cowrie shell pendants referred to above, were also recovered from fill associated with the SS monumental building. Two Rock Shell beads came from other contexts in FS and SS. Other marine shells include a burnt Olive Shell (Fig. 493:3) together with part of a burnt gastropod from the street fill in Area CH, of either early Akkadian or possibly Phase L destruction level date (locus CH 445). A single dentalium bead (reg. no. 1403) was found in an early Phase L context in Area CH, and a small Stone Ware jar in the burnt debris of the 'tunnel cupboard', Area ER, Level 5 (p. 36), contained 10 Arcularia or basket shell beads (jar 123).

The local, freshwater bivalves, found in large quantity in all periods at Brak, were used not only for food but as a source of small pieces of mother-ofpearl inlay. Clear evidence is found of the cutting of small circular, rectangular and diamond-shaped inlays (e.g. reg. no. 4219 from topsoil clearance in Area FS, and Akkadian examples from FS 576). Unfortunately the contexts of such shells do not further enlighten us concerning this local mother-of-pearl industry. The local bivalves also provided useful containers for pigments and probably cosmetics: one filled with a red haematite pigment (reg. no. 5451) was found in an FS Level 2 courtyard (54), together with grinding stones, rubbers and a flint core. Other bivalves were also used for this purpose, for example a Cerastoderma edula glaucum from an Akkadian courtyard (reg. no. 5251, FS Level 3, east of Courtyard 19); the latter contained a thick black substance (? kohl).

## C. Bone (Fig. 492)

Excluding beads, 194 bone objects were registered from the third-millennium excavations. These include 17 awls or otherwise unidentifiable pointed tools, 13 pins, only 2 identifiable needles, 10 rings, 5 bone handles and finials, 123 small squares of inlay (Fig. 319), 3 broken objects with serrated edges and 2 possible spatulas. A large needle (?), possibly for making some very coarse material or netting, is illustrated by Figure 492:9. Among the more unusual objects are 7 tiny animal vertebrae filed down to


Figure 319. Bone inlay from fill in the SS temple antecella (TB 10064).


Figure 320. Bone decorative knobs/finials from pit beneath Area SS monumental building Room 23 (16-18).
make small flat pieces, possibly unfinished beads. Some phalanges were cut as stamps (e.g. reg. no. 846, from fill in the uppermost level in Area SS), a practice attested also in the second millennium (Brak 1, fig. 236:83-5).

Bone spindle whorls are common in the fourthmillennium deposits, especially in the Northern Middle Uruk phase, but none were found in thirdmillennium levels. A smaller object, of generally similar shape, but apparently incised on the flat side, was found in a pit in the floor of Room 23 in the SS monumental complex (reg. no. 5843). Assuming that the apparent incisions are accidental, or simply cutting marks, it would appear that this object served as some kind of decorative knob or boss. Two bone finials came from the same deposit (Fig. 320). A similar bone finial came from a deep sounding beneath the floor of Area SS Room 18 (reg. no. 5086), suggesting that this group of bone objects may have originated in slightly earlier third-millennium contexts.

## D. Horn and antler

Gazelle horn cores were recovered from a variety of Ahkadian contevts, in particular within the Area FS houses. Five such horn cores were found in the lower fill of the antecella of the FS Level 5 temple, almost certainly part of a deliberate deposit. A number of pieces of worked antler of Dama mesopotamica were found, of which the most interesting is Figure 492:6, from a large pit cut into the Area SS monumental building; the surface had been polished and small pieces drilled, perhaps to provide pierced inlay which had been cut with a sharp knife. Another antler (reg. no. 7234) from the fill of the FS antecella had also been cut, across the core, with a sharp knife. Other worked examples came from both Akkadian and post-Akkadian contexts in Areas FS and CH.

## E. Reeds

Impressions of reed matting on bricks or as part of roofing material were common throughout the site. Matting seems also to have been used in the context of the equid 'burials' in Area FS; in one case at least the animal was covered over with such matting, which survived as a series of layers of white phyto-


Figure 321. Bitumen basket impression, ht 29.3 cm , rim d. c. $30 \mathrm{~cm} . T B 60-3$. Found in the passage east of FS Leiel 3, Room 2 (p. 58 ).
liths, many still articulated as reeds (FS 1886). Reed baskets were also common, and often survive as impressions in bitumen (Fig. 321). Traces of a fibrous substance (?reeds), possibly used as binding material, were found on some sickle blades.

## F. Cloth and leather

No cloth as such survived but cloth impressions were common on the seal impressions. A dagger blade and axe in ritual deposit FS 1957 retained traces of a mineralized textile on their surfaces (Fig. 323). Examination at a magnification of $\times 20$ suggested that the threads were formed of ' $s$ '-spun fibres with a very fine weave of one over one; ten rows of fourteen horizontal threads were identified in an area of $0.5 \mathrm{~cm}^{2}$. Bitumen impressions suggest the presence of leather bags, tied together at the top (below).


Figure 322. Bitumen impressions of leather bag and basket, together with wood and matting, from the floor of the SS ceremonial courtyard (8), found on the baked brick pavement near Room 30.

## G. Bitumen

Bitumen was widely used at Brak both for waterproofing and repairs. Some small objects were made of bitumen, especially in the fourth millennium. Indeed small objects from third-millennium contexts may be residual fourth-millennium pieces (for example a small token from FS Level 3, Room 4). A single bitumen bead was recovered. Bitumen impressions are common, usually of reed matting or baskets. Several virtually complete basket impressions have been recovered, including Figure 321 from an Akkadian context in Area FS. Part of the deposit of jewellery and metal tools found in the Level 5 temple courtyard in Area FS had been contained in a similar basket (Fig. 249). Such baskets come from both Akkadian and post-Akkadian contexts. There are also bitumen impressions of what were clearly bags made of some soft, weave-less material, presumably leather (Fig. 322). In one of the third-millennium urns with a drainage hole in the base the bitumen plug was still preserved. Bitumen paint was used for decorative purposes on the pottery of the late third/early second millennium (e.g. Figs. 197 \& 198). Analyses of bitumen from both the third- and fourth-millennium levels, carried out by Jacques Connan, will be published in Volume 3.

## H. Wood

Objects of wood are of course rare. Three large pieces of a charred object (Fig. 102:39) were found in Area SS above the red libn platform in the general area of SSTC Room 16 but beneath its floor. These were flat pieces and clearly parts of a carefully finished object. The individual fragments, which measured $13.0 \times$ 8.2 and $11.6 \times 6.4 \mathrm{~cm}$, had rounded corners with a flat end. A smaller fragment was submitted for dendrochronological dating but unfortunately it proved to be a conifer, lacking sufficient rings. An unidentifiable lump of charred wood, which had been covered with an overlay of copper and may come from some piece of furniture, was recovered


Figure 323. Mineralized textile surviving on surface of dagger blade 3 and flat axe TB 14170, which had been resting on, or wrapped in, the cloth. FS 1957 deposit, left side of Figure 249.
from brick rubble in Area FS, Level 3, Room 1, while a charred fragment resembling a small mace-head or a large bead had been preserved in the large mass of copper / bronze fragments in the SS Courtyard 8 deposit (reg. no. 4072 ; surviving d. 3 cm , d. of piercing 5 mm tapering to 3 mm ). The best-preserved piece is the handle of metal tool 19 (Fig. 252), which survived virtually intact owing to the presence of large quantities of copper in the deposit; traces of wood also survived on the tang of tool 20.

Charcoal types identified include poplar (or willow, Salicaceae), oak (Quercus), hackberry/elm/ pistachio (Celtis/Ulmus/Pistacia), possible ash (Fraxinus), a conifer and a 'diffuse, porous hardwood' (SS 280). Bitumen impressions of wood also survive (Fig. 322), as do impressions on the backs of door sealings (Fig. 152).

## I. Ostrich shell

Over 80 pieces of ostrich shell were recorded, many from the fill of the SS monumental complex, in particular the ritual deposit SS 549 in the courtyard ( $n=$ 19) and from Room $18(n=55)$.

# Third-millennium вс Charred Plant Remains from Tell Brak 

Mike Charles \& Amy Bogaard

The following report presents an analysis of charred plant remains dating from the late ED III through the post-Akkadian occupation of the site. The material is of particular interest for two reasons. First, archaeobotanical work at large urban sites in both north and south Mesopotamia has been limited but can potentially address fundamental questions relating to crop production and consumption in such contexts. Secondly, the evidence from Tell Brak can provide useful comparisons with contemporary sites elsewhere in the region where archaeobotanical investigations have also been undertaken as well as with southern sites where large-scale irrigation systems were employed.

## I. Methods

The samples were taken during the 1978-84 excavation seasons and derive primarily from contexts observed to contain concentrations of charred plant remains. Additionally, samples were taken from the contents of all more or less complete pots. Soil sample sizes range from less than 1 litre to $c .20$ litres (Table 33), tending to be small since flotation was done by hand. The charred plant remains were separated from the soil matrix by bucket flotation using a 0.3 mm sieve to retain the floating material (flot). The flots were later put through a 1 mm sieve to aid sorting. The coarse ( $>1 \mathrm{~mm}$ ) flots from more than 150 samples were scanned by eye in order to estimate their richness. Samples containing approximately 50 or more scoreable cereal or pulse items were targeted for sorting and identification. In all, forty samples were sorted using a low-power stereoscopic incident microscope. Eleven of these samples had previously been sorted by Mary Ann Murray and Karen Sperling.

Coarse flots were mostly sorted in their entirety. In the case of four very large and rich sam-
ples, the coarse flot was randomly subsampled and an amount estimated to contain more than 384 identifiable items was sorted. The sorting of subsamples containing this minimum number of items was carried out in order to ensure that the percentage content of component species is accurate to within 5 per cent (see van der Veen \& Fieller 1982). The fine ( $<1$ mm ) flots were fully sorted except in the case of eight samples where random subsamples containing at least fifty identifiable items were sorted. Wet-sieve residues ( $>1 \mathrm{~mm}$ ) were sorted in their entirety with the exception of two samples (ST105/26, ST105/27) where the residues contained a large number of lentil seeds (in both cases, no floating material had been recovered). These two residues were randomly subsampled to give a fraction containing a minimum of 200 identifiable items.

Cereal grain and chaff identifications were made with the help of reference material in Sheffield and various unpublished reference works. Both apical and embryo ends of cereal grains were counted and the number for the more abundant element was used. The chaff units counted were individual rachis internodes, glume bases and culm nodes / bases. Nomenclature for cultivated barley follows Charles (1984).

Wild plant seed types were identified using the seed reference collection in Sheffield, various seed atlases and other publications (Beijerinck 1947; Berggren 1969; 1981; Zohary \& Feinbrun-Dothan 1966-86; Anderberg 1994). Apical and embryo ends were used as the scoreable unit for grass seeds (the number for the more abundant element being used), while for non-grasses visual inspection yielded a 'minimum number of seeds'. Only those wild seed types occurring in at least 10 per cent of samples ( 4 of 40) were targeted for full identification; rare or unique types in the assemblage number well over 100 and would in any case be difficult to interpret.

Table 33. Contextual, chronological and botanical data for the 40 Tell Brak samples. Only those wild taxa present in at least four samples are shouen. Wild taxa are ordered alphabetically by family.

| Locus number/soil sample number Context description | AL 19/4 pot 131 | $\begin{gathered} \text { AL } 47 \\ \text { pit } \end{gathered}$ | CH 253/54 ash over cobbling | CH 484/29 destruction, Rm 610 | $\begin{gathered} \mathrm{CH} 485 / 18 \\ \text { pot, } \\ \operatorname{Rm} 610 \end{gathered}$ | CH 485/45 floor, Rm 610 | CH 495/46 oven, Rm610 | $\begin{gathered} \text { CH } 527 / 56 \\ \text { oven, } \\ \operatorname{Rm} 62 \end{gathered}$ | $\underset{\text { pit }}{\text { DH } 56 / 115}$ | DH 57/93 tannur | DH 78/158 pot | DH 91/142 <br> burnt layer | ER 39/23 pot 1550 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Area level | ( $=$ CH 6) | ( $=$ CH 6) | $(=\mathrm{CH} 6)$ | $(=\mathrm{CH} 6)$ | ( $=$ CH 6) | ( $=$ CH 6) | ( $=$ CH 6) | ( $=$ CH 6) | DH 1 | DH $2 / 1$ | DH 3 | DH3 | ER 5 |
| Phase | Phase L | Phase L | Phase L | Phase L | Phase L | Phase L | Phase L | Phase L | Phase N | Akkadian | Phase L/M | Phase L/M | Phase L |
| Volume of soil processed (litres) | 0.1 | 0.6875 | 0.88 | 2 | 2 | 0.7 | 2 | 0.4 | 3 | 9 | 1.75 | 2 | 1 |
| Density of scoreable items/litre | 1910 | 2310 | 390 | 64 | 207 | 469 | 166 | 725 | 61 | 26 | 216 | 48 | 187 |
| Cereal grain |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Triticum monococcum (1-grained) |  | 30 |  |  |  |  |  |  |  | 2 |  |  |  |
| Trittum menocuccum (1-grained/2-grained) |  |  |  |  |  | 3 |  |  |  |  |  |  |  |
| Tritucum monococcum (2-grained) | 1 | 65 |  |  |  | 2 | 3 | 1 |  | 2 |  |  |  |
| Triticam monococcum/dicoccum/spelta |  | 106 |  |  |  | 2 | 4 |  | 1 |  | 2 |  |  |
| Tritcum dicoccum |  | 21 | 1 |  |  | 3 | 4 | 1 |  | 1 | 3 |  |  |
| Triticum durnh/arstroum |  | 9 |  |  |  | 3 | 37 |  |  | 4 | 2 | 1 |  |
| Trittcum indet. |  | 17 |  |  |  | 1 |  | 2 |  | 1 | 9 |  |  |
| Triticum/Secale |  |  |  |  |  |  |  |  | 2 |  |  |  |  |
| Triticum/Aegrlops |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hulled Hordeum satrvum, straight | 21 | 54 |  |  |  | 3 |  |  |  |  | 4 |  | 7 |
| Hulled Hordeum sativum, twisted |  | 2 |  |  |  |  |  |  |  |  | 1 |  |  |
| Hulled Hordeum sativum indet. | 108 | 369 | 20 | 52 | 396 | 17 | 105 | 19 | 12 | 43 | 38 | 11 | 137 |
| Hordeum sativum indet. | 1 | 351 |  | 4 |  |  |  | 3 | 17 |  | 2 |  |  |
| Hordeum indet. | 37 | 136 |  | 2 |  | 1 | 1 | 7 | 6 | 2 | 7 |  | 8 |
| Hordetm/Triticum |  |  | 2 |  |  |  |  |  |  |  |  |  |  |
| Hordeum/Aegilops |  |  |  |  |  |  |  |  |  | 1 |  |  |  |
| Cereal chaff |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Glume bases |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tritcum monocactum |  | 35 |  | 1 |  | 3 |  | 1 | 1 | 7 | 7 |  |  |
| Triticum monococcum/dicoccum |  | 234 | 3 | 1 |  | 92 | 2 | 10 | 9 | 21 | 18 |  |  |
| Triticum dicoccum |  | 24 | 3 |  |  | 23 |  | 7 | 27 | 2 | 11 |  |  |
| Triticum/Aegilops |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Rachis interuodes |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Triticum durum |  |  | 6 | 1 |  |  |  | 2 |  | 1 | 11 |  |  |
| Triticum cf. aestivum |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tritcum durum/nestivum |  |  | 1 | 1 |  | 2 |  | 15 | 3 | 4 | 1 |  |  |
|  |  |  |  |  |  | 4 |  |  |  |  |  |  |  |
| Triticum/Hordeum |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Triticum/Aegilops |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hordeum sativum var. distichum |  |  | 43 | 2 | 3 | 17 | 4 | 6 | 6 | 11 | 48 | 3 |  |
| Hordeum sativum cf. var. hexastichum |  |  |  |  |  |  | 2 |  |  |  |  |  |  |
| Hordeum sativum indet. | 1 |  | 45 | 3 |  | 16 | 36 | 46 | 4 | 12 | 60 | 15 | 2 |
| Hordeum/Secale |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cereal indet. |  |  | 2 |  |  |  |  |  | 2 |  | 2 |  |  |
| Lemma bases <br> cf. Avena/Hordeum lemma base |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Culm material |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Large ( $>1 \mathrm{~mm}$ ) culm nodes | 1 | 1 | 54 | 1 |  | 9 |  | 23 | 3 | 2 | 1 |  | 2 |
| Large ( $>1 \mathrm{~mm}$ ) culm bases | 1 |  | 2 |  |  |  |  |  |  | 2 | 1 |  |  |
| Pulses |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lens culinaris |  |  |  |  |  | 1 |  |  |  |  |  |  |  |
| Pisum sativum | 1 | 8 |  |  |  |  |  |  |  | 1 |  |  |  |
| Pisum sativum/Lathyrus sativum/cicera |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lathyrus sativus/cicera |  |  |  |  |  |  |  |  |  |  | 1 |  |  |
| Large legume indet. |  |  |  |  |  | 1 |  | 1 | 1 |  |  |  |  |

Table 33. (cont.)

Locus number/soil sample number Context description

Area level
Phase
Volume of soil processed (litres) Density of scoreable items/litre

Wild taxa
Gypsophula sp
Silene spp.
Vaccaria pyramidata/segetalis
Caryophyllaceae indet.
Chenopodium indet
Artemisua sp
Centaurea indet
Brassica/Smapis
Cruciferae, accumbent sp /spp Scirpus martimus
Scirpus/Schoenoplect
Fumaria parvetlonaldenstlorn Aegilops crassa glume bases Acsilops speltordes glume bases Acgilops truschu glume bases Acgilops indet. grain
Acgllops indet. glume bases
Arcina indet. grain
Bromus cf. tectorum
$\underset{\mathrm{O}}{\mathrm{O}}$ Bromus sp.
Bromus indet
Ercmopynum bonacpartis/confusum Hordeum spontancum grain Hordeum spontancum rachis Lohum ct perenne Lophochloa indet. Phalars indet. (non-tuberosa) Small grass type B Gramineae indet. grain Gramineae indet. rachis Gramineae indet. rachis
Small $(<1 \mathrm{~mm})$ culm nod Small ( $<1 \mathrm{~mm}$ ) culm bases Teucruum polum
Astragalus indet.
Coronlla scorpioudes
Leguminosae indet
Medtango indet
Mchlotus/Trifolum
Prosopis ct farctio
Trigonella indet.
Trigonella indet.
Thigonella/Astragulus
Trigonella/Astragolus
Malvaceae
Malvaceae
Papaver rhoens
Rumex conglomeratus
Androsaci mavima
Asperula arvensis
ct Torills sp
Umbelliterae indet
Other
Sheep/goat dung (pellet ends)

| AL 19/4 pot 131 ( $=$ CH 6 ) | AL 47 pit $(=\mathrm{CH} 6)$ | CH 253/54 ash over cobbling (= CH 6) | CH 484/29 destruction, Rm 610 (= CH 6) | $\begin{gathered} \mathrm{CH} 485 / 18 \\ \text { pot, } \\ \mathrm{Rm} 610 \\ (=\mathrm{CH} 6) \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: |
| Phase L | Phase L | Phase L | Phase L | Phase L |
| 0.1 | 0.6875 | 0.88 | 2 | 2 |
| 1910 | 2310 | 390 | 64 | 207 |
| 1 | 3 | 1 | 1 | 1 |
|  |  | 1 |  |  |
|  | 1 |  |  |  |
|  |  | 1 |  |  |
|  |  | 2 |  |  |


| CH 527/56 oven, Rm 62 | DH 56/115 | DH 57/93 tannur | $\begin{gathered} \text { DH 78/158 } \\ \text { pot } \end{gathered}$ | DH 91/142 <br> burnt layer | ER 39/23 <br> pot 1550 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| (= CH 6) | DH 1 | DH $2 / 1$ | DH 3 | DH 3 | ER 5 |
| Phase L | Phase N | Akkadian | Phase L/M | Phase L/M | Phase L |
| 0.4 | 3 | 9 | 1.75 | 2 | 1 |
| 725 | 61 | 26 | 216 | 48 | 187 |

16

1

1

2
2

$$
3
$$

Table 33. (cont.)

|  | Locus number/soil sample number Context description | ER 45/1 pot 1551 | ER 45/4 pot 179 | $\begin{gathered} \text { ER 45/13 } \\ \text { pot } \end{gathered}$ | $\begin{gathered} \text { ER 45/26 } \\ \text { pot } \end{gathered}$ | $\begin{aligned} & \text { FS } 140 / 8 \\ & \text { soakaway } \end{aligned}$ | FS 178/33 fill in burnt | $\begin{aligned} & \text { FS } \begin{array}{l} \text { 191/35 } \\ \text { pit, } \end{array} . \end{aligned}$ | $\begin{aligned} & \text { FS } 242 / 58 \\ & \text { pit, } \end{aligned}$ | $\begin{aligned} & \text { FS } 243 / 52 \\ & \text { oven } \end{aligned}$ | $\begin{aligned} & \text { FS 259/75 } \\ & \text { fill, } \end{aligned}$ | $\begin{aligned} & \text { FS } 267 / 64 \\ & \text { sooty deposit, } \end{aligned}$ | $\begin{aligned} & \text { 1ऽ } 267 / 77 \\ & \text { sooty deposit. } \end{aligned}$ | $\begin{aligned} & \text { FS } 304 / 31 \\ & \text { tunnur } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Arealevel |  |  |  |  |  | Rm 16 | Rm 21 | Rm 14/15 |  | Rm 13/14 | Rm 13/14 | Rm 13/14 |  |
|  | Phase | ER 5 | $\begin{aligned} & \text { ER } 5 \\ & \text { Phase L } \end{aligned}$ | ER 5 | ER 5 | FS 1 | FS 2 | FS 2 | FS $2 \times$ | FS 2 | FS 2 | FS 2 | FS 2 | 152 |
|  | Volume of stil processed (litres) | 0.32 | 0.125 | 0.14 | 0.25 | 1 | Phase | Phase | Phase N | Phase N | Phase N | Phase N | Phase N | Phare N |
|  | Density of scoreable items/litre | 509 | 5112 | 4443 | 3164 | 1938 | 87 | 207 | 103 | 1.65 | 1.2 | ${ }_{1}$ | 2 | 1.2 |
|  | Cereal grain |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Tritium monetoctum (1-grained) | 1 |  |  |  |  |  |  |  | 3 |  |  | 1 |  |
|  | Tritucum montuctum (1-grained /2-grained) |  |  |  |  |  |  |  |  | 1 |  |  |  | 1 |
|  |  | 2 | 2 | 1 | 2 | 1 |  | 1 |  | 1 | 1 |  | 5 | 1 |
|  | Tithenm moneco cum/dicocimm/spedta |  |  |  | 1 | 10 |  | 1 |  | 1 | 1 |  |  | 4 |
|  | Trificum drocam |  |  |  | 1 | $+$ |  |  |  | 1 |  | 1 | 11 | 4 |
|  | Triticum durumhestroum |  |  |  |  | 26 |  |  |  | 13 |  |  | 7 |  |
|  | Tritu um, indet. |  |  |  | 1 | 7 |  |  |  | 5 |  |  | 7 | 1 |
|  | Tthinm/Sccalle |  |  |  |  |  |  |  |  | 1 | 1 |  |  |  |
|  | Tritucum/Acsilyp, |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Hulled Hordeum saftrum, straight | 3 | 9 |  |  | 5 |  |  |  | 1 |  |  |  |  |
|  | Hulled Hordeum sativam, twisted | 1 | 2 |  |  |  |  |  |  | 1 |  |  | 1 |  |
|  | Hulled Hodenm satioum indet. | 98 | 443 | 1 | 532 | 63 | 9 | $\varepsilon$ | 5 | 43 |  |  |  |  |
|  | Hordrum satrumm indet. |  | 2 | 2 | 53 | 14 | 1 | 6 |  | 2 | 1 | 3 | ${ }^{24}$ | 4 |
|  | Horderwim indet. | 33 | 98 | 1 | 68 | 19 | 1 | 1 | 2 |  | 3 |  | $\begin{gathered} 5 \\ 11 \end{gathered}$ | 22 |
|  | Hordeum/Tritcum |  |  |  |  |  |  |  |  | 3 |  |  |  |  |
|  | Hortewn/Aegilops |  |  |  |  |  |  |  |  | 3 |  |  |  |  |
|  | Cereal chatf Glume bases |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Triticum monocectum |  |  |  |  |  | 1 | 2 |  |  | 1 |  |  |  |
|  | Tritcum monococtum/dicoctum |  |  |  |  |  |  | 1 | 10 | 116 | 3 | 36 20 | 46 281 |  |
| + | Truticum ditoccum |  |  | 2 |  | 19 |  | 7 | 1 | 17 |  | 2 | 317 | 72 34 |
|  | Truturum/Acgleps |  |  |  |  |  |  | 7 |  | 17 |  | 2 | 317 | 34 1 |
|  | Rachis internodes |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Triticum durum |  |  |  |  | 147 | 5 | 4 |  | 2 |  |  | 1 |  |
|  | Triftum ct. asstirum |  |  |  |  | 1 |  |  |  | 1 |  |  | 1 | 1 |
|  | Triticum durum/astivum | 1 |  | 2 |  | 172 | 2 | 4 |  | 7 |  |  |  | 1 |
|  | Tritcum/Hordeum |  |  |  |  |  |  |  |  |  |  | 1 | 3 | 9 |
|  | Triticum/Aegilops |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Hordetum satrumm var. distichum |  | 2 | 5 | 6 | 253 | 1 | 6 | 13 |  |  |  |  | 24 |
|  | Hordeum sativum cf. var. heanstichum |  |  |  |  |  |  | 6 | 13 | 6 | 18 | 8 | 40 | 24 |
|  | Hordeum sativum indet. |  | 2 | 3 | 1 | 663 | 1 | 13 | 34 |  | 34 |  |  |  |
|  | Hordeum/Secale |  |  |  |  |  |  |  |  | 59 | 34 | 13 | 49 | 193 |
|  | Cereal indet. |  | 1 |  |  |  |  |  |  | 1 | 3 |  | 1 | 1 |
|  | Lemma bases <br> cf. Avena/Hordeum lemma base |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Culm material |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Large (>1 mm) culm nodes | 1 |  | 1 | 2 |  |  |  | 1 |  |  |  |  |  |
|  | Large ( $>1 \mathrm{~mm}$ ) culm bases |  |  |  |  | 1 | 2 | 1 | 1 | $\begin{gathered} 29 \\ 5 \end{gathered}$ | $\begin{aligned} & 8 \\ & 2 \end{aligned}$ | $\begin{aligned} & 2 \\ & 1 \end{aligned}$ | 49 3 | $10$ |
|  | Pulses |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Lens culinaris | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Pisum sativum | 1 |  | 563 |  |  |  |  |  | 1 | 5 |  | 3 | 1 |
|  | Pisum sativum/Lathyrus sativum/ccera |  |  | 7 |  |  |  |  |  |  |  |  |  |  |
|  | Lathyrus sativus/cicera |  |  | 13 |  |  |  |  |  |  |  |  |  |  |
|  | Large legume indet. |  |  | 16 |  |  |  | 1 |  |  |  |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Table 33. (cont.)

Locus number/soil sample number Context description
Area level
Phase
Volume of soil processed (litres)
Density of scoreable items/litre
Wild taxa
Gypsophila sp.
Silene spp.
Silene spp.
Vaccaria pyramidata/segetalis
Caryophyllaceae indet.
Chenopodium indet.
Artemista sp.
Centaurea sp.
Centaurea indet.
Centaurea indet.
Brassica/Sinapis
Cruciferae, accumbent sp./spp
Scirpus maritimus
Scirpus/Schoenoplectus
Fumaria parviflora/densiflora
Aegilops crassa glume bases
Aegilops speltotdes glume bases
Aegilops tauschii glume bases
Aegilops indet. gran
Aegilops indet. glume bases
Avena indet grain
Avena indet. grain
Bromus ct. scoparius
Bromus cf. tectorum
OH Bromus sp.
Bromus indet
Eremopyrum bonaepartis/confusum Hordeum spontaneum grain Hordeum spontaneum rachis
Lolium cf. pereme
Lophochloa indet.
Phalaris indet. (non-tuberosa)
Small grass type B
Gramineae indet. glume bases
Gramineae indet. glume
Gramineae indet. rachis
Gramineae indet. rachis Small ( $<1 \mathrm{~mm}$ ) culm bases Teucrum politum
Astı agalus indet.
Coronilla scorpioides
Leguminosae indet.
Medicago indet.
Medrago indet.
Melilotus/Trifolum
Trigonella astroites
Trigonella indet.
Trigonella indet.
Trigonella/Astragalus
Trigonella/Astragalus
Malvaceae
Papaver rhoeas
Rumex conglomeratus
Androsace maxima
Asperula arvensis
of Tortlis sp
Umbelliterae indet.
Other
Sheep/goat dung (pellet ends)

| $\begin{aligned} & \text { ER 45/1 } \\ & \text { pot } 1551 \end{aligned}$ | ER 45/4 pot 179 | $\begin{gathered} \text { ER 45/13 } \\ \text { pot } \end{gathered}$ | $\begin{gathered} \text { ER 45/26 } \\ \text { pot } \end{gathered}$ | $\begin{aligned} & \text { FS 140/8 } \\ & \text { soakaway } \end{aligned}$ | FS 178/33 fill in burnt Rm 16 | $\begin{gathered} \text { FS } 191 / 35 \\ \text { pit, } \\ \text { Rm } 21 \end{gathered}$ | $\begin{gathered} \text { FS 242/58 } \\ \text { pit, } \\ \text { Rm 14/15 } \end{gathered}$ | FS 243/52 | $\begin{gathered} \text { FS 259/75 } \\ \text { fill, } \\ \operatorname{Rm} 13 / 14 \end{gathered}$ | $\begin{gathered} \text { FS 267/64 } \\ \text { sooty deposit, } \\ \text { Rm 13/14 } \end{gathered}$ | FS 267/77 sooty deposit, Rm 13/14 | FS 309/31 tannur |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ER 5 | ER 5 | ER 5 | ER 5 | FS 1 | FS 2 | FS 2 | FS 2 | FS 2 | FS 2 | FS 2 | FS 2 | $\begin{gathered} \text { FS } 2 \\ \text { Phase N } \end{gathered}$ |
| Phase L | Phase L | Phase L | Phase L | Phase N | Phase N | Phase N | Phase N | Phase N | Phase N | Phase $\mathbf{N}$ | Phase ${ }_{2}$ | Phase |
| 0.32 | 0.125 | 0.14 | 0.25 | 1 | 1.5 | 1.5 | 103 | 1.65 | 1.2 | 100 | 488 | 455 |
| 509 | 5112 | 4443 | 3164 | 1938 | 87 | 207 | 103 | 601 | 145 |  |  |  |

Table 33. (cont.)
Locus number/soil sample number Context description

## Area leve

Volume of soil processed (litres) Density of scoreable items/litre
Cereal grain
Cereal grain
Triticum monow wim (1-grained)
Triticum monockстm (1-grained/2-grained) Tritcum monotict um (2-graned)
Triticum monococimm/diceicum/spelta
Trificum dicoccum
Triticum durimm/arstroum
Tritterm inder
Trithcum/Açilops
Hulled Hordeum sativum, straight
Hulled Hordeum satroum, twisted Hulled Hordicum satroum indet.
Hordcum satioum indet.
Hordeum indet
Hordcum/Triticum
Hordcum/Acglops

## Cereal chaff Glume bases

Glume bases
Tritcum monococcum
Trittcum monococcum/dicoccum
Thiticum dicoctum
Triticum/Aeglops
Rachis internodes
Tritcum durum
Triticum ct. aestivum
Triticum durum/aestivum
Triticum/Hordeum
Triticum/Aegilops
Hordeum sativum var. distichum
Hordeum satrvum cf. var. he vastichum Hordeum satrvum indet. Hordeum/Secale
Cem
Lemma bases
cf. Avena/Hordeum lemma bas
cf. Avena/Hordeum lemma base
Culm material
Large ( $>1 \mathrm{~mm}$ ) culm nodes
Large ( $>1 \mathrm{~mm}$ ) culm nodes
Large $(>1 \mathrm{~mm}$ ) culm bases
Puises
Lens culnaris
pisum
Pisum sativum
Pisum sativum/Lathyrus sativum/cicera
Lathyrus sativus/cicer
Large legume indet.
Other potential crops

| FS 351/48 floor, Rm 4 FS 3 | FS 351/49 floor, Rm 4 FS 3 | FS 355/147 external space FS 3 | FS 1016/ 68+111 baulk FS 2 | FS 1020/85+110 pit in doorway, <br> Rms 2-26 <br> FS 2 | FS 1067 floor, Rm 3 FS 3 | FS 1067/84 pot, Rm 3 FS 3 | FS 1067/87 <br> floor, <br> Rm 3 <br> FS 3 | $\begin{aligned} & \text { FS } 1067 / 130 \\ & \text { under } \\ & \text { bricks, Rm } 3 \\ & \text { FS } 3 \end{aligned}$ | $\begin{gathered} \text { FS } 1107 / 155 \\ \text { burial } \\ \text { pit } \\ \text { FS 2 } \end{gathered}$ | FS 1527 oven in courtyard FS 3 | SS 142/65 oven <br> SS 2 | $\begin{gathered} \text { ST 105/26 } \\ \text { pot in } \\ \text { hearth } \\ \text { ST 4 } \end{gathered}$ | ST 105/27 pot in hearth ST 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Phase M | Phase M | Phase M | Phase N | Phase N | Phase M | Phase M | Phase M | Phase M | Phase N | Phase M | Phase N | Phase $1 / \mathrm{M}$ | Phase L/M |
| 19.25 | 15 | 3 | 3.75 | 5.7 | 2 | 4 | 6.4 | 0.6 | 6 | 0.3 |  | 0.4 | 0.2 |
| ${ }^{188}$ | 30 | 293 | 214 | 49 | 66 | 36 | 29 | 2060 | 75 | 820 | 594 | 1260 | 10100 |
|  |  | $\begin{aligned} & 1 \\ & 1 \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | 5 |  |  |
| 2 |  | 10 |  |  |  |  |  |  | 11 |  |  |  | 4 |
| 2 | 1 | 4 | 2 | 1 |  |  |  |  |  | 4 | 1 |  |  |
| 3 |  | 6 | 1 |  | 3 |  |  | 1 | ¢ |  | 4 |  |  |
|  |  |  |  |  |  | 4 |  |  |  |  | 2 |  |  |
|  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |  | 2 |  |  |  |  |
|  |  |  |  |  | 8 |  |  |  |  |  |  |  |  |
|  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |
| 66 | 32 | 4 | 7 | 3 | 94 | 7 | 35 | 126 | 3 | 188 | 27 |  |  |
| 5 | 1 | 40 | 2 | 11 | 4 | 3 | 1 |  | 24 |  | 25 |  |  |
| 4 |  |  | 4 |  | 13 | 1 |  |  |  | 14 | 12 |  |  |
|  |  |  | 2 | 1 | 1 |  | 1 |  |  |  | 3 |  |  |
| 109 | 94 | 10 | 77 | 5 |  | 23 | 13 | 3 | 11 |  | 27 |  |  |
| 7 | 16 | 13 | 8 | 18 |  | 5 | 10 |  | 40 |  | 33 |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | 3 | 5 | 10 |  |  |  |  | 11 |  | 12 |  |  |
|  |  | 1 |  | 3 |  | 1 |  |  | 1 |  |  |  |  |
| 7 | 3 | 19 | 2 | 25 |  | 2 | 4 | 1 | 13 |  | 19 |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |
|  |  | 1 |  |  |  | 5 |  |  |  |  |  |  |  |
| 27 | 32 | 52 | 186 | 20 |  | 2 | 9 | 10 | 42 |  | 109 |  |  |
| 2 | 5 |  |  |  |  |  | 2 | 2 |  |  |  |  |  |
| 171 | 55 | 332 | 170 | 92 |  | 20 | 13 | 15 | 134 |  | 174 |  |  |
|  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |
| 47 | 35 | 47 | 66 | 15 |  | 3 | 15 | 4 | 8 |  | 32 |  |  |
|  |  | 22 | 2 |  |  |  |  |  | 14 |  | 1 |  |  |
|  |  | $\begin{aligned} & 1 \\ & 3 \end{aligned}$ |  |  |  |  |  |  |  |  |  | 488 | 1988 |
|  |  |  |  |  |  |  |  |  |  |  |  | $\begin{aligned} & 8 \\ & 8 \end{aligned}$ | 16 |
|  |  | 2 |  | 2 |  |  |  |  | 1 |  | 1 |  | 12 |
|  |  |  |  | 7 |  |  |  |  | $\begin{gathered} 1 \\ 10 \end{gathered}$ |  |  |  |  |

Table 33. (cont.)


## II. Results

## A. Archaeological and botanical overview of the assemblage

## 1. Contextual and chronological range

The samples derive from a range of context types (pots, pits, floors, ovens/tannurs etc.) and periods (spanning c. 400 years). Table 34 shows the contexts sampled by trench and period (context information for individual samples is given in Table 33). Probable 'storage contexts' (pots in AL, CH, DH, ER, ST and the clay-lined pit in AL) are largely confined to Phase L, the late ED III destruction level.

## 2. Composition of the samples

The composition of the samples is summarized in Table 33. The density of charred plant remains in the contexts sampled ranges from 26 items per litre of soil processed (DH 57/93, tanmur, early Akkadian) to over 10,000 items per litre (ST 105/27, pot in hearth, late ED III) (Table 33).

Two sets of samples, one Akkadian (FS 351/48, FS 351/49, FS 1067/84, FS 1067/87) and one postAkkadian (FS 267/64 and FS 267/77), probably represent multiple sampling of single contexts. These samples are combined for the purposes of establishing the frequency of taxa (as in the next section) but are otherwise considered individually in order fully to explore variability in sample composition.
a) Cultivated plants: Cereal and pulse crops occurring in the samples are hulled barley (Hordeum sativum: grain, 94 per cent of samples; rachis, 83 per cent),
glume wheat (Triticum monococcum/dicoccum: grain, 72 per cent; glume bases, 72 per cent), free-threshing wheat (Triticum aestivum/durum: grain, 47 per cent; rachis, 61 per cent), lentil (Lens culinaris: 28 per cent), common pea (Pisum sativum: 17 per cent) and grass pea (Lathyrus sativus/cicera, 11 per cent). Mere presence in samples, however, does not necessarily indicate use of a cereal/pulse crop at the site. Table 35 shows the cultivated cereal/pulse crops by period when an (arbitrary) minimum of 50 grains and/or chaff items in a sample are taken together as a minimal indicator of use. While hulled barley, glume wheat (both einkorn and emmer), free-threshing wheat, lentil and common pea meet the minimal criterion in one period or other, grass pea occurs at low levels accompanying far more abundant pulse crops (with lentil in samples ST105/26 and ST105/ 27; with common pea in sample ER45/13) (Table 33).

Based on the abundance of straight grains and on rachis morphology, the most common crop in the samples, hulled barley, appears to be the two-rowed form ( H . sativum var. distichum); out of the thousands of barley items identified, only a very few rachis fragments were tentatively ('cf.') identified as six-rowed and a few grains as assymetrical grains characteristic of six-rowed barley (Table 33). Wellpreserved glume wheat grains and glume bases were identified as einkorn (Triticum monococcum) or emmer (T. dicoccum), less well-preserved material as 'einkorn/emmer' (T. monococcum/dicoccum) or 'glume wheat' (T. monococcum/dicoccum/spelta) (Table 33). Einkorn is more common than emmer (occurring in 40 per cent of samples as opposed to 10 per cent), though the large amount of material identified as

Table 34. The context types sampled by trench and period.

| Area | Phase L/Late ED III <br> (destruction level, c. 2400 BC ) | Akkadian <br> (c. 2300-2200 BC) | Post-Akkadian <br> (c. 2200-1950 вс) |
| :---: | :---: | :---: | :---: |
| AL | ```pot clay-lined pit``` |  |  |
| CH | ovens/tannurs (Fig. 30) <br> destruction debris <br> destruction fill on floor (Fig. 29) ash overlying cobbling |  |  |
| DH | pot <br> burnt layer <br> (these DH samples are dated 'ED III/Akkadian') | oven/tannur | pit |
| ER | pots (Fig. 37) |  |  |
| FS |  | pot <br> floor deposit(s) <br> under mud bricks <br> fill between jars (Fig. 61, Rm 4) | pits <br> ovens/tannurs <br> miscellaneous contexts |
| SS |  | oven |  |
| ST | pots in hearth (p. 40) |  |  |

'einkorn/emmer' or 'glume wheat' precludes any statement as to the predominance of one or the other crop. While glume bases are commonly abundant, glume wheat grains tend to occur at low levels. In one sample (AL 47), both glume wheat grains and glume bases occur in significant numbers (Table 33).

Free-threshing wheat grains were not identified further than 'bread/macaroni wheat' (Triticum aestivum/durum). Free-threshing wheat rachis, however, is readily identifiable to species, and all wellpreserved rachis fragments were of the macaroni wheat type (T. durum) with the exception of a few fragments tentatively identified as bread wheat ( $T$. cf. aestivum) (Table 33). Apart from two almost pure lentil samples (ST 105/26, ST 105/27) and one sample dominated by common pea (ER $45 / 13$ ), pulse seeds tend to occur in small numbers.

The other potentially cultivated plants in the samples are safflower (Carthamus tinctorius) and flax (Linum usitatissimum). Since the seeds of safflower occur only in small numbers in five of the samples, cultivation and use of this crop at Tell Brak is uncertain. Similarly, flax is only present in a single sample (FS 1107/155), in the form of a seed capsule fragment containing two broken seeds (Table 33).
b) Wild taxa: Grains and glume bases of Aegilops occur in over half of the samples. Three Aegilops chaff types were distinguished and identified as $A$. tauschii ( $=$ squarrosa), A. crassa and A. speltoides (Fig. 324). Two other grass types occur in the majority of samples: Eremopyrum bonaepartis / confusum and Hordeum spontaneum ('wild barley'). Wild barley grains were distinguished from cultivated hulled barley by a deep, wide, sharply defined ventral groove and flat dorsal profile. The rachis fragments of wild barley were distinguished from hulled two-rowed barley by a 'clean' internode attachment scar and well-preserved sterile floret bases.

Other wild taxa occurring in at least half the samples are Coronilla scorpioides and Trigonella indet.; these legume types, like the common grasses, probably grew as weeds in the crop fields. Indeed, most of the wild taxa identified to species commonly occur as field weeds in the Near East and can be harvested at the fruiting stage with the crop, e.g. Vaccaria pyramidata, Hordeum spontaneum, Lolium cf. perenne, Fumaria parvifloraldensiflora, Papaver rhoeas, Coronilla scorpioides, Trigonella astroites, Asperula arvensis (Zohary \& Feinbrun-Dothan 1966-86; Köder et al. 1982; Palmer 1994). A clear exception is Prosopis cf. farcta, present in four of the samples, which fruits after the cereal harvest (MacDonald \& partners 1958, 206-7; Townsend et al. 1966-85; Oates 1978, 306).


Figure 324. Three types of Aegilops spikelet base identified at Tell Brak, showing the ventral view (left) and the attachment scar on the bottom (right): Aegilops tauschii (1), Aegilops crassa (2) and Aegilops speltoides (3). Scales are 2 mm long.

The mode of arrival of several perennials of wet habitats, Scirpus maritimus and Rumex conglomeratus, is uncertain. Hillman $(1991,35)$ has suggested that Scirpus maritimus grows as a weed in cereal fields and can be harvested together with the crop at the fruiting stage. Other observations in Iraq (Townsend et al. 1966-85) and Jordan (Charles pers. observ.) suggest that Scirpus maritimus comes into fruit after the cereal harvest. Further investigation is required into the ecology of these species in order to assess their origin.
c) Sheep/goat dung: Small numbers of charred sheep / goat dung pellets ( $1-2$ per sample) were observed in nine (22 per cent) of the samples (Table 33). Where
whole pellets were not preserved, the dung could be identified from the surface tevture of the fragments and the distinctive shape of the pellet ends. The dung was quantified by counting pellet ends. No identifiable plant material was observed in the exposed dung matrix.

## B. Investigating causes of variation in composition among samples

## 1. The influence of crop processing on sample composition

Crop processing - the series of operations required to convert the harvested crop into clean grain (and potentially useful 'by-products') - has long been recognized as an important cause of variation among archaeobotanical crop samples (Dennell 1972; 1974; 1976; Hillman 1973). Moreover, it is necessary to determine which crop-processing stages are represented by samples if husbandry-related differences in weed composition are to be identified. Ethnobotanical studies of crop processing have shown that both crop and weed composition are altered systematically through the processing sequence (Hillman 1981; Jones 1984; 1987b).
a) Assessing crop-processing stage from grain, rachis and wed proportions: Prior to assessing the impact of crop processing on samples it is necessary to take account of post-processing mixing, whether accidental or purposeful. While some types of mixing may be difficult to detect (e.g. mixing of different stages of processing of the same crop), mixing of different crop types (e.g. free-threshing and non-free-threshing cereals) which are unlikely to be grown and processed together can readily be identified. In the Tell Brak assemblage, the remains of free-threshing type cereals (hulled barley and free-threshing wheat) are often accompanied in samples by glume wheat material, particularly glume bases. This type of mixing almost certainly took place after processing, since glume wheats require a different processing sequence from free-threshing cereals, the glume bases being separated from the grain only after pounding of the spikelets. The coincidence in samples of hulled barley and free-threshing wheat, however, does not necessarily mean that post-processing mixing has taken place, since these two cereals are processed in more or less the same way and, therefore, are more likely to have been grown together (Hillman 1981; 1985; Jones \& Halstead 1995).

In Figure 325, the relative proportions of the three major cereal types (based on total counts for both grain and chaff) are shown for the 37 cereal-
dominated samples (the three pulse-dominated samples are omitted). It is evident that all 37 samples contain some hulled barley, and that none are entirely dominated by glume wheat or free-threshing wheat. On the basis of these percentages, samples have been classified as follows:
Group 1. Samples with at least 80 per cent hulled barley ( $n=16$ );
Group 2. Samples with less than 80 per cent hulled barley but at least 80 per cent hulled barley + free-threshing wheat ( $n=9$ );
Group 3. 'Mixed crop' samples with less than 80 per cent free-threshing cereal material and hence a significant percentage of glume wheat material (though never as much as 80 per cent) ( $n=12$ );
Group 4. Samples dominated (at least 95 per cent) by pulse seeds ( $n=3$ ).
Since, as already noted, it is unlikely that glume wheat and free-threshing cereals were grown and processed together, group 3 samples are here considered too 'mixed' for further assessment of crop processing. Samples in group 4 will also be excluded from further discussion in this section. Samples in groups 1 and 2 are dominated by a single crop (hulled barley) or crop type (free-threshing cereal). Group 2, however, may contain high levels of post-processing mixing if free-threshing wheat and hulled barley were not actually grown together. The possibility that these samples also represent a mixture of separately grown crops will be explored further below.

Jones (1990) has published percentages of cereal grain, cereal chaff and weed seeds in samples taken from different stages of the crop-processing sequence observed on the Greek island of Amorgos. All of the cereals grown on Amorgos were freethreshing and include hulled six-rowed barley and free-threshing wheat, which were often grown together as a mixed or 'maslin' crop (Jones \& Halstead 1995). Because the group 1 and 2 samples defined above contain little glume wheat material, the grain, rachis and weed proportions of the group 1 and 2 samples from Tell Brak can be compared with the ethnobotanical samples from Amorgos. In making these comparisons there are several problems to consider. The thoroughness of winnowing, sieving, etc. may vary, as may the amount of weed harvested with the crop. Furthermore, the hulled barley at Tell Brak is the two-rowed form (the ratio of grains to rachis internodes approximating to 1:1) rather than the six-rowed form grown on Amorgos (with a grain to rachis ratio of $3: 1$ ). The Tell Brak barley grain counts, therefore, have been multiplied by three to make them comparable with the Amorgos figures. Since free-threshing wheat also has $c .3$ grains per rachis


Figure 325. Diagram showing the relative proportions of barley, glume wheat and free-threshing wheat material (total grain and chaff) per sample.
internode, the figures for wheat and barley are also comparable and can be summed for samples containing a mixture of these two cereal types (as at Amorgos).

In Figure 326, adjusted percentages of freethreshing grain, rachis and weed seeds are shown for the group 1 and 2 samples. In Figure 327, per cent composition of the Amorgos samples is similarly shown. The Tell Brak samples tend to be dominated by grain, rachis, or a combination of rachis internodes and weed seeds (Fig. 326). Most of the low-grain samples occur near the 'rachis corner' or midway along the rachis-weed side of the triangle (Fig. 326), suggesting that they derive from one of the early processing stages (winnowing or coarse sieve by-product: Fig. 327). The late stage by-product of fine-sieving tends to be virtually free of rachis material (Fig. 327). These inferences are further strengthened by the presence of potentially cereal-derived culm material (culm nodes and/ or bases $>1 \mathrm{~mm}$ in diameter) in virtually all low-grain samples (Table 33). In the Amorgos study, all of the winnowing and coarse sieve by-product samples contained many culm nodes, whereas only one fine-sieve byproduct sample contained a single culm node.
b) Assessing crop-processing stage from weed composition: The ethnobotanical study of crop processing in Amorgos has shown that the weed seed composition of the harvested crop changes through the cropprocessing sequence in accordance with the size, headedness (tendency to stay in heads despite threshing) and aerodynamic properties of weed seeds (Jones


Figure 326. Diagram showing the relative proportions of grains (free-threshing cereal only), rachis internodes and weed seeds for Group 1 and 2 samples.


Figure 327. Diagram showing the relative proportions of grains, rachis internodes and weed seeds in ethnobotanical samples from Amorgos of crop-processing products and by-products for freethreshing cereals. (After Jones 1990.)

1984; cf. Hillman 1981). Using the method developed by Jones (1984; 1987b), the Tell Brak samples were compared with ethnographic data relating to traditional cereal-processing in order to determine which processing stages were represented. Wild taxa which are likely to have been harvested in fruit with the crop and which occur in at least 10 per cent of samples were categorized according to the three characteristics noted above (Table 36). A discriminant analysis was performed using the Amorgos sam-

Table 35. Crops used in cach period. Crops are considered likely to have been used at the site if there are at least 50 grain and/or chaff items in a sample.

| Crops | Late Phase L | Phase M/Akkadian | Phase N/ Post-Akkadian |
| :--- | :---: | :---: | :---: |
| hulled two-rowed barley | $X$ | $X$ | $X$ |
| free-threshing wheat | $X$ | $X$ | $X$ |
| glume wheat* | $X$ (einkorn+ ?emmer) | $X$ | $X$ (einkorn + emmer) |
| lentil** | $X$ |  |  |
| common pea | $X$ |  |  |

* Grains and glume bases identified as emmer amount to just under 50 items ( 45 total) in one late ED III sample (AL 47) whereas einkorn and emmer are each abundantly represented in one post-Akkadian sample (FS 267/77) (Table 33). In the Akkadian period, material identified only to the more general 'einkorn/emmer' or 'glume wheat' categories occurs in abundance.
** The lentil sample is 'ED III/ early Akkadian'.

Table 36. The classification of wild taxa according to their size, headedness, and aerodynamic properties (after Jones 1984). Seeds smaller than 2 mm in diameter are considered 'small'.

Small, Free and Light:
Bromus cf. scoparius
Bromus cf. tectorum
Bromus sp.
Lophochloa indet.
Small grass type B
Small, Headed and Light:
Lolium cf. perente
Papater rhoeas
Small, Headed and Heavy:
Coronilla scorpioides
Gypsophila sp.
Malvaceae
Phalaris indet. (non-tuberosa)
Sulenc spp.
Trigonella astroites
Trigonclla indet.
Big, Headed and Heavy:
Medicago indet.
Small, Free and Heavy :
Androsace maxima
Artemisia sp.
BrassicalSinapis
Chenopodium indet.
Rumex conglomeratus
Sorpus maritimus
Scirpus/Schoenoplectus
Teucrium polium
Big, Free and Heavy:
Aegilops indet.
Asperula areensis
Centaurea sp.
Eremopyrum bonaepartis/confusum
Fumaria parvifloraldensiflora
Hordeum spontaneum
Vaccaria pyramidata/segetalis
ples from the different crop-processing stages as 'control groups' to which the Tell Brak samples were compared. The discriminant analysis maximizes the separation among the four known groups representing the four major by-products/products of crop processing (by-products of winnowing, coarse sieving, and fine-sieving; product of fine-sieving) and classifies each of the archaeological samples into one of the four groups. This classification is based on similarity in weed seed category composition between the archaeological samples and the ethnobotanical samples from Amorgos.

Samples containing less than twenty weed seeds were excluded from the analysis (cf. Jones 1987b, 313-14). Of the twelve samples excluded, three are the pulse-dominated samples (group 4, above) and seven consist almost entirely of hulled barley grain. With the possible exception of CH 484/29 and FS 1067/130, which are dominated by barley grain but contain some rachis material, all of these samples seem to represent cleaned crop products. The remaining two samples which contain less than 20 weed seeds (FS 1020/68+111, FS 1107/155) are group 2 samples and are dominated by rachis. The interpretation of all of the excluded samples in terms of processing will be discussed below.

The results of the discriminant analysis are illustrated in Figure 328. It is evident that the 'mixed crop' (group 3) samples occur at the margins of various groups or in the central space between them. Thus the peripheral position of these samples underscores their 'mixed' character. With the exception of one sample (AL 47, see below), the classification of these samples by the discriminant analysis will not be discussed further.

In Table 37, the classification of the group 1 and 2 samples (and AL47) by the discriminant analysis is shown together with the probability of each classification. It should be noted that the probabilities merely reflect how similar the samples are to a particular
processing group as opposed to the other three; they are not an absolute indicator of the origin of each sample. Most of the group 1 and 2 samples are classified as fine-sieve product or winnowing by-product, a further two samples being classified as coarse sieve by-product and one as fine-sieve by-product. This overall picture is in agreement with inferences based on grain, chaff and weed percentages (Fig. 326): samples appear to derive either from the end of the processing sequence (crop product) or from an early processing stage (winnowing or coarse-sieving byproduct). The classifications shown in Table 37 will now be considered in light of the crop composition (crop types and plant parts) of each sample.
c) Samples classified as winnowing by-product: The five samples classified as winnowing by-product (three group 1 samples and two group 2 samples) conform more or less in grain, rachis and weed proportions to the Amorgos winnowing by-product samples (i.e. they occur in the lower part of the triangle in Fig. 326). The position of one sample, FS 140/8, appears peripheral to the winnowing by-product group in Figure 328. In the plot of the first and third functions (not shown), however, this sample is clearly pulled away with the winnowing by-product group and away from the other sample groups.
d) Samples classified as coarse-sieve by-product: The group 1 sample classified as coarse sieve by-product, FS 355/147, conforms well in grain, rachis and weed proportions and in weed category composition to the Amorgos coarse-sieve by-products. The other (group 2) sample, FS 178/33, contains only 37 crop items consisting primarily of barley grain and free-threshing wheat rachis. Though such a small sample is difficult to interpret, it appears to reflect a mixture of different crops (hulled barley and free-threshing wheat) from different processing stages. This inference is supported by the lower probability ( 0.88 ) associated with the classification of this sample as coarse sieve by-product (Table 37).
e) Samples classified as fine sieve by-product: The only sample classified as fine sieve by-product, FS 1016/ 68+111 (Fig. 328 ), is a group 2 sample. The sample is dominated by rachis and thus does not resemble fine-sieve by-products from Amorgos. It probably represents a mixture of different processing
residues. The probability associated with the classification of this sample as fine sieve by-product is very low (0.59) (Table 37), and it is interesting to note that it is secondarily classified by the discriminant analysis as winnowing by-product (at 0.39 ). The position of this sample between the fine sieve by-product and winnowing by-product groups (Fig. 328) may suggest that it represents a mixture of these two by-products.
f) Samples classified as fine-sieve product: Of the eight samples classified as fine-sieve product (five group 1 samples and three group 2 samples), three group 1 samples (ER 45/4, ER45/26, FS 1527) closely resemble the Amorgos products in grain, rachis and weed porportions and in weed category composition. Two other group 1 samples, CH 495/46 and DH 91/142, are classified with lower probabilities ( 0.70 and 0.62 , respectively; Table 37) and are therefore probably not pure grain products. This is supported by the fact that both samples contain some rachis as well as grain (Table 33). The position of these samples in Figure 328 between the fine-sieve product and winnowing/ coarse-sieve by-product groups reflects their uncertain classification.

The three group 2 samples are classified with high probabilities in the fine sieve product group (Table 37) but do not appear to represent 'genuine' products. Two of the samples, CH 527/56 and DH $78 / 158$, are dominated by rachis and probably represent a mixture of residues (Fig. 328). The samples, for example, may contain a mixture of winnowing/ coarse sieve by-product and the by-product of hand-

Table 37. The classification of samples by the discriminant analysis. Crop type composition refers to groups defined previously (see Fig. 325).

| Crop-processing <br> classification | Crop type <br> composition | Sample | Probability |
| :--- | :--- | :--- | :---: |
| Winnowing by-product | barley | CH 253/54 | 1.00 |
|  | barley <br> barley <br> free-threshing cereal | FS 140/8 | 1.00 |
|  | free-threshing cereal | SS 142/65 | 0.92 |
| Coarse-sieve by-product | barley | FS 355/147 | 0.98 |
|  | free-threshing cereal | FS 178/33 | 1.00 |
| Fine-sieve by-product | free-threshing cereal | FS 1016/68+111 | 0.88 |
| Fine-sieve product | barley | CH 495/46 | 0.59 |
|  | barley | DH 91/142 | 0.60 |
|  | barley | ER 45/4 | 1.00 |
|  | barley | ER 45/26 | 1.00 |
|  | barley | FS 1527 | 1.00 |
|  | free-threshing cereal | CH 527/56 | 1.00 |
|  | free-threshing cereal | DH 78/158 | 0.96 |
|  | free-threshing cereal | FS 191/35 | 1.00 |
|  | mixed crop | AL 47 | 0.79 |



Figure 328. Scatter plot of Tell Brak and Amorgos samples based on a discriminant analysis of the four crop processing groups using weed seed category counts as the discriminating variables (method described in Jones 1984, 1987b). The position of samples, where discussed in the text, is indicated by labels (shortened to locus number).
sorting, which would consist of the large, heavy weed seeds removed from the fine sieve product. The third sample, FS 191/35, contains some rachis but is dominated by big, free and heavy Aegilops seeds, some of which are preserved in whole spikelets. This sample may contain the by-product of hand-sorting, though the rachis content of the sample suggests that it also is of mixed origin.
g) Mixed products: AL 47, a group 3 sample classified as fine-sieve product at a low probability (0.79) (Fig. $328 \&$ Table 37), is unique in the Tell Brak assemblage in several respects. One of the most dense samples (>2000 items/litre) (Table 33), it is dominated by hulled barley grain but also contains a significant number of both glume wheat grains and glume bases. While the hulled barley is chaff-free, the glume wheat material occurs at a grain:glume base ratio of $c$. 3:4. The dominant glume wheat grain type identified to species is two-grained, though onegrained einkorn is also present. For two-grained
spikelets, a c. 1:1 grain:glume base ratio would be expected if whole spikelets (rather than dehusked grain) were stored. The slightly greater frequency of glume bases in sample AL 47 could be explained by the additional presence of one-grained spikelets (with a grain: glume base ratio of 1:2). The glume wheat material in AL 47, therefore, could represent a mixture of one- and two-grained spikelets. The low probability associated with the classification of this sample as fine-sieve product may suggest that these spikelets were stored prior to sieving, though it is also possible that crop processing by-product is also present in the sample.

## 2. Summary of the assemblage in terms of crop processing

Bringing together the results of the crop- and weedbased analyses discussed in the previous sections (Figs. 325-8), the classification of all samples according to crop-processing stage and crop type composition is given in Table 38. The 'product mixed with some early stage by-product' category contains bar-
ley grain-dominated samples which contain a small amount of barley rachis. The 'mixed stage' samples include a variety of by-product and product/byproduct mixtures. The 'mixed crop' group in Table 37 is identical with group 3 defined above (Fig. 325) except that one group 3 sample, AL 47, is categorized as a 'mixed products' sample.

Five of the seven group 2 samples entered in the discriminant analysis appear to contain a mixture of processing stages and are thus categorized as 'mixed stage' samples in Table 38. This suggests that the group 2 samples do not generally reflect the processing of a combined barley and free-threshing wheat crop, but rather that they result from the post-processing mixing of two separately grown and processed crops. In the case of two weedpoor group 2 samples which could not be entered in the discriminant analysis (FS 1020/ $85+110$, FS1107/155), they have been classified provisionally as 'mixed stage' in Table 38, though their 'purity' as early stage by-products cannot be ruled out.

## 3. Exploring general trends in sample composition

The multivariate ordination technique correspondence analysis was used to explore variation in sample composition (see Jongman et al. 1987; Lange 1990; Jones 1991). Correspondence analysis produces axes along which it places each sample according to its botanical composition (sample plot) or each species in terms of its coincidence with other botanical components in samples (species plot). The origin of the two axes represents a neutral point such that, for example, botanical components placed near the origin tend to occur in all samples to a similar degree. As explained by Lange $(1990,44)$, 'the direction of a point away from the origin indicates the specific diversion in the distribution of that species or sample, while the distance away from the origin indicates the degree of the diversion'. Furthermore, the distance between sample (or species) points can be interpreted as similarity or difference in relation to overall trends in the data (represented by the axes).

Axis 1 (horizontal) and axis 2 (vertical) were used since these account for the most variation in the data. CANOCO (ter Braak 1987-92) was used to conduct the analysis and CANODRAW (Smilauer 1992) to plot the results. Correspondence analysis was applied to the data set comprising 11 major crop categories (barley grain and rachis, free-threshing wheat grain and rachis, glume wheat grain and
glume bases, culm nodes and bases greater than 1 mm in diameter, lentil, common pea, and grass pea) and 37 cereal-dominated samples. Rare crops (e.g. flax, safflower) present in less than four samples (10 per cent of samples) were excluded as these tend to dominate the analysis and obscure major trends in the data (cf. Jones et al. 1995). In addition, various indeterminate categories (e.g. Triticum indet. grain, large legume indet. seeds) were excluded for the sake of simplicity. It should be noted, however, that a sample plot similar to Figure 329 is produced when all botanical components (crop, indeterminate and wild taxa) occurring in at least 10 per cent of samples are included in the analysis. The three pulse sam-

Table 38. The classification of all samples in terms of cropprocessing stage and crop-type composition (see Fig. 325).

| Crop-processing stage | Crop-type composition | Sample |
| :---: | :---: | :---: |
| Winnowing by-product | barley | CH 253/54 |
|  | barley | FS 242/58 |
|  | barley | FS 259/75 |
|  | free-threshing cereal | FS 140/8 |
|  | free-threshing cereal | SS 142/65 |
| Coarse-sieve by-product | barley | FS 355/147 |
| Fine-sieve product | common pea | ER 45/13 |
|  | lentil | ST 105/26 |
|  | lentil | ST 105/27 |
|  | barley | AL 19/4 |
|  | barley | CH 485/18 |
|  | barley | ER 39/23 |
|  | barley | ER 45/1 |
|  | barley | ER 45/4 |
|  | barley | ER 45/26 |
|  | barley | FS 1067 |
|  | barley | FS 1527 |
|  | mixed crop | AL 47 |
| Product mixed with some early stage by-product (rachis) Mixed stages | barley | CH 484/29 |
|  | barley | CH 495/46 |
|  | barley | FS 1067/130 |
|  | barley | DH 91/142 |
|  | free-threshing cereal | CH 527/56 |
|  | free-threshing cereal | DH 78/158 |
|  | free-threshing cereal | FS 178/33 |
|  | free-threshing cereal | FS 191/35 |
|  | free-threshing cereal | FS 1016/68+111 |
|  | free-threshing cereal | FS 1020/85+110* |
|  | free-threshing cereal | FS 1107/155* |
|  | mixed crop | CH 485/45 |
|  | mixed crop | DH 56/115 |
|  | mixed crop | DH 57/93 |
|  | mixed crop | FS 243/52 |
|  | mixed crop | FS 267/64 |
|  | mixed crop | FS 267/77 |
|  | mixed crop | FS 309/31 |
|  | mixed crop | FS 351/48 |
|  | mixed crop | FS 351/49 |
|  | mixed crop | FS 1067/84 |
|  | mixed crop | FS 1067/87 |



Figure 329. Correspondence analysis plot of samples coded according to crop-processing stage and crop-type composition (see Table 38).
ples, which are so different from the rest of the assemblage that they would obscure variation among the remaining samples, were also excluded.

Figures 329-30 show correspondence analysis plots of samples and species, respectively. In Figure 329 , the 37 samples, coded according to crop-processing stage and crop-type composition (Table 38), are shown distributed along the first two axes and in Figure 330, crop components are shown in relation to these same axes. Figure 329 demonstrates that crop processing and crop-type composition account for the major trends in variation among samples. Along axis 1 (horizontal), products and productdominated samples are situated at the right end away from by-products and chaff-dominated mixed stage samples. Along axis 2 (vertical), chaff-rich barley and free-threshing cereal samples - including those considered 'pure' winnowing and coarse-sieve byproducts - are situated at the bottom end, while samples containing a mixture of free-threshing cereal and glume wheat are pulled out towards the

Figure 330. Correspondence analysis plot of species coded according to crop component categories. Key to labels: bargr = barley grain; barra = barley rachis; commpea $=$ common pea; culmba $=$ culm bases; culmno $=$ culm nodes; fwhtgr $=$ free-threshing wheat grain; fwhtra $=$ free-threshing wheat rachis; graspea $=$ grass pea; gwhtgb = glume wheat glume bases; $g$ whtgr $=$ glume wheat grain.
top. The corresponding species plot (Fig. 330) illustrates the position of each crop component based on sample composition. Barley grain and glume wheat grain are situated at the right end of axis 1 indicating that they occur in abundance in some samples (products), while free-threshing wheat grain, situated very near the origin, occurs in the majority of samples at low levels. Culm nodes and bases are situated near barley and free-threshing wheat rachis towards the bottom end of axis 2 ; all of these components tend to be separated from the grain by winnowing and coarse sieving. Glume wheat grain and glume bases are situated at the top end of axis 2 as are various pulses, which tend to co-occur (at low levels) with glume wheat material.

The relative proportions of the various crop
components in each sample are illustrated in Figure 331, where samples are represented by pie charts indicating crop composition. The proportion of barley grain increases along axis 1 towards the right end at the expense of various chaff components. Barley product and product-dominated samples occur in two nearby clusters at the right end of axis 1 (area shown expanded in Fig. 332), while the mixed product sample (AL 47), which contains a significant amount of glume wheat grains and glume bases, is pulled away from the barley products towards the top of axis 2. Glume bases are most abundant at the top end of axis 2 and decrease in favour of freethreshing wheat rachis, barley rachis and culm material towards the bottom end (area shown expanded in Fig. 333).

In order to determine how far these major trends in sample composition coincide with other factors, the sample plot is coded in Figures 334-6 according to density (number of identifiable items per litre), context type and period, respectively. In Figure 334, crop processing is shown to relate to sample density insofar as products tend to be more dense than byproducts and chaff-dominated mixed stage samples. The lowest density class (25-49) is confined to the left end of axis 1 and, in particular, to some of the mixed stage/mixed crop samples. By-products and mixed stage samples, however, can also occur at high densities. In Figure 335, crop processing and context type appear linked in that products in particular tend to occur in pots, though they have also


Figure 332. Expanded section of Figure 331: right end of axis 1 .


Figure 331. Correspondence analysis plot of samples where data points are shown as pie charts indicating the relative proportions of crop components.


Figure 333. Expanded section of Figure 331: left end of axis 1 and bottom end of axis 2 .


Figure 334. Correspondence analysis plot of samples coded according to sample density.
been recovered from pit, floor and oven/tannur contexts. Generally, individual context types are shown to be quite variable in content.

Finally, in Figure 336, products and productdominated samples are shown to derive particularly from the late ED III destruction level, a trend of limited significance since stored products would be under-represented except in accidental/catastrophic fires. Akkadian period samples also include several product/product-dominated samples (though none of these were recovered from pots), whereas the postAkkadian samples consist exclusively of by-products and chaff-dominated mixed stage samples. Thus, while sample composition does vary to some degree in accordance with density, context type and period (Figs. 334-6), the classification of samples according to crop processing and crop type composition (Table 38) clearly provides the most complete explanation for variation in sample composition.

## C. The interpretation of mixed stage samples

The mixed stage / mixed crop samples (Table 38) occur in all periods including the late ED III destruction level. While some of these samples are the least dense in the assemblage (see above and Fig. 334),


Figure 335. Correspondence analysis plot of samples coded according to context type.
others (CH 485/45, FS 267/77, FS 243/52, FS 309/31) are high in density ( $>350$ items/litre), suggesting that each may represent a single depositional event. Pre-depositional mixing of glume wheat chaff and free-threshing cereal grain/chaff may have been carried out in the preparation of fodder or fuel (cf. van Zeist \& Bakker-Heeres 1988, 706). The mixed stage/ free-threshing cereal samples (Table 38) occur in the late ED III destruction level as well as in the postAkkadian period, suggesting that the mixing of hulled barley and free-threshing wheat, which were probably grown separately (see above), may have been intentional. This inference is supported by the reasonably high densities of the two destruction level samples ( $>200$ items/litre), suggesting that single depositional events are represented. One of these (DH 78/158) was actually recovered from a pot, though it does not necessarily represent the original contents. The density of the post-Akkadian samples is variable but exceeds 200 items per litre in several cases (FS 1016/68+110, FS 191/35). Here again, mixtures of barley and free-threshing wheat material could have been used as fodder, fuel, temper, etc.

In Table 39, the relative proportions of various crop components are shown for the mixed stage (both mixed crop and free-threshing cereal) samples. While


Figure 336. Correspondence analysis plot of samples coded according to period.
pulse seed content is low or nil, cereal grain content is reasonably high ( $>20$ per cent) in roughly a third of these samples, suggesting that the material may not simply represent discard. Furthermore, grain content is consistently higher for hulled barley than for free-threshing wheat or glume wheat. In a few cases, the ratio of hulled barley grain to rachis approximates 1:1 (the ratio found in unprocessed two-rowed barley), whereas in several others barley grain content considerably exceeds barley rachis content. The overall implication is that the free-threshing wheat and glume wheat components, consisting almost entirely of chaff, derive from more completely/thoroughly processed crops than the hulled barley. This consistent trend provides further evidence that the mixed stage samples are not simply the cumulative result of haphazard discard events.

The role of animal dung burned for fuel as a source of charred plant remains on archaeological sites has received increasing attention (Miller 1984b; 1991; 1996; Miller \& Smart 1984; Charles 1989). Charles (1998) has recently presented a methodology for assessing the likelihood of dung contamination in archaeobotanical samples by examining various aspects of sample composition. In addition to the presence of apparently deliberate post-processing mixtures of various cereal components (as ob-
served in the mixed stage samples at Tell Brak), several other criteria are suggested:

- the presence of recognizable charred dung;
- the presence of wild taxa unlikely to be harvested in fruit with the (winter) crops;
- the degree to which the archaeological samples diverge from known crop-processing groups in discriminant analysis.
Eight of the nine dung-containing samples in the Tell Brak assemblage are mixed stage samples (Table 33). As noted earlier, however, no identifiable plant remains have been observed in the occasional pellet fragments recovered. In terms of the ecology of the wild taxa at Tell Brak, only one taxon, Prosopis farcta, definitely comes into fruit after the winter crop harvest (MacDonald \& partners 1958, 206-7; Townsend et al. 1966-85), and thus could not have been brought to the site as a weed harvested with crops. Prosopis seeds are highly palatable to sheep and goats (Helbaek 1969), and the presence of these seeds in four mixed stage, dung-containing samples (Table 33) implies that, at least in these cases, some dung-derived material is represented.

With regard to the final criterion, the behaviour of the Tell Brak samples in terms of crop processing is discussed in Charles (1998), where it was found that the Tell Brak assemblage diverges much less radically overall from the known processing groups than an ED III assemblage from Abu Salabikh in southern Iraq. The latter assemblage is rich in taxa which could not have been harvested at the fruiting stage with cereals. The relatively low input from non-weed wild taxa at Tell Brak may suggest either that the mixed stage samples generally represent fodder not yet fed to animals (and thus that dungburning, as such, is not being represented), or that the mixed stage samples derive from the dung of animals fed more or less exclusively on crops and their weeds. In either case (and both could be represented), the mixed stage samples seem to provide evidence of the deliberate mixture of crop residues for animal feeding. Furthermore, while barley grain is a common component of these samples along with barley rachis, free-threshing wheat and glume wheat grain was carefully separated from the chaff to be used for other purposes such as human consumption.

## D. The implications of archaeological context for crop use

The distribution of crops in various states of processing and purity through different areas of the site may contribute to a reconstruction of crop use as well as to a better understanding of the functioning

Table 39. The relative proportions of warious crop components in mixed stage samples (both mixed crop and freethreshing cereal samples - see Table 38).
$\left.\begin{array}{llccccccc}\text { Samples } & \begin{array}{l}\text { Crop-type } \\ \text { composition }\end{array} & \begin{array}{c}\% \text { Barley } \\ \text { grain }\end{array} & \begin{array}{c}\% \text { Barley } \\ \text { rachis }\end{array} & \begin{array}{c}\% \text { Free- } \\ \text { threshing } \\ \text { wheat grain }\end{array} & \begin{array}{c}\% \text { Free- } \\ \text { threshing } \\ \text { wheat rachis }\end{array} & \begin{array}{c}\% \text { Glume } \\ \text { wheat } \\ \text { grain }\end{array} & \begin{array}{c}\% \text { Glume } \\ \text { wheat }\end{array} & \text { glume bases }\end{array}\right]$
*This sample contains exactly $80 \%$ free-threshing cereal material but was placed in the mixed crop group since it probably derives from the same deposit as several other mixed crop samples.
of structures, rooms, etc. The 'character' of some areas is outlined in Chapter 2, and the archaeobotanical evidence may now be considered in light of these characterizations. Extensively excavated areas destroyed in the late ED III destruction and/or in which grain-rich deposits are preserved have been selected for discusson.

## 1. Trench ER, late ED III destruction level (Phase L)

The ER samples were taken from individual intact pots found in 'small domestic rooms' burned in the late ED III destruction (p. 35, Fig. 35). Pots sampled have been found to contain common pea product (ER $45 / 13$ ) and hulled barley product (ER 39/23, ER 45/1, ER 45/4, ER 45/26). The rooms in ER do not appear to have been used for large-scale, bulk storage of crops but rather for small-scale, householdlevel storage of cleaned barley and pulses ready for cooking and consumption.

## 2. Trench $A L$, late ED III destruction level (Phase $L$ )

The clay-lined pit in Trench AL (AL 47) was found to contain a mixture of products (namely hulled barley and glume wheat). Assuming that the pit was used for storage, different crops may have been kept separate within the pit in containers destroyed by the fire. The only other sample from the trench in this period, AL 19/4, represents barley product stored in a pot. The AL samples may well reflect householdlevel storage of relatively small amounts of crop
analogous to that seen in Trench ER.
It has been suggested above that the glume wheat component of the AL 47 pit fill represents stored spikelets. Hillman (1981) reports that in recent times in eastern Turkey glume wheat spikelets were not bulk stored but were pounded immediately after the harvest. The only exception to this was seed corn storage since glume wheats are sown as spikelets. At Late Bronze Age Assiros in Greek Macedonia, however, there is clear archaeobotanical evidence for bulk storage of glume wheat spikelets (Jones 1987a, 115-16). Glume wheat grain stored in the spikelet may be less susceptible to insect and rodent damage, though this has not been demonstrated conclusively (Sigaut 1988, 15).

## 3. Trench CH, late ED III destruction level (Phase L)

Samples from Rooms 61 and 62 (Fig. 28, p. 29), interpreted as domestic quarters within a 'high status' household similar to that in ER, include a barley product sample recovered from a pot (CH 485/18), several hulled barley product/by-product mixtures (CH 484/29, CH 495/46), one of which was taken from an oven, a mixed stage/mixed crop sample (CH 485/45), and a mixed stage/free-threshing cereal sample (CH 527/56), also from an oven. Another sample from the same level ( $\mathrm{CH} 253 / 54$ ), from ash overlying cobbling, has been interpreted as (unmixed) winnowing by-product. The CH samples demonstrate that, in addition to stored crop prod-
ucts, various by-products and by-product mixtures were present in houses, some of which may have been used as fuel, whether as dung fuel (e.g. CH 527/56, which contains dung material) or as kindling. As for the 'pure' winnowing by-product, this need not be taken as evidence for winnowing in the immediate area but could have been stored for later use as fuel, etc.

It is worth noting that, taking the assemblage as a whole, ovens and tannurs have yielded a range of sample types including both chaff- and grain-rich samples (see also Fig. 335). Van Zeist \& Bakker-Heeres $(1988,291)$ have urged caution in the interpretation of plant remains in ovens as 'the spillings of food preparation' given that dough and flour are the likeliest cereal-derived ingredients in ovens used for baking bread. With the possible exception of the two grain-rich samples (CH 495/46 \& FS 1527), the oven/ tannur samples could represent material used as fuel, if indeed they are related to the functioning of the ovens.

## 4. Trench FS, Akkadian (Phase M)

Akkadian samples from FS derive from approximately the same level as the niched, rectangular enclosure (Level 3, p. 56). Four samples of very similar composition (FS 351/48, FS 351/49, FS 1067/84 \& FS 1067/87) were taken from the occupation debris of two nearby rooms in the so-called 'southern building'. These samples are of the mixed stage/mixed crop type (Table 38) and, as noted earlier, it is possible that they derive from a single deposit, though such an interpretation would require that the same deposit be spread over parts of two adjacent rooms. The presence of both dung pellets and Prosopis seeds in these samples suggests that they contain dungderived material (i.e. spent dung fuel). The apparent storage function of the southernmost room in the southern building (which contains large storage jars) is thus not directly reflected in the samples from this room (FS 351/48, FS 351/49). Two samples from the northernmost of the rooms (FS 1067 \& FS 1067/130) have been interpreted as hulled barley product (mixed with a small amount of barley rachis in the latter sample), though neither was found in a vessel. One sample from this room (FS 1067/84) was recovered from a pot but its low density (Table 33) and similarity to other floor samples noted above suggests that it does not represent the original contents. A further sample (FS 355/147) from the open space between the 'southern building' and the niched building (RDB) has been interpreted as (unmixed) coarse sieve by-product.

It is notable that none of the samples from the 'southern building' rooms contain any pulse seeds
in contrast with the earlier samples from CH , all of which contain pulses (albeit at low levels), and in particular with ER, where stored common pea was recovered.

## 5. Summary of contextual evidence

The areas described above present a range of apparently different functions and sample types. While all of these areas include product and/or by-product of hulled barley, free-threshing wheat and glume wheat, pulses are lacking in the one extensively sampled 'public' context (FS). The implications of this apparent contrast between 'private' and 'public' contexts as well as of the evidence for on-site processing and storage will be discussed further below.

## E. The implications of weed composition for crop husbandry

Weed seeds accompanying crop material in archaeobotanical samples provide the best archaeological evidence of crop-husbandry practices (Hillman 1973; Wasylikowa 1981; Jones 1992; van der Veen 1992). The ecology of weed species can potentially shed light on a range of crop management factors (sowing time, watering, crop rotation, etc.). A study of Halafperiod agriculture in the Khabur basin used field observations of present-day species distribution in the reconstruction of crop husbandry from archaeological weeds (McCorriston 1992). The author listed species observed in dry-farmed and irrigated fields in the Khabur basin and noted that certain species were restricted to dry-farmed or irrigated fields (McCorriston 1992, table 2). These lists have been compared with observations made in other areas where both dry-farming and irrigation are practiced (Spain: Jones et al. 1995; Charles et al. 1997; Jordan: Charles pers. observ.). In several cases, species apparently associated exclusively with dry-farming in the Khabur basin occur under both dry and irrigated conditions in these other areas (e.g. Vaccaria pyramidata), while species occurring only in irrigated fields in the Khabur basin were present under dry-farmed conditions elsewhere (e.g. Cephalaria syriaca, Cardaria draba). Such discrepancies highlight the need for:

1. quantitative observations of species occurrence in a statistically useful number of fields (e.g. species frequency under different conditions as opposed to simple presence/absence);
2. an understanding of the ecological basis of floristic differences between modern dry-farmed and irrigated crop fields in different areas.
The importance of understanding the ecological basis of floristic differences between regimes is further
emphasized by the lack of potential overlap between modern studies and archaeobotanical samples, even when the modern studies are located in the same region as the site(s) in question. Thus, the species lists presented by McCorriston (1992) include only one species (Vaccaria pyramidata) which occurs in the Tell Brak assemblage. Clearly, a method which links species characteristics rather than species per se with particular traditional crop-husbandry practices is essential for the reconstruction of ancient husbandry regimes. Such a method (namely, the Functional Interpretation of Botanical Surveys or 'FIBS') is currently being evaluated for eventual archaeobotanical application (e.g. Charles et al. 1997; Bogaard et al. 1998; 1999). While full ecological data are not yet available for the wild taxa in the Tell Brak assemblage, maximum plant height (relevant to harvesting height: Hillman 1981), life-history data (annual/ biennial/ perennial) and general habitat information (e.g. occurrence in damp places, in steppe, etc.) are given in Flora Palaestina (Zohary \& Feinbrun-Dothan 1966-86) and Flora of Iraq (Townsend et al. 1966-85) (Table 4)).

Crop processing alters weed seed composition not only in accordance with the physical properties of the weed seeds but also, at least potentially, in terms of their ecology. This effect of crop processing has been noted by Jones (1992) on Amorgos, where the proportion of typical winter cereal weeds in the crop product increases through the processing sequence at the expense of summer crop and/or ruderal species. Thus, weeds which mimic the crop (in height, fruiting time and seed size) may tend to dominate the later stages of processing, in particular fine-sieve products. Furthermore, the clearest separation of ethnographic samples deriving from crops grown on different soils was achieved by comparing the weed composition of samples from the same crop-processing stage (Jones 1992, fig. 2).

Two questions are to be addressed regarding weed composition. First, is there any significant variation in weed composition among samples from different processing stages and, if so, can it be explained by the effects of crop processing? Second, what general inferences can be made as to the husbandry of crops used at Tell Brak based on the weed content of 'unmixed' by-product and product samples? The weed ecological data used are shown in Table 40. Only those taxa identified to species or to ecologi-cally-restricted genera are considered.

## 1. Weed composition in different processing groups

Three (unmixed) crop-processing stages have been identified at Tell Brak (Table 38): winnowing by-
product, coarse-sieve by-product and fine-sieve product (only those product samples containing at least 20 weed seeds are considered here). Weed species occurring in these samples have been grouped into categories relevant to harvesting height in order to consider the proportional occurrence of these categories among processing groups. In Figure 337, the relative abundance of short, medium and tall weeds is shown. Though most samples contain low-growing ( $\leq 30 \mathrm{~cm}$ ) taxa indicating low harvesting height, the proportion of such taxa is clearly variable. The product samples tend to be dominated by mediumsized weeds whereas winnowing by-products contain a significant proportion of short taxa. This trend is probably a bias introduced by processing: product samples tend to contain weeds which mimic the crop in height rather than short, non-specialized weeds, whose seeds tend to be winnowed or coarse sieved off.

## 2. Overall weed composition

The majority of taxa in Table 40 are annuals, while a few types are perennial (Artemisia sp., Lolium perenne, Teucrium polium), indicating that disturbance (e.g. tillage) was not so frequent and/or severe as to prevent their establishment. Indeed, such perennial weeds have been observed to flourish in ardploughed fields (Hillman 1991).

Harvesting heights seem to have been low ( $\leq 30$ cm ) as most of the samples in Figure 337 contain low-growing taxa. Culm bases occur in all of the early stage by-product samples (winnowing and coarse sieve by-product); assuming that these derive from cereal plants, they suggest a degree of uprooting of the crop (Hillman 1981). Uprooting, however, can form part of sickle-harvesting techniques (Charles, pers. observs.).

One winnowing by-product sample from ovens cut into a Level 3 wall (SS142/65) contains seeds of perennials of wet habitats (Scirpus maritimus, Rumex conglomeratus) (Table 40). Assuming that these species were present as weeds in crop fields (and this is uncertain, see above), their presence may suggest that wetter conditions existed in some barley fields. It should be noted, however, that species of drier habitats (e.g. steppe) co-occur with the 'wet species' in this sample. The comprehensive interpretation of weed composition must await the compilation of ecological data on all species concerned (e.g. by the 'FIBS' method: Charles et al. 1997).

## F. Discussion

## 1. Evidence for crop use

The preservation of crops by catastrophic burning
together with the wider chronological and contextual range represented at Tell Brak offer an excellent opportunity for the reconstruction of crop use. In previous sections, different kinds of evidence relevant to crop use including contextual and chronological information have been reviewed. The implications of this evidence can now be considered further.
a) Crop purity: At least six crops appear to have been used at Tell Brak: hulled two-rowed barley, glume wheat (einkorn and emmer), free-threshing wheat, lentil, and common pea (see Table 35). Barley, lentil and common pea are represented by more or less 'pure' samples recovered from individual pots, suggesting that they were grown and stored separately. Glume wheat product occurs only in the mixed product sample AL 47, but it is likely that einkorn/ emmer were grown separately from the other crops; whether or not einkorn and emmer were grown together is unknown. A number of samples (group 2: Fig. 325) are dominated by a mixture of free-threshing wheat and hulled barley material. As demonstrated above (Table 38), most of these samples appear to represent post-processing mixtures of the two crops. There is thus no compelling evidence that hulled barley and free-threshing wheat were grown together as a mixed or 'maslin' crop. On the other hand, a sevent crop, grass pea may have grown
in fields dominated by common pea and lentil, since it occurs at low levels with these crops in a clean, stored state.
b) Crop processing and storage: The abundance of ra-chis-rich samples at Tell Brak, including unmixed early stage (winnowing and coarse-sieve) by-products, may be considered unusual in comparison with archaeobotanical evidence from Europe (Jones 1987b). A site of similar date in northeast Syria, Selenkahiye (see below), has also yielded much free-threshing cereal chaff (van Zeist \& Bakker-Heeres 1988). In dry climates, winnowing and coarse-sieving are usually large-scale activities that take place at the threshing floor, away from settlements. The presence of early stage by-product material (rachis and culm nodes) in all three periods at Tell Brak need not necessarily imply that winnowing and/or coarse-sieving took place within the settlement itself. Indeed, winnowing and coarse-sieve by-product could be consolidated and stored for use as fodder, fuel, tempering, etc. throughout the year. That straw was considered a useful resource is demonstrated by the low harvesting height for cereals (see above). It is of course an essential component of mud-brick architecture.

The absence of rachis and culm nodes in archaeobotanical samples from the Akkadian period Lower Town at Tell Leilan has been interpreted as evidence that rations processed and cleaned else-

Table 40. Weed ecological data (Zohary \& Feinbrun-Dothan 1966-86; Townsend et al. 1966-85).

| Wild taxa | Plant height max. (cm) | Life history | Recorded habitat(s) |
| :--- | :---: | :---: | :--- |
| Aegilops tauschii/crassa* | 40 | annual | fields, grassy steppic slopes, desert |
| Androsace maxima | 15 | annual | steppe, fields, batha |
| Artemisia sp. | (variable) | perennial | (variable) |
| Asperula arvensis | 40 | annual | fields |
| Avena indet. | (variable) | annual | (variable) |
| Bromus cf. scoparius | 40 | annual | fields and roadsides |
| Bromus cf. tectorum | 40 | annual | ruderal, arid waste places |
| Centaurea sp. | 50 to 60 | annual(/biennial) | (variable) |
| Coronilla scorpioides | 40 | annual | fields and batha |
| Eremopyrum bonaepartis/confusum | 30 | annual | steppe and fields |
| Fumaria parviflora/densiflora | 25 | annual | fields and roadsides |
| Hordeum spontaneum | 80 | annual | batha and fallow |
| Lolium cf. perenne | 25 | perennial | calcareous and basalt soils |
| Lophochloa indet. | 12 to 30 | annual | (variable) |
| Papaver hoeas | 30 | annual | steppe, field borders |
| Phalaris indet. (non-tuberosa) | 50 to 60 | autumn | fields and roadsides |
| Rumex conglomeratus | 120 | perennial | swamps, damp places |
| Scirpus maritimus | 100 | perennial | marshes and riverbanks, mostly on saline soil |
| Teucrium polium | 40 | perennial | stony batha, arid hills, desert |
| Trigonella astroites | 20 | annual | steppe |
| Vaccaria pyramidata/segetalis | 60 | annual | fields |

[^2]

Figure 337. Bar chart showing the relative proportions of short, medium and tall weeds in winnowing by-product (CH253/54, FS242/58, FS259/75, FS140/8, SS142/ 65), coarse sieve by-product (FS355/147) and product (AL47, CH458/18, ER45/4, $E R 45 / 26, F S 1527$ ) samples containing at least 20 weed seeds.

ED III destruction level represent large-scale storage of clean or partially cleaned grain, though large-scale storage would be expected at the site given that functioned as a regional administrative centre. Rather, relatively small vessels have been recovered containing fine-sieve product or virtually weedless (potentially hand-cleaned) crops (Areas CH, ER). Thus, small amounts of crop destined for day-to-day consumption appear to be preserved in household contexts.
c) Crop production and consumption: As has often been noted (e.g. Miller 1984a; van Zeist \& Bakker-Heeres 1988, 275), the relative
where were used in the area (Weiss et al. 1993, 140). Given the abundance of chaff-rich samples in all periods at Tell Brak, including the Akkadian period, the lack of chaff at Leilan does appear remarkable. As noted above, however, the chaff deriving from winnowing and coarse sieving is unlikely to have been generated as by-product in the settlement itself and may instead reflect its usefulness for various purposes including, including fodder for animals. An interesting problem is how this chaff came to be present across the settlement. The use of chaff in fodder (and hence dung fuel) provides one possible explanation, though the 'logistics' of how chaff was distributed and sometimes combined in mixtures (as in the mixed stage samples, Table 38) remains more difficult to explain.

In terms of Hillman's (1981) proposed contrast between producer and consumer sites, the evidence for early processing stages at Tell Brak would suggest that it is a producer site. On the other hand, if Tell Brak functioned for much of the period under investigation as an urban centre which depended on the crop production of a wide surrounding area, it might equally be considered a site of consumption as well as production (cf. Falconer 1987). As already noted, the presence of early stage by-product at Tell Brak is probably a direct reflection of its usefulness ('consumption').

None of the grain-rich samples from the late
abundance or ubiquity of crops in archaeobotanical samples cannot be read simply as a direct reflection of their 'economic importance' (e.g. the amount of land given over to production). The role of different crops, however, can be approached from the point of view of crop use as inferred from circumstantial evidence.

While there is some evidence to suggest that mixed stage samples represent animal fodder and/ or dung fuel, most of the crops used at Tell Brak (Table 35) occur in at least one sample in a cleaned state (as fine-sieve or hand-cleaned product), suggesting that in these cases they may have been intended for human consumption. An Old Akkadian tablet from Tell Brak actually provides direct evidence for the payment of barley flour rations to workmen (p. 114). Ethnographic evidence suggests that the boundary between 'food' and 'fodder' crops can be flexible (Jones \& Halstead 1995), and the degree to which a specific crop such as barley was considered food or fodder may well have differed depending on the specific context. As noted above, the relatively high barley grain: barley rachis ratio in mixed stage samples (Table 39) suggests that barley grain was more likely to be fed to animals than freethreshing wheat grain, glume wheat grain or pulses, which were presumably reserved for human consumption. The archaeobotanical evidence, therefore, suggests that at Tell Brak as in southern Mesopota-
mia (e.g. Maekawa 1983) barley grain was produced at least in part for animal consumption.

It has been observed in the one extensively sampled 'public' area (FS, Akkadian) that pulse seeds are entirely absent in contrast with their presence at low levels or as stored products in two apparent household contexts (Areas CH, ER). One possible interpretation is that this contrast reflects specialized, 'public-sector' agriculture concentrated on barley and other cereals functioning alongside 'pri-vate-sector' cultivation of a wider range of crops including pulses. Documentary evidence for pulse cultivation in southern Mesopotamia is limited, implying small-scale production (Maekawa 1985). Halstead (1990) has suggested that diverse, privatesector arable production, falling largely outside the scope of textual evidence, would have offered a means of defence against the fluctuating availability of food-relief in the form of barley. Similarly, Weiss (1986b, 97) has argued that a high-yield, high-risk concentration on barley cultivation in the Khabur basin administered by palace organizations must have been accompanied by the activities of 'smaller farming units' cultivating 'crop combinations maximizing guaranteed annual returns'. Such hypotheses appear to be supported by archaeobotanical and contextual evidence at Tell Brak.

## G. Comparison of Tell Brak with other North Syrian Bronze Age sites

Important archaeobotanical investigations have been undertaken at a number of Bronze Age sites in northern Syria: Tell Leilan (c. 2600-2200 BC) in the northern Khabur basin, for which only general observations have been published at the time of writing (Miller 1991, 150; Weiss et al. 1993), three sites on the North Syrian Euphrates, Selenkahiye (c. 2400-1900 вс), Sweyhat (c. 2400-2000 вс) and Hadidi (c. 1550-1400 вс) (van Zeist \& Bakker-Heeres 1988) and Hammam et-Turkman (c. $2400-1600$ вс) in the Balikh valley (van Zeist et al. 1988). Crop spectra at these sites are summarized in Table 41, where crops are considered present if they meet the criterion applied to the Brak material for crop use (if at least 50 seeds and/or chaff items of the crop are present in a sample).

All sites exhibit a similar crop spectrum, including wheat(s) and pulses as well as barley (the lack of wheat at Sweyhat may be due to the small number of samples). Barley is the predominant crop at all five sites, an observation which agrees with textual evidence for state-administered barley production in the north as in southern Mesopotamia. The ubiquity and abundance of barley material may
in part be a reflection of large-scale use for animal fodder as well as for food/ration-payments (see above) (Powell 1984). Cultivation of wheats and pulses would presumably have played an important role in the human diet.

With the exception of Hammam et-Turkman, dry-farming agriculture is thought to have been practised at these sites based on sufficient present-day rainfall (e.g. average 300 mm or reliable 200 mm / year) in these areas and given the technological problems of diverting water onto crop fields along the Syrian Euphrates in the months when supplementary water is most needed (Oates \& Oates 1976, 1212; van Zeist \& Bakker-Heeres 1988, 283 \& 311). The dominance of two-rowed hulled barley at these North Syrian sites may be significant in light of the (admittedly limited) evidence for six-rowed barley cultivation in southern Mesopotamia (Renfrew 1984, 77-8). Such a contrast between north and south could be related to a greater water requirement of six-rowed barley (Townsend et al. 1966-85; Arnon 1972, 80).

## H. Environmental conditions

It has been argued that northern Mesopotamia experienced a great increase in aridity and wind circulation around 2200 BC and that a consequence of this was the break-down of the dry-farming agriculture on which the Akkadian economy depended (Weiss et al. 1993; Courty \& Weiss 1997). The argument seeks to explain archaeological evidence for what is interpreted as settlement contraction and abandonment in the area. Recent re-dating of some of the soil stratigraphic data used as evidence for 'regional desertification', however, places the change between the ED III and Akkadian periods, reflecting a short timespan (pp. 367-72; Courty 1998).

Archaeobotanical evidence from Tell Brak may shed some light on the issue of mid- or later thirdmillennium BC climate change. In terms of crops grown, increased reliance on barley at the expense of free-threshing wheat might be expected given that barley can be grown under drier conditions (Wirth 1971, 92; Arnon 1972, 89). Weed floras might also develop which were more drought tolerant than previously. Crop fields, however, are buffered environments where macro-climatic changes might not be expected to register directly (cf. Wilkinson 1997). Regional desertification could lead to much more complex changes in weed floras if, for example, new soils were cultivated or new husbandry regimes developed.

Table 35 indicates that free-threshing wheat (durum wheat) was probably used in all three peri-

Table 41. Crop spectra at Tell Brak and four other North Syrian Bronze Age sites. Note: $x=$ crop meets minimal criterion for use (sec Table 35), $(x)=$ present but does not meet this minimal criterion, ? = status of crop uncertain since sample-by-sample data have not been published.

| Sites | two-rowed <br> hulled barley | free-threshing <br> wheat | glume <br> wheat | lentil | common <br> pea | grass pea |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |

ods (ED III, Akkadian, Post-Akkadian). Since this cereal has a higher water requirement than barley (see above, though not as high as bread wheat, Triticum aestivum), its consistent presence suggests that conditions remained relatively favourable. According to the basic habitat data available on the weed species present in 'unmixed' products/by-products (Table 40), species associated with desert or steppe conditions (e.g. Teucrium polium, Trigonella astroites, Ercmopyrum bonaepartis/confusum) occur in 'unmixed' samples from all periods as do species of somewhat moister habitats such as batha (e.g. Coronilla scorpioides, Hordeum spontancum). As noted above, the significance of perennials of wet habitats which occur in one apparently unmixed winnowing by-product ( $\mathrm{SS} 1+2 / 65$ ) is uncertain. There is thus no clear evidence from these basic ecological data to suggest that conditions were much drier or wetter in one period than in any other. Here again, however, more extensive ecological data on the weed species concerned must be collected before a precise analysis can be undertaken.

## I. Summary and conclusions

The analysis of 40 mid- to late third-millennium $B C$ samples from Tell Brak has demonstrated the cultivation of at least four cereal and two pulse crops. Other Early Bronze Age sites in North Syria exhibit similar crop spectra. Crop processing and mixing
exert the greatest influence on sample composition and early (e.g. winnowing and coarse-sieve by-product) as well as late (e.g. fine-sieve product) stages of the processing sequence appear to be represented. A number of samples represent mixtures of different crops and/or processing stages, which may have been used as animal fodder. The late ED III destruction level has yielded evidence for small-scale, house-hold-level storage of a range of cereal and pulse crops.

The very limited nature of ecological data available for the weeds represented has prevented any serious consideration of crop husbandry. There is no clear evidence that desertification affected the area in any period, though complex responses to climatic change might be expected to obscure its effects. A comprehensive treatment of this issue, like the more general attempt to reconstruct crop husbandry, must await the compilation of detailed data on the ecology of the weed species concerned.

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## Chapter 13

## Faunal Evidence

# Juliet Clutton-Brock, Eufrasia Roselló Izquierdo, Arturo Morales Muñiz, Jill A. Weber \& Theya Molleson 

# Ritual Burials of a Dog and Six Domestic Donkeys 

Juliet Clutton-Brock

During the 1987 excavations the complete skeleton of a dog was discovered among the deposits associated with the large public building in Area FS, Level 5. Nearby was the complete skeleton of an equid. The excavators now believe that both animals were ritually buried at the time the monumental building which contained them was filled in (p. 389). With the generous permission of the Director-General of Antiquities and Museums, Syrian Arab Republic, the remains of the dog and the donkey were sent for study to The Natural History Museum, London, and a report was published by Clutton-Brock (1989). The measurements of this donkey skeleton are repeated here in Tables 44-9, numbered as Donkey 6. In 1991, the twelfth season of excavation of the Akkadian buildings at Tell Brak yielded the skeletons of five more domestic donkeys (Donkeys 1-5), also apparently ritually interred in the same monumental build-
ing. (Numbers 1-5, described below, reflect the sequence used in the previous description of these specimens: Clutton-Brock \& Davies 1993.) The positions of these skeletons are shown on the plan (Fig. 42 ) and their excavation is described in Chapter 2.

In 1992 a temple was identified, associated with the 'donkey building', and with further donkey burials. The possible association of this temple with the god Šamagan (Šakkan), god of steppe animals, including donkeys, is discussed on p. 387. The ritual burial of the animals described below, now viewed as part of the same 'closure' event, is to be dated, at the latest, not long after 2250 вс.

## The dog skeleton

The skeleton of the dog (Canis familiaris) was found lying on its left side with its legs stretched out, almost in a running position (Fig. 338a). It appeared to be virtually intact but the bones did not survive excavation and transport as successfully as those of the equid, and the skull was crushed. It can be ascertained, however, that the dog was an adult male, and it was possible to measure most of the essential


Figure 338. a) The skeleton of the dog (Canis familiaris) from Tell Brak, during excavation. b) Mounted skin of the Saluki, Luman, The Natural History Museum, London.

Table 42. Masurements of the skull, mandible and teeth of the wes together with those of the Saluki Luman (NHM no. -2.s, - $/ D^{-2}$ ). TBD = Tell Brak dog; SL = Saluki Luman.

```
Skull
Width from frontal suture to supraorbital process (right)
\(\mathrm{IBL}-25 \mathrm{~s}\) SL-23.6
Width from frontal suture to postorbital constriction (right)
TBD-19.0 SL—18.8
Depth of zygomatic bone (left)
TBD-13.9 SL—12.3
Depth of occipital condyle (left)
TBD-20.4 SL-18.4
```

| Upper teeth (left) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Tooth | Length TBD | Length SL | Width TBD | Width SL |
| Molar 1 | 19.2 | 16.9 | 7.8 | 7.1 |
| Molar 2 | 13.6 | 12.4 | 15.8 | 14.2 |
| Molar 3 | 6.9 | 7.0 | 9.2 | 8.9 |
| Length of | molar $2+$ mol | 3 TBD- |  | 20.0 |
| Mandible and lower teeth (left) |  |  |  |  |
| Length of | tooth row | TBD | -92.5 SL | -99.5 |
| Length of | cheek tooth r | TBD | -70.4 SL | 77.9 |


| Tooth L | Length TBD | Length SL | Height TBD | Height SL |
| :---: | :---: | :---: | :---: | :---: |
| Canine | 11.0 | 9.7 | 19.1 | 18.9 |
|  |  |  | Width TBD | Width SL |
| Premolar 1 | 15.4 (alv) | 3.8 (alv) |  |  |
| Premolar 2 | 27.7 (alv) | 7.7 (alv) |  |  |
| Premolar 3 | $3 \mathrm{q}+$ (alv) | 8.8 (alv) |  |  |
| Premolar 4 | +11.5 (tooth) | 10.9 | 6.2 | 5.8 |
| Molar 1 | 22.5 | 21.2 | 9.3 | 7.9 |
| Molar 2 | 9.0 | 9.2 | 6.5 | 6.7 |

Depth of mandible behind premolar 2 TBD-17.9 SL-17.9
Depth of mandible behind molar 1 TBD-21.9 SL-19.7

Table 43. Measurements (in mm) of the limb bones of the dog (TBD) and the Saluki Luman (SL), as in von den Driesch 1976.

| SCAPULA | Dog | GLP | BG |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| right | TBD | 27.5 | 16.9 |  |  |  |
| right | SL | 33.5 | 26.2 |  |  |  |
| HUMERUS | Dog | GLC | Bd | SD |  |  |
| right | TBD | 157.5 | 31.1 | 12.8 |  |  |
| right | SL | 171.8 | 33.9 | 13.1 |  |  |
| RADIUS | Dog | GL | Bd | Dp | ?Bd | Dd SD |
| left | TBD | 165.2 | 22.9 | 11.4 | 22.9 | 12.313 .2 |
| left | SL | 178.8 | 19.5 | 12.4 | 24.8 | 13.514 .0 |
| Estimates of | ulder | heights | TBD | -54.5 | m, SL | $-58.8 \mathrm{~cm}$ |


| ULNA | Dog | GL | SDO DPA | BPC |
| :---: | :---: | :---: | :---: | :---: |
| left | TBD | 192.8 | 19.624 .9 | 16.8 |
| left | SL | 209.6 | $23.3 \quad 27.3$ | 18.8 |
| Estimates of shoulder heights TBD-54.2 cm, SL-58.9 cm |  |  |  |  |
| FEMUR | Dog | GL | Bp BC | DC Bd Dd SD |
| left | TBD | 178.6 | 38.018 .1 | $17.5 \quad 29.530 .314 .0$ |
| right | SL | 190.6 | $\begin{array}{llll}41.8 & 21.6\end{array}$ | 19.635 .337 .513 .5 |
| Estimates of shoulder heights TBD-54.8 cm, SL-58.7 cm |  |  |  |  |
| TIBIA | Dog | Bp | Bd Dd | SD |
| right | TBD | 33.8 | 23.217 .2 | 12.8 |
| right | SL | 37.2 | 28.117 .4 | 14.3 |


| CALCANEUM | Dog | GL | GB |
| :--- | :--- | :--- | :--- |
| left | TBD | 43.6 | 17.7 |
| left | SL | 47.2 | 19.2 |
| TALUS | Dog | GL |  |
| left | TBD | 26.7 |  |
| left | SL | 28.7 |  |

Mean estimates of shoulder heights SL-58.8 c
teeth and bones for an accurate estimate of the stature and proportions of the $\operatorname{dog}$ (Tables $42 \& 43$ ). These bear a remarkable resemblance to the skeleton of 'Luman', one of the earliest Salukis to be imported to England from Egypt, in 1907 by the Hon. Florence Amherst.

The Saluki or Persian greyhound is traditionally held to be one of the oldest breeds of dog in the world. It is said to have originated as a hunting dog trained to chase gazelle and hare. The skeleton of the dog from Tell Brak may not have had the external features that characterize the Saluki, but it was certainly of greyhound build. The measurements of the Brak skeleton are given in Table 43 where they may be compared with those of Luman, the skeleton of which is in the Natural History Museum, while a femur and tibia of the Tell Brak dog are compared with those of Luman in Figure 339. The shoulder height of the mounted skin of Luman (on exhibition at the Zoology Museum, Tring: see Fig. 338b) has been
measured to 58 cm . This almost exactly corroborates the estimated shoulder height of this Saluki as calculated from the lengths of its limb bones (using the factors of Harcourt 1974; see Table 43). The dog from Tell Brak was somewhat more sturdy than the Saluki, with a mean shoulder height 4 cm shorter than that of Luman (Table 43); its jaws were less elongated and its teeth were larger, as would be expected in an ancient, less highly bred dog. On the other hand, the characteristics of the pedigree Saluki today are more exaggerated. The limbs are considerably longer than those of Luman, the skull is more elongated and narrow, and the teeth are relatively very small.

The complete skeleton of a dog from this early period is a rare find, and its alliance with the greyhound type not only provides osteological evidence for one of the foundation breeds of domestic dogs but also for its distribution outside ancient Egypt where the greyhound is well known from a large


Figure 339. On the left of the photograph, right femur and right tibia of the Saluki, Luman (NHM no. 72.876); on the right, the left femur and right tibia of the Tell Brak dog.
number of pictorial representations in the second millennium BC .

## The equid skeleton (6) (Tables 44-9)

The skeleton of Equid 6 lay just above the floor of the courtyard to the east of Room 1 (locus FS 565; see plan Fig. 42). Associated with the equid skeleton was a number of bones of domestic pig, cattle, sheep/ goat and a Demoiselle crane (Anthropoides virgo; identified by G. Cowles, Bird Section, The Natural History Museum, London). Excavation of the bones showed that not only was the skeleton exceptionally well-preserved but that the shapes of the soft parts of the body survived moulded in the earth (Fig. 57, p. 49). The lungs and stomach could be easily discerned and the coiled intestines were represented by a string of coprolites. The 'soft parts' were covered with what appeared to be a surface film of orangegreen material. Everything was lifted with as much care as possible by the excavation conservator, Mrs Risë Taylor-Andreason, using Paraloid B72 (methyl metacrylate/ethyl acrylate) and UHU (cellulose nitrate) as consolidants where necessary. A sample of

Table 44. Measurements (in mm ) of the upper cheek teeth of the six donkeys (Equus asinus) (as in Eisenmann et al. 1988 and Clutton-Brock 1989). $(E)=$ estimate .

|  | Side | Occlusal length | Occlusal width | Height of crown | Length of protocone |
| :---: | :---: | :---: | :---: | :---: | :---: |
| P2 protocone |  |  |  |  |  |
| 1 | L | 30.70 | 23.10 | 39.00 | 6.86 |
| 2 | L | 33.90 | 23.93 | 61.60 | 7.62 |
| 3 | L | 33(E) | 22.38 | 53.50 | 7.00 |
| 4 | R | 33.00 | 23.00 | - | 7.50 |
| 5 | L | 31.20 | 22.00 | 37.64 | 6.56 |
| 6 | R | 28.30 | 21.30 | 41.70 | 5.60 |
| P3 |  |  |  |  |  |
| 1 | L | 23.74 | 23.69 | 40.00 | 10.66 |
| 2 | L | 29.15 | 23.05 | 74.00 | 16.78 |
| 3 | L | 25.78 | 26(E) | 65.00 | 10.00 |
| 4 | R | 25.00 | 26.47 | 38.00 | 10.72 |
| 5 | L | 25.28 | 26.47 | 38.00 | 11.62 |
| 6 | R | 23.70 | 23.60 | 48.80 | 9.20 |
| P4 |  |  |  |  |  |
| 1 | L | 22.03 | 27.08 | 43.00 | 11.34 |
| 2 | L | 26.00 | 23.20 | 80.30 | 12.46 |
| 3 | L | 23.88 | 23.80 | 65.00 | 10.42 |
| 4 | R | 27.00 | 25.38 | - | 12.00 |
| 5 | L | 24.18 | 27.30 | 45.00 | 10.00 |
| 6 | R | 23.40 | 24.30 | 55.90 | 10.60 |
| M1 |  |  |  |  |  |
| 1 | L | 21.20 | 25.80 | - | 10.76 |
| 2 | L | 26.80 | 24.62 | 79.00 | 13.40 |
| 3 | L | 22.00 | 23.44 | 64.50 | 10.16 |
| 4 | R | 22.00 | 24.30 | 37.00 | 11.00 |
| 5 | L | 21.32 | 26.22 | 41.15 | 8.64 |
| 6 | R | 21.30 | 22.50 | 47.70 | 9.70 |
| M2 |  |  |  |  |  |
| 1 | L | 21.60 | 25.08 | - | 10.44 |
| 2 | L | 27.60 | 24.85 | 78.64 | 15.60 |
| 3 | L | 21.92 | 22.47 | 62.56 | 10.46 |
| 4 | R | 23.00 | 24.70 | 35.00 | 9.20 |
| 5 | L | 23.00 | 24.50 | 45.00 | 9.36 |
| 6 | R | 21.40 | 22.00 | 55.10 | 9.20 |
| M3 |  |  |  |  |  |
| 1 | L | 23.00 | 21.22 | - | 13.34 |
| 2 | L | 21.40 | 20.00 | 53.80 | 13.90 |
| 3 | L | 21.28 | 20.68 | 59.47 | 12.05 |
| 4 | R | 25.88 | 22.70 | 35.00 | 13.60 |
| 5 | L | 24.00 | 22.50 | 33(E) | 13.00 |
| 6 | R | 22.30 | 17.90 | 51.70 | 10.60 |

bone from the equid skeleton was submitted to the Oxford University Accelerator Unit for radiocarbon dating, but unfortunately the bone contained no collagen. Samples of the 'soft parts' were sent to the Institute of Archaeology, London, for examination, but no further information was obtainable.

The equid skeleton was found lying on its left side. The neck must have been outstretched and the limbs drawn up onto the body. The skull was badly crushed and could be retrieved only as fragments. The teeth, some of the vertebrae, most of the limb

Table 45. Mensurements (in mm) of the lower cheek teeth of the six donkeys (Equus asinus) (as in Eisenmann et al. 198s; Clutton-Brock 1989). $(E)=$ estimate $(R)=$ right side.

|  | Side | Occlusal length | Occlusal width | Height of crown | Length of pre-flexid | Length of post-flexid | Width between silla |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| P2 |  |  |  |  |  |  |  |
| 1 | L | 2392 | 14.74 | 25.04 | - | 10.26 | 4.78 |
| 2 | L | 30.00 | 13.64 | 60.54 | 10.06 | 14.60 | 4.36 |
| 3 | L | $27(\mathrm{E})$ | 14.00 | - | - | 13.44 | - |
| $\pm$ | L | 25.00 | 15.00 | 21.50 | - | 11.14 | 5.00 |
| 5 | L | 23.00 | 13.00 | 21.00 | - | - | - |
| 6 | R | 23.30 | 12.70 | 33.00 | 12.40 | 5.30 | - |
| P3 |  |  |  |  |  |  |  |
| 1 | R | 22.40 | 15.64 | 25.40 | 6.94 | 9.26 | 4.90 |
| 2 | L | 27.95 | 14.84 | 72.20 | 9.06 | 13.56 | 4.77 |
| 3 | L | 24.42 | 16.66 | 67.40 | 7.90 | 11.00 | 4.54 |
| 4 | L | 23.00 | 17.16 | 31.42 (R) | 7.68 | 10.00 | 5.56 |
| 5 | L | 24.00 | 17.18 | 27.50 | - | 9.16 | 5.00 |
| 6 | R | 21.90 | 14.30 | 44.00 | 9.00 | 7.10 | - |
| P4 |  |  |  |  |  |  |  |
| 1 | R | 22.64 | 18.36 | 36.50 | 6.60 | 9.34 | 4.50 |
| 2 | L | 28.70 | 15.18 | 68.24 | - | - | - |
| 3 | L. | 25.00 | 17.00 | - | 9.00 | 10.73 | 6.25 |
| 4 | L | 23.78 | 17.52 | 34.00 | 8.22 | 11.32 | 6.58 |
| 5 | L | 24.00 | 17.20 | 32.50 | 5.08 | 9.24 | 5.00 |
| 6 | R | 21.90 | 13.70 | 45.20 | 11.30 | 8.30 | - |
| M1 |  |  |  |  |  |  |  |
| 1 | R | 21.18 | 17.24 | 40.88 | 3.60 | 7.76 | 4.26 |
| 2 | L | 28.44 | 14.16 | 80.53 | 8.10 | 10.94 | 3.47 |
| 3 | L | 23.50 | 17.00 | 62.00 | 7.35 | 7.20 | 2.50 |
| 4 | L | 24.50 | 15.70 | 40.36 | 7.00 | 10.40 | 3.68 |
| 5 | L | 21.50 | 16.40 | 31.00 | - | 6.00 | 3.18 |
| 6 | R | 21.80 | 17.00 | 53.70 | 10.50 | 9.20 | - |
| M2 20.20 |  |  |  |  |  |  |  |
| 1 | R | 22.40 (E) | 14.90 (E) | 42.46 | 7.12 | 8.60 | 4(E) |
| 2 | L | 29.48 | 12.33 | 73.12 | 8.68 | 10.48 | 4.15 |
| 3 | L | 22.00 | 15.30 | 67.00 | 7.50 | - | 3.50 |
| 4 | R | 24.00 | 15.00 | 40.00 | 7.20 | 9.00 | 3.44 |
| 5 | L | 23.70 | 15.00 | 37.60 | 6.34 | 8.00 | 3.16 |
| 6 | R | 21.50 | 13.30 | 51.70 | 9.20 | 6.80 | - |
| M3 ${ }^{\text {m }}$ |  |  |  |  |  |  |  |
| 1 | R | 29.10 | 13.64 (E) | 44.80 | 7.98 | 10.34 | - |
| 2 | L | - | 11.00 | 50.00 | - | - | - |
| 3 | L | 24.80 | 13.00 | 60.00 | 6.20 | 7.74 | 2.00 |
| 4 | L | 28.56 | 13.00 | 42.00 | 5.20 | 11.50 | 3.58 |
| 5 | L | 31.32 | 13.70 | 55.80 | 6.30 | 10.14 | 2.60 |
| 6 | R | 26.50 | 11.30 | 59.30 | 10.20 | 6.50 | - |

bones and the pelvis were, however, almost complete. These show that the skeleton is from a small female domestic donkey, Equus asinus, which was approximately ten years old when she died. The sex can be determined from the presence of canine teeth which are rudimentary, a characteristic of female equids. An approximate estimate of the shoulder height of the donkey can be calculated by multiplying the lengths of the limb bones by the factors of Kiesewalter (quoted from von den Driesch \& Boessneck 1984). These factors, however, are intended for assessing the shoulder height of a horse, so they are unlikely to be very accurate for a donkey. Never-
theless, the lengths of the limb bones as shown in Table 48 give a mean value for the withers height of 113.7 cm (approximately 11 hands), which seems reasonable. That it was a valued animal also seems clear from the healthy state of the skeleton. There is no pathological condition on the bones, and the animal appears to have been in the prime of life when she died, despite her ten years. The hoof bones are all healthy as are the teeth and jaws. There is no evidence of 'bit-wear' on the teeth or of 'crib-biting' (Fig. 340, and see below).

There is no evidence specifically from the remains of the dog or the donkey to explain how they

Table 46. Measurements (in mm ) of the forelimb bones of the six donkeys (Equus asinus). Points of measurement and terminology as in Clutton-Brock 1986 and von den Driesch 1976. $(E)=$ estimate. $(U)=$ unfused. All measurements are of left side bones unless indicated by $(R)$ for the right side.

| SCAPULA | GLP | BG |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 71.2 (R) | 37.4 (R) |  |  |  |  |
| 2 | 64.9 | 34.4 |  |  |  |  |
| 3 | - | - |  |  |  |  |
| 4 | 64.2 (R) | 35.0 (R) |  |  |  |  |
| 5 | 68.3 (R) | 36.7 (R) |  |  |  |  |
| 6 | - | - |  |  |  |  |
| HUMERUS | GLC | GLI | Bp | Bd | SD |  |
| 1 | 200 (E) | 215 (E) | P | 60.4 | 26.5 |  |
| 2 | 190 (E) | - | - | 55.2 | 22.2 |  |
| 3 | - | - | - | 57.1 | 25.0 |  |
| 4 | 194 (R/E) | 215 (R/E) | 65 (R/E) | 59.2 (R) | 25.6 (R) |  |
| 5 | 222.7 (R) | 231.7 (R) | 71.7 (R) | 63.9 (R) | 25.8 (R) |  |
| 6 | - | - | 67.1 | 56.1 | 24.3 |  |
| RADIUS | GL | GL1 | Bp | Bd | BFd | SD |
| 1 | 286.6 | 273.6 | 64.4 | 60.6 | 49.7 | 31.7 |
| 2 | 271.9 (U) | 260.7 (U) | 55.7 (E) | 55.6 | 46.6 | 25.9 |
| 3 | 260.4 (R) | 248.7 (R) | 58.2 (R) | 53.3 (R) | 45.0 (R) | 28.1 (R) |
| 4 | 265.1 (R/E) | 259.7 (R) | 63 (R/E) | 51.7 (R) | 47.8 (R) | 29.1 (R) |
| 5 | 279.3 | 266.5 (E) | 62.9 | 60.7 | 47.7 | 27.7 |
| 6 | 270.5 | - | 61.3 | 35.4 | 31.5 | 27.5 |
| METACARPAL 3 | GL | Ll | Bp | Dp | Bd | SD |
| 1 | 174.3 | 170.5 | 36.7 | 25.7 | 33.7 | 23.8 |
| 2 | 173.0 | 168.3 | 38.4 | 26.5 | 34.7 | 23.2 |
| 3 | 187.9 | 181.4 | 40.8 | 28.3 | 36.7 | 25.9 |
| 4 | 175.9 | 170.1 | 38.8 | 26.7 | 34.7 | 24.0 |
| 5 | 180.2 (R) | 175.0 (R) | 40.3 (R) | 26.9 (R) | 38.0 (R) | 25.0 (R) |
| 6 | 181.7 | 176.3 | 37.4 | 25.6 | 34.4 | 23.4 |
| PHALANX 1 | GL | Bp | Dp | Bd | BFd | SD |
| 1 | 67.3 | 36.1 | 25.3 | 31.6 (E) | 35.0 | 21.9 |
| 2 | 64.5 | 36.9 | 26.6 | 30.9 | 36.4 | 21.7 |
| 3 | 73.3 | 38.6 | 28.5 | 35.5 | 37.4 | 24.4 |
| 4 | 67.9 | 36.7 | 27.4 | 35.3 | 33.4 | 23.4 |
| 5 | 69.1 (R) | 38.5 (R) | 30.7 (R) | 36.6 (R) | 35.1 (R) | 24.5 (R) |
| 6 | 70.5 | 36.9 | 27.3 | 33.0 | 32.2 | 21.0 |
| PHALANX 2 | GL | Bp | Bd | SD |  |  |
| 1 | - | - | - | - |  |  |
| 2 | 30.0 | 33.0 | 29.4 | 28.9 |  |  |
| 3 | 35.6 | 37.9 | 35.4 | 33.7 |  |  |
| 4 | 35.3 | 37.2 | 34.3 | 32.0 |  |  |
| 5 | - | - | - | - |  |  |
| 6 | 35.8 | 36.7 | 33.5 | 28.7 |  |  |
| HOOF-CORE | GL | GB | BF | HP | Ld |  |
| 1 | 40.9 (E) | - | - | 22.0 (E) | 30.0 (E) |  |
| 2 | 40.8 (E) | - | - | - | - |  |
| 3 | 43.7 | 46.3 | 39.4 | 29.4 | 37.3 |  |
| 4 | 41.1 | 43.2 | 36.4 (E) | 27.8 | 35.2 |  |
| 5 | - | - | - | - | - |  |
| 6 | 42.0 | 43.5 | 33.6 | 29.6 | 35.6 |  |

have survived in their moulded form, while the survival of many tiny bones from the dog indicates that it too was buried before decomposition had occurred. The archaeological evidence confirms that the deaths of these two animals almost certainly reflect the same superficially catastrophic event that resulted in the preservation of a number of human skeletons, found lying haphazardly above the fill of the reception room (20) of the monumental building that contained the animals, and the disarticulated human remains found together with other equid burials on the floor of the central courtyard of the Level 5 building (Fig. 45). At the same time the careful deposition of the equid skeletons themselves and the other apparently ritual deposits suggest the deliberate and presumably ritual deposition of these animals (see $p$. 389). Postgate (1986) has summarized the cuneiform evidence for the Sumerian terms for the donkey and its hybrids (see also p. 286), while Gamkrelidze (1998) cites the terms used for the donkey as a sacred animal and a fertility symbol; there is also evidence that donkeys were sacrificed as part of treaty ceremonial (Sasson 1987).

## Osteology of the six equid skeletons

Identification of skeleton 6 as domestic donkey (Equus asinus), as well as Donkeys $1-5$, is based on the enamel patterns of the cheek teeth and the size and proportions of the limb bones. Characters that distinguish the upper teeth from those of the horse (Equus


Figure 340. a) Left upper cheek teeth and fragment of maxilla, Donkey 6 (abour), and the upper incisor teeth (below ); b) right lower cheek teeth of Donkey 6 (above) and lower incisor teeth (below).
calallus) are the flat interstylar faces, narrow mesostyle, and short protocone (Fig. 340a). In the lower teeth, the linguaflexid is strongly V-shaped, the ectaflexid is shallow with a rudimentary pli, and the postflexid is long (Fig. 340b). The combination of these characters means that the teeth can be ascribed with certainty to ass rather than to horse and with some certainty to Equus asinus rather than to the onager or Asiatic wild ass, Equus hermionus (Eisenmann 1986). These qualitative features of the teeth as indicators of species are supported by the measurements of the individual teeth which are given in Tables 44 and 45 . These may be compared with the measurements and descriptions of the teeth of the Early Dynastic equids from Abu Salabikh and Tell Madhur (Iraq) given in Clutton-Brock (1986).

Measurements of the individual bones of the six donkeys are given in Tables 46 and 47, and, as with the teeth, they may be compared with the equids


Figure 341. Metacarpal bones of equids from Tell Brak and from Early Dynastic sites in Iraq (Clutton-Brock 1986): a) Equus asinus from Tell Brak; b) Equus asinus (6G.64.77) from Abu Salabikh; c E d ) Equus asinus / hemionus (6G.66.94 and 6G.37.61) from Abu Salabikh; e \& f) Equus asinus/hemionus (5G. 258 and 259) from Tell Madhur. Metacarpals c, d, e and $f$ could be from hybrids between a donkey (Equus asinus) and an onager (Equus hemionus).
from Abu Salabikh and Tell Madhur. Figure 341 shows that the metacarpal bone of Donkey 6 is smaller than those of the Sumerian equids, in some of which the identification was more equivocal, and there is a possibility that some bones are from ass/ hemione hybrids (Clutton-Brock 1986). The measurements of the Tell Brak donkeys may also be compared with the measurements of third-millennium donkeys from Tal-i Malyan (Iran) and with those of modern donkeys given in Zeder (1986).

The hypothesis that the onager or Asiatic wild ass, Equus hemionus, was domesticated in ancient Mesopotamia (Zeuner 1963, 367) has now been refuted as a result of further work on the textual evi-
dence, the osteology of the ass and the onager, and studies of the behaviour of the different species of equids (as discussed in Clutton-Brock 1992). It is much more probable that the wild ass, Equus africanus (an endemic of North Africa and probably Arabia), was the only species of ass to be domesticated. From the measurements of the individual bones of the donkeys given in Tables 45-7, and from the estimated shoulder heights given in Table 48, it can be seen that the six donkeys were all very similar in size, and that they were all small animals, no larger than the short-legged donkeys of the present day that commonly stand about 11 hands ( 112 cm ) at the shoulders.

Measurements of the skeletons of the six donkeys from Tell Brak also show that they had slender, fine-boned limbs. It has been demonstrated by von den Driesch \& Amberger (1981) that the proportions of the limb bones to each other provide a discriminating character between the ass and the onager. In the onager

Table 48. Mean estimates of the shoulder heights of the six donkeys.

| SKELETON | $\mathbf{H t}(\mathbf{c m})$ |
| :--- | :--- |
| 1 | 109.00 |
| 2 | 112.62 |
| 3 | 115.14 |
| 4 | 110.06 |
| 5 | 113.64 |
| 6 | 113.70 |

Table 47. Measurements (in mm) of the hindlimb bones of the six donkeys (Equus asinus) (points of measurement and terminology as in Clutton-Brock 1986 and von den Driesch 1976). All measuremants are of left side bones unless indicated by ( $R$ ) for the right side. $(E)=$ estimate $(U)=$ unfused.

| ACETABULUM | LA | LAR |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | - | - |  |  |  |  |
| 2 | - | - |  |  |  |  |
| 3 | - | - |  |  |  |  |
| 4 | 48.3 | 42.3 |  |  |  |  |
| 5 | 49.3 | 44.4 |  |  |  |  |
| 6 | - | - |  |  |  |  |
| FEMUR | GL | GLC | DC | Bp | Bd | SD |
| 1 | - | - | - | - | - | 31.1 (R/E) |
| 2 | 304.1 (U) | 278.3 (U) | 38.8 | 82.5 | - | 26.1 |
| 3 | - | - | - | - | - | 29.5 |
| 4 | 302.7 (R) | 280.3 (R) | 38.5 (R) | 85.6 (R) | 69.9 (R) | 27.1 (R) |
| 5 | - | - | - | (R) | 67.3 (E) | 28.6 |
| 6 | 301.5 (R) | 279.2 (R) | - | - | - | 27.8 (R) |
| TIBIA | GL | Ll | Bp | Bd | SD |  |
| 1 | - | - | - | 52.0 | 29.8 |  |
| 2 | 285.7 (R/U) | 291.0 (R/U) | 69.4 (R/U) | 54.0 (R) | 39.9 (R) |  |
| 3 | 297.5 (E) | 277.5 (E) | - | 58.3 | 34.4 |  |
| 4 | 287.5 (R) | 268.0 (R) | 70.9 (R) | 557 (R) | 32.3 (R) |  |
| 5 | 298.6 | 2770 | 72.4 | 58.4 | 31.4 |  |
| 6 | 288.9 (R) | 268.3 (R) | 70.9 (R) | 55.1 (R) | 30.2 (R) |  |
| PATELLA | GL | GB |  |  |  |  |
| 1 | 50.2 | 50.5 (E) |  |  |  |  |
| 2 | 48.7 (R) | 46.3 (R) |  |  |  |  |
| 3 | 52.1 | 55.2 |  |  |  |  |
| 4 | 52.5 (R) | 51.8 (R) |  |  |  |  |
| 5 | - | - |  |  |  |  |
| 6 | - | - |  |  |  |  |
| TALUS | GH | LmT | GB | BFd |  |  |
| 1 | 43.1 | 42.9 | 45.5 | 34.9 |  |  |
| 2 | 45.5 (R) | 42.9 (R) | 459 (R) | 37.5 (E) |  |  |
| 3 | 48.0 | 47.1 | 50.2 | 38.0 (E) |  |  |
| 4 | 459 (R) | 45.9 (R) | 43.9 (R/E) | - |  |  |
| 5 | 46.5 (E) | 457 | - | $\bar{\square}$ |  |  |
| 6 | 44.2 | 43.6 | 46.2 | 37.6 |  |  |
| CALCANEUM | G1 | GB |  |  |  |  |
| 1 | 80.2 | 45.5 |  |  |  |  |
| 2 | 86.2 | 450 |  |  |  |  |
| 3 | 88.9 | 49.8 |  |  |  |  |
|  | 83.5 (R/E) | 41.3 (R) |  |  |  |  |
| 5 | 86.4 | 42.4 |  |  |  |  |
| 6 | 83.4 | 39.9 |  |  |  |  |
| METATARSAL 3 | GL | Ll | Bp | Dp | Bd | SD |
| , | 203.6 | 193.7 | 366 | 32.0 | 32.6 | 21.4 |
| 2 | 208.5 | 203.5 | 40.1 | 34.7 | 349 | 22.6 |
| 3 | 221.9 | 216.4 | 37.8 | 37.0 | 36.1 | 25.5 |
| 4 | 213.0 (R) | 207.9 (R) | 37.6 (R) | 349 (E) | 34.2 (R) | 22.9 (R) |
| 5 | 215.1 (E) | 208.5 (E) |  |  | 368 | 23.9 |
| 6 | 213.3 | 2114 | 36.2 | 31.8 | 34.4 | 23.1 |
| PHALANX 1 | GL | Bp | Dp | Bd | BFd | SD |
| 1 | 65.0 | 36.0 | 26.2 | 32.1 | 31.9 | 20.5 |
| 2 | 59.7 | 35.7 | 26.9 | 30.1 | 29.2 | 21.7 |
| 3 | 67.8 | 39.1 | 28.9 | 32.3 | 31.2 | 23.6 |
| 4 | 64.8 | 38.4 | 27.8 | 32.0 | 30.9 | 22.2 |
| 5 | 64.6 | 38.1 | 30.5 | 32.8 | 31.3 | 23.7 |
| 6 | 66.1 | 38.0 | 27.8 | 30.6 | 295 | 21.2 |
| PHALANX 2 | GL | Bp | Bd | SD |  |  |
| 1 | - | - | - | - 7 |  |  |
| 2 | 35.7 | 35.5 (E) | 30.6 | 28.7 |  |  |
| 3 | 34.4 (E) | 36.6 | 33.6 | 30.1 |  |  |
| 4 | 34.8 | 35.5 | 30.4 | 29.6 |  |  |
| 5 | - | - | - | - |  |  |
| 6 | 35.0 | 35.4 | - | - |  |  |
| HOOF-CORE | GL | GB | BF | HP | Ld |  |
| 1 | 40.7 | 42.4 | 31.7 | 27.5 | $37+$ |  |
| 2 | 36.9 | 40.0 (E) | 33.0 (E) | 27.9 | 33.1 |  |
| 3 | - | - | 36.7 | -29? | $\overline{358}$ |  |
| 4 | 39.2 | 42.2 | 36.7 | 292 | 358 |  |
| 5 | - | - | $\overline{79}$ | $\overline{72}$ | $\overline{36.2}$ |  |
| 6 | 38.5 | 38.7 | 29.6 | 27.2 | 36.2 |  |



Figure 342. Proportional indices of metacarpal measurements to show the clear division betiocen onagers (E. hemionus) and asses (E. africanus/ asinus). Data from Table 47 and Clutton-Brock 1986.

Table 49. Proportional indices of limb bones of the six donkeys (Equus asinus). (Points of measurement and terminology as in Clutton-Brock 1986 and von den Driesch 1976).

| SKELETON | McIII GL/ rad <br> GL, \% | McIII SD/ <br> GL, \% | MtIII SD/ <br> GL, \% |
| :--- | :--- | :--- | :--- |
|  |  |  |  |
| 1 | 60.82 | 13.66 | 10.51 |
| 2 | 63.63 | 13.41 | 10.84 |
| 3 | 72.16 | 13.78 | 11.49 |
| 4 | 66.35 | 13.64 | 10.75 |
| 5 | 64.52 | 13.87 | 11.11 |
| 6 | 67.17 | 12.88 | 10.83 |

(Equus hemionus) the metapodial bones are longer in relation to the upper limb bones than in other equids. If the lengths of the bones are expressed as a ratio it is found that in hemiones the length of the metacarpal is always more than 70 per cent of the radius length, while in true asses it is always less than 70 per cent. In Donkeys 1, 2, 4, 5 and 6 the ratio of metacarpal length to the radius length is less than 70 per cent. The exception is Donkey 3 in which the ratio is 72.16 per cent (Table 49). As can be seen from Table 46, the anomaly appears to be caused by this equid having an unusually short radius rather than the long metacarpal of the onager, and in all other characteristics this skeleton conforms to the osteology of the donkey. On the other hand, although this donkey is estimated to have stood only one and a
half cm taller than the next tallest equid, that is Donkey 5 , its limb bones, with the exception of the radius, are longer than those of the other donkeys. It is on the dimensions of these bones and on the length of the metacarpal III in proportion to the length of the radius that von den Driesch $(1993,263)$ maintains that Donkey 3 must be an onager $x$ donkey hybrid (kúnga). If this is the true identification of Donkey 3, then we have at least one example of the hybrid for which the site of Brak-Nagar was famous (see Chapters $3,10 \& 16$ ).

Another distinction between ass and hemione is seen in the greater slenderness of the metapodial bones in the hemiones. The ratio of midshaft width to metacarpal length in the asses is not below 12.4 per cent, while in the hemiones it is usually between 11 per cent and 12.7 per cent (Clutton-Brock 1986, 217). In Donkeys 1-5 this slenderness index is above 13 per cent, while in Donkey 6 it is 12.88 per cent (Table 49).

## Individual descriptions of Donkeys 1-5

Unfortunately, as is usual with the burials of equids from Western Asia, the five skulls were too fragmented to provide information on how the donkeys were killed, but the teeth are nearly all present and allow the animals to be aged and sexed. The presence of canine teeth indicates that the donkey was a male (jack) while their absence, unless it is postmortem, indicates that it was a female (jenny). On this basis and on the wear of the teeth, the skeletons have been ascribed as follows:
Donkey 1, aged female (Fig. 47, p. 44)
Donkey 2, female aged three to five years (Fig. 47)
Donkey 3, male aged five years (Fig. 47)
Donkey 4, aged male (Fig. 343)
Donkey 5, aged female (Fig. 344)
There is no evidence from the bones or teeth to suggest that the male donkeys had been castrated, but this would be difficult to determine, especially if the testes had been removed after the canine teeth were developed in the jaws, that is after the age of two years. Neither is there any sign of foetal bones in association with the female donkeys so they are unlikely to have been pregnant when they were killed. As shown on the plan (p.42) and in Figure 47,


Figure 343. Skeleton of Donkey 4 in the doorway of Room 13 (plan Fig. 42, p. 42).
three of the donkeys (numbers $1,2 \& 3$ ) had been carefully placed in Room 10 (FSTC, locus FS 1824); the fourth donkey lay in the east courtyard doorway of Room 2 (locus FS 810, Fig. 343) while the fifth lay in the courtyard itself (Figs. $344 \& 45$, p. 43). From the positions of the skeletons it looks as though all the carcasses had been deliberately placed where they were found; it is even possible that the donkeys had been killed in situ, although the observation that the donkey skeleton found above the antecella of the shrine appears to have been wrapped in reed matting ( $p$. 48) would argue that it was killed elsewhere and perhaps carried in the matting. Donkeys 1 and 2 were lying together as a pair with Donkey 3 behind them and facing in the opposite direction. There was no sign of any harness or chariot with any of the skeletons.

The characteristics of each skeleton are described below.

## Donkey 1

All the permanent cheek teeth are present and are very much worn. The absence of canine teeth could be due to the loss of the front part of the skull as there are no incisor teeth either, but it is more likely


Figure 344. Skeleton of Donkey 5, just above the floor of Courtyard 6/5 (FS 810).
that this donkey, a female (jenny), could have been more than twenty years old. The skeleton was lying on its left side with neck stretched upwards from the body (to the southeast). The right forelimb was lying across the thorax and right forelimb of Donkey 2, and the hind limbs lay beneath those of Donkey 3.

## Donkey 2

This, the youngest of the donkeys, was a female of between three and four years old. The permanent upper incisors are erupted but unworn and the deciduous (milk) third incisors are present, but were about to be shed. Two permanent lower incisors are also present, as well as a few other incisor fragments. All the permanent upper and lower cheek teeth are present but are mostly unworn, and the deciduous lower right fourth premolar had not been shed. There are no canines. It is unlikely that this donkey was old enough to have had a foal, and it may be speculated that she was the daughter of Donkey 1. The skeleton was also lying on its left side with its forelimbs facing downwards from the body and its hind limbs facing down and forwards from the body (to the southwest).

## Donkey 3

This male was the largest of the donkeys, although as can be seen from Table 48, he was still under 12 hands ( 121.9 cm ). The permanent teeth, including canines, are all fully erupted but are little worn, indicating that this donkey was only about five years old when he died. The incisor teeth are strongly notched, as shown in Figure 345, probably caused by


Figure 345. Crib-biting, as exemplified by the notched incisor teeth of Donkey 3. (Photo: Natural History Muscum, London. Scale in mm.)
the habit of crib-biting. The young jack would seem to have been a restless animal that did not take kindly to being confined in a stall and developed the compulsive habit of biting the wooden beams around him.

The third skeleton also lay on its left side but facing in the opposite direction from Donkeys 1 and 2 with the head to the north. The limbs faced downwards from the body (to the northeast) and the rump lay against or on top of the rump of Donkey 2. The bones of the hindlimb were mixed with the hindlimb bones of Donkey 1. It can therefore be seen that the bodies of the donkeys were deposited in the order 1, 2 and 3.

## Donkey 4

Canines are present in the very well-worn tooth row, so this donkey must have been an aged male, probably over twenty years old when he died. There are notches, typical of 'crib-biting', on the left first incisor and the left second incisor is unevenly worn. There is marked 'bit-wear' on the upper right second premolar (Fig. 346). (In all equids, the first premolar, 'wolf tooth', is rudimentary or absent, and the second premolar is the first cheek tooth behind the diastema, in the upper and lower jaws.)

The left hind hoof core has exostoses of the bone around the rim which may indicate that the donkey had been used as a pack animal or ridden for long periods on hard ground. This was the only skeleton that lay on its right side. It appears to have been carefully positioned in the centre of the doorway with the head on the threshold, facing out of the room (to the north).

## Donkey 5 (Figs. 45 \& 344)

The teeth of this donkey are very well worn; there are no canines. This is the only skeleton in which the pelvis is well enough preserved for it to be sexed; in the left innominate bone the obturator foramen is large, the pubic bone has the typical thin and concave shape of a female equid, and the pubic symphysis is unfused. It is therefore evident that this was another aged jenny who had probably given birth to several foals.

The skeleton lay on its left side in a natural position with the limbs below the body and the neck and head raised and pointing to the east. The right maxilla and upper right cheek teeth are missing. The upper right second incisor and the lower right first incisor are notched, as caused by the habit of 'cribbiting'. The top surfaces of the neural spines of the posterior thoracic vertebrae are flattened and expanded with exostoses which is a strong indication that this donkey was frequently ridden (Fig. 347). In addition there are slight arthritic changes on the anterior surfaces of the centra (bodies of the vertebrae) which are evidence of damage to the intervertebral discs caused by the strain on the back.

## Bit wear and evidence for the stabling and use of Donkeys 1-5

The excavation of these six equid skeletons from a single building at Tell Brak with an associated radiocarbon determination of around 4000 BP (BM-2554, -2556, p. 373), and their identification as undoubted donkeys (Equus asinus) provides support for the early domestication of the ass in Western Asia. There are no serious pathologies on any of the skeletons but a number of features indicate that the donkeys had been used as riding and / or pack animals. First, there is flattening and the growth of spongy bone on the tops of the neural spines of the posterior thoracic vertebrae (especially marked in Donkey 5), and exostoses on a hoof core in Donkey 4. Secondly, evidence for a bit or rope in the mouth is shown by oblique wear on the second premolars, especially $\mathrm{P}^{2}$ of Donkey 4, which is most likely to have been caused by a hard bit (Fig. 346). At first I believed that the bits must have been made of copper, as there are small patches of bright green staining on the enamel of the crowns, underneath the cement and running through the closed pulp cavities of the roots of the first cheek teeth (upper and lower second premolars) of three of the six donkeys. However, when one of the teeth was sent for analysis to the Minerology Department at The Natural History Museum, Lon-
don, no evidence of copper could be detected. Nor has any evidence been found in the literature to show that copper can intrude into and discolour the enamel and roots of teeth during life. It is remarkable, however, that in three of the skeletons this green staining occurs only on the first cheek teeth, and it is these teeth that would have been in contact with a bit or rope. The origin of the green staining is, therefore, a mystery, at least for the time being, but there remains evidence in the wear of the teeth for the use of a hard bit, perhaps made of bone.

Of course, bones and teeth can become stained green by being in contact with copper artefacts buried in the soil, but such staining would be not only much more extensive but on the outer cement of the tooth. Nor is there any surviving copper in the room.

Evidence for the use of a bit at this early period is unexpected, especially on donkeys which, today in Western Asia, are never normally ridden with a bit. Bit wear found on the occlusal surfaces of teeth in early domestic horses has been reviewed by Dorcas Brown and David Anthony in a series of publications (cited in Brown \& Anthony 1998); they have also carried out experiments on living horses to show the precise action of metal and rope bits on the surface of the premolar teeth. According to Brown \& Anthony $(1998,331)$ the bit wear on the nearly complete skull of a horse from the site of Dereivka in the Ukraine (Bibikova 1986, 136-8), 'is the earliest evidence for the use of the horse as a transport animal anywhere in the world'. At the time of writing this, and in their earlier accounts of bit wear, this horse skull, which had been intentionally buried with artefacts that included two bridle cheekpieces made of antler, had not been directly dated and was believed to be contemporary with the rest of the site, that is $4200-3700$ вс (Telegin 1986, 31-5). An AMS date has now been obtained on the skull itself and, unfortunately, it has proved to be an intrusive Scythian burial of late Iron Age date (cult horse tooth, OxA $7185,2295 \pm 60 \mathrm{BP}, 400-209 \mathrm{cal} \mathrm{BC}$ ).

Following experiments carried out on living horses with rope bits, Anthony \& Brown (1989) have been able to show that five of the lower second premolars from Botai in Kazakhstan may show evidence of rope bit wear. AMS dates that have been obtained on horse bones from sites at Botai range from $4630 \pm 80-4620 \pm 80$ BP, uncalibrated (Levine \& Kislenko 1997) which is around 400 years earlier than the donkeys from Tell Brak. However, Levine (1999, 73; pers. comm. 1999) has questioned the use of rope bits at Botai because the wear on the premolars is very slight, and no pathological changes


Figure 346. Unnatural wear on the first upper right cheek tooth (premolar 2) of Donkey 4 that was probably caused by bit-wear. (Photo: The Natural History Museum, London. Scale in mm.)


Figure 347. Bony outgrowths on the tops of the neural spines of the posterior thoracic vertebrae of Donkey 5, probably caused by heavy loading. (Photo: The Natural History Museum, London.)
have been found on the vertebrae or foot bones to indicate that the horses had been ridden.

Another early site where there is evidence of bit wear on horse teeth is Tal-i Malyan in Iran, dated to $2100-1800$ BC (Anthony \& Brown 1989, 110). In this paper, the authors suggest that, 'It is possible that metal bits were developed in Western Iran or Mesopotamia in conjunction with the arrival of horses and improvements in chariot technology'. To me, it seems just as fruitless a task to try to find the first bit
as it is to try to find the first equid bred in captivity, but the evidence for bit wear on the premolars of the donkers from Tell Brak at about 2250 вс indicates that bits were being used on donkeys, probably those which were driven (see Chapter 10). It also seems probable that the invention of the bit was preceded by the use of a rope that was tied around the equid's mandible, as is, indeed, the common practice for the control of donkeys at the present day. The textual evidence provides no further illumination on this matter, but it is clear that in the first part of the second millennium, ridden equids were still controlled by reins through a nose ring (Moorey 1970).

The notches on the external edges of the incisor teeth of Donkeys 3, 4 and 5 are typical signs of cribbiting and may indicate that these animals spent much of their time in stalls where they developed compulsive behaviour patterns in an attempt to relieve the monotony of their lives, just as stabled horses will do today when they are bored. True cribbiting is a stereo-typed activity that is combined with sucking in of air; according to Youatt (1846, 450 ), 'the horse lays hold of the manger with his teeth, violently extends his neck, and then after some convulsive action of the throat, a slight grunting is heard, accompanied by the sucking or drawing in of air'. Of course there is no way of knowing whether the Tell Brak donkeys had developed this troublesome habit to its full extent or whether they were just gnawing at wood, or even if they were merely browsing on woody shrubs in the surrounding pasture. The cement on the lingual (inner) sides of the upper teeth and the labial (cheek) sides of the lower teeth of Donkeys 1,2 and 3 is much worn down and polished, this being especially so in Donkey 3. Perhaps this was caused by a diet of dry grasses with a high content of abrasive phytoliths, while in Donkey 3 the polishing could have been increased by the animal compulsively licking round his teeth at the same time as crib-biting.

In summary, it can be deduced that the six donkeys were reasonably well cared for. They were housed in stalls but were frequently used as pack animals, were ridden or were harnessed to chariots or carts of which both two- and four-wheeled models occur frequently in the contemporary Akkadian levels at the site (Chapter 10). The donkeys were bridled with bits. They ended their lives at more or less the same time, as sacrifices to a demanding god who could not be appeased with the one aged male and two aged females but required, as well, a young male and a young female donkey in the prime of life.

Abbreviations used in the measurements in Tables 42-9, as in von den Driesch 1976<br>BC breadth of caput<br>BD distal breadth<br>BF breadth of articular facet<br>BFd breadth of distal articular facet<br>Bp proximal breadth<br>BT breadth of trochlea<br>DC greatest depth of caput<br>Dd distal depth<br>DD depth of diaphysis<br>Dp proximal depth<br>DPA depth over anconeal process<br>GB greatest breadth<br>GH greatest height<br>GL greatest length<br>GLC greatest length from caput<br>GL1 greatest lateral length<br>GLP greatest length of articular process<br>HP height over extensor process<br>LA length of acetabulum + lip<br>LAR length of acetabulum on the rim<br>LD dorsal length<br>L1 lateral length<br>LmT medial length of trochlea<br>LO length of olecanon<br>SD smallest breadth of diaphysis<br>SDO smallest depth of collum

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# Fish Offerings from Tell Brak? <br> Comments on an Articulated Specimen found in the 1990 Season 

Eufrasia Roselló Izquierdo \& Arturo Morales Muñiz

This paper reports on a find of the yellow-fin black porgy (Acanthopagrus latus), retrieved as an articulated specimen at the Syrian site of Tell Brak (2100 вс). The find has taphonomical and palaeocultural interest for it attests commerce with lower Mesopotamia. Furthermore, its status might have more to do with symbolism or ritual than with any strictly utilitarian purpose, although complementary information is necessary in order to substantiate such a hypothesis.

The archaeological site of Tell Brak is located some 2 kilometres from the nearest body of water, the Wadi Jaghjagh, a tributary of the Khabur river, itself a tributary of the Euphrates (Fig. 348). Although fish remains have received scarce attention not only in Syria but throughout the Near East until recent times (van Neer 1984; Desse 1995), Tell Brak is one of the very few places in the region featuring a thor-
ough report from this group of vertebrates where retrieval included both hand collection and sieving with 3.5 and 1 mm sieves (Dobney \& van Neer in press).

## A. The 1990 find

In 1990, during excavation within Area FS Level 2, the earliest level to be dated after the collapse of Akkadian authority, sometime early in the twentysecond century BC , an articulated fish was found in locus FS 689, within the open area 58 (Fig. 79a); a second disarticulated head came from the same context. These specimens were found in ordinary household debris, lying on broken sherds but without indications of any container. Of particular importance is the presence in the more complete specimen of some of the main elements from the gill arches (i.e. Ceratohyale) and pectoral girdle (i.e. Cleithrum). Severe windy conditions on exposure were unfortunately responsible for subsequent loss of some skeletal parts, including scale cover over most of the anterior half of the left side of the body along with cranial elements and ribs (Fig. 349). The imprints of the ribs from the right portion of the body in the sediment reinforce the idea of a complete specimen,

Figure 348. Location of Tell Brak (1), Abu Salabikh (2), Umm-alHafriyat (3), Isin (4), Uruk (5), Lagash (6), Failaka F5 (7) and Failaka F6 (8).



Figure 349. The seabream from Tell Brak. The arrows indicate the imprints of the right-hand side ribs on the sediment.
with subsequent loss after exposure (arrows in Fig. 349). The estimated standard length (SL) of the fish lies around 150 mm . Its weight, inferred from specimens from our reference collection, could range between $100-150 \mathrm{~g}$.

The general morphology corresponds clearly with the family Sparidae (sea breams) and the molariform teeth indicate a durophagous (i.e. crushing) diet. The relative proximity of Tell Brak to the Mediterranean (by contrast with the Persian Gulf; there are no sparids at present in the Caspian sea! See Beckmann 1962; Banister 1980; Coad 1996) suggested an initial comparison of this specimen's anatomy with that of the gilthead (Sparus auratus) and the common porgy (Pagrus pagrus), but this proved unsuccessful. Among the Persian Gulf sparidae, only the genus Acanthopagrus exhibits the laminar expansions behind the neural apophyses which our specimen featured.

The identification of Acanthopagrus below genus level is not always possible, as several authors have remarked (Boessneck et al. 1984, 185) since, except for a few jaw bones, there are few diagnostic features in the four species which occur in the area (van Neer \& Uerpmann 1994, 449). It was mainly for this reason that a detailed comparative analysis was carried out, of which the main results are depicted in Figures 350-52. From this study it seems clear that the Tell Brak specimen belongs to the species $A$. latus, the yellow-finned black porgy or yellow-fin bream, also called the western sea bream (Kuronuma \& Abe 1972; 1988; Allen \& Swainston 1988; Randall 1995). Local names include sheim (Kuwait), shaghoom and shii-öm (Iran) (Blegvad 1944). No Syrian or Iraqi common names have been found.


Figure 350. Dentaries from Persian Gulf species of Acanthopagrus. The short body morphotype, similar to that of the gilthead, appears only in A. bifasciatus (1) whereas the long body is typical of the remaining taxa. A. cuvieri (2) has two diagnostic inner (i.e. lingual) rows of diminute molariform teeth and one outer (i.e. labial) row of caniniforms, the anteriormost ones (1-2) rather enlarged. Of the two species with large molariforms and long bodies, A. berda (3) features a more pronounced and curvilinear ridge below the tooth row which in A. latus (4) and in the Tell Brak specimen (Fig. 349) is straight and not so pronounced.

## B. Discussion

There are several interconnected issues which the Acanthopagrus finds from Tell Brak raise. In order to deal adequately with them, it would be useful to know something about the biology and habits of $A$. latus. The yellow-fin seabream is reported to be a common, shoal forming, species along the shores of the Persian Gulf, over both sand and rocky substrates (Blegvad 1944; Kuronuma \& Abe 1972; Relyea 1981).


Figure 351. Premaxilaries from Persian Gulf species of Acanthopagrus. The short body and blunt posterior end of A. bifasciatus (1) is very diagnostic. A. cuvieri (2) with its slender body, sloping posterior end and small molariforms plus enlarged outer caniniforms is also very typical. The main differences between A. berda (3) and A. latus (4) refer to the inclination of the ascending process (ramus), and the differential enlargement of the area where the olariform teeth are rooted. Again, the Tell Brak specimen (Fig. 349) conforms better with the anatomy of A . latus.

A protandrous hermaphrodite, $A$. latus frequents estuaries as a juvenile but reaches depths of 50 m as an adult (Allen \& Swainston 1988; Randall 1995). Relyea states, without specifying further, that a few species enter freshwater' $(1981,90)$. Our data, obtained from the United Arab Emirates by personal observation, confirm that both $A$. berda and $A$. bifasciatus can be fished in the brackish waters of the various khor (mangrove inlets) along the Indian ocean coastline. In the Gulf spawning occurs between May and September and in Japan, from September to November


Figure 352. Palatines from Persian Gulf species of Acanthopagrus. The medial thickening of A. latus (4) is also present in the Tell Brak specimen (Fig. 349). The differential morphology of the anterior process is diagnostic for each one of the four species (1: A. bifasciatus; 2: A. cuvieri; 3: A. berda).
(Masuda et al. 1984; Samuel et al. 1987).
Blegvad (1944) reports a maximum weight for A. latus of 1.5 kg and, without specifying length, an average weight for 114 specimens of 450 g . Allen \& Swainston (1988) report a maximum weight of 1.97 kg for lengths of up to 45 cm SL, whereas Randall (1995) reports a slightly higher SL of 50 cm . Our own reference specimens do not reach above 32 cm SL (weight: 430 g ). Acanthopagrus is a highly prized food throughout the Gulf area, independent of the species, and is often seen in markets and bazaars (Blegvad 1944; Kuronuma \& Abe 1972; Relyea 1981). In the United Arab Emirates A. bifasciatus seems to be the species which commands the highest price, although this may reflect the fact that the remaining species are not so frequently captured (pers. observ.).

## Chapter 13

Table 50. Remains of Acanthopagrus on Near Eastern sites.

| Site | Abu Salabikh (l |
| :---: | :---: |
| Date: | Early Dynastic periods I-III. Third millennium BC |
| Material: | 12 specimens |
| Description: | Grave no. 1: two anal pinna (burned) from a $c .30 \mathrm{~cm}$ Acanthopagrus sp. (probably A. bifasciatus) (sieved fraction; 1983 field season). From the non-sieved fraction of that campaign, two precaudal vertebrae which best conform to A. berda. From the sieved fraction of the 1978 season one precaudal and four caudal vertebrae from a MNI= 2 'middle-sized' Acanthopagrus sp. From the 1963 season's unsieved materials one fin ray plus one precaudal and one caudal vertebrae from two $c .35 \mathrm{~cm}$ estimated length Acanthopagrus sp . |
| Context: | Graves + unspecified. Inland site. Other marine taxa include Hilsa ilisha (1 specimen), 6 Plectorhynchus sp., 1 Sphyraena jello and a further 83 remains from Mugil sp. Sieved and non-sieved materials present. |
| Site: | Isin-Ishan Bahriyat (Iraq) |
| Culture/dating: | : Neo-Babylonian and c. 2300 bc |
| Material: | 2 specimens |
| Description: | One dissarticulated skeleton of $A$. berda (estimated length $25-30 \mathrm{~cm}$ ) from Grave 1 (c. 2300 вс; 1973/74 season). One anal fin-ray of a $c .30 \mathrm{~cm}$ Acanthopagrus sp. (possibly A. berda?) from Grave 59 (Neo-Babylonian; 1975/77 season) |
| Context: | Graves. Inland site. Other marine taxa include 12 examples from Mugil sp. and two further ones from Sparidae indet. No sieving specified. |
| Site: | Lagash (Tell al-Hiba; Iraq) |
| Culture/dating: | Early Dynastic III, c. 2600-2350 bC |
| Material: | 1 specimen |
| Description: | One maxillare, tentatively identified as Acanthopagrus sp. (1970/71 season) |
| Context: | Area C (interconnected small rooms, either an administrative sector or a residential district). Inland site. Other marine taxa include 11 examples from undetermined Sparidae and 3 from 'at least two different species' of Pomadasyidae (grunts) (Mudar 1982, 29). No sieving specified. |
| Site: | Uruk-Warka (Iraq) |
| Culture/dating: | Early Dynastic, c. 2850-2500 вс and 'second third of the nineteenth century вс' (Boessneck et al. 1984, 150). |
| Material: | 7 examples from the 1960, 1965 and 1967 seasons without further specification. |
| Description: | 1 praemaxillare and 1 maxillare from a c. 25 cm Acanthopagrus sp. from Fundstelle Nr. 18 (portion of a wall; c. 28502500 BC ). 5 caudal vertebrae from one 'very small' and one $c .30 \mathrm{~cm}$ Acanthopagrus sp. from Fundstelle Nr. 22 (Sînkašid palace without further specification (second third of the nineteenth century вс). |
| Context: | See above. Inland site. Other marine taxa include 1 specimen from Plotosus anguillaris, 1 from Johnius sp . (?) and one Liza abu. No sieving specified. |
| Site: | Umm al-Hafriyat (Iraq) |
| Culture/dating: | Akkadian site, east of Nippur. |
| Material: | Three examples from the 1977 season. |
| Description: | Unspecified bones from two c. 30 cm specimens from Acanthopagrus berda. |
| Context: | Found in one grave. Inland site. |
| Site: | Failaka (Kuwait) |
| Culture/dating: | Dilmun period; Hellenistic period. |
| Material: | 22 specimens. 1985/1986 field seasons |
| Description: | 3 cranial and 1 postcranial unspecified bones from Acanthopagrus sp. site F6 (Dilmun period). 14 cranial and 4 postcranial unspecified specimens from Acanthopagrus sp. site F5 (Hellenistic period). |
| Context: | Unspecified (utilitarian?). Island site. All remaining fish taxa ( 19 for a total NISP $=803$ ) are marine. No sieving carried out. |
| Site: | Qala'at al-Bahrain (Bahrain) |
| Culture/dating: | 2150-1900 вс |
| Material: | 37 specimens from the 1965 and 1970 field seasons without further specification. |
| Description: | 23 praemaxillare and 14 dentale of Acanthopagrus sp. of ' larger (than 30 cm SL ) specimens up to 50 cm SL ' (van Neer \& Uerpmann 1994, 449) |
| Context: | Unspecified [levels 24-9 in trench B, levels 15-20 in trench D (both excavated in 1970) 'and from the bulk between... trenches A and B . . . excavated in 1965 and 1970' (Van Neer \& Uerpmann 1994, 445)]. Coastal site. All 24 remaining taxa of fishes $($ NISP $=4227)$ are marine. No sieving carried out. |
| Site. | ed-Dur (Umm-al-Qawain, United Arab Emirates) |
| Culture/dating: | 1st-4th century AD |
| Material: | Acanthopagrus sp. reported 'rare'; A. latus and A. berda reported 'very rare' - |
| Description: | No description of fragments given. |
| Context: | General debris. 'The available faunal specimens come from two wells, from in and around different buildings, and from graves ...' (van Neer \& Gautier 1993, 110-11) without further specification. Coastal site. |

## C. The archaeological record of Acanthopagrus in the Near East

Remains of Acanthopagrus have been retrieved from six sites in Mesopotamia, five of them in Iraq, but never previously in Syria (Boessneck 1977; Boessneck \& Ziegler 1987; Boessneck et al. 1984; Desse \& DesseBerset 1990; von den Driesch 1981; 1986; Mudar 1982; Steger in press). A detailed review of these finds, plus two further ones from Bahrain (Qala'at al-Bahrain) and Umm al-Qawain (ed-Dur) (van Neer \& Gautier 1993; van Neer \& Uerpmann 1994) appears in Table 50. Of the barely 100 recorded bones, most have been classified to genus level and none in Mesopotamia has been assigned to $A$. latus. The yellowfin seabream has only been reported at ed-Dur, where it has been recorded as 'very rare' (van Neer \& Gautier 1993, 118), a fact which makes the find from Tell Brak all the more remarkable.

Chronologically, most of the Acanthopagrus finds appear to date back to the third millennium. Such a 'pattern' may prove misleading, however, for it may simply be related to site selection. Taphonomically almost all these remains consist of isolated bones (again, possibly related to retrieval techniques), but von den Driesch (1981) reports a dissarticulated specimen of $A$. berda in one of the graves from the excavations at Isin-Ishan Bahriyat (Table 50, site 2). The fact that both at this site and nearby Abu Salabikh seabream have been found only in graves perhaps provides an indirect indication of the symbolic/ritual importance of Acanthopagrus in Mesopotamian funerary contexts.

## D. The fish assemblage from Tell Brak

The number of fish remains reported by van Neer from the 1994-96 seasons totals 1276 specimens (Dobney \& van Neer in press). All of these remains apparently belong to freshwater species with carp leading in terms of numerical importance followed by grey mullet (Mugilidae), although for this species the remains are concentrated in a very restricted portion of the site (Van Neer, pers. comm.), and by catfish (actually, Silurus triostegus) (Fig. 353). Except for the second place mullet, such a numerical distribution seems to agree well with present-day commercial fish records from the Khabur river, where cyprinids lead the catch followed by $S$. triostegus (Khalaf 1961; Mahdi 1962; Beckmann 1962). Although the largest quantity of fish remains come from the second millennium $B C$, this evidence indicates a welldeveloped local fishing industry already by the third


Figure 353. Identified fish remains from Tell Brak: 1) Cyprinids (carp); 2) Mugilids (grey mullet); 3) Silurids (catfish). (Data taken from Dobney $\mathcal{E}$ van Neer in press.)
millennium. The fact that the majority of cyprinids were between $10-30 \mathrm{~cm}$ SL indicates that fishing gear, probably nets, enabled the regular capture of small to very small fish (Dobney \& van Neer in press). Oddly, despite extensive wet-sieving on other areas of the site, virtually no other fish bones have been recovered. Those few specimens that have survived are largely small vertebrae, though a fourthmillennium $B C$ pit produced dorsal spines of catfish.

Several lines of evidence suggest that the articulated $A$. latus does not represent the same phenomenon as the other fish. Small size is probably not a good argument against the potentially edible nature of this fish, which corresponds, in terms of SL, to the modal value of presumably consumed specimens at Tell Brak. All the other data, however, point to a different conclusion. Thus, the mere presence of this fish more than 2000 km from the Gulf shores is indicative of long-distance commerce which, in view of the limited capability for upstream river transport in the third millennium, was probably carried overland. At any rate, one might assume that if such commerce in seabreams existed, it was not only a rare but also a strange event, for it would be more reasonable (i.e. economic) to expect transport of large specimens over such distances rather than of tiny fish full of spines! In the second place, the extremely good state of preservation probably indicates very rapid burial. Such an explanation has been advanced at Tell Brak for one donkey of which the entrails (stomach, lungs, guts) have left their impressions in an earlier Akkadian level (p. 48). However, if this fish had been transported such a long distance, unless it had been previously preserved it would al-
most certainly have spoiled, even if such transport tooh place during the winter (lower Mesopotamia, it - putative place of origin, does not now have below freezing winter temperatures, and the third-millennium BC climate may have been milder than that of the present day: Sanlaville 1989; 1990). It should be noted also that the presence of gill bones almost certainly indicates that the animal was kept in some kind of preservation liquid, since smoked and/or dried fish normally have their gills removed (BødkerEnghoff 1996). Such preservative liquid was probably some kind of brine, because acetic acid (vinegar) used in marinating demineralizes bone and turns it into an extremely fragile material (Ponsich \& Tarradell 1965; Martínez Maganto 1992; Ponsich 1988; Roselló 1989a,b). The fact that, even in areas where accessibility to sea bream was not so restricted as at Tell Brak, these fish are found in graves indicates, at the very least, some ritual connotation. In this connection it is of considerable interest that still today the meat from these fish is held in high esteem throughout the Persian Gulf.

Although, according to the excavators, 'close examination of the archaeological context does not suggest deliberate deposition', this does not completely rule out the possibility that the fish may originally have been placed in just such a context, and subsequently removed and discarded. In the same area, a group of three copper/bronze tools was found and nearby, a very fine Akkadian cylinder seal. It remains conceivable that these objects were originally 'ritual' deposits, removed after the fire which destroyed the earliest version of the Grey Libn Building just to the south (see p. 66). In fact, their deposition, at the time of the rebuilding of Level $2 a$, coincides with the robbing of the vaulted tomb illustrated in Figure 81. Certainly, in view of the unusual contexts of $A$. latus specimens and the distances over which they were carried, a strong case exists for connecting all these deposits under a common taphonomical, or, more specifically, 'biostratinomical', history (Gautier 1987). To refute such a suggestion will require complementary information which, for the moment, is lacking.

## E. Other non-local specimens

A 'ritual' interpretation is further reinforced by the recovery of a small group of fish bones from the monumental buildings at Brak which, again, are not of local types. These include:
$-\therefore$ trunk vertebrae from a grunt (Pomadasyidae) SS 405, Room 9 construction level;

- 1 trunk vertebra from a drum (Sciaenidae)

SS 414, Room 10 floor;

- 1 caudal spine and 7 vertebrae from a stingray (Dasyatidae)

SS 549, ritual deposit in Courtyard 8.
Additional evidence comes from a drawing on an Akkadian potsherd illustrating a spiny fish which is either a Rabbit Fish (a poison-spined Siganidae) or a Porcupine Fish (a poison-fleshed Ostraciidae) (Figs. 354 \& 408:373). Further evidence for marine fish comes from an unidentified caudal vertebra from a Percomorph, found in a Level 3 Akkadian house (locus FS 1738).

The deposit of the fish on or beneath the floors of SSTC Rooms 9 and 10 may have been associated with the construction of the Area SS monumental complex, while the stingray remains appear to be associated with a deliberate deposit of valuable items (see p. 90), contemporary with the ritual closure of the complex. The caudal spine of the stingray comes from an individual of over a metre, limiting the range of species to which it could be assigned (probably Himantura warnak), whereas the vertebrae from the same deposit belong to individuals no larger than 30 cm . In the remaining loci the number of individuals is restricted to one. All taxa, including the unidentified percomorph from Level 3, appear to be of marine origin, reinforcing the hypotheses of allochtony and trade previously suggested. The fact that stingrays, able to inflict painful injuries, have been retrieved in a ritual context, may have epiphenomenal connotations which should be explored in the future. The variety of marine taxa retrieved could be


Figure 354. Akkadian potsherd (Fig. 408:373) illustrating a spiny fish which is either a Rabbit Fish (a poison-spined Siganidae) or a Porcupine Fish (a poisonfleshed Ostraciidae).
taken to indicate that there was no targetting of any particular type of fish but that it was, rather, the marine origin of the fish that was significant.

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## A Preliminary Assessment of Akkadian and Post-Akkadian Animal Exploitation at Tell Brak

Jill A. Weber

Animal bone remains provide useful data for understanding many aspects of ancient life. Whole and partial skeletons found during excavation provide information about cooking and eating practices, husbandry, and hunting and disposal behaviour of people in the past. That animal bones do not always represent food remains is shown by the finds of eight complete donkey skeletons and a single complete dog skeleton in the deliberate fill of the FS Level 5 monumental building (see above). This preliminary report focuses on what are mainly rubbish remains from mid- to late-third-millennium occupations at Tell Brak and aims to illustrate trends in animal use and disposal. It thus augments the data from the ritual animal burials as well as that provided by Bate from Mallowan's excavation of the contemporary Naram-Sin Palace (reported in Mallowan 1947). In addition, the Tell Brak faunal remains can be placed within the broader, regional framework of the Khabur and, more generally, that of northern Syria.

The following analysis of faunal remains from Tell Brak was begun during the 1998 field season employing phase one of the two-phase approach developed by Zeder (Zeder \& Arter 1994). In this first phase, bone fragments are identified to the most specific taxonomic level possible, counted, weighed and measured. Analysis was aided by a reference library, but little comparative skeletal material, resulting in rather conservative identifications. Ribs and vertebrae (other than the atlas and axis) were identified only to class and size. Most of the bones which have so far been analyzed come from Area FS Levels 1 and 2 (post-Akkadian) and Levels 3-5 (Akkadian); a small sample of SS material has also been examined. Of the 3147 bones examined up to now, 968 ( 31 per cent) are mammals identified to the level of genus or better. It is this 31 per cent that provides the basis for the present preliminary study. Although differences may exist within the postAkkadian or Akkadian levels, the present sample size does not justify their distinction. Because of the unique nature of Level 5 , that sample is kept separate from the other Akkadian remains. It remains important to bear in mind the preliminary nature of this report. The bones discussed here represent no more than one-fifth of the existing FS material, and only a cursory analysis of these bones has been completed. The interpretations, therefore, remain tentative, and later reports will, of course, supersede this one.

## Rubbish, ritual and equids

The majority of the animal remains from FS levels represent discarded rubbish not ritual deposits. The clear exceptions are the equids and dog which were deliberately buried in the monumental structures of Area FS. In a few cases other material, such as gazelle horncores or pig skulls, may also have been deposited ritually. Most of the remainder of the bones, however, were found fragmented (mainly before deposition), and many had marks of butchery and burning on them consistent with processing for meat or hides. The major food animals found in Area FS are sheep, goat, cattle, pig and equid. Initial examination of the equid remains indicates that both donkey and onager were present and, as a preliminary judgment, it seems that most of the equid remains which were not ritually deposited come from onager, modifications on the bones of which indicate that this animal was eaten. Only preliminary comment on the equid material is provided here, but a more complete examination, particularly of the Level 5 remains, will be published in Volume 3.

## A. Domestic animals

## 1. Cattle

Cattle bones are present in all levels, but are the least commonly found of the domestic food animals. In Level 5 , only 9 per cent of the bones from major animals come from cattle. This increases only marginally to 10 per cent in the remainder of the Alkadian period and in the post-Akkadian period to 12 per cent of the major animal assemblage. Representations of cattle on cylinder seals and sealings, and references in the Beydar texts (Ismail et al. 1996; Matthews 1997a) indicate that, in addition to meat, cattle were exploited for their milk and were also harnessed to ploughs, though donkeys were the more common plough animal.

The FS cattle are smaller than those from earlier periods at Tell Brak. Size variation within the FS material, however, is consistent with sexual dimorphism. Thus, the smaller size of cattle in the latter half of the third millennium probably represents a genuine decrease in size, rather than a change in the sex composition of the herds. It is likely that most of the bones are from Bos taurus. A single bone of Bos indicus, the 'humped cattle' or 'zebu', has been found in a second-millennium deposit at Tell Brak (R. Matthews 1995), while zebu figurines are also attested at this date (Brak 1, Fig. 239).

## 2. Sheep and goat

Sheep and goat comprise the largest portion of the assemblage (by NISP) in all levels. The relative contribution of these animals to the economic regime differs only little over time. Sheep and goat together comprise $c$. 50 per cent of the Level 5 assemblage. Their contribution rises to $c .60$ per cent during the remainder of the Akkadian period and falls back to c. 50 per cent in the post-Akkadian levels. Sheep slightly outnumber goat, but the ratio approaches 1:1 (from a total of 382 bones identified as either sheep/ goat, 60 could be certainly identified as sheep and 51 as goat). Both the sheep and goat are similar in size to animals from contemporary sites in the Syrian Jazirah (Weber 1997), the Hamrin (Boessneck

Table 51. Population means for the GLpe of the first phalanx of sheep and goat (in mm ).

|  | mean | std dev. | range | n |
| :--- | :---: | :---: | :---: | :---: |
| FS sheep | 37.0 | 2.0 | $33.6-41.2$ | 12 |
| Uruk (TW) sheep | 43.2 | 3.3 | $39.1-47.5$ | 9 |
| FS goat | 38.0 | 4.2 | $34.4-48.5$ | 12 |
| Uruk (TW) goat | 40.1 | 2.7 | $36.7-46.0$ | 12 |

1987) and southern Mesopotamia (data compiled by Richard Meadow). However, both the goat and in the particular sheep are distinctly smaller than those from all earlier periods at Brak. This size difference is apparent even in animals dating from earlier in the third millennium, but is especially true of those from the Uruk occupations (a full faunal report on the early periods at Brak will be published in Brak3). This size difference is particularly noticeable in comparison of the means for the greatest length (Glpe) measurement of the first phalanx (Table 51). The explanation for this phenomenon is unknown, but there are several possibilities. First, the measurements of the larger Uruk populations could include unrecognized wild animals. However, one goat which is almost certainly wild ( $\mathrm{PH} 1 \mathrm{GL}=48.5$ ) is from the mid-third, not the fourth millennium. Once it is removed from the sample, moreover, the mean for the FS goat population falls to 37.1 (std. dev. 2.6), further distinguishing it from the Uruk goat population.

Second, the heavier bones of the Uruk animals (the breadth measurements were larger, as well) could have resulted from activities that increased the animals' muscle mass, such as high mobility or pasture in rough terrain. The FS animals may have been less mobile, perhaps receiving fodder as opposed to grazing. Third, the Beydar texts make it clear that several breeds of sheep and goat were present in the mid-third millennium in the Khabur, which were utilized for specific products such as wool, milk or skins (van Lerberghe 1996b). Thus the animals found in FS may have come from a small breed. Further possible explanations for the size variations include differences in sex composition, or changes in nutrition and climate.

No information is yet available on the sex composition of the herds from either period. However, frequency distributions based on the Glpe of the first phalanges provide clues to differences in herd structure (Fig. 355). For instance, a bi-modal distribution of the lengths - which occurs with the Uruk sheep distribution - may indicate female animals at the smaller mode and male animals at the larger. The Uruk sheep distribution is the most bi-modal of the four, while the distribution of the FS sheep is the most normal in the Gaussian sense. It is tempting to interpret these data as representing extreme sexual dimorphism, perhaps owing to the presence of large castrates in the Uruk material - the bones of castrated animals fuse later in life, thus growing longer - while the FS sheep represent simply male and female with minimal size difference (that is, lacking the large-sized castrates). Such a reconstruction


Figure 355. Sheep/goat frequency distributions based on the GLpe of the first phalanges.
would lend support to the view that sheep were bred for wool production in the Late Uruk period. This would have raised the value of castrates, owing to their especially fluffy wool (Payne 1988). While the wool industry was certainly still important during the Akkadian period, and the Ebla texts tell us that wool was brought from Nagar (p. 293), the particular animal population found in Area FS may have been raised for some other purpose. For example, the FS animals may all represent the same breed, while the fourth-millennium sheep/goat population may represent two different breeds. This hypothesis would support the suggestion that, during the Uruk period, large sheep from southern Uruk centres were imported into northern areas (Zeder 1994). It must be stressed, however, that no morphological evidence of either castrates or 'breeds' has as yet been found at Tell Brak. Such theories require a more thorough examination of the periods immediately preceding and succeeding the Late Uruk.

The distribution of the goat measurements may
indicate a greater proportion of females in the FS third-millennium levels, with a single wild individual on the distribution tail. This distribution differs from that in the Uruk levels, where the more continuous distribution illustrated in Figure 355 suggests a greater overlap of sizes in both males and females.

## 3. Pig

Pig comprised a major component of the animal assemblage throughout the Akkadian and postAkkadian periods. Only 15 per cent of the sample from Level 5 was identified as pig, but this figure increased to $c .25$ per cent through the remainder of the Akkadian and post-Akkadian periods. The sizes of the animals did not change over this time and, as a population, pigs were slightly more robust than the pig population from Üç Tepe (Boessneck 1987). No wild boar has yet been identified, though such animals may have existed along the Jaghjagh or in the marshy areas to the east.

During the course of analysis, two observations
were made: cranial bones are heavily represented, and there are an unusual number of young pigs from Level 5. Neither observation has been quantified, which will be done when element and age information has been collected. The significance of these observations is not certain, but the young pigs may have constituted yet another aspect of the ritual associated with many of the Level 5 faunal remains. The prevalence of pig skulls in later third-millennium levels (including a number of complete or almost complete specimens) may constitute further evidence of the ritual importance of pig (a complete pig skull, for example, was found directly beneath the north façade of the SS ceremonial courtyard and another in the Room 20 deposits).

## 4. Dog

The presence of dogs is documented directly through osteological remains, and indirectly by the presence of canid tooth marks (from bone gnawing) on some of the bones of other animals. Dog bones are present in both Akkadian and post-Akkadian levels. Interestingly, although a whole dog skeleton was recovered from Level 5 (p. 327), no other dog bones have been found within the FS monumental building, a situation perhaps related to the function of the building. This contrasts with the occurrence of equids in the building, where eight donkey skeletons and numerous, more fragmentary bones were found. Dog bones have been identified in other deposits, however, and at least three bones (a radius, a calcaneus and a third metatarsal) have been found burned. These bones were not modified in any other way, and it is not known whether the burning was deliberate.

In addition to the osteological evidence for dog, a pig's humerus and a donkey's second phalanx had carnivore (dog?) gnaw marks. The gnawing of these bones may simply reflect canid scavengers, but textual evidence - particularly from the Ur III period - documents the feeding of equids to kenneled dogs (Mander 1994).

## B. Domestic or wild animals

Equid
Bones of the domestic donkey and the wild onager are both present during all periods of occupation published in this volume. Up to now horse has not been identified. Excluding Level 5 , the majority of equid remains came from rubbish deposits. Both donkey and onager bones occurred fragmented, chopped and burned. Distinctions between species were made utilising published differences in skeletal morphology
(Meadow 1986; Uerpmann 1986). Metrics were not used to distinguish between onager and donkey, owing to the large degree of overlap in their absolute size.

Measurements of bones which have been morphologically identified as onager are largely intermediate in size between the published measurements of the donkeys from Brak and onager from other sites in northern Syria. This might be explained as a predominance of female onager; indeed, three of the four pelvic bones from which the sex of the animal could be determined have been female. Bones from infant and juvenile equids (of undetermined species) also occur in all levels, but particularly in Level 5 and in post-Akkadian Level 2. The presence of infants provides some evidence for equid breeding at Brak.

## C. Wild animals

## 1. Gazelle and deer

Bone and horn cores of gazelle, and bone and antler of cervids, were found in small numbers in both Akkadian (including FS Level 5) and post-Akkadian levels. A preliminary identification of Gazella subgutturosa is suggested on the basis of horncore morphology and that species' ancient distribution.

Fallow deer (Dama mesopotamica) was found in post-Akkadian levels, while the Roe deer (Capreolus capreolus) was identified in Akkadian contexts. Red deer (Cervus elaphus) has not been found among the FS material, but was identified in deposits from area TW in the 1998 excavations at Tell Brak. This shift may follow reduced tree cover in the vicinity of Tell Brak or possibly a change in niche exploitation.

An observation made during analysis was that horncores and antler were highly represented in relation to other elements from the same species. This observation has not been quantified, but may suggest that antler and horn were selectively saved for either utilitarian (i.e. the making of tools) or symbolic purposes. The latter is not inconceivable given the iconic prevalence in the glyptic of horned or antlered animals (see for example Figs. 150, 156 \& 162), and is supported by the recovery of gazelle horncores in the antecella of the Level 5 temple ( $p .298$ ). That such material was also used for practical purposes can be seen in the number of carefully cut examples recovered (see Fig. 492:6).

## 2. Lion

A single distal metatarsal has been identified as belonging to a lion (Panthera leo). This bone was found in street fill associated with Level 2a (FS 1644). Lion has already been identified at Brak in material from the Naram-Sin Palace (Mallowan 1947). Lion finds
from ancient Near Eastern sites are relatively rare, but their depictions in glyptic and mention in cuneiform documents illustrate their presence in greater Mesopotamia. We know, for example, that lion were hunted in the Khabur region in the eleventh century вс (Grayson 1976, 16) and suitable habitats were present not only in the Khabur but also in southern Mesopotamia well into this century (Budge 1920, 211).

## 3. Birds and reptiles

A total of 12 bird bones were found in Akkadian and post-Akkadian levels. No further taxonomic identifications have been made, with the exception of the mandible of a pheasant-like bird from the floor of the cella in the Area SS temple. The two reptile bones found may represent intentional ancient exploitation or simply burrowing activity, perhaps even representing the large population still resident on the site.

Fish from possibly ritual contexts are reported
cuneiform texts from both Ebla and Beydar, which emphasize the importance at Nagar of the hybrid (presumably donkey-onager) (see Chapter 10).

Throughout all five levels, the uniformity of the relative proportions of sheep, goat, pig and cattle is striking (Table 52). Nevertheless, there is a slight increase in the proportions of both pig and cattle from Akkadian to post-Akkadian levels, and a concomitant decrease in the proportion of sheep and goat. By contrast, the presence of equid varies to a greater degree, though this may be more locationspecific, especially in the context of the Level 5 deposits. In general, the rubbish remains are very consistent over the latter half of the third millennium. A further and perhaps also ritual difference between Level 5 and other levels is the larger number of young (infant and juvenile) bones. This applies to equids and pigs in particular, but also to young sheep and goat. elsewhere (p. 339).

Table 52. Relative abundance of sheep, goat, pig and cattle from Area FS.

## D. Local subsistence at Tell Brak during the mid-third millennium BC

Although the excavations in Area FS revealed different functions over time (public buildings and

|  | Sheep/goat |  | Pig |  | Cattle |  | (Equid) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| post-Akkadian | 59.0 | (51.7) | 27.5 | (24.1) | 13.5 | (11.8) | (12.3) |
| Akkadian | 63.3 | (58.0) | 25.3 | (23.1) | 11.2 | (10.2) | (8.8) |
| Level 5 | 67.5 | (50.0) | 20.4 | (15.1) | 12.1 | (9.0) | (25.9) |

Percentages (by NISP) of main animals. Numbers in bold indicate percentages excluding equid, while numbers in parentheses include equids.
private houses) and even changes in political association (Akkadian to possibly Hurrian), the faunal picture remains fairly consistent. Sheep and goat always predominate by NISP, while cattle and pig increase in importance when weight is used as the quantifier. Hunting seems to have been a relatively insignificant part of the economy, as illustrated by the generally low percentages of wild animals. The importance of onager, the only wild animal which is present with any frequency, is suggested by the

Table 53. FS totals by level.



Figure 356. \% NISP and weight of FS major animals; the 'equid' weight is very strongly biased by complete skeletons.
nium levels at another urban site in the Khabur, Tell Leilan (Leilan II). On that site's acropolis, sheep and goat make up 62 per cent of the assemblage, pig comprise 22 per cent and cattle contribute 8 per cent to the total (Zeder 1995, table 2). Indeed, the presence of the complete equids in Level 5 constitutes the only unusual aspect of the FS data. Evidence for complete donkey skeletons is plentiful elsewhere in the mid-third millennium, but these skeletons are mainly associated with human burials (see Zarins 1986). The fact that subsistence changes little between Akkadian and post-Akkadian domination supports the idea that environmental suitability exerted a strong influence upon local economic systems but also suggests not only that there was little change in this environment but that the animal economy was not closely linked to political domination.

Future research on the fauna from Tell Brak will address some of the questions that have been raised in this report. Specifically, the size difference between the mid-third-millennium sheep and goat and those animals from earlier periods needs to be explained. In addition, work will continue on the characterization and nature of the 'ritual' deposits and their distinction from rubbish deposits. This will necessarily involve further elucidation of the equid populations at Tell Brak and their importance in its economy.

## A Note on the Human Skeletal Material from Area FS

Theya Molleson

No cemetery has been identified at Tell Brak, and no adult burials were found during the 1976-93 excavations. The human bones examined here came from the deliberate deposits associated with the ritual closure of the monumental complex in Area FS, and in
particular those mutilated skeletons illustrated in Figure 58, p. 50 (locus FS 1374). Here there was no evidence of formal interment, yet the outline of the body could be seen in the soil. Since these bodies were recovered from a building we believe to have been associated with the use of equids, one of the questions addressed was whether it was possible to detect any evidence for riding at this time.

The bones examined here were excavated in 1985 and submitted to the Natural History Museum in 1996, with the permission and cooperation of the Directorate-General of Antiquities and Museums, Syrian Arab Republic. The bones were identified and reconstructed in London. They were not washed since the sandy soil adhering was easily removed by hand. The numbered bones were sorted into likely individual skeletons on the basis of size and articulation. Three, possibly four, individuals are probably represented. Skeletons A-C appear to be male. The remains of a possible female from FS 1449 are also considered here.

## Skeleton FS 1374 A

Part of the post-cranial skeleton of a young adult, probably male. It comprises rib fragments, including left 1 and 2, fragments of left scapula and left ilium, most of the long bones of both arms and both legs, and ankle bones. No cranial fragments could be attributed to the skeleton. Traces of the proximal epiphyseal lines of the tibiae remain, indicating a young adult. The long bones are slender and gracile, generally without strongly marked muscle impressions. This contrasts with the clearly differentiated supinator crests on the ulnae, the gluteal muscle impressions on the gluteal tuberosity of both femora, and the greater trochanter of the left femur, the adductor tubercles of the femora and the soleus line on both tibiae. Both humeri and the femur have clear areas of cribra on the anterior aspect of the neck. There are

Table 54. Estimation of stature of 1374A from long bone length (in $\mathrm{mm})$ using the regression formulae of Trotter \& Glesser (1952;
1958) for negroes and caucasians.

|  | Negro |  | Caucasian |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | Length | (M) | (F) | (M) | (F) |
| Femur | 491 | 1753 | 1717 | 1794 | 1754 |
| Tibia (R) | 397 | 1723 | 1699 | 1780 | 1767 |
| Fibula | 386 | 1704 | 1670 | 1758 | 1727 |
| Humerus | 333 | 1714 | 1672 | 1743 | 1698 |
| Femur + Fibula |  | $1730\left(5^{\prime} 8^{\prime \prime}\right)$ |  | $1790\left(5^{\prime} 10^{\prime \prime}\right)$ |  |
| Femur + Tibia |  |  | $1717\left(5^{\prime} 7^{\prime \prime}\right)$ |  | $1766\left(5^{\prime \prime} 9 \prime\right)$ |

small squatting facets on the distal ends of the femur and left (but not right) tibia. The facet on the tibiae for the proximal ends of the fibulae is distinct, especially on the right.

The stature was about $1.73 \mathrm{~m}\left(5^{\prime} 8^{\prime \prime}\right)$ using the formulae of Trotter \& Gleser (1952; 1958) for male negroes. (In the absence of appropriate formulae for Syria, experience has shown that these formulae give the most consistent results for bones from this area.) The bones of the right side are larger than those of the left (Table 55).

The evidence for strongly developed muscles of the legs used to maintain balance observed here have been noted to an extreme degree on the bones of a part skeleton from Ur attributed to a cart driver (Molleson \& Hodgson 1994). This is of interest, since Tell Brak is notable both for the number of donkey bones that have been recovered from the site and for the cuneiform evidence that identifies the city as a major centre for the breeding of the donkey $x$ onager hybrid, which was used especially for drawing wagons and carts (see Chapter 10). There is no trochanteric spicule on the femur, a trait that has been identified with horse riding (Blondiaux 1994; Molleson \& Blondiaux 1994). The spicule may be specific to horse- as distinct from donkey-riding, but comparative data are lacking. The fovea of the femur, which may also develop bony spicules in horse-riders (Blondiaux 1994), is unfortunately damaged. The strong supinator crests imply strong supinator muscles of the arm; these would be developed symmetrically in controlling restraining reins if driving a cart, but there are other possible explanations.

The significance of the cribra on the femur and humeri is not understood. Angel (1964) described the reaction area of the femur and attributed it to ligamental strain as resulting from habitual climbing and descending hills (like the tell at Brak?). Overall, the skeleton is probably that of a young physically active male who may have driven a cart or ridden a donkey. Our studies are at too early a stage to be confident of a certain attribution.

## 1374 B

The fragmented skeleton of a large adult male. Described as the middle burial, it consists of fragments of the ear regions of the cranium, a fairly complete spine, rib fragments, fragments of most of the long bones, and two ankle bones. There is marked asymmetry, with the bones of the right side being noticeably larger, i.e.

Table 55. Dimensions ( mm ) of long bones. Mcasurements as defined in Brothwell (1981).

|  |  | 1374 A |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  | $\mathbf{1 3 7 4} \mathbf{B}$ | $\mathbf{1 3 7 4} \mathbf{C}$ | $\mathbf{1 4 4 9}$ |  |
|  | $\mathbf{M}$ | $\mathbf{M}$ | $\mathbf{M}$ | F |

thicker, not longer, than those of the left (Table 55). The patellas in particular are very different in size, but are similar in shape. It is possible that two individuals are represented, though this is not obvious in the photograph (Fig. 58).

There is a lateral squatting facet on the distal end of the right tibia. This area is not presented on the left. The tibias have strongly marked soleus lines. Stature could only be calculated from the ulna (length 290 mm ), yielding an estimate of $1.75 \mathrm{~m}\left(5^{\prime} 7^{\prime \prime}\right)$ using the same regression formulae as for skeleton 1374A.

## 1374C

Post-cranial fragments of a mature to old adult male. Fragments include ribs, vertebrae, arm bones, leg and ankle bones. Again the bones are not necessarily all from one individual, but all show arthritic or degenerative changes.

Severe spondylitis and pitting of the bodies of the third and fourth cervical vertebrae (C3 \& 4) suggest neck strain and injury, possibly a whiplash injury to the neck. The thoracic vertebrae show slight
to moderate spondylitis. There are osteo-arthritic changes on the lesser tubercle of the left humerus, and enthesis at the insertion of the achilles tendon on the calcaneus. The deltoid tuberosity on the humerus is strongly developed, and also the supinator crests on both ulnae. Kennedy (1989) has attributed hypertrophy of the supinator crest and fossa to supination and hypertension of the arm and identified it with spear-throwing, the use of the sling or the pitching of missiles by sportsmen. Kelley \& Angel (1983) observed it among black slaves who had manipulated iron with a long reach with elbows extended. This seems the better parallel for Tell Brak where the feature is equally developed on right and left arms. It would be compatible with controlling the reins of a cart.

No stature could be calculated.

## Skeleton 1449

Cranial and post-cranial fragments of an adult female. The tibias are weathered and cracked, indicative of shallow burial and subaerial erosion. Fragments of the ear region, ribs, one vertebra, leg and ankle bones are present. The mastoid is well developed but rather pointed as in a female. The post cranial bones are generally small and gracile. The distal end of the left femur is preserved. It has a strongly developed linea aspera and osteoarthritic changes at the knee: there is pitting and eburnation of the articular surface and osteophytic lipping around the margin. Fragments of the articular surface of the right femur show similar arthritic changes. Fragments of the tibia articular surface also display degenerative pitting. The tibia shafts show evidence of healed periostitis, a feature which may be related to nutritional deficiency.

No stature could be calculated.

## Conclusion

The human bones described here were recovered from the same part of the site, FS, as were a number of skeletons of sacrificed donkeys (see above). These animals had not been kept for food and showed signs of having been used as pack animals or having been ridden. Our studies were not able to ascertain from morphological changes of the human bones whether the humans were drivers or riders.

## Acnowledgements

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## Chapter 14

# Microstratigraphic Analysis of Depositional Sequences in Areas FS and SS 

W. Matthews, C.A.I. French, T. Lawrence, D.F. Cutler \& M.K. Jones

In this chapter we discuss first the history of use and abandonment of the two monumental building complexes in Areas FS and SS, for contexts in which microstratigraphic evidence was studied. We then examine contextual variation in deposit types in order to identify key traces of different uses and meanings of space and micro-environment in a range of contexts within the third-millennium BC settlement at Tell Brak.

The research presented in this chapter was conducted as part of a three-year NERC project to study microstratigraphic traces of site-formation processes and uses of space within domestic and ritual contexts in complex early urban sites (Matthews et al. 1997). One of the principal focuses of this research design at Tell Brak was to study comparable contexts from a range of periods, in order to assess the nature of diachronic variation in the character of occupational sequences at a large multi-period site. Selection of depositional sequences and micromorphological thin-section samples for study from Areas FS and SS, therefore, was principally aimed at these questions, but was also sensitive to opportunities for sampling and questions which arose during excavation. Those microstratigraphic sequences selected for study were photographed, drawn at 1:5 and described in detail. Samples of deposits were cut out from these sequences in blocks for examination in large, resin-impregnated thin sections, $13.5 \times 6.5 \mathrm{~cm}$ and $25-30 \mu \mathrm{~m}$ thick (Brak 1, 135-40). The sequences studied in Areas FS and SS are listed in Table 56, with details of their specific locations, reasons for selection and samples collected.

## A. History of use and abandonment of the two monumental buildings in Areas FS and SS: microstratigraphic observations

Contexts studied within the monumental building complex in Area FS include the temple cella, antecella and courtyard, the large Courtyard 5 to the south of the temple and the area outside the north wall of the temple courtyard (Fig. 357). The main context studied within the monumental building in Area SS was a large administrative room, 18 , and a low oven/ area of burning in Room 28 (Figs. 91 \& 163).

The principal characteristics of each depositional layer within these contexts are described in brief in Tables 57-8, with interpretations set out in adjacent columns in italics. The relative stratigraphic sequence of deposits within each context is illustrated within each vertical column, starting with the earliest deposit examined at the base. Tentative correlations of the sequence of events in each context and area are suggested by comparing depositional histories from the last laid surfaces to massive deposits of infill or collapse. Tracing the relative position of deposits along horizontal axes in Tables 57-8 gives some indication of these comparative histories and tentative correlations.

## 1. Area FS

Temple cella (Room 41): The last floor laid in the temple was an orange-brown silt loam mud plaster floor. In thin section this floor exhibits traces of wear represented by sub-horizontal cracks in the uppermost fabric and an irregular surface topography. A thick


Figure 357. Plan of FS Level 5 building, showing sample locations, with field section numbers.
layer of overlying brown, slightly sandy, silt loam deposits, some 20 cm in depth, is difficult to interpret, but most closely resembles samples of deliberately laid packing from other areas. Plant remains within this deposit were charred in situ by the intensity of heat from a later fire which reddened deposits to a depth of 3 cm (Fig. 358 [1]). In this later fire were charred and siliceous grass and reed stems, leaf and roots, cereal grains, and unidentified dicotyledonous wood [2], in a heap $c .55 \mathrm{~cm}$ in diameter and 5 cm thick when excavated. A fine Stone Ware jar (92.197) was found in these deposits in the eastern corner of the cella next to the doorway. A patch of burning is visible on the wall but it remains uncertain whether this small area of burning in the cella is related to the infilling rituals or to the actual use of the cella. It resembles a similar patch of burning which can be seen along the north wall of Area SS Room 5 (Fig. 101). In both cases it is likely that the burning occurred on the 2-3 cm of 'trample' found in both rooms, as illustrated in the FS courtyard, Fig. 359. In the FS cella, as elsewhere, these burnt deposits are covered by heterogeneous unburnt and burnt building material aggregates, comprising deliberate infill to a depth of more than two $m$.

Temple antecella (Room 42): The last floor laid in the antecella was an or-ange-brown silt loam mud plaster, similar to that laid in the cella. The floor surface was slightly irregular and covered in a thin layer of slightly greenish ash (10YR 6/1-7/2 light grey), 2-6 mm thick, which also appears to have covered the whole of the temple courtyard surface. This ash includes melted silica particles which suggest original burning temperatures exceeded $600-800^{\circ} \mathrm{C}$. There is, however, no reddening of the underlying plaster floor in the antecella or of the whole area of the courtyard
floor to suggest that the burning responsible for the green ash occurred in situ; this contrasts with the random patches of heavily burnt surfaces visible across the courtyard in Figure 53 (p. 47), discussed below, which derive from later burning associated with the final 'closure' of the temple complex. The slightly greenish ash includes charred reed, unidentified dicotyledonous wood, and other unusual remains which have up to now proved unidentifiable, partly owing to their small size. In the antecella the ash is mixed with unoriented aggregates $1-4 \mathrm{~mm}$ in size, only some of which are burnt. It is likely that the ash was redeposited in these contexts. The apparently even distribution of such a thin layer over these large expanses is difficult to explain without further ethnoarchaeological and experimental research. It may be of wind-laid origin, although the wide range of unsorted particle sizes perhaps suggests that this unusual ash could have been brought in by human rather than natural action.

In the antecella this ash is overlain by at least three different types of deposit which accumulated



Figure 358. FS temple cella, burnt deposits in northeast corner next to doorway. Packing or 'trample' deposits reddened by burning to a depth of 3 cm [1]. Overlying charred and siliceous plant remains include grass and reed stems, leaf and roots, cereal grains, and unidentified dicotyledonous wood [2]. Field section 1. TS sample 92.001. PPL. Frame width $=11 \mathrm{~mm}$.

$$
\text { wood [2]. Field section 1. TS sample 92.001. PPL. Frame width }=11 \mathrm{~mm} .
$$

during an interval of time between abandonment and deliberate infill. The first of these deposits includes fallen plaster fragments and discontinuous mounds of burnt and unburnt building aggregates. The second comprises a thin layer of deposits with charred and siliceous remains of reeds, grasses, ce-

Table 56. Location of microstratigraphic sequences in Areas FS and SS, with lists of context and deposit types analyzed, thin-section sample numbers and references to figures in text.

| Area | Room no. | Context type | Location within context | Deposit type sampled | Thinsection sample no. | Field section no. | Text figure no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| FS | 41 | Temple cella | NE corner | Floors | 92.001 | 1 | 358 |
| FS | 41 | Temple cella | NE corner | Mud-brick and wall plaster | 92.003 | 4 | 368 |
| FS | 42 | Temple antecella | NW | Floors | 92.004 | 2 |  |
| FS | 42 | Temple antecella | NW | Floors | 92.005 | 2 |  |
| FS | 42 | Temple antecella sounding | centre | Floors | 92.006 | 3 |  |
| FS | $+2$ | Temple antecella |  | ?Roofing fragment | 92.026 | - |  |
| FS | 43 | Temple courtyard | NW | Floors and infill | 92.007 | 5 | 360 |
| FS | 43 | Temple courtyard | SE | Floors and infill | 92.008 | 6 |  |
| FS | 43 | Temple courtyard | West centre | Floors and infill | 93.075 | 32 |  |
| FS | 43 | Temple courtyard | N | Collapsed white plaster and mortar | 92.009 | - | 363 |
| FS |  | Outside temple N wall | W | Basal deposits | 93.011 | 7 |  |
| FS |  | Outside temple N wall | W | Burnt deposits on 'glacis' | 93.013 | 7 | 365 |
| FS | 5 | Courtyard sounding | SE | Multiple layers of trample | 93.078 | 34 | 366, 370 |
| FS | 5 | Courtyard sounding | SE | Multiple layers of trample | 93.079 | 34 | 371 |
| FS | 5 | Courtyard sounding | W | Deposits on irregular baked brick 'paving' | 93.015 | 10 |  |
| FS |  | Street W of temple |  | Trample | 92.034 | 15 |  |
| FS | Locus | 1886, open area | W | Phytolith rich deposits surface of temple infill; assoc. equid burial 1888 | 92.024 | 8 | 361,362 |
| FS | Locus | 1893, open area above temple |  | Brazier ash | 92.014 | 9 |  |
| FS | Locus | 2215, kiln, open area | Level 2 | Vitrified wall | 92.027 | - |  |
| FS | Locus | 2310, tamur in courtyard | Level 1 | Fill | 92.047 | 20 |  |
| SS | 18 | Large administrative rm | centre | Floor and infill | 93.041 | 18 |  |
| SS | 18 | Large administrative rm | centre | Deliberate infill | 93.042 | 18 |  |
| SS | 18 | Large administrative rm | N centre, close to doorway | Floors and infill | 93.043 | 19 | 367 |
| SS | 18 | Large administrative rm | N centre | Foundation levels, burnt | 93.044 | 19 |  |
| CH |  | Construction surface for NSP |  |  | 88.001 | - | 364 |
| SS | 7 | Temple courtyard | NE corner | Structural infill | 88.002 | 12 | 369 |
| SS | 7 | Temple courtyard | NE corner | Foundation materials | 92.023 | 12 |  |
| SS | 28 | Large oven | centre | Ash on burnt surface | 92.022 | 13 |  |
| SS | Locus | sot, kiln | Level 2 | Ash fuel within kiln | 92.019 | 11 | 373 |
| SS | $\begin{aligned} & \text { Locus } \\ & 1096 \end{aligned}$ | Room with burnt floors, <br> 'Isin-Larsa' date |  | Burnt floors and deposits | 93.081 | 36 |  |
| SS | $\begin{aligned} & \text { Locus } \\ & 1096 \end{aligned}$ | Room with grindstone set in plaster, 'Isin-Larsa' date |  | Plaster and overlying deposits | 93.080 | 35 |  |

real grains, dicotyledonous wood, and small fragments of burnt bone. The third layer is 2 cm thick, and constitutes compacted grey and orange-brown sediments with horizontally aligned pseudomorphic voids of plant remains which have since decayed. The antecella was then filled with the same massive deposits of heterogeneous aggregates and sediments as those in the cella.

Temple courtyard (Room 43 ): Three samples were collected across the courtyard, from close to the entrance to the antecella, near the western wall face, and from eroding deposits in the southeast. The or-ange-brown mud plaster laid in the courtyard has
more inclusions than the plasters within the temple, such as fragments of slag and stone, suggesting the materials may have been collected for different properties and intentions. The courtyard surface is irregular and undulating, and was covered, where sampled, by the same thin layer of ash (Fig. 359) which occurred in the antecella, discussed in the preceding section. In thin section (Fig. 360 [1]), the ash in the courtyard includes a similar range of plant remains, but has fewer building material aggregates. An extensive thin layer of compacted silt loam and reddish water-laid silty clay was deposited on the ash in the courtyard (Fig. 360 [2]); a similar thin layer of reddish sediments was deposited on the mound
in the spring of 1994, during a dust and rain storm. The FS courtyard was then covered in a layer of unoriented and disturbed deposits, c. 1-2 cm thick, with some post-depositional insect disturbance. Pottery sherds and clay sealing fragments were found within and on top of these deposits (Fig. 359), perhaps from abandonment disturbance or simply preinfilling clearance activities. In some areas these remains were covered, as in Figure 359, by a layer of burnt and collapsed building materials which reddened underlying deposits in irregular patches to a depth of up to 4 cm . These burnt deposits include fragments of mud-brick and gypsum wall plaster, and charred reeds and wood. Some of the wood fragments are from hackberry, elm or pistacia (Celtis/ Ulmus / Pistacia). The question as to whether this burning may have been deliberate is discussed elsewhere (p. 389).

Outside temple north wall along niched façade (Fig. 48, p. 44): In thin section, unoriented burnt aggregates, quite well-preserved charred and siliceous plant remains and a stone bowl fragment lay, apparently tumbled, at the base of the temple north wall, in a layer $c .3 \mathrm{~cm}$ thick on top of basal packing. The higher slope of the 'glacis' is covered by a discontinuous thin water-laid surface crust ( 0.5 mm thick), which may correlate with the water-laid deposits on the surface of the courtyard. On top of this crust a layer of burnt aggregates and remarkably well-preserved charred reeds probably correspond with the destruction of the courtyard by fire (Fig. 365). Both the base of the wall and the 'glacis' were buried below unoriented unburnt and burnt building material aggregates, which may correlate with the deliberate infilling of the cella and antecella.

Summary observations and interpretations of FS temple sequences (Tables 57 \& 58): Irregular surfaces and sub-horizontal cracks in areas of plaster flooring throughout the temple complex suggest some use of the building after the latest replastering. In the temple courtyard and antecella these floors were covered in an extensive thin layer of green ash which had been burnt at moderately high temperatures elsewhere and redistributed here, perhaps by wind, perhaps by human agency. Some of the ash outside the temple complex includes melted silica which may have accumulated at the same time as the greenish ash in the antecella and courtyard. In the courtyard, this ash is covered by an extensive, thin, water-laid surface crust, $<0.5 \mathrm{~mm}$ thick, probably from rain, which was relatively undisturbed and perhaps sug-
gests a brief period of disuse or abandonment. The antecella and courtyard were then covered in unoriented aggregates and broken pottery fragments, perhaps from activities connected with the clearing out of the building. This was followed in the courtyard by an episode of burning which resulted in violent collapse of burning debris onto some but not all areas of the courtyard surface, scorching and blackening underlying deposits (Fig. 53). The small fire in the corner of the cella and lens of charred debris in the antecella may correspond with these episodes, which may have constituted a part of the ritual 'closure' of the building (below, p. 389). A thick layer of packing / compacted deposits was laid subsequent to this phase, and tentative correlations of relative sequences in Table 57 suggest infilling of the antecella and cella may have begun subsequent to this burning episode.

The only other sequence studied within the monumental building complex in Area FS, was another large courtyard, 5 , immediately to the south of the temple (Figs. $357 \& 366$ ). The last deliberately laid surface in this courtyard, comprising brown mottled bricks and packing, was similar to earlier surfaces on which dung had accumulated. This surface was covered by a series of 'dusty' sandy silt loam deposits with heterogeneous aggregates, and occasional lenses of compacted, possibly trampled, deposits similar to some street deposits (W. Matthews 1995, fig. 9). The courtyard was then covered in burnt collapse, from extensive burning within this area and the temple courtyard to the north, and massive infilling. No evidence of the green ash layer was found in Courtyard 5.

## 2. Area SS

The only context selected for micromorphological study which can provide additional information on the last use, abandonment and infilling of the monumental buildings is Area SS Room 18, a large square room with mud-plastered benches along the walls. In 1990 a complete section through the centre of this room was recorded (Fig. 107).

During use of the room a series of plaster floors were laid on top of a mud-brick foundation; these were laid deliberately sloping down to the south ( p . 83). The last of these was an orange silt loam plaster which had been worn away in the centre of the room and was covered by discontinuous compacted lenses of trampled deposits and small patches which may represent burning. Next to the north wall, in the area where thin section 43 was taken, a pit or trench had been dug, infilled and covered over with grey plas-


Figure 360.


Figure 361.


Figure 362.


Figure 363.


Figure 364.
ter and a mud-brick bench, visible in Figure 106; thin section 43 was taken just south of this bench. In thin section, traces of thin water-laid crusts, $<0.4 \mathrm{~mm}$ thick, were detected on top of the grey plaster which extended at floor level beyond the bench (Fig. 367); these also appeared as a beige water-laid deposit in the centre of the room (thin section 93.041) and occur in the same relative sequence of deposition as those observed in the FS courtyard (Table 57). As Room 18 may have been roofed (p. 82), the presence of these crusts may be explained by a range of possibilities, including a leaking roof, the use of water in the room or, most likely, water flooding in from the courtyard to the north. A layer of clay sealings, conical cups and other artefactual fragments lay directly on the floor, overlaid by unoriented heterogeneous aggregates or 'trample', the latter almost certainly representing, as in Area FS, a period of disturbance

Figure 360. (on left) FS temple courtyard southeast. Thin lens of re-deposited greenish ash and overlying water-laid crust [2]. The ash includes melted silica particles [1], which suggest original burning temperatures exceeded $600-800^{\circ} \mathrm{C}$, charred reed and unidentified dicotyledonous wood. There is, however, no reddening of the underlying plaster floor to suggest that this burning occurred in situ. Field section 6. TS 92.008. PPL. Frame width $=11 \mathrm{~mm}$.

Figure 361. (on left) FS open area on top of temple infill. Thick deposits rich in finely fragmented siliceous plant remains [1]. Field section 8. TS 92.024. Same view as Figure 362. PPL. Frame width $=11 \mathrm{~mm}$.

Figure 362. (on left) FS open area on top of temple infill. Thick deposits rich in finely fragmented siliceous plant remains and calcareous spherules [1]. Field section 8. TS 92.024. Same view as Figure 361. XPL. Frame width $=$ 11 mm .

Figure 363. (on left) FS temple courtyard 43. Exterior wall surface coated in gypsum plaster [1], 2-5 mm thick, and a thin finishing coat of lime plaster [2], c. 0.5 mm thick. Spot sample. TS sample 92.009. XPL. Frame height $=3.5 \mathrm{~mm}$.

Figure 364. (on left) Area CH, Level 4. Working floor consisting of irregular layers of yellow and white calcareous deposits associated with the preparation of quicklime. Underlying reddish-orange deposit, with comparatively dense concentrations of basalt fragments [1], $5-10$ per cent, $<5 \mathrm{~mm}$ in size. TS 88.001. PPL. Frame height $=11 \mathrm{~mm}$.
or clearance. The types of deposits which infilled Room 18 in general are the same as those in the rest of the SS complex, and the FS temple cella and antecella. The steep tip and down slope sorting of the heterogeneous sub-angular and sub-rounded aggregates in massively bedded units suggest high energy rapid deposition, probably from deliberate infilling using shovels or baskets.

Depositional sequences were studied in two other rooms in Area SS, but these lie outside the monumental building complex, and are discussed in the second section of this report on contextual variation in deposits.

## 3. Architectural materials

One of the most interesting thin sections was taken


Figure 365. Outside FS temple, the 'glacis' is covered by a layer of burnt aggregates [1] and remarkably wellpreserved charred and siliceous reeds [2], which may correspond with the burning in the temple courtyard (43). Field section 7. TS 93.013. PPL. Frame height $=$ 3.5 mm .


Figure 366. West-facing field section 34, FS Courtyard 5, illustrating multiple layers of flooring, dung-rich deposits and possible stake-holes for tethering animals (cf. Fig. 357). Field descriptions of depositional units from the base up. 1) Laid mud-brick foundation, two courses thick. Mud-bricks range in colour from brown to dark grey. Dark greyish brown silt loam mortar (10YR 4/2) with massive bedding/structure. Unoriented randomly distributed inclusions comprising $10-20 \%$ plant impressions and $2-5 \%$ siliceous plant remains $<2 \mathrm{~cm}$ in length from added vegetal stabilizers, 2-5\% charred flecks, and 2\% burnt aggregate inclusions. Fine crumb-subangular blocky structure, moderately firm, sticky and plastic consistency. 2) Thick layer of plaster on top of mud-brick foundation. Similar to mortar betiwen bricks, unit 1 , with $10 \%$ aggregates of pale grey clay $<1 \mathrm{~cm}$, and $2 \%$ calcareous rock fragments, $<8$ mm. 3) Thin white lens (10YR 8/2-8/1) with 2-5\%? plant impressions/matting and salts. 4) Brown silt loam 'dust' (10YR +/4) with massive bedding/structure, from wind-laid deposits and trample with only $<2 \%$ unoriented and randomly distributed charred remains and burnt aggregates $<2 \mathrm{~mm}$. Fine crumb. Moderately weak and sticky, only slightly plastic. 5) Brown slightly clay loam trampled deposits (10YR 4/3) with massive bedding/structure. 2-5\% charred remains $<2 \mathrm{~mm}$, and $20-30 \%$ bricky and burnt aggregates ( $7.5 \mathrm{YR} 4 / 4$ and $5 / 6$ ) $<15 \mathrm{~cm}$. Fine crumb, occasionally sub-angular blocky structure. Moderately weak and sticky, but very plastic consistency. Floor build-up. 6) Discontinuous poorly prepared orange brown plaster floor/surface (7.5YR 6/6 and 5/4) with $2 \%$ plant impressions from added stabilizers, $5-10 \%$ hard subangular calcareous aggregates $<1 \mathrm{~cm}$, and 5-10\% burnt aggregates $<1 \mathrm{~cm}$. Heterogeneous fine crumb, subangular blocky and granular structure. Friable, slightly sticky and non-plastic due to gritty inclusions. 7) Heterogeneous compound layers of pale greyish brown accumulated deposits (10YR 5/3-5/2) with $10-20 \%$ fine plant impressions $<1 \mathrm{~cm}$. Fine crumb. Weak, moderate-very sticky and very plastic consistency. 2-5\% fine siliceous plant remains, $2 \%$ charred remains and $<2 \%$ burnt aggregates. Discontinuous salt lines also present. See also Figures 369 and 370, which illustrate the micromorphology of herbivore dung, detectable in thin section; contemporary with earliest stake-holes near wall face on right-hand side of Figure 366. 8) Discontinuous poorly prepared orange brown plaster floor/surface, similar to unit 6 . Depressed by insertion of possible stake, during later use of this area, visible on left-hand side of Figure 366. Latest courtyard surface. 9) Irregular greyish brown thick clay silt
of material from the 'working floor' for the Naram-Sin Palace (Area CH ), collected for analysis in 1981. The sample includes irregular layers of yellow and white calcareous deposits almost certainly associated with the preparation of quicklime (Fig. 364 [1]; Courty pers. comm.). The basal layer in this small sample includes an unusual reddishorange deposit, with comparatively dense concentrations of basalt fragments (Fig. 364[2], 5-10 per cent of fabric, $<5 \mathrm{~mm}$ in size), not observed anywhere else on the mound. True quicklime provides a much harder surface than the gypsum plasters which are more common in this region, and we know that the exterior walls of the FS temple were finished with a thin coat of such plaster (below).

The interior walls in the FS temple were coated in alternate layers, perhaps couplets, of grey and orange slightly sandy silt loam mud plaster, $5-19 \mathrm{~mm}$ thick, with added vegetal stabilizers represented by pseudomorphic voids, i.e. impressions, of plant remains which have since decayed (Fig. 368). The exterior walls were covered in a sequence of ashy mortar, gypsum plaster ( $2-5 \mathrm{~mm}$ thick) and a thin finishing coat of lime plaster (c. 0.5 mm thick: Fig. 363). Examination of these materials under a Scanning Electron Microscope would provide additional information on how these gypsum and lime plasters were prepared (Kingery et al. 1988).

Burnt fragments of possible roofing material were found within the fill of the antecella. The sample


Figure 367. SS Room 18. Traces of water-laid crusts [1], $<0.4 \mathrm{~mm}$ thick, on top of the last laid plaster floor in this room. Field section 19. TS 93.043. PPL. Frame width $=3.5 \mathrm{~mm}$.


Figure 368. FS temple cella Room 41. Alternating layers of greenish-grey [1] and orange [2] silt loam wall plasters, with added vegetal stabilizers represented by pseudomorphic voids (impressions, of plant remains which have since decayed). Field section 4. TS 92.003. PPL. Frame width $=11 \mathrm{~mm}$.

Figure 366. (cont.) loam and bricky packing (10YR 4/2). 5\% charred plant remains and $10 \%$ burnt aggregates. Fine crumb-subangular blocky structure. Moderately firm and sticky, and very plastic consistency. 10) Pale brown silty clay loam dust (10YR 5/3) similar to unit 4. Fine crumb. Moderately weak and sticky, but very plastic. 11) Brown bricky packing, similar to unit 9, slightly 'dustier' deposits. 12) Brown brick fragments, similar to those in unit 1. 13) Greyish brown dusty deposits, similar to unit 10.14) Burnt aggregates and destruction debris, which have scorched the surface of unit 12, and seal the last of the possible stake-holes. 15) Collapse building debris with large fragments of brick and orange plaster, probably from the surfaces of adjacent walls; initial stage of infilling. 16) Fill, visible tip lines. 17) Mud-brick wall. 18) Orange wall plaster still adhering to the surface of the wall. a. Animal hole.

Table 57. Summary descriptions of microstratigraphic sequences studied in Area FS and SS monumental buildings, lowermost $=$ basal deposits. Tentative correlations are suggested by tracing descriptions across the horizontal axis of the table. These are based on comparison of a) the relative order and b) deposit types between the latest laid surface in each area and the massive deposits from episodes of burning and infilling. Tentative correlations between depositional histories in Areas FS and SS Rm 18 may be suggested if the last laid surface in each area is generally contemporary and the 'red dusty coat' (FS 92.008) = 'water-laid crusts' (SS 93.041 \& 93.043). Blanks in the table indicate locations within sequences where there are no layers which correspond with those in adjacent sequences. Such discontinuities are not surprising within complex settlements where differences in micro-environment and human activities affect the nature of deposition, sediment traps and erosion horizons. Entries in parentheses signify deposits present but not within field section. 'TS' = thin-section sample number. $[n]=$ microstratigraphic unit number.

| Area FS <br> cella <br> Rm 41 <br> TS 92.001 <br> field section 1 | Area FS <br> antecella <br> Rm 42 <br> TS 92.005 <br> +92.045 <br> field section 2 | Interpretation of cella and antecella sequence | Area FS Courtyard 43 TS 92.008 field section 6 | Interpretation of FS sequence | Area SS large Room 18 close to door TS 93.043 field section 19 | Area SS <br> large Room 18 centre TS 93.041 field section 18 | Interpretation of SS <br> Room 18 <br> sequence |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Brown fill [6] | Greyish brown fill with brick fragments [6] | Deliberate infill | (Deliberate infill) | Deliberate infill | Deliberate infill | Deliberate infill [Field sect. 6] | Rapid deliberate infill of building |
| Charred and siliceous plant remains from in situ burning [4-5] | Charred lens [5.01] | 'Ritual burning in corner of cella (prior to infilling) | (Burnt collapse) | Burning of ?ritual deposits mbuilding |  |  | No evidence of burning |
| Units [2-3] <br> (locus 1911) <br> brown compacted deposits/packing, reddened by burning of <br> Units 4-5 <br> (mod-dense charred plant remains). <br> Bioturbated deposits (base of [2]) | c) Grey <br> 'trampled' <br> lenses [5.02] <br> b) Discontinuous mound of burnt \& unburnt heterogeneous aggregates [4], on top of <br> a) ?collapsed wall plaster fragment (locus 1916) | Accumulation of heterogeneous aggregates (2-3 cm 'trample') | Unoriented aggregates [3] | ?Post occupation clearance of building $=$ 'trample' | Brick collapse near doorway [19] | Unoriented heterogeneous aggregates and charred flecks [5] | ?Post occupation disturbance in centre of room $=$ 'trample' |
|  |  |  | Red silty clay 0.5 mm thick [2.2] | Brief abandonment; ?Thin water-laid deposit | 2 banded water-land crusts $<0.4 \mathrm{~mm}$ thick [18.2] | Water-laid crust $[4.2=$ spot sample 45] | ?Leaking roof or use of water, no debris to suggest removal of roof |
|  | Ash [3] 'green' ash, silica inclusions | Ash in antecella same as ash in courtyard Rm 43 Unit 2 | Ash [2.1] | Evenly distributed lens of green ash from high temperature burning, not burnt in situ |  |  |  |
|  |  |  |  |  | Greyish brown plaster covering the pit below bench (locus 946) | Compacted lens of ?occupation deposits; small burnt patches [4.1] | Accumulation <br> of thin <br> occupation <br> deposits <br> covering of pit <br> with plaster \& bench |
| Plaster [1] | Plaster [2] | Last lald plasters within temple building | Orange brown plaster, reddened [1] | Last plaster latd on courtyard surface | Orange plaster [3.2] | Orange plaster [3] | Orange plaster laid across room, but worn away in patches in centre of room |
| (Orange plaster) | Orange plaster <br> [1] (locus 1922) |  | Complex lenses of thin plaster, ?mat impressions, reddened [11-9] |  | Grey occupation debris [17] |  |  |
|  |  |  | Orange plaster reddened [8] |  | Orange plaster [3.1] |  |  |
|  |  |  |  |  | Discontinuous charred surface [2.2] |  |  |
|  |  |  | Brick packing [7] | Floor foundations | Dark brown brick foundation [2] (SS locus 830) |  | Laid foundation for floor |

examined has impressions of round ?reeds/thin branches ( $>10-14 \mathrm{~mm}$ in diameter) along one surface. The material comprises a layer of silt loam more than 4.6 cm thick, with pseudomorphic voids from plant remains, some of which are 2.7 cm in length. No upper finished surface was preserved for comparison with other samples of roofing, for example from Çatalhöyük (Matthews 1998).

The east courtyard of Area SS was paved with thick layers of gypsum plaster on top of a mud-brick foundation. In the northeastern corner of this courtyard, a dark grey slightly gravelly material was used to infill an unusual slot in the gypsum plaster which extended along the east wall and around a rectangular space, c. 2 metres by 1 metre in size (Fig. 94, p. 76). The slot was 20 cm wide and 15 cm deep. In thin section it is clear that the dark grey material principally comprises unoriented particles of slag with heterogeneous aggregates and charred and siliceous plant remains (Fig. 369). Some of the properties which this material may have provided include porosity for free running drainage of liquids, or firmness for a solid but adjustable base of unconsolidated particles for an installation which has since been removed. Unfortunately no further evidence survives to explain this unusual feature.

## B. Contextual variation in deposit types

Of particular note among the contextual variations in depositional sequences observed during the course of this research project is the variety of different surfaces which were selected and laid in courtyards and open areas. These ranged from laid-brick paving and thick gypsum plaster to orange-brown sandy silt loam mud plasters, to heterogeneous packing and a lack of deliberately laid surfaces. The type of surface selected correlates with variation in other indica$=11 \mathrm{~mm}$.


Figure 369. SS Courtyard 7. Material infilling the slot feature comprises unoriented particles of slag [1] with heterogeneous aggregates and charred and siliceous plant remains. Field section 12. TS 88.002. PPL. Frame width


Figure 370. FS Courtyard 5. Dung-rich [1] deposits accumulated on top of coarse brick packing. Field section 34, lower of two thin sections, Figure 365. TS 93.078. PPL. Frame width $=3.5 \mathrm{~mm}$.
tions of actual use of space such as associated features, treatment of walls, and type, thickness and frequency of accumulated deposits. Thus deliberately laid brick pavements, gypsum plaster, and multiple layers of orange-brown plaster are found in ceremonial and ritual areas within the FS and SS monumental buildings. These contexts include fittings such as a throne dais and decorated or white-


Figure 371. FS Courtyard 5. Dung-rich [1] deposits accumulated on top of coarse brick packing. Field section 34, upper of two thin sections, Figure 365. TS 93.079. *XPL. Frame width $=1.3^{*} \mathrm{~mm}$.
plastered wall surfaces. Such ceremonial courtyards were kept very clean with few accumulations of overlying deposits. By contrast, contexts with mud packed surfaces and few deliberately laid surfaces tend to have no elaborate fittings or elaborate wall plasters, and were less well maintained, with much thicker accumulations of overlying deposits. The latter contexts include FS courtyard 5 where there are thick accumulations of dung and ash rich deposits (Figs. 370 \& 371) associated with stake holes (Fig. 366, at least $11-15 \mathrm{~cm}$ deep, $2-2.5 \mathrm{~cm}$ wide), perhaps for tethering animals, and the open areas on top of the temple infill, with thick deposits rich in siliceous plant remains and calcareous spherules (Figs. $361 \& 362$ ). These

Table 58. Sequence of depositional layers within courtyards amd open spaces in Area FS. The full sequence of floors in FS Courtyard 43 was sampled at the southeastern edge of the surviving courtyard where the sequence was exposed by erosion at the edge of the mound, and in the deep sounding in courtyard 5. 'TS' = Thin-section sample number. $[n]=$ microstratigraphic unit number.

| Area FS <br> Courtyard 43 <br> TS 92.007 <br> Field section 5 | Area FS <br> Courtyard 43 <br> TS 92.008 <br> Field section 6 | Area FS <br> Courtyard 43 <br> TS 93.075 <br> Field section 32 | Area FS <br> Courtyard 5 <br> TS 93.078-93.079 <br> Field section 34 | Area FS <br> Outside temple N wall <br> TS 92.011-92.012 <br> Field section 7 | Interpretation of FS sequence |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Burnt collapse [4-5] |  | Burnt collapse | Burnt collapse [14] | Burnt collapse | ?Ritual burning, esp. in courtyard; reddened underlying deposits in some areas |
| Poorly defined boundary | Poorly defined boundary | Poorly defined boundary |  |  |  |
| Fallen plaster + unoriented aggregates [3] | Unoriented aggregates [3] | Unoriented aggregates $+[3]$ | Mixture of dusty, grey and brown discontinuous deposits [10-13] | Series of burnt layers: dark grey ash [2], grey ash [3], charred remains [4] | ?Post-occupation disturbance <br> = 'trample'; some collapse <br> of wall plaster |
| Compact silt loam 0.175 mm thick [2.2] | Red silty clay 0.5 mm thick [2.2] | Compacted surface |  | Water-laid lens $<0.4 \mathrm{~mm}$ thick | Abandoned for a brief duration, ?water-laid deposits |
| Ash [2.1] | Ash [2.1] | Ash [2] | Dusty deposits [10] and large aggregates [11.1] | Units [2-3] may belong to this phase | Evenly distributed lens of green ash from high temperature burning, but not burnt in situ |
| Orange-brown plaster [1] | Orange-brown plaster, reddened [1] | Orange-brown plaster [1] | Brown mottled bricks and packing [9] on top of orange plaster [8] | Bricky surface | Last plaster laid on courtyard surface |
|  | Complex lenses of thin plaster with ?mat impressions, reddened [11] |  | Organic-rich deposits with herbivore dung [7] |  | (Tethering of equids in Courtyard 5) |
|  | Plaster, bioturbated, reddened [10] |  | Orange aggregates/ plaster [6] |  | Dust lens, floor [4] and trample [5] |
|  | Complex lenses of thin plaster with ?mat impressions, reddened [9] |  |  |  |  |
|  | Orange plaster with calcareous rock frags, reddened [8] |  | Thick plaster bedding [2] |  |  |
|  | Brick packing [7] |  | Brown and grey brick packing [1] |  | Foundation for floors |



Figure 372. Proportions of plant types in fire-installations of the third millennium $B C$ at Tell Brak, as a percentage by area in thin section.
calcareous spherules range in size from $25-250 \mu \mathrm{~m}$ and more frequently fall within the size range $60-$ $150 \mu \mathrm{~m}$. They are larger than the calcitic spherules which occur in dung at this and other sites and are less than $25 \mu \mathrm{~m}$ in size (Canti 1997; 1998). Observed sizes and shapes will be dependent in part upon the angle and location of the thin-section cut. A great diversity of spherules was observed by Marie-Agnès Courty in CH Level 5 (Fig. 374), a sample close in date to the temple deposits.

Calcareous spherules similar to those illustrated in Figures 361 and 362, have been identified in more than 25 per cent of all samples analyzed from Tell Brak, and from spatially distant parts of the site, including Areas HS, TW, FS, HN and HH. These spherules occur in all major levels sampled, spanning some three thousand years from early Northern Uruk (HS6 courtyard), c. 4100 вс to the Middle Assyrian period, c. 1200 BC , in HH Courtyard 8. They have been identified in a wide range of deposit types, including constructional packing and plasters and occupation deposits in roofed and unroofed contexts. The origin of these calcareous spherules is currently uncertain, and may be multiple. They do not appear to be fossils from parent sediments and rocks. Since none of those reported here have as yet been subject to examination by scanning electron microscope and electron microprobe, it remains uncertain how closely they resemble the spherules identified by Courty at a range of sites in northern Syria, including Brak, in levels dating to $c .2350-2300$ вс ( p . 367; Courty 1998). The CH spherules found by Courty (1998) occur together with a 'petrographic assemblage which includes exogenous geological material' (see discussion below).

Rooms
Five rooms were sampled from the third-millennium BC settlements, two in ritual contexts (FS cella and antecella), one in an administrative context (SS Room 18), and two in domestic contexts associated with the latest surviving occupation of Area SS (SS 1096, see also p . 93). The floor plasters laid in the ritual and administrative contexts were all very similar, made from well-prepared orange-brown silt loam mud plasters with vegetal stabilizers. By contrast, the floor plasters in the domestic area at the western limits of Area SS were not well-prepared. Here the floor surfaces were covered only by irregular sequences of brown heterogeneous packing, occasional orange-brown silt loam plaster floors and, in one room, a thin pale brown calcareous plaster. One room, with a plastered grindstone installation, was kept remarkably clean, leaving few additional clues to its use. In a second room were multiple accumulations of thin deposits with finely fragmented charred plant remains, pseudomorphic voids of plants and a grindstone fragment. Several deposits were charred and scorched reddish brown. Our local builder said he had seen similar deposits in rooms in which food had been smoked, but such an assumption would require additional ethnoarchaeological and experimental research.

## Fire installations

Tell Brak is situated in semi-arid steppe on the edge of the 300 mm isohyet (Chapter 1). Not surprisingly, the principal sources of fuel identified in thin section, grasses and dung (Fig. 372), reflect this steppe environment. In 1993 the only fire installation available for sampling within the monumental buildings


Figure 373. Oven in Area SS, Level 5, Room 28.60 per cent of the fuel comprises well-preserved diverse siliceous remains of grasses, including many leaf, leaf/sheath and stem fragments [1]. Only 2 per cent of the grass remains still have occluded carbon from incomplete combustion. 10 per cent of the fuel is represented by calcitic ashes, and a further 2 per cent by melted silica [2]. Ficld section 11. TS 92.019. PPL. Frame width $=1.4 \mathrm{~mm}$.
was sampled. The principal remains of fuel burnt in this kiln comprise well-preserved diverse siliceous remains of grasses ( 60 per cent), including many awns with short spines; leaf, leaf/sheath and stem fragments, and an entire grass flower. Only 2 per cent of the grass remains still have occluded carbon from incomplete combustion. 10 per cent of the fuel is represented by calcitic ashes, and a further 2 per cent by melted silica.

The only woods identified in thin sections from third-millennium bс contexts are oak (Quercus), hackberry/elm/pistachio (Celtis/ Ulmus/Pistacia), possible willow/ poplar (Salicaceae), possible ash (Fraxinus), and occasionally abundant dicotyledonous wood fragments. These occur principally in the FS temple cella, antecella and courtyard.
was the large low 'oven' in Area SS, Room 28 (p. 89). Here, 60 per cent of the oven fuel had been burnt to calcitic ashes; 10 per cent comprised siliceous remains of grasses (Fig. 373).

Three fire installations were sampled from postmonumental building phases in Areas FS and SS. The first was the group of braziers which almost certainly comprise part of the ritual closure deposits overlying the Area FS monumental complex (Fig. 56 and p. 48). A marked change in burning conditions, probably associated with a change in fuel, is attested within the layers of burnt plant remains surrounding these braziers. The proportion of charred remains in the earliest fuel residues is much higher than those in the latest, at 40 per cent and 2 per cent respectively. At least half of the earliest fuel comprised charred wood from young dicotyledonous branches which were incompletely burnt, probably because of high green sap content. By contrast, in the latest fuel, most of the plant remains had been burnt to calcitic ashes ( 70 per cent) or comprised siliceous remains of grasses (2 per cent).

A circular tannur from FS Level 1, courtyard 2310, was also sampled. Unfortunately, most of the fuel had been cleaned out. Much of the sediment sampled was infill which included 10 per cent finely fragmented charred remains, some of which were from reed. In Area SS the fuel in a large Level 2 kiln

## C. Conclusions

Micro-stratigraphic and micromorphological analysis has enabled characterization of some of the floors and deposits which were laid and accumulated during use and abandonment of the large monumental buildings in Areas FS and SS. Such information has provided details of sequences of treatment, use and conception of rooms and courtyards, which correlate closely with the archaeological evidence, and of differences in areas where the archaeological contexts are less well-defined. In particular it has highlighted the unusual character of a green ash that covered the FS courtyard and antecella, prior to their deliberate infilling. This ash had been burnt elsewhere at moderately high temperatures and then evenly redeposited across these surfaces, perhaps by wind action or even deliberate human activity. Micromorphology also enabled identification of brief episodes of water-laid deposits in both FS and SS. Tentative correlations in microstratigraphic sequences within these areas have also been suggested. The results concur with those from excavation, suggesting a short period of abandonment and subsequent clearing of the buildings, prior to their ritual infilling.

As part of a larger NERC project, micromorphology has enabled identification of differences in
depositional sequences that correspond with contextual variation in concepts and uses of space. Variations in the types, thickness and frequency of floors and occupation deposits correlate with variations in the nature of the size and shapes of different spaces, surface textures on walls, and range of fittings and associated artefacts. Similar variations have been observed in ethnoarchaeological studies (Kramer 1979,

148-9; Horne 1994, 177-80). Within third-millennium BC courtyards and open areas in particular, the types of fixtures and wall and floor surface finishes varied according to whether these areas were intended and used for ceremonial or more mundane activities such as the possible tethering of animals and the use of fire-installations, both attested by micromorphological evidence.

# Evidence at Tell Brak for the Late EDIII/Early Akkadian Air Blast Event (4 kyr bp) 

Marie-Agnès Courty

In a recent article (Courty 1998) stratigraphic and analytical data have been presented demonstrating the existence at a regional level of the exceptional late third-millennium BC event first reported at Tell Leilan and Abu Hjeira (Weiss et al. 1993). The more recent data are based on a series of archaeological sites and natural soils across Syria. In the 1998 article, refined examination of the stratigraphy of the anomalous dust layer which is the fingerprint of this event helped to explain why originally the event was (1) given an age of 2200 yr вc instead of $c .2350$ yr Cal вc, (2) misinterpreted as a tephra fall-out of volcanic origin, and (3) confused with a sudden aridification. Comparison of the sedimentary facies of the dust layer and related stratigraphic units between the different sites, combined with the petrography and geochemistry of the exogenous mineral assemblage specific to this dust layer, has allowed us to document the occurrence of wildfires and sur-
face explosion synchronous with the accumulation of the air-fall bed. Facing the impossibility of relating such a combination of uncommon manifestations to ordinary volcanic activity, we considered an alternative, that the dust layer could be the by-product of impact ejecta, insisting, however, on the need to collect unambiguous evidence to support this hypothesis.

Since then, existence of the dust layer has been traced across other parts of the Middle East (Courty 1999). Continuation of the geochemical analyses helped to strengthen the refutation of a normal volcanic origin for the glassy grains, and the different types of exogenous particles can now be recognized as the various components of a similar air-fall bed. Thus we can now extend the conclusions first obtained in northern Syria with evidence that in other regions of the Middle East there occurs also a contemporary, exogenous dust layer, possibly the result

Table 59. Radiocarbon determinations: Beta, Beta Analytic, Miami; Lyon, Centre de datation par le radiocarbone, Lyon, and Oxford Laboratory, Oxford; Gif, Laboratoire des Sciences du Climat et de l'Environnement CNRS-CEA, Gif-sur-Yvette, France. Calibration was with RADIOCARBON CALIBRATION PROGRAM REV. 3.0.3 by the University of Washington. AA, University of Arizona AMS facility, Tucson.

| Site | Lab. no. | Date (years BP $\mathbf{1} \sigma$ ) | cal bC (range at $\mathbf{+ 2} \sigma$ ) |
| :--- | :--- | :---: | :---: |
| Tell Brak CH97.1 | Beta-110930, AMS | $4040 \pm 50 \mathrm{BP}$ | $\mathbf{2 6 0 5 - 2 4 0 0}$ |
| Tell Brak CH97.2 | Beta-125320, conventional | $4170 \pm 40 \mathrm{BP}$ | $2885-2595$ |
| Tell Chuera CVI:2a-110 | Lyon-473 (OxA), AMS | $3980 \pm 55 \mathrm{BP}$ | $2610-2317$ |
| Tell Leilan Tr 1.2 m lower burnt soil | GifA 96233, AMS | $3790 \pm 90 \mathrm{BP}$ | $2469-1924$ |
| Tell Leilan Tr 1.2 m upper burnt soil | GifA 96236, AMS | $3980 \pm 70 \mathrm{BP}$ | $2832-2230$ |
| Tell Beydar (I) | Beta-110929, conventional | $3850 \pm 50 \mathrm{BP}$ | $2460-2140$ |
| Tell Beydar (F) | Lyon-474 (OxA), AMS | $3825 \pm 55 \mathrm{BP}$ | $2442-2063$ |
| Terqa97-K1B225 | Beta-110931 | $3950 \pm 50 \mathrm{BP}$ | $2575-2300$ |
| Terqa96-K1A200 | GifA 97081,AMS | $3930 \pm 60 \mathrm{BP}$ | $2545-2290$ |

of a violent air blast that caused multi-site ignition and widespread wild-fires. When first suggesting the hypothesis that the explosion of a bolide in the atmosphere may have caused these manifestations, the need to disentangle instantaneous events of natural origin - e.g. from a few seconds to hours - from much longer geological processes and, even more important, from human actions, appeared as a major issue. We suggested that this could be achieved only at a few sites which offered a rapid sedimentation rate and a well-preserved signal; the report presented here, therefore, aims at illustrating the analytical strategy' now adopted, in order precisely to identify the evact stratigraphic position of the dust layer within archaeological deposits and the criteria selected to discriminate these specific phenomena from other processes.

## A. Materials and methods

In May 1999, detailed microstratigraphic investigations were carried out at Tell Brak on a selection of excavated areas to better define the age and nature of the late third-millennium BC event as previously identified. Areas FS, SS and CH were chosen because they offered ready access to material of this date, and in Area CH in particular the possibility of investigating the transition from Late ED III layers to early Akkadian and then Akkadian layers contemporary with the construction of the Naram-Sin Palace. As observed at other studied sites, close examination of the sections with the naked eye did not allow the detection of any unusual manifestation, uncommon deposit or clear stratigraphic discontinuity that could be directly related to the previously described dust layer (Weiss et al. 1993). We therefore designed a series of blind tests in which a two-step procedure was adopted.

## B. Phase 1: Preliminary identification of the dust layer

At Brak this comprised spaced sampling within each major stratigraphic unit or sedimentary facies of the sequences studied in areas FS, SS and CH, followed by water-sieving and binocular observation in the field of four sized fractions: $>2 \mathrm{~mm}, 2-1 \mathrm{~mm}, 1-500$ $\mu \mathrm{m}, 500-200 \mu \mathrm{~m}$. After observation of the different particle-size fractions, the layers showing the greatest abundance of fresh exogenous particles that included vesicular glassy grains, angular uncommon rock fragments - grey coarse crystalline basalt, dolomite and sandstones - and spherules (as defined in

Courty 1998) are assumed to indicate more or less the position of the dust layer.

Among the three areas studied, only the sequence from the CH south section (Fig. 374) displayed a sharp increase of these different particles above the Late ED III layers; this was followed by their progressive decrease in the Naram-Sin and later Akkadian layers. Most of these particles could also be identified in the Areas FS and SS monumental buildings, but they did not show such a fresh aspect. Moreover, they did not appear as a discrete unit, but were distributed within discontinuous lenses throughout the entire sequence, evidence which indicates that in the areas we have examined in Areas FS and SS the dust layer is not in its primary position, but has more likely been reworked by human activity. Only a selective sampling of bulk sediments and undisturbed blocks was therefore carried out in FS and SS. Sampling below the floor of Room 18 in Area SS and from the construction fill of the Area FS courtyard (see Fig. 60, p. 52) provided negative results, suggesting that the 'event' took place after the construction of these buildings.

## C. Phase 2: Refinement of the stratigraphic position

Based on the results obtained during phase 1, a systematic sampling was performed in Area CH throughout a 150 cm thick sequence from just below the ED III destruction level (Level 6, cf. Figs. 15 \& 374) to the construction floor associated with the Naram-Sin building level (CH 155). A continuous column of undisturbed blocks was taken for the preparation of large thin sections and bulk samples were collected every five cm within each distinct stratigraphic unit. Careful study of the thin sections under the petrographic microscope enabled the comparison of variations in the exogenous mineral abundance with the sedimentary facies of the hosting materials. The bulk samples were also separated into four sized fractions and examined in great detail in order to discriminate the exogenous mineral grains that were in their primary settings from those that had been later reworked. Only the former were selected for a series of microprobe and geochemical analyses, in order to avoid distortion of their original composition by subsequent alteration.

## D. Results and interpretation

The very first evidence of the exogenous mineral assemblage - as described in Courty 1998 - appear just above the ED III destruction level (CH Level 6),


Figure 374. Detail of Area CH south section. The heavy diagonal hatching identifies the location of the major deposit of exogenous mineral grains; strong evidence of this deposit was found up to and including locus 213. The dotted areas indicate heavy ash deposits (see also Fig. 15, p. 17, which illustrates the full section and, in particular, the stepping of the Naram-Sin construction level to the west; slight differences in detail reflect the cutting back of the original section; wall $173=$ Level $4 b$ ).
in the context of Level 5 which the excavators believe to be early Akkadian. This is present within a 35 cm thick sedimentary unit - here designated as the transition unit (TU) - that contrasts from the underlying late ED III layers. The late ED III layers are brown, weakly stratified, with a spongy fabric which is dominantly formed of mm-sized calcitic clayey loam aggregates with rare quartzitic sands and fragments of local basalts. In addition, there is also a large proportion of cm -sized fragments of mud-brick with diffuse edges, the petrographic composition of which is identical with that of the fine aggregates. The weak layering noticed in the field relates to the repeated occurrence of diffuse lenses of fine sands often mixed with bone fragments. Intense bioturbation is clearly expressed by abundant channels filled with earthworm excrements. This unit observed over 80 cm shows from bottom to top a much lighter colour and a porosity increase which are both correlated with a weakened alteration of the calcitic fine mass.

Maturity of the micro-aggregation, the evidence of continuous biostructuration and the weak contribution of waste-dumping show that the late ED III layers result mainly from the slow desegregation of mud-brick walls, possibly over a number of years. This mode of accumulation can be interpreted to have taken place in some kind of open space, that is neither in a zone of intense circulation nor close to domestic activities. The earthworm burrowing and the spongy fabric indicate that the moisture content
remained high, however, showing a slight decrease from the bottom to the top. The lenses of loose sands attest occasional pulses of strong winds that accumulated materials transported over short distances, mainly eroded from the surrounding mud-brick structures.

The boundary between the late ED III layers and the transition unit is sharp, marked by a reddish brown surface that resulted from reddening in situ of the iron oxides and carbonization of the organic matter in the soil fine mass. These are evidence of moderate burning which are, however, intriguing because they are not associated with the ash layer that would inevitably accompany fire of human origin. The uniqueness of this boundary lies also in its wavy aspect, the result of cm -sized elongated tongues filled with materials of the transitional unit that penetrate the topmost part of the late ED III layer. This morphology cannot be confused with earthworm burrowing or human trampling, and would moreover suggest that the sediments which formed the transition unit arrived with great kinetic energy, thus producing violent splash effects at the surface at the same time as the surface was briefly exposed to intense heating. Also intriguing is one constituent of the transition unit that consists predominantly of loosely packed elongated dumb-bell-shaped aggregates with a size-range between 1 and 5 mm that are mixed with a minor proportion of sub-rounded to rounded mm -sized brick fragments. The dumb-bell morphology of the micro-aggregates does not re-
semble any of the soil fauna pellets, not only from the local soils or archaeological sediments but more generally from any soil. The unusual, very high packing porosity, averaging 60 per cent, suggests that the aggregates arrived by air and accumulated rapidly in turbulent conditions; this would explain the lack of compaction. The occurrence of patches of carbon-ate-depleted zones both within the aggregates and at their periphery indicates that their partial decalcification pre-dates their accumulation and is thus unlikely to result from decalcification in situ. This is confirmed by the absence of decalcification features in the carbonate-rich brick fragments that are present together with the dumbbell micro-aggregates. Evidence of strong dissolution of the sand-sized calcite grains, that is totally unusual for soils but is observed within the dumb-bell micro-aggregates, even suggests that decalcification began before the aggregates formed, possibly caused by contact of the solid phase with acid vapours.

The lower part of the transition unit contains a great proportion of black vesicular carbonaceous grains - BVCG - together with abundant loosely packed, rounded, carbonized lignified plant tissues and phytoliths. This ashy sub-unit is obviously neither the result of a fire in situ nor the consequence of waste dumping from fireplaces; this is indicated by the textural homogeneity of the carbonaceous and carbonized grains, their rounded shape, lack of compaction and absence of the very fine ashy component that should be expected in case of firing in situ. The unusual nature of this ashy layer is furthermore confirmed by the mm-sized BVCG, revealed to be coarse soot grains, a type of amorphous carbon that has not previously been reported as occurring in such large particles, either in natural fires or anthropogenic ash.

Characterization of the BVCG was achieved by combining Raman analysis, infra-red spectrometry, thermo-gravimetric analysis, high-resolution STEM observation and geochemical analysis. Their $\delta^{13} \mathrm{C}$ value of -22.39 per cent indicates that these coarse soot grains are by-products of biomass burning. They differ from carbonized plant residues by the lack of plant-tissue morphology, their amorphous structure, the presence of graphite filaments, their high water content, their high vesicularity and the fine imbrication of the carbonaceous phase with isotropized mi-cron-sized minerals that are identical with the fine component of the dumb-bell micro-aggregates. At present, the structural properties and the physical behaviour of the BVCG suggest that they formed from low-temperature melting $\left(<400^{\circ} \mathrm{C}\right)$ in reduced
conditions of carbonized wood fragments that solidified by rapid quenching when the carbonaceous melt entered in contact with the mineral phase. Their occurrence with the dumb-bell micro-aggregate, and their similar size and morphology show that both are of exogenous origin and arrived together as components of an airfall bed. The similar C14 age obtained on carbonized plant residues (CH97-1) and the BVCG (CH 97-2) from this ash layer, together with the general coherence of this radiometric age with the C14 determinations obtained on other sites (cf. Table 59), indicate that these two types of car-bon-rich particle formed at the same time, probably from forest fires that occurred elsewhere at an early stage of this event.

The middle part of the transition unit shows a decrease of both carbonaceous grains and burnt plant fragments, a more open fabric and a greater heterogeneity marked both in the wider particle-size range of aggregates and mineral grains - from a few hundred microns to cm -sized, as well as in the composition of the aggregates and the petrography of the mineral grains. The coarser aggregates are angular brick-fragments showing evidence of in situ breaking. The mm-sized examples are well-rounded, locally concentrated and consist of resistant materials such as: 1) ceramic sherds and baked brick fragments, derived from androgenic activity; 2 ) carbonate nodules and calcareous clayey soil aggregates, derived from the local soils; and 3 ) exogenous mineral fragments that include various types of volcanic rocks and a quartzitic sandstone with a magnesia rich calcareous cement. The dumb-bell micro-aggregates are still present but generally in the form of fragments, finely mixed with all the other components. The uppermost part of the transition unit shows an increase of weakly burnt brick fragments, mixed with mm-sized aggregates and fine dust, the two latter components having a similar petrography. The spatial configuration of this specific part of Area CH - surrounded by surviving walls - has probably helped to trap the dust preferentially, perhaps explaining the rapid accumulation there of a thick unit.

The evolution from bottom to top of the transition unit clearly reflects an increase of air turbulence. The thermal blast and the fallout of exogenous dust with high energy splash effects appear to have been followed rapidly by violent dust swirls that eroded the surrounding landscapes as well as materials in the city itself, thus mixing the local components with the exogenous dust particles which had previously been deposited. The more important mud-
brick fragmentation and in situ pulverization at the very top of the transition unit mark the end of the short dust-swirl episode. Although clear in thin sections, this mechanical disruption of the mud-brick sequence does not correspond to any evidence of building collapse. This suggests that the dust swirls might have induced only minor damage or disruption to the city.

The 80 cm thick sequence that is lying on the top of the transition unit, just below the Naram-Sin building level was recognized during the excavation as deliberate fill within the Level 4 b building, associated with the construction of the palace (Joan Oates pers. comm.), though there is also some evidence of roof collapse (west of wall CH 173). The preliminary test performed on this fill (phase 1) gave a rather confusing pattern with imbrication of layers with abundant exogenous mineral particles typical of the dust layer and others with only a few grains of this mineral assemblage. This chaotic distribution was further elucidated by the systematic sampling performed on the entire sequence (phase 2).

As noticed in the field, this unit, west of 173, consists of a mixing of poorly sorted waste debris that includes ashes, bones, pottery, brick fragments and pieces of roof material (CH 183 is described in the excavation notebook as 'loose, crumbly, gritty reddish-brown burnt sand with many carbonized grain inclusions mixed with dark grey clayish ash; high sherd content, including grain jars with adhering grain', and was interpreted as collapsed material or deliberate infill). This heterogeneous assemblage presents a rather dense fabric with a spongy microstructure that contrasts with the open fabric of the underlying transition unit. The great variability in the abundance of the exogenous mineral grains appears in fact to correlate with the types of waste debris: only a few grains when the materials are mainly brick fragments, more in lenses made of densely packed micro-aggregates that are dumped from activity areas, and a large proportion only once in a finely layered lenticular unit that appears to be a large piece of roofing material in the middle of the fill within the Level $4 b$ walls. Such a correlation clearly confirms that the exogenous mineral grains are in a secondary position and have been introduced in the fill simply because they were originally present in the different types of materials that were later dumped.

The presence of the exogenous mineral grains within the archaeological sediments which belong to the phase of occupation just following the 'event' is not surprising. As seen in the underlying transition
unit, the dust fallout associated with the event sprayed a fair amount of exogenous grains throughout all the city, as well as over the surrounding plains. Therefore the sediments later collected for making construction materials inevitably contained some grains of the exogenous mineral assemblage. However, the very regular distribution pattern of the exogenous mineral grains in the piece of roof would even suggest that this fragment derives from a building that witnessed the fallout of the dust layer. It is only at the very top part of the fill that the proportion of the exogenous mineral grains considerably decreases, becoming negligible in the working floor associated with the construction of the Naram-Sin building (CH 160). This evolution indicates that late in the reign of Naram-Sin, at most a few decades after the event, the fingerprint of the dust layer fallout was no longer clearly visible at the soil surface.

## E. Conclusions

The detailed investigations performed in Area CH at Tell Brak have allowed a relatively precise dating of the 4 kyr bp event which occurred following the end of the ED III period (Brak Phase L), and contemporary with the 'early Akkadian' phase. The distinction in area CH of a stratigraphic unit which contains the dust fallout of this event in its primary setting i.e. the transition unit - from another unit in which the exogenous mineral assemblage is in a secondary position - i.e. the upper intentional fill - explains how the event can be easily misdated in archaeological sequences when its recognition lies only on the presence of anomalous mineral grains as in the original Tell Leilan samples (Weiss et al. 1993). The record of the event in area CH has now given a series of criteria for secure identification of the dust fallout in its primary position that are not only based on the petrography of the exogenous mineral assemblage but also include: 1) a specific soil structure: finely fragmented burnt aggregates; 2 ) an unusual soil fabric: the dumb-bell micro-aggregates; and 3) a common sedimentary facies: the very loose packing of heterogeneous airborne grains. These criteria are in fact broadly similar to those recognized in natural soil contexts, except that in the latter they occur within a cm-thick unit. The contrast between this thin layer and the thick accumulation in archaeological contexts is not surprising, since the shallow micro-depressions of the Jazira landscape would not offer the same opportunity for the dust particles to be trapped preferentially as occurred within build-
ing. In the natural landscape, moreover, the dust swirls which followed the dust fallout may have wept the soil surface, thus erasing the traces of the event. The example of Brak Area CH, therefore, shows that the expanded signal of the 4 kyr BP event in archaeological sites offers a unique opportunity to establish its timing with much greater precision. This exceptional record now allows us to propose as a working hypothesis the following sequence of phenomena that took place probably within a few minutes or at most a few hours: 1) thermal blast, wild fires, formation of an ejecta cloud elsewhere and
production of acid vapours; 2) thermal blast, high energy airflow and dust fallout; 3) dust swirls and soil deflation.

At the present stage of our investigations, there is as yet no evidence to establish whether the explosion and the related ejecta cloud are the result of a phreato-magmatic eruption or of a cosmic impact. Whatever the solution, these two alternatives correspond with an extraordinary event which cannot be confused with either the exceptional dust storms or the explosive volcanism that might periodically have affected the region.

## Chapter 15

## Radiocarbon Results for Tell Brak

Janet Ambers

Atotal of 20 radiocarbon analyses have been produced for Tell Brak by the British Museum and are listed below in Table 60. The results are quoted in the form recommended by Stuiver \& Polach (1977), and corrected for measured isotopic variation as shown. Calibrated age ranges are generated from the curve of Pearson et al. (1986), using the program OxCal (Bronk Ramsey 1995) and are quoted in the form recommended by Mook (1986).

Eleven of the measurements were made during the period from the middle of 1980 to the end of 1984 when there was a systematic error in results issued by the laboratory (for details see Bowman et al. 1990). Revised results, distinguished by the suffix R on the laboratory number, have been calculated for most of the affected samples and are also given in the table. Only these revised figures are correct and only these figures should be used; the uncorrected figures may have been published elsewhere and are included here only to avoid confusion. The process of revision has necessarily increased the error term on these samples. For all other results the original figures are correct and should be used.

Samples were cleaned by pretreatment with acid and, where considered necessary, alkali washes to remove contamination. After pretreatment the cleaned samples were converted to benzene and analysed by conventional liquid scintillation counting using the cocktails and configurations described in Burleigh et al. (1976; sample numbers BM-1758 to $-1761,-1763$ to $1765 \&-1970$ to 1973), or Ambers et al. (1989; sample numbers BM-2511, -2531 \& -2554 to -2556), or Ambers et al. (1991; sample numbers BM-

2900, -2901, -2914 \& -2915).
Errors quoted for the first two groups of samples are based on counting statistics alone, while those for the last one are the counting error for the sample combined with an estimate of the errors contributed by the modern and background samples. This estimate includes both counting and non-counting errors, the latter being computed from differences in the overall count-rates observed among the individual backgrounds. It should be noted that these error terms only include contributions from measurement error; they cannot make any allowance for age offsets implicit in the sample material itself. In particular, where the sample consists of unidentified or mature charcoal, as is the case for most of these samples, no allowance for the pre-existing age of the sample (owing to either initial age before felling or reuse) can be included in the measured value, and these figures should be regarded as a terminus post quem for their contexts. A small group of samples (BM-1971R, -1972R \& -2531) were taken from burnt grain found securely in situ in jars in the CH Level 6 destruction layer. In this case there is firm archaeological evidence to indicate that the material sampled comes from a single harvest and thus reflects a single year's growth. Subjecting these figures to a comparison using the methods of Ward \& Wilson (1978) gives a $T$ value of 1.5 , indicating that the results are statistically indistinguishable. Under these circumstances it is justified to produce a more precise date for the year of harvest by taking a weighted mean for these three figures. This gives a result of $3821 \pm 40$ BP (listed with calibrations in Table 60).

Table 60. Rathearhon delerminations from Tell Brak.


| Table 60. (cont.). |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| BM-1763 | Burnt grain ER 40 | Burnt house Room 41, ER Level 5 | -22.6 | $3570 \pm 40$ | BM-1763R | $3730 \pm 100$ | 2310 to 2020 | 2500 to 1900 |
| BM-2717 | Burnt grain ER 40 | Burnt house Room 41 repeat of grain used for BM-1763R, above | $-21.8$ | $3680 \pm 50$ |  |  |  |  |
| BM-1764 | Burnt grain ER 42 | Burnt house Room 41, ER Level 5 | -24.8 | $3600 \pm 40$ | BM-1764R | $3710 \pm 100$ | 2290 to 1970 | 2500 to 1850 |
| BM-1765 | Burnt grain ER 28 | Burnt house Room 43, ER Level 5 | -22.7 | $3540 \pm 40$ | BM-1765R | $3680 \pm 100$ | 2210 to 1930 | 2500 to 1750 |
| BM-2554 | Charcoal FS 504 | Floor of FSTC Room 1, Level 5 | -23.4 | $3990 \pm 50$ |  |  | 2580 to 2460 | 2700 to 2350 |
| BM-2556 | Charcoal FS 1383 (poplar roof beam) | Floor of FSTC Room 2, Level 5 | -25.3 | $3960 \pm 50$ |  |  | $\begin{aligned} & 2580 \text { to } 2450 \text { or } \\ & 2420 \text { to } 2400 \end{aligned}$ | 2700 to 2300 |
| BM-2687 | Charcoal SS 240 | Wood from fill of antecella of shrine in SSTC | -25.6 | $3700 \pm 80$ |  |  |  |  |
| BM-2688 | Charcoal | Wood from floor of antecella of shrine in SSTC, below fill dated by BM- 2687 above | -25.2 | $3780 \pm 50$ |  |  |  |  |
| BM-1970 | Charcoal FS 29 | Ash layer GLB, Level 2a | -24.2 | $3440 \pm 50$ | BM-1970R | $3820 \pm 100$ | $\begin{aligned} & 2460 \text { to } 2190 \text { or } \\ & 2170 \text { to } 2140 \end{aligned}$ | 2600 to 1950 |
| BM-2555 | Charcoal <br> FS 1093 | Floor of latest phase of GLB, Level 2a | -25.6 | $3730 \pm 50$ |  |  | 2280 to 2240 or 2210 to 2110 or 2090 to 2040 | 2320 to 1970 |



Figure 375. Radiocarbon determinations.


Figure 375. (cont.).


Figure 375. (cont.).

# Archaeological Reconstruction and Historical Commentary 

David Oates \& Joan Oates

The identification of Brak with ancient Nagar is not conclusive, but the circumstantial evidence is strong and on archaeological information alone there can be little doubt that Brak was the major city within the central Khabur basin during the mid-third millennium вс, a role assigned to Nagar in the Ebla texts. In 1985 we published a brief comment suggesting Tadum/Ta'idu as a possible identification; this was based in part on the presence of the name Tadum in the Akkadian texts, on the identification of the Brak castellum as Roman Thebeta according to the evidence of the Tabula Peutingeriana (Iraq 47, 1985, 169-72) and on a new itinerary from Dur-Katlimmu. This seemed reinforced by the discovery in 1986 of a cuneiform text recording a delivery 'of / from Nawar in the district of Ta'idu' (Brak 1, 43), suggesting that Brak was one or other of these two cities. It is now widely accepted, however, that Tell Hamidi, some 20 km north of Brak, is a more likely candidate for Ta'idu (inter alia, Wäfler 1993; Eidem 1997, 39); thus Nawar, also identified as a place name south of Kahat in a treaty from Tell Leilan (Brak 1, 143), becomes a highly plausible candidate for the Mitanni name of Brak, according to Durand a later pronunciation of a possible original 'Nagwar'

The identification of Brak with ancient Nagar was first suggested by Durand on the basis of evidence from the Mari letters, which show that early second-millennium Nagar was situated not only close to Kahat but on the route from Kahat to Mari, that is, south of Kahat (Charpin 1990a, 68-9). Charpin (1990a, 68-9) also points out that at this time Nagar lay 'at a point of contact - and thus conflict' - between the kingdom of Mari on the Euphrates to the south and that of Šamši-Adad at Ekallatum on the Tigris to the east, a situation which accords with the 'gateway' position of Brak described in the introduction. The Ebla texts clearly identify Nagar not only as the most important city in this area in the second half of the third millennium, a role for which Brak qualifies on
the basis not only of its size but of its extraordinary monumental architecture, unparalleled elsewhere, but also as a city associated with the trade in the kúnga (BAR.AN) hybrid (Chapter 10). That Tell Beydar (perhaps ancient Nabada/Nabatium), some 40 km to the west of Brak, was part of the kingdom of Nagar is revealed by the cuneiform texts from the site. The equids of the en of Nagar feature also in these texts.

Although Brak fits all of these situations, and is unquestionably the most important third-millennium site in the area, none of this proves conclusively that Brak is Nagar. But there is now further evidence from the site itself. Most important is the sealing of a Hurrian ruler, Talpuš-atili who claims the title 'sun (god, i.e. ruler) of the country of Nagar' (Fig. 376), found by Mallowan in debris of the post-Akkadian version of the 'palace'. Another piece of epigraphic evidence that clearly points to an identification with Nagar is the 'bottle-top' inscription illustrated on $p$. 99 (Fig. 135), which records an 'offering' of oil to, or from, Nagar. There is even a possible 'pun' on the city name, which resembles superficially the Sumerian word for carpenter, the sign for which appears on two seals used in the SS monumental complex (Fig. 169 \& p. 134). It is perhaps also relevant that the status-conscious Naram-Sin chose Brak as the focus of his administration in the Khabur; this is clearly attested both in the Brak texts and in the presence of the 'palace' bearing his name. We now know that his daughter played a role in the administration of another major third-millennium city, Urkesh, which is also associated with Nagar in a Hurrian text. With the possible exception of the offering of oil, all of this evidence is circumstantial, but we know of no other site that meets both the Ebla and the Mari criteria for the location of Nagar.

On the evidence of the personal names known from the Ebla texts and the contemporary written language attested at nearby Beydar, it would appear
that the language of Nagar is closer to that of Mari and northern Babylonia than to that of Ebla far to the west. Linguistically, mid-third-millennium Nagar is part of a wider landscape of Semitic-speaking kingdoms. No Hurrian names are attested at the time of the pre-Akkadian kingdom of Nagar.

## A. Nagar in the mid-third millennium $B C$

In the early third millennium the whole of the main mound seems to have been occupied, constituting an urban settlement at least 40 and possibly as much as 65 ha. Material of Phase H attribution (pre-Ninevite 5 'ED I') has been found in both Area TW (Levels 26: see Iraq 53, 1991) and, at the western end of the site, in Area SS2 and beneath the monumental buildings in Area SS. In the more securely stratified excavations in Area TW this phase includes pottery of 'proto-Ninevite 5' types, both painted and incised (Iraq 53, 1991, fig. 7). Classic Ninevite 5 pottery, characteristic of Phases J/K, is also found over the whole of the mound, suggesting that the settlement retained its urban conformation throughout this period. Early incised and later excised Ninevite 5 sherds are found in large numbers, but up to now only a small quantity of painted Ninevite 5 pottery has been recovered; only future research will determine whether this limited representation is a true reflection of Ninevite 5 material at the site or no more than an accident of excavation. As yet no Ninevite 5 levels have been extensively excavated, but the investigation of earlier third-millennium occupation is one major objective of the current research programme.

The question of third-millennium urbanization in the Khabur basin has been a focus of research for a number of archaeologists (see especially, Weiss 1986a). At Brak, present evidence suggests a site of urban proportions throughout the millennium, while it would appear that the fourth-millennium city was even larger, during Phase F in particular ('Northern Middle Uruk', see Table 1, p. $x \times x$ ), when settlement spread to a number of small 'satellites' surrounding the main tell, producing a total settlement size of well over a hundred hectares. Indeed, already in the earlier Phase E there is evidence for a substantial settlement with monumental walls. At this time Hamoukar, to the east of Brak and the 'gateway' to the Khabur on the northeastern route from the Tigris valley, seems also to have been a site of urban proportions. Thus, in the specific context of Tell Brak, the archaeology of urbanism is best addressed in Volume 3 of this series, which presents the fourthmillennium evidence (preliminary information can
be found in Iraq 55, 1993, and CAJ 7, 1997). Within the Khabur plain, however, there is apparently a secondary phase of urban growth associated with the construction of city walls around or just after the middle of the third millennium (Leilan and Mozan, for example), perhaps coinciding with the expanding power of the already urban Nagar and/or a threat from Hurrians to the north.

In the third millennium we have found no evidence at Brak for city walls, but the tell itself, by then of substantial height, may have served as its own defence. Or, it is possible that powerful Nagar needed no such protection. At the time of the independent kingdom attested in the tablets of Ebla and Beydar, Brak was undoubtedly a city of monumental proportions both in size and in architecture, the latter seen most clearly in the massive buildings found beneath the Area FS monumental complex (p. 51). It is possible that the earlier version of the monumental SS complex is also of this date. Only in the very early part of the third millennium do we lack evidence of the nature and organization of the settlement, since up to now we have excavated only very restricted exposures of this date. In the second millennium there is evidence that the city was walled: part of a defensive system may have been identified in Area TW and a famous battle was fought 'before the gates of Nagar' (Brak 1, 142-3, figs. $165 \& 166$ ).

## B. The kingdom of Nagar (Phase $\mathrm{L}={ }^{\prime} \mathrm{ED}$ IIIB')

In Phase L we begin to gain a better idea of ancient Nagar. The name itself is probably of Semitic origin, meaning perhaps 'a cultivated place' or, possibly, a 'spring' (Bonechi 1998, 221; in Biblical Hebrew the West Semitic root ${ }^{*} n g r$ has the meaning 'to gush forth'). The kingdom was ruled by an individual bearing the title en, but no trace of a royal palace has yet been identified, perhaps not surprising since much of the third-millennium city is inaccessible under the great depth of second-millennium deposits on the massive north ridge. A segment of what appears to be a monumental oval of Phase L date was found in the central area of the tell in 1998, and parts of substantial houses, perhaps those of local officials, have been excavated in both Areas ER and CH . In CH too we know that some monumental structure, conceivably buildings associated with the latest phase of the Eye Temple, occupied a walled precinct that was to be superseded by the NaramSin Palace. Unfortunately the precise date of the construction of the monumental complexes in Areas FS and SS cannot be established. It remains possible
that the earliest version of the SS complex and conceivably also the FS temple, which closely resembles it in plan, were architectural products of the kingdom of Nagar. There is an equally strong argument, however, for attributing both buildings to Akkadian construction. What is virtually certain is that the latest use of both complexes was under Akkadian authority. The evidence for these conclusions is discussed below and in Chapter 2.

By the mid-third millennium вс urban Northern Mesopotamia and Syria seem widely to have been organized into a series of 'city-states', superficially not unlike those in southern Mesopotamia. These were distinctively Semitic states, however, with seemingly a more personalized ideology of kingship. By the period of the written documents (c. twenty-fourth century BC ) a few larger 'regional centres' had developed, including Ebla, Mari and Nagar. Ebla, though at least for a time a dependant of Mari, seems at the end of this period to have controlled much of northwest Syria, including Emar on the Euphrates. At this time on the Khabur plain the two most important cities were Nagar and Urkesh to the north (modern Tell Mozan). It is Nagar, however, that treats diplomatically with Ebla (and, apparently, Kish). It has been suggested that one of the reasons for Nagar's pre-eminence was its geographical position as the westernmost of the North Mesopotamian cities, and therefore the point at which North Mesopotamian commercial relations were negotiated with the west (Archi 1998, 3), with Nineveh possibly of greater importance but far to the east. Nagar's status is indicated in Ebla texts which show the en and his family receiving gifts of precious metals, in one text along with the king of Kish and other important personages. At some point within the period covered by the Ebla texts, it is possible that Nagar was defeated by Ebla (p. 100). One text at least reveals that the en of Nagar went to Tuttul (Tell Bi'a, at the junction of the Balikh and the Khabur), together with the rulers of his satellite towns, to swear a peace treaty with Ebla (Archi 1998, 5).

The third-millennium city was widely noted for three features of its society: the cult of the goddess Belet-Nagar, the 'Lady of Nagar'; the quality and cost of its equid hybrids, exported in large numbers to Ebla; and its famous 'cult dancers' or 'acrobats'. The 'Lady' was an important goddess. In the third millennium her name appears on a list of food offerings at Mari and later in the curse formula of the famous Tiš-atal inscription from Urkesh. Also in the Ur III period, two Drehem texts mention her as receiving food offerings. In second-millennium texts
she is cited as the font of authority, claiming rights of possession of towns and woods within the Khabur area; indeed her statue was taken on ceremonial tours of her territories, possibly even as far as the boundaries of Mari (Guichard 1994, 270). The Leilan texts also emphasize her role in the legitimization of kingship (Brak 1, 141). Her third-millennium temple remains to be identified, but it must lie under one of the high ridges on the north side of the site. It seems likely that both her widespread recognition and her political role were derived from the importance of Nagar at that time.

The Ebla archives also document the earliest diplomatic marriages attested anywhere in the cuneiform record. These are for the most part alliances within the territory of Ebla, but there is evidence for two royal marriages of wider political significance, first with Nagar, the second with the even more powerful king of Kish (Biga 1998). The marriage alliance with Nagar was effected under Is'ar-Damu, the last king of Ebla, the 'crown prince' of Nagar, Ultum-huhu, marrying Tagriš-Damu, a princess of Ebla (apparently a daughter of a second wife, whereas the superior status of the son of the king of Kish is reflected in his marriage to the princess Hirdut, daughter of the then queen). The marriage between Nagar and Ebla is the best documented among the Ebla group, though the information comes largely from administrative texts. The latter list large numbers of special garments and textiles, issued not only to the bride and groom but to their wider courts, and even describe some aspects of the ceremonies themselves (Biga 1998, 18). One text, unfortunately damaged, enumerates the very rich trousseau, including jewellery and sumptuous garments, with which the bride travelled to Nagar where she was to become queen, and it is possibly for the wedding banquet that 42 jars of wine are sent to Nagar (Biga 1998, 1920). These texts also demonstrate the personal contacts of the en of Nagar not only with the ruling family of Ebla but almost certainly also with Mari; indeed several important officials at Nagar, perhaps members of the ruling family, bear the same names as rulers of Mari (Archi 1998, 6).

The trade in equid hybrids, and its possible association under Akkadian rule with the FS Level 5 monumental complex, is discussed in Chapter 10. It is clear that the breeding of these onager $x$ donkey hybrids constituted an important aspect of the economy of Nagar at this time, and that the Nagar hybrids were much in demand at Ebla. Also noted specifically in relation to Late ED Nagar are people designated 'húb', a professional group who per-


Figure 376. Sealing of Hurrian ruler, Talpuš-atali, 'sun of the country of Nagar' (see p. 105).
formed together with singers and dancers. The precise nature of these 'entertainers' remains unknown, though the word itself means 'to jump' or to perform some similar act (Civil 1984, 90-92). Often translated 'cult dancers' or 'acrobats', they were much in demand at Ebla; indeed professionals were brought from Nagar to teach the young húb of the Ebla palace. Oddly, as well as clothing, the húb.húb of Nagar received, not singly but as a group, ' 1 small axe of 20 shekels, 1 hammer/chisel of 10 shekels, 1 saw of 20 shekels of bronze', common tools of a carpenter, perhaps to erect some stage equipment associated with their performances. It has also been suggested that the húb.húb were 'specialists in the equestrian art' (Archi 1998, 11), though there is neither faunal nor textual evidence for horses at this time at either Brak or Beydar. Both cities were certainly way stations, however, and equid transport associated with two- and four-wheeled wagons was an important feature of both economies. By the early second millennium there is possible evidence for mounted ex-
press riders (see, for example, a text from Tell al Rimah, OBTR 85), but there is little to enable us to identify the earliest introduction of this practice (see also Chapter 10, p. 289).

Regrettably, we have as yet found no cuneiform texts of Phase L date. A single 'oil' sign on one of the sealed bullae from Area CH (Fig. 161) provides up to now the only indication of writing. That a powerful, literate administration functioned here is clear, however, both from the Ebla and the Beydar texts. The end of Phase $L$ is archaeologically defined by the destruction of the officials' houses in Areas CH (Level 6), ER (Level 5) and elsewhere (ST, DH), together with the new Brak Oval (Emberling et al. 1999). All these buildings suffered violent destruction and fire, leaving much material in situ. This has provided an invaluable and precisely dated corpus of pottery and other objects, published here. A 'single year' radiocarbon determination from grain in an Area CH Room 61 jar provides a date of $3751 \pm 27$ BP ( 2450 to 2430 or 2350 to 2200 BC, p. 30). It is not implausible that the final Phase L destruction, for which there is evidence over the whole of the site, marks the initial Akkadian appearance in the Khabur (below). It is also possible that this destruction marks the first incursion of a Hurrian power, an event which may of course have provoked an Akkadian response. There is no evidence of Hurrian names before the time of Naram-Sin, however. In terms of comparative dating it should also be noted that if the Phase L destruction was the work of an Akkadian king, the material of late Phase L (that is, of ED IIIB 'style' is in fact contemporary with the period of Akkadian rule elsewhere. As explained in the introduction, the term Akkadian is used in this volume in a 'political', not a 'style', sense. Thus late Phase L can be contemporary with the time of Sargon or even Rimush.

The subsequent sequence in Area CH consists of a rebuilding using some Level 6 walls (Level 5), followed by a more regular building (Level 4b) which we have identified as Akkadian because it anticipates the succeeding Level 4a plan. The latter is contemporary with the early use of the Naram-Sin Palace. The earlier Level 4 building was in fact cut down to provide the actual working floor which served for the construction of the Palace ( p .25 ). The evidence for this Late ED / early Akkadian sequence is consistent with that from Area ER, and provides the foundation for our overall stratigraphy. It demonstrates, moreover, a minimum of two building phases between the Phase $L$ destruction and the construction of the Palace; this construction is to be dated relatively late in the reign of Naram-Sin, after his apothe-
osis, and it provides the one certain, historicallydated point of reference in the archaeological chronology of North Mesopotamia and Syria.

## C. The Akkadians at Brak (Phase M)

No ancient power better illustrates the pendulum swings of historical scholarship than the Akkadian. Often viewed as the originators of charismatic kingship and imperial strategy, the Akkadians do seem to have imposed a greater degree of centralization and regulation than their predecessors, but claims for the existence of an 'empire' in the sense of organized control over a large territory external to the homeland state have been much challenged in recent scholarship (see Liverani 1993, esp. paper by Michalowski). Indeed, to quote a comment written by Michalowski in 1985, 'The data we have do not suggest any empires or large states in third millennium Syria . . . the presence of Naram-Sin's garrison at Tell Brak and possibly a few other towns in the region, a few victory cartoons, and scribal bombast notwithstanding' $(1985,105)$.

The recent excavations at Brak have to some extent altered this view, though it must be admitted that it remains the combination of the Naram-Sin Palace and the cuneiform inscriptions rather than the direct evidence of more recent archaeology that still provides the basis for historical reconstruction. Indeed, without written documentation the presence of an external authority would have been impossible to recognize, since the material culture, in particular the pottery, bears virtually no resemblance to that from southern Mesopotamia and the presence of an Akkadian sealing style is not in itself conclusive. Of the greatest significance is a new discovery at Tell Mozan, made as this final chapter is being revised. This is the recovery of some 200 fragments of sealings of a previously unknown daughter of Naram-Sin; the seal bore a classic South Mesopotamian contest scene and the inscription, 'Of Naram-Sin, the king of Akkad, Tar'am-Agade, his daughter' (Buccellati \& Kelly-Buccellati in press); the name of Naram-Sin is preceded by the prefixed divine determinative. The impressions were on door sealings, indicating that the seal was actually used in Urkesh. Another group of impressions from the same deposit records the name of an official with the southern Akkadian name of Išar-Beli; his seal depicts a presentation scene before a seated god, 'feeding' a beautiful, prancing equid (either the hybrid or a donkey), a pose reminiscent of the Brak Scribe's Seal. We are extremely grateful for permission to mention these exciting


Figure 377. 'Early Dynastic' style impression on baked clay, showing a human figure, a horned animal and a harp, from the Area ST 'sump'; TB 4006, DM 514.
discoveries, which add a new dimension to the evidence discussed below. The Buccellatis suggest that Tar'am-Agade was either the wife of the ruling endan of Urkesh, or perhaps his son, or conceivably a priestess involved in the local administration; unfortunately she bears no title on the sealing. The presence of a daughter of Naram-Sin at Urkesh, whatever her formal role, provides convincing evidence of an Akkadian intention to maintain long-term control in the Khabur basin, presumably as a military and political base for further aggrandisement to the north and west.

At Brak the most persuasive written documentation for Akkadian administration of the Khabur region comes still from the Mallowan tablets, especially the often-cited text 14 from the Naram-Sin Palace, which lists workmen from cities which we can now identify as representing an extensive part of the Khabur basin (see Chapter 3). These include Šehna (T. Leilan), Urkesh (T. Mozan), both to the north of Brak at the foot of the Tur Abdin (see map, Fig. 2), Tadum (probably T. Hamidi) and Kakkaban,


Figure 378. Akkadian tablet from Area ER listing animals, perhaps for some cultic occasion, from a number of individuals and localities (sec inscription 31, p. 112).
possibly Tell Aswad, west of Brak in the vicinity of the volcano (modern Kaukab), that is, major cities from the Anatolian frontier south at least to the vicinity of Hasake and including the important centre of Urkesh, on the road to Mardin and Diyarbakr. Inscription 31, a tablet from Area ER (Fig. 378), lists small numbers of sheep and goats either brought from or issued to a number of cities and individuals, again including Šehna and a certain Hilazum, a place name also attested in the Ebla texts. The Akkadian texts recovered during the more recent excavations include administrative accounts dealing with the receipt of silver (texts $67 \& 72$ ), again listing various localities including Šehna and Kakkaban, the issue of garments (75), lists of men (etlu, 68) and rations for workmen (guruš, 53), and a sealed bulla with a cuneiform notation recording a shipment from Šehna (Fig. 379). Important officials include the sukkal (53), a cupbearer (Fig. 382) and several scribes (p. 106 \& Fig. 380); school texts indicate formal teaching at the site. From the administrative texts alone it is not unreasonable to propose a period during which most of the Khabur region was under a direct Akkadian authority based at Brak.

Although these texts indicate the immediate geographical extent of this control, they do not answer the question how long it persisted, or when it began. The former question is best answered by the
archaeology which in Area CH documents a substantial length of time from the Level 4 construction of the Naram-Sin Palace to the destruction of the Akkadian city at the end of Level 3 (p. 27). It should also be noted that Level 3 represents a rebuilding of the Level 4 formal building (Fig. 22), after damage to the walls from some unknown cause. In Area FS also, two levels follow the (Akkadian) closure of the Level 5 monumental building: Level 4 in which tablets with pointed numbers were found, and Level 3 in which Akkadian style seals and sealings occur and where there is a striking architectural continuity from the Level 5 monumental complex. Level 3 suffered a major destruction, which marks, we believe, the end of Akkadian control at Brak. The evidence suggests the likelihood that this control lasted significantly after the time of Naram-Sin, a reconstruction supported by the use of pointed numbers on two of the Level 4 tablets, that is, well before the end of (Akkadian) Level 3 (Gelb 1970, xix, and see Fig. 139). Found with these tablets was an official, lens-shaped, 'flat bulla', with the sealing of an ensi of Gasur, the style of which is also consonant with this reconstruction. That is, both the time span represented by CH Levels $4-3$ and the fact that these very late Area FS tablets pre-date Akkadian Level 3 strongly support the view that the type of Akkadian administration established at the time of Naram-Sin continued, at the least, under his successor. Also relevant to our reconstruction is the fact that, on the evidence of the use of the prefixed divine determinative in the writing of his name on the foundation bricks (Figs. 136 \& 381), the Naram-Sin Palace was built relatively late in his reign.

Despite this textual documentation, some authorities have continued to find unconvincing these arguments for the presence of an actual Akkadian administration at Brak, as opposed, for example, to a small garrison controlling an essentially local administration, perhaps the situation under the earliest Akkadian authority at the site (see below). Further evidence from the time of Naram-Sin is now available in the personal names, which appear not only in the Brak texts and on the official sealings and but feature also in the Diyala region and at Kish, that is, in the homeland of Akkadian authority (Chapter 3, above; Catagnoti 1998). Moreover, these names are in general unlike those associated with Nagar in the


Figure 379. Sealed bulla of Akkadian type, with fragmentary inscription listing shipment to or from Šehna (Tell Leilan; see inscription 59).


Figure 380. Reconstructed sealing from bulla fragments, Area ER, with legend identifying its owner, Ahu-Ahi, as a scribe (see inscription 10; DM 373). Late Akkadian.


Figure 381. Mud-brick stamped with the name of Naram-Sin, one of a number recovered from a collapsed NSP foundation wall in 1984.

Ella texts which, like the personal names attested at Beydar, seem to belong to a more local Semitic tradition. The important question is whether the Akkadian onomasticon was indigenous to the Khabur or whether its origin was 'inperial'. The relatively marrow time gap between the classic Sargonic (Akkadian) documents and the Ebla texts, together with the new evidence from Tell Mozan, suggests that the 'imperial' explanation is more likely (see also Catagnoti 1998, 62). Also interesting in this context is the fact that the offical who delivered the kúnga

equids to the FS temple comple has a southern Ahkadian name, Rabi'il (Fig. 139b). Among the other sargonic names is that of Isar-mupi who lived in Area ER and held the high office of cupbearer (Fig. $35_{2}$ ). The bulk of the official sealings from Brak (and the new Tar'am-Agade sealings from Mozan) are, moreover, of the 'late classic Akkadian' contest scene type generally used by southern officials of high status (Zettler 1977). Except at Mozan, such contest scenes are rare elsewhere in the north. Zettler also notes $(1977,37)$ that most of the surviving Akkadian impressions of this type are on the very distinctive 'flat bullae', an innovation of late Akkadian administration (see p. 130 \& Fig. 160).

Further support for this reconstruction can be found in the contemporary year-name inscriptions of Naram-Sin. Of particular importance for the history of the Khabur are a year-date from Umm el-Jir, 'The year Naram-Sin was victorious in the campaign against Subir at Azuhinnum and captured (the Hurrian) Tahiš-atali (Foster 1982, 23; Frayne 1993, 86), and another year-name recording Naram-Sin at the sources of the Tigris and Euphrates; a military victory here is recorded on the famous Pir Hüseyn stele, found in the region of Diyarbakr (for all royal inscriptions see, most recently: Frayne 1993). It is now widely agreed that this Azuhinnum was located west of the Tigris and north of Jebel Sinjar (Michalowski 1986, 138; Charpin 1990b, 94; Foster 1992, 74). Two Sargonic royal inscriptions, and possibly a third, also record activities of Naram-Sin in the Khabur region (Frayne 1993, 124ff.); one, on which the ruler remains unidentified, mentions Nahur, probably to the north of Brak, Kurda, located somewhere north of Karana (the latter possibly Tell al Rimah, south of Jebel Sinjar, or certainly in that region) and again Azuhinnum (Foster 1992; Frayne 1993, NS 21). In these inscriptions, where the king's name is mentioned, as on the Naram-Sin Palace bricks and the new Mozan sealing, it is written with the preficed divine determinative; a single seal inscription from Area ER at Brak lacks the determinative (inscr. 6, p. 106) and may thus date from before his apotheosis.

The date of the earliest Akkadian presence at the site is more difficult to resolve. Sargon claims to have 'bowed down to the god Dagan in Tuttul' and that the god 'gave him the Upper Land: Mari, Yarmuti and Ebla as far as the Cedar Forest and the Silver Mountain', but this is hardly a claim to have campaigned north of the middle Euphrates. Certainly there is no historical reason to assume his presence in the Khabur, but the surviving 'evidence' is of
course merely negative. For Rimush, the evidence must also remain uncertain, although two fragments of alabaster vases with different inscriptions bearing his name, that is, two different vases, have been found at Brak (Fig. 383). A haematite macehead from Assur also bears his name (Frayne 1993, 71), but there is no contemporary evidence for military campaigns other than against Elam and the cities of Sumer. With Maništusu we find marginally more convincing though still circumstantial evidence. A bronze bowl inscribed with his name is said to have come from Qamishli (Frayne 1993, 81), while at Assur a copper spear point bears a 'servant of Maništusu' legend. Whether this individual was a local Akkadian official cannot be determined at present. Later tradition also attributes to Maništusu the construction of the Emenue Temple of Ishtar at Nineveh (Grayson 1987, 53). Individually these fragments of evidence are relatively meaningless, but their cumulative impression provides at least a reasonable possibility that Maništusu not only exercised some control in the north but also campaigned at least as far west as the Khabur. In this volume one should note also Candida Felli's convincing arguments for a Maništusu date for the important Scribe's Seal, used in the Area SS complex (Chapter 4). It is in fact the archaeological evidence in Areas FS and SS, discussed below, that provides the strongest support for an Akkadian administration at Brak before the time of Naram-Sin, and forms the basis on which we have assigned CH Level 5 and ER Level 4 to 'pre-Naram-Sin Akkadian'.

## D. The monumental Level 5 buildings in Areas FS and SS

The two most impressive building complexes revealed during the recent excavations are the Level 5 buildings in Areas FS and SS (plans, Figs. 42 \& 91). The known extent of the SS complex is now some 5000 sq.m, and the original area was clearly much greater. The buildings are ranged around a series of at least four courtyards and were constructed in stages, as can be seen from the presence of unbonded joints where one obviously coherent plan abuts another. The earliest architectural phase is represented by the only characteristically Mesopotamian unit in the whole complex, a 'bent-axis' shrine with antecella and cella and the juss-paved courtyard from which it was entered. The original version of the western gateway and the apparently administrative room 23 were also parts of the earliest version of this vast complex (p. 85). At some point in its history a major rebuilding was carried out, involving the addition of


Figure 383. Fragment of a banded calcite vase with an inscription of the Akkadian king Rimush (Mallowan photograph, see inscription 1).


Figure 384. North façade of ceremonial Court 8, Area SS Level 5 building, showing the fluted plaster ornament on the upper walls. On the right is the doorway to the courtyard of the adjoining temple (the 'stair' on the left of the picture was cut for access).
an extraordinary ceremonial courtyard, unparalleled elsewhere. This court, with its large limestone dais and elaborate façade (Fig. 384), must have been designed for ceremonies conducted in the open air and presumably witnessed by a large audience. Certainly far more people could have been accommodated than in the relatively small shrine to the north, or even in its courtyard. We have suggested that the 'porches' surrounding the courtyard, with their 5 -m-wide doorways, may have accommodated official delegations attending, perhaps summoned to, the courtyard ceremonial. We know of no textual evidence for open air ceremonies on such a large scale although it is tempting to suggest some connection with the divine king. The presence of the couchant human-faced bison sculpture (frontispiece) in the ceremonial courtyard suggests the possibility that the adjoining temple was dedicated to the god Shamash; certainly his association with this composite creature is well-documented (p. 144). There is, moreover, a small ledge on the west side of the doorway leading from Courtyard 8 into the temple courtyard that is precisely the right size to have held this remarkable piece (foreground Fig. 384).

Another 'bent-axis' temple, somewhat narrower than that in Area SS, but similar in plan and with a comparable large courtyard, constitutes one part of the Area FS monumental complex (plan, Fig. 42). The external façades of both temples were ornamented with deep niches, as is the façade of the small

Akkadian building in FS Level 3 (Fig. 64) and the Akkadian boundary wall in Area CH. South of the FS temple complex is another large courtyard entered through a long entrance chamber with a possibly arched entrance and benches and bins around the sides. To the west is a large, raised reception room, possibly a secondary addition to the original building, and to the east what is probably a third courtyard in which donkeys may have been kept. The presence of ritual burials of donkeys, associated with the closure of this building (discussed below), the marks of 'crib bite' and 'bit wear' on their teeth, together with stakeholes and herbivore dung in the unusually large Courtyard 5/6, and cuneiform 'notes' concerning the delivery of young hybrid equids ( p . 118 , inscriptions $77 \& 78$ ), suggest an institution connected with the use and stabling of equids. The position of this building at the north gate of the city leads us also to suppose that the building served as some form of way station, that is, an early form of caravanserai. Interestingly, the texts confirm such an institution at Beydar (p. 293). As in Area SS, we have no direct evidence as to the deity to whom the FS temple was dedicated. An original mis-reading of the bullae suggested the possibility that this was a temple of Šakkan (Akkadian Šamagan), but other evidence now suggests that this mis-reading may, nonetheless, have given us the correct identification. Šamagan was the god of steppe animals, for whom the association of equids and the deposition of ga-
zelle horns in the antecella would be entirely appropriate. The seated male deity depicted on the socalled Scribe's Seal (Fig. 171) is also plausibly interpreted as Šamagan, an important deity also at Bevdar, where we know the en of Nagar travelled to celebrate his festival (Ismail et al. 1996, text 101).

The 'bent-axis' plan employed in the two monumental temple complexes at Brak has an interesting geographical distribution, especially as different temple plans may reasonably be assumed to reflect differences in religious ritual, one of the aspects of social behaviour that is most rigidly controlled by tradition. In southern Mesopotamia we know of only one example, in Inanna Level VII at Nippur, which is dated by the excavators to ED IIIA (Hansen \& Dales 1962). At Mari the secondary shrine in the Ishtar Temple, ascribed to ED IIIB, bears a superficial resemblance to this plan but differs from it in the position of the doorway, which adjoins the podium (Parrot 1956, 36; Margueron 1985, 489).

In the Diyala region, however, it is the standard pattern throughout the Early Dynastic period (examples listed in Tunça 1984, 22). In particular, in the latest of the Single Shrines in the Abu Temple sequence, next to the 'Akkadian Palace' and said to be Early Akkadian in date (Delougaz et al. 1942, fig. 23), there are opposing piers separating the cella from an antecella, a feature not found earlier in the Diyala but common to both Brak temples. The bent-axis plan is also found in the Early Dynastic Ishtar Temple at Assur, where it was retained throughout the temple's history until its final restoration by Šin-šariskun at the end of the seventh century BC , even though it then shared the same precinct with two other shrines of conventional Late Assyrian langraum type (Andrae 1938, 160-61).

It may be interesting to note that Late Assyrian throne rooms also utilized some form of the bentaxis approach, of which one example is graphically illustrated in paintings on the walls of a small throne room, Room S5 in Fort Shalmaneser at Nimrud. Here a file of officials, entering by a single doorway, circles the room to approach the figure of the king (Mallowan 1966, II, 381-2). Indeed, although guests or suppliants are no longer required to circle the walls, the same form of reception room is a standard feature of government offices and private houses in northern Mesopotamia to the present day.

From the Late Early Dynastic and possibly Akkadian examples cited above it is clear that the bent-axis temple is a typically northern type. It is not, however, common to the whole of northeastern Syria in the Early Dynastic period, as the temples at

Tell Chuera and Tell Beydar show (for Beydar, see most recently, Bretschneider in prep.). We may reasonably suppose that its presence at Brak during and perhaps before the Akkadian occupation reflects at least in part the close connection with Assur and the Diyala sites by way of the Tigris valley, the southern part of the trade route that led through Brak to the Diyarbakr mines, or, possibly, a North Mesopotamian Semitic tradition shared with the Diyala, though the paucity of third-millennium excavated sites in the north makes this observation purely speculative. The importance of the Diyala evidence in comparison with other areas may be somewhat magnified by the relatively large number of sites excavated there, but a strong connection with Brak is the more likely if we accept the most recent suggestion that Agade itself was situated on the Tigris not far from its confluence with the Diyala (Wall-Romana 1990).

As noted above, the other architectural feature which is common to the two temples at Brak and the official buildings associated with them is the use of deeply recessed niches on exterior walls, which spring from about 1 m above the ground (for example, Figs. $48,49 \& 64)$. We know of no exact parallel for this form of decoration, which must have some formal or religious significance. The only possible comparison is the north façade of the secondary shrine in the Ishtar temple complex at Mari, referred to above, but there the niches are much shallower in proportion to their length and seem to start from ground level (Parrot 1956, fig. 23). It is interesting that similar niches occur on the precinct wall east of the Naram-Sin Palace which was restored when the Palace was built. The lack of parallels for these niched façades together with the lack of evidence for Akkadian monumental architecture on other sites make it impossible to speculate whether any particular architectural feature can be attributed to a specifically Akkadian origin. Nor can we identify the origins of the unique fluted plaster wall decoration (Figs. $95 \& 384$ ), since most buildings do not survive to the height of those in Area SS at Brak and such fine detail can easily be missed in excavation. And, as in other arts, architectural style must at first have depended on the traditions of existing craftsmen, an observation which makes the very different architecture of the Beydar temples all the more striking. It should also be noted that the Brak 'fluted plaster' decoration is found on the earliest version of the SS complex, in its western gateway (Figs. 113 \& 114).

In terms of general stratigraphic evidence and the similarity of their plans, the two temple precincts are likely to have been built at approximately
the same time. The elaborate wall decoration, however, seems to have been associated with the SS buildings only; this would seem to be a matter of specific function and the interior temple walls were not so decorated in either complex. The one fact that seems incontrovertible is that these buildings went out of use simultaneously. Both were ritually infilled, and the sequence of their abandonment and filling, identified in both excavation and microstratigraphic thin sections (Chapter 14), is strikingly similar. This evidence is discussed in the next section, and in more detail in Chapters 2 and 14.

## E. The date of the monumental complexes

## 1. Date of the ritual closure

As argued elsewhere (p. 90), it is evident that both monumental buildings were deliberately infilled, and that ritual actions, including the deposit of valuables and almost certainly ritual burning, accompanied this closure. In both buildings the surviving evidence, supported by micromorphological thin sections, attests a temporary abandonment, followed by the deposition of an unusual green ash on the floor of the FS temple courtyard and a thin deposit of water-laid materials in at least parts of both buildings. The ash is from high temperature but not in situ burning. In both buildings a brief period of postoccupation disturbance follows, the evidence consisting of 'trampled' lenses that are not stabilized as one would expect of genuine floor deposits, but are of a more transient nature. We believe that these deposits were associated with the clearing out of the building (in Area FS the inscribed bullae were found in this 'trample'). Intense fires seem then to have been lit, in particular within the FS courtyard (Fig. 386). There is no convincing evidence for the deliberate destruction of the buildings themselves prior to the infilling, and these fires appear to have formed part of the closure ritual (see below, and Bjorkman 1994).

Above the 'trample' is a very bricky layer of fill, suggesting perhaps the intentional pushing in of the uppermost parts of the walls as the first stage of the infilling process - this is particularly evident in SS Rooms $15,16,18$; it is followed by the deposition of rubbish in which the tip lines remain clearly visible. Above this in Area SS was placed a hard red plaster 'capping', on which were a number of food offerings (p. 90). In Area FS the bodies of equids were placed both just above the floors of the building and on the top of the fill. Valuable materials were also deposited both within the fill of the temple courtyard and


Figure 385. Human-faced bison sculpture, found in Courtyard 8 of the $S$ S monumental complex (ht 28 cm ; see Chapter 9).


Figure 386. Area FS, Level 5 temple courtyard (43), from the east. Note the heavily, though unevenly, burnt wall plaster and courtyard surface.
on its surface, including large quantities of jewellery and copper/bronze tools (Figs. 51, 252 \& 387). In SS


Figure 387. Silver jewellery and ingots, together with gold, electrum, lapis lazuli and carnelian, found in ritual deposit FS 1958 (see Fig. 50).
valuable objects were also placed on the pavement of the ceremonial courtyard; in both complexes human and other bones were included among the deliberate deposits. In Area FS this included three incomplete human skeletons, covered as they lay, without graves, above the reception room (Fig. 388; see also p. 50), together with others in the central courtyard (Fig. 45) and a single skull in the doorway of Area SS Room 30.

The closure sequences are so closely comparable that there can be little doubt that the two buildings came to a simultaneous end. The questions who? and when? are not quite so easily answered, though several strands of evidence persuade us that these actions were carried out by Akkadian officials, or at least at a time when there was some form of Akkadian authority at the site. Most convincing is the evidence from Area FS, in the Level 3 rebuilding of parts of the Level 5 monumental complex, including the associated storerooms. Such direct and deliberate reconstruction is incompatible with a change in political authority. It follows that the SS complex was also in use during an Akkadian administration, an interpretation which receives support from the surviving materials found in the 'trample' and on the floors of the building. These include the very distinctively Akkadian style limestone statuette from Room 18 (p. 263) and the various impressions of the Scribe's Seal also found in Room 18 and in the ceremonial courtyard. Although the cutting of the seal has been dated
as early as Sargon or Rimush and as late as NaramSin, and a case for Maništusu is argued in Chapter 9, there is complete agreement as to its Akkadian character. Indeed the contemporary presence in the SS complex of a local seal (Fig. 172) with what appears to be the same name suggests an Akkadian authority at this time based on the cooperation of the local officials (see p. 137). Moreover, the pottery from the fills of both buildings includes far more types that resemble those from the succeeding Level 3 than from the Phase L destruction. The absence in both Areas SS and FS of any evidence for a destruction corresponding with that in Areas CH and ER at the end of the ED period is open to three possible explanations, that the destruction debris was removed during the restoration of the two shrines, that they were spared for religious reasons, or that both buildings are of Akkadian construction.

One of the most characteristic features of both formal complexes is the type of bulla and associated seal style, which was clearly in use at the time of the abandonment of the buildings. The bullae are of the 'chunky' type described in Chapter 4, and generally sealed with 'Brak style’ sealings (Fig. 159). Very similar bullae have recently been found at Tell Beydar, in association with tablets like those from the original discovery which are dated to late ED IIIB, approximately contemporary with similar documents from Ebla and Mari (1999 season: we are very much indebted to Joachim Bretschneider for detailed information on these as yet unpublished discoveries). Indeed at Beydar, the personal names and the goods listed on the inscribed bullae are the same as those on the tablets (Sallaberger in press). Until recently, only one Brak style sealing had been found in a secure Phase L context at Brak (DM 184), but several have now been recovered in Area TC. Here contest scenes and other southern types are more common, however, and at least for the moment we must conclude that the use of the Brak style is associated with a very particular aspect of local administration which at Brak continued to function under the earliest Akkadian authority. Local officials, after all, know where to collect the taxes, a ploy not unknown to the Romans. It should perhaps also be reiterated that the actual bulla type associated with Phase L administration at Brak, at least as found up to now, differs from the 'chunky'-shaped bullae of the monumental complexes (pp. 129-30).

The presence of early forms of the cuneiform signs DA and ŠU on text 64, a bulla from the SS building, superficially suggests a date comparable with that at Beydar, but this Brak evidence is not
specifically informative since the bulla itself was found in the infill, that is, unlike those from Area FS, not necessarily in a context contemporary with its use. But these sign forms continue in use in the early Akkadian period, and the shape of the bulla and its Brak style seal suggest a date roughly comparable with bullae from the 'trample' in the FS temple courtyard, that is, again Akkadian. It is possible that all of these bullae are to be dated before the time of NaramSin or, at least, before that time during his reign when changes were made to the writing and administrative systems. Such changes included also the introduction of the flat, lens-shaped bulla, associated with formal administration, none of which has as yet been found in a context earlier than the time of Naram-Sin.

Without written evidence we cannot determine whether the Phase L destruction was the result of a local conflict or whether it marks the first appearance of the Akkadians in the Khabur, either early in the reign of Naram-Sin or before. The latter seems less likely because, when the first Akkadian presence can be recognized in the archaeological sequence, it has an at least superficially peaceful aspect in contrast with its later, more military character typified by the fortified Naram-Sin Palace and the failure to restore the two great temples. It seems more plausible to suppose that the destruction was the result of a local conflict, after which the Akkadians appeared, perhaps even in peaceful guise as protectors of Nagar and, to their own advantage, of its important trade route. This would also help to explain the absence of any reference to the conquest of Nagar among the military achievements listed in the royal inscriptions. Such a reconstruction is perhaps supported by the apparent association of Kish and Nagar in the Ebla texts.

## 2. Date of the construction of the monumental complexes

 The construction date of the earliest versions of the FS and SS complexes is far more difficult to determine than the date of their ritual closure. Certainly it remains possible that these were constructions of the independent and powerful kingdom of Nagar, for which these buildings would have been appropriate symbols. Against this is the presence of bent-axis temples of Mesopotamian type, which have not been found elsewhere in the Khabur. Nor has the elaborate plaster decoration, attested in the earliest version of the SS building, been found elsewhere. In FS, as we have noted above, there is clear evidence of continuity of public architecture from Level 5 to Level 3 , a strong indication of construction by the same

Figure 388. Fragmentary human skeletons on upper surface of Level 5 building, Area FS, beneath Level 3, Room 1, looking west. The outer façade of the Mitanni Palace is visible in the distance, beneath the survey point (Area HH).
authority. On the basis of the evidence from Level 3, and the late Sargonic tablets found in FS Level 4, this authority must have been Akkadian. Such reconstruction, admittedly, relates only to the official storerooms and the reception room, which were apparently additions to the original FS plan, but their certain Akkadian attribution strengthens the case for attributing the great ceremonial precinct in Area SS also to an Akkadian authority. Indeed its unique plan and decoration tempt us to wonder whether there may have been some connection with the deified king. Certainly this was a building in which ceremonial took place on the grand scale. A strong case can even be made for identifying the whole of both complexes as of Akkadian origin, with
their Divala type temple plan, the extraordinary ceremonial court and unparalleled architectural decoration, none of which is found, for example, at Late ED III Beydar. Again, we cannot prove this.

Unfortunately, the radiocarbon determinations are of little assistance (Chapter 15), even suggesting that the closure of the FS complex is much earlier than that in SS, which is of course highly unlikely on the basis of the archaeological evidence. One possible scenario would attribute the original SS structure to the first Akkadian administration, and the grand reconstruction to early Naram-Sin. Ideologically, this would make sense, but on the evidence we have we cannot prove that the original version was not a product of the independent kingdom of Nagar. Certainly its impressive monumentality would fit well with the apparent status of Nagar at this time. An attribution of either monumental complex to the independent kingdom of Nagar, however, raises not only the problem of their stratigraphic relationship with CH Level 6 and ER Level 5, but also the fact of the lack of comparable material culture, especially pottery and sealings, in the fill of the buildings, suggesting the passage of some period of time between the Phase L destruction and the closure of the monumental buildings. It must be hoped that future work at Brak will resolve these uncertainties or that someday excavation at the city of Agade itself might reveal the source of Brak's unique architecture.

It has been observed elsewhere that the method of brick-laying in the SS complex closely resembles that used in the Naram-Sin Palace. This may, of course, reflect no more than the habits of local builders. Both here and in Area FS, however, the building history is much the same. Both buildings lie on the massive walls of equally monumental underlying structures, cut-down to provide foundations for the new buildings. Such lower walls have been identified in deep soundings in Area SS Room 18 and in the FS Courtyard 5 sounding D (Fig. 60); these buildings at least can be attributed to the independent kingdom of Nagar, as can the large 'Oval' now under excavation.

There is one other piece of evidence that should be considered. Indeed, it is tempting to associate the brief abandonment of the monumental buildings, and perhaps even the city itself, with the 'exceptional event' described on pages $367-72$ and represented by the deposition of a thin dust layer following on the disruption of local surface soils, synchronous with the fall-out of black carbon, possibly from forest fires elsewhere. Perhaps most significant in this reconstruction is the fact that the associated petro-
graphic assemblage is said to indicate the presence of rock fragments from various exogenous geological formations. This 'event' has been identified at a number of sites in the Khabur area (Courty 1998), and one of the best-dated soil samples producing this profile came from Area CH Level 5, not long pre-dating the construction of the Naram-Sin Palace (Fig. 374). Such a reconstruction must remain highly speculative, but the suggestion that some natural catastrophe may have provoked local, or even wider, unrest might account for the apparent change in Akkadian policy at Brak, with the abandonment of the temple complexes, the construction of a wellfortified storehouse (the 'Palace') and the introduction of greater numbers of local officials from the south, as seen in the Level 3 seals and names. It is perhaps also relevant that Palace F at Chuera was briefly abandoned and peacefully reoccupied at approximately the same time (Alexander Pruß pers. comm.). It is almost certainly also relevant that the 'way station' seems to decline in importance and the trade in kúnga equids apparently disappears at this time, reflecting perhaps the interruption of previous routes to the north and west and, at the same time, conceivably, the introduction of the horse, attested at Tell Leilan, an animal that was soon to make the hybrid redundant. We have as yet no faunal evidence for horse at Brak, but we think it likely that this animal was brought to the Khabur region late in the third millennium, almost certainly by the newlyarrived Hurrians who were soon to control BrakNagar, if only for a relatively short period.

## F. Post-Akkadian Brak (Phase N)

Most significant for the absolute chronology of this period is the fact that the FS Level 4 tablets, which can be dated to late Naram-Sin at the earliest, are well-stratified beneath FS Level 3, in which are found classic Akkadian seals and sealings and where a marked continuity of architecture from the monumental buildings in Level 5 can be observed. The pottery in these Akkadian levels is also comparable with that from Area CH where there is a direct association with Naram-Sin. Moreover, in those levels that we now describe as post-Akkadian, that is, Levels 1-2 in Areas CH, FS, SS and Level 1 in Area ER, the actual character of the settlement changes again. Although the city of Nagar continues to occupy the whole of the tell and the Naram-Sin Palace is rebuilt, we now find private houses in areas where there were public buildings during Akkadian times. Indeed the excavations in FS, ER and CH suggest the
presence of houses of substantial size, of which the so-called Grey Libn Building in Area FS is not only the best-preserved and the most interesting, with its bakery and shop (Fig. 79), but also reflects a considerable level of prosperity in the post-Akkadian kingdom.

At the same time there appear a number of new and very distinctive ceramic types, which are found from the Balikh to the Tigris. Indeed, one of the most recognizable of these types, the beaker with convex base and 'recess-beaded' rim (p. 171), was actually manufactured in 'Palace F' at Chuera (Bauschicht 1, Orthmann \& Pruß 1995; Pruß pers. comm.). This Chuera pottery is literally indistinguishable from that at Brak, where a surprising number of south Mesopotamian pottery types is also found. Indeed the absence of Khabur place names in the Ur III Drehem archives, with the notable exception of the record of offerings to the Lady of Nagar, suggest an absence of contact belied by the actual ceramic evidence. Although the archaeological evidence as currently interpreted indicates that some cities in the Khabur area may have been abandoned at this time, we would suggest that at least in some cases this assumption is based on the mis-dating of ceramic types now clearly identified at Brak as dating to the postAkkadian phase (defined as including Ur III). At this time the size of Brak remained as it was in the Akkadian period, only contracting to the north ridge sometime early in the second millennium when there seems to have been a more general shift in settlement pattern, easily identified by the early secondmillennium introduction of Khabur ware. The latest occupation level identified by us on the lower reaches of the tell is of Isin-Larsa date, pre-dating the introduction of Khabur ware (p. 173).

One of our more important conclusions is that there is no evidence whatsoever at Brak that would support the view of 'desertification' or large-scale population movements that has sometimes been suggested for the late third millennium. Indeed there is evidence, in the heavy erosion of some abandoned Level 3 walls in Area FS, for the continuance of at least the intermittent heavy rainfall attested by gully formation in earlier phases (and not unlike the modern regime). Certainly both Brak-Nagar and MozanUrkesh continue as major cities at this time. And cities do not exist in the absence of hinterlands. The possibility of some unusual climatic or other natural event is attested during the Akkadian period (see comments above) where, as at Chuera, it can be demonstrated both that this 'event' was of relatively short duration and that at Brak it did not mark the end of Akkadian authority. In addition, palaeobotanical data
from Brak, which include samples from Phases L, M and N , indicate no identifiable variation between the Akkadian and post-Akkadian crops or weeds. The pottery that we now attribute to Phase N is clearly paralleled at Ur III sites elsewhere, and at Brak is quite distinct from the Akkadian repertoire. Among the sites where pottery of these post-Akkadian types has recently been recognized are Chagar Bazar and Hamoukar (Augusta McMahon \& Jason Ur pers. comm.), and it is now apparent that material of this type at Chuera is of post-Akkadian attribution. Similar pottery is also found at Beydar.

Long-known inscriptions of Hurrian rulers identify both Urkesh and Nagar as important centres at this time. A Hurrian inscription of Tiš-atal mentions the Lady of Nagar in the curse formula, while another Tiš-atal is known to have been a ruler of Nineveh during the time of the Ur III king Šu-Sin (Whiting 1976). Another, Atal-šen, claims the kingship of 'Urkesh and Nawar'. Although Nawar would seem to have been the Mitanni name of Brak (Brak 1, 39 and text 7, p. 43), it has been argued that this third-millennium Nawar is more likely to refer to a city closer to Mozan, perhaps the town later called Nawala/Nabula in the vicinity of Qamishli (Matthews \& Eidem 1993, 205). These Hurrian inscriptions, long attributed to the town of Amuda, almost certainly come from Tell Mozan, Urkesh itself, where there is impressive new evidence for a late third-millennium Hurrian city (Buccellati \& Kelly-Buccellati 1998b). Undoubtedly the single most important piece of historical evidence from Brak at this period is the sealing illustrated in Figure 376, that of another Hurrian king, Talpuš-atili. This was apparently found by Mallowan on the 'TOP CREST' of the mound (suggesting the uppermost level of CH ), but the inscription remained unread at the time. Although its exact find spot is not known, it may well have come from the ruins of the post-Akkadian 'palace' which, as Mallowan's plan and sections show, was built on the foundations of the Naram-Sin building. The seal shows yet another Akkadian contest scene, but Hurrian adoption of Akkadian iconography is not surprising, and the name itself had almost certainly been added at some later date. Indeed among the newly discovered sealings at Mozan is another classic Akkadian contest scene seal inscribed with the Hurrian name Ewrim-atal (Buccellati \& KellyBuccellati in press). One further point must be made with reference to these Hurrian names. It has often been argued that the writing of Tahiš-atali on the Naram-Sin year-date (p. 386) indicated an Akkadian date for Talpuš-atali, since -atali was assumed to be


Figure 389. 'ED III' style sealing from Area SS, almost certainly of Akkadian date; the scene shows a scorpionman, a bull-man and a 'hairy hero', attacking a full-face bull-man (TB 12009; DM 166).
an archaic form of -atal found in names known to be of Ur III date. However, the Ewrim-atal sealings from Mozan were found in a deposit with sealings of the daughter of Naram-Sin, suggesting that both writings were used simultaneously at this time. Moreover, within the clearly dated Akkadian levels at Brak (especially Areas CH and FS) there is no room for a Hurrian ruler, although it should be noted that Talpuš-atali's claim is to rule the 'country of Nagar'.

We have observed that the transition from the latest Akkadian occupation to Level 2, which overlies it, was violent (Fig. 90). As remarked above, there is some indication also of water damage to buildings left standing open at this time (Area FS). Moreover, although in the northern part of FS some Akkadian walls had been re-used, most Level 2 buildings bear no relationship to earlier structures beneath them, in sharp contrast to the FS Level 5 to 3 transitions. Such a change in the character of this quarter of the city would accord with the possible Hurrian take-over of Brak suggested by the Talpuš-atili sealing. In the Khabur basin, however, this does not necessarily, or even probably, coincide with the first appearance of the Hurrians, who may well have been a threat from as early as the reign of Naram-Sin, a suggestion reinforced by the new evidence from Mozan. Indeed a Hurrian threat may have been at least in part responsible for the apparent change in Akkadian policy to a more direct and militaristic control which the construction of the fortified palace, the abandonment of the major temples and the apparent increase in southern administrators seem to suggest. Unfortunately we have no archaeological criteria for rec-
ognizing Hurrian as opposed to Semitic rule, and we cannot tell whether or not cities like Tell al-Rimah and Tell Taya, with a very similar repertoire of pottery to that from Brak and Nineveh (McMahon 1998), also fell under Hurrian control at this time. We do hope, however, that the publication here of the extensive collection of easily recognized post-Akkadian pottery will assist in the identification of sites of this date not only in the Khabur basin but also elsewhere in northern Mesopotamia. Certainly Brak at this time displays a close material culture relationship with sites to the east, at least as far as Nineveh, and to the west. Whether this bears any relation to the distribution of Hurrian-speaking peoples at this time cannot be established without further written documentation.

## G. The economy of Nagar

Brak is an urban centre within an area of rich agricultural lands, at the present day at the approximate southern limit of rainfed cultivation. In the thirdmillennium dry-farming must have been practised, given the unsuitable nature of the terrain for all but the most simple and limited irrigation systems. Indeed the botanical samples from the site reveal a range of crops very comparable with the wintergrown crops of the present day, at least before the relatively recent introduction of diesel pumps and summer cash crops. The evidence suggests a crop spectrum very like that from other North Syrian sites in the Early Bronze Age (p. 325), including wheats and pulses as well as barley. Barley is the predominant crop, perhaps reflecting its large-scale use for animal fodder as well as human rations (and beer!). At least six crops are well-documented: hulled two-rowed barley, glume wheat (both einkorn and emmer), free-threshing wheat, lentil and common pea, while the evidence for crop-processing makes it clear that Brak was a 'producing' site. Other possible crops are linseed and safflower.

The faunal samples are still in process of analysis, but a very preliminary report suggests a reliance on sheep/goat that is characteristic of the present day and is even more predominant throughout the fourth millennium at the site. The importance of wool is clear from the Beydar texts, an industry possibly controlled by the Nagar palace (van Lerberghe 1996b, 111); texts from Ebla refer to the import of both sheep and wool from Nagar. The apparently small size of the third-millennium sheep and goats remains to be explained satisfactorily, but the Beydar texts make clear the presence of at least two breeds of sheep, that kept specifically for wool production


Figure 390. View of Area FS, Level 3, Rooms 20 and 22, looking north and showing objects abandoned in their destroyed rooms. The low door leads into the storeroom 31.
and the mountain-sheep which are recorded as being fattened and kept primarily for slaughter (van Lerberghe 1996b, 107). An observation by the eight-eenth-century English poet Thomas Love Peacock is perhaps relevant:

The mountain sheep are sweeter
But the valley sheep are fatter
We therefore deemed it meeter
To carry off the latter.
(The War Song of Dinas Vawr)
The tanning of hides was clearly another important local industry.

Pigs constitute a significant portion of the faunal remains, between a quarter and a third of the bones by weight. There is an unusual proportion of baby pigs, often in contexts that suggest their ritual deposition, especially in the monumental buildings. The importance of pig's fat is demonstrated in the Beydar


Figure 391. Drawing of impression of 'Syrian Animals style' limestone seal, found in Area SS, Level 5, Room 21 floor (Fig. 148b, p. 124).
texts, possibly used, inter alia, for the manufacture of soap for washing wool. By far the most valuable animal was the famous kúnga (BAR.AN) 'mule', the onager x donkey cross discussed in Chapter 10. The price of a BAR.AN equid ranged from 1 to 5 minas of silver, up to 300 times the cost of a single sheep (c. 1 shekel); three or four 'stone-weights' of wool, depending on the quality, are also valued at Nagar at one shekel (Archi 1998, 9). The date of the earliest horse in the Khabur basin remains to be established, but horse bones are reported at Leilan (Šehna). A more extensive report on both the third- and fourthmillennium fauna will appear in Volume 3.

The archaeological data from third-millennium Brak also provide evidence for a number of crafts practised at the site. Of these one of the most important must have been metal-working, attested in the large number of moulds found at the site (p. 247), and the 859 metal tools and weapons recovered. Analyses of the copper suggest the 'second-hand' nature of the Brak metals (p. 256), but we were of course only able to provide for analysis very broken pieces of pins and wire and not the larger metal tools that the moulds show were manufactured at the site. The evidence of experimentation with 'glassy' materials and the large range of frit and faience objects is of particular interest (p. 217), especially in view of the importance of these industries at Mitanni Brak (see Volume 1). With the exception of bakeries in the FS Level 2 and CH Level 6 houses, a number of domestic contexts where grain was ground and one or two possible flint-knapping areas in Area FS Level 2 (Courtyard 54, for example), we have found little
evidence of the places where everyday craft activities took place, the excavations having identified largely private houses or public institutions of ritual and/or administrative character. The small area of the Brak Oval, excavated in 1998, may, however, have produced evidence of a public bakery (or even brewery), while the Level 2 house in the south sector of Area FS included a shopkeeper as well as a baker among its occupants (perhaps, of course, the same individual). Pottery kilns were found only in Level 2 , production in the earlier periods of the more monumental city having obviously been 'off-site'. Analyses of the sources of such materials as bitumen and basalt will appear in Volume 3.

We have already emphasized that the importance of Brak lay to a great extent in its geographical position, not only controlling one route from the Tigris valley into the Khabur basin but also as the
westernmost city-state of northern Mesopotamia in its official dealings with major powers to the west. The connections with Mari are clear in its language and in its personal names, while the trading and diplomatic links with Ebla are well-documented. Chipped stone tools at the site suggest some form of settlement at Brak from pre-pottery Neolithic times onwards, while the contact with the southern 'Ubaid towns of lower Mesopotamia remains the earliest attested in the north. The evidence for this and for the large, possibly walled city of the early fourth millennium will be published in Volume 3 of this series. The material remains for the large and politically important third-millennium city, presented in this volume, are the most extensive so far excavated for any period at Brak-Nagar; they provide, moreover, the most detailed picture up to now of any third-millennium city in northern Mesopotamia.

## Artefact Drawings

## Abbreviations in tables and text.

TB cat. no. Catalogue number for objects sent to the Deir ez-Zor Museum, numbers prefaced with the letters TB. The first season has TB numbers that begin with 1000, the second season with 2000 and so forth.
reg. no. Object or pottery register number. The object register consists of a continuous series of numbers beginning with 1 . The pottery register is separate, and the first two digits denote the year of excavation, e.g. $86.1=1986$ season pot number 1 ; for each season the numbers after the year date begin with one.
FSTC Area FS temple complex
MEL.M Mallowan excavations
GLB Grey Libn Building
NSP Naram Sin Palace
RLB Red Libn Building
RDB revealed doors building
SSTC Area SS temple complex
VB vaulted building
unstrat. unstratified
cb cut by
s seals
sb sealed by
rel relates to
joins indicates actual pottery joins between different contexts
assoc. associated with
c/b copper/bronze
cm centimetres
Rm Room
Fig. Figure
Tr. Trench
ED Early Dynastic
Akk. Akkadian

1. length
w. width
th. thickness
ht height
d. diameter
ds. diameter of shaft
$\mathrm{d} / \mathrm{wh}$ diameter or width of head (for pins etc.)
dp diameter of perforation.
bl blade length (for a projectile point)
bw blade width
bth blade thickness
socl length of socket (for axes etc.)
dsoc diameter of socket
est. estimated
ext. extant
max. maximum
PPL Plane-polarized light
TS Thin-section sample
XPL Cross-polarized light
D.M1 000 seal number in D. Matthews 1997a

## Ware types.

1. Stone Ware
a) dark grey fabric with dark grey, occasionally brown surface, sometimes red-streaked; surface often has vitreous quality; typically Munsell N 4 / and N 3 / (Fig. 185a,c)
b) red fabric and surface (rare); typically Munsell 2.5 YR $5 / 6$ to $5 / 8$ 'red' (Fig. 185b:7)
c) grey fabric with pale grey or darker blue-grey surface; often highly polished; Munsell $\mathrm{N} 7 /$, 5 Y 6/1 to $4 / 1$ (Fig. 185c)
d) yellow to olive green; Munsell 2.5Y $6 / 4$ to $5 \mathrm{Y} 6 / 3$, light yellowish-brown to pale olive (Fig. 185a:5)
2. 'Near Stone Ware'. High-quality, dense fabric but grittier than Stone Ware, often difficult to distinguish from true Stone Ware.
a) light grey
b) yellow to olive-green
c) burnished light brown (Munsell 10YR 5/2 to 6/2, 'light brownish grey' to 'grey brown'
d) streaky brown/yellow/light red; Munsell 7.5YR 6/3 to 10YR 7/6, 'light brown to yellow'
e) dark grey
f) dense green
(see also post-Akkadian fabric 8c)
3. Imitation Stone Ware. Highly burnished vessels, usually jars, deliberately made to resemble dark grey Stone Ware but of an ordinary gritty buff or greyish fabric.
4. Grey fabrics, gritty
a) dark
b) light
c) ring-burnished / fluted Syrian bottles
d) highly polished black surface, gritty porous fabric, red-brown to grey; sometimes incised and often with white inlay (Fig. 205c:1-4)
e) brown burnish
5. Gritty buff (most common fabric)
a) fine ware, little visible temper
b) with some chaff
c) yellow
d) very fine greenish-yellow/brown
6. Gritty salmon fabric, mica
a) with some chaff
b) brown fabric
7. Gritty red to brown fabric, sometimes grey
a) red-slipped
b) large quantity small white grits
8. Orange ware (gritty orange to grey fabric)
a) orange fabric
b) 'clinky' orange ware ('eggshell')
c) 'clinky' brown/grey fabric, 'near stoneware'/'eggshell'
d) brittle orange ware
9. Cooking ware
10. Heavy chaff, buff to brown
11. Handmade, unfired or lightly fired

## Artefact Drawings

Figure 392. Miniature Stone Ware and 'near Stone Ware' (1-24), scale 1:2.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions $h t ;$ d. | Comments | Reg no. | $\begin{aligned} & \text { TB cat. } \\ & \text { no. } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | SS 585 | 5 | M | 2a | 1.1;3.9 | Exterior surface cut, fine grit inclusions. Munsell 5GY 7/1 'light greenish grey'. | 90.97 |  |
| 2 | SS 964 | 4 | M | 1 c | 1.4; 5.0 | Complete, burnt. | 93.163 | 14208 |
| 3 | SS 581 | 5 | M | 1 c | 1.7; 7.0 | Complete, string-cut base, very smooth. | 90.57 | 11106 |
| 4 | SS 204 | 4 | M | 2 | 2.3; 7.6 | Surface vitrified, ?accidentally, highly burnished, gritty. Munsell 5GY 6/1 to 5/1 'greenish grey'. |  |  |
| 5 | FS 1548 | 3 | M | 1c | 1.9; 6.5 | Complete. 2 further examples, FS 2312, FS 2335 latter Munsell 5GY 7/1 to 6/1 'light green grey' to 'green-grey' | 87.13 | 9218 |
| 6 | FS 1548 | 3 | M | 2a | 2.5; 8.2 | Fine grit inclusions; further example in fine burnished grey, SS 545. | 87.14 | 9220 |
| 7 | CH B 14 | 5/4 | M | 1c | 4.3; 9.1 | Surface scraped. Munsell, paste $5 \mathrm{Y} 6 / 1^{\prime}$ light olive grey', surface $5 \mathrm{Y} 6 / 2$ to $7 / 2$ 'pale grey'. |  | 34 |
| 8 | FS 141 | 2b | M/N | 1a | 3.0; 6.6 | Red streaks on interior, Munsell 2.5Y 4/1 'dark grey'; out of context further example, Munsell paste N 5 / 'grey', surface N 3 / 'very dark grey'. Out of context. |  |  |
| 9 | SS 887 | 3 | M | 1a | 2.7; 6.4 | Red streaked, Munsell 2.5 YR 7/6 'light red' to 6/6 \& 5/6 'red'; grey fabric 2.5 YR $4 / 1$ 'dark reddish grey'. Fig. 185c:12. (?ED type) |  |  |
| 10 | CH 525 | 6/7 | L | 1a | 2.8; 6.5 | Base shaved, brown streaks on interior. |  |  |
| 11 | SS 1044 | 6 | L/M | 1a | 3.4; 7.6 | Munsell N 3/ 'very dark grey'; further example from FS 1923, Munsell interior \& upper exterior N 5/ 'grey', lower exterior N 4/ 'dark grey'. |  |  |
| 12 | ER 233 | 5 | L | 1a | 3.3; 7.4 | String-cut base, heavily burnt. Munsell 2.5Y 4/ 'dark grey'. 3 further examples. | 80.79 | 3101 |
| 13 | CH 801 | 7 | L | 1a | 2.7; 8.0 | Some fine white grit. Munsell N 3/ 'dark grey'. |  |  |
| 14 | DS 12 |  | M | 4a | 1.8; 5.0 | Some fine white grit. |  |  |
| 15 | SS 545 | 4 | M | 1 c | 2.8; 4.8 | Some fine grit. Bluish grey with yellow streaks. Munsell 5B 6/1 to 5/1. |  |  |
| 16 | FS 1567 | 3 | M | 1a | 3.9; 4.8 | Appears to be burnished. 3 further examples, SS 545, FS 355 \& 1281. | 87.54 | 9217 |
| 17 | CH 510 | 6 | L | 1d | 4.1; 9.4 | Shaved string-cut base. Munsell 2.5Y 6/4 'light yellowish brown'. |  |  |
| 18 | SS 686 | 4 | M | 2b | 4.0; 6.8 | Burnished surfaces, string-cut base, some grit. Munsell $5 \mathrm{Y} 6 / 4$, 'pale olive'. Further unstrat. examples in Stone Ware (1d) and fabric 2 b . |  |  |
| 19 | FS 1500 | 3 | M | 1a | 5.0; 7.1 | Munsell N 5/ to N 6/. |  |  |
| 20 | FS 316 | 3 | M | 1 c | 3.7; 7.8 | Very smooth exterior surface, dark grey with yellow streaked interior, Munsell NG 5/2 'greyish green'; further unstrat. example in ware 5 . |  |  |
| 21 | ER 232 | 5 | L | 2a | 4.7; 8.8 | Highly burnished exterior, Munsell 5Y 7/2 'light grey' 2 further examples, 1 identical (CH 181) \& 1 in grey/ yellow streaked Stone Ware (ST 14). |  |  |
| 22 | CH 251 | 6 | L | 1d | 3.3; 8.4 | Heavily burnt, Munsell 5Y 5/2 olive grey'; further example, Munsell 5Y 7/4 'pale yellow', FS 1718. | 80.106 | 3160 |
| 23 | ST 110 | 5 | L | 1 c | 3.5; 10.0 | Munsell N5/ to 5GY 5/1 'grey' to 'greenish-grey'. 1 further example. |  |  |
| 24 | SS 825 | 4 | M | 1d | 5.1; 10.0 | Almost complete, green Stone Ware with very smooth surfaces. | 90.98 | 11104 |



Figure 393. Stone Ware (25-54): Phase L(25-37,47) and Akkadian bowls and beakers (38-46); yellow' 'near Stone Wiare 1 ti-itl: sale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions $h t ; d$. | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 25 | ER 109 | 4 | L/M | 1d | 5.3; 9.6 | Munsell 5Y 6/3 'pale olive'. | 80.152 | 3129 |
| 26 | CH 195 | 5 | M | 2 b | 5.3; 12.3 | Rim uneven. Munsell 5Y 6/2 'light olive grey'. | 80.100 | 3161 |
| 27 | CH 209 | 6 | L | 2 b | 5.6; 12.0 | Close to Stone Ware, fine grit inclusions. Munsell 5Y 6/2 'light olive grey' to $5 / 3$ 'olive'. | 80.44 |  |
| 28 | ER 236 | 5 | L | 2a | 6.5; 14.3 | Exterior highly burnished. Munsell 5Y 7/2 'light grey' to 5/1 'grey'. 3 further examples, ware 1d, ER 202, 205. |  |  |
| 29 | CH 209 | 6 | L | 1d | 8.3; 19.5 | Base pared. Munsell $5 \mathrm{Y} 6 / 3$ 'pale olive', further example AL 19, highly polished. | 80.41 | 3163 |
| 30 | CH 209 | 6 | L | 1d | 9.3; 19.6 | Exterior burnished. Munsell interior 5Y 5/2 'olive grey'. Found with dockets. | 80.40 | 3164 |
| 31 | CH 515 | 6 | L | 1d | 6.8; 15.0 | Highly polished surface. Munsell 5Y 6/2 light olive grey' to 7/3 'pale yellow'. |  |  |
| 32 | FS 505 | 3 | M | 1d | 7.0; 16.0 | Very smooth surfaces, some very fine grit. |  |  |
| 33 | DH 1 | 3 | L | 1 c | 7.0; 17.0 | Yellow streaked surface. Munsell 5 GY $4 / 1$ 'dark greenish grey'. |  |  |
| 34 | CH 660 | ED | L | 1d | 5.3; 11.8 | From pit. |  |  |
| 35 | SS 541 | 3 | M | 1d | 6.0; 15.0 | Munsell 5Y 6/3 'pale olive', further example FS 1892. |  |  |
| 36 | AL 19 | ED | L | 1a | 6.6; 13.0 | Dark grey Stone Ware. |  |  |
| 37 | DH 1 | 3 | L | 1a | 7.2; 13.2 | Very burnt, black paste with some grit, dark green/ grey surface, very well smoothed. | 84.41 |  |
| 38 | FS 1472 | 2/3 | M | 1c | 6.3; 16.0 | Dark grey with yellow streaked surface. |  |  |
| 39 | FS 2212 | 3 | M | 1c | 6.2; 13.4 | Munsell 5Y 5/1 'grey'. A further example in ware 1a. |  |  |
| 40 | CH 318 | 4 | M | 1 c | 7.6; 16.0 | Rm 4. | 81.73 |  |
| 41 | FS 604 | 4 | M | 1 c | 5.2; 15.8 | Munsell, lighter banding of N 7 / to $\mathrm{N} 6 /$ on N 5 / fabric. This type also found in pale olive. |  |  |
| 42 | DH 2 |  | M | 1c/2a | 5.7; 18.6 |  |  |  |
| 43 | ER 26 | 4 | M | 1 c | 8.3; 19.0 | Munsell, N 7 / \& 6/ to N 4/ at rim, 'grey'. Some rims $2.5 \mathrm{Y} 5 / 2$ 'greyish-brown'. |  |  |
| 44 | SS 809 | 4 | M | 2b | 6.2; 11.8 |  |  |  |
| 45 | CH 252 | 5 | M | 2b | 6.9; 14.2 | Fine grit inclusions. Munsell 5Y 6/2'light olive grey'. 3 further examples from ER 236. | 80.124 |  |
| 46 | SS 1238 | 5 | M | 5b | 3.5; 10.8 | Identical bowl from SS 669, fabric 2b, Munsell 5Y 7/3 to $8 / 2$ at rim. | 91.135 | 12225 |
| 47 | DH 79 | 3 | L | 2b | 4.5; 13.0 | Surface varies in colour, brown near base \& green near rim. Munsell 5YR 4/3,5/3 to 7/3; grey example from SS. |  |  |
| 48 | SS 945 | 4 | M | 2d | 4.8; 12.0 | Munsell 5Y 8/3 'pale yellow' \& 10YR 7/3 'very pale brown' alternating bands on interior, pale yellow at rim exterior. |  |  |
| 49 | SS 540 | 4 | M | 2 b | 5.1; 12.8 | Munsell 5Y 7/4 'pale yellow' to 6/3 'pale olive'. |  |  |
| 50 | SS 950 | 4 | ?LM | 2b | 6.1; 11.5 | A further example from SS 534 in ware 2 b , light yellow-grey. |  |  |
| 51 | SS 254 |  |  | 2d | 6.7; 11.0 | Surface clearance. Exterior pale towards rim, otherwise brown, close to Stone Ware, slightly gritty. Also found in ware 1a. |  |  |
| 52 | AL 19 |  | L | 2d | 7.3; 13.0 | A shallower example of this rim shape from SS topsoil, ware 1d, pale yellow to olive; more common in ware 5 b. |  |  |
| 53 | FS 1757 | 3 | M | 2b | 5.5; 16.5 | Munsell 5Y 6/3 'pale olive'. 5 further examples, FS 232, 2240, SS 944, 1259 \& 1276. |  |  |
| 54 | SS 509 | 3 | M | 2 b | 5.5; 17.0 | Munsell 5Y 7/4 'pale yellow' to 2.5Y 6/4 'light yellowish brown'. 2 further examples, ware 1d, unstrat. |  |  |



## Artefact Drawings

Figure 394. Akkadian Stone Ware: flat-based bowls and beakers (55-84), scale 1:4.

| No. | Area \& locus | Area level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 55 | CH 318 | 4 | M | 1 c | 5.6;12.0 | Very smooth surfaces, mended with bitumen in antiquity. Munsell N7 / 'light grey'. |  |  |
| 56 | SS 1250 |  | ?M | 1d | 6.2; 11.5 | Topsoil. Yellow-green Stone Ware, sparse white grit. |  |  |
| 57 | FS 746 | 3 | M | 1d | 7.2; 11.5 | Green Stone Ware, yellow towards rim. Polished exterior surface. |  |  |
| 58 | FS 1362 | 3 | M | 1 c | 6.8; 13.0 | Munsell N 7/ to 6/ grey, dark band at rim N 5/. |  |  |
| 59 | SS 825 | 4 | M | 1d | 7.3; 13.6 | Exterior surface very smooth, fine white grit. |  |  |
| 60 | FS 1804 | 3 | M | 1d | 7.2; 13.1 | Highly burnished. Munsell 5Y 6/2 'light olive grey' to $6 / 3$ 'pale olive'. 2 further examples, FS $1804 \& 1$ in ware $2 b$, ER 216. |  |  |
| 61 | DH 2 |  |  | 1d | 7.5; 14.2 | Exterior surface very smooth. | 84.45 |  |
| 62 | ER 202 | 3 ? 4 | M | ?1d | 7.0; 15.0 | Very smooth surface. Munsell 5Y 6/3 'pale olive'. Identical example, ER 205. |  |  |
| 63 | CH 179 | 4 | M | 1c | 11.0 est.; 27.0 | Highly polished. Munsell 5Y 6/2 'light olive grey. |  |  |
| 64 | FS 316 | 3 | M | 1c | 7.5; 4.6 | Polished exterior, inlaid horizontal yellow bands on upper body. Depth of inlay $=0.1$; Fig. 185c: 1 |  |  |
| 65 | FS 1796 | 3 | M | 1d | 7.6; 12.0 | Further examples, 2 in green Stone Ware (FS 1804 \& SS 778) \& 1 in overfired gritty green, FS 807. | 91.29 | 12168 |
| 66 | FS 2220 | 2 b | N | 1d | 9.5; 11.5 | Possibly out of context. Almost complete, heavily ribbed interior. Munsell 5Y 7.3 'pale yellow'. | 92.157 |  |
| 67 | SS 1083 | 5 | M | 1d | 8.9; 13.0 | Also from SS 1080. 1 further example ER 216, 80.70. | 93.26 |  |
| 68 | SS A | 1 | N | 1c | 9.3; 12.4 | Highly polished, interior slightly ribbed. Munsell, N5/ 'grey'. Identical example in ware 2b, Munsell 5Y 7 / 2 'light grey', SS 1005. |  |  |
| 69 | FS 2335 | 3/2b | M/N | 1a | 8.3; 11.5 | Slight wheel ribbing on interior. | 93.192 |  |
| 70 | SS 1240 | 5 | M | 1c | 8.6;11.2 | Complete, highly burnished, veg. inclusions, medium grey with yellow streaked surface. Interior mainly yellow with firing bubbles. | 91.137 | 12167 |
| 71 | SS 679 |  |  | 1a | 6.5; 8.8 | Very gritty. Mended with bitumen in antiquity. Ribbing on interior. Munsell varies from N/4 'dark grey' to 2.5Y 4/1 'dark grey'. | 91.98 |  |
| 72 | DH 10 | 3 | L | 1a | 8.0; 10.8 | Brown streaked surface. |  |  |
| 73 | $\begin{aligned} & \text { FS } 1757 / \\ & 1758 \end{aligned}$ | 3 | M | 1 d | 9.0; 13.2 | String-cut base. Yellow streaks on surface. Kiln cracks in side, mended with bitumen in antiquity. | 91.18 |  |
| 74 | FS 1654 | 3 | M | 1a | 9.4;12.0 | Complete, highly burnished, wheel ribbing \& red bands on upper body. 3 further examples, SS 1286, FS 1704 (90.88) in ware 1c \& FS 2345 pot D sampled for organic residue. | 90.25 | 11103 |
| 75 | FS 1773 | 3 | M | 1a | 10.0; 11.7 | Slight ribbing on interior. 3 further examples, FS 1818, 2312, 1 highly burnished \& gritty, SS 669. | 91.65 |  |
| 76 | FS 1818 | 5 | M | 1a | 10.8; 12.5 | Highly burnished, wheel ribbing on upper body. Munsell 5 Y 4 / 1 'dark grey'. 1 further example, FS 854, 92.72. |  |  |
| 77 | SS 527 | 3 | M | 1 c | 7.0; 4.2 | String-cut base. Exterior surface highly polished. Heavy internal ribbing streaked with pale red \& grey, some polish on the ribs. Munsell 5G 5/1 'greenish grey'. 1 further example in ware 2a, FS Level 3. |  |  |
| 78 | SS 769 | 2 | ? N | 1 c | 10.0; 11.0 | Mended with bitumen in antiquity. Heavily ribbed interior. |  |  |
| 79 | FS 1758 | 3 | M | 1c | 9.7; 12.4 | Blue-grey Stone Ware, mended with bitumen in antiquity. Further examples, SS 1001; SS 760, ware 1a; SS 1070, ware 1 c , highly polished. Munsell $5 \mathrm{Y} 4 / 2$ 'olive grey' with red streaks on interior 2.5 YR $4 / 2$ 'dusky red'. |  |  |
| 80 | FS 1361 | 4/5 | M | 1a | 9.8; 11.8 | 5 further examples all from FS level 3 . |  |  |
| 81 | FS 1875 | 2 | M/N | 1 c | 10.8; 11.8 | Almost complete, ribbed surfaces. Munsell 5Y 5/1 'grey'. 1 further example in ware 1a FS 1773 (91.65). | 92.14 | 13237 |
| 82 | SS 1276 | 3 | M | 1a | 9.8;12.4 | Black Stone Ware, yellow streaked interior, base exterior pale. Munsell N3/ 'very dark grey'. Mended with bitumen in antiquity. Exterior very smooth, also covered with short hairline scratches. Further example, FS 505. (cf. Fig. 125, Rm 34, \#2) | 92.188 |  |
| 83 | SS 915 | 4 | M | 2 b | 9.6;15.4 | Very gritty. |  |  |
| 84 | CH 146 | 3 | M | 1d | 11.6; 19.0 | Burnished exterior. Munsell, 5Y 5/2 'olive grey'. Further examples, SS 760 in ware 1a, highly polished with yellow streaks. Munsell 5Y 5/1 'grey' to 5Y 7/2 'light grey'. 1 in ware 1c. Munsell 5Y $7 / 1$ 'light grey' highly polished. 1 in ware 2d, FS 1346. | 80.21 |  |



## Artefact Drawings

I igure 395. Stome Wari bowls and bottles (85-118), scale 1:4 (85-88 are probably post-Akkadian).

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 85 | FS 507 | 2 b | N |  | 2.2; 14.0 | Pale grey paste, yellow interior surface (5Y 7/4 'pale yellow'), darker grey burnished exterior with pale band below rim. Post-Akkadian type from Level $2 b$ well. |  |  |
| 86 | unstrat. |  |  | 2 c | 2.8; ? | Yellow bands on dark grey. Fig. 205b:10. |  |  |
| 87 | surface |  |  | 2 c | 3.5; 13.0 | Burnished surface. Munsell $2.5 \mathrm{Y} 6 / 2$ to $5 / 3$ 'light brownish grey' to 'light olive brown'. |  |  |
| 88 | SS 303 |  | M/N | 1a | $3.4 ; 16.0$ | Yellow bands on dark grey. Munsell 2.5Y 7/6 'yellow' on N 3/ 'very dark grey'. Fig. 205b:9. |  |  |
| 89 | FS 316 | 3 | M | 4 b | 4.7; 13.0 | Exterior dark grey ( $\mathrm{N} 4 /$ ), interior lighter grey ( $5 \mathrm{Y} 6 / 1$ to $\mathrm{N} 5 /$ ). Exterior scraped. Fine white grit \& mica. |  |  |
| 90 | SS 545 | 4 | M | 1 a | 4.0; 16.0 | Dark grey with purplish red band at rim (10R 4/3 'weak red'). Fig. 185c:16. |  |  |
| 91 | FS 1185 |  | M | 1a | 3.9; 17.0 | Interior streaky red \& grey, exterior very dark grey near rim, lower body red \& stripe below rim (10R 6/ 6 light red). Fig. 185c:15. |  |  |
| 92 | unstrat. |  |  | 1a | 4.2; 19.0 | Exterior surface grey ( $\mathrm{N} 4 /$ ) with red streaks, interior surface \& paste warm brown. |  |  |
| 93 | unstrat. |  |  | 1a | 3.7; 19.8 | Dark grey (N 4/) with red streaks, internal \& external. Another example of burnished grey 'near Stone Ware', dark grey band on upper exterior, interior and lower body N 6/ to 5/. |  |  |
| 94 | FS 392 | 4 | M | 2 C | 2.8; 19.0 | Burnished exterior, light greyish brown (10YR 6/2), lighter brown interior \& fabric. |  |  |
| 95 | FS 457 | 3 | M | 1a | 2.6; 3.6 | Munsell N 4/ 'dark grey'. |  |  |
| 96 | SS 1080 | 5 | L/M | 1a | 5.0; 5.0 | Black (N 3/) ware with grey paste, foot handmade, sparse chaff. |  |  |
| 97 | CH 702 | 7 | L | 1a | 2.9; 2.9 | Munsell N 3/ 'dark grey'. |  |  |
| 98 | surface |  | M | 1 C | 5.9;13.0 | Hard lustrous surface. Munsell 5Y 6/2 to 6/4 'light olive grey' to 'pale olive', overlying a bluish grey. |  |  |
| 99 | FS 2335 | 3/2 | M | 1 C | 7.0; 9.0 | Burnished exterior has produced an effect of darker \& lighter grey stripes. Munsell N $5 / \& N 6 /$. Also example with body d. of 5 cm . |  |  |
| 100 | FS 1325 | 3b | M | 1c | 9.3; 9.4 | Burnished dark blue-grey, slightly ribbed surface. | 85.40 |  |
| 101 | FS 2240 | 3 | M | 2 b | 6.4; 9.8 | String-cut base. |  |  |
| 102 | FS 2211 | 3 | M | 2 b | 7.0; 8.5 max. | Superficial resemblance to green Stone Ware but fabric gritty. |  |  |
| 103 | SS 1091 | 3 | M | 1 c | 7.8; 7.8 | Complete, light grey fabric. Also example from FS 2335. | 93.206 | 14234 |
| 104 | ER 111 | 5 | L | 1 a | 7.0; 11.4 | Rm 45 floor. Interior red, exterior black with red \& black below. Munsell 2.5YR 6/8 'light red' to 10YR 4/1 'dark grey'. Fig. 187. | 80.153 | 3150 |
| 105 | CH B 7 | 3 | ? L | 1a | 2.1;11.2 | Reddish brown fabric, rilled exterior and interior. Cf. Kühne 1976, fig. 13. |  |  |
| 106 | SS 547 | 4 | L/M | 1a | 5.5; 11.0 | Dark grey on ridges, red in grooves (10YR 5/6). Fig 185c:14. Cf. Chuera no. 13. ?Phase L. |  |  |
| 107 | SS 323 | 3 | M | 1a | 6.1; 10.8 | Dark grey (5YR 4/1) with red banding on sides; red interior Munsell 2.5YR $4 / 1$ 'dark reddish grey' to 2.5 YR 5/4 'weak red'. |  |  |
| 108 | DH |  | ? L | 3 | $9.7 ; 7.5$ | Surface. Burnt, dark grey gritty fabric with red-brown slip on exterior and neck interior. | 84.43 |  |
| 109 | FS 1813 | 4/5 | M | 3 | 7.6; 7.5 | Gritty grey paste, orange brown surface with black wash which is worn to orange in places. | 91.101 | 12166 |
| 110 | FS 2243 | 3 | M | 3 | 10.2; 6.7 | Complete. Horizontal burnishing, dark grey surface, some burning. ?Imitation Stone Ware. | 92.83 | 13230 |
| 111 | FS 1778 | 3 | M | 4 a | 9.0; 5.6 | Burnished grey ware, fine grit inclusions. |  |  |
| 112 | SS 242 |  | ?M | 2 b | 5.0; 4.0 | Surface clearance. Munsell 5Y 6/1 to 6/2 'grey'to 'light olive grey'. Also smaller similar rim in ware 1a Munsell N 4 / 'dark grey'. |  |  |
| 113 | DH 92 |  |  | 1a | 7.4;3.9 | Found in section cleaning. Vertical burnishing on exterior. Munsell N 3/ 'very dark grey'. |  |  |
| 114 | FS 1567 | 3 | M | 1 a | 11.7; 5.0 | Heavy interior ribbing, polished dark grey surface. A larger example from FS 1714 (TB 11113). | 87.55 | 9211 |
| 115 | CH 169 | 4 | M | ?1c | 3.7; 5.7 | Overfired fabric (N 3/) speckled with yellow, polished surface. Another example ware 1a. |  |  |
| 116 | SS 825 | 4 | M | 1 a | 6.0; 5.0 | Munsell N 3/ 'dark grey'. Handles applied by hand. A second example grey (N 3/) \& light brown (10YR 6/2). |  |  |
| 117 | SS 501 |  | ?M |  | 19.0; 10.5 max. | Topsoil. White Stone Ware, highly polished surface, core dark grey, some chaff. Resembles white marble. | 88.28 | 10167 |
| 118 | DH 78 | 3 | L | 5 b | 19.4; 11.1 max. | Gritty buff paste, some chaff. Well-smoothed surface, light wash, upper body cut. | 84.130 |  |

Artefact Drawings


## Artefact Drawings

Figure 396. Small stomi Ware jars (119-46), scale 1:t.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \mathrm{ht} ; \mathrm{d} \text {. } \end{aligned}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 119 | SS 603 | 4 | M | 1a | 5.9; 4.8 | Red banded. (?ED type). Rm 5, niche in N wall. | 91.50 | 12165 |
| 120 | CH 449 | 6 | L | 1a | 6.7;4.3 |  | 81.89 | 4102 |
| 121 | CH 209 | 6 | L | 1 a | 6.9; 4.0 | Complete. Badly encrusted. Surface Munsell 10YR 5/6 'yellowish brown'. | 80.102 | 3106 |
| 122 | CH 209 | 6 | L |  | 7.0; 5.8 | White Stone Ware. Munsell 5Y $8 / 2$ 'white'. | 80.101 | 3104 |
| 123 | ER 39 | 5 | L | 1a | 7.8; 4.0 | Black exterior, red fabric. Contained 10 Arcularia shell beads (p. 297). | 78.193 | 1027 |
| 124 | ST 6 | 3 | L | 1a | 10.0; 5.2 | Polished surface, rim \& neck brown, body black. | 81.5 | 4103 |
| 125 | CH 189 | 5 | L/ M | 1a | 9.2; 6.7 | Munsell 5Y 2.5/1 'black'. | 80.45 |  |
| 126 | CH 386 | 5 | M | 1a | 3.7; 4.0 | Munsell N 3/ 'dark grey'. |  |  |
| 127 | CH 703 | 7 | L | 1a | 4.0; 6.0 | Munsell N 5/ 'grey'. |  |  |
| 128 | $\begin{aligned} & \text { CH 445/ } \\ & 447 \end{aligned}$ | 6/5 | L | 1 a | 6.5; 6.5 | Surface Munsell 2.5YR 'greyish brown' to 7.5YR 5/3 'brown'. |  |  |
| 129 | ER | 5 | L | 1a | 9.5; 7.0 | Exterior surface red upper and black lower. |  |  |
| 130 | SS 1047 | ? 4 | M | 1 a | 9.4; 4.4 | Munsell 7.5YR N 3/ 'very dark grey' to 7.5YR N 4/ 'dark grey'. | 92.38 | 13231 |
| 131 | AL 19 |  | L | 1a | 9.3; 6.2 |  | 84.7 | 6114 |
| 132 | FS 2318 | 3 | M | 1a | 9.9; 7.5 | Rim brown, rest dark grey. | 93.55 | 14187 |
| 133 | $\begin{aligned} & \text { ER 45/ } \\ & 80 \end{aligned}$ | 5 | L | 1 a | 20.2; 10.6 | Interior grey, exterior mostly red, grey at base. From storeroom, see 179 for list of pots from this room. | 78.240 |  |
| 134 | CH 270 | 4 | M | 1 b | 20.9; 10.0 | Burnished surface. Munsell 5YR 5/3 'reddish brown'. Burnt. | 80.122 |  |
| 135 | ST 6 | 3 | M | 1a | 16.2; 8.8 |  | 81.4 | 4150 |
| 136 | SS 944 | 4 | M | 1a | 21.3; 10.5 | Exterior surface brown, interior \& paste dark grey. | 93.31 |  |
| 137 | SS 6 | 1 | ? N | 1 a | 4.7; 8.0 | Red banded. Interior surface weak red, exterior weak red to dark grey. A smaller version of Chuera 40, Kleiner Antentempel 2/3 ED III, see also Chuera 38, Steinbau 3. Probably Phase L. |  |  |
| 138 | ER 102 | 4 | M | 1 d | 11.1; 11.0 | Lightly burnished green ware, similar to Stone Ware in quality. Munsell 5 Y $7 / 2$ 'light grey to $7 / 3$ 'pale yellow'. | 80.59 | 3126 |
| 139 | FS 1654 | 3 | M | 1 a | 10.9; 8.9 | Polished surface, warped in fire. | 90.30 | 11102 |
| 140 | SS 316 | 4 | M | 1 b | 7.3; 9.0 | Munsell paste 2.5YR 5/8 'red', exterior 2.5YR 5/4 'weak red', interior 2.5YR $5 / 2$ 'weak red'. |  |  |
| 141 | SS 203 | 4 | M | 1 b | 4.0; 12.0 | Munsell surface 2.5 YR $4 / 3$ to $5 / 6$ 'dusky red' to 'red', fabric 2.5 YR 6/6 'red'. Dark interior colour caused in part by burning. |  |  |
| 142 | SS 936 |  | M | 1b | 14.5; 17.4 max. | Burnished. Munsell 2.5Y 5/6 'red' to 5YR $4 / 3$ 'reddish brown'. |  |  |
| 143 | FS 1654 | 3 | M | ?1a/3 | 9.1; 6.2 | Complete. Polished surface, partially burnt. Brown 'Stone Ware' probably imitation (Fig. 188). | 90.24 | 11109 |
| 144 | CH |  | (M) | 1a | 8.2; 6.2 | Unstratified. |  |  |
| 145 | FS 858 | 5 | M | 1a | 6.0; 7.0 | Munsell N 4/ to 3/ 'dark grey'. 1 lug extant. |  |  |
| 146 | SS 254 | ? 4 | M | 1a | 10.3; 8.0 | Surface clearance, south slope. Munsell N 4/ 'dark grey'. |  |  |

Artefact Drawings


## Artefact Drawings

Figure 397. Large Stome Ware jars (14-72) and one large beaker (147); (147-56) scale 1:4; (157-72) scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 147 | FS 1953 | ?3 | M | 1d | 14.6; 19.2 | Sparse white grit \& chaff inclusions. |  |  |
| 148 | FS 1893 | 5/4 | M | 1b | 6.0;?16-18 | Banded polishing. Munsell exterior 2.5YR 4/2 'dusky red' interior 2.5YR 5/ 6 to $4 / 6$ 'red' to 'dark red' to 7.5YR 6/2 'pinkish grey'. Fabric 2.5 YR 6/4 'weak red'. (?ED). |  |  |
| 149 | unstrat. |  | ?L | 1a | 3.8; 13.0 | Very dark grey with red streaks, Munsell 2.5 YR 5/6 'red' to N3/ 'very dark grey'. Exterior very smooth. |  |  |
| 150 | SS 412 | 3 | M | 1a | 4.8; 16.5 | Slight red-brown tones on rim \& exterior 'cording' Fabric Munsell N4/ 'dark grey', interior surface N 4/ to 3 / 'dark to very dark grey'. |  |  |
| 151 | unstrat. |  |  | 1a | 4.9; 13.5 | Slightly red-brown on rim otherwise fabric \& surface Munsell N 4/ 'dark grey'. |  |  |
| 152 | SS 316 | 4 | M | 1a | 4.8; 12.5 | Red edge \& streaks on rim. Interior Munsell N 3/ 'very dark grey'. |  |  |
| 153 | FS 334 | 3 | M | 1a | 4.4; 12.6 | Fabric dark grey, interior surface grey to dark brown. Munsell 7.5YR 4/2. |  |  |
| 154 | FS 1920 | 5 | M | 1a | 30.8; 18.7 | Interior Munsell N4/ 'dark grey'. Exterior 5Y 5/2 to 6/2 'olive grey' to $5 \mathrm{Y} 4 / 1$ 'dark grey. 4 other examples of the base, SS 246, 812, FS 1551 \& unstrat. ?ED, cf. Chuera 34. | 92.191 |  |
| 155 | FS 607 |  | M | 1a | 5.2;14.5 |  |  |  |
| 156 | SS 924 |  | N | 1a | 4.8; 11.0 | Stone Ware footed base re-used as a small bowl. Munsell 2.5Y 4/1 'dark grey'. |  |  |
| 157 | FS 801 | 4/5 | M | 1a | 6.2; 12.5 | Fabric \& interior Munsell N 4/ 'dark grey'. Colour variation on neck 2.5YR $4 / 3$ 'dusky red' to 5 YR $4 / 1$ 'dark grey'. |  |  |
| 158 | FS 1776 | 3 | M | 1a | 8.0; 15.5 | Munsell N 4/ 'dark grey'. |  |  |
| 159 | FS 810 | 5 | M | 1a | 7.0; 10.5 | Surface Munsell 5YR 4/1 'dark grey', fabric very dark grey with pale brown edging. |  |  |
| 160 | FS 71 |  |  | 1c | 10.3; 20.5 | Neck scraped vertically, some horizontal smoothing on shoulder. Munsell N 5/ 'grey'. |  |  |
| 161 | SS 412 | 3 | M | 1a | 6.5; 16.5 | Munsell N 3/ 'very dark grey'. |  |  |
| 162 | unstrat. |  | ? | 1a | 12.0; 17.6 | Slightly vitreous smooth surface. Munsell 7.5YR 4/1 'dark grey'. |  |  |
| 163 | SS 223 | 4/3 | M | 1a | 4.7; 18.5 | Fabric half red, half very dark grey. Surface Munsell 5YR 4/1 to 4 / 2 'dark grey' to 'dark reddish grey'. |  |  |
| 164 | FS 801 | 4/5 | M | 1a | 7.3; 14.8 | Grey paste with darker grey surface, Surface Munsell N4/ 'dark grey'. |  |  |
| 165 | ER 216 | 4 | M | 1a | 7.0; 19.0 | Munsell N 3/ 'very dark grey'. |  |  |
| 166 | unstrat. |  |  | 1a | 4.5; 32.5 | Pale grey paste, black surface, Munsell N 2.5/ to N 3/ 'very dark grey' to 'black'. |  |  |
| 167 | SS 684 |  | ?L | 1a | 8.5; 26.0 | Vertical smoothing on neck. Interior surface \& fabric $\mathrm{N} 3 /$ to 2.5 , rim $2.5 \mathrm{YR} 6 / 3$ to $6 / 4$ 'pale red', surface 7.5YR 5/4 'brown'. |  |  |
| 168 | CH 189 | 5 | M | 1a | 10.0; 22.0 | Max. body d. $=55.0$; Black Stone Ware. | 80.48 |  |
| 169 | CH 207 | 4 | M | 1a | 7.5; 21.0 | Shoulder surface cut. Munsell surface N 4/. |  |  |
| 170 | ST 1006 | 2 | M | 1a | 10.6; 14.5 | Grey Stone Ware; complete but badly broken when found. | 78.177 |  |
| 171 | $\begin{aligned} & \text { CH 209/ } \\ & 230 \end{aligned}$ | 6 | L | 1a | 58.0; 20.5 | One side of the pot red, the other side black. Munsell, 2.5YR $5 / 4$ 'reddish brown' to 5 Y 2.5/1 'black'. Another example from CH 207 Munsell N 4/1 'dark grey'. | 80.118 |  |
| 172 | SS 414 | 4 | M | 1a | 83.3; 28.0 | Fig. 189. | 90.133 | 11120 |

Artefact Drawings


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## Artefact Drawings

Figure 398. Imitation Stone Ware (173-93), sale 1:4, except 192-3, scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions $h t$; d . | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 173 | FS 571 | 3/2 | M/N | 3 | 5.9; 5.0 | Heavily burnished. | 87.56 | 9216 |
| 174 | FS 2212 | 3 | M |  | 7.0; 5.2 | Heavily encrusted, fabric uncertain; possibly Stone Ware. | 92.80 |  |
| 175 | CH 152 | 3 | M | 3 | 7.7; 5.5 | Dark brown, heavily burnt, burnished, original colour doubtful. Munsell 7.5YR 3/2 'dark brown'. | 80.107 | 3180 |
| 176 | FS 1904 | 5 | M | 3 | 9.0; 6.15 | Grey, horizontally burnished surface, some white grit \& mica. Munsell 5Y 4/1 'dark grey'. | 92.84 | 13229 |
| 177 | FS 2240 | 3 | M | 4a | 10.35; 5.6 | Gritty grey fabric. | 92.146 |  |
| 178 | FS 2211 | 3 | M | 3 | 9.9; 6.0 | Complete. Vertical burnishing. | 92.70 | 13228 |
| 179 | $\begin{aligned} & \text { ER 45/ } \\ & 80 \end{aligned}$ | 5 | L | 3 | 10.7; 6.7 | Reddish-grey with large white grits. From storeroom with 133, 1484, 1486, 1519, 1530, 1537, 1538, 1540, 1542, 1551, 1556, 1676, 1679. Contained botanical sample, Table 33. | 78.231 | 1003 |
| 180 | FS 2243 | 3 | M | 3 | 9.9; 6.5 | Highly burnished surface, very gritty grey fabric. Munsell 5Y 2.5/1 'black'. Fig. 188. | 92.85 |  |
| 181 | CH 450 | 6 | L | 3 | 12.2; 8.5 | Brown, burnished exterior. Rm 61, found with 1528. | 81.98 | 4120 |
| 182 | FS 2306 | 2 |  | 3 | 7.0; 5.5 | Disturbed context. Horizontally burnished. | 93.46 | 14185 |
| 183 | SS 852 |  | M | 3 | 11.4; 8.5 | Complete. Brown with abundant white grit. | 91.55 |  |
| 184 | SS 825 | 4 | M | 3 | 11.7; 5.5 | Well levigated grey fabric with some white grit. Highly burnished. | 90.94 | 11101 |
| 185 | FS 491 | 1 | M/N | 3 | 12.3; 6.6 | Grey, flaky fabric, with grit \& mica. Possibly mis-fired Stone Ware. 2 further examples, SS 548 \& FS 1650. | 86.32 |  |
| 186 | DH 78 | 3 | L/M | 3 | 15.0; 9.8 | Complete. Grey, gritty fabric, burnished surface. | 84.124 | 6103 |
| 187 | SS 1240 | 5 | L/M | 3 | 14.9; max. body 15.7 | Dark grey gritty paste, highly burnished brown to grey surface. ?Burnt. | 91.144 |  |
| 188 | FS 1654 | 3 | M | 3 | 11.1; 7.7 | Very burnt fabric, blackened \& flaking. 2 further examples, FS 1672 (90.48) \& FS 2237 (TB 13227). |  |  |
| 189 | FS 1955 | 4 | M | 3 | 12.4; 8.3 | Gritty grey fabric, exterior worn \& pitted but traces of burnishing preserved. | 93.95 |  |
| 190 | CHB7 | 3 | M | 3 | 11.0; 7.0 | Grey gritty fabric, hard fired but not as dense as Stone Ware. Munsell 5Y 5/1 'grey'. White substance coats part of surface. | 76.4 | 4 |
| 191 | FS 1564 | 3b | M | 4a | 24.8; 14.0 | Grey fabric with large white grits. | 87.63 | 9188 |
| 192 | SS 585 | 5 | M | 3 | 25.0; 9.5 | Gritty grey fabric, highly burnished surface. | 90.127 | 11101 |
| 193 | FS 603 | 3 | M | 3 | 35.8; 13.0 | Burnished black surface, gritty grey paste, some large white grits. Further example, FS 807. | 87.59 | 9187 |

Artefact Drawings


## Artefact Drawings

Figure 399. 'Syrian bottles' and other gritty grey-and brown-burnished ware (194-227), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 194 | FS 1541 | 4 | M | 4 | 2.9; 4.0 | Surface Munsell N 4/ 'dark grey', paste 5Y 6/1 to 7/1 'grey' to 'light grey'. |  |  |
| 195 | CH 17 | 3 | M | 4 c | 3.2; 2.8 | Ring-burnished. Fine grit \& mica. |  |  |
| 196 | SS 242 |  | ? N | 4 c | 2.4; 4.8 | Surface Munsell 10YR 6/4 'light yellowish brown', paste 10YR 6/2 'light brownish grey'. Gritty fabric with mica. |  |  |
| 197 | SS 966 |  |  | 4 c | 9.0; 2.5 | Ring-burnished. Some white grit. | 93.170 | 14211 |
| 198 | FS 1728 | 3 | M | 4 c | 11.3; 2.4 | Ring-burnished. Surface very dark grey, gritty grey paste. | 90.119 |  |
| 199 | FS 1957 | 5 | M | 4 c | 10.4; 2.0 | Ring-burnished. Gritty grey fabric with white grits \& mica. | 93.98 | 14210 |
| 200 | FS 1873 | 2 b | N | 4 | 9.4; 2.8 | Surface flaking, gritty fabric. |  |  |
| 201 | SS 922 | 4 | M | 4 | 8.5; 6.0 max. | Surface Munsell 5Y 5/1 to 4/1 'grey' to 'dark grey', paste 5Y 5/1. Gritty fabric, sparse chaff. |  |  |
| 202 | $\begin{aligned} & \text { CH } 471 \text { / } \\ & 467 \end{aligned}$ | 6 | L |  | 10.5; 6.4 max. | Very burnt, surface flaking, gritty fabric. |  |  |
| 203 | SS 1238 | 5 | M | 4 c | 20.1; 3.4 | Complete but crushed. Ring-burnished. Gritty paste with mica. Fig. 190. | 91.139 | 12163 |
| 204 | SS 1092 |  | ? N | 4 c | 15.6; 3.0 | Ring-burnished body, some vertical burnishing on lower body. Surface dark grey/black, gritty fabric. | 93.30 |  |
| 205 | SS 1099 | 2/1 | M/N | 4 c | 11.5; 3.5 | Ring-burnished, dark grey surface, buff gritty paste. | 93.202 |  |
| 206 | CH B 1 | 2 | N | 4 c | 3.5; 10.0 | Ring-burnished. |  |  |
| 207 | FS | 3 | M | 4 | 6.3; 9.5 max. | Highly burnished. Further example from SS 223. Munsell surface 5Y 6/1 to 5/1 'grey', paste 5Y 6/1. | 91.12 |  |
| 208 | FS 365 | 3 | M | 4 a | 7.1; 10.0 max. | Highly burnished black surface, very gritty paste. Examples in wares 5 (SS 200) \& 2b (SS 540). | 86.3 | 8261 |
| 209 | SS 690 | 4 | M | 4 | 5.5; 9.0 | Horizontal burnish on rim, vertical burnish on body. Surface Munsell 5Y 4/1 'dark grey', paste 5Y 6/1 'grey'. |  |  |
| 210 | SS 545 | 4 | M | 4 | 7.6; 5.8 | Highly burnished, gritty paste some chaff. String-cut base. Example in ware 6, FS 854. |  |  |
| 211 | FS 1542 |  |  | 4 a | 6.3; 19.0 | Highly burnished surface, Munsell 5Y 2.5/1 'black', paste N 4/ 'dark grey'. Chaffy paste with fine white grit. |  |  |
| 212 | FS 1198 | 3 | M | 4 | 5.5; ? | Munsell 5Y 6/1 to 6/2 'grey' to 'light olive grey'. Chaffy paste with white grits. |  |  |
| 213 | FS 1773 | 3b | M | 4 | 7.6; 22.0 | Munsell 5Y 6/1 to 6/2 'grey' to 'light olive grey'. Gritty paste with white grits \& mica. |  |  |
| 214 | FS 800 | 4 | M | 4 | 4.9; 18.0 | Surface Munsell 5Y 6/1 'grey', paste 5Y 7/1 'light grey'. White grit, mica \& chaff. Some burnish on exterior. |  |  |
| 215 | FS 2321 | 3 | M | 4 | 7.8; 21.0 | Surface $5 \mathrm{Y} 6 / 1$ to $4 / 1$ 'dark grey' to 'grey', paste $5 \mathrm{Y} 7 / 1$ to 6/1 'light grey' to 'grey'. Gritty, some mica. |  |  |
| 216 | FS 1717 | 3 | M | 4 | 8.8; 20.5 | Interior surface N 4/ 'dark grey', exterior 5Y 6/2 to 5/2 'olive grey', paste 5Y5/1 'grey'. Vertical burnishing on exterior. |  |  |
| 217 | SS 567 | 4 | ?M/N | 4 | 4.2; 12.0 | Pattern-burnished interior, rouletting on exterior. | 90.124 | 11105 |
| 218 | SS 547 | 4 | M | 9 | 4.3; 11.5 | Burnished surface, brown interior, black burnt exterior. |  |  |
| 219 | FS 1875 | 2/3 | M/N | 4 | 6.6; 16.0 | Gritty paste, well-smoothed surface. |  |  |
| 220 | $\begin{aligned} & \text { CH } 471 / \\ & 467 \end{aligned}$ | 6 | L | 4 | 8.1; 16.5 | Burnished surface. Further examples in ware 4 e (ER 39) \& in ware 6 (FS 1948). | 83.63 |  |
| 221 | CH 23 | 4 | M | 4 | 7.5; 19.0 | Munsell 10YR 4/2 to 3/2 'dark greyish brown'. Burnished. | 80.27 | 3178 |
| 222 | CH 209 | 6 | L | 4 e | 5.0; 12.4 | Burnished exterior, brown fabric. |  |  |
| 223 | CH 209 | 6 | L | 4 e | 5.0; 12.9 | Burnished exterior, brown fabric. |  |  |
| 224 | ER 242 |  | K | 4 b | 5.6; 13.6 | Layer 9 in sounding. |  |  |
| 225 | CH 445 | 6 | L | 4 e | 7.5; 17.3 | Burnished exterior, gritty brown fabric. | 81.93 | 4144 |
| 226 | ER 32 | 5 | L | 4 e | 5.1; 15.0 | Burnished brown exterior, interior surface grey-buff. Fine grit. Same shape with red slip in Level 6. |  |  |
| 227 | CH 471 | 6 | L | 4 b | 8.2; 18.5 | Burnished light grey exterior, gritty dark grey paste. | 83.71 |  |

Artefact Drawings


## Artefact Drawings

Figure 400. Early Transcaucasian pottery (Kura Araxes ware) (228-49), scale 1:2. (Nos. 228, 231-2, 234-7 \& 24() are from the . Mallowam excaenations.)

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 228 | CH |  |  | 4d | 5.2; 3.0 | Not burnished, incised pattern with traces of white inlay. |  |  |
| 229 | DS 11 |  | M | 4d | 5.8; 4.5 | Highly burnished with white inlay. Handmade. Dark grey paste. Fig. 191. | 85.26 | 7229 |
| 230 | TW 32 |  |  | 4d | 2.1 ext.; 8.6 | No surviving white inlay. Unstratified third-millennium sherd. |  |  |
| 231 |  |  |  | 4d | 2.7; 6.5 | Black burnished with traces of white inlay. |  |  |
| 232 |  |  |  | 4d | 2.2; 5.4 max. | Traces of white inlay. |  |  |
| 233 | SS 549 | 4 | M | 4d | 1.7; 6.8 | Glossy black burnished surfaces. A similar fragment from HH 501, out of context. |  |  |
| 234 |  |  |  | 4d | 3.4; ?2.5 | Well-preserved white inlay. |  |  |
| 235 |  |  |  | 4d | 2.0; ? | Well-preserved white inlay. |  |  |
| 236 |  |  |  | 4d | 3.1; 6.0 max. | White inlay. |  |  |
| 237 |  |  |  | 4d | 3.7; ? | No white inlay. |  |  |
| 238 | FS 1248 | 2 | N | 4d | 2.2; 7.0 | Notched triangles. |  |  |
| 239 | ER 220 | 4 | M | 4d | 3.8; ?4-5 | Surface black but worn, paste brown to grey, white inlay in circles, chaff temper. |  |  |
| 240 |  |  |  | 4d | 2.8; 3.6 max. | No white inlay. |  |  |
| 241 | FS 1826 | 5 | M | 4d | 3.2; 20 | Some mica. |  |  |
| 242 | FS 1015 | 2 | N | 4d | 2.5; 14 | Horizontal burnish, grey paste with mica \& some fine grit. |  |  |
| 243 | SS 1079 | 4 | M | 4d | 7.0; 4.4 | Vertical burnish. Surface 5Y 2.5/1 black. | 92.190 |  |
| 244 | FS 1773 | 3 | M | 4d | 3.5; 5.0 max. | Exterior burnished. |  |  |
| 245 | FS 696 | 2 | N | 4d | 2.3; 4.0 | Brown paste with fine grit; glossy burnish. Fig. 205b:3. |  |  |
| 246 | ST 92 | 3 | M | 4d | 5.0; 18 max. | Burnish on interior \& exterior, brown paste with fine grit \& mica. |  |  |
| 247 | FS 375 | ?2 | N | 4d | 2.5; 9.0 | Burnished interior \& exterior, vertical burnish on neck, black paste. |  |  |
| 248 |  |  | M/N | 4d | 4.4; 8.7 | Horizontal burnish, grey paste with mica \& some fine grit; wheelmade. Not a Transcaucasian type. |  |  |
| 249 | SS 149 | 3 | M | 4d | 6.0; 14 | Burnished exterior, brown very gritty paste. Fig. 205b:4. |  |  |



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## Artefact Drawings

Figure 401. Dark-rimmed orange bouls and red-slipped ie'ssels (250-79), scale 1:4.
$\left.\begin{array}{|l|l|c|c|c|c|l|l|l|}\hline \text { No. } & \begin{array}{l}\text { Area \& } \\ \text { locus }\end{array} & \begin{array}{c}\text { Area } \\ \text { level }\end{array} & \text { Range } & \text { Ware } & \begin{array}{c}\text { Dimensions } \\ \text { ht; d. }\end{array} & \begin{array}{l}\text { Comments }\end{array} & \begin{array}{c}\text { Reg. } \\ \text { no. }\end{array} \\ \text { no. }\end{array}\right\}$


## Artefact Drawings

Figure 402. Combed-wash ware (280-82), brittle orange ware (283-4), painted jug (286), red-slipped iessels (287s), siale 1:t.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 280 | DH 76 | 3 | L/M | 7 b | 6.3; 13.2 | Paint Munsell 10YR 4/2 'dark greyish-brown', surface 10YR $7 / 3$ 'very pale brown'. |  |  |
| 281 | CH 192 | 4/5 | M | 7 b | 10.5; 14.5 | Paint Munsell 5YR 4/1 'dark grey'. Surface varies 10YR 7/3 'very pale brown' to 5YR 7/4 'pink'. Paste 5 YR 6/1 'grey'. Cf. Fig. 193:14, bottom right. |  |  |
| 282 | SS 1235 | 4 | M | 7 b | 28.0; 30 max. | Paint Munsell 2.5YR 6/4 to 5/4 'weak red', surface 7.5YR 7/3 'pink', paste 5YR 6/4 'light reddish brown'. |  |  |
| 283 | CH D 7 | $? 5$ | M | 8d | 19 ext.; ? | Thick slip Munsell 10R 4/4 to 4/2 'weak red' to 2.5YR $4 / 3$ 'dusky red'. Vertical burnish on exterior. Similar fragment from CH 23, Level 3. Cf. Fig. 185d:6. |  |  |
| 284 | DS 8 |  | ?M | 8d | 4.6 ext.; ? | Brittle orange ware, pattern incised after firing. Exterior vertically burnished. Munsell 10R 5/6 'red'. Cf. Fig. 185d:2. |  |  |
| 285 | FS 1515 | 3 | M | 8 c | 8.5; 18 max. | Slip on exterior, Munsell 5YR 5/3 'reddish brown'. Fabric close to Stone Ware. Cf. Fig. 185d:1. |  |  |
| 286 | SS 1081 | 4 | M | 5 | 14.5; 6.9 | Painted jug with trefoil rim and eye motif. Paint Munsell 10YR $4 / 2$ to $3 / 2$ 'dark' to 'very dark greyish-brown', surface $5 \mathrm{Y} 7 / 3$ 'pale yellow', paste 10YR 7/3 'very pale brown'. Rm 23, floor. Fig. 194. | 93.27 |  |
| 287 | FS 1306 | 3 | M | 7a | 20.6; 4.0 | Burnished red-brown slip, gritty buff paste. | 85.37 | 7234 |
| 288 | CH 79 | 6 | L | 7a | 10.0; 14.5 | Thick red slip on interior \& exterior, irregular horizontal burnish. Grey core, grit temper. Possibly handmade? | 78.203 |  |

## Artefact Drawings



## Artefact Drawings

Figure 403. Fine ware e'essels with fine combed and/or painted decoration (289-301), scale 1:2.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 289 | FS 1688 | 3 | M | 5 | 11.0; 7.0 | Impressed comb decoration on shoulder. | 90.39 | 11090 |
| 290 | SS | Tr. A | N | 5 | 4.3; 15.0 | Impressed comb decoration on shoulder. |  |  |
| 291 | SS 316 | 4 | M | 5a | 4.8; 9.0 max. | Greenish fabric; cf. Taya, pl. 5. |  |  |
| 292 | SS 934 |  | N | $2 \mathrm{~b} / \mathrm{f}$ | 4.8; 6.2 | Cleaning MELM trench. See also the pattern-burnished vessel 513. |  |  |
| 293 | SS 64 | 2 | N | 2b/5a | 7.8; 8.2 | See also Reade 1968, pl. 84:12, Taya level VIII. |  |  |
| 294 | FS 592 | 3/2 | ? N | 2a | 3.2; 9.0 | Pale grey fabric, black paint dots below rim. Fig. 197:1. |  |  |
| 295 | SS 761 | 1 | N | 5a | 3.3; 6.0 | Black paint dots. |  |  |
| 296 | SS 563 | $? 3 / 2$ | ? N | 5a | 3.8; 8.8 | From pit which cuts Level 4. Black paint dots on neck. Fig. 197:3. |  |  |
| 297 | SS 1233 | 4 | M | 5a | 6.5; 21.5 max. | Black paint dots on neck preserved on two sherds, greenish fabric. Fig. 198. |  |  |
| 298 | SS 958 | 4 | M | 2 b | 4.9; 15.7 | Greenish fabric, impressed comb decoration on shoulder. |  |  |
| 299 | SS 119 | 1 | N | 5a | $3.8 ; 12.0$ | Greenish fabric; cf. Taya, pl. 5, Level IX. |  |  |
| 300 | SS 224 | $3 / 2$ | $\mathrm{M} / \mathrm{N}$ | 5a | 4.2; 9.0 | Fig. 197:9. |  |  |
| 301 | SS 541 | 3 | M | 5 | 4.5; 14.0 | Bitumen-stained interior, sherd very worn. |  |  |



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## Artefact Drawings

Figure 404. l'essels with combed decoration (302-21), sate 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. <br> no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 302 | SS 172 | ?2 | N |  | 13.0; 9.0 | An Ur III type. Brick red fabric. Comb-impressed decoration on shoulder. This rim type is found on other SS Level 2 jars, fabric 6, e.g. from SS 63. | 84.81 |  |
| 303 | FS 1036 | 2 a | N | 5a | 11.0; 8.8 | Well-finished cream surface. Comb-impressed decoration on shoulder. Bitumen staining on interior. Another rim from FS 2335, tannur. |  |  |
| 304 | FS 304 | 2 b | N | 6b | 4.3; 22.0 | Light brown fabric, heavy mica. Comb-impressed decoration on shoulder. |  |  |
| 305 | FS 1362 | 3 | M | 5b | 8.0; 20.4 max. | Comb-impressed decoration on shoulder. |  |  |
| 306 | FS 3 | 1 | N | 5b | 5.7; 23 |  |  |  |
| 307 | SS 560 | 1 | N | 5 b | 3.0; 20.0 |  |  |  |
| 308 | FS 623 | 1 | N | 5 b | 7.8; 13.0 | Comb-impressed decoration on shoulder. |  |  |
| 309 | SS 317 | 1 | N | 5b | 11.2; 19.0 | Black paint circles on neck. Bitumen stains on interior. Body sherd from a similar vessel, SS 611, level 1 or later. |  |  |
| 310 | SS 236 | 3/2 | N | 5b | 7.0; 23.0 | 4-pronged comb decoration. |  |  |
| 311 | SS 85 | 2 | N | 5b | 5.7;34.0 | Thick bitumen lining on interior. 3-pronged comb decoration. |  |  |
| 312 | FS 157 | 2 | N | 5 | 8.0; 33.0 | Cream surface. 5- to 6-pronged comb decoration. |  |  |
| 313 | FS 1180 | 2 | N | 5b | 9.8; 23-24 | Cream surface. 5-pronged comb decoration. |  |  |
| 314 | SS 272 | 3 | M | 5 b | 10.6; 17.0 | Yellow-buff fabric. 3-pronged comb decoration. |  |  |
| 315 | FS 308 | 2b | N | 5 b | 9.5; 20.0 | 4 -pronged comb decoration. |  |  |
| 316 | FS 1789 | 4 | M | 5b | 9.6; 13.0 |  |  |  |
| 317 | SS 252 | 4-2 | ? N | 6 b | 8.0; 21-2 | Brown-buff fabric, mica \& small white grits. 4-pronged comb decoration. |  |  |
| 318 | CH 540 | 6 | L | 5 | 8.0; 22.0 | Very little chaff. 3-pronged comb decoration. 2 sherds: Fig. 196:3 \& 318. |  |  |
| 319 | FS 2335 | ?3/2b | N | 5 | 6.8; 26.0 | Very porous buff clay, coarse temper, cream surface. 3 -pronged comb decoration. |  |  |
| 320 | FS 1370 | 5/4 | M | 5b | 14.5; 16.4 | 4 -prong comb decoration. |  |  |
| 321 | FS 810 | 5 | M | 5 | 10.8; 7.7 | 4 -prong comb decoration. |  |  |

## Artefact Drawings



## Artefact Drawings

I igure 405. Post-Akkadian comb-incised jars and urns (322-39), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 322 | FS 566 | 1 | N | 5 | 7.8; 18.5 | Well-finished surface, 5-prong comb. |  |  |
| 323 | $\begin{aligned} & \text { SS 30/ } \\ & 35 \end{aligned}$ | 1 | N | 6 b | 7.7; 22 | Cleaning, uppermost SS. Mica \& white grits. 5- \& 7-prong comb. |  |  |
| 324 | FS 157 | 2 | N | 6 b | 10.2; 18 | Pale surface, light brown fabric with mica \& large white grits. 4-\& 5-prong comb. Another similar from FS 1592, Level 1. |  |  |
| 325 | FS 19 | 1 | N | 5 | 9.5; 26 | 3 -prong comb. |  |  |
| 326 | FS 1622 | 1/2 | N | 6 b | 9.3;31 | Light brown fabric with heavy mica. 10-prong comb. |  |  |
| 327 | SS 124 | 2 | N | 6 b | 9.3; 25 | 4-, 5- \& 7-prong comb. |  |  |
| 328 | CH B 4 | ?1 | N | 5 | 8.6; 25.5 | White grits \& a very small amount of chaff. 3- \& 4prong comb. |  |  |
| 329 | FS 2348 | 3/2 | M/N | 5b | 9.0; 40+ | 3 -prong comb. |  |  |
| 330 | FS 661 |  | N | 5 b | 8.0; 32 | 4-prong comb. |  |  |
| 331 | SS 224 | ?2 | N | 5b | 15.8; 38 | Well-smoothed surface. Bitumen 'slip' on exterior of rim and vessel interior (?Isin-Larsa type). 3- \& 4-prong comb. |  |  |
| 332 | FS 1414 | 1 | N | 5b | 8.0; 24 | 6- \& 8-prong comb. |  |  |
| 333 | FS 197 | 2 a | N | 5 b | 9.3;33 | 5- \& 7-prong comb. |  |  |
| 334 | FS 237 | 2b | N | 5 | 8.2; 30 | 6-prong comb. |  |  |
| 335 | FS surface |  |  | 5b | 10.4; 29 | 8 -prong comb. Interior surface scraped. |  |  |
| 336 | FS 623 | 1 | N | 5b | 14.8; 50+ | 5-, 7-\& 10-prong comb. Interior surface worn. |  |  |
| 337 | FS 1641 | 2/1 | N | 5 b | 4.8; $37-8$ | 5-prong comb. |  |  |
| 338 | SS 56 | 1 | N | 6 b | 9.3; 21-2 | 3- \& 4-prong comb. |  |  |
| 339 | FS 623 | 1 | N | 6 b | 12.6; 38 | Interior surface very worn. 5- \& 6-prong comb. 2 sherds from this pot, no actual join. |  |  |



## Artefact Drawings

Figure 406. Comb-decorated jars and urns (34()-54), scale 1:10 except 353-4, scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 340 | SS 30 | 1 | N | 5b | 27.7; 10.2 | 5-prong comb band on shoulder. Another very similar jar without decoration SS 356 (TB 11100). | 83.97 |  |
| 341 | SS 544 | 2/3 | ?M | 5b | 29.3; 9.3 | 3- \& 4-prong comb bands on shoulder. Surface smoothed and bitumen lined interior. | 88.74 |  |
| 342 | FS 1063 | 2 | N | 5 | 26.9; 18.5 | Black paint on rim. 5-prong comb decoration on shoulder. Found in basalt mortar set in Rm 27 floor. | 84.101 | 6102 |
| 343 | FS 549 | 5/6 | L | 5 | 10.9; 12.7 | 3 -prong comb bands, rather uneven. |  |  |
| 344 | $\begin{aligned} & \text { FS } 354 / \\ & 318 \end{aligned}$ | 3 | M | 5 | 13.0; 27.0 | 9-prong comb, smoothed surface. Similar rims from FS 598 \& 2311. |  |  |
| 345 | FS 2218 | 3 | M | 5b | 19.5; 27.0 | 7-prong comb. Slight groove on rim interior. |  |  |
| 346 | FS 1230 | 2a | N | 5 b | 11.5; 22.5 | 7-prong comb. Flaking surface. Also a sherd from FS 450. |  |  |
| 347 | ST 85 | 2 | M | 5 b | 18.5; 28.2 | 7- \& 8-prong comb bands, 11-prong comb impressions. |  |  |
| 348 | FS 1054 | 2 a | N | 5 | 58.0; 45.5 | 3 -prong comb bands, 4 -prong impressions. One of three vessels in a feature, cf. 861, 864 \& Fig. 86. | 84.118 |  |
| 349 | SS 742 | 2/3 | M | 5b | 45.5; 24.0 | 4 - to 5 -prong comb bands, 10 -prong impressions. Contents sieved, rodent bones, a human tooth, carbonized material \& a basalt piece found. | 92.35 | 13189 |
| 350 | SS 214 | ?3 | M | 5 | 43.4; 51.0 | Overfired and distorted, pot is triangular in plan. 3prong comb decoration. | 88.34 | 10213 |
| 351 | SS 545 | 5 | M | 5 | 40.0; 51.0 | 3-prong comb decoration. Detail of decoration at 1:1 scale, showing that the swags were incised after the zigzag. |  |  |
| 352 | SS 603 | 4 | M | 5b | 28.0; 60.0 | 3 -prong comb. |  |  |
| 353 | $\begin{aligned} & \text { SS } 522 / \\ & 224 \end{aligned}$ | 3/2 | M/N | 5 | 11.3; 32.0 | Overfired. |  |  |
| 354 | SS 679 |  | N | 6 | 9.7;34.0 | Topsoil. 4-prong comb wavy band, 10-prong comb impressions. |  |  |



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## Artefact Drawings

Figure 407. V'esels ornamented with appliqué snakes and/or scorpions together with incised and impressed decoration (355-65), scale 1:4; except 359, scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{gathered} \text { Dimensions } \\ \text { ht; d. } \end{gathered}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 355 | FS 2204 |  | N | 6 b | 6.3; 13 max. | Both brown fabric and decoration are Ur III/ Isin-Larsa. |  |  |
| 356 | SS 252 |  | N | 6 | 4.0; 10 | Topsoil, post-Akkadian type (cf. Mallowan 1947, pl. 70). |  |  |
| 357 | FS 554 | 4 | M | 10 | 10.5; w . $=6.6$ |  |  |  |
| 358 | SS 206 | 3/2 | M/N | 5b | 13.5; $\mathrm{w} .=15$ | Probably post-Akkadian. |  |  |
| 359 | FS 2317 | 2 b | N | 5 | 33; 39 | Pot has 3 snakes. 4-pronged comb used for wavy lines and crosses. Fig. 200. (Akkadian in 'style'.) | 93.193 | 14257 |
| 360 | FS 2252 | 3 | M | 5b | 16.5; 30 |  |  |  |
| 361 | SS 252 |  | M/N | 5b | 12.5; 29 | From a circular urn-like vessel, date uncertain. |  |  |
| 362 | $\begin{aligned} & \text { FS 1565/ } \\ & \text { FS } 340 \end{aligned}$ | 3 | M | 5 | 12.4; 28 | 2 sherds from the same urn-like vessel (little chaff). |  |  |
| 363 | FS 1306 | 3 | M | 5 | 14;30 | 2 sherds from this vessel, each with a snake. Extra details added from the second sherd (little chaff). |  |  |
| 364 | ST 1006 | 2 | M | 5b | 11.5; $\mathrm{w} .=14.5$ | Rectangular vessel. |  |  |
| 365 | SS 567 | 4 | M | 5 | 13; 1. $=30.5$ | Rectangular vessel. |  |  |



## Artefact Drawings

Figure 408. lissels decorated with incised and/or appliqué patterns; lamp-shaped bowls (366-81), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; w or d. | Comments | Reg no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 366 | surface |  |  | 6 | 14.5; 15.7 | Appliqué snake and incised ?ostrich neck and legs. Cream slip. |  |  |
| 367 | FS 1650 |  | ? $\mathrm{H} / \mathrm{J}$ | 5 | 3.9; 4 | Probably out of context. Green painted bands. The perforations of the nostrils join the eyes which are inlaid with white paste ?frit. | 90.35 | 11087 |
| 368 | FS 1382 | 5 | M | 6 | 7.1; 5.1 | Bricky colour. |  |  |
| 369 | SS 223 | 4/3 | M | 6 | 5.0; 7.3 | Cream surface. Incised pig. |  |  |
| 370 | $\text { SS } 825$ | 4 | M | $5$ | $8.0 ; 6.0$ |  |  |  |
| 371 | SS 603 | 4 | M | 6 b | 3.2; 3.5 | Pale brown surface. |  |  |
| 372 | $\text { SS } 252$ |  | M | $5$ | $4.8 ; 5.2$ |  |  |  |
| 373 | FS 1088 | 3 | M | 5 | 13.7; 1. $=15.5$ | Incised design includes man catching fish and large horned head. |  |  |
| 374 | SS 1096 |  |  |  | 11.0; 1. = 16.0 | Perforation in the corner of the vessel (out of context). Fig. 201. | 93.168 | 14265 |
| 375 | FS 598 | 3/?2 |  | 5 | 9.0; 1. = 13.4 | ?Out of context. Both exterior sides of vessel decorated with parallel lines and še signs. | 87.69 | 9195 |
| 376 | FS 1920 | 5 | M | 6 | $6.3 ; 1 .=8.0$ |  |  |  |
| 377 | surface |  | ?M | 6b | $\text { 9.5; } 9.8$ | Pale surface. |  |  |
| 378 | CH 169 | 4 |  | 5 | 8.1; 8.2 |  |  |  |
| 379 | SS 614 | $1 / 2$ |  | 5 | 11.2; 10.2 | Incised pattern on the rounded surface only the flattened side is plain. String-cut base, carelessly made. | 91.44 |  |
| 380 | SS 965 | 4 | M | 5a | $\begin{gathered} 2.8 ; 1 .=7.0 ; \\ \mathrm{w} .=5.0 \end{gathered}$ |  | 93.167 | 14212 |
| 381 | FS 1567 | 3 | M | 5 | $4.5 ; 1 .=14.5$ |  | 87.57 | 9210 |

## Artefact Drawings


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## Artefact Drawings

Figure 409. Theriomorphic iessels, kernos ring and jar (382-9), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { 1.; w.; ht } \end{aligned}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 382 | FS 317 | 2 b | N/?M |  | 9.5; 4.8; 4.1 | Upper half of ?bovid vessel with two perforations in the back. Incised body decoration. Cf. Fig 202. | 1350 | 6189 |
| 383 | FS 1067 | 3 | M |  | $\begin{gathered} \text { 16; } 12.5 \text { est.; } \\ 19 \text { est. } \end{gathered}$ | Goat vessel with two perforations in the back. One of the perforations is within the remains of a cup. Fig. 203, Rm 3. | 1381 | 6187 |
| 384 | FS 1525 | 3 | M | 5a | $\begin{gathered} 13 \text { ext.; } 12.2 ; \\ 12.4 \text { ext. } \end{gathered}$ | Rear end of cow vessel with two spout-like teats. | 87.10 | 9181 |
| 385 | SS 580 | 4 | M | 5b | 13.8; 7.5; 8.0 | ?Bear vessel with three perforations, mouth, rear and middle of the back. | 4571 | 11081 |
| 386 | FS 1825 | 5 | M | 5b | $\begin{gathered} 10.5 ; 7.0 \\ 5.6 \text { ext. } \end{gathered}$ | Tripod vessel with perforation at one end. |  |  |
| 387 | CH B 15 | 4 | M |  | $\begin{aligned} & \text { d. }=22.4 ; \\ & \text { ext. ht. }=6.8 \end{aligned}$ | Kernos ring with the remains of six cups. Cf. Iraq 1977, 242. Earliest Level 4. | 89 | 45 |
| 388 | SS 755 | 1 | N | 6a | $\begin{gathered} \text { d. }=23 ; \\ \text { ext. ht }=3.5 \end{gathered}$ | Lion head spout from a kernos. Spout joins tube that runs round the rim of the vessel, possibly similar to 389. <br> Pale surface, pink gritty paste, occ. mica, some chaff. | 5778 |  |
| 389 | $\begin{aligned} & \text { SS } 607 / \\ & 611 \end{aligned}$ | 1 | N | 6 | $\begin{aligned} \text { est. ht. } & =15 ; \\ \text { rim d. } & =12 \end{aligned}$ | Incomplete kernos with remains of a cup \& an animal-headed spout. The appliqué body of the animal is on the exterior, while the spout projects into the interior of the vessel. <br> Pale surface, salmon paste, some fine grit and larger white grits. <br> a) Face-on view of the sherd with the cup. <br> b) Section showing how the cup and the rim-tube join. <br> c) Reconstuction of pot showing the tube-like rim and the approximate position of the body of the animal on the section. <br> d) Top view of the appliqué animal (?sheep) sherd with the spout projecting into the interior of the pot. <br> e) Section through the body of the sheep and the spout. <br> f) Face-on view of the sheep on the exterior. The impression can be seen of the rope with which the tube was formed. |  |  |

## Artefact Drawings



## Artefact Drawings

Figure 410. . Mimature iessels (39(1-420), scale 1:2.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 390 | ST 129 | 8 | ?K | 11 | 1.1; $1 .=2.8$ | Rectangular vessel. Dark grey fabric. |  |  |
| 391 | CHB 1 | 2 | N | 5 | $1.4 ; 2.5$ | Tr. B. | 4 | 4 |
| 392 | CH 607 | 8 | L | 11 | 1.5; 3.0 | Lightly fired, orange-grey to dark. |  |  |
| 393 | SS 1269 |  | ? N | 5 | 2.0; 3.4 | Topsoil. | 5888 |  |
| 394 | SS 501 |  | N | 11 | 2.2; 2.4 | Topsoil. Lightly fired, brown fabric. | 88.37 | 10160 |
| 395 | SS 25 | ?1 | N | 11 | 3.2; 2.3 | Unbaked. Complete. | 83.60 |  |
| 396 | FS 1314 | 3 | M | 11 | 3.6; 1.8 | Unbaked. | 85.44 | 7225 |
| 397 | FS 1044 | 2a | N | 5 | 3.5; 3.2 | Lightly burnished. | 84.90 | 6134 |
| 398 | FS 2355 | 2 b | N | 11 | 4.7; 3.0 | Complete, cross incised on base. | 93.195 | 14213 |
| 399 | ER 233 | 5 | L | 11 | 4.7;3.2 | Unbaked. Munsell 5YR 6/2 'pinkish grey'. | 80.80 |  |
| 400 | SS 703 |  | N | 5 | 2.0; 5.7 | Topsoil. |  |  |
| 401 | SS 1256 |  | N | 5 | 2.0; 5.1 | Topsoil. | 5736 |  |
| 402 | SS 662 | 2/1 | N | 11 | 4.0; 3.7 | Complete, unbaked. | 91.52 | 12181 |
| 403 | FS 1546 | 3 | M | 11 | 4.1; 5.6 | Lightly fired. | 87.18 | 9221 |
| 404 | SS 967 | 4 | M | 11 | 6.7; 3.3 |  |  |  |
| 405 | FS 1515 | 3 | M | 11 | 5.9; 2.4 | Lightly fired. |  |  |
| 406 | ST 3 | 2 | M | 5 | 3.2; 4.3 | Lid. | 429 | 3008 |
| 407 | FS 621 |  |  | 5 | 2.9; 4.4 | Lid. Mallowan dump. | 4274 |  |
| 408 | SS 70 | ?2/1 | N | 2 a | 3.2; 7 | Vertical burnishing on lower exterior. Comb-impressed decoration near rim. Very fine fabric. |  |  |
| 409 | CH 46 | 1 | ?M/N | 11 | 4.6; 2.3 | Reed-impressed decoration, lightly fired. Phase 1 foundation trench. | 80.17 |  |
| 410 | FS 2312 | 2 b | N | 11 | 3.0; 5.0 | Reed-impressed decoration, lightly fired. | 93.49 |  |
| 411 | FS 1500 | $3 / 2$ | ?M/N | ? 5 | 3.3; 4.0 | From soakaway for Level 2 drain, water-stained. | 87.4 | 9219 |
| 412 | SS 1001 | 1 | N | 11 | 6.5; 3.8 | From surface. Complete, string-cut base, lightly fired. | 92.21 | 13217 |
| 413 | FS 854 | 3 | M | 5 | 6.8; 3.8 | Traces of pink pigment inside bowl. Almost complete. | 92.68 |  |
| 414 | FS 2311 | 2a | N | 11 | 7.5; 4.8 | Another example from SS 1092. |  |  |
| 415 | CH |  |  |  | 3.1; 6.2 | Potstand with seal impression, DM 551. |  |  |
| 416 | FS 108 | 2 a | N | 6 b | 1.2;6.7 max. | Scraper. Lightly fired. Base rolled and then cut in leather-hard state. | 83.29 |  |
| 417 | DH 6 | 2 | M | 5a | $2.0 ; 1 .=4.8$ | Scraper. Upper edge burnished by use. Length of scraper $=5$. Heavier example from HH 468. |  |  |
| 418 | SS 809 | 4 | M | 5 | 1.8; 7.6 | Scraper. Rm 18. | 4259 |  |
| 419 | SS 586 |  | ?M | 5a | 2.1; 6.0 | Scraper. Soil over libn pavement south of Rm 18. | 4603 |  |
| 420 | TW |  |  | 5a | 3.2; 9.8 | Scraper, length $=7.7$. Unstratified. |  |  |



Figure 411. Miniature and small ivesels ( $+21-4+$ ), saale 1:2.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 421 | SS 540 | 4 | M | 5a | 2.9; 6.2 |  |  |  |
| 422 | FS 1166 | 2 | M/N | 5a | 4.0; 8.0 | Further examples from SS 686 \& 636. |  |  |
| 423 | SS 903 | 3 | M | 5a | 3.5; 7.7 |  | 91.51 | 12170 |
| 424 | FS 1755 | 3/2 | M/N | 5a | 2.8; 8.6 | Pale green-grey. |  |  |
| 425 | ST 128 | 7 | K/L | 5a | 3.4; 7.9 | Further examples from the same deposit \& from SS 911. |  |  |
| 426 | $\begin{aligned} & \text { SS 754/ } \\ & 760 \end{aligned}$ | 4 | M | 5b | 4.5; 8.0 | Cut-down beaker, string-cut base. | 92.126 |  |
| 427 | ST 1014 | 2 | M | 7 | 2.7; 6.0 | Surface scraped to leave burnished appearance; light red. Floor Rm C. | 78.200 |  |
| 428 | FS 607 | 3 | M | 6 | 6.3; 7.2 | Vertical pattern-burnishing. |  |  |
| 429 | SS 945 | 4 | M | 5 | 3.9; 8.1 | ? Phase L type. |  |  |
| 430 | CH 151 | 3 | M | 5 | 5.5; 5.6 |  | 80.37 | 3167 |
| 431 | SS 1005 | 4 | M | 5 | 5.8; 6.2 | String-cut base. |  |  |
| 432 | SS 390 | 3 | M | 6b | 5.3; 7.0 | String-cut base. |  |  |
| 433 | DS 8 |  | M | 2 a | 6.1; 7.4 | Complete. | 85.22 | 7240 |
| 434 | FS 1415 | 2 | N | 5a | 5.2; 7.3 | String-cut base. | 86.1 |  |
| 435 | SS 944 | 4 | M | 5 | 4.2; 7.4 | String-cut base. |  |  |
| 436 | FS 663 | 2 | N | 5a | 1.6; 4.6 | Colander, complete. Rm 47. | 90.20 | 11085 |
| 437 | SS 744 | ?2 | N | 5 | 2.7; 8.8 |  |  |  |
| 438 | FS 2303 | 2 a | N | 5 | 2.5; 8.1 | String-cut base. |  |  |
| 439 | FS 2335 | 2b | M/N | 5 | 2.8; 9.4 | Sring-cut base. Further examples from SS 90 (83.52), FS 376, SS 832 \& 635; \& FS 340 in ware 6. |  |  |
| 440 | FS 304 | 2b | N | 5 | 3.2; 9.9 | Further example from FS 1599. |  |  |
| 441 | FS 1597 | 2/1 | N | 6 | 2.6; 10.0 | String-cut base. Identical example from SS 919. |  |  |
| 442 | SS 758 | 1 | N | 6 | 2.8; 10.2 | String-cut base. | 92.123 | 13223 |
| 443 | FS 436 | 2/3 | M/N | 6 | 3.6; 10.4 | String-cut base. | 86.11 | 8249 |
| 444 | SS 135 | $2 / 3$ | M/N | 6 | 3.6; 11.2 | String-cut base. Further example from DH 52 (84.140). | 83.93 |  |

Artefact Drawings


## Artefact Drawings

Figure 412. Miniature jars ( $44.5-7$ ), soale 1:2.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht.; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 445 | FS 424 | 2 | N | 11 | 2.1; 2.0 | Grey, gritty fabric. Handmade. | 2138 | 8103 |
| 446 | FS 1475 | 3 | M | 11 | 4.6; 1.3 | Burnt. Handmade. | 86.30 | 8276 |
| 447 | SS 1096 | 1 | N | 7 | 4.0; 3.3 | 'Isin-Larsa' context; pale red fabric. |  |  |
| 448 | SS 564 | 4 | M | 4 a | 4.6; 5.1 | Light grey surface. | 90.63 | 10086 |
| 449 | FS 325 | 3 | M | 5 | 5.3; 6.1 | Lower body heavily cut. |  |  |
| 450 | FS 571 | 2/3 | M/N | 6 | 4.8; 4.7 | Pink wash. |  |  |
| 451 | SS 760 | 4 | M | 4 b | 6.2; 5.2 | Rm 13 , fill on floor. | 92.40 |  |
| 452 | FS 1478 | 3 | M | 11 | 2.2; 2.2 max. | Oval in cross-section. | 2305 |  |
| 453 | DS 9 |  | ?M | 5 | 7.0; 3.6 | Almost complete. Wheelmade; string-cut base. | 85.25 | 7223 |
| 454 | CH 19 | 3 | M | 5a | 5.7; 3.5 | Surface, Munsell 5Y 6/2 'olive green'. | 76.27 | 6 |
| 455 | FS 2243 | 3 | M | 4 a | 6.4; 3.9 | Complete, rim worn, white grits. | 92.82 | 13255 |
| 456 | FS 1067 | 3b | M | 6 | 6.2; 4.0 | Almost complete. | 84.103 | 6131 |
| 457 | ER 238 | 5 | L | 5 | 5.8; 5.2 | Munsell, 10YR $7 / 3$ 'very pale brown'. String-cut base. Rm 46. | 80.161 | 3105 |
| 458 | SS 1080 | 5 | M | 5 | 6.0; 4.7 | Complete. Rm 23 floor. | 92.202 | 13232 |
| 459 | SS 607 | 1 | N | 6 | 3.4; 3.7 | Hole in base, ?intentional. | 91.40 | 12177 |
| 460 | SS 929 | 1 | N | 5a | 5.6; 2.4 | String-cut base. | 91.99 | 12174 |
| 461 | SS 859 | 3 | M | 5 | 7.1;3.8 | Complete. Exterior scraped and cut. | 91.35 | 12175 |
| 462 | SS 560 | 1 | N | 5 | 3.1; 5.3 | Burnt. Base very slightly concave. Topsoil. |  |  |
| 463 | SS 626 | 2 | N | 5 | 4.0; 4.7 |  |  |  |
| 464 | FS 1899 | 5 | M | 5 | 4.7; 4.5 | Lower body and base roughly cut. |  |  |
| 465 | FS 1704 | 3 | M | 6 b | 4.9; 4.8 | String-cut base. |  |  |
| 466 | CH 443 | 6 | L | 5 | 5.6; 2.2 | String-cut base. | 81.112 | 4114 |
| 467 | SS 1286 | 3 | M | 5 | 6.7; 4.1 | Complete. Fig. 125, Rm 37 \#2. | 92.225 | 13235 |
| 468 | SS 586 |  | ?M | 5a | 5.0; 4.5 | String-cut base. Soil over libn pavement, s. of Rm 18. | 90.60 | 11086 |
| 469 | FS 818 | 1 | N | 5 | 4.7; 4.8 | String-cut base. | 92.7 |  |
| 470 | FS 1627 | 1 b | N | 5 | 5.5; 5.3 | A further example from FS 2204. |  |  |
| 471 | FS 1124 | 1 | N | 5 | 5.8; 5.2 | String-cut base. | 85.31 | 7224 |



## Artefact Drawings

Figure 413. 5mall jars and bowls (472-88), scale 1:2.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 472 | SS 655 | 2 | N | 5 | 5.5; 4.9 | String-cut base. Further examples from SS 652 \& FS 854. | 91.53 | 12172 |
| 473 | SS 1261 | 4 | M | 5 | 5.8; 5.7 | String-cut base. Fig. 125, pot \#3, fill on floor Rm 32. | 92.203 |  |
| 474 | FS 1067 | 3 | M | 5 | 6.2; 5.4 | String-cut base. Further examples from SS 549 \& 586 (TB 11086). | 84.104 | 6132 |
| 475 | FS 2243 | 3 | M | 5 | 6.5; 5.8 | Complete. String-cut base. | 92.93 | 13233 |
| 476 | FS 854 | 3 | M | 5b | 7.1; 6.8 | String-cut base. | 92.67 | 13266 |
| 477 | FS 2319 | 2 | N | 5 | 6.8; 6.6 |  | 93.198 | 14264 |
| 478 | FS 1548 | 4/3 | M | 5 | 7.1; 7.2 | String-cut base. | 87.16 | 9214 |
| 479 | SS 746 | 3 | M/N | 5b | 7.0; 7.2 | String-cut base. |  |  |
| 480 | FS 1906 | 5 | M | 5 | 6.8; 7.3 |  |  |  |
| 481 | FS 801 | 4/3 | M | 6 | 8.1; 8.9 | Large white grits. |  |  |
| 482 | SS 812 | 4 | M | 5 | 6.7; 6.9 | String-cut base. Rm 18. | 90.54 | 11089 |
| 483 | FS 694 | 2 | N | 5 | 4.1; 4.5 | Large white grits. | 91.21 | 12176 |
| 484 | FS 1460 | 3 a | M | 5a | 6.2; 4.9 | Legs carelessly attached. | 86.17 | 8274 |
| 485 | CH 548 | 7 a | L | 5 | 7.0; 4.8 | Complete. Yellow-buff wash. One leg mended with bitumen in antiquity. Another larger example from DH 6. | 83.103 | 5103 |
| 486 | FS 2243 | 3 | M | 5 | 5.0; 7.7 | Complete. String-cut base. | 92.94 | 13265 |
| 487 | FS 527 | 4 | M | 6 | 8.0; 7.6 | Almost complete. String-cut base. | 87.1 | 9213 |
| 488 | FS 1648 | 2 | N | 5 | 6.7; 9.2 | Hard green paste, gritty. |  |  |

Artefact Drawings


## Artefact Drawings

Figure 414. Post-Akkadian Stone Ware, grey-and pattern-burnished fine wares (489-524); 503 is Akkadian, scale 1.4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 489 | FS 355 | 3 | ?M/N | 1 c | 3.9; 5.0 | Probably out of context. |  |  |
| 490 | FS 1436 | 2 ?3 | M/N | 1a | 8.7; 3.0 | Grey-brown Stone Ware; ?Akkadian. | 86.2 | 8273 |
| 491 | FS 684 | 2/1 | N | 4a | 6.9; 7.2 | Burnished horizontally, mica. |  |  |
| 492 | SS 140 | 3/2 | M/N | 1a | 2.5; 10.0 | Munsell N 4/ 'dark grey'. Another example from SS 131, Level 2. |  |  |
| 493 | CH |  |  | 2 e | 4.6; 7.0 | Incised. Mallowan excavations. |  |  |
| 494 | SS 38 | 1 | N | 2 e | 4.4; 7.0 | Highly polished surface. Fig. 205b:13. |  |  |
| 495 | SS 242 |  |  | 2 b | 5.8; 6.0 | Overfired grey-green fabric. |  |  |
| 496 | FS 16 | 2a | N | 1 c | 6.0; 18.0 | Cf. Reade 1968, pl. 85:18, Taya Level VII. |  |  |
| 497 | SS 64 | 2 | N | 2 e | 3.5; 9.5 | Highly burnished on exterior. |  |  |
| 498 | FS 173 | 2a | N | 8 c | 4.5; 15.6 | Fine orange-brown fabric. Identical rim from FS 167 in dark grey-burnished, fabric $2 e$. |  |  |
| 499 | SS 95 | 2 | N | 2b | 5.3; 11.0 | Another example in black from SS 254. | 83.50 | 5114 |
| 500 | FS 304 | 2 b | N | 2 a | 4.2; 12.0 | Fine grey-burnished, well-levigated. Munsell N $7 /$ 'light grey', darker exterior at rim N 5/ to N 4/ 'grey' to 'dark grey'. 1 lug extant. |  |  |
| 501 | FS 507 | 2a | N | 2a | 5.8; 12.4 | Fine grey-burnished, well-levigated with band of black paint at rim. 1 lug extant. |  |  |
| 502 | SS 924 | 1 | N | 1d | 4.8; 15.2 | Very highly polished. Munsell surface varies $5 \mathrm{Y} 6 / 3$ to $5 / 2$ to 5/3, 'pale olive' /'olive-grey'/'olive'. Interior 5GY 5/1 'greenish grey'. 1 lug extant. Fig. 205b:5. |  |  |
| 503 | FS 376 | 3 | M | 6 b | 7.0; 12.7 | 1 set of lugs extant. Incised decoration. Fig. 197:11. |  |  |
| 504 | SS 254 |  |  | 4 a | 8.7; 17.5 | Surface find. 1 lug extant. |  |  |
| 505 | FS 668 | 2 | N | 1d | 5.4; 15.5 | Much yellow banding/streaking; the yellow itself is streaked with pink to light brown, Munsell 7.5YR 7/4 to 6/4. |  |  |
| 506 | SS 1232 | 3 | M | 1d | 5.3; 13.8 | Late Akkadian? |  |  |
| 507 | FS 269 | 2 C | N | 1a | 7.0; 15.5 | Pit in Rm 21. Dense black with yellow streaks. Fabric N $4 /$ 'dark grey', surface $2.5 \mathrm{Y} 4 / 1$ 'dark grey'. Also an example from FS 1472. |  |  |
| 508 | SS 856 |  | N | 4b | 8.2; 8.8 | Post level 1. Vertically burnished. Interior N4/ 'dark grey'. <br> Exterior near rim, N 5 / to N 4/ 'grey' to 'dark grey', rest of body $2.5 \mathrm{Y} 5 / 1$ to $5 / 2$ 'grey' to 'greyish brown'. |  |  |
| 509 | SS 116 | 2 | N | 1d | 8.2; 8.2 | Identical example from SS 858 (topsoil) also from SS 224 \& FS 1618. |  |  |
| 510 | FS 719 | 2 | N | 1d | 10.9; 9.2 | Upper body exterior 5Y 7/4 'pale yellow', rest of body $5 \mathrm{Y} 6 / 2$ 'light olive-grey'. |  |  |
| 511 | FS 1118 | 2b | N | 2a | 10.8; 10.5 | Burnished. Additional examples from FS 425 \& SS 561. | 84.155 | 6136 |
| 512 | CH 13 | 2 | N |  | 7.6; 8.1 |  |  |  |
| 513 | FS 445 | ?2 | N | 2 b | 9.2; 9.0 | Vertical burnishing. 'Light grey' to 'pale yellow' 5 Y 7/2 to 7/3 Cf. Taya fig. 12. |  |  |
| 514 | SS 1070 | ? 4 | ?M/N | 2 b | 3.4;19.8 | Radial pattern-burnishing. (?Out of context.) |  |  |
| 515 | SS 232 | ?2 | M | 2 a | 8.3; 14.5 | Fine grey-burnished. Exterior darker grey on upper body, rest light grey. Another example from FS 494 in buff. | 88.60 | 10204 |
| 516 | FS 1031 | 2 a | N | 2 a | 8.0; 16.2 | Very fine with radial pattern-burnishing, grey-green with streaks of green and red; another example SS 14. |  |  |
| 517 | FS 1635 | 1 b | N | 2b | 6.7; 16.2 | Radial pattern-burnishing. 5Y 6/2 'light olive-grey'/5GY 6/1 'greenish grey'. Fig. 205a:9. Base type common at Taya. |  |  |
| 518 | SS | 1 | N | 5b | 4.6; 14.4 | Another example from CH Level 1. |  |  |
| 519 | ER 55 | 2/1 | N | $2 \mathrm{a} / 4 \mathrm{~b}$ | 6.5; 24.0 | Radial pattern-burnishing, pale grey very fine. |  |  |
| 520 | SS | 1 | N | 1 d | 6.9; 17.0 | Topsoil. |  |  |
| 521 | SS 240 | 4 | M | ?2b | 3.5; 15.9 | Overfired \& heavily water-soaked probably topsoil. |  |  |
| 522 | SS 252 | 3/2 | M/N | 2 b | 5.2; 11.5 | Topsoil. |  |  |
| 523 | SS 534 | ?3/2 |  | 2b | 6.7; 13.2 | Topsoil. |  |  |
| 524 | FS 1655 | 3/2 | M/N | 2 b | 6.5; 14.0 |  |  |  |

Artefact Drawings


## Artefact Drawings

Figure 415. Post-Akkadian fine ware bowls with beaded, plain, step-beaded rims and ring-bases (525-45, 550); berkers with beaded rims (54(-9); shoulder beakers (551-2), scale 1:4.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 525 | FS 173 | 2 a | N | 5a | 7.5; 13.2 | Beautifully finished. | 83.7 | 5110 |
| 526 | $\begin{aligned} & \text { SS } 626 / \\ & 636 \end{aligned}$ | 2 | N | 2 b | 7.0; 14.5 | Fine green paste, yellow band at rim on exterior. | 91.48 |  |
| 527 | FS 1219 | 2 b | N | 5b | 6.2; 15.8 | Grey-buff. |  |  |
| 528 | FS 1219 | 2 b | N | 5b | $6.3 ; 15.8$ | Fine buff. |  |  |
| 529 | SS 563 |  | N | 2b | 7.9; 15.3 | Contained some red substance. |  |  |
| 530 | FS 578 | 2/3 | $\mathrm{M} / \mathrm{N}$ | 5b | 7.7; 14.5 | Salmon-pink wash. |  |  |
| 531 | FS 494 | 2 | N | 4b | 7.6; 16.2 | Pale grey. |  |  |
| 532 | surface |  | ?N | 5 b | 7.3; 14.3 | Surface near JJ. Very fine. |  |  |
| 533 | FS 1013 | 2 a | N | ?8c | 6.2; 15.6 | Well-finished, dense, orange-brown fabric. Second example from FS 1622. | 84.36 |  |
| 534 | FS 151 | 2a | N | 5 | 7.0; 16.0 | Grey-buff. | 83.32 |  |
| 535 | SS 14 | 1a | N | ? 5 b | 7.9; 11.3 | Found in oven, burnt. Fine. Similar sherd from SS 11, floor deposit assoc. with oven. | 83.42 |  |
| 536 | SS 25 | 1 | N | 5 b | 8.2; 13.5 | Very fine. Identical bowl from FS 140. |  |  |
| 537 | FS 1064 | 2a | N | 5 b | 7.3; 12.2 | Well-smoothed. | 84.114 |  |
| 538 | SS 850 |  | ? N | 6 | $6.1 ; 13.5$ | From floor sealed by topsoil. |  |  |
| 539 | FS 1020 | 2a | N | 5b | 7.0; 15.3 | Fine gritty buff. |  |  |
| 540 | SS 734 |  | ? N | 6 | $8.5 ; 12.4$ | Topsoil. |  |  |
| 541 | FS 1020 | 2 a | N | 5 b | 7.0; 11.9 | Lightly burnished exterior. Mended in antiquity. | 84.108 |  |
| 542 | SS 703 |  | ? N | 5a | 5.8; 14.0 | Topsoil. |  |  |
| 543 | FS 1062 | 2a | N | 6 b | $4.9 ; 14.8$ |  |  |  |
| 544 | FS 1062 | 2a | N | 5 b | 5.4;14.8 | Orange-buff. |  |  |
| 545 | FS 213 | 2a | N | 5 b | 5.0; 8.2 | Beautifully finished, greyish-buff. |  |  |
| 546 | FS 2233 | 2 b | N | 4b | 7.2; 6.9 | Green ?overfired. | 92.148 |  |
| 547 | FS 1414 | 1/2 | N | 5 | 9.2; 8.0 |  |  |  |
| 548 | unstrat. |  | ?N | 5 | 9.8; 9.6 | Light brown surface. |  |  |
| 549 | FS 689 | 2b | N | 5 | 12.6; 9.7 |  |  |  |
| 550 | SS 140 | 2 | N | 5a | 6.6; 10.0 | String-cut base. From mixed fill. | 83.111 |  |
| 551 | ER 300 |  |  | 5 | 9.8; 11.2 | Mallowan fill. Munsell 5Y $8 / 2$ 'white'. |  |  |
| 552 | SS 88 | 2 | N |  | 11.3; 10.7 | Overfired kiln waster. | 83.48 |  |

## Artefact Drawings



## Artefact Drawings

Figure 416. Post-Akkadian and Isin-Larsa iossels (553-67), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 553 | SS 1096 | 1 | N |  | 7.1; 7.7 | Overfired \& slightly warped, greenish grey paste, green surface. |  |  |
| 554 | SS 1096 | 1 | N | 5a | 8.2; 10.0 | String-cut base. |  |  |
| 555 | SS 1096 | 1 | N | 6 | 8.1; 8.8 | Complete. Cream-slip or wash, string-cut base. | 93.38 | 14199 |
| 556 | SS 1096 | 1 | N | 6 | 23.8; 8.1 | Almost complete. 'Isin-Larsa'. | 93.161 |  |
| 557 | SS 1096 | 1 | N | 6 | 5.1; 9.2 | Dog's paw-print on bowl interior. Exterior has impression of sticks and stones. String-cut base. | 93.165 | 14179 |
| 558 | SS 36 |  | N | 6 | 8.9; 11.8 |  | 83.43 |  |
| 559 | SS 1096 | 1 | N | 6 | 5.5; 17.2 | String-cut base. |  |  |
| 560 |  |  | N | 6 b | 4.2; 27.0 | Bitumen on interior and band on exterior. 'Isin-Larsa' type. |  |  |
| 561 | SS 1100 | 1 | N | 5a | 23.6; 5.6 | 1 lug extant, greenish fabric. |  |  |
| 562 | SS 1096 | 1 | N | 9 | 25.8; 16.3 |  | 93.203 |  |
| 563 | SS 106 | 2 | N | 5 b | 4.2; 9.8 | Lower body cut (see p. 175). Cf. Finkbeiner 1991, pl. 106:102. |  |  |
| 564 | SS 652 |  | ? N | 5 | 8.7; 11 | Pale cream surface, rough hand-finished base. From removal of access stairs, probably post-Level 3. |  |  |
| 565 | SS 563 |  |  | 5 | 3.3; 21.4 | Cream surface. Level 4 or later. |  |  |
| 566 | surface |  |  | 6 b | 14.2; 40 | Orange-brown surface. Fig. 206:2. Cf. Finkbeiner 1991, pl. 107:35. |  |  |
| 567 | SS 55 | 1 | N | 6 | 7.0; 40 approx. | Cream exterior, orange interior surface. Identical vessels from DH 25 \& SS 31. Fig. 206:3. |  |  |



## Artefact Drawings

Figure 417. Post-Akkadian open bowls (568-99, 597 is Akkadian), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{gathered} \text { Dimensions } \\ \mathrm{ht} ; \mathrm{d} . \end{gathered}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 568 | FS 2316 | 2 b | N | 5 | 3.9; 8.2 | String-cut base. | 93.50 | 14178 |
| 569 | SS 3 |  | N | 5 | 4.6; 11.0 | Crudely made. |  |  |
| 570 | FS 649 |  | N | 6 | 3.8; 11.0 | Further examples from SS 1096, 607 \& FS 1674. |  |  |
| 571 | FS 1633 | 1 b | $\mathrm{M} / \mathrm{N}$ | 6 | 4.8; 10.5 | String-cut base. Further examples from SS 563, 864, 1096, FS 661, 1773 (TB 12226) \& 1856 (TB 13280). |  |  |
| 572 | CH B 4 | 2 | N | 6 | 4.9; 10.7 | String-cut base. 7.5YR 7/4 pink with 10YR 8/4 very pale brown surface. |  |  |
| 573 | SS 594 |  | N | 6 | 4.4; 11.0 | Topsoil. String-cut base. |  |  |
| 574 | SS 70 | 1 | N | 5 b | 5.1; 11.0 | String-cut base. Further examples from SS 24, 39 (83.47), 632, 1096 (93.40), FS 1001 (84.31) \& 178 (83.37). |  |  |
| 575 | FS 30 | 2a | N | 6 | 4.9; 10.5 | Further examples from SS 39 \& 63. |  |  |
| 576 | SS 560 |  | N | 6 | 5.2; 13.5 | Topsoil. |  |  |
| 577 | FS 1875 | 2 | M/N | 5 | 7.2; 13.0 | String-cut base. Further examples from FS 1875 \& SS 945 (93.162). |  |  |
| 578 | FS 1450 | 2 | M/N | 6 a | 6.5; 14.0 | Further example from SS 1267 (93.25). |  |  |
| 579 | SS 929 | 1 | N | 6 a | 6.6; 14.8 | String-cut base. |  |  |
| 580 | FS 108 | 2a | N | 6 b | 3.4; 12.3 |  |  |  |
| 581 | SS 88 | 2 | N | 5 | 4.4; 12.3 | String-cut base. Further examples from SS 739, 232 (TB 10191), FS 1154. | 83.49 | 5113 |
| 582 | SS 40 | 1 | N | 5 | 5.2; 14.2 | String-cut base. | 83.46 |  |
| 583 | SS 232 | ?2 | N | 6 | 5.1; 11.6 | String-cut base. Bitumen-filled example from SS 1096. | 88.72 | 10190 |
| 584 | FS 661 | 1 | N | 6 | 5.1; 13.0 |  |  |  |
| 585 | SS A | 1 | N | 5 | 4.6; 13.7 | Base cut, but not string-cut. |  |  |
| 586 | SS 632 | 1 | N | 5b | 6.1; 11.2 | Topsoil. Base cut, but not string-cut. |  |  |
| 587 | FS 2330 | 2b | N | 6 | 6.0; 12.1 | Further example in ware 1d from SS 607. | 93.138 |  |
| 588 | SS 300 | 1 | N | 6 | 6.0; 12.0 | Topsoil. |  |  |
| 589 | SS 704 | 2 | N | 6 | 4.5; 10.6 | String-cut base. |  |  |
| 590 | FS 1064 | 2a | N | 5 | 4.5; 12.8 | Another example from DS 12. |  |  |
| 591 | SS 850 | 1 | N | 5b | 4.8; 14.6 | Topsoil. |  |  |
| 592 | FS 662 | 2 | M/N | 5 | 4.1; 10.6 | Further examples from FS 652, 858 \& SS 560. |  |  |
| 593 | SS 1212 | 3 | ?M | 6 | 6.1; 13.8 | Well-smoothed. |  |  |
| 594 | SS 679 | 1 | N | 6 | 4.6; 11.2 | Topsoil. |  |  |
| 595 | SS 607 | 1 | N | 6 b | 8.1; 15.8 | Pale cream surface. |  |  |
| 596 | SS 1269 | 1 | N | 5 | 7.1; 22.2 | Perforated base. Topsoil. |  |  |
| 597 | FS 598 | 3 | M | 5 | 4.6; 11.6 |  | 87.65 |  |
| 598 | SS 590 |  | N | 5b | 7.3; 15.8 | Heavy ring marks on upper interior \& lower exterior. Further example from FS 1767. |  |  |
| 599 | FS 2320 | 2 | N | 6 | 11.0; 26 max. | Warped \& oval. | 93.51 | 14176 |

Artefact Drawings


## Artefact Drawings

Figure 418. Post-Akkadian band-rim bowls and bowls with rolled or flared rims (600-629), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 600 | FS 8 | 1 | N | 6 b | 3.6; 11.5 | Cream to pale brown surface. |  |  |
| 601 | FS 663 | 2 | N | 6 b | 4.4; 17 | Light brown with small white grits. 2 further examples, FS 19 ware 5a, FS 2327 ware 5c, 5Y 7/3 'pale yellow'. |  |  |
| 602 | SS 823 |  | N | 5 c | 5.5; 14.4 | Topsoil. 5Y 8/3 'pale yellow', slightly convex base. |  |  |
| 603 | SS 71 |  | N | 4 b | 4.9; 15.4 | Very chalky fabric, well-finished, cut base. |  |  |
| 604 | FS 202 | 2 b | N | 5 C | 6.5; 17 | Very fine, 2.5Y 7/6 'yellow'. |  |  |
| 605 | FS 9 | 1 | N | 5b | 4.4; 12.4 |  |  |  |
| 606 | DH 57 | 1 b | N | 5 | 7.5; 16.6 |  | 84.126 |  |
| 607 | $\begin{aligned} & \text { SS } 100 / \\ & 83 \end{aligned}$ | 2 | N | 5a | 4.7; 19 |  |  |  |
| 608 | FS 16 | 2a | N | 2a | 5.5; 19 | Lower body scraped. |  |  |
| 609 | SS $4 / 26$ | 1 | N | 6 b | 5.0; 14 | Topsoil. Interior cream. |  |  |
| 610 | SS 141 | 2 | N | 6 | 4.1; 18 | Cream wash. |  |  |
| 611 | SS 136 | 2 | N |  | 6.0; 18 | Dark brown paint. |  |  |
| 612 | SS 140 | 2 | N | 6 | 4.5; 22 |  |  |  |
| 613 | SS 152 | 2 | N | 6 | 5.6; 23 |  |  |  |
| 614 | $\begin{aligned} & \text { FS } 653 / \\ & 697 / 698 \end{aligned}$ | 2 | N | 6 | 5.0; 19 | Pale surface, mica. |  |  |
| 615 | FS 9 | 1 | N | 5b | 6.0; 16.4 |  |  |  |
| 616 | SS 75 | 2 | N | 5 | 5.5; 17.5 | Kiln-cracked rim. Grey-buff. | 83.45 | 5109 |
| 617 | FS 16 | 2 a | N | 5 | 3.5; 14.4 |  |  |  |
| 618 | SS 150 |  |  | 6 b | 4.3; 15.3 |  |  |  |
| 619 | $\begin{aligned} & \text { FS } 14 / \\ & 90 \end{aligned}$ | 2a/1 | N | 5a | 4.2; ?34 | Cream surface |  |  |
| 620 | SS 172 | ? 3 | M | 6 b | 4.9; 14.8 | Further example from FS late level 3, same profile but smaller. |  |  |
| 621 | FS 1417 | 2 | N | 6a | 6.0; 17.2 |  |  |  |
| 622 | FS 847 | 3/2 | N | 5b | 8.7; 24 |  |  |  |
| 623 | SS 501 |  | N | 5b | 5.9; 15.5 | Topsoil. Further example from SS 703 with finer rim. | 88.24 |  |
| 624 | SS 11 |  | N | 5 | 7.4; 20 | Not stratified upper SS. Ware 5 with red-brown surface slip. |  |  |
| 625 | FS 2217 | 2 b | N | 5b | 9.0; 20.6 | Base cut and lower body shaved. | 92.81 |  |
| 626 | FS 2338 |  | N | 4 a | 8.8; 20.5 | From baulk. Dark grey ware, horizontal burnishing on rim, vertical burnishing on body exterior. |  |  |
| 627 | FS 308 | 2b | N | 6 b | 3.2; 25 | Brown paint. |  |  |
| 628 | FS 331 | 2 b | N | 6 | 5.2; 28 | Brown paint. |  |  |
| 629 | FS 330 |  | N | 6 | 7.0; 34 | Small white grits \& no mica. Paint near rim 2.5 YR 4/4 to 4 / 6 'dusky red' to 'dark red', paint on lower exterior 2.5YR 5/1 'dark reddish grey'. Lower body cut and smoothed by hand. |  |  |

Artefact Drawings


## Artefact Drawings

Figure 419. Post-Akkadian bowls with rolled or folded rims; flat open bowls (630-54), scale 1:4.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 630 | SS 563 | post 4 | N | 6 a | 5.3; 14.5 | Base cut. Further example from CH 127. |  |  |
| 631 | SS 864 | 2 | N | 6 b | 5.0; 12.5 | Base cut. From kiln. |  |  |
| 632 | SS 881 | 1 | N | 5 | 7.2; 15.5 | String-cut base. |  |  |
| 633 | FS 1875 | 2 | N | 6 b | 9.6; 24 |  |  |  |
| 634 | SS 110 | 2 | N | 5 b | 10.0; 21.5 | Further example from SS 647 (M). | 83.59 |  |
| 635 | ER 86 | ?2 | $\mathrm{M} / \mathrm{N}$ | 6 | 5.6; 16 | 44 further examples, of which 25 come from post-Akkadian contexts. | 78.84 | 1017 |
| 636 | SS 544 | 2 | N | 6 | 5.3; 17.9 | Five further examples from FS 641, 1650, 1755, SS 372 \& 544. |  |  |
| 637 | CH 132 | 2 | N | 6 | $6.5 ; 18.8$ | Munsell 5YR 7/4 to 6/4 'pink' to 'light brown'. String-cut base. Found with 2 bowls of the same type (TB 3174 \& 80.11, Fig. 208) on the floor illustrated in Fig. 207. | 80.9 | 3175 |
| 638 | CH 8 | 1 | N | 6 | 5.7; 15.4 |  | 78.54 |  |
| 639 | CH 8 | 1 | N | 6 | $6.7 ; 16$ |  | 78.55 |  |
| 640 | FS 847 | 3/2 | N | 6 | $6.5 ; 17.5$ | String-cut base. |  |  |
| 641 | CH 13 | 2 | N | 5 a | 3.0; 10.6 |  |  |  |
| 642 | FS 2316 | 2 b | N | 5 b | 6.1; 16.8 |  |  |  |
| 643 | DH 2 |  | N | 6 | 6.2;18 | 2 further examples from FS 1493 \& 1500. |  |  |
| 644 | DH 19 | 2/1 | $\mathrm{M} / \mathrm{N}$ | 5 | 4.7; 18 | Green. |  |  |
| 645 | SS 106 | 2 | N | 5 b | 7.7; 19.3 | Further example from SS 245. |  |  |
| 646 | FS 1083 | 2a | N | 5a | 4.3; 14 |  |  |  |
| 647 | FS 92 | 2a | N | 6 b | 7.3; 23 | Chaff. |  |  |
| 648 | FS 680 | 2 | N | 6 | 7.2; 20.5 |  |  |  |
| 649 | FS 1627 | 1 b | N | 6a | 7.3; 19 |  |  |  |
| 650 | FS 141 | 2 b | N | 6 | $8.4 ; 21.3$ | String-cut base. Further example from FS 431 (TB 8240). | 83.24 |  |
| 651 | SS 1096 | 1 | N | 5 b | 11.6; 25 | Mica. |  |  |
| 652 | FS 1020 | 2a | N | 5 b | 8.8; 22 | Well-smoothed. | 84.107 |  |
| 653 | FS 681 | 2 | N | 6a | 8.4; 23 | String-cut base. |  |  |
| 654 | CH B 3 | 1 | N | 6 b | 14.0; 26.6 | Munsell 7.5YR 6/4 'light brown'. Wet-smoothed. |  |  |

Artefact Drawings


## Artefact Drawings

Figure 420. Bowls of uncertain post-Akkadian/late Akkadian context (655-67), scale 1:4; large post-Akkadian bowls (068-8(1), scale 1:10, except jar 673, scale 1:t.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 655 | FS 1002 | 1/2 | N | 5 | 3.3; 11.2 | String-cut base. 2 further examples from SS 534 \& 254. | 84.33 |  |
| 656 | FS 847 | 3/2 | M/N | 6 a | 4.7; 11.5 | String-cut base. |  |  |
| 657 | DH 57 | 1 b | N | 6 | 5.5; 17.5 | String-cut base. 6 further examples from FS $438(\times 2)$, 375 ( $\times 2$ ), 416 \& 529. |  |  |
| 658 | DH 4 |  | M/N | 6 | 6.3; 16.6 | 10 further examples from SS $240,511,513,515,223$ (TB 10189), FS 654 (TB 11116), 1154 \& 1142. | 84.47 |  |
| 659 | FS 654 | 2 | N | 6 | 6.8; 19 | String-cut base. Identical example from SS 734. |  |  |
| 660 | SS 563 | $\begin{aligned} & 4 \text { or } \\ & \text { later } \end{aligned}$ | M/N | 6 | 5.2; 11.5 | String-cut base. Pale wash on interior. |  |  |
| 661 | SS 919 |  | N | 6 | 5.5; 12.4 | String-cut base. MELM dump. |  |  |
| 662 | SS 544 | 2/3 | M/N | 5a | 5.9; 14.1 | Lower body cut down. Pit with sealings, DM 168, 264, 282,344 \& 359. |  |  |
| 663 | SS 741 |  | N | 6 a | 6.5; 12.6 | String-cut base. |  |  |
| 664 | SS 1241 | ? 4 | ?M/N | 5b | 5.4; 10.7 | String-cut base. |  |  |
| 665 | SS 1099 | ?1 | N | 5b | 5.6; 12.8 | String-cut base. | 93.208 | 14263 |
| 666 | SS 140 | 2 | M/N | 6b | 5.9; 12.4 | 5 further examples from SS 370, 912, 1080, 1286 \& FS 315. | 83.115 |  |
| 667 | DH 25 | 1 | M/N | 5 b | 4.8; 13 | Cleaning level 1 walls. String-cut base. |  |  |
| 668 | SS 929 | 1 | N | 5b | 11.9; 29 |  |  |  |
| 669 | FS 1001 |  | N | 5b | 19; 28 | Topsoil. |  |  |
| 670 | FS 1875 | 2 | N | 6a | 18.3; 35 |  | 92.17 |  |
| 671 | ER 10 | 1 | N | 6 a | 23.2; 41 | Complete. Perforated base. Mica. | 78.71 | 1038 |
| 672 | FS 108 | 2a | N | 6 a | 27.8; 48 | Slightly oval. | 83.25 |  |
| 673 | SS 778 | 2 | N | 6a/10 | 17.3; 31 | Groove on exterior irregular ?unintentional. |  |  |
| 674 | FS 1036 | 2a | N | 6 b | 15.9; 31 | Heavy wheel marks on exterior \& coarse interior surface. |  |  |
| 675 | FS 1036 | 2a | N | 6 | 25.7; 37 | Irregular. |  |  |
| 676 | FS 697 | 2b | N | 5b | 19;36 | Interior surface grey ?burnt. |  |  |
| 677 | CH 10 | 2 | N | 5b | 15.8; 14.4 | Munsell exterior surface $5 \mathrm{Y} 8 / 1$ 'pale yellow', paste 7.5YR 7/4 'pink'. Base and exterior scraped. | 76.10 | 15 |
| 678 | SS 611 | $\begin{aligned} & 1 \text { or } \\ & \text { later } \end{aligned}$ | N | 6 | 22.8; 21 |  |  |  |
| 679 | SS 757 | 1 | N | 6 b | 21; 22.6 | Mica. |  |  |
| 680 | CH F 1 | 1 | N | 5 | 34.5; 46 |  | 76.35 | 41 |

Artefact Drawings



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## Artefact Drawings

Figure 421. Post-Akkadian beakers (681-715, 689 is Akkadian), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 681 | SS 515 | 3/2 | ? $\mathrm{M} / \mathrm{N}$ | 5 | 3.2; 7.8 | Complete. | 88.31 | 10196 |
| 682 | SS 200 | 3/2 | ? N | 5a | 5.9; 7.0 | Top fill in MELM trench. Greenish fabric. |  |  |
| 683 | SS 616 |  | ?M/N | 6 | 6.8; 7.8 | Baulk removal. ?Post-Akkadian. |  |  |
| 684 | DH 57 | 1 b | N | 5 | 7.0; 8.6 | Complete. String-cut base. 2 further examples from SS topsoil \& 231. | 84.56 | 6121 |
| 685 | SS 532 |  | ? N | 5 | 7.0; 9.3 | Yellow paste. MELM trench. |  |  |
| 686 | DH 6 | 2 | M | 5 | 3.9; 8.8 | ?Akkadian. Gritty grey-buff fabric with pale wash. ?Lid. | 84.49 |  |
| 687 | SS 876 | ?3/2 | ?M/N | 6 | 6.8; 5.8 | Base shaved. |  |  |
| 688 | DH 22 | 2 | ?M/N | 6 | 7.1; 6.2 |  |  |  |
| 689 | FS 482 | 3 | M | 6 | 6.8; 7.9 | Almost complete. String-cut base. | 86.31 | 8268 |
| 690 | SS 734 |  | ?N | 5b | 7.4; 7.0 | Topsoil. String-cut base. |  |  |
| 691 | FS 1613 | 1 | N | 5 | 7.5; 8.5 | String-cut base. Rm 3.2 further examples from SS 663 \& 934. | 90.79 |  |
| 692 | CH 8 | 2 | N | 5 | 8.1; 9.5 | Found on floor with pots $800 \& 832$. Complete. String-cut base. Munsell 5 Y 8/2 white. Identical example from ER 1. | 80.4 | 3133 |
| 693 | SS 231 |  | ? N | 5 | 8.9; 8.8 | String-cut base. Wall top of Akkadian building. Further example from SS 544. | 88.23 |  |
| 694 | FS 2303 | 2a | N | 6 b | 7.8; 10.9 | String-cut base. Further example from SS 1093. |  |  |
| 695 | FS 1681 | ? 3 | M/N | 6 | 7.9; 7.0 | String-cut base. |  |  |
| 696 | SS 636 | 2 | N | 6 | 8.7; 7.4 | Base cut, but not string-cut. Further example from SS 686, possibly Akkadian. |  |  |
| 697 | SS 858 |  | N | 5 | 8.4; 8.7 | Topsoil. Further example from SS 626 (TB 12224). | 91.37 |  |
| 698 | SS 865 |  | N | 6 | 8.9; 9.3 | Topsoil. String-cut base. Further example from SS 1210. |  |  |
| 699 | SS 959 |  | N | 5 | 6.7; 7.0 | Topsoil. String-cut base. |  |  |
| 700 | SS 934 |  | N | 6 | 7.2; 10.2 | Cleaning MELM trench. |  |  |
| 701 | SS 761 | 1 | N | 6 b | 8.8; 5.0 | String-cut base. |  |  |
| 702 | SS 370 |  | N | 5b | 7.0; 7.8 | Topsoil in Rm 10. String-cut base. |  |  |
| 703 | FS 2316 | 2b | N | 5b | 9.0; 7.5 | String-cut base. |  |  |
| 704 | CH 124 | 1 | N | 6 | 10.6; 9.5 | Contained magnetite polisher \& frit beads $11 \& 16$. Metal vessels 162-4 from the same locus. | 80.15 | 3171 |
| 705 | CH 8 | 2 | N | 6 a | 9.8; 9.0 | Trench C. | 78.50 | 1008 |
| 706 | FS 1137 | 2a | N | 6 b | 10.7; 10.0 |  |  |  |
| 707 | FS 1093 | 2a | N | 5 | 3.9; 6.6 | String-cut base. Further example from SS 532. | 84.115 | 6115 |
| 708 | SS 868 | 2 | N | 5 | 4.0; 8.3 | String-cut base. |  |  |
| 709 | SS 532 |  | N | 6 | 5.7; 6.8 | Topsoil. String-cut base. |  |  |
| 710 | SS 850 |  | $\mathrm{M} / \mathrm{N}$ | 5 | 6.0; 8.0 | Topsoil. String-cut base. Further example from SS 1210 (TB 12173). |  |  |
| 711 | FS 90 | 2a | N | 5 | 8.6; 7.5 | Complete. String-cut base. | 83.21 |  |
| 712 | FS 641 |  | N | 5 | 7.4; 8.2 | String-cut base. Similar example from SS 850 (91.32). |  |  |
| 713 | FS 1001 |  | ?N | 5 | 9.6; 10.4 | Surface. String-cut base. | 84.30 |  |
| 714 | SS 253 | ? 3 | M/N | 5 | 9.1; 6.8 | String-cut base. Cf. Umm el-Jir type, Gibson 1972, fig. 34: Late Akkadian type E. | 88.47 | 10172 |
| 715 | FS 641 |  | N | 5 | 11.5; 10.4 | String-cut base. |  |  |



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## Artefact Drawings

Figure 422. Post-Akkadian beakers, including recess-beaded rim types ( $716-44$ ), scale 1:t.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 716 | SS 573 | 4 | M | 5 | 7.3; 7.7 | Drain pit. | 90.97 |  |
| 717 | FS 4 | 1 | N | 5a | 8.2; 8.5 | Cream surface. 2 further examples from SS 231 \& 544. | 83.26 |  |
| 718 | DH 40 | 1 b | N | 5 | 9.7; 10.3 | 1 further example (without the concave base) from SS 561. |  |  |
| 719 | FS 1001 |  | M/N | 5 | 9.0; 10.0 | Topsoil. Identical examples from SS 607 \& FS 1778 (TB 12223). | 84.32 |  |
| 720 | CH 127 | 1 | N | 5 | 10.8; 10.6 |  |  |  |
| 721 | SS 744 | 2 | N | 5b | 13.4; 14.6 | Levelling for Level 2. |  |  |
| 722 | SS 632 |  | N | 5 | 12.3; 11.2 | Topsoil. Example from Rimah. |  |  |
| 723 | FS 1640 | 2 | N | 6 | 7.0; 9.0 | String-cut base. |  |  |
| 724 | SS 544 |  | N | 5 b | 9.2; 9.8 | Pit. |  |  |
| 725 | SS 544 |  | N | 5 | 9.2; 10.0 | String-cut base. From pit with sealings, see note for pot 662. Further example from SS 607. | 88.50 | 10175 |
| 726 | SS 632 |  | N | 6 | 10.2; 10.7 | Topsoil. |  |  |
| 727 | SS 891 | ? $1 / 2$ | N | 5 b | 10.6; 9.8 |  |  |  |
| 728 | SS 560 |  | N | 5 | 9.7; 13 | Topsoil. |  |  |
| 729 | SS 561 |  | N | 5b | 12.1; 12.5 | Mended with bitumen in antiquity. Disturbed upper fill Rm 30. |  |  |
| 730 | FS 2313 | 3 | M/N | 5 | 8.2;11.8 | Pale brown wash. String-cut base. | 93.59 | 14191 |
| 731 | SS 80 | 2 | N | 5b | 8.6; 8.6 | String-cut base. Further example from SS 607 (TB 12233). |  |  |
| 732 | SS 135 | 2 | M/N | 5 | 9.3; 9.0 | String-cut base. Further examples from SS A, 535, 704 (92.26), DH 69, FS 355, 1088 (84.152). |  |  |
| 733 | SS 870 | 1 | N | 6 a | 9.5; 10.1 | String-cut base. Further example with a finished base FS 2204. |  |  |
| 734 | SS 734 |  | N | 5b | 11.5; 10.4 | Topsoil. Munsell 5Y 8/4 'pale yellow'. |  |  |
| 735 | SS 626 | 2 | N | 5b | 11.2; 9.0 | 2 further examples from SS 734 \& FS 1869. |  |  |
| 736 | FS 89 | 2a | N | 5a | 14;11.1 | Further examples from DH 16, 39, SS 110, 119, 225, FS $769,1146,1542$ \& 1650. | 83.23 |  |
| 737 | FS 2214 | 2 | N | 5a | 8.8; 11.8 |  |  |  |
| 738 | FS 2319 | 2b | N | 5 | 8.5; 10.1 | Beautifully finished. String-cut base. | 93.196 | 14198 |
| 739 | FS 1875 | 2 | N | 5 | 8.7; 12.6 | Overfired. |  |  |
| 740 | CH 132 | 2 | N | 6 | 8.2; 10 | String-cut base. 5YR 7/4 to 6/4 'pink' to 'light brown'. Stacked on floor with 741 \& TB 3136, cf. Figs. 207 \& 208. | 80.7 | 3168 |
| 741 | CH 132 | 2 | N | 6 | 8.3; 11.5 | String-cut base. 5YR 7/4 to 6/4 'pink' to 'light brown'. See note on 740 . | 80.6 | 3138 |
| 742 | FS 2210 | 2/1 | N | 5 | 9.4; 11.2 | String-cut base. Further example from SS 1091 in ware 5b. |  |  |
| 743 | FS 191 | 2a | N | 6 | 11.3; 12 | Rm 21. | 83.28 |  |
| 744 | SS 626 | 2 | N | 6 | 12.6; 12.6 | Lower body scraped. |  |  |



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## Artefact Drawings

Figure 423. Ribbed-rim and other post-Akkadian jars (745-66, 768), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 745 | FS 1083 | 2 a | N | 5b | 7.8; 13.3 | Base cut. |  |  |
| 746 | DH 57 | 1 b | N | 5 | 12.0; 13.0 | Very shallow grooving on upper body, slightly concave base. | 84.182 |  |
| 747 | SS 626 | 2 | N | 6 | 8.5; 9.5 | Further example from SS 37. | 91.47 |  |
| 748 | $\begin{aligned} & \text { SS } 607 / \\ & 611 \end{aligned}$ | 1 | N | 4 b | 9.1; 10.5 | Vertical burnishing on body. |  |  |
| 749 | SS 618 | 2 | N | 5 | 9.6; 12.0 | Pale wash, mica. Cf. Hammam et-Turkman: Curvers 1988, nos. 34 \& 40. |  |  |
| 750 | SS 40 | 1 | N | 6 | 11.5; 38 | White grit \& micaceous inclusions. |  |  |
| 751 | FS 213 | 2a | N | 6 | 7.4; 6.0 | Light brick fabric, buff surface. Rim sherds from similar vessels from FS 1124. |  |  |
| 752 | SS 607 | 1 | N | 5a | 4.0; 9.2 | Fine green / cream slip. Further example from FS 1603, larger versions from FS 16 \& SS 245. |  |  |
| 753 | FS 571 | 2/3 | N | 6 b | 9.0; 14.5 | Mica. |  |  |
| 754 | ER 15 | 2 | N | 6 | 13.5; 14 | Rm 7. Mica. | 78.62 |  |
| 755 | $\begin{aligned} & \text { FS 1026/ } \\ & 1046 \end{aligned}$ | 2a | N | 6 b | 11.0; 21.0 | Mica. Further examples from SS 36, FS 174, 1622. |  |  |
| 756 | FS 19 | 1 | N | 6 a | 7.2; 32-4 | Pale wash, mica. |  |  |
| 757 | unstrat. |  |  | 6 a | 11.3; 22 | Exterior surface pale. Interior surface worn. |  |  |
| 758 | SS 140 | 2 | N | 5 | 10.0; 16.0 |  |  |  |
| 759 | ER 300 |  | N | 6 | 9.2; 22.5 | Pale wash, mica. Upper fill in MELM excavations. |  |  |
| 760 | DH 64 | $\begin{aligned} & 1 \text { or } \\ & \text { later } \\ & \hline \end{aligned}$ | N | 5 | 6.5; base $\text { d. }=3.2$ | String-cut base. | 84.54 |  |
| 761 | SS 136 | 2 | N | 5 | 8.5; 5.4 | String-cut base, smoothed. | 83.95 | 5099 |
| 762 | FS 2320 | 2 | N | 5b | 7.2; 5.0 | Almost complete, ?handmade. | 93.94 | 14201 |
| 763 | SS 1256 | 1 | N | 5b | 7.9; 8.2 | Topsoil. String-cut base. |  |  |
| 764 | FS 1876 | 2b | N | 5 | 8.1; 7.6 | Almost complete, heavily burnt, brown, mica. Fill in Rm 41. | 92.5 |  |
| 765 | FS 178 | 2b | N | 5 | 8.6; 5.8 | Pale green. Larger, coarser version from SS 94 in ware 5b. | 83.31 |  |
| 766 | FS 179 | 2a | N | 5 | 10.7; 8.0 | Greenish ware, surface worn. Same type with a cut base from SS 865 . | 83.38 |  |
| 767 | DH 81 | 3 | M/L | 6 | 11.5; 8.4 |  | 84.132 |  |
| 768 | FS 2330 | 2 b | N | 6 a | 13.5; 10.5 | Pale cream surface. | 93.136 |  |

Artetact Drawings


## Artefact Drawings

Figure 424. Post-Akkadian bottles and small jars (769-800), scale 1:4 (778 E 793 are Akkadian).

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions $h t ; d$. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 769 | FS 1755 | 3/2 | M/N | 2b | 5.8; 2.6 | Well-smoothed surface. Same shape with a neck from FS 2237 in ware 6 with pale surface. | 91.13 |  |
| 770 | FS 566 | 2 | N | 5 | 4.0; 9.3 max. | Base cut. Cream surface. Topsoil. |  |  |
| 771 | FS surface | 1 | N | 5 | 7.3; 6.3 | Almost complete, rim very worn, pale slip. | 86.18 | 8260 |
| 772 | FS 832 | 2 | N | 5 | 6.0; 3.8 |  |  |  |
| 773 | SS 607 | 1 | N | 6 | 8.5; 3.6 |  | 91.36 |  |
| 774 | FS 846 | 2 | N | 5b | 7.5; 10.4 max. | Yellow-buff surface. |  |  |
| 775 | FS 1118 | 2 b | N | 5 | 7.7; 3.4 | Lightly burnished surface. Same shape, no rim \& without handles from SS 240 in ware 2 b. | 84.119 |  |
| 776 | SS 1099 | ? 1 | N | 6b | 9.5; 3.8 |  | 93.205 |  |
| 777 | FS 69 |  | N | 6b | 7.5; 12.4 max. | Sherds from similar shaped vessels from FS 104 (red-burnished) \& SS 88. | 81.19 | 4121 |
| 778 | SS 1210 | 3 | M | 5 | 10.2; 3.6 | Surface worn. Found in situ on a Tr. D floor (Fig. 132). Further example from FS 821(Level 2) in ware 6. | 91.91 | 12164 |
| 779 | FS 2338 | ?2 | N | 5 | 9.8; 3.1 | Almost complete, possibly handmade. | 93.134 |  |
| 780 | SS 1098 | 2/1 | N | 5b | 9.4; 6.7 | Wash on edge of tell, near curving wall. |  |  |
| 781 | FS 566 | 3/2 | N | 5 | 9.7; 6.0 | Topsoil above Vaulted Building. | 87.51 | 9196 |
| 782 | FS 269 | 2c | N | 5 | 11.2; 5.4 | Yellow slip / wash. | 83.83 | 5097 |
| 783 | SS 138 | 2 | N | 6 | 15.1;3.8 | Orange-brown fabric. Black slip from shoulder down ?kiln effect, well-smoothed upper surface. | 83.94 | 5094 |
| 784 | SS 418 |  | M/N | 5 | 9.6; 6.2 | Topsoil, east side of Courtyard 7. | 90.122 | 11114 |
| 785 | FS 2204 | 1 | N | 5 | 10.2; 7.3 | Mica. Topsoil. | 92.16 | 13260 |
| 786 | DH 58 | 1 | N | 5 | 9.8; 8.2 | Pale surface. | 84.55 | 6120 |
| 787 | SS 865 |  | ? N | 6 | 10.5; 8.6 | Base cut/scraped. Topsoil. | 91.34 | 12244 |
| 788 | FS 2320 | 2 | N | 5b | 15.6; 10.5 | Heavy mica. |  |  |
| 789 | $\begin{aligned} & \text { SS 959/ } \\ & 964 \end{aligned}$ |  | ?M/N | 5b | 6.6; 3.2 | Worn surface. Topsoil or level 4 fill. | 93.164 |  |
| 790 | FS 2320 | 2 | N | 5a | 7.3; 5.0 | Little chaff. |  |  |
| 791 | FS 1641 | 2a | N | 5 | 6.7; 6.1 max. |  |  |  |
| 792 | SS 632 | 1 | ? N | 5 | 10.2; 6.2 | Topsoil. |  |  |
| 793 | SS 250 | 3 | M | 5 | 4.3; 9.0 | Date uncertain; no complete examples. |  |  |
| 794 | FS 2335 | 2 | N | 8 a | 6.0; 10.8 | Red-brown paint/slip on exterior worn, ?signs of burnishing on interior. Mica and very fine black grit. |  |  |
| 795 | SS 418 |  | ?M/N | 5b | 13.5; 5.4 | Topsoil, Courtyard 7. | 90.123 |  |
| 796 | SS 1097 | 1 | N | 5 | 15.0; 6.6 | Heavy wheel ribbing. Pale surface. 'Isin-Larsa' floor. | 93.169 | 14182 |
| 797 | SS 700 |  | ?N | 5b | 15.2; 4.5 | Topsoil above curving wall. |  |  |
| 798 | FS 2320 | 2 | N | 5 | 16.1; 5.8 | Greenish fabric. | 93.93 |  |
| 799 | SS 1018 | ?3/2 | ?M/N | 5b | 18.2; 5.3 | Base scraped. | 92.34 |  |
| 800 | CH 8 | 2 | N | 5b | 20; 6.8 | Found on floor with pots 692, $705 \& 832$. Flaky surface. Munsell 5Y 8/2 'white'. | 80.2 |  |

## Artefact Drawings



## Artefact Drawings

Figure 425. Post-Akkadian jars with ribbed shoulders (801-19), scale 1:10 (819 is Akkadian).

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 801 | $\begin{aligned} & \text { FS } 1396 \\ & / 1403 \end{aligned}$ | 2/1 | N | 5b | 22.5; 12.0 |  |  |  |
| 802 | $\begin{aligned} & \text { FS } 1396 \\ & / 1403 \end{aligned}$ | 2/1 | N | 6a | 35; 33.5 |  |  |  |
| 803 | FS 435 | 2 | N |  | 41.8; 27.5 | Perforated base. Contained copper/bronze tweezers 85. |  |  |
| 804 | FS 425 | 2 | N | 6a | 21.5; 13.5 |  |  |  |
| 805 | FS 1093 | 2a | N | 6 | 32; 11.5 | Pale surface. Further examples from FS levels 1 \& 2, latter has more marked ribbing. | 84.116 |  |
| 806 | ER 11 | 1 | N | 5 b | 36.5; 27.8 | Perforated base. Shape oval and distorted. Found on floor with 809 . | 78.70 |  |
| 807 | FS 1013 | 2a | N | 6 | 32; 27 | Rounded ribbing on shoulder, shallow grooving on rest of body. | 84.37 |  |
| 808 | FS 395 | 2 | N | 5b | 38.8; 31.5 | Perforated base. |  |  |
| 809 | ER 11 | 1 | N | 5b | 54; 24 | On floor with 806. | 78.194 | 1000 |
| 810 | $\begin{aligned} & \text { SS 62/ } \\ & 63 \end{aligned}$ | 2 | N | ?7 | 61; 27 | Gritty grey / brick paste, buff surface. | 83.116 |  |
| 811 | SS 18 | 1 | N | 6 | 9.5; 15.4 |  |  |  |
| 812 | ER 10 | 1 | N | 5 b | 31.5; 12 |  |  |  |
| 813 | CH 16 | 2 | N | 6a | 30.4; 13 | Munsell 7.5YR 7 / 4 'pink' fabric and slip. Interior scraped. |  | 35 |
| 814 | CH 7 | 2 | N | 6a | $\begin{gathered} 12.8 ; \text { base } \\ \text { d. }=7.2 \end{gathered}$ | Same Munsell colour as previous. |  |  |
| 815 | FS 706 | 2 b | N | 5 b | 18.8; 13.8 | Pale surface, interior scraped, incised decoration on shoulder. |  |  |
| 816 | FS 1854 | 2a | N | 5 | 17; 11.3 |  |  |  |
| 817 | $\begin{aligned} & \text { SS } 100 / \\ & 108 \end{aligned}$ | 2 | N | 5 b | 19; 21 | Lower interior scraped. |  |  |
| 818 | DH 57 | 1 b | N | 6 | 38.5; 9.2 | Pale surface. Uppermost Level 2. Further example from FS 1854, level 2a. | 84.183 |  |
| 819 | SS 416 | 3 | M | 6 | 49.5; 18.8 | Buff surface. | 90.132 |  |



## Artefact Drawings

Figure 426. Post-Akkadian iars with sharp shoulder carination (820-22) and round-based post-Akkadian jars, (823-32), scale 1:4. except 820, 824-9, 832, scale 1:10 ( 821 is Akkadian).

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 820 | CH B 2 | 1 | N | 6 | 8.6;18.7 | Wet-smoothed inside and outside rim. Associated with MELM Rm 14. |  |  |
| 821 | FS 1200 | 3 | M | 6 | 20; 8.8 | Fill of lintel building. |  |  |
| 822 | $\begin{aligned} & \text { SS 614/ } \\ & 629 \end{aligned}$ | 2 | N | 6 | 26.2; 9.0 | Pale surface. Interior and exterior surface scraped. Bitumen splashes on exterior. |  |  |
| 823 | FS 2220 | 2 b | N | 5b | 16.4; 13 | Perforated base. Fill of Rm 53. | 92.74 |  |
| 824 | DH 57 | 1 b | N | 6 | 31.0; 30 | Pale surface. Small perforation in base. | 84.137 |  |
| 825 | FS 2220 | 2 b | N | 5 b | 35.4; 10.8 |  | 92.195 |  |
| 826 | FS 1036 | 2a | N | 5 | 32.5; 13.8 | Rm. 31. Further example with finer rim from FS 2243, fill of Rm 32, Level 3. | 84.87 |  |
| 827 | FS 837 | 2 | N | 6 a | 33.5; 11.8 | Light brown surface. | 92.13 |  |
| 828 | DH 57 | 1 b | N | 5 | 38.9; 12.2 | Interior heavily scraped. Pot mark on shoulder. | 84.121 |  |
| 829 | ER 10 | 2 | N | 5 | 70; 27 | Reserve slip on exterior, pot mark on shoulder. | 78.69 |  |
| 830 | FS 654 | 2 | N | 5 | 20.3; 11.3 | Three pierced lugs, traces of bitumen on rim, lower body scraped. Further example from FS 1593 (Level 1) with short neck. | 90.33 |  |
| 831 | FS 1875 | 2 | N | 6 a | 23.0; 4.5 | Pale surface, two pierced lugs. |  |  |
| 832 | CH 8 | 2 | N | 5 b | 57.5; 21.0 | Found on floor with pots 692 \& 800 . | 80.1 |  |

Artefact Drawings


## Artefact Drawings

Figure 427. Post-Akkadian jars, closed forms (833-40, 847-8) and cooking vessels (841-6) scale 1:10, except 845-8 scale 1:t 18.5 is Akkadian).

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 833 | CH 132 | 2 | N | 6 | 27; 11.4 | Base deliberately cut away. Found on same floor as 740 \& 741. Munsell 5YR 6/6 to 5Y 8/2 'reddish yellow' to 'white'. | 80.13 |  |
| 834 | FS 16 | 2a | N | 5b | 8.4; 12.6 |  |  |  |
| 835 | FS 2335 | 2 | N | 5 b | 14; 11 |  |  |  |
| 836 | SS 662 | 2 | N | 6 | 22.5; 8.5 | Pale surface. | 91.82 |  |
| 837 | CH 16 | 2 | N | 5 c | 28; 10.4 | Munsell 5Y 7/3 'pale yellow'. | 76.16 | 36 |
| 838 | FS 1007 | 2a | N | 6 b | 30; 10.8 | Sharply-cut collar rim. | 84.89 |  |
| 839 | FS 1275 | 2 a | ? N | 6a | 49; 22.0 | Date uncertain, this locus also contains Uruk material, but probably post-Akkadian. |  |  |
| 840 | FS 2219 | 2a | M/N | 5b | 46.5; 18.8 | Complete, pale wash. From floor associated with kiln. Further example from FS 1957 (TB 14258). | 92.69 |  |
| 841 | DH 57 | 1 b | N | 9 | 27.8; 18.5 | Both grit \& chaff inclusions, dark core. Heavily burnt base. |  |  |
| 842 | FS 842 | 2 | N | 9 | 30.2; 20 | Heavy chaff \& large white grits, dark core. Vertical smoothing on body. | 92.18 |  |
| 843 | CH B 3 | 1 | N | 9 | 29.8; 25 | Fabric carbonized throughout, except for part of rim, Munsell 7.5YR 5/2 'brown' to 5YR 5/3 'reddish brown'. Heavy grit \& mica. | 76.20 |  |
| 844 | ER 11 | ? $1 / 2$ | ? N | 9 | 44;31.5 | Burnished exterior. Light brown fabric with black core, heavy grit \& mica. | 78.58 |  |
| 845 | FS 1500 | 2 | N | 9 | 14.3; 13.4 | From well. Heavy grit and mica, heavily burnt. | 87.5 |  |
| 846 | SS 153 | 2 | N | 9 | 4.5; 15 | Heavy grit. |  |  |
| 847 | FS 1627 | 1 b | N | 6 a | 17.5; 18.8 | Pot drain sunk into Level 1b floor. |  |  |
| 848 | SS 515 | 4 | M | 6 | 23.2; 10.5 | Found upside-down within urn 1414, together with the base of a similar smaller jar (88.44). Pale surface. <br> Urn 1414 also contained sheep bones. | 88.43 | 10209 |

Artetact Drawings


## Artefact Drawings

Figure 428. Post-Akkadian urns (849-63), scale 1:10, except 857 scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 849 | SS 211 |  | N | 6a | 22.8;16 | Pale wash, interior scraped, wear marks on rim interior ?caused by lid. Topsoil. |  |  |
| 850 | SS 211 |  | N | 6a | 22; 20.2 | Pale wash, heavy chaff, surface pitted. |  |  |
| 851 | FS 1020 | 1/2a | N | 5 | 26.2; 25.0 | Almost complete. Pale surface. | 84.109 |  |
| 852 | SS 662 | 1/2 | N | 6a | 21; 20 | Pale surface. | 91.83 |  |
| 853 | FS 1030 | 2a | N | 6 | 30; 25.6 | Almost complete, pale surface. | 84.38 |  |
| 854 | SS 757 | 1 | N | 5 | 29.7; 30.5 | Almost complete. From floor. | 92.137 | 13190 |
| 855 | ER 10 | 2 | N | 5b | 37.8; 27.5 | Base interior worn. | 78.65 |  |
| 856 | FS 2220 | 2b | N | 5b | 37.6; 35 | Perforated base. |  |  |
| 857 | FS 179 | 2a | N | 6a | 18.1; 18.5 | Heavy chaff especially visible on interior of base. |  |  |
| 858 | FS 35 | 2a | N | 5 b | 49; 57 | Perforated base. |  |  |
| 859 | ER 54 | 1 | N | 5 | 39.5; 44 | Interior surface worn. | 78.247 |  |
| 860 | SS 51 | 1 | N | 5 | 44.2; 49 | Almost complete. Slightly greenish buff paste. | 83.58 |  |
| 861 | FS 1054 | 2a | N | 6 a | 59; 54.2 | One of three urns cut to form storage feature FS 1054 in Rm 27. The other pots are $348 \& 864$, Fig. 86. | 84.157 |  |
| 862 | FS 218 | 2 b | N | 10 | 57.8; 49 |  | 83.81 |  |
| 863 | SS 1002 |  | ? N |  | 50.2; 47.5 | External surface, post-SSTC building. |  |  |

Artefact Drawings


## Artefact Drawings

Figure 429. Large storage iars, post-Akkadian (86t-72), scale 1:10, except 872, scale 1:20.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht.; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 864 | FS 1054 | 2 a | N | 5 | 57.3; 27 | One of three large jars cut to form storage feature FS 1054 in Rm 27, with 348 \& 861. See also Fig. 86. | 84.117 |  |
| 865 | FS 173 | 2 a | N | 6 | 67; 27 | Almost complete. Head of soakaway in cobbled room of Grey Libn Building (GLB, Fig. 83). Original base restored in drawing. | 83.85 |  |
| 866 | FS 97 | 1 b | N | 5 | 70.2; 30.4 | Rm A, in small pit cut just below RLB, into grey ash layer. Top of pot broken by levelling for the RLB. | 83.22 |  |
| 867 | FS 209 | 2 a | N |  | 47.8; 23 | Complete. | 83.87 |  |
| 868 | DS 8 |  |  | 5 b | 46.2; 21 | Almost complete. Date uncertain, possibly Akkadian. | 85.27 |  |
| 869 | SS 1002 |  | ?M/N | 6 a | 65.5; 21.5 | Complete. Pale surface, vertical smoothing on lower body. From ancient ground surface external to SSTC building. Possibly Akkadian. | 92.28 |  |
| 870 | ER 86 |  | ? N | 10 | 61;36 | Context uncertain, probably post-Akkadian. | 78.156 |  |
| 871 | FS 2200 | 2 | N | 6a | 57; 32.5 | Dark grey core. |  |  |
| 872 | ER 54 | 1 | N | 5 | 115; 50 | Perforation near base, 2 circular potters marks on neck/shoulder. Jar set in bricks. Post-Akkadian context; ?originally Akkadian. Cf. Fig. 34. | 78.259 | 1001 |

Artefact Drawings


## Artefact Drawings

Figure 430. Akkadian round-based cups and bowls; flat-based bowls with rounded sides (873-906), scale 1:t.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 873 | SS 540 | 4 | M | 5 | 4.6; 9.6 | Internal wiping = ringed pattern-burnished effect. Grey-buff fabric. |  |  |
| 874 | SS 565 | 4 | M | 6 a | 5.6; 8.2 | Pale surface, handmade. Akkadian or earlier. |  |  |
| 875 | SS 316 | 4 | M | 6 | 8.2; 11.2 | Base scraped. ?ED. |  |  |
| 876 | ER 102 | 4 | M | 5 | 7.3; 9.4 | Almost complete. Munsell 10YR 7/3 very pale brown. | 80.61 | 3131 |
| 877 | SS 811 | 4 | M |  | 6.9; 9.0 | Green/yellow overfired fine grit fabric. ?ED date. |  |  |
| 878 | SS 746 | 3 | M | 6 | 6.6; 11.2 | Complete. Base scraped. | 92.36 | 13277 |
| 879 | CH 408 | 5 | M | 5 | 8.5; 12.8 |  |  |  |
| 880 | ST 1010 | 2 | M | ? 6 | 6.5; 13 |  | 78.175 |  |
| 881 | SS 549 | 4 | M | 5a | 7.3; 13.5 | Wheel marks. ?ED. |  |  |
| 882 | FS 2250 | 5/4 | M | 5 | 7.1; 13.4 | Base shaved. |  |  |
| 883 | SS 603 | 4 | M | ?2b | 6.5; 12.5 | Warped. ?ED. Further examples from SS 603 in ware 5 \& from FS 1899/ 1916 in ware 5a. | 91.45 | 12214 |
| 884 | DH 57 | 1b | ? N | ?2b | 6.5; 13.7 | Very fine greenish fabric. |  |  |
| 885 | ST 105 | 4 | M | 5/6 | 7.3; 15 | Complete, base cut \& smoothed. From hearth found with pots 1197, 1234, 1319 \& 1329, metal objects 1,17 \& 63 \& stone objects 22 \& 39 . | 83.14 |  |
| 886 | FS 1363 | 3 | M | ? 5 | 7.9; 11.8 | Greenish-grey fabric. |  |  |
| 887 | FS 700 | 2 | N | ?2b | 9.7; 13.8 | Burnished. | 90.117 |  |
| 888 | FS 1362 | 3 | M | 5b | 10.4; 16.4 | Red pigment on interior. | 85.50 | 7233 |
| 889 | ER 81 | 4 | M | 5 | 5.6; 11.4 | Munsell 10YR 6/4 'light yellowish-brown'. String-cut base. | 80.165 |  |
| 890 | FS 1829 | 5 | M | 5a | 6.0; 11.6 | Base scraped. |  |  |
| 891 | CH 204 | 5 | M | 5 | 6.8; 12.8 | Munsell 2.5YR 7/2 'light grey'. (Level $5 / 6$ wall.) | 80.105 | 3153 |
| 892 | CH 237 | 4 | M | 6 | 8.2; 17.8 | Pale surface, $5 \mathrm{Y} 8 / 2$ 'white'. | 80.116 |  |
| 893 | SS 944 | 4 | M | 5 | 5.2; 12 | Further example from SS 252 in ware 2b. |  |  |
| 894 | ST 1010 | 2 | M | 5 | 5.4; 13 | Base scraped. | 78.176 |  |
| 895 | ST 3 | 3/2 | M | 5a | 5.8; 14 | Further identical examples from CH 476 in ware 4, AL 5 (84.3) \& SS 754 (92.127). |  |  |
| 896 | FS 2316 | 2b | M/N | 5b | 7.5; 15 | Further examples from FS 1720 \& SS 1070. |  |  |
| 897 | SS 502 | 4 | M | 6 a | 4.3; 8.0 | String-cut base. | 88.32 | 10195 |
| 898 | SS 1070 | 4 | M | 5b | 4.8; 10 | String-cut base. |  |  |
| 899 | CH 189 | 5 | M | 5 | 6.7; 11.8 | Burnt. |  |  |
| 900 | CH 189 | 5 | M | 5a | 6.7; 13 |  |  |  |
| 901 | FS 1117 | 3 | M | 5b | 5.6; 12.5 | Further examples from FS 1515 \& 1566 \& ER 236 (TB 3154). |  |  |
| 902 | FS 1364 | 3 | M | 5a | 5.9; 12.2 | Further example from SS 944. |  |  |
| 903 | CH 354 | 4 | M | 5a | 6.6; 14.3 | Base shaved. Further example from CH 476 (83.73). | 81.75 |  |
| 904 | CH 423 | 5/4 | M | 5 | 5.9; 11.8 | String-cut base. | 81.87 | 4127 |
| 905 | FS 1854 | 2 a | M/N | 5 | 6.7; 11.8 | Very sparse chaff. |  |  |
| 906 | DH 76 | 3 | M | 5b | 6.5; 12.8 | String-cut base. Further examples from SS 603 \& FS 2206 in ware 6 . |  |  |

Artefact Drawings


## Artefact Drawings

Figure 431. Akkadian bowels, inturned and coerted rims; carinated bowls (907-38), scale 1:4 (929 \& 934 are postAkkadian).

| No. |  <br> locus | Area <br> level | Range | Ware | Dimensions <br> ht; d. | Comments | Reg. <br> no. | TB cat. <br> no. |
| :---: | :--- | :---: | :---: | :---: | :---: | :--- | :---: | :---: |
| 907 | FS 1825 | 5 | M | 5 a | $3.7 ; 10.8$ | Further examples from FS 863, ware 5. |  |  |
| 908 | ER 224 | 3 | M | $5 b$ | $4.9 ; 11.5$ | Further example from DH 2. |  |  |



## Artefact Drawings

Figure 432. Medium-sized Akkadian bowls (939-52), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 939 | SS 744 | 3 | M | 5 | 6.6; 18.8 |  |  |  |
| 940 | $\begin{aligned} & \text { SS } 1273 / \\ & 1288 \end{aligned}$ | 3 | M | 5b | 9.9; 20 | Perforated base. Pale greenish surface. | 92.206 |  |
| 941 | SS 2312 | 2 | N | 6 | 11.1; 22.4 | Lower body and base shaved. Pale surface. | 93.92 | 14175 |
| 942 | SS 1277 | 3 | M | 5 b | 9.8; 23 | Bowl \#2, Fig. 125, SS Rm 33; 2nd example (in ware 6) from SS 1267, TB 13214 (bowl \#1, Rm 32); also SS 1286 (93.33) from Rm 37. See p. 92. | 92.218 | 13215 |
| 943 | FS 1447 | 3a | M | 5b | 13.6; 27.5 | Pale surface, smoothed lower exterior. |  |  |
| 944 | FS 1654 | 3 | M | 6 a | 12.5; 25.8 | Similar, larger vessel, oval in plan from SS 1244. |  |  |
| 945 | FS 325 | 3 | M | 6 | 10.5; 29.0 |  |  |  |
| 946 | FS 2335 | 2/3 | M/N | 6a | 10.4; 27.4 |  |  |  |
| 947 | FS 800 | 4 | M | 5b | 11.4; 28.8 | Creamy-green surfaces. 1 lug extant. |  |  |
| 948 | FS 1821 | 5 | M | 6a | 8.5; 23.4 | Grey core. | 91.104 |  |
| 949 | CH 189 | 5 | M |  | 10.9; 28.5 | Lower body and base scraped. |  |  |
| 950 | FS 1478 | 3 | M | 6 a | 10.2; 28 | Grey core. Lower body and base scraped below two rows of finger impressions. |  |  |
| 951 | FS 807 | 5 | M | 6 | 8.2; 19.2 | Complete, exterior burnished. | 91.121 | 12215 |
| 952 | FS 2240 | 3 | M | 6 b | 11.3; 26.5 | Lower exterior roughly finished. |  |  |



## Artefact Drawings

Figure 433. Akkadian medium-sized bowls (953-9); miscellaneous shallow bowls (960-61, 971); flat-based beakerlike bowls (962-81), scale 1:t.
$\left.\begin{array}{|l|l|c|c|c|c|l|l|l|}\hline \text { No. } & \begin{array}{l}\text { Area \& } \\ \text { locus }\end{array} & \begin{array}{l}\text { Area } \\ \text { level }\end{array} & \text { Range } & \text { Ware } & \begin{array}{c}\text { Dimensions } \\ \text { ht; d. }\end{array} & \begin{array}{l}\text { Comments }\end{array} & \begin{array}{c}\text { Reg. } \\ \text { no. }\end{array} \\ \text { TB cat. } \\ \text { no. }\end{array}\right]$.


## Artefact Drawings

Figure 434. Benker-like bowels with low, disc-like bases (982-5, 992-1008); straight-sided bowls (987-91); lowfooted bowls (986. 1009-18), scale 1:t.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | $\begin{aligned} & \text { TB cat. } \\ & \text { no. } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 982 | CH 445 | 6 | L | 5a | 6.4; 12 | Pink ?slip or stain on interior. Further example from SS 944. | 81.117 |  |
| 983 | CH 423 | 5/4 | M | 5b | 7.0; 12.4 | String-cut base. | 81.85 | 4140 |
| 984 | CH 437 | 5 | M | 5 | 6.1; 11.4 | String-cut base. | 81.84 | 4129 |
| 985 | FS 549 | 5 | M | 5 | 5.9; 12 | Pale wash. |  |  |
| 986 | SS 200 | 3 | M | 5 | 5.9; 10.8 | Pale wash, string-cut base. |  |  |
| 987 | AL 6 |  | M | 5 | 4.7; 11.8 | Further example from SS 314. |  |  |
| 988 | CH 370 | 4 | M | 5a | 6.9; 14.5 |  | 81.74 |  |
| 989 | FS 1682 | 3 | M | 5 b | 7.0; 14.6 | Pale greenish surface. |  |  |
| 990 | CH 305 | 4 | M | 6 | 9.1; 18.5 |  |  |  |
| 991 | CH 179 | 4 | M | 5 | 11; 27 | Identical vessel in ware 1c from the same locus, see 36. |  |  |
| 992 | SS 1022 | 5 | M | 5 b | 4.8; 9.2 | String-cut base. |  |  |
| 993 | SS 258 | ?3 | M | 6 | 5.7; 10.2 | String-cut base. Further examples from FS 1953, 798 \& in ware 5 SS 413 (90.95), FS 1897 (TB 13284), $733 \& 798$. |  |  |
| 994 | SS 809 | 4 | M | 6a | 6.6; 11.6 | Further examples from SS 825, in ware 5 FS 802 \& 2323. |  |  |
| 995 | ER 219 | 4 | M | 5 | 6.8; 12.5 | Brittle fabric, $5 \mathrm{Y} 7 / 3$ pale yellow. 10 further examples (2 in ware 6,1 in 5 b, rest in ware 5) from Phase M. | 80.71 |  |
| 996 | FS 807 | 5 | M | 6 | 6.7; 12 | String-cut base. Further examples from FS 801, 807 (92.156) \& in ware 5 FS 2306 \& SS 1022. | 91.106 | 12212 |
| 997 | ST 25 | 3 | M | 5 | 7.2; 11.6 | String-cut base. 16 further examples ( 3 in ware 6,1 in 5 b, rest in ware 5) from Phase M. | 81.18 | 4137 |
| 998 | FS 1370 | 5 | M | 5 | 6.4; 15 | String-cut base. |  |  |
| 999 | SS 545 | 4 | M | 6 | 5.8; 8.7 | String-cut base. Further examples from SS 958, 825, 854 \& FS 798. |  |  |
| 1000 | SS |  |  | 6 a | 5.9; 9.4 | String-cut base. SS surface. |  |  |
| 1001 | SS 549 | 4 | M | 6 a | 5.7; 8.8 | String-cut base. Further examples from SS 590 \& in 5b SS 223. |  |  |
| 1002 | SS 560 |  | M | 6 a | 6.9; 9.8 | Complete, string-cut base. Further examples from FS 1758, SS 936, 1085 (TB 13296) \& in ware 5 SS 1041 \& FS 1887. | 90.16 | 11096 |
| 1003 | SS 1018 | 4 | M | 5b | 8.0; 12.5 | String-cut base. Upper fill Rm 30. |  |  |
| 1004 | FS 1901 | 5 | M | 6 a | 4.7; 9.2 | String-cut base. | 93.41 |  |
| 1005 | FS 1897 | 5 | M | 5b | 5.8;9.9 | String-cut base. Further examples from SS 686 \& 1025. |  |  |
| 1006 | SS 854 | 1 | M | 6 | 6.1; 11.1 | String-cut base. Further example from SS 944. |  |  |
| 1007 | FS 789 | 3 | M | 5 | 7.2; 12 | String-cut base. Further examples from SS 1284 \& FS 2320. |  |  |
| 1008 | FS 604 | 3 | M | 6 | 6.3; 11.8 | String-cut base. | 87.64 | 9204 |
| 1009 | FS 719 | 3 | M | 5 | 5.6; 11.5 | String-cut base. |  |  |
| 1010 | FS 790 | 3 a | M | 5 | 5.0; 11.2 | String-cut base. | 91.66 | 12227 |
| 1011 | $\begin{aligned} & \text { SS } 1273 \\ & \hline / 1258 \end{aligned}$ | 4 | M | 5b | 5.6; 13.8 | String-cut base. |  |  |
| 1012 | SS 232 | 2/3 | M | 5b | 6.3; 13 | String-cut base. Pale surface. | 88.84 |  |
| 1013 | FS 2243 | 3 | M | 5 | 6.2; 13.2 | String-cut base. | 92.88 |  |
| 1014 | FS 2335 | 3/2b | M/N | 6 a | 6.2; 13 | String-cut base, yellow wash. | 93.133 |  |
| 1015 | SS 1032 |  | M | 5 | 8.8; 11.2 | String-cut base. Pale wash, greenish fabric. | 92.31 |  |
| 1016 | SS 338 | 6 | L | 5b | 8.1; 13.5 | Coarse greenish paste. |  |  |
| 1017 | FS 1891 |  |  | 5 | 6.3; 14.4 | Mixed debris below old spoilheap. | 92.20 | 13273 |
| 1018 | SS 372 | post 4 | ?M | 6 a | 6.3; 14.7 | String-cut base. |  |  |



## Artefact Drawings

Figure 435. Akkadian shallow, open bowls (1019-37); Akkadian and post-Akkadian basins (1038-45), scale 1:4, except 103 - 4 . scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1019 | FS 1869 | 3 | M | 6b | 5.0; 14.6 | String-cut base. |  |  |
| 1020 | SS 372 | ? 3 | M | 5 b | 5.9; 13.5 | String-cut base. |  |  |
| 1021 | SS 1091 | 3 | M | 6a | 5.5; 13.7 | String-cut base. |  |  |
| 1022 | SS 754 | 4 | M | 5 | 6.0; 15 | String-cut base. Large white grits. Further example from SS 1079. | 92.122 | 13272 |
| 1023 | FS 1758 | 3 | M | 6 | 5.8; 12.5 | String-cut base, with incised cross. Further example from SS 1094. |  |  |
| 1024 | SS 934 |  | M | 5 | 6.3; 15.5 | String-cut base, bitumen on interior, very sparse chaff. Further example from SS 958. |  |  |
| 1025 | SS 223 | 4/3 | M | 6 | 6.3; 16.7 | Cream surface. String-cut base. | 88.40 |  |
| 1026 | SS 936 | 3 | M | 5 b | 7.0; 15.2 | String-cut base, very sparse chaff. |  |  |
| 1027 | SS 540 | 4 | M | 6 | 7.2; 18.6 | String-cut base. Pale wash, interior bitumen lined, mica. | 88.53 |  |
| 1028 | SS 296 | 4 | M | 5 | 5.4; 12.8 | String-cut base. Further examples in ware 6 from SS 370, 686,423 ( $\times 2$, both TB 11115)). | 88.87 |  |
| 1029 | SS 253 | 3 | M |  | 4.8; 17 | String-cut base. |  |  |
| 1030 | SS 677 | 4 | M | 6 a | 5.4; 15 | String-cut base. Further example from SS 754 (TB 13276). |  |  |
| 1031 | SS 1224 | 3 | M | 6 | 7.5; 14.8 | String-cut base. Pale surface. Basin in floor. |  |  |
| 1032 | SS 541 | 3 | M | 6 | 6.7; 16.6 | String-cut base. Pale wash. | 88.54 |  |
| 1033 | SS 749 | 4 | M |  | 7.7; 19 | String-cut base. |  |  |
| 1034 | SS 734 |  |  | 6 | 8.1; 19 | String-cut base. Topsoil. |  |  |
| 1035 | SS 223 | 4/3 | M | 6 b | 8.5; 20.9 | Found with bowl 88.41 (same shape as 658) as a lid, 922 \& 928 found nearby. String-cut base. | 88.42 |  |
| 1036 | SS 794 | 3 | M | 5 b | 11.1; 27 | String-cut base. Pale yellowish-green paste. |  |  |
| 1037 | SS 525 | ?3/2 | M/N | 6 | 10.2; 19 | String-cut base. |  |  |
| 1038 | SS 543 | ?3/2 | M/N | 6 a | 14.2; 29 |  |  |  |
| 1039 | $\begin{aligned} & \text { FS 195/ } \\ & 198 \end{aligned}$ | 2 | M/N | 10 | 18.8; 36 | Almost complete. Further examples from FS 269, 351 \& DH 97. | 83.40 |  |
| 1040 | $\begin{aligned} & \text { DH } 81 / \\ & 78 \end{aligned}$ | 3 | M/L | 5b | 18.5; 37 | Further examples from FS 681, 1856, 1346 (85.85) | 84.138 |  |
| 1041 | FS 704 | 2 | N | 5 b | 18.4; 33.5 | Mended with bitumen in antiquity. | 90.118 |  |
| 1042 | SS 543 | ?3/2 | M | 6 a | 14.5; 28 | Base cut. Further examples from SS 545, 1219 \& FS Level 3 destruction. |  |  |
| 1043 | SS 944 | 4 | M | 5b | 15.8; 29 | Found upside-down in the upper fill of Rm 18 against the east wall. Rim oval and vessel splayed. Lower body scraped. | 93.24 |  |
| 1044 | FS 1758 | 3 | M | 5b | 16.5; 33.5 | Found upside-down on 1221 in fill, Rm 31. Base cut. | 91.19 | 12157 |
| 1045 | FS 437 | 3 | M | 10 | 18.2; 35 |  |  |  |



## Artefact Drawings

Figure 436. Large basins and open bowls, largely Akkadian (1046-64, 1070), scale 1:10; medium-sized bowls with tilled rims (1065-9, 1071-2), somle 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1046 | SS 1279 | 3 | M | 10 | 16.5; 34 | Pale surface, pink-brown paste, sparse sandy grit. |  |  |
| 1047 | FS 1875 | 2/3 | M | 5 b | 14; 37.5 | Base and lower body scraped. Further example from SS 1279. |  |  |
| 1048 | FS 2243 | 3 | M | 6 a | 15.2; 28.2 | Base and lower body scraped. Further examples from FS 2212 \& 2243. |  |  |
| 1049 | FS 1664 | 3 | M | 5b | 16.2; 38 |  |  |  |
| 1050 | FS 854 | 3 | M | 10 | 15.5; 36.6 | Lower body scraped. |  |  |
| 1051 | FS 606 | 4 | M | 6a | 18.6; 41.5 | Finger impressions on interior at junction of sides and base. |  |  |
| 1052 | CH B 11 | 4 | M | 6 b | 18.8; 38.2 | Fabric 7.5YR 6/4 'light brown', exterior surface 5YR 6/4 'light reddish brown'. Chaff. |  | 38 |
| 1053 | SS 1093 | 4 | M | 6a | 15.5; 25 | Pale surface. | 93.34 |  |
| 1054 | ST 1012 | 2 | M | 5 | 21; 39.8 |  | 78.245 |  |
| 1055 | SS 1233 | 4 | M | 5 b | 26.6; 58 | Lower body and base scraped. |  |  |
| 1056 | FS | 3 | M | 6a | 15; 31 | From FS Level 3 destruction. Further example from SS 1219. |  |  |
| 1057 | SS 917 | 4 | M | 5b | 23; ? | Further examples from SS 825, FS 1715 ( $\times 2$, one of which is in ware 6 ) \& FS 2227 ( $\times 2$, both in ware 10 ). |  |  |
| 1058 | FS 1451 | 3 a | M | 6a | 14.8; 30 | Pale wash, almost complete. | 86.14 | 8239 |
| 1059 | CH B 14 | 4 | M | 6a | 18.6; 38 | Fabric 5YR 7/4 'pink', surface 5Y 7/3 'pale yellow'. Interior worn, exterior scraped. |  | 37 |
| 1060 | SS 545 | 4 | M |  | 16.4;36 | Perforated base. Very burnt, ware uncertain, some chaff. |  |  |
| 1061 | FS 1685 | 3 | M | 6 a | 19.6;31.2 | Perforated base. 1 lug extant. |  |  |
| 1062 | SS 540 | 4 | M | 6 a | 20.4; 40 | Perforated base. |  |  |
| 1063 | FS 1774 | 3 | M | 5 b | 20.4; 41 | Complete. Perforated base, lower body shaved vertically. | 91.27 | 12156 |
| 1064 | FS 338 | 3 | M | 10 | 14.6; 37.5 | Lower body scraped. |  |  |
| 1065 | FS 1677 |  |  | 5 | 7.4; 19.8 | String-cut base. From baulk. |  |  |
| 1066 | CH 46 | 1 | N |  | 7.6; 20.2 | String-cut base. 10YR $7 / 2$ 'light grey'. Ur III foundation trench. | 80.19 |  |
| 1067 | SS 148 | 3 | M | 5 | 8.5; 17.6 | String-cut base. Further example from FS 1599. |  |  |
| 1068 | FS 453 | 3 | M | 6 a | 9.8; 20.2 | String-cut base. |  |  |
| 1069 | SS 525 | 3 | M | 6 | 10.8; 21.4 | String-cut base. Pale wash. Further examples from SS 632 (91.57) \& SS 1212. |  |  |
| 1070 | FS 1713 | 3 | M | 5 b | 20.2; 35 |  |  |  |
| 1071 | FS 451 | 4/3 | M | 6 a | 12.4; 19.2 |  |  |  |
| 1072 | SS 876 | 3 | M | 6 | 10.5; 22.5 | String-cut base. Pale wash. |  |  |



## Artefact Drawings

Figure 437. Akkadian folded rim bowls (1073-8), scale 1:4; large open bowls (1079-84), scale 1:10; Akkadian cups; beakers with rounded sides or bases (1085-97), soale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1073 | SS 736 | 3/2 | M | 6 | 8.1; 19.2 | String-cut base. |  |  |
| 1074 | SS 858 |  |  | 5 | 8.1; 19.5 | String-cut base, pale cream surface. Topsoil. |  |  |
| 1075 | FS 436 | 3/2 | M | 6 | 10.1; 23.5 | String-cut base, pale wash, very sparse chaff. |  |  |
| 1076 | FS 1599 |  | M | 6 | 8.2; 22 | String-cut base. Pale wash. Level 1 wall. |  |  |
| 1077 | SS 632 |  | M | 5 | 12; 23 | String-cut base. Topsoil. | 91.58 |  |
| 1078 | FS 304 | 2 b | N | 6 | 13; 25.2 | Pale surface. | 84.26 |  |
| 1079 | FS 1198 | 3 | M | 5 b | 27.5; 55 |  | 85.46 |  |
| 1080 | FS 1067 | 3 b | M | 6 | 26; 53 | Pale surface. | 84.120 |  |
| 1081 | $\begin{aligned} & \text { FS 1704/ } \\ & 1646 \end{aligned}$ | 3 | M | 5b | 12.2; 28 | Base scraped. |  |  |
| 1082 | FS 1758 | 3 | M | 5b | 14.4; 30.5 | Lower body scraped down. Base mended with bitumen in antiquity. |  |  |
| 1083 | SS 312 | 4 | M | 6 a | 13;30 | Buff surface, interior very worn. |  |  |
| 1084 | ER 17 | 3 | M | 6a | 25; 46 | Interior worn. | 78.80 |  |
| 1085 | ST 6 | 3 | M | 5 | 7.2; 6.6 | Pale surface, almost complete. | 81.6 | 4104 |
| 1086 | FS 2211 | 3 | M | 5 | 6.0; 5.8 | String-cut base. Overfired, yellowish paste. |  |  |
| 1087 | SS 1224 | 3 | M | 6 | 6.8; 7 | Contains bitumen. | 91.131 |  |
| 1088 | FS 1313 | 3 | M | 6 | 7.0; 7.8 | Almost complete, string-cut base, pale surface. | 85.39 | 7241 |
| 1089 | DH 92 |  | ?M/N | 5 | 7.4; 10.2 | 2 further examples from FS 1493. |  |  |
| 1090 | FS 1755 | 3 | M | 5 | 8.1; 10.4 | String-cut base. |  |  |
| 1091 | FS 807 | 5 | M | 5 | 8.8; 13.7 | Base shaved. | 93.42 |  |
| 1092 | FS 1674 | 3/2 | M | 5b | 9.8; 13.6 |  |  |  |
| 1093 | FS 1188 | 3 | M | 5b | 9.7; 14.4 | Grey-buff. |  |  |
| 1094 | CH 151 | 3 | M | 5 | 8.9; 13 | Almost complete. Munsell 10YR 7/4 'very pale brown'. | 80.36 | 3173 |
| 1095 | SS 825 | 4 | M | 6 | 10.9; 11 | Perforation in base made after firing. |  |  |
| 1096 | DH 15 | 1 b | ?M/N | 5a | 12.2; 13.9 |  |  |  |
| 1097 | SS 563 | $\begin{aligned} & 4 \text { or } \\ & \text { later } \end{aligned}$ | M | 5b | 12.9; 16.5 |  |  |  |

Artefact Drawings


Figure 438. Akkadian beakers (1089-130), scale 1:4 (1099 and 1106 are post-Akkadian).

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1098 | ER 206 | 3 | M | 6 | 9.5; 9.6 | String-cut base. | 80.55 |  |
| 1099 | FS 507 | 2 b | N | 5 | 8.6; 9.6 | Pale green surface. String-cut base. | 86.38 | 8267 |
| 1100 | SS 958 | 4 | M | 5b | 8.7; 10.1 | String-cut base. |  |  |
| 1101 | FS 1755 | 3 | M | 5 b | 8.7; 10.5 | String-cut base. Further example from SS 922. |  |  |
| 1102 | FS 1755 | 3 | M | 6 | 9.2; 12 | String-cut base, pale upper exterior. |  |  |
| 1103 | SS 825 | 4 | M | 5 | 9.5; 13.3 | Greenish fabric. |  |  |
| 1104 | SS 816 | 5 | M | 5 b | $9.2 ; 11.0$ | String-cut base. Further examples in ware 5 from SS 915 (91.89), 825 \& FS 1773. |  |  |
| 1105 | DS 3 |  | M | 5 | 8.8; 12.8 | String-cut base. Further examples from SS 214 ( $\times 5$ ), SS 825, 555 (88.89), DH 15, DS 15 \& FS 1646. |  |  |
| 1106 | FS 507 | 2b | N | 5 b | 8.3; 8.5 | Water-stained. | 86.39 |  |
| 1107 | SS 598 | 5 | M | 5 | 11.3; 10.4 | Complete. Pale surface. | 91.39 | 12238 |
| 1108 | CH 192 | 4 | M | 5 | 6.3; 10.0 | Munsell 5Y 8/2 'white'. Further example from CH 204. |  |  |
| 1109 | SS 555 | 4 | M | 6a | 8.6; 10.8 | String-cut base. | 88.97 | 10203 |
| 1110 | DH 2 |  | M | 5 | 8.4; 10.7 | Surface soil. String-cut base. 10 further examples from Phase M, 2 of which are in ware 6 . | 84.48 | 6150 |
| 1111 | FS 862 | 5 | M |  | 9.1;11.9 | Overfired, fine grit inclusions. Further examples from FS 2262 in ware 5b \& 2312 in ware 5. | 92.199 |  |
| 1112 | SS 403 | 5 | M | 6 a | 9.0; 11.2 | Complete. String-cut base. Further examples from SS 594, FS 1758, 318 \& $1770(\times 2)$. | 90.96 | 11094 |
| 1113 | FS 1885 | 5/4 | M | 5b | 9.0; 12.0 | Complete. String-cut base. Further example in ware 6 from SS 1093. | 92.9 |  |
| 1114 | FS 858 | 5 | M | 5b | 7.8; 10.4 | String-cut base. Further examples from SS 1081, 1018, in ware 6 SS 1070 \& in ware 5 SS 950 (93.36). |  |  |
| 1115 | FS 2335 | 3/2 | $\mathrm{M} / \mathrm{N}$ | 5 b | 7.3; 11.4 |  |  |  |
| 1116 | SS 1094 | 4 | M | 6 a | 7.8; 11.4 | String-cut base. |  |  |
| 1117 | FS 717 | 2 | $\mathrm{M} / \mathrm{N}$ | 6 | 8.1; 11 | String-cut base. Further examples from FS 1941, 1770 \& ware 5 from SS 580, 876, 677, 1970 (TB 14262) \& 1017. | 90.76 |  |
| 1118 | CH 17 | 3 | M | 5 b | 10.0; 11.0 | Munsell 5Y 8/2 'white' to 7/2 'light grey'. Lower body scraped. | 76.22 | 22 |
| 1119 | FS 2204 |  | M | 5a | $9.3 ; 12.0$ | Topsoil. Munsell 5Y $8 / 2$ 'white'. Further examples from DH 89 (84.133), FS 2236, 1704 (90.78), SS 417 \& 1219 (the last in ware 6 ). |  |  |
| 1120 | SS 677 | 4 | M | 6 | 10.0; 11.9 | Pale \& salmon surface. Further examples from FS 2236 \& 1957 (TB 14192). |  |  |
| 1121 | FS 2313 | ?3 | M | 5 | 11.0; 12.0 | Greenish paste. Further examples from SS 856, 904, FS 1778 \& 2201. | 93.58 | 14190 |
| 1122 | CHD 8 | 4 | M | 5b | 7.2; 10.0 | Munsell 10YR 8/3. | 76.38 | 10 |
| 1123 | FS 2263 | 3 | M | 5b | 6.9; 10.5 |  |  |  |
| 1124 | FS 318 | 3 a | M | 6 a | 8.0; 11.8 | String-cut base. 50 further examples, 39 in ware $5 \& 11$ in ware 6 including 92.217, SS Rm 33 floor (Fig. 125). |  |  |
| 1125 | FS 1887 | baulk | M | 5 b | 8.0; 10.5 | Further examples from SS $1245,1005,1243,1016(\times 2$, TB 13283), 703, 1257, 1276 (93.21), FS 858, 1770, 1946, 1451 (TB 14196), 1953 (93.57) \& 2313 (93.60). |  |  |
| 1126 | SS 852 | wash | M | 6 | 8.8; 10.3 | String-cut base. Further examples from SS 1269 (92.182), 1274 (TB 13297) Fig. 125, Rm 35 \#5 \& FS 2355 (TB 13282). | 91.54 | 12228 |
| 1127 | FS 351 | 3 | M | 5 | 7.7; 10.7 | String-cut base. Further examples from SS 211, 370 (91.31), 1240 (TB 12236), FS $1148 \& 1876$ (TB 13282). | 84.39 | 6149 |
| 1128 | FS 1380 | 5 | M | 5 b | 8.0; 12.3 | Further examples from SS 214, 1250 (92.211), 312 (TB 11093), 204 (TB 9202), 551 (88.67), 372, 502, FS 789, 549 (87.19), 1709 (TB 11097), 1548 (TB 9200) \& 604. | 85.83 | 7245 |
| 1129 | FS 1686 | 3 | M | 6 a | 8.2; 11.3 | String-cut base. Further examples from SS 585, 1017, 1269 \& 303 (TB 11095). |  |  |
| 1130 | FS 549 | 5/6 | ?M |  | 8.8; 13.6 | String-cut base. 3 further examples from FS 549. |  |  |



## 1106



1107


1102


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1108

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1111


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1127


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1122


1123


1126


1128


## Artefact Drawings

Figure 439. Akkadian beakers with heavy or low-footed bases (1131-61), scale 1:t (1134 is post-Akkadian).

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1131 | SS 255 | 4/3 | M | 6 | 9.3;7.8 | Complete, pale surface. String-cut base. | 88.48 | 10170 |
| 1132 | SS 148 | 3 | M | 6 | 9.5; 9.0 | Further example from SS 243. |  |  |
| 1133 | SS 544 | 2/3 | M | 5 a | 9.2; 8.7 | Almost complete, string-cut base. | 88.49 | 10171 |
| 1134 | FS 507 | 2 b | N | 5 b | 10.9; 8.6 | From well. String-cut base. Further example from SS 564 in ware 6 . | 86.37 | 8269 |
| 1135 | SS 240 | 4 | M | 5 | $11.7 ; 9.4$ | Complete. String-cut base. Further examples from FS 1869, SS 915 \& 958 (last in ware 6). | 88.55 | 10174 |
| 1136 | SS 286 | 5 | M | 5 | 10.0; 9.0 | Further example from SS 573 (TB 11095). | 88.76 | 10173 |
| 1137 | SS 925 | ?2 | M | 6a | 10.7; 11.2 | String-cut base. |  |  |
| 1138 | SS 1274 | 3 | M | 5 b | 6.6;9.8 | String-cut base. Rm 35. |  |  |
| 1139 | FS 1325 | 3 b | M | 5 | 7.7; 11.3 | String-cut base. Further examples from SS $214(\times 2), 246$ (TB 10199), 312, 223, 502, 200, FS 1325, 1461, 1548 \& 1564 (SS 200 \& FS 1461 are in ware 6). |  |  |
| 1140 | SS 921 | 1 | $\mathrm{M} / \mathrm{N}$ | 6 | 8.6; 11.5 | 17 further examples, 11 from Phase M, 3 from N, 2 unstratified. | 91.87 | 12229 |
| 1141 | SS 1279 | 3 | M | 5b | 9.1; 11.8 | String-cut base. |  |  |
| 1142 | FS 604 | 3 | M | 5 | 8.0; 11.2 | String-cut base. Further examples from SS 211, 258 ( $\times 2$ ), 825 \& FS 1686. | 87.66 | 9201 |
| 1143 | SS 825 | 4 | M | 5 | $9.3 ; 11.8$ | String-cut base. Further examples from SS 915 (TB 12230), 669 (TB 12231), $1081 \&$ FS 1834 (TB 12213). |  |  |
| 1144 | SS 1003 | 3 | M | 5 b | $8.4 ; 11.5$ | Bitumen on base interior. Further example from FS 2243 (93.43). |  |  |
| 1145 | SS 566 | 4 | M | 5 | 7.9; 10.0 | String-cut base. Further examples from SS 412, 825, 585, 603, 922, 1009, 669 \& 1279 (TB 13288). | 90.69 |  |
| 1146 | SS 1079 | 4 | M | 6 a | 8.5; 10.5 | String-cut base. |  |  |
| 1147 | FS 853 | 3 | M | 5 b | 8.5; 9.8 | String-cut base. Further examples, FS 2320, SS 1096 \& 563 ( 90.51 ) all in ware 6. |  |  |
| 1148 | SS 1018 | 4 | M | 6 a | 8.1; 9.8 | String-cut base. |  |  |
| 1149 | FS 1056 | $3 / 2$ | M | 5 | 8.0; 11.6 | String-cut base. 11 further examples from DH 85, FS 697, 1688, 1589, 1654, SS 825, 258, 262 (TB 10200), 1277 (TB 13294, Fig. 125:3) 669, 934; last 2 are in ware 6. | 84.98 |  |
| 1150 | SS 959 |  | ?M | 6 | 9.9; 11.7 | String-cut base. Topsoil Courtyard 8. |  |  |
| 1151 | SS 50 | 1 | $\mathrm{M} /$ ? N | 6 | 9.5; 10.0 | String-cut base. Further examples from SS 547 \& 825 ( $\times 2$ ). | 83.44 |  |
| 1152 | FS 1717 | 3 | M | 5b | 8.3; 11.4 | String-cut base. Further example from SS 1276 (93.22). | 90.89 |  |
| 1153 | SS 591 | 4 | M | 5 | 8.2; 11.5 | String-cut base. Further examples from FS 1804 (91.102) \& 2220 . | 90.131 |  |
| 1154 | FS 1538 | baulk | M | 5b | 7.6; 10.5 | Pale wash, string-cut base. Further examples, SS 823 \& 922. |  |  |
| 1155 | SS 1025 | 4 | M | 5 b | 9.1; 10.8 | String-cut base. |  |  |
| 1156 | SS 1095 | 4 | M | 6a | 7.6; 10.6 | String-cut base. |  |  |
| 1157 | SS 1022 | 5 | M | 5 b | $8.3 ; 12.0$ | Further examples from SS 772 \& 1022 (latter in ware 6). |  |  |
| 1158 | ST 12 | 2 | M | 5 b | 8.0; 10.8 | Further examples from SS 211, 887, 669, 739 (92.30), 1257, 1095 (TB 14197), DH 96, DS $4 \&$ CH 92. |  |  |
| 1159 | SS 825 | 4 | M | 6 a | 8.7; 11.6 | String-cut base. |  |  |
| 1160 | SS 812 | 4 | M | 5 | 9.0; 11.0 | String-cut base. Further examples from FS 2243 (92.97), 2215 \& in ware 6 from FS 1642, SS 1274 (TB 13292), 1290, 1277 (TB 13295 \& 92.213). | 90.58 |  |
| 1161 | SS 772 | 4 | M | 5 | 9.8;11.2 | Complete. String-cut base. Further example from SS 1025 in ware 6. | 92.125 | 13298 |



## 1136



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1161

## Artefact Drawings

Figure 440. Akkadian tall, narrow beakers; wide beakers (1162-83) scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions $h t$ d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1162 | SS 411 | 3 | M | 5 | 9.8; 9.6 | Complete. String-cut base. Further examples from SS 310 \& 635 . | 90.67 | 11094 |
| 1163 | SS 1233 | 4 | M | 5b | 9.7; 10.2 |  |  |  |
| 1164 | SS 749 | 4 | M | 5 | 10.9; 12 | Complete. String-cut base. | 92.37 | 13277 |
| 1165 | SS 1001 |  | M | 5 | 10.7; 13.0 | Pale yellow-green surface. | 92.22 |  |
| 1166 | SS 825 | 4 | M | 6 | 10.5; 12.8 | Further example from SS 836 (90.109). | 90.101 | 11098 |
| 1167 | SS 834 | 4 | M | 6 | 12.0; 12.8 | String-cut base. Lower body scraped. Further example from FS 1946 (93.47). |  |  |
| 1168 | FS 539 | 4 | M | 5 | 14.8; 18 | Complete. Mended with bitumen in antiquity. Further examples from FS 1717 (TB 11098), 1646 \& 2240. | 87.6 | 9198 |
| 1169 | FS 2335 | 2b/3 | M/N | 5 | 10.0; 9.5 | Exterior shaved. Burnt. | 93.132 |  |
| 1170 | SS 110 | 2 | M/N | 5b | 11.1; 10 | Further examples from FS 549, 343 (84.88) 2329, SS 515 $(\times 2), 131,150,584$ \& in ware 5a SS 919. |  |  |
| 1171 | SS 119 | 1 | M/N | 5 | 12.5; 11.2 | Lower body shaved. Further examples from SS 80,95 (83.51) 223, 734, 598 (TB 12238), FS 343, 1067, 84, 1758, 2204, 2243 (92.98), DH 2, 39 \& 41 (TB 6119). |  |  |
| 1172 | SS 515 | ? 4 | M | 6 | 11.9; 10.2 | Cream surface. Further example from SS 632. |  |  |
| 1173 | FS 178 | ?2a | ?M | 5a | 12.9; 13.8 | Greenish. | 83.27 |  |
| 1174 | FS 1654 | 3 | M | 6 | 16.7; 14.2 |  |  |  |
| 1175 | FS 2335 | 2b/3 | M | 2 f | 15.4; 14.0 | Pale surface, dense dark green paste, sparse chaff. Lower body shaved. | 93.131 |  |
| 1176 | CH 22 | 4 | M | 5b | 10.3; 15.2 | Munsell 5Y 6/2 'light olive grey'. | 76.36 | 12 |
| 1177 | FS 807 | 5 | M | 5a | 9.2; 14.2 | Pale grey/green surface. Exterior shaved. Further examples from SS 1005 (in ware 2d, burnished) \& FS 1907 (92.154, in ware 6). | 91.123 |  |
| 1178 | FS 807 | 5 | M | 5a | 10.2; 17.6 | Lower exterior shaved. | 92.77 |  |
| 1179 | SS 632 |  |  | 6b | 6.4;9.5 | Topsoil. |  |  |
| 1180 | FS 1717 | 3 | M | 2b/5a | 14.0; 16.8 | Very fine, pale green paste. Further example from FS 2320 in ware 6. | 90.82 | 11098 |
| 1181 | SS 590 |  | ?M | 5a | 13.9; 20.2 | Greenish paste, lower body shaved. Topsoil. Further example from FS 1953. |  |  |
| 1182 | DH 19 | 2 | M/N | 5a | 15.4; 18.7 | Greenish paste. Further examples in ware 5 from FS 2243, 540, 2220 ( 92.76 ), 1567 ( 90.37 ), SS 813, 580 \& DH 78 (84.136). | 84.52 |  |
| 1183 | CH 151 | 3 | M | 5a | 18.0; 19.8 | Complete. Munsell 5Y $7 / 2$ light grey'. | 80.31 | 3128 |



## Artefact Drawings

Figure 441. Goblets (11st-201); Akkadian small jars (1202-1才), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1184 | SS 110 | 2 | N | 6 b | 9.5; 8.4 | String-cut base. | 83.55 |  |
| 1185 | SS 110 | 2 | N | 5 | 9.6; 7.7 | String-cut base, friable yellow-green fabric. | 83.54 |  |
| 1186 | SS 1259 | 4 | M | 6 | 8.0; 8.3 | Complete. Pale surface. String-cut base. From ritual deposit. Further example from SS 1276 (92.201) Fig. 125, Rm 34 \#4. | 92.129 | 13226 |
| 1187 | SS 1259 | 4 | M | 5 | 10.1; 8.4 | String-cut base. From ritual deposit in SE corner Rm 11 with 1186. | 92.130 | 13224 |
| 1188 | FS 1452 | 3 a | M | 5b | 9.0; 7.3 | Almost complete, pale wash. String-cut base. | 86.28 |  |
| 1189 | SS 545 | 4 | M | 6a | 10.0; 9.1 | Surface pale to brown. String-cut base. | 88.82 |  |
| 1190 | FS 1887 |  |  | 5b | 9.2; 8.7 | String-cut base. Baulk removal. |  |  |
| 1191 | FS 1014 | 3 | M | 5 | 7.8; 6.2 | String-cut base. Found with 1192. | 84.35 | 6126 |
| 1192 | FS 1014 | 3 | M | 6 | 8.8; 6.4 | Surface buff to pale. String-cut base. | 84.34 | 6125 |
| 1193 | FS 1303 | 3 | M | 5b | 9.0; 9.5 | Complete. String-cut base. | 85.36 | 7231 |
| 1194 | FS 1452 | 3 a | M | 5 b | 8.5; 10.0 | Underside of base worn. |  |  |
| 1195 | FS 1047 | 3 | M | 5 | 9.9; 8.2 | Pale surface. String-cut base. Further example from FS 1876. | 84.93 | 6128 |
| 1196 | FS 1362 | 3 | M | 5b | 11.8; 9.9 | Greenish paste, pale wash. Further example from FS 2302 in ware 6. | 85.48 | 7227 |
| 1197 | ST 105 | 4 | M | 5 | 9.0; 5.3 | String-cut base. From hearth with copper/bronze objects nos. $1,17 \& 63$, stone objects $22 \& 39$ and pots 885, 1234, 1319 \& 1329. | 83.16 |  |
| 1198 | ER 236 | 4 | M | 5a | 6.2; 5 | Overfired, greenish fabric with overall black-purple slip. String-cut base. |  | 3188 |
| 1199 | SS 876 | 3 | M | 5 | 11.2; 7.5 | Pale wash. String-cut base. | 91.43 |  |
| 1200 | SS 1276 | 3 | M | 5 | 11.8; 7.0 | Pale surface. String-cut base. Fig. 125, Rm 34 \#4. | 92.185 |  |
| 1201 | CH 540 | 6 | L | 5 | 8.9; 7.5 | String-cut base. Further examples of base from FS 2302 in ware $1 \&$ FS 2306 in ware 5a. | 83.101 |  |
| 1202 | FS 606 | 4 | M | 5b | 6.7; 7.1 |  |  |  |
| 1203 | FS 802 |  | ?M | 5b | 6.5; 6.0 | From baulk. |  |  |
| 1204 | ER 25 | ? 4 | ?M | 6 a | 6.4; 6.0 |  | 78.172 |  |
| 1205 | ER 25 | ? 4 | ?M | 5b | 7.3; 6.0 | Lower body scraped. | 78.171 |  |
| 1206 | ER 24 | 3 | M | 6 a | 7.8; 6.0 |  | 78.95 |  |
| 1207 | FS 1675 | 3 a | M | 5 | 8.3; 7.0 | Perforation in base made after firing. Further example from FS 801. | 90.46 |  |
| 1208 | FS 1721 | 3 a | M | 5b | 9.5; 9.6 | Narrow groove on rim interior. String-cut base. |  |  |
| 1209 | DH 92 | $3 / 2$ | ?M | 5 | 8.2; 8.6 | String-cut base. | 84.135 | 6137 |
| 1210 | SS 825 | 4 | M | 6 | 8.2; 6 | Almost complete. Pale cream surface, fine fabric. String-cut base. | 90.93 | 10089 |
| 1211 | SS 669 | 4 | M | 5 | 8.1; 7 | String-cut base. | 91.59 | 12245 |
| 1212 | SS 669 | 4 | M | 6 a | 7.6; 7.6 | String-cut base. |  |  |
| 1213 | FS 523 | 5 | M | 5 b | 7.6; 6.5 | Irregular perforation in base. String-cut base. |  |  |
| 1214 | FS 1904 | 5 | M | 5 b | 7.6; 8.6 | Complete. Greenish paste. | 92.95 | 13267 |
| 1215 | FS 1796 | 4 | M | 5 | 7.8; 7.0 | Complete. Pale green. String-cut base. | 91.30 | 12169 |
| 1216 | SS 603 | 4 | M | 5b | 7.5; 7 | Lightly baked. String-cut base. | 91.85 |  |
| 1217 | FS 801 | 4/3 | M | 5 b | 7.9; 6.3 | String-cut base. | 91.69 |  |



## Artefact Drawings

Figure 442. Akkadian small and medium, wide-mouthed jars (1218-46), spouted jars (1222-4), footed jar (1229), scale 1:t.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1218 | FS 478 | 4a | M | 5 b | 7.0; 6.6 | String-cut base. Further example from FS 729. |  |  |
| 1219 | CHB8 | 3 | M | 5 b | 7.9; 8.3 | Complete, lower body shaved. Munsell 10YR 7/3 'very pale brown'. | 76.11 | 2 |
| 1220 | CH 22 | 4 | M | 5b | 9.6;7.7 | Munsell 5Y 7/3 'pale yellow'. | 76.33 | 1 |
| 1221 | FS 1758 | 3 | M | 6 | 11.2; 9.4 | Found broken beneath pot 1044. Lower body and base pared. | 91.16 | 12243 |
| 1222 | SS 912 | 4 | M | 6 | 8.4; 5.2 | Pale surface. Details of spout taken from similar vessel from ST surface. | 91.84 |  |
| 1223 | SS 223 | 4/3 | M | 6a | 9.3; 6.8 | Almost complete. Pale wash. | 88.30 | 10163 |
| 1224 | ER 102 | 4 | M | 5a | 7.3; 5.1 | Complete, Munsell 5Y 7/3 'pale yellow'. | 80.60 | 3124 |
| 1225 | FS 2243 | 3 | M | 5 | $7.2 ; 4.5$ | Complete. | 92.90 | 13252 |
| 1226 | FS 1714 | 3 | M | 5 | 9.0; 4.9 | Complete. Greenish paste. | 90.72 | 11114 |
| 1227 | FS 2212 | 3 | M | 6 | 7.8; 4.6 |  |  |  |
| 1228 | FS 1946 | 3 a | M | 6 | 9.2; 8 | Almost complete. Crumbly, salted surface. | 93.45 |  |
| 1229 | SS 411 | 3 | M | 5 | 10.0; 7.0 | Burnt. | 90.66 |  |
| 1230 | FS 1460 | 3 a | M | 5 b | 9.7; 6.2 | Almost complete. Base mended with bitumen in antiquity. | 86.12 | 8266 |
| 1231 | SS 1276 | 3 | M | 5 b | 10.0; 9.5 |  |  |  |
| 1232 | SS 809 | 4 | M | 6a | 10.5; 5.4 | Handmade. Pale buff surface. | 90.18 | 11108 |
| 1233 | FS 2240 | 3 | M | 6a | 11.0; 9.8 | Pale surface. Lower sides and base cut. | 92.96 | 13268 |
| 1234 | ST 105 | 4 | M | 5 | 10.8; 10.6 | Almost complete. From hearth with copper-alloy objects $1,17 \& 63$, pots $1197,1319 \& 1329$ \& stone objects $22 \& 39$. | 83.11 |  |
| 1235 | FS 1675 | 3 a | M | 5 | 12.6; 11.2 | Pale greenish surface. | 90.45 |  |
| 1236 | FS 1738 | 3 | M | 5 b | 11.6; 11 | Pale surface. | 90.116 |  |
| 1237 | FS 1688 | 3 | M | 5 | 11.8; 10.2 | Slightly greenish. From cleaning. |  |  |
| 1238 | SS 706 | 2/3 | M | 6 | 9.5; 8.1 | Fine paste. |  |  |
| 1239 | FS 1105 | 3 | M | 6 a | 11.6; 8.4 | Pale wash. Lower sides and base shaved. |  |  |
| 1240 | FS 1314 | 3 | M | 6a | 13.3; 10.8 | Pale surface. Further examples in ware 5 from SS 944 (93.32) \& in ware 5b from SS 545 (TB 10108) \& FS 2248 (TB 13269). | 85.43 |  |
| 1241 | ST 85 | 2 | M | 6 a | 12.8; 11.4 | Almost complete, buff surface. | 83.3 |  |
| 1242 | SS 1003 |  | ?M | 5 b | 12.6; 12.5 | String-cut base. Lower sides cut. Fill sealed by external surface SS 1002. |  |  |
| 1243 | FS 1717 | 3 | M | 5 | 13.4; 12.6 | Greenish paste. Lower sides cut. Same shape from DH 78 (TB 6104) found with a flat rim similar to $\mathbf{1 2 4 0}$. |  |  |
| 1244 | SS 1241 |  | M | 5b | 13.2; 11.8 | String-cut base. From cleaning. |  |  |
| 1245 | FS 1564 | 3 b | M | 6 | 13.9; 12.6 | Perforation in base. Pale surface. |  |  |
| 1246 | FS 1564 | 3 b | M | 5 b | 15; 10.1 | Smooth surface. | 87.61 |  |



## Artefact Drawings

Figure 443. Akkadian wide-mouthed jars (1247-61), scale 1:4, except 1258-61, scale 1:10.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1247 | $\begin{aligned} & \text { SS 310/ } \\ & 312 \end{aligned}$ | 4 | M | 5 b | 17.0; 16.8 | Topsoil. | 90.14 |  |
| 1248 | $\begin{aligned} & \text { SS } 555 / \\ & 556 \end{aligned}$ | 4 | M | 5 b | 16.2; 15.0 | Lower body scraped. | 90.7 |  |
| 1249 | FS 1796 | 4/3 | M | 6 | 19.0; 16.0 | Almost complete. Contained a sheep vertebra. | 91.61 | 12162 |
| 1250 | FS 802 | 4/3 | M | 5 b | 14.1; 10.5 | String-cut base. |  |  |
| 1251 | FS 1717 | 3 | M | 5 b | 15.1; 13.4 | Burning on lower body and base. |  |  |
| 1252 | FS 604 | 4 | M | 6 | 15.6; 11.4 | Pale surface. |  |  |
| 1253 | SS 825 | 4 | M | 6 | 17.4; 12.0 | Buff surface. Vertical-scraped marks on exterior. |  |  |
| 1254 | FS 316 | 3 | M | 5 b | 15.3; 14.0 | Brown paste, pale brown surface. RDB. Sherds from a similar vessel from SS 522. | 84.28 |  |
| 1255 | FS 1116 | 3a | M | 6a | 16.5; 14.0 | Pale surface. | 84.156 |  |
| 1256 | SS 944 | 4 | M | 5 b | 16.1; 13.8 | Greenish paste. A very much larger example of this type was found in FS 1728, rim d. 26.3 cm . |  |  |
| 1257 | SS 545 | 4 | M | 5b | 17.2; 15.0 | Lower body scraped. |  |  |
| 1258 | FS 1715 | 3 | M | 10 | 26.8; 25 | Perforated base. Pale surface. | 90.112 |  |
| 1259 | FS 2239 | 3 | M | 5b | 26.4; 30.5 | Perforated base. |  |  |
| 1260 | FS 2243 | 3 | M | 5 b | 35.0; 29.5 | Rm 32. | 92.160 |  |
| 1261 | FS 2320 | $3 / 2$ | ?M | 6a | 30.1; 25.5 | Complete. Perforated base. Pale surface. | 93.96 | 14259 |



Figure 44. Akkadian globular jars (1262-76), scale 1:10, except 1262-3, scale 1:4 and 1271, scale 1:20.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | $\begin{aligned} & \text { TB cat. } \\ & \text { no. } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1262 | FS 1826 | 5a | M | 5b | 18.6; 8.0 | Body scraped vertically and smoothed. | 91.105 |  |
| 1263 | FS 1957 | 5 | M | 5b | 18.9; 9.8 | Contained upper part of copper-alloy object 4 (reg. no. 7137). | 93.121 |  |
| 1264 | ER 218 | 4 | M | 5 | 34.0; 11.5 | Munsell 2.5Y $7 / 2$ ' light grey'. Further example from CH B 7, Level 3 (76.17). | 80.77 |  |
| 1265 | FS 1655 | 3/2 | M | 6 a | 27.0; 11.6 | Complete, buff surface. | 90.114 | 11100 |
| 1266 | SS 223 | ? $4 / 3$ | M | 6 a | 38.0; 24.2 | Brown surface. |  |  |
| 1267 | SS 541 | 3 | M | 5 b | 31; 12.5 | Pale wash, interior scraped roughly. |  |  |
| 1268 | SS 910 | 4/3 | M | 6 a | 45.5; 25.5 | Base and lower body burnt. | 91.133 |  |
| 1269 | FS 1564 | 3 b | M | 6 | 31.0; 11.8 | Interior heavily scraped. | 87.62 |  |
| 1270 | SS 1210 | 3 | M | 6 | 30.2; 13.2 | Brown surface. Fig. 131. | 91.90 | 12161 |
| 1271 | FS 351 | 3 | M | 6a | 95.0; 45 | Buff surface, incised mark. Room 4. | 84.86 |  |
| 1272 | SS 356 | 4 | M | 5b | 32.4; 11.6 | Complete. Pale surface. Body of pot uneven from cutting. | 90.59 | 11100 |
| 1273 | ER 17 | 3 | M | 7a | 33.6; 12.0 | Burnished thick red slip. Heavy white grit gives a speckled appearance to the surface. | 78.94 |  |
| 1274 | FS 1564 | 3 b | M | 5b | 28.2; 9.0 | Complete. | 87.60 | 9189 |
| 1275 | CH 151 | 3 | M | 5 | 48.2; 12.0 | Complete | 80.35 |  |
| 1276 | DH 22 | 2 | M |  | 53.5; 20.0 |  |  |  |

Artefact Drawings


## Artefact Drawings

Figure 445. Akkadian jars, elongated with rounded bases (1277-88), scale 1:10; except 1279, 1283-4, scale 1:20.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1277 | SS 544 | 3 | $? \mathrm{M} / \mathrm{N}$ | 6 | 36.8; 14.4 | Pale wash. Pit with mixed material. Another example also from SS 544. | 88.57 |  |
| 1278 | CH B 11 | 4 | M | 6a | 61;33 | Munsell 5YR 7/6 'red-yellow'. Incised pot mark. | 76.30 |  |
| 1279 | FS 1717 | 3 | M |  | 82; 39 |  |  |  |
| 1280 | SS 241 | 3 | M | 6 a | 59.3; 20.2 | Almost complete, pale surface (cf. Fig. 130). | 88.81 |  |
| 1281 | FS 354 | 3 | M | 5 b | 57.5; 25.4 | Brown paste, lightly burnished surface. | 84.113 |  |
| 1282 | FS 437 | 3 | M | 5b | 52.8; 23 | Light brown surface. | 86.40 |  |
| 1283 | ST | 2 | M |  | 69.5; 24 |  |  |  |
| 1284 | FS 351 | 3 | M | 5 | 120; 48 | Incised pot mark on shoulder. Room 4. | 84.40 |  |
| 1285 | FS 1758 | 3 | M | 5 b | 27; 10.4 | Complete. Lower body shaved. | 91.17 |  |
| 1286 | FS 2240 | 3 | M | 5b | 55; 24.5 |  | 92.200 |  |
| 1287 | SS 1277 | 3 | M | 5b | 59.8; 21 | Rm 33 floor, Fig. 125 \#5. |  |  |
| 1288 | SS 577 | 4 | M | 5 b | 67.8; 21.5 | SE corner Rm 30. Interior scraped down. |  |  |



## Artefact Drawings

Figure 446. Akkadian jars (1290-300), scale 1:4; except 1290-93, 1296, scale 1:10; 1289 post-Akkadian, scale 1:20.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1289 | FS 483 | 2 | N | 5 b | 76;38 | Almost complete. Originally set into Level 2 floor (see Fig. 61, p. 53). | 86.36 |  |
| 1290 | FS 374 |  | ?M | 5 b | 51.8; 19 | Complete. Section cleaning, probably Akkadian. | 86.8 |  |
| 1291 | FS 1951 | 3 | M | 6 a | 52.5; 26 | Base broken and mended in antiquity with bitumen \& then lined with juss. |  |  |
| 1292 | FS 1564 | 3 b | M | 6 | 58; 20.5 | Almost complete. Pale brown surface, rope mark near base. Rm 4. | 87.76 |  |
| 1293 | SS 204 | 4 | M | 5b | 37.6; 11 | Complete. Pale yellowish wash. Floor of Rm 1. | 87.81 |  |
| 1294 | SS 584 | 4 | M | 5 | 21.4; 9.5 |  | 90.108 |  |
| 1295 | FS 1564 | 3 b | M | 5 | 26.3; 11.0 | Greenish paste, oval neck. | 87.58 |  |
| 1296 | FS 2240 | 3 | M | 5b | 48.6; 19.5 | Rm 31 floor. Almost complete. Exterior scraped. | 92.159 |  |
| 1297 | SS 1210 | 3 | M | 5 | 11.6; 5.5 | Almost complete. Cream wash. | 91.100 |  |
| 1298 | DH 78 | 3 | M/L | 5 | 18.9; 8.8 | Burnt. | 84.129 |  |
| 1299 | FS 1362 | 3 | M | 6a | 25.6; 10.2 | Pale buff surface. Further example from FS 2240. | 85.82 |  |
| 1300 | FS 354 | 3 | M | 5 b | 25.2; 10.4 | Almost complete. | 84.105 | 6105 |



## Artefact Drawings

Figure 447. Akkadian jars and bottles (1301-20), scale 1:4; except 1301-7, scale 1:10.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1301 | FS 807 | 5 | M | 6 | 26.4; 10.8 | Almost complete. Burnished cream surface. | 91.122 | 12160 |
| 1302 | FS 2212 | 3 | M | 5 b | 28; 10.4 | Lower body scraped. |  |  |
| 1303 | SS 240 | 4 | M | 5b | 26.4; 10.0 | Rm 2, shrine. |  |  |
| 1304 | SS 1286 | 3 | M | 5 | 27.0; 11.5 | Complete. Pale greenish surface. Base \& lower body scraped. Rm 37 \#1. | 92.219 | 13191 |
| 1305 | FS 2240 | 3 | M | 6 a | 30.1; 9.6 | Rm 31 floor. Almost complete. Pale surface. | 92.142 |  |
| 1306 | ER 110 | 4b | M | 5 | 17.5; 15.2 | Munsell 5Y 8/2 white. |  |  |
| 1307 | FS 1728 | 3 | M | 5 b | 25.2; 26.5 | Interior scraped. |  |  |
| 1308 | ST 85 | 2 | M | 5b | 12.0; 16.2 |  |  |  |
| 1309 | ER 210 | 4 | M | 5 | 17.0; 21.6 | Interior surface flaky. |  |  |
| 1310 | CH 270 | 4 | M | 5 | 13.8; 4.9 | Complete. Munsell 5Y 8 / 3 pale yellow. Further example lacking rim from CH 370 in ware 6. | 80.113 | 3117 |
| 1311 | SS 201 | 3 | M | 5 | 16.7; 6.3 | Heavily salted surface. | 87.72 |  |
| 1312 | CH 18 | 4 | M | 6a | 19.6; 8.5 | Munsell 5YR 7/6 reddish-yellow. | 76.29 |  |
| 1313 | SS 1010 | 4 | M | $5 \mathrm{a} / \mathrm{b}$ | 14.1; 6.1 | Almost complete. Pale green surface. | 92.23 | 13261 |
| 1314 | FS 1654 | 3 | M | 6a | 15.3; 7.5 | Heavily burnt. Rim pulled out to form pouring lip. | 90.31 |  |
| 1315 | FS 2266 | 3 | M | 5 | 18.7; 6.4 | Complete. Pale surface. | 92.153 |  |
| 1316 | DS 8 |  | M | 6 | 13.0; 3.9 | Pale surface. | 85.23 |  |
| 1317 | FS 438 | 3 | M | 5 | 13.2; 4.9 | Almost complete. Pale wash. | 86.13 | 8259 |
| 1318 | CH 318 | 4 | M | 5 b | 14.7; 5.7 | Complete. | 81.100 | 4111 |
| 1319 | ST 105 | 4 | M | 6 | 15.2; 6.5 | In hearth with copper-alloy objects $1,17 \& 63$, stone objects 22 \& 39 and pots $885,1197,1234 \& 1329$. Buff surface. | 83.12 |  |
| 1320 | FS 1362 | 3 | M | 6 a | 20.5; 7.7 | Pale pink surface. | 85.81 |  |

Artefact Drawings


## Artefact Drawings

Figure 448. Akkadian bottles (1321-44, 1331 \& 1340 are post-Akkadian), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1321 | SS 223 | 3 | M | 5 | 13.1; 4.0 | Pale wash. Body shaved/cut. | 88.22 | 10166 |
| 1322 | FS 1714 | 3 | M | 6 a | 14.5; 5.0 | Cream surface. Rm 22. Further example from FS 2239 (92.144). | 90.71 | 11113 |
| 1323 | SS 825 | 4 | M | 6 | 16.2; 6.4 | Pale cream wash. Rm 15. Further example from SS 1274 (TB 13263) Fig. 125, Rm 35 \#4. | 90.121 |  |
| 1324 | FS 1106 | 3 | M | 5 | 14.9; 5.8 | Lightly burnished. Floor of RDB. | 84.151 |  |
| 1325 | SS 1276 | 3 | M | 5 | 19.4; 6.4 | Rm 34. Almost complete. Lower body \& base shaved vertically. | 92.208 |  |
| 1326 | FS 1447 | 3 | M | 5 | 11.7;3.8 | Almost complete. Greenish. | 86.7 | 8258 |
| 1327 | ST 1008 | 2 | M | 6a | 15.6; 8.0 | Buff surface. Base scraped. | 78.150 | 1012 |
| 1328 | CH 23 | 4 | M | 5 | 14.3; 6.5 | Almost complete. Base rough, cracked in firing. | 78.60 | 1013 |
| 1329 | ST 105 | 4 | M | 5 | 13.2; 5.7 | From hearth with copper/bronze objects $1,17 \& 63$, stone objects $22 \& 39$ and pots $885,1197,1234 \& 1319$. | 83.13 |  |
| 1330 | FS 1714 | 3 | M | 5 b | 14.7; 6.0 | Rm 22. Lower body scraped. Greenish fabric. | 90.80 |  |
| 1331 | FS 2345 | 2 b | N | 6a | 16.1; 5.4 | Pale greenish surface. Base shaved. Rm 34. | 93.128 | 14183 |
| 1332 | FS 2323 | 3 | M | 5 | 17.9; 6.5 | Greenish fabric. | 93.127 | 14181 |
| 1333 | FS 1353 | 3 | M | 5 b | 17.3; 5.7 | Pale green fabric. Eroded surface. | 85.45 |  |
| 1334 | SS 547 | 4 | M | 5b | $9.4 ; 4.0$ | Surface worn, ?originally slipped. Slightly greenish fabric. | 88.73 |  |
| 1335 | FS 1671 | 3 a | M | 5 | 12.8; 4.8 | Paste slightly greyish, fabric friable. | 90.111 |  |
| 1336 | FS 1654 | 3 | M | 5 | 15.5; 5.8 | Burnt \& bitumen stained. Rm 26. | 90.28 | 11114 |
| 1337 | CH B 7 | 3 | M | 6 | 8.5; 2.5 | Munsell 10YR 8/3-7/3 'very pale brown'. | 76.3 | 7 |
| 1338 | CH B 21 | 4 | M | 5 b | 8.6; 3.8 | Munsell 5Y $7 / 3$ pale yellow. | 76.43 | 18 |
| 1339 | FS 2243 | 3 | M | 6 | 10.0; 5.1 |  | 92.87 |  |
| 1340 | FS 2312 | 2 b | N | 5 | 9.4; 5.2 | Slightly grey-green surface with red pigment surviving in grooves, storeroom 34. | 93.124 | 14184 |
| 1341 | CH 318 | 4 | M | 5 | 9.5; 3.0 | Complete. | 81.95 | 4108 |
| 1342 | ST 11 | 2 | M | 5 | 9.6; 6.3 | Greenish flaky surface. String-cut base. | 81.10 | 4123 |
| 1343 | DH 1 |  | ?M | 5 | 10.7; 4.0 | Heavily burnt. Brown fabric. | 84.42 |  |
| 1344 | FS 1067 | 3 b | M | 6 | 8.7; 4.4 | Pale wash. | 84.99 | 6130 |




132

1334

1335

1326


 334



1333

1336



## 1337



1339


1343


1344


## Artefact Drawings

Figure 449. Akkadian small and tall, narrow-necked bottles (1348-71); post-Akkadian (1346-47), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1345 | SS 1099 | ?2/1 | ?M/N | 5b | 8.2; 3.6 | Lower body \& base cut, sparse chaff. | 93.201 | 14206 |
| 1346 | FS 2345 | 2 b | M | 5b | 8.6; 3.2 | Greenish fabric, sparse chaff; storeroom 34. | 93.130 | 14204 |
| 1347 | FS 2345 | 2b | M | 5a | 9.8; 3.5 | Slightly greenish. | 93.129 | 14203 |
| 1348 | SS 825 | 4 | M | 5a | 9.8; 4.0 | Pale surface, lower body shaved. Further example from SS 1250. | 90.92 | 11110 |
| 1349 | FS 1717 | 3 | M | 5 | 10.1; 4.2 | Well-finished cream surface. Rm 28. | 90.115 | 11110 |
| 1350 | FS 1374 | 5 | M | 5 | 11.0; 4.3 | Pale well-finished surface. | 85.49 | 7228 |
| 1351 | SS 312 | 4 | M | 5b | 9.6; 4.6 | Lower body cut. Deposit of pottery in Rm 18. Further example from SS 1259, deposit on fill of SSTC, SE corner Rm 11 (TB 13256). | 90.8 | 11110 |
| 1352 | SS 959 | 4 | M | 6 | 9.4; 3.7 | Base scraped, light brown surface. Part of ritual deposit on 'trample', Courtyard 8. | 93.37 | 14205 |
| 1353 | FS 1653 | 3/2 | M/N | 6 | 9.3; 4 | Base and lower body rough. | 90.32 | 11111 |
| 1354 | SS 834 | 4 | M | 6a | 9.6; 4.4 | Buff surface. | 90.107 |  |
| 1355 | SS 834 | 4 | M | 5b | 9.7; 4.1 | Pale wash. Further example in ware 5 from FS 2317 (93.97). | 90.104 | 11110 |
| 1356 | SS 836 | 4 | M | 6a | 10.2; 4.7 |  | 90.105 | 11112 |
| 1357 | SS 834 | 4 | M | 6 | 9.0; 4.5 | Pale wash. | 90.106 | 11112 |
| 1358 | SS 545 | 4 | M | 6 | 10.0; 4.3 | Pale surface. | 88.77 |  |
| 1359 | FS 757 | 3 | M/N | 5 b | 10.9; 4.3 | Complete. Rm 16. Further examples from FS 821 (TB 13257), 2312 (TB 14202) \& SS 1046 (TB 13258). | 90.81 | 11112 |
| 1360 | FS 1654 | 3 | M | 6 a | 10.0; 4.4 | Pale buff surface. Bitumen-stained. | 90.27 | 11111 |
| 1361 | SS 223 | 4/3 | M | 5b | 8.4; 3.9 | Almost complete. Handmade. | 88.29 | 10162 |
| 1362 | SS 322 | 4 | M | 6a | 10.0; 4.6 | Almost complete. Found upside-down on Courtyard 7 pavement against S. wall of courtyard. | 90.15 | 11111 |
| 1363 | CH 318 | 4 | M | 5a | 14.9; 5.2 | Complete. Highly burnished, greenish surface. | 81.99 | 4110 |
| 1364 | SS 272 | 3 | M | 5 | 11.7; 3.4 | Greenish fabric, surface worn. |  |  |
| 1365 | SS 1276 | 3 | M | 5b | 16.0; 4.6 | Greenish. Base cut \& smoothed. Fig. 125, Rm 34 \#3. | 92.187 | 13264 |
| 1366 | CH 318 | 3 | M | 5a | 16.0; 5.5 | Munsell, surface 10YR $7 / 3$ 'pale brown', fabric 5YR 6/4 'light reddish-brown'. | 76.31 | 20 |
| 1367 | SS 1276 | 4 | M | 5b | 14.3; 3.6 | Body shaved. Brown fabric. Fig. 125, Rm 34 \#5. | 92.189 |  |
| 1368 | SS 553 |  | ?M | 5 b | 15.1; 4.1 | Surface clearance. Lightly burnished greenish surface. | 88.70 | 10168 |
| 1369 | SS 1274 | 4 | M | 5 | 15.1; 4.4 | Almost complete. Fig. 125, Rm 35 \#10. | 92.135 |  |
| 1370 | FS 1904 | 5 | M | 5a | 17.0; 5 | Yellowish buff paste. Courtyard 43 fill. |  |  |
| 1371 | SS 1276 | 4 | M | 5b | 16.6; 5.6 | Pale surface. Rm 34. | 92.205 | 13262 |



## Artefact Drawings

Figure 450. Akkadian short-necked, globular bottles; spouted and large double-handled bottles (1372-91); scale 1:4: excopt 138,-8. scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1372 | SS 1046 | 4 | M | 5 | 9.1;3.3 |  | 92.121 | 13253 |
| 1373 | FS 1901 | 5 | M | 5 | 9.0; 3.8 | Rim worn. |  |  |
| 1374 | FS 2237 | 3 | M | 5 | 8.8; 4.3 | Almost complete. Burnt. Further example from SS 958 in ware 4 a. | 92.100 | 13254 |
| 1375 | SS 280 | 4 | M | 6 b | 9.3; 4.2 | Base cut. Upper floor in antecella. | 88.71 | 10164 |
| 1376 | FS 1460 | 3a | M | 5 | 8.6; 3.3 | Almost complete. Pale surface. | 86.10 |  |
| 1377 | FS 1899 | 5 | M | 5b | 10.1; 4.0 | Brown paste. | 92.78 |  |
| 1378 | SS 556 |  | M | 5 | 10.4; 3.2 | Greenish paste. Base cut. | 88.88 | 10165 |
| 1379 | SS 414 | 4 | M | 5 b | 12.2; 4.4 | Pale surface. | 90.64 | 11108 |
| 1380 | FS 2249 | 3 | M | 5 | 8.8; 3.0 | Almost complete. Greenish fabric. | 92.149 |  |
| 1381 | SS 686 | 4 | M | 6 a | 9.1; 3.0 | Complete. | 92.33 | 13259 |
| 1382 | SS 146 | 3 | M | 6 | 10.7; 5.0 | Almost complete. Pale wash. | 83.98 | 5095 |
| 1383 | SS 250 | 3 | M | 5 | 8.5; 5.5 | Rim may not be original, ?possibly cut at neck, but see 769. Brown fabric. Burnt, surface blackened, black substance in interior ?bitumen. Contained burnt bone fragments. | 88.46 |  |
| 1384 | CH 22 | 4 | M | 5 | $\begin{gathered} 10.8 ; \text { body } \\ \text { d. }=7.8 \end{gathered}$ | Munsell 5Y 7/3 'pale yellow' to 10YR 8/3 'very pale brown'. |  | 33 |
| 1385 | FS 1713 | 3 a | M | 5b | $\begin{gathered} 13.5 ; \text { body } \\ \text { d. }=10.6 \end{gathered}$ | Rim lost. | 90.70 |  |
| 1386 | SS 812 | 4 | M | 5 | 13.2; 6.4 | $\mathrm{L}=18.3 . \mathrm{Rm} 18$. | 90.53 | 11091 |
| 1387 | CH B 7 | 3 | M | 5b | 25.0; 7.6 | Complete. 5Y 8/4 to 7/3 'pale yellow' fabric \& slip. | 76.2 | 28 |
| 1388 | FS 1564 | 3b | M | 5b | 13.8; 7.5 |  |  |  |
| 1389 | FS 1664 | 3 | M | 6 a | 14.8; 7.4 | Width of lug = 3.2. |  |  |
| 1390 | FS 1654 | 3 | M | 5 | 16.0; 4.8 | Burnt. |  |  |
| 1391 | FS 1901 | 5 | M | 5 | 23.5; 6.1 | Greenish paste. Surface flaking. Lower body cut. Fill in antecella. | 92.73 |  |

Artefact Drawings


## Artefact Drawings

Figure 451. Akkadian wide-mouthed bowls and urns (1392-408), scale 1:10; except 1392-3, scale 1:t.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1392 | FS 1671 | 3 | M | 6a | 19.1; 17.5 | Perforated base. | 90.47 |  |
| 1393 | $\begin{aligned} & \text { FS } 2240 / \\ & 2237 \end{aligned}$ | 3 | M | 5b | 19.0; 18.2 | Base cut. |  |  |
| 1394 | FS 1899 | 5 | M | 5b | 20; 16.8 | Complete. Brown paste, mica. | 92.66 | 13213 |
| 1395 | SS 204 | 4 | M | 6 a | 24; 25 | Pale wash. | 87.80 |  |
| 1396 | ST 2 | 2 | M |  | 42; 35 |  |  |  |
| 1397 | FS 1758 | 3 | M | 5b | 28.8; 25.8 | Interior scraped vertically. | 91.20 |  |
| 1398 | DH 78 | 3 | L/M | 5 | 35.8; 36.5 | Greenish paste. Overfired \& one side warped. | 84.127 |  |
| 1399 | FS 1654 | 3 | M | 5 | 19.8; 16.8 | Complete. Heavily burnt. | 90.26 | 11099 |
| 1400 | SS 204 | 4 | M | 6 | 24.4; 24.8 | Pale brown surface, interior heavily shaved. |  |  |
| 1401 | SS 588 | post 4 | ? N | 5 b | 25.6; 23 | Area of subtle grooving on shoulder. Lower body scraped vertically. |  |  |
| 1402 | FS 2243 | 3 | M | 5b | 29.6; 26.5 | Narrow groove inside rim. Rm 32. | 92.196 |  |
| 1403 | DH 66 | ?2 | M |  | 43.3; 35.5 | Further example from SS 674 (91.96) in ware 5b, interior water-soaked, set into kitchen floor. |  |  |
| 1404 | CH 151 | 3 | M | 6a | 27.8; 25.8 | Surface 5Y 8/2 'white'. | 80.33 |  |
| 1405 | FS 2312 | 2b | M | 6a | 36.5; 26 | Overfired \& base distorted. Pale cream/green surface. | 93.53 |  |
| 1406 | FS 1773 | 3b | M | 5 b | 36.5; 43.5 | Narrow groove on interior of rim. Lower body scraped \& smoothed. |  |  |
| 1407 | SS 876 | 3 | M | 5b | 27.4; 27 | Found in situ on floor. | 91.49 |  |
| 1408 | FS 1717 | 3 | M | 5b | 67.8; 57.0 | Perforation near base. Bitumen used to mend base in antiquity. |  |  |



## Artefact Drawings

Figure 452. Akkadian large urns (1+(19-22), scale 1:10; except 1409, 1411, scale 1:20.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1409 | ST 1006 | 2 | M | 5b | 60.5; 49.5 | Incised potter's mark on shoulder. | 78.189 |  |
| 1410 | ST 2 | 2 | M | 5 | 38.7; 33.5 | Groove on rim interior. Further examples from ST 85 (in ware 5b) \& DS 12. | 81.3 |  |
| 1411 | FS 1717 | 3 | M | 5 | 59; 52 | Bitumen-lined. Groove on rim interior. |  |  |
| 1412 | FS 1755 | 3/2 | M | 5b | 40; 34 | Greenish. Groove on rim interior. | 91.64 |  |
| 1413 | ST 1006 | 2 | M | 5b | 51.5; 35 | Two decorative knobs each surrounded by an incised circle. This type of 'breast-like' ornament also from SS 917 in ware 6a \& from SS 372 in ware 10. |  |  |
| 1414 | SS 515 | 4 | M | 5b | 47.8; 38 | Possibly a food offering associated with the closure of SSTC. Contained 'lamb stew' (sheep bones) pot 848 \& jar base 88.44. Perforation near the base. Juss-lined. | 88.45 | 10212 |
| 1415 | ST 1008 | 2 | M | 6 a | 47.8; 37.8 | Surfaces worn. | 78.152 |  |
| 1416 | FS 1907 | 5 | M | 5 b | 33.6; 25.5 |  |  |  |
| 1417 | FS 375 |  |  | 5 | 37; 33.5 | Pale green paste. Cable decoration. Section cleaning. | 86.4 |  |
| 1418 | FS 1451 | 3 | M | 5b | 40; 48 | Greenish surface. Interior flaking. Cable decoration. |  |  |
| 1419 | ST 85 | 2 | M | 5 b | 27; 52 | Cable decoration. |  |  |
| 1420 | FS 1349 | 3 | M | 5b | 68.2; 43.5 | Complete, base was plastered onto floor. Identical example from SS 1277 (92.220) Fig. 125, Rm 32 \#4. |  |  |
| 1421 | ST 1005 | 2 | M | 5b | 60.2; 45 | Cable decoration. | 78.151 |  |
| 1422 | SS 1283 | 4 | M | 6 a | 52.5; 43 | Cable decoration. |  |  |



## Artefact Drawings

Figure 453. Akkadian double-mouthed bottles (1423-33), scale 1:4; except 1433 and multiple-spouted jar 1432
(Phase L), scale 1:10.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1423 | FS 801 | 4/3 | M | 5 b | 7.5 ext.; 1.6 | Diameter given is of the larger of the two mouths. Remains of perforated flap between the two mouths. |  |  |
| 1424 | SS 603 | 4 | M | 5 | 5.2; 2.2-2.4 | Perforated appliqué flap between the two mouths would have permitted the bottle to have been suspended. |  |  |
| 1425 | FS 1914 | 5 | M | 5 | 17.7; 2.9-3.7 | Lower body scraped. Surface worn. Further example from SS 1276 (Fig. 125 Rm 34 \#6) \& in ware 6 from FS 1946 (TB 14186). | 92.150 | 13251 |
| 1426 | FS 1313 | 3 | M | 5 | 17.0; 2.5-3.4 | Lower body heavily cut. Further examples from SS 201, SS 772 (92.124), several rim sherds from SS 501 \& in ware 6 from FS 604. | 85.38 | 7247 |
| 1427 | FS 1887 |  | M/N | 5 b | $\begin{aligned} & 25.4 \text { ext.; } \\ & 9.0 \text { max. } \end{aligned}$ | Another rim from SS 302 in ware 5, mouth d. $=13.7$; distance between mouths $=4.5$. Removal of S. baulk from surface to Level 5. |  |  |
| 1428 | SS 1286 | 3 | M | 6 a | 17.5; 3.0-3.3 | Lower body scraped. Fig. 125 Rm 37 \#4. | 93.28 |  |
| 1429 | SS 545 | 4 | M | 5 | 19.2; 3 | Found adjacent to W. side of bench niche in façade wall. | 88.80 |  |
| 1430 | FS 1453 | 3 | M | 5 | 24.3; 3 | Appliqué blob of clay between the two mouths. Yellow paste. Further example from SS 1274 (92.132) Fig. 125 Rm 35 \#6. | 86.6 | 8238 |
| 1431 | FS 1778 | 3 | M | 6 a | 19.7; 3.2-3.4 | Lower body cut down vertically. Pale buff surface. Area between the two mouths pinched together \& folded over. Further examples in ware 5b from FS 2240 (TB 13250) \& SS 1274 (92.133) Fig. 125 Rm 35 \#12. | 91.62 |  |
| 1432 | FS 1044 | 2a | N | 6 | 34.5; 20.6 | Spout d. $=4.0$. Ring base broken in antiquity. Pale buff surface (Fig. 213). | 84.91 | 6101 |
| 1433 | ER 232 | 5 | L | 5 | 18.4; 4.5-6.3 | Complete. Munsell 2.5Y $7 / 2$ 'light grey'. Fig. 211. | 80.76 | 3123 |



## Artefact Drawings

Figure 454. Phase L bouls (1434-65), scale 1:4; except 1465, scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1434 | ST 126 | 6 | L | 5 | 5.3; 12.4 | ?Burnt. |  |  |
| 1435 | ER 233 | 5 | L | 5 | 6.6; 12.7 | Munsell 5Y 7/2 'light grey'. Further examples from CH 445, DH 57 \& SS 683. | 80.84 | 3157 |
| 1436 | AL 19 |  | L | 5 | 7.1; 12.8 | Exterior scraped. | 84.6 |  |
| 1437 | CH 95 | 7 | L | 5b | 8.2; 15.0 |  | 78.166 | 1004 |
| 1438 | ER 111 | 5 | L | 5a | 6.1; 15.3 | Almost complete. Munsell $5 \mathrm{Y} 8 / 3$ 'pale yellow'. | 80.155 |  |
| 1439 | ER 233 | 5 | L | 5 | 5.4; 13.2 | Munsell 5Y 8/2. Further example from ST 81 (TB 4126). | 80.85 | 3162 |
| 1440 | AL 19 |  | L | 5 | 6.4; 13.5 | A second example from the same locus (84.8) \& an identical example from SS 241. | 84.9 |  |
| 1441 | ER 242 | 9 | ?L | 5b | 5.3; 14 | Layer 9 in sounding. Further example from FS 1954. |  |  |
| 1442 | ER 33 | 5 | L | 5b | 6.7; 12.8 | Surface blackened ?burnt. | 78.186 |  |
| 1443 | CH 619 | 6 | L | 5 | 7.0; 14.5 | Further example from FS 2212 in ware 4. |  |  |
| 1444 | CH 239 | 6 | L | 5 | 6.7; 17.5 |  |  |  |
| 1445 | ST 88 | 9 | ?K/L | 5a | 4.3; 10.3 | Greenish. Base cut, body pared \& smoothed. | 83.4 |  |
| 1446 | ST 86 | 8 | L | 5a | 5.6; 11.3 | Almost complete. Greenish. | 83.1 |  |
| 1447 | ER 227 | 5 | L | 5 | 7.4; 10.5 | Almost complete. Munsell $2.5 \mathrm{Y} 8 / 2$ 'white'. | 80.73 | 3132 |
| 1448 | CH |  | L | 5b | 6.3; 14.4 | Munsell 5 Y 8/1 white. Lower body shaved down. Further examples from SS 535, FS 1932 (level 6) \& in ware 6 SS 944. |  |  |
| 1449 | ER 233 | 5 | L | 5 | 7.2; 13.2 | Base cut roughly. |  |  |
| 1450 | FS 549 | 5/6 | L | 5 | 7.0; 11.8 | Pale wash. |  |  |
| 1451 | CH 476 | 6 | L | 5b | 6.7; 13.2 |  |  |  |
| 1452 | CH 541 | 7 a | L | 5 | 5.3; 13.9 | Complete. Pale surface. | 83.79 | 5112 |
| 1453 | CH 503 | 6 | L | 5 | 6.6; 14.8 | Burnt. | 83.72 |  |
| 1454 | ER 233 | 5 | L | 5 | 6.7; 15.4 | Munsell 2.5Y $7 / 2$ 'light grey'. Burnt. | 80.91 | 3156 |
| 1455 | CH 541 | 7 | L | 5 | 9.2; 22.0 | Area above carination shaved. |  |  |
| 1456 | CH 480 | 6 | L | 4b | 6.7; 11.2 | Almost complete. | 83.64 |  |
| 1457 | ER 233 | 5 | L | 5 | 6.3; 14.8 | Munsell 2.5Y 7 / 4 'pale yellow'. Two further rims from ER 233 in ware $4 / 5$. |  |  |
| 1458 | ER 232 | 5 | L | 4b | 7.2; 19.6 | Lower body cut. Munsell 5Y 7/2 'light grey'. Further examples from ER 205 \& FS 2204. |  |  |
| 1459 | CH 209 | 6 | L |  | 7.4; 11.5 | Lightly fired, chaff inclusions. Munsell 10YR 7/3-6/4 'very pale brown' to 'light yellowish brown'. | 80.117 |  |
| 1460 | CH 595 | ? 8 | L | 5 | 4.8; 16.7 | String-cut base. Casemate in ED boundary wall. Further example from SS 246 in ware 6. | 84.16 |  |
| 1461 | CH 595 | ? 8 | L | 6 | 6.4; 17.2 | String-cut base with perforation. Further example from FS 821. |  |  |
| 1462 | $\begin{aligned} & \text { CH 595/ } \\ & 599 \end{aligned}$ | ? 8 | L | 5 | 5.9; 17.6 | String-cut base. Further examples from SS 749, in ware 5b FS 482 (TB 8247) \& in ware 6 FS 704 (TB 12241). |  |  |
| 1463 | CH 471 | 6 | L | 5 | 9.6; 19.2 | Another example from the same locus. |  |  |
| 1464 | CH 471 | 6 | L | 5 | 8.5; 17 | Burnt, grey-buff. | 83.62 |  |
| 1465 | CH 485 | 6 | L | 5 | 13.5; 32.0 | Complete. | 83.66 | 5116 |



## Artefact Drawings

Figure 455. Bowols and beakers from CH cistern (1466-82); Phase L lugged bowls (1485-8); scale 1:4, cxcept 1486-- sale 1:10.

| No. | Area \& locus | Area level | Range | Ware | Dimensions $h t ; d$. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1466 | CH 92 |  | L/M | 6a | 5.8; 14.6 |  | 78.215 |  |
| 1467 | CH 47 |  | M | 5 b | 7.8; 13.0 |  | 78.131 |  |
| 1468 | CH 92 |  | L/M | 6a | 6.2; 14.9 |  | 78.217 |  |
| 1469 | CH 92 |  | L/M | 5 b | 6.7; 13 |  | 78.197 |  |
| 1470 | CH 92 |  | L/M | 6a | 6.9; 15.0 |  | 78.198 |  |
| 1471 | CH 52 |  | L/M | 5b | 6.6; 12.0 | Further example from CH 92 (78.196). | 78.107 |  |
| 1472 | CH 92 |  | L/M | 5b | 6.4; 12.0 | Almost complete. | 78.148 |  |
| 1473 | CH 92 |  | L/M | 5b | 6.2; 13.0 | Almost complete. | 78.147 |  |
| 1474 | CH 92 |  | L/M | 5 b | 6.1; 15.6 | Complete. | 78.218 |  |
| 1475 | CH 92 |  | L/M | 6 | 7.6; 14.4 | String-cut base. Warped, oval shape. | 81.78 | 4135 |
| 1476 | CH 92 |  | L/M | 5 b | 6.9; 14.0 | Almost complete. | 78.149 |  |
| 1477 | CH 92 |  | L/M | 5 b | 5.5; 10.0 | Complete. | 78.216 |  |
| 1478 | CH 47 |  | M | 5b | 7.7; 11.0 | Complete. Further examples from CH 47 (78.79) in ware $6 \mathrm{a} \& \mathrm{CH} 52$ (78.100) in ware 6b. | 78.78 |  |
| 1479 | CH 92 |  | L/M | 5 | 8.0; 12.5 | String-cut base. Further example from CH 92 (TB 413481.82). | 81.77 | 4138 |
| 1480 | CH 92 |  | L/M | 5 | 10.6; 11.6 | Further examples from SS 555 (88.96), SS 706 (in ware 6) \& FS 2200. | 81.80 | 4142 |
| 1481 | CH 47 |  | M | 5 a | 10.8; 10.4 | Greenish. Lower body scraped. | 78.122 |  |
| 1482 | CH 63 |  | L/M | 11 | 7.7; 11.0 | Lightly fired, heavy chaff \& grit. Both surfaces coated with a white substance. | 78.164 |  |
| 1483 | CH 509 | 6 | L | 5 b | 9.7; 21.2 | Complete. Lower body surface shaved. | 83.75 | 5104 |
| 1484 | ER 45/80 | 5 | L | 5 b | 12.1; 22.5 | Blackened surfaces. From storeroom with 1486, see 179 for other illustrated pots from this room. | 78.229 | 1020 |
| 1485 | CH 503 | 6 | L | 4b | 12.6; 21.0 |  | 83.70 |  |
| 1486 | ER 45/80 | 5 | L | 5 | 31.0; 52.0 | 2 rows of rope marks below handles. Base burnt. | 78.251 |  |
| 1487 | CH 445 | 6 | L | 5 | 26.0; 61.0 | Complete. 4 knob lugs. | 81.114 | 4100 |
| 1488 | $\begin{array}{\|l\|} \hline \text { CH 285/ } \\ 541 \end{array}$ | 7/6 | L | 6 | 14.0; 32.2 | Lower body cut. Upper exterior surface buff. 2 lugs. | 83.105 |  |



## Artefact Drawings

Figure 456. Phase L large bowls, spouted bottles, small jars and goblets (1489-510), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1489 | CH 285 | 7/6 | L | 5 | 10.2; 21.0 |  |  |  |
| 1490 | ER 238 | 5 | L | 5 | 12.7; 22 | Munsell 2.5Y $7 / 4$ 'pale yellow'. | 80.164 | 3145 |
| 1491 | CH 445 | 6 | L | 5 | 10.4; 28 | Complete. Lower body and base shaved, beautifully finished. | 81.96 | 4145 |
| 1492 | CH 445 | 6 | L | 5 | 9.7; 5.0 | Complete. | 81.88 | 4109 |
| 1493 | ER 33 | 5 | L | 5a | 9.6; 5 | Carbonized deposits on surface. | 78.192 | 1030 |
| 1494 | ER 232 | 5 | L | 5 | 10.3; 6.5 | Munsell 5Y 8/2 'white' to 7/2 'light grey'. Rm 43. | 80.99 | 3125 |
| 1495 | CH 515 | 6 | L |  | 10.5; 5.4 | Red-brown fine ware, some white grit. |  |  |
| 1496 | CH 621 | 7/8 | L | 5 | 14.6; 9.5 max. | Surface well-smoothed, ?originally burnished. | 84.78 |  |
| 1497 | CH 445 | 6 | L | 5 | 18.0; 6.6 |  | 81.90 | 4147 |
| 1498 | DH 10 | 3 | L | 5 | 9.7; 4.3 | Pale surface. | 84.1 | 6113 |
| 1499 | ER 237 | 5 | L | 5 | 6.4; 6.1 | Overfired greenish, flaky fabric. |  |  |
| 1500 | ER 237 | 5 | L | 5 | 7.7; 6.0 | Complete. Burnt. String-cut base. | 80.160 | 3107 |
| 1501 | ER 237 | 5 | L | 5 | 8.2; 7.0 | Complete. Munsell 2.5 Y 7/4 'pale yellow'. String-cut base. | 80.157 |  |
| 1502 | $\begin{aligned} & \text { CH 209/ } \\ & 230 \end{aligned}$ | 6 | L | 5 | 11.7; 10.8 | Munsell 2.5Y $8 / 2$ 'white'. | 80.121 | 3179 |
| 1503 | CH 540 | 6 | L | 6 | 14.2; 11.0 | Light brown wash on exterior. Cf. Chuera, Steinbau 3, fig. 284. | 83.80 |  |
| 1504 | SS 1210 | 3 | M | 5 | 7.9; 8.0 | Further example from SS 1225. |  |  |
| 1505 | ST 1104 | 14 | J | 5b | 9.5; 13.0 | Lower body scraped. | 78.225 |  |
| 1506 | FS 1662 | 3 | M | 6 a | 8.5; 9.0 | Pale surface. |  |  |
| 1507 | SS 341 | 6/7 | L | 6 a | 7.5; 10.6 | Vertical grooves on lower body. |  |  |
| 1508 | ER 242 | 9 | ? L | 6 | $\begin{gathered} \text { 5.9; base } \\ d=4.4 \end{gathered}$ | Pale surface. Layer 9 in sounding. |  | 3188 |
| 1509 | SS 1091 | 3 | M | 5b | $\begin{aligned} & \text { 4.2; base } \\ & d=10.5 \end{aligned}$ |  |  |  |
| 1510 | CW A 3 |  |  | 5 | 10.1; 7.5 | From surface scrape between FS \& TW. Spout coiled. Greenish buff, with traces of slip or wash fired pink in places. | 81.101 | 4115 |



## Artefact Drawings

Figure 457. Phase L round-based jars and bottles (1511-27), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1511 | ER 39 | 5 | L | 5b | 10.8; 6.6 | Burnt, very friable. | 78.204 |  |
| 1512 | CH 458 | 7 | L | 5 | 13.6; 5.8 |  | 81.113 |  |
| 1513 | ER 233 | 5 | L | 5 | 14.5; 6.8 | Munsell 2.5Y $7 / 2$ 'light grey'. Rm 41. | 80.82 | 3121 |
| 1514 | CH 497 | 6 | L | 5 | 16.0; 7.0 | Complete. Found cleaning stairs in burnt room. Another example of base in FS 1886. | 83.104 | 5093 |
| 1515 | ER 233 | 5 | L | 5 | 18.8; 8.5 | Munsell 2.5Y $7 / 4$ 'pale yellow'. |  |  |
| 1516 | ER 33 | 5 | L | 5b | 13.6; 6.4 | Black deposit inside pot. Rm 43. | 78.157 | 1005 |
| 1517 | ER 233 | 5 | L | 5 | 16.0; 8.0 | Complete. Munsell 2.5Y 6/2 'light grey'. Burnt. | 80.81 | 3118 |
| 1518 | ER 38 | 5 | L | 5a | 16.8; 8.0 |  | 78.219 |  |
| 1519 | ER 45/80 | 5 | L | 5b | 17.0; 6.4 | Almost complete. Carbonized deposit on interior. From storeroom, see 179 for list of illustrated pots from this room. | 78.242 | 1006 |
| 1520 | ER 233 | 5 | L | 5 | 18.2; 9.2 | Munsell 2.5Y $7 / 2$ 'light grey'. Burnt. | 80.83 | 3120 |
| 1521 | ER 232 | 5 | L | 5 | 11.0; 5.7 | Almost complete. Heavily burnt, $2.5 \mathrm{Y} 7 / 3$ 'light grey'. Further example from CH 367 , but with pear shaped body. | 80.75 | 3114 |
| 1522 | ER 236 | 4 | M | 5 | 13.3; 6.4 | Complete. Munsell 5Y 8/3 'pale yellow'. | 80.156 | 3115 |
| 1523 | $\begin{aligned} & \text { CH } 540 / \\ & 515 \end{aligned}$ | 6 | L | 5 | 11.7; 5.0 | Brown fabric. | 83.102 | 5096 |
| 1524 | ER 33 | 5 | L | 5b | 14.3; 7.5 | Rm 43. | 78.158 | 1022 |
| 1525 | ER 238 | 5 | L | 5 | 15.8; 6.5 | Rm 46. Further example from CH 148. | 80.159 | 3116 |
| 1526 | CH 473 | 6 | L | 6 | 17.1; 6.0 | Rm 62. | 83.69 |  |
| 1527 | ER 33 | 5 | L | 5 b | 17.5; 7.3 | Rm 43. | 78.246 |  |

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2 & 2 & 2 \\
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\end{array}
$$

## Artefact Drawings

Figure 458. Akkadian elongated urn-like jars and Phase L jars with round or rounded bases (1528-42), scale 1:4; except 1534-42, scale 1:10; 1533, scale 1:20.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1528 | CH 450 | 6 | L | 5 | 15.5; 10.2 | Complete. Lower body pared. From burnt floor in Rm 61 with 181. | 81.111 | 4119 |
| 1529 | CH 445 | 6 | L | 5b | 16.6; 8.4 |  | 81.118 | 4151 |
| 1530 | ER 45/80 | 5 | L | 5 | 16.2; 11.8 | Storeroom with $\mathbf{1 5 3 7}, \mathbf{1 5 3 8}, 1540,1542$, see also 179 for other illustrated pots from this room. | 78.252 | 1002 |
| 1531 | ER 230 | 5 | L | 5 | 14.0; 13.0 | Munsell 5Y 8/2 'white'. Pale pink deposit on interior surface. Further example from CH 189. | 80.86 |  |
| 1532 | CH 189 | 5 | M | 5 | 17.5; 11.8 | Munsell 5Y 8/2 'white'. | 80.111 |  |
| 1533 | SS 280 | 4 | M | 5 | 73.0; 50.0 | Found in NE corner of antecella, set into floor 1. Fig. 93. | 88.98 |  |
| 1534 | SS 760 | 4 | M | 5 | 52.5; 39.0 | Lower body shaved vertically. |  |  |
| 1535 | SS 356 | 4 | M | 5b | 42.7; 36.5 | Found in situ set into kitchen floor. Complete. | 90.128 | 11099 |
| 1536 | FS 1717 | 3 | M | 5b | 53.2; 37.0 | Almost complete. Lined with bitumen. Further example from FS 2306 in ware 5, juss-lined. | 90.130 |  |
| 1537 | ER 45/80 | 5 | L | 5b | 22.0; 22.8 | Complete. Burnt. Botanical sample, Table 33, ER $45=$ ER 80. Storeroom with 1530. | 78.230 | 1032 |
| 1538 | ER 45/80 | 5 | L | 5 | 26.8; 21.5 | Perforation in base. Storeroom, see 1530. | 78.248 | 1035 |
| 1539 | ER 232 | 5 | L | 5 | 29.5; 22.0 | Heavily burnt. | 80.150 |  |
| 1540 | ER 45/80 | 5 | L | 5 | 35; 21 | Incised pot mark. Burnt. Storeroom, see 1530. | 78.253 |  |
| 1541 | ER 232 | 5 | L | 5 | 41.8; 25 | Much stained, vertical dribbles down sides of pot. | 80.96 |  |
| 1542 | ER 45/80 | 5 | L | 5 | 34.0; 25.0 | Heavily burnt. Storeroom, see 1530. | 78.255 |  |

Artefact Drawings


## Artefact Drawings

Figure 459. Phase L open-mouthed and tall-necked jars (1543-59), scale 1:4; except 1545, 1548-58, scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1543 | CH 238 | 6 | L | 5 | 21.4;15.9 | Found in grinding pit in bin CH 63 above mortar. Complete; contained clay with reed impressions, ?roofing fragments. | 80.47 | 3127 |
| 1544 | ER 210 | 4 | L/M |  | 20.7; 19.2 | Incised pot mark, še sign on shoulder. |  |  |
| 1545 | ER 111 | 5 | L | 6 | 20.2; 42.4 | Munsell 5YR 6/6 'reddish-brown'. Incised pot mark \& ED seal impression on shoulder, DM 147. Rm 45. | 80.166 | 3151 |
| 1546 | ER 232 | 5 | L | 5b | 7.0; 21.8 | Rm 43. |  |  |
| 1547 | ER 111 | 5 | L | 5 | 5.0; 14.5 | Rm 45. |  |  |
| 1548 | ER 111 | 5 | L | 5 | 9.0; 24.6 | 2 drilled depressions on interior of vessel, depth $=$ 0.5 cm . These do not pierce the vessel wall. Cf. 1569-71. |  |  |
| 1549 | ER 232 | 5 | L/M | 5 | 25.2; 12.0 | Slightly ribbed effect on shoulder. Burnt and stained. Munsell 5Y 7/3 'pale yellow'. Rm 43. Further example from ST 8 (TB 4148). | 80.98 |  |
| 1550 | ER 39 | 5 | L | 5b | 28.5; 11.5 | Scrape marks on exterior. | 78.205 | 1036 |
| 1551 | ER 45/80 | 5 | L | 5 | 31; 11.8 | Complete, burnt. Contained botanical sample, Table 33, ER $45=$ ER 80. Storeroom with 1556, see also $1530 \& 179$ for other pots from this room. | 78.232 | 1019 |
| 1552 | ER 233 | 5 | L | 5 | 29.5; 10.2 | Munsell $2.5 \mathrm{Y} 7 / 2$ 'light grey'. Rm 41 floor. Further example from ER 232 (80.94) Munsell $2.5 \mathrm{Y} 7 / 4$ 'pale yellow'. | 80.88 |  |
| 1553 | ER 33 | 5 | L | 6 | 29.4; 15.8 | Rm 43 floor. | 78.188 |  |
| 1554 | ER 232 | 5 | L | 5 | 18.5; 11.5 | Burnt. Further example from CH 207/209 with groove on rim interior. | 80.97 |  |
| 1555 | ER 33 | 5 | L | 5b | 35.0; 11.8 | Burnt. Pot mark, stamped circle on shoulder. | 78.190 |  |
| 1556 | ER 45/80 | 5 | L | 5 | 55.5; 22.8 | Complete. Burnt. Incised pot mark on base. From storeroom with 1551. | 78.254 |  |
| 1557 | ER 232 | 5 | L | 5b | 26.0; 12.0 | Almost complete. Further example from the same locus. Rm 43. |  |  |
| 1558 | ER 232 | 5 | L | 5 | 13.0; 16.5 | Rm 43. |  |  |
| 1559 | CH 189 | 5 | M | 5 | 22.6; 14.1 | Pot mark or decorative 'face' in the form of two deep circular impressions surrounded by an incised oval. | 80.46 | 3149 |


1545


[^3] )
1547
1548

1559

## Artefact Drawings

Figure 460. Phase L large jars and bowl (1560-73), scale 1:4; except 1560, 1562-8, scale 1:10.

| No. | Area \& locus | Area level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1560 | $\begin{aligned} & \text { CH 209/ } \\ & 207 \end{aligned}$ | 6 | L | 6 | 12.2; 25.5 | Fill of bins CH 204 \& 205. | 80.120 |  |
| 1561 | ER 232 | 5 | L | 5 b | 8.0; 17.6 | Interior burnt. |  |  |
| 1562 | SS 680 | 5 | M | 6 a | 50.2; 34.0 | Lower body scraped down on interior and exterior. Rope impressions on exterior. Perforated spout on lower body, most of spout lost. Set into floor of Rm 25 . Fig. 210. | 91.138 | 12263 |
| 1563 | ER 232 | 5 | L | 5 | 60.0; 50.0 | Contained gritty deposit. Rm 43. | 80.93 |  |
| 1564 | CH 445 | 6 | L |  | 72.5; 52.0 | Black core, orange-buff surface. | 81.115 |  |
| 1565 | ER 232 | 5 | L | 5 | 28.7; 42 | Rm 43. | 80.171 |  |
| 1566 | ER 233 | 5 | L | 5 | 26.3; 19,0 | Heavily burnt. Munsell 5Y 7/2 light grey. Rm 41. Further example from CH 374. | 80.162 | 3189 |
| 1567 | ER 232 | 5 | L | 10 | 38.0; 17.2 | Heavily burnt. Rm 43. | 80.163 |  |
| 1568 | ER 232 | 5 | L |  | 43.5; 21.0 | Buff surface, reddish fabric, dark core. Incised pot mark $(X)$ on shoulder. Rm 43. Further examples of rim from CH 189 \& ST 2. | 80.92 |  |
| 1569 | ER 232 | 5 | L | 5 b | $9.0 ; 21.7$ | 2 drilled depressions on interior of vessel, depth $=$ 0.5 cm . These do not pierce the vessel wall. Cf. 1548. |  |  |
| 1570 | ER 232 | 5 | L | 5 b | 8.2; 34+ | 2 drilled depressions on interior surface, depth $=$ $0.4-0.6 \mathrm{~cm}$. Rm 43 . |  |  |
| 1571 | ER 232 | 5 | L | 5 b | 11.0; 18.5 | 2 drilled depressions on interior surface, depth $=0.5 \mathrm{~cm}$. Rm 43. |  |  |
| 1572 | ER 232 | 5 | L | 5 b | 7.5; 29.8 | Rm 43. |  |  |
| 1573 | ER 232 | 5 | L | 6 | 13.4; 30.0 | Munsell surface 5Y $8 / 2$ 'white'. Rm 43. | 80.95 |  |



## Artefact Drawings

Figure 461. Urn and jar rims and shoulders with pot marks (1574-93), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1574 | FS 88 | 2 a | N | 6 | 5.7; 8.8 | Shallow excised marks. |  |  |
| 1575 | FS 1773 | 3 | M | 5 b | 6.5; 12.0 | 3 tubular impressions on shoulder. Rm 10 floor. |  |  |
| 1576 | FS 1450 | 3/2 | M | 5 b | 13.0; 20.0 | 2 tubular impressions on shoulder. |  |  |
| 1577 | FS 308 | 2 b | M/N | 9 | 13.4; 37.0 | 3 tubular impressions on shoulder. From cleaning. |  |  |
| 1578 | SS 825 | 4 | M | 5 b | 9.0; 25.0 | 3 tubular impressions on shoulder. Further example from ST 107. |  |  |
| 1579 | FS 2324 | 5 | M | 5b | 6.7; 24.0 | 2 tubular impressions. Groove on rim interior. Rm 23 fill. |  |  |
| 1580 | FS 1789 | 5 | M | 5b | 5.6; 8.0 | 5 tubular impressions on shoulder. Diameter is the internal neck diameter. Fig. 219:2. |  |  |
| 1581 | CH B 7 | 3 | M | 5b | 29; 23 | Height given is full height of vessel. Flattened base with central perforation (not illustrated). Incised mark (inverted V ) on shoulder. | 76.1 | 29 |
| 1582 | FS 1362 | 3 | M | 5b | 22.5; 35 | Incised mark (inverted V ) on shoulder. Groove on rim interior. |  |  |
| 1583 | CH 189 | 5 | L/M | 5b | 11.4; 46 | Incised pot mark on shoulder, inverted $V$ with crossing stroke. Levelling for Level 5. |  |  |
| 1584 | FS 1187 | 2 | ?M/N | 5b | $\begin{gathered} 10.8 ; \text { w. of } \\ \text { sherd }=10.0 \end{gathered}$ | Pot mark on shoulder. Inverted V with crossing stroke. Fig. 219:6. |  |  |
| 1585 | CH 209 | 6 | L | 5 | 7.9; 14.0 | Incised pot mark on shoulder. Cross within a ?diamond. |  |  |
| 1586 | FS 803 | 5 | M | 6 a | 13.3; 46 | Incised pot mark on shoulder. Circle containing 2 vertical strokes (incomplete). Fill of Courtyard 6. |  |  |
| 1587 | FS 2318 | 3 | M | 6 a | 15.0; 33 | Incised X mark on shoulder. Pale surface. |  |  |
| 1588 | DH 1 |  | L | 5 | 12.0; 28 | Shallow W-mark, almost a wipe, on shoulder. Also a large bitumen blob on shoulder ?accidental. |  |  |
| 1589 | CH 189 | 5 | L/M | 5b | 12.2; 36-8 | Incised še sign on shoulder. |  |  |
| 1590 | DH 45 |  | ?M | 5 b | 9.0; 46 | U-shaped pot mark with two small gouges. |  |  |
| 1591 | SS 1018 |  | ?M | 6a | $\begin{aligned} & \text { 7.5; internal } \\ & \text { d. }=8 \end{aligned}$ | Fragment of a fenestrated stand with incised mark, two parallel lines that cross each other at right angles. |  |  |
| 1592 | ER 232 | 5 | L | 10 | 11.0; w. of sherd $=11.5$ | Burnt, incised mark on shoulder, similar mark as 1591. |  |  |
| 1593 | FS 1542 |  | M/N | 9 | 5.0; 15 | Burnished surface. Lug handle on rim with deeply incised roughly square mark. |  |  |

All pot marks made before firing.


## Artefact Drawings

Figure 462. Finestrated stands, potstands and braziers (1594-607), scale 1:4; except 1595, 1602, 1607, siale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1594 | $\begin{aligned} & \text { CH 485/ } \\ & 480 \end{aligned}$ | 6 | L | 5 | 17.1;9.0 | Heavily burnt. Triangular fenestrations, incised še signs \& male stick figure. | 83.65 | 5091 |
| 1595 | ER 111 | 5 | L | 5 | 53 est.; 29.0 | Munsell 10YR 7/3 'pale brown'. Rm 45. | 80.169 | 3147 |
| 1596 | CH 276 | 6 | L | 6 | 15.5; 22.5 | Surface 10YR 7/4 'very pale brown'. Triangular fenestrations, incised še signs and slashed rib decoration. Possibly the base rather than the rim. | 80.123 | 3146 |
| 1597 | SS 545 | 4 | M | 5 | 11.4; 9.4 | Stand with slashed rib decoration. |  |  |
| 1598 | ER |  |  | 5 | 10.2; 9.8 | Baulk clearance. Munsell 5Y 8/2 'white'. Potstand with slashed rib decoration. | 80.51 | 3113 |
| 1599 | ST 1103 | 14 | J | 5 | 8.5; 8.0 | 7 triangular fenestrations. Possibly upside-down. | 297 | 1053 |
| 1600 | SS 502 | 4 | M | 5 b | 9.7; 9.2 | Upper interior worn and pitted. | 88.33 |  |
| 1601 | FS 1920 | 5 | M | 5 b | 9.5; 9.9 |  |  |  |
| 1602 | FS 354 | 3 | M | 5b | 25.8; 28.5 | 2 triangular fenestrations, large perforation in base. ?Brazier. | 84.106 |  |
| 1603 | SS 535 | 3 | M | 6 | 7.4; 13.0 | 3 rectangular fenestrations. Pale surface. | 88.75 | 10186 |
| 1604 | SS 1274 | 3 | M | 6 a | 11.3; 18.5 | Pale surface, 4 circular fenestrations, arranged in 2 pairs. Fig. 125, Rm 35 \#13. | 92.184 |  |
| 1605 | $\begin{aligned} & \text { CH 416/ } \\ & 419 \end{aligned}$ | 5 | M | 5 | 13.0; 20.4 | Jagged line indicates where extra clay added to form base. |  |  |
| 1606 | FS 1885 | 5/4 | M |  | 21.7; 19.5 | 3 circular fenestrations. Crumbly brown fabric with heavy shell inclusions. Brazier, burnt black below dotted line. Fig. 56. Further example from FS 1893, brown fabric, heavy chaff \& grit. | 92.11 | 13192 |
| 1607 | SS 922 | 4 | M/? N | 6 a | 45; 56.5 | Pale surface, both interior \& exterior surfaces scraped vertically. ?Brazier, no sign of burning but base lost. 3 rectangular fenestrations extant, may have been a fourth. Further sherds from this or similar vessels from SS 754, $744,719,727,965 \& 1091$. |  |  |



## Artefact Drawings

Figure 463. Compartmented iessels, potstands, drainpipes and miscellanea (1608-22), scale 1:4; except 1616, 1618-22, scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1608 | FS 1451 | 3 a | M | 6a | 8.3; 26.5 | 3 triangular fenestrations on inner bowl. Lower sides and base cut. D. of inner bowl $=15.0$. Incised slash decoration on rims. Fig. 217. | 86.5 | 8235 |
| 1609 | SS 734 |  | ?N/Q | 6 | $\begin{gathered} 2.5 ; \mathrm{l}=12.8 ; \\ \mathrm{w} .=5.0 \end{gathered}$ | Vessel with two compartments. Incised decoration on three surfaces. Topsoil. Further examples from FS 1651 (in ware 6b), SS 207 (TB 9194, semi-circular in plan \& in ware 5) and a fragment from FS 729 in brown, gritty fabric. | 5508 | 13220 |
| 1610 | ST 92 | 3 | M | 5 | 8.0; 11.0 | Almost complete. | 83.10 |  |
| 1611 | SS 1284 | 3 | M | 5a | 8.8; 12.0 | Rm 33. |  |  |
| 1612 | SS 1081 | 4 | M | 6 a | 11.0; 17.4 |  |  |  |
| 1613 | SS 316 | 4 | M | 6 a | 7.2; 15.4 |  |  |  |
| 1614 | SS 513 | 2 | N |  | 5.7; 6.5 | Salmon surface, grey gritty fabric. Found in tannur. | 88.27 | 10161 |
| 1615 | SS 603 | 4 | M | 6 | 8.7; 8.2 | Mica. | 91.46 |  |
| 1616 | FS 1766 | 3 | M | 5b | 29.8; 24.2 | 2 pairs of perforations, $\mathrm{dp}=2.0$. Interior scraped down below the level of the perforations. | 91.63 | 12159 |
| 1617 | CH | 1 | N | 11 | 10.5; 9.7 | Unbaked stand. Munsell 7.5YR 6/4 'light brown'. | 80.23 |  |
| 1618 | FS 326 | 2 | N | 5 | 40.0; 13.0 | Drainpipe, found slotted into 1619. Further example from CH B 16 (TB 122). Other drainpipe fragments from SS 374, 580, 749 \& 1070. | 84.96 |  |
| 1619 | FS 326 | 2 | N | 5 | 45; 12.8 | Drainpipe with large perforation $(\mathrm{d} .=16)$ in its side to allow another pipe to join it at right angles. | 84.95 |  |
| 1620 | FS 563 | 2 | N |  | 47.8; 15.0 | Drainpipe. Brown wash, grey very gritty fabric with coarse chaff; associated with soakaway, Fig. 85. |  |  |
| 1621 | ER 56 | 2 | M | 6 a | 76.3; 18 | Level 2 drainpipe, see plan Fig. 33. Almost complete. See also 1622. | 78.195 |  |
| 1622 | ER 103 | 2 | M | 6 | 72.5; 19.2 | Drainpipe, part of the same drain as $\mathbf{1 6 2 1}$. Complete. Buff surface. | 80.65 |  |

## Artefact Drawings



## Artefact Drawings

Figure 464. Colanders and strainers (1623-56), scale 1:4; except for 1656, scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1623 | FS 1885 | 5/4 | M | 11 | 1.9; 4.5 | Handmade, complete. Gritty brown clay. Fired at low temperature. | 92.10 | 13219 |
| 1624 | SS 30 |  | N | 5 | 2.5; 5.6 | Complete. | 83.91 | 5115 |
| 1625 | SS 662 | 2 | N | 5 | 2.9; 6.6 | 6 notches around rim, 6 perforations in body. |  |  |
| 1626 | FS 598 | 3 | M | 5b | 4.2; 9.2 | Handmade. From tannur. |  |  |
| 1627 | FS 1362 | 3 | M | 5 | 3.3; 11.3 | Complete. | 85.47 | 7230 |
| 1628 | FS 2259 | 3 | M | 5 | 3.6; 10.4 | String-cut base. | 92.143 |  |
| 1629 | FS 1646 | 3 | M | 5b | 5.2; 12.1 |  | 90.49 |  |
| 1630 | FS 1804 | 3 | M/N | 5 | 3.9; 11.0 | 3 further examples in ware 5b from FS 2212, 2217 \& unstratified. |  |  |
| 1631 | CH 471 | 6 | L/M | 5 | 5.8;11.6 | Almost complete. 2 further examples from FS 1537 \& DH 66. | 83.61 | 5108 |
| 1632 | SS 136 | 2 | M/N | 6 | 5.2; 14.0 | 9 further examples from FS 318, 1564, 1688 (90.84) 1191, SS 300, 545, 560, 632 (TB 12220) \& 761. | 83.96 |  |
| 1633 | SS 545 | 4 | M | 6 | 4.2; 11.8 |  |  |  |
| 1634 | SS 501 |  | M/N | 5 | 5.5; 13.0 | Topsoil. |  |  |
| 1635 | SS 219 |  | M/N | 5 | 4.5; 11.4 |  |  |  |
| 1636 | SS 110 | 2 | L/M/N | 5 | 4.4; 11.5 | 3 further examples from FS 318 (TB 6116), FS 1165 \& 1362. | 83.100 |  |
| 1637 | FS 1362 | 3 | M | 6 | 5.0; 11.8 | 1 further example from ER 16 (78.74). |  |  |
| 1638 | CH 124 | 1 | N | 5 | 5.5; 12.6 | Distorted oval shape. Munsell 10YR 7/3 'very pale brown'. | 80.16 | 3112 |
| 1639 | FS 1773 | 3b | M | 5 b | 3.0; 10.0 |  |  |  |
| 1640 | FS 1899 | 5 | M | 6 a | 4.4; 10.8 | Burnt, base scraped. |  |  |
| 1641 | FS 635 | 1 | N | 5 | 4.0; 13.0 |  |  |  |
| 1642 | SS 719 | 2/3 | M/N | 5 | 4.7; 11.3 |  |  |  |
| 1643 | FS 694 | 2 | N | 5b | 6.0; 13.0 | Further examples from FS 55 \& 1415. | 91.15 | 12221 |
| 1644 | SS 958 | 4 | M | 5 b | 4.5; 18.5 |  |  |  |
| 1645 | CH 595 | 7/8 | L | 5 | 5.3; 13.5 |  | 84.12 |  |
| 1646 | FS 1774 | 3b | M | 5 | 4.8; 12.8 | 2 further examples from SS 560 in ware 5b and SS 568 in ware 6. | 91.28 | 12222 |
| 1647 | FS 729 | 2 | N | 5b | 4.0; 12.6 | Exterior scraped. Rm 57. |  |  |
| 1648 | SS 809 | 4 | M | 5 | 3.9; 11.6 | Further example from FS 1445. |  |  |
| 1649 | FS 1804 | 3 | M | 5 | 3.7; 11.8 | Base scraped. |  |  |
| 1650 | SS 825 | 4 | M | 5 | 6.3; 14.6 |  | 90.99 |  |
| 1651 | FS 2240 | 3 | M | 5 | 6.2; 12.4 | Complete. 1 further example from FS 2240 in ware 6. | 92.89 | 13239 |
| 1652 | FS 1453 | 3 a | M | 5 | 7.0;12.4 |  |  |  |
| 1653 | ER 26 | 4 | M | 5 | 2.8; 5.0 | String-cut base. |  |  |
| 1654 | FS 437 | 3 | M/N | 6 a | 16.3; 15.6 |  |  |  |
| 1655 | ST 135 | 8 | ?J/K | 5 | 22.0; 16.4 | 1 further example from ST 1103. | 83.19 |  |
| 1656 | FS 1960 | 5 | M | 6 a | 41.0; 34.5 | Burnt, base scraped. |  |  |



## Artefact Drawings

Figure 465. Cooking iessels; additional strainers and stands (1657-74), scale 1:4; 1670-74, scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1657 | FS 71 |  | N | 6 | 3.7; 12.8 | Strainer. |  |  |
| 1658 | FS 19 | 1 | N | 5 | 4.3; 13.0 | Strainer. |  |  |
| 1659 | FS 12 | 1b | N | 5 | 5.7; 14.2 | Strainer. |  |  |
| 1660 | FS 631 | 1 | N | 6 a | $6.7 ; 15.0$ | Potstand or possibly a funnel. |  |  |
| 1661 | SS 130 | 2 | N | 5 b | 10.6; 13.0 |  | 83.99 |  |
| 1662 | ER 236 | 4 | M | 5 | 12.5; 19.5 | Munsell 10YR 7/4 'very pale brown'. | 80.167 |  |
| 1663 | DH 57 |  |  | 9 | 10.0; 12.0 | Burnished exterior surface. Circular knob lug. |  |  |
| 1664 | ER 24 | 3 | M | 9 | 5.6; 15.0 | Burnished horizontally. Further examples from CH B $14 \&$ CH B 11 (with perforation at base of triangular lug handle). |  |  |
| 1665 | FS 1567 | 3 | M | 9 | $15.4 ; 15.2$ | Burnished, base \& lower sides heavily burnt. Triangular lug handles on rim. |  |  |
| 1666 | FS 2320 | 2 | N | 9 | 23.3; 17.0 | Burnished exterior surface. Lower sides burnt. Triangular lug handles on rim. | 93.122 |  |
| 1667 | FS 12 | 1 b | N | 9 | ht. $=19.0$ | Burnt. Incomplete leg, rectangular in section, $\mathrm{w} .=5.5$; |  |  |
| 1668 | FS 1654 | 3 | M | 9 | 5.9 ext.; 6.8 | Highly burnished exterior surface. Lower body burnt. 1 handle extant, ?originally 2. |  |  |
| 1669 | FS 1435 | 2 | N | 9 | 8.8 ext.; 10.7 | 1 handle extant, ?originally 2. |  |  |
| 1670 | CH B 6 | 2 | N | 9 | 26; 18.3 | Munsell 10YR 5/3 to $2 / 1$ 'brown' to 'black'. Well-slipped surface. | 76.24 |  |
| 1671 | FS 1714 | 3 | M | 9 | 24.2; 18.5 | Heavily burnt. | 90.113 |  |
| 1672 | $\begin{aligned} & \text { FS 2211/ } \\ & 2240 \end{aligned}$ | 3 | M | 9 | 24.4 ext.; 14.2 | Rm 31. | 92.192 |  |
| 1673 | $\begin{aligned} & \text { FS 2211/ } \\ & 2243 \end{aligned}$ | 3 | M | 9 | 30.0; 22.5 | Further example from SS 944. Rm 32. | 92.193 |  |
| 1674 | SS 204 | 4 | M | 9 | 46.6; 28.5 | Well-smoothed orange to light brown surface, black core. | 87.75 |  |

## Artefact Drawings



## Artefact Drawings

Figure 466. Cooking iessels and miscellany (1675-86), scale 1:4; except 1676, 1681, scale 1:10.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1675 | ER 233 | 5 | L | 9 | 12.2; 10.0 | End of spout lost. Burnished surface. Munsell 5YR 4/2 to 5/4 'dark reddish-grey' to 'reddish-brown'. Rm 41 floor. | 80.89 |  |
| 1676 | ER 45/80 | 5 | L | 9 | 32.6; 20.0 | Horizontally burnished on upper body \& rim. Triangular lug handles on rim. From storeroom with 1679, see 179 for rest of pots from this room. | 78.249 | 1037 |
| 1677 | ER 39 | 5 | L | 9 | 9.3; 18.0 | Thick light red slip. Burnished diagonally \& horizontally in places. Rm 29. | 78.241 |  |
| 1678 | FS 1687 | 3 | M | 9 | 19.6; 11.0 |  |  |  |
| 1679 | ER 45/80 | 5 | L | 9 | 15.9; 27.0 | Horizontally burnished. Perforated triangular lug handles on rim. Possibly handmade. From storeroom with 1676. | 78.250 |  |
| 1680 | FS 1704 | 3 | M | 9 | 14.9; 26.7 | Some chaff on surface. | 90.110 |  |
| 1681 | FS 156 | 2a | N | 5 | $\begin{gathered} 11.0 ; \mathrm{w} .=40.4 ; \\ \text { ext. } \mathrm{l} .=33 \end{gathered}$ | Rectangular, tray-like vessel. ?For storage, built into room. | 83.86 |  |
| 1682 | CH 137 | 2 | N |  | 10.5; 40 | Sherd from bowl rim with handle. Section through handle, dotted line indicates shape of rim. From fill of plastered compartment associated with wall CH 136. |  |  |
| 1683 | FS 2237 | 3 | M | 10 | 12.6; 24.0 | Two views of bowl with 2 handles \& spout. Upper view has section through one of the handles and face-on view of spout. Lower view has section through spout and face-on view of one of the handles. Black, chaffy fabric. |  |  |
| 1684 | ER 24 | 2/3 | N |  | 4.9; 14.4 | Shallow dish. Small perforation near base. Concentric groove on rim \& diagonal incised decoration. | 200 |  |
| 1685 | SS 314 |  | ? N |  | 6.6; 15.2 | Baulk clearance. High ring base with groove \& cable decoration, one perforation. |  |  |
| 1686 | SS 296 | 4 | M | 5b | $\begin{gathered} \text { 1. }=20 \text { ext.; } \\ \text { d. }=5.5 \end{gathered}$ | Hollow handle of bowl, would have permitted a wooden stick to be inserted for carrying if vessel hot. Fragments of similar items from SS 693, 1046, 603, 722, 1025. |  |  |



## Artefact Drawings

Figure 467. Ritual iessels, large trays and platters, rectangular vessels and stand (1687-1704), scale 1:10, cacept 1690-93, 1695-s, 1702, scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1687 | CH B 11 | 4 | M | 5 | $\begin{gathered} 14 ; 1.1=49 ; \\ \mathrm{w} .=15.4 \text { ext. } \end{gathered}$ | Trough with fenestrations in the sides. Covered top preserved at one point. | 91 | 46 |
| 1688 | CH B 11 | 4 | M | 5 | $\begin{gathered} \text { 16.4; 1. }=46 ; \\ \mathrm{w} .=18.8 \end{gathered}$ | Trough with teardrop/triangular fenestrations. Rim preserved at one point. Further example from same locus, reg. no. 92 (TB 47), l. $=44 ;$ w. $=24$. | 90 | 48 |
| 1689 | SS 1079 | 4 | M | 6 | 8.2; 38 max. | Stand. |  |  |
| 1690 | ST 51 | 13 | J | 10 | 5.3; ? | Platter fragment with handle. Rim diameter indeterminate. |  |  |
| 1691 | SS 316 | 4 | M | 6a | 5.2; 20.4 |  |  |  |
| 1692 | SS 734 |  |  | 10 | 6.3; 14.5 | Topsoil. |  |  |
| 1683 | SS 875 | 1 | N | 5 | 6.8 max.; 19.2 | 1 lug handle extant, did not have two opposing lugs but may have had three lugs originally. Found in tannur. |  |  |
| 1694 | FS 20 | 1 | N | 5b | 7.9; 30.5 |  |  |  |
| 1695 | ER 10 | 2 | N | 9 | 5.5; 37 | Possibly handmade ? moulded. | 78.57 |  |
| 1696 | ER 33 | 5 | L | 6a | 3.5; 43 | Tray. Probably handmade. | 78.187 |  |
| 1697 | ST 85 | 2 | M | 6 a | $\mathrm{ht}=6.3$ | Rectangular vessel. |  |  |
| 1698 | FS 203 | 2b | N | 10 | $\mathrm{ht}=13.6$ | Oval vessel. |  |  |
| 1699 | FS 1471 | 2 | N | 5b | $\begin{gathered} 15.0 ; \\ \text { ext.1. }=63.6 \end{gathered}$ | Oval tray. |  |  |
| 1700 | SS 540 | 4 | M | 10 | $\begin{gathered} 5.7 ; \\ \text { ext. 1. }=38.4 \end{gathered}$ | Oval tray. Base cut. |  |  |
| 1701 | SS 591 | 4 | M | 6 a | $\begin{gathered} 8.0 ; \\ \text { ext. 1. }=27.8 \end{gathered}$ | Oval dish with lugs on rim interior and base. |  |  |
| 1702 | ST 1104 | 14 | J | 6 a | 8.3; 16.5 | Handmade. Grog temper. | 78.226 |  |
| 1703 | DH 52 | 1b | N | 5b | $\begin{gathered} \text { 13.6; 1. }=23 ; \\ \text { w. }=19.8 \end{gathered}$ | Rectangular sink-like vessel, complete. Perforation for drainage near base. Upper view shows face on view of long side with perforation. Lower view has section through the perforation. | 84.181 | 6100 |
| 1704 | FS 2320 | 2 | N | 5b | $\begin{gathered} 11 ; 1 .=30.2 ; \\ \mathrm{w} .=19.4 \end{gathered}$ | Rectangular vessel with spout/drainage hole near base. | 93.194 | 14256 |

## Artefact Drawings



## Artefact Drawings

Figure 468. Lids (1-(15-16); Ninevite 5 beakers and bowls (1717-34), scale 1:4.*

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1705 | SS 255 | 4/3 | M | 5 | 4.5; 7.4 | Lid. String-cut top. Pale yellow surface. |  |  |
| 1706 | SS 372 | post 4 | M | 5 | 4.8; 8.8 | Lid. String-cut top. |  |  |
| 1707 | CH 621 | 8 | L | 5 | 3.6; 10.6 | Lid with steam hole. String-cut top. Complete, lower surface worn. | 84.76 | 6138 |
| 1708 | FS 211 | 2a | N | 6 | 3.3; 9.0 | Lid with string-cut top and two steam holes. | 83.36 |  |
| 1709 | FS 1548 | 3/4 | M | 5b | 4.1; 11.0 | Lid with string-cut top and two steam holes. | 87.15 | 9193 |
| 1710 | TW 146 | ? $1 / 2$ | H | 6 | 5.0; 11.6 | Lid with circular knob handle \& vertical perforation ?for steam. Edges of lid blackened. | 87.49 | 9183 |
| 1711 | FS 2330 | 2b | ? N | 5b | 5.2; 10.4 | Lid. Handmade. Perforated pinched handle on top. |  |  |
| 1712 | SS 731 |  | ?M | 6a | 7.2; 9.8 max. | Baulk removal. Lid with circular knob handle. Almost complete, perforated. Grey core, brown surface. | 92.27 | 13216 |
| 1713 | TW 178 | 3/2 | H | 9 | 6.4; 18.8 | Lid with loop handle \& 3 steam holes that pierce the lid. Edges burnt black. Brown fabric, grey core, white grit, some chaff. | 91.10 |  |
| 1714 | SS 686 | 4 | ? $\mathrm{L} / \mathrm{M}$ | 10 | 4.0; 14.2 | Lid with loop handle. Grey core, large black grit inclusions. |  |  |
| 1715 | ST 1104 | 14 | J | 6 a | 7.0; 20-21 est. | Lid with rectangular handle. Pale slip, burnt edges. | 78.228 |  |
| 1716 | $\begin{aligned} & \text { ST 1102/ } \\ & 1103 \end{aligned}$ | 14/13 | J |  | 2.7; 26 | Lid, incomplete, probably had a central handle now lost. Part of a ?seal impression, ?ladder motif. (Cf. Pecorella 1998, 71, fig. 4f.) | 256 |  |
| 1717 | TW |  | ?J |  | 3.9; 4.0 | Pale brown. From surface. |  |  |
| 1718 | TW 124 |  | J |  | 4.3; 5.3 | Fine greenish yellow fabric. |  |  |
| 1719 | ST 128 | 7 | K | 5b | 3.7; 6.2 |  |  |  |
| 1720 | SS 1003 | 3 |  | 5b | 4.9; 5.5 | Surface within pisé wall; ?Ninevite 5. |  |  |
| 1721 | ST 127 | 7 | K | 5a | 4.4; 6.5 |  |  |  |
| 1722 | ST 129 | 8 | K | 6 | 4.9; 6.4 | Fine brown fabric. Further examples from SS 657 \& 1227. | 83.18 |  |
| 1723 | T 2 |  | ? $\mathrm{H} / \mathrm{J}$ |  | 4.8; 6.0 | From small tell T2, SE of Brak. |  |  |
| 1724 | SS 825 | 4 |  |  | 5.1; 10.0 | Fine greenish fabric. ?Residual piece. |  |  |
| 1725 | TW 124 |  | H/J |  | 5.2; ? | Overfired, rim diameter indeterminate. |  |  |
| 1726 | ST 1103 | 14 | J |  | 3.1; 8.8 | Grey-green. Further examples from TW 20 \& ST 1107. |  |  |
| 1727 | ST 1104 | 14 | J |  | 5.3; 8.9 | Fine grey-green fabric. |  |  |
| 1728 | TW 20 |  | H |  | 5.5; 14.8 | Grey fabric. Fill in OB foundations. |  |  |
| 1729 | TW 36 |  | H |  | 5.5; 10 | Light brown fabric, cream surface. Grooved decoration. |  |  |
| 1730 | TW B 36 |  | H |  | 4.2; 9.0 | Light brown fabric. Grooved decoration. |  |  |
| 1731 | FS 1755 |  | ?J |  | 6.0; 10.0 | Overfired greenish fabric. Grooved decoration, lower body scraped (out of context). |  |  |
| 1732 | TW 6 |  | J |  | 5.8; 8.0 | Pale brown fabric. Grooved decoration. |  |  |
| 1733 | TW 20 |  | ?J | 5 | 9.6; 10.7 | Grooved decoration. |  |  |
| 1734 | CW 10 |  | ?J | 5 | 7.5; 14.1 | Surface scrape between TW \& FS. |  |  |

[^4]
## Artefact Drawings



## Artefact Drawings

Figure 469. Incised and painted Ninevite 5 (1;35-48), scale 1:2.

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1735 | SS 1200 | 3 | M |  | 5.0; 6.0 | Reddish-brown fabric. Incised decoration. |  |  |
| 1736 | TW 122 |  |  |  | 6.5; 8.5 | Pale brown fabric. Incised decoration. Lower body scraped. ICPAES \#34. |  |  |
| 1737 |  |  |  |  | 6.5; 9.2 | Fine gritty light brown paste. Munsell paint 10YR 4/2 to $3 / 2$ 'weak red' to 'dusky red'. Surface cream wash/slip. Fig. 205d:3. |  |  |
| 1738 | ST 1103 | 14 | J |  | 3.8; 8.0 | Green-buff gritty fabric. Incised decoration. Further example from TW 3. |  |  |
| 1739 | ST 1104 | 14 | J |  | 5.6; 8.8 | Incised decoration. Pale yellow/grey fine ware. Further examples from ST 1103, TW 3 (ICPAES \#28) \& ST 1104 (ICPAES 29). |  |  |
| 1740 | ST 51 | 13 | J |  | 4.0; 9.6 | Incised decoration. Fine pale grey fabric. Old spoilheap. |  |  |
| 1741 | SS 804 |  |  | 5 | 3.5; 6.0 | Incised decoration. Topsoil south of Rm 23. |  |  |
| 1742 | TW 14 |  |  | 5a | 3.2; 5.0 | Incised decoration. |  |  |
| 1743 | FS 890 | 8 |  | 5a | 2.7; 6.9 | Incised decoration. |  |  |
| 1744 | SS 528 | 4 | M |  | $\begin{gathered} 7.0 \text { ext.; } \max \\ \text { d. }=10.3 \end{gathered}$ | Fine pale green fabric. 2 perforated lugs extant, would have had 4 lugs originally. Incised decoration. |  |  |
| 1745 | SS 1218 | 3 | M |  | 7.7; 8.3 | Fine pale green fabric. Incised decoration. 2 further examples in fine green fabric from SS 1200 , see Fig. 221:4 \& 13 . | 91.97 | 12210 |
| 1746 | SS 1200 | 3 | M |  | 4.9; 10.8 | Fine buff fabric. Incised decoration. |  |  |
| 1747 | ST 1103 | 14 | J |  | 6.1; 11 | Greenish-yellow. Shallow grooves and incised decoration. | 78.178 | 1031 |
| 1748 | ST 1103 | 14 | J | 5 c | $\begin{aligned} & 5.2 ; \max \\ & \text { d. }=10.5 \end{aligned}$ | Dense green fabric. Shallow groove. |  |  |

Note: Ninevite 5 sherds found in Area SS deposits all derive from levelling fills.


1736


1737

1738


l
1739


1740

1741


1742


1743



1745


1746


1748


## Artefact Drawings

Figure 470. Incised and excised Ninevite 5 (1-49-62), sale 1:2 (see note on Fig. 469).

| No. | Area \& locus | Area <br> level | Range | Ware | Dimensions ht; d. | Comments | Reg. <br> no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1749 | SS 910 | 4/3 |  |  | 5.6;8.8 | Pale grey fabric. Incised \& excised decoration. Fig. 205c:2. |  |  |
| 1750 | ST 1103 | 14 | J |  | 5.0; 9.8 | Green-grey fabric. Excised decoration, deeply gouged. |  |  |
| 1751 | ST 1105 | 13 | J |  | 7.7; 10.8 | Pale brown fine ware. Incised \& excised decoration. Further examples from ST 51 \& 52 . |  |  |
| 1752 | TW 122 |  | K |  | 10.1;11.1 | Incised \& excised decoration. |  |  |
| 1753 | ST 91 | 13 | J/K |  | 3.8; 6.8 | Pale green. Incised \& excised decoration. From a brick in an ED wall. |  |  |
| 1754 | $\begin{aligned} & \text { CH 54/ } \\ & 79 / 68 \end{aligned}$ | 6/5 |  |  | 4.0; 11.8 | Incised \& excised decoration (out of context). |  |  |
| 1755 | CH 96 | 7 |  |  | 3.6; 7.8 | Green fabric. Incised \& excised decoration. |  |  |
| 1756 | TW 113 |  | K |  | 3.4; 8.0 | Green-buff fabric, some fine grit. Incised \& excised decoration. |  |  |
| 1757 | SS 903 | 3 |  |  | 6.5; 10.9 | Pale grey fabric. Incised \& excised decoration. |  |  |
| 1758 | TW |  | K |  | 3.0; ?17 | Green overfired fine fabric. Excised decoration. ICPAES \#30. |  |  |
| 1759 | FS 2305 | 2 |  |  | 3.7; 8.3 | Pale cream fabric. Incised \& excised decoration. |  |  |
| 1760 | FS 318 | 3 |  |  | 2.8; 7.4 | Greenish-yellow with incised \& excised decoration. |  |  |
| 1761 | surface |  |  |  | 4.0; 9.0 | Greyish-buff fine ware. Incised \& excised decoration. |  |  |
| 1762 | SS 934 |  | ?L | 5 | 5.1; 6.0 | ?Late ED III. Incised decoration. Cleaning MELM trench. |  |  |

1749


1750


1751



1755


1758



1760



## Artefact Drawings

Figure 471. Incised and plain Ninevite 5, bichrome stand (1763-90), scale 1:4.

| No. | Area \& locus | Area <br> level | Range | Ware | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1763 | ST 1104 | 14 | J |  | 3.9; 8.9 | Fine grey-burnished fabric. |  |  |
| 1764 | TW 20 |  |  |  | 5.6; 10.0 | Fine greenish fabric. |  |  |
| 1765 | ST 1104 | 14 | J |  | 5.2; 10.0 | Pale yellow in colour. |  |  |
| 1766 | ST 1104 | 14 | J |  | 6.4; 8.8 | Fine light grey fabric. |  |  |
| 1767 | TW 20 |  |  |  | 4.9; 9.5 | Fine cream fabric. |  |  |
| 1768 | SS 671 | 2 |  | 5 | 7.2; 8.0 | Fine, slightly green fabric. Courtyard surface. |  |  |
| 1769 | SS 1200 | 3 |  |  | 6.5; 9.0 | Very fine, slightly gritty, greenish fabric. Further example from TW 227 with convex lower body. |  |  |
| 1770 | TW 3 |  |  |  | 3.0; 7.9 | Fine light grey fabric. Shallow groove. |  |  |
| 1771 | ST 1104 | 14 | J |  | 5.6; 8.8 | Pale yellow gritty fabric. |  |  |
| 1772 | ST 1104 | 14 | J |  | 7.5; 9.8 | Greenish buff fabric. Incised decoration. Further example with different pattern from ST 1103. |  |  |
| 1773 | ST |  |  |  | 7.6; 11.8 | Incised decoration. Ninevite 5 house. |  |  |
| 1774 | SS 300 |  |  |  | 9.4; 11.0 | Incised decoration. Munsell 5Y 7/2 light grey. ICPAES \#19. Topsoil. Fig. 205c:6. |  |  |
| 1775 | ST |  |  |  | 7.5; 8.9 | Incised decoration. Ninevite 5 house. |  |  |
| 1776 | SS 1232 | 3 |  |  | 9.2; 21 | Gritty greenish paste. Incised decoration. From wall. |  |  |
| 1777 | TW 20 |  |  | 5a | 3.8; 6.8 | ICPAES \#35. |  |  |
| 1778 | FS 1710 | 3 |  |  | 3.3; 11.8 | Fine pale green fabric. |  |  |
| 1779 | SS 1250 |  |  | 5a | 5.2; 9.4 | Body / base below shoulder scraped down. Topsoil. |  |  |
| 1780 | FS 889 | 8 |  |  | 4.8; 10.7 max. | Fine gritty salmon fabric. Lower body scraped down. |  |  |
| 1781 | SS 777 |  |  | 5a | 5.6;11.5 | Incised decoration. Upper fill. |  |  |
| 1782 | T 2 |  | K | 5a | 3.4; 10.6 | Incised pattern on shoulder. From satellite mound T2. |  |  |
| 1783 | $\begin{aligned} & \mathrm{CH} 97 / \\ & 89 \end{aligned}$ | 7 |  | 5 | 4.5; 12 | Incised/excised decoration. |  |  |
| 1784 | surface |  |  |  | 6.4; 15.0 | Dense orange-brown fabric; some chaff. Incised /excised decoration. |  |  |
| 1785 | SS 318 |  |  |  | 4.2; 18.4 | Light brown dense fabric. Incised / excised decoration. Fig. 225:7. |  |  |
| 1786 | TW 20 |  |  |  | 3.8; 18.8 | Cream/buff fabric. |  |  |
| 1787 | FS 1755 |  |  |  | 4.8; 9.0 max. | Pale green fabric. Levelling for Level 2. Further example from TW 111 with a flatter profile. |  |  |
| 1788 | CH | 8 |  |  | 5.0; 11.9 max. | Fine greenish fabric. Incised/ excised decoration. |  |  |
| 1789 | CH 588 | 9/8 | ?K |  | 2.0; 2.6 | Gritty grey fabric. Incised decoration. |  |  |
| 1790 | DH 10 |  |  |  | 12.0; 19.6 | Bichrome stand base. Red \& black paint on brown fabric with grey core, medium chaff \& white grit inclusions. Other examples from ER 241 \& out of context from FS. Fig. 185:b1,3. |  |  |

Artefact Drawings


## Artefact Drawings

Figure 472. Glass, frit and faicnce oljects and beads, 1-5 scale 1:2, 6-22 scale 1:1. (Bead dimensions are length or thickness followed by diameter and perforation diameter.)

| No. | Area \& locus | Area level | Phase | Dimensions | Comments | Reg. no. | $\begin{aligned} & \text { TB cat. } \\ & \text { no. } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | ST 92 | 3 | M | $\begin{aligned} & \text { d. }=7.0 ; \\ & \mathrm{ht}=5.0 \end{aligned}$ | Polychrome frit bowl, incomplete. Incised pattern, buff with alternating white and black triangles (white ?originally blue). Fig. 235. | 699 | 5025 |
| 2 | ER 47 | 1 | N | $\begin{aligned} & \text { d. }=5.5 ; \\ & \mathrm{ht}=2.5 \end{aligned}$ | Turquoise frit (?faience) vessel base. | 254 |  |
| 3 | FS 3 | 1 | N | 8.1; 5.8; 1.1 | Faience tile with light blue glaze. Incomplete. A similar tile fragment in white from SS 55 . | 569 |  |
| 4 | SS 935 | postlevel 4 | M/N | 4.4; 1.2; 0.5 | Faience wheel, incomplete. Pale blue glaze on white body. Fig. 240. Fill above floor SS 937 (p. 219 \& Table 7 for analysis). | 5304 | 12205 |
| 5 | FS 1826 | 5a | M | 2.4; 2.2 | Cylindrical 'glazed quartz' object (see p. 217 \& Fig. 234). Floor between FSTC and building to north. | 5280 |  |
| 6 | SS 1010 | 5 | M | 1.9; 0.3; 0.4 | Faience button. Purple glaze on white body. Two perforations. Rm 21 floor. Also in white frit from FS 1530 (TB 9174), SS 775 (TB 13183) \& surface (TB 5045). | 5815 |  |
| 7 | SS 75 | 2 | N | 1.1; 0.9 | Conical white frit token or counter. Complete. | 781 | 5032 |
| 8 | SS 549 | 4 | M | 1.3; 1.3; 1.1 | Faience token or counter, green glaze on white body. Incomplete. Fig. 241. |  |  |
| 9 | FS 354 | 3 | M | 1.4; 1.2; 0.6 | Faience object fragment with braided relief. | 1414 |  |
| 10 | FS 375 |  | N | 4.3; 1.05; 0.35 | Bichrome frit tube, broken at one end. Spiral bands of pale blue and dark brown frit. ?Large bead ?spout ?handle. | 2134 | 8211 |
| 11 | CH 129 | 2 | N | 2.0; 0.9 | Bichrome frit tube, broken at both ends. Spiral bands of white (?originally blue) and black. ?Large bead. Found with 16 \& a magnetite polisher (reg. no. 425) in pot no. 704. | 424 | 3039 |
| 12 | SS 545 | 4 | M | 7.5; 2.0 | Cylindrical frit object with cross-hatch pattern, incomplete. Burnt black. Possible seal (DM 450) or very large bead. Another similar fragment from the same locus, reg. no. 3151 (DM 449). | 4021 |  |
| 13 | FS 2210 |  | N | 1.7; 1.4; 0.8 | Frit duck, grey-brown frit. Perforated vertically. Possibly early second millennium. | 5812 | 13179 |
| 14 | CH D 6 | 1 | N | 1.55; 0.9; 0.7 | Blue frit duck, complete. Perforated horizontally. | 111 | 68 |
| 15 | SS 549 | 4 | M | 1.25; $0.85 ; 0.45$ | Faience bull's head bead or amulet. Incomplete. Green glaze on white body. Fig. 241. | 4100 | 10118 |
| 16 | CH 129 | 2 | N | 0.2; 0.3-0.4 | 12 white frit disc beads found in pot with 11. | 424 | 3039 |
| 17 | SS 545 | 4 | M | 0.25; 1.2; 0.3 | Faience disc bead. Green glaze, white body. Also in white frit from SS 1240 (TB 12219). Fig. 241. | 4023 | 10111 |
| 18 | SS 365 | 5 | M | 0.4; 0.75; 0.2 | Hemispherical bead in white frit. | 4349 |  |
| 19 | SS 675 | 4 | M | 0.7; 2.1; 0.3 | White frit disc bead. Rm 5 floor. Also in yellow-glazed faience from SS 1235. Fig. 240. | 5179 | 12251 |
| 20 | SS 760 | 4 | M | 1.5; 1.8; 0.5 | Spherical bead. Yellow-glazed surface, complete, faience. Also in brown-glazed faience from SS 925. | 5817 | 13180 |
| 21 | SS 501 |  |  | 0.55; $0.8 ; 0.3$ | White frit spherical bead with groove around perforation at one end. Topsoil. | 4079 | 10091 |
| 22 | FS 1958 | 5 | M | 0.8; $0.9 ; 0.2$ | Spherical green frit bead. FS courtyard closure deposit. Also in black frit from SS 1240 \& FS 810, in brown frit from FS 548 \& 4 in green faience from SS 549 . | 7276 | 14015 |



## Artefact Drawings

Figure 473. Frit and faience beads (23-59), scale 1:1, except for 26, scale 2:1.

| No. | Area \& locus | Area level | Phase | Dimensions <br> 1./th.; d.; dp. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 23 | SS 549 | 4 | M | 0.45; 0.7; 0.2 | Faience melon bead, 7 flutes. Green glaze, white body. Another identical from the same locus. Fig. 237. | 4663 | 11014 |
| 24 | SS 549 | 4 | M | 0.5; 0.7; 0.15 | Faience melon bead, 11 flutes. Green glaze, white body. Fig. 237. | 4663 | 11014 |
| 25 | FS 1958 | 5 | M | 0.5; 0.6; 0.2 | Faience melon bead, 11 flutes. Green glaze, white body. Another very similar with 10 flutes from the same locus. | 7371 | 14015 |
| 26 | FS 2222 | 2 b | N | 0.35; $0.35 ; 0.2$ | White frit melon bead, 8 flutes. | 5639 | 13319 |
| 27 | FS 621 |  | N | 0.4; 1.2; 0.3 | Brown frit melon bead, 14 flutes. Fig. 237. | 4247 | 11012a |
| 28 | FS 847 | 3/2 | M/N | 0.75; 1.1; 0.3 | Black frit melon bead, 15 flutes. | 5820 | 13182 |
| 29 | SS 565 | 4 | M | 1.1; 1.5; 0.3 | Brown frit melon bead, 15 flutes. Also in green-glazed faience, SS 549. | 4317 | 11012b |
| 30 | SS 935 | ? 3 | M | 1.1; 1.5; 0.3 | Grey frit melon bead, 21 flutes. Also in black frit, ER 220. Fig. 240. | 5307 | 12207 |
| 31 | FS 1184 | 2 | M/N | 0.6; 1.4; 0.2 | Rosette bead, yellow-green frit. Flutes \& raised centre on one surface, indented flower pattern on the other (from mixed fill). (Cf. photograph in Brak 1, fig. 134, top row.) | 1656 | 7127 |
| 32 | SS 549 | 4 | M | 0.9; 0.3; 0.1 | Faience cylindrical bead. Green glaze on white body. Also in white frit from the same locus. | 4098 | 10092 |
| 33 | SS 607 | 1 | N | 0.9; 0.8; 0.2 | Green frit cylindrical bead, granulated surface. Also in white frit from SS 910 \& 719 and 7 in green-glazed faience from SS 549. | 4823a | 12254 |
| 34 | ER baulk |  | ? N | 3.3; $0.85 ; 0.5$ | Faience cylindrical bead, pale blue glaze on white body. 3 more in blue frit (Phase N), 2 in white frit ( N ), 1 in green frit (M) \& 1 in yellow glaze faience (M). | 381 |  |
| 35 | ST 76 | 10 | K/L | 1.2; 0.6; 0.15 | Light blue frit barrel bead. Also in brown frit from SS 549. | 703 | 5043 |
| 36 | SS 675 | 5 | M | 0.7; 0.4; 0.2 | White frit barrel bead. Rm 5 floor. Also in green faience from SS 549 \& FS 1958, in yellow faience from SS 1238 \& another in white frit from FS 2211. | 5178 | 12255 |
| 37 | FS 2248 | 3 | M | 1.2;0.7; 0.1 | Black frit barrel bead. Also in white frit from FS 1958, SS 549 \& 2 from SS 204. | 5822 | 13186 |
| 38 | FS 30 | 2a | N | 1.2; 0.8; 0.2 | Blue frit barrel bead. | 581 | 4032 |
| 39 | SS 754 | 4 | M | 3.4; 1.0; 0.3 | Brown frit long-barrel bead. | 5814 | 13184 |
| 40 | SS 675 | 4 | M | 3.1; 1.1; 0.35 | Faceted barrel bead with red pigment on surface, incomplete (p. 223 for analysis). Rm 5 floor. | 5241 |  |
| 41 | SS 585 | 5 | M | 3.4; 0.9;0.15 | Dark-brown frit segmented bead, 16 segments. Fig. 237. | 4662 | 10013 |
| 42 | SS 1240 | 4 | M | 0.4; 0.3; 0.1 | White frit segmented bead. Rm 21 floor. | 5343 |  |
| 43 | ST 117 | 3 | M | 0.9; 0.4; 0.1 | White frit bead with 3 segments. Fig. 243. | 1023 | 5047 |
| 44 | CH 801 | 8/7 | L | 0.7; 0.3; 0.1 | White frit bead with 4 segments. | 2733 |  |
| 45 | FS 809 | 5 | M | 1.3; 0.5; 0.1 | White frit segmented bead. 6 segments. | 5821 | 13185 |
| 46 | FS 2265 | 5a | M | $1.15 ; 0.5 ; 0.2$ | Blue frit segmented bead. Also in white frit from CH 445. | 5823 | 13181 |
| 47 | SS 549 | 4 | M | 0.8; $0.6 ; 0.15$ | Faience hubbed bead. Green glaze on white body. Fig. 241. |  |  |
| 48 | SS 630 | 3 | M | 1.5; 0.9; 0.2 | Faience cylindrical bead with 2 large ridges, brown glaze on white body, incomplete. Fig. 240. | 5245 | 12249 |
| 49 | SS 607 | 1 | N | 2.2;0.8; 0.2 | Green frit cylindrical bead with longitudinal flutes. Fig. 240. | 4823b | 12253 |
| 50 | FS 1054 | 2 a | N | $2.2 ; 1.2 \times 0.6$ | Light green frit bead. Also in grey frit from DH 2. | 1473 | 6171 |
| 51 | SS 549 | 4 | M | $\begin{gathered} 0.9 ; 0.7 \times 0.3 ; \\ 0.15 \end{gathered}$ | Faience flat-diamond bead. Green glaze on white body. Another example from FS 1958. Fig. 237. | 4663 | 11014 |
| 52 | SS 549 | 4 | M | 1.3; $0.75 ; 0.1$ | Faience biconical bead with lateral groove. Green glaze on white body. Fig. 241. Further 8 from SS 549, no groove. | 4099 | 10092 |
| 53 | SS 1240 | 4 | M | 0.7; 0.65; 0.1 | Black frit biconical bead. | 5328 | 12151 |
| 54 | SS 935 |  |  | $4.85 ; 1.35 ; 0.3$ | Brown frit, rectangular bead, incomplete. | 5324 | 12204 |
| 55 | SS 1238 | 5 | M | 1.4;0.6; 0.2 | Grey-brown frit rectangular bead. Also in brown frit from SS 549, 236 \& in white frit from SS 813. | 5325 | 12248 |
| 56 | FS 1044 | 2a | N | 1.7; 0.9 | Pale blue frit tear-shaped pendant, loop incomplete. | 1276 | 6169 |
| 57 | SS 1235 | 4 | M | $1.8 ; 0.95 \times 0.65$ | Blue-white frit tear-shaped bead. Further example from jar with 311 frit disc beads (TB 8220, FS 1451). Fig. 240. | 5326 | 12247 |
| 58 | SS 934 |  |  | $1.25 ; 1.2 \times 0.65$ | White frit spacer bead. Fig. 240. Cleaning MELM trench. | 5305 | 12206 |
| 59 | SS 549 | 4 | M | $2.6 ; 1.05 \times 0.6$ | Yellow frit spacer bead, broken into 3 pieces; at least 3, maybe 4, perforations. | 4663 | 11014 |




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# Artefact Drawings 

Figure 474. Carnelian, jet and other stone beads (60-88), scale 1:1.

| No. | Area \& locus | Area <br> level | Phase | Dimensions 1./th.; d.; dp. | Comments | Reg. no. | TB cat. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 60 | FS 1958 | 5 | M | 0.3; 0.7; 0.3 | Carnelian disc bead. Nos. 60-68 from the FS Courtyard 43 deposit with silver items \& jewellery (131-53) and copper / bronze objects (21, 50). Fig. 387. | 7095 | 14283 |
| 61 | FS 1958 | 5 | M | 0.55; 1.1; 0.3 | Carnelian disc bead. | 7097e | 14010 |
| 62 | FS 1958 | 5 | M | 0.35; 0.7; 0.2 | Carnelian disc bead. Flanged profile. 2 more this shape from the deposit. | 7097 f | 14010 |
| 63 | FS 1958 | 5 | M | 0.7; 0.8; 0.1 | Carnelian truncated bicone or angled sphere. | 7097b | 14010 |
| 64 | FS 1958 | 5 | M | 1.1; 0.9; 0.15 | Carnelian bead, truncated bicone. A further 9 shaped like $63 \& 64$ from this deposit. | 7097a | 14010 |
| 65 | FS 1958 | 5 | M | 1.3; $0.7 ; 0.2$ | Cylindrical carnelian bead. | 7097h | 14010 |
| 66 | FS 1958 | 5 | M | 1.4; 0.85; 0.1-0.4 | Cylindrical carnelian bead. | 7097 g | 14010 |
| 67 | FS 1958 | 5 | M | 1.65; 0.8; 0.2 | Barrel-shaped carnelian bead. A further 3 this shape from the deposit. | 7097i | 14010 |
| 68 | FS 1958 | 5 | M | 3.15; $0.85 ; 0.3$ | Long-barrel shaped carnelian bead. A further 3 this shape from the same deposit. | 7094 | 14010 |
| 69 | SS 549 | 4 | M | 5.3;1.0; 0.3 | Long-barrel shaped carnelian bead. Indus type. Fig. 241. Deposit in Courtyard 8 with 73. | 3964 | 10109 |
| 70 | FS 729 | 2 | N | 2.3; 1.4; 0.5; 0.3 | Flat-diamond or hexagonal in plan, lentoid in section. Pinkish carnelian. | 4801 | 12143 |
| 71 | SS 1045 | 5/6 | M/L | 0.55; 0.1 | Spherical carnelian bead. | 5638 | 13303 |
| 72 | FS 549 | 4 | M | 0.5; 0.3 | Eye- or tear-shaped carnelian bead. | 2894 |  |
| 73 | SS 549 | 4 | M | 8.9; 0.85; 0.3 | Very long rectangular jet bead. Indus type. Fig. 241. | 3963 | 10110 |
| 74 | SS 540 | 4 | M | 1.4; $0.2 ; 0.1$ | Rock-crystal disc bead. Found with 3 similar beads. | 3314 | 10108 |
| 75 | FS 604 | 3/4 | M | 0.6; 0.8; 0.1 | Transparent spherical bead ?rock crystal. | 3019a | 9164 |
| 76 | SS 814 | 4 | M | $\begin{gathered} 1.25 ; 0.75 ; \\ 0.8 ; 0.2 \end{gathered}$ | Diamond-shaped ?rock crystal bead. Rm 18 floor. | 4415 | 11060 |
| 77 | CH 702 | 7 | L | 0.6; 1.1; 0.2 | Obsidian disc bead. From street. | 2074 | 8290 |
| 78 | FS 346 | 3 | M | 1.2; 0.7; 0.15 | Black glassy cylindrical bead. Incised lateral grooves. | 1224 |  |
| 79 | CH 209 | 6 | L | 2.4; 1.0; 0.4 | Steatite bead with pronounced ridges. Perforation incomplete. | 389 | 3030 |
| 80 | FS 1644 | 2a | N | 2.0; 0.9;0.5 | Ovoid steatite bead, incised, incomplete. Similar, but smaller example from SS 876 (reg. no. 4879). | 4245 |  |
| 81 | FS 1374 | 3 | M | 3.5; 1.2; 0.2 | Rectangular grey-green polished stone bead. | 1977 | 7151 |
| 82 | CH 416 | 5 | M | 0.8; 0.7; 0.2 | Square, glossy, black stone bead. | 561 | 4035 |
| 83 | FS surface |  |  | 0.4; 0.4; 0.3; 0.1 | Diamond-shaped spacer bead. 2 perforations. Incised dot \& circle decoration. Olive-green stone. | 2083 |  |
| 84 | SS 549 | 4 | M | 0.8; 0.65; 0.2 | Foot-shaped pendant or inlay. White very fine-grained stone. |  |  |
| 85 | SS 272 | 3 | M | 0.7; 0.6 | Black steatite tear-shaped bead / pendant. Incomplete. | 3907 |  |
| 86 | FS 1362 | 3 | M | $\begin{aligned} & 3.25 ; 2.6 ; \\ & 0.6 ; 0.25 \end{aligned}$ | Ovoid ?serpentine pendant. Mottled blue-black \& green stone. Similar in granite from FS 1296, reg. no. 1652. | 1898 | 7056 |
| 87 | SS 176 | 4 | M | 0.4; 2.3; 0.3 | Large disc bead. Turquoise-colour stone with mica, ?schist. | 1223 | 6061 |
| 88 | SS 1240 | 4 | M | 2.7; 1.95; 0.5 | White marble-like stone cylindrical bead. ?Seal blank. Rm 21 floor. | 5329 | 12147 |



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## Artefact Drawings

Figure 475. Olieenc bull pendant (89), lapis objects and beads (90-110), scale 1:1; except for 108-10 scale 2:1.
(Bead dimensions are length or thickness followed by diameter or width and perforation diameter.)

| No. | Area \& locus | Area <br> level | Phase | Dimensions 1./th.; d.; dp. | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 89 | SS 1235 | 4 | M | $\begin{gathered} 1.9 ; 1.65 ; 0.35 ; \\ \text { dp. }=0.2 \end{gathered}$ | Plaque carved on both faces with the front leg of a couchant bull. Perforated ?pendant. Groove on edge. Incomplete. Beautifully polished surface. ?Olivene stone. Fig. 275. Fill on floor in Rm 21. | 5302 | 12027 |
| 90 | SS 549 | 4 | M | 1.8; 0.9; 0.55 | Triangular piece of ?inlay with incised lines and spiral at apex. Ritual closure deposit in Courtyard 8. Another from SS 560. Fig. 241. | 4094 | 10120 |
| 91 | SS 549 | 4 | M | 1.4; 1.1; 0.4 | Triangular piece of ?inlay with incised lines and spiral at apex. Fig. 244. Further 3 incomplete examples from the same locus. | 4569 | 11062 |
| 92 | SS 1267 | 3 | M | 1.4; 0.8; 0.35 | Rectangular piece of inlay with incised lines and circular depression. Rm 32, floor. | 5892 | 13134 |
| 93 | SS 549 | 4 | M | 1.8; 1.0; 0.5 | Rectangular inlay fragment with incised lines. Fig. 241. Found with a further eight rectangular fragments with incised lines, a triangular piece like nos. $90 \& 91$ but without incised lines and six small fragments. | 3965 | 10121 |
| 94 | SS 675 | 4 | M | 2.5; 1.3; 0.7 | Pentagonal inlay with incised lines. Rm 5 , floor. | 5213 | 12029 |
| 95 | SS 501 |  |  | 2.5; 1.0; 0.6 | Rectangular inlay with incised lines. Fig. 241. Topsoil. | 3149 |  |
| 96 | SS 582 | 5 | M | 1.0; 0.6; 0.2 | Rectangular inlay. Fig. 244. Rm 30 floor. Further examples from SS 949 \& SS 633. | 4523 | 11063 |
| 97 | SS 549 | 4 | M | 2.0; 1.05; 0.4 | Inlay. Possibly an eyebrow. Fig. 244. Found with 105 and a further six lapis fragments. | 4570 |  |
| 98 | FS 159 | 1 b | N | 0.9; 0.5; 0.1 | Cylindrical bead. Fig. 243. | 700 | 5048 |
| 99 | FS 604 | 3/4 | M | 0.5; 0.6; 0.1 | Biconical bead. Further examples from SS 1249 \& 549. | 3019b | 9164 |
| 100 | SS 549 | 4 | M | 0.7; 0.6; 0.15 | Barrel-shaped bead with rounded triangular section. Further example with circular section from SS 549. | 5855 | 13307 |
| 101 | SS 549 | 4 | M | $\begin{aligned} & 1.0 ; 0.65 ; \\ & 0.45 ; 0.15 \end{aligned}$ | Flat diamond bead. Further examples from SS 1238 \& 501. | 4096 | 10117 |
| 102 | SS 549 | 4 | M | 0.4; 0.85; 0.05 | Rosette bead or possible inlay, cup-shaped. Fig. 241. | 4095 | 10116 |
| 103 | surface |  |  | 1.0; 0.85 | Rosette bead, incomplete. Fig. 244. | 4187 | 11063 |
| 104 | JJ 3 |  | ?M | 2.9; 1.05; 0.45 | Spacer bead with two perforations. Ridges on one surface. | 519 | 4034 |
| 105 | SS 549 | 4 | M | $\begin{gathered} 0.95 ; 0.65 ; \\ 0.3 ; 0.10 \end{gathered}$ | Triangular bead or inlay piece. Found with 97. | 457 |  |
| 106 | FS 1958 | 5 | M | $\begin{aligned} & 1.1 ; 0.75 ; \\ & 0.35 ; 0.15 \end{aligned}$ | Tear-shaped bead/ pendant. | 7102 | 14013 |
| 107 | SS 902 | 3 | M | 0.8; 0.5 | Ovoid bead/ pendant. Incomplete. | 5017 |  |
| 108 | FS 1958 | 5 | M | $\begin{gathered} 1.1 ; 0.8 ; \\ 0.35 ; 0.15 \end{gathered}$ | Fly bead. Fig. 242. Found with 106, 109 \& 110. | 7101 | 14012 |
| 109 | FS 1958 | 5 | M | $\begin{aligned} & 2.1 ; 0.8 ; \\ & 0.7 ; 0.15 \end{aligned}$ | Pendant in the shape of a standing female with long hair and a robe covering left shoulder \& arm. Perforated through head. Figs. 242 \& 387. | 7100 | 14011 |
| 110 | FS 1958 | 5 | M | 1.4; 0.9; 0.7; 0.2 | Pendant in the shape of a reclining bull, head missing, perforated vertically. Incised detail on one side only. Fig. 242. (Cf. Parrot 1956, 157, fig. 94.) | 7099 | 14014 |





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# Artefact Drawings 

Figure 476. Copper/bronze weapons and large tools (1-23), scale 1:4.

| No. | Area \& locus | Area level | Phase | Dimensions <br> 1.; bw.; bth. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | ST 105 | 4 | M | $\begin{gathered} 30.5 ; 2.5 ; \\ w t=950 \mathrm{~g} \end{gathered}$ | Narrow spearhead, ?incomplete end of tang missing, found with nos. $17 \& 63$ in hearth (also with stone 22 \& 39), destruction level. | 908 | 5059 |
| 2 | ER 233 | 5 | L | 25.1; 1.2 | Narrow spearhead, incomplete. Rm 41, on floor, destruction level. | 411 | 3022 |
| 3 | FS 1957 | 5 | M | 21.9; 3.7; 0.4 | Dagger blade, incomplete, found in a corroded group which included a sickle blade and a flat axe identical with no. 18, Fig. 249. Mineralized cloth impression on surface (Fig. 323). Cf. Mallowan 1947, pl. 31:2. | 7460 | 14170 |
| 4 | FS 1957 | 5 | M | 14.2; 3.5; 0.9 Rivets: 1.6; 0.6. | Small dagger blade, in 2 pieces and possibly end of tang lost, 3 rivets in situ, well-defined mid-rib. From the ritual deposits in the FS temple courtyard, the upper half was found in jar 1263. Fig. 249. | $\begin{aligned} & 7137 / \\ & 7480 \end{aligned}$ | 14273 |
| 5 | SS 370 |  | M | 14.5; 4.1; 0.7 | Spear head, incomplete, both point and tang lost, 2 parallel slots on blade. Topsoil within SSTC, Rm 10. | 4700 | 11128 |
| 6 | DH |  | M | 12.0; 3.3; 2.5 | ?Dagger blade or ?spearhead, tang or haft missing, heavily corroded, short triangular blade no trace of rivets. Found with nos. 7 \& 165. Fell out of section, ?shallow pit at Akkadian level. | 1447 | 6089 |
| 7 | DH |  | M | 13.1; 2.7-4.2; 0.8 | Socketed axe, collar split, ribbed decoration on socket, traces of blunting on rear of collar suggests that this end was used for hammering at least once. Fig. 253. | 1448 | 6090 |
| 8 | SS 785 | 2 | N | 10.8; 1.5; 0.1 | Leaf-shaped arrowhead or other projectile point with long thin tang, complete. Fig. 255. | 5781 | 13038 |
| 9 | FS 1648 | 2 | N | 6.9;1.1; 0.2 | Leaf-shaped arrowhead or other projectile point, ?complete, but corroded and bent. Pebble surface of street. | 4660 | 11125 |
| 10 | FS 570 | 2 | N | 8.0; 1.3; 0.1 | Leaf-shaped projectile point with square socket, complete. Fig. 255. | 2942 | 9020 |
| 11 | ST 1005 | 2 | M | 4.4;3.2; 0.7 | Chisel blade, seems incomplete. Floor west of wall A. | 251 | 1062 |
| 12 | FS 689 | 2a | N | 21.0; 3.9; 0.25 | Sickle blade with folded tang. Ht of tang = 4.2. Fig. 254. Found with 15. | 4655 | 11131 |
| 13 | FS 1957 | 5 | M | 21.3; 3.9; 0.4 | Sickle blade with folded tang, complete. Found with the lower half of no. 4. Figs. 249 \& 251. | 7444 | 14169 |
| 14 | SS 1238 | 5 | M | $\begin{gathered} 22.2 ; 3.8 ; 0.25 \\ \text { dp. }=0.8 \end{gathered}$ | Sickle blade with 3 rivet holes in tang. This deposit on the floor of the doorway into SSTC, Rm 20 contained 5 sickle blades (TB 12258-12262). | 5346 | 12258 |
| 15 | FS 689 | 2a | N | 7.7; 1.7; 0.8 | Adze with long tubular socket, blade corroded, traces of preserved wood in socket, socket l. = 5.0; d. = 1.3. Found with 12. Fig. 254. | 4647 | 11133 |
| 16 | FS 1724 | 3 | M | 12.5; 6.5; 0.15 | Fragment of a serrated blade ?saw, broken at one end. Cf. Mackay 1925, pl. 18:16. Fig. 256. | 4698 |  |
| 17 | ST 105 | 4 | M | $\begin{gathered} 26.6 ; 1.4 ; 1.4 ; \\ \mathrm{wt}=250 \mathrm{~g} \end{gathered}$ | Spearhead with chisel-shaped blade, complete, remains of mineralized wood below the bulge. In hearth with nos. $1 \& 63$. | 907 | 5060 |
| 18 | FS 1957 | 5 | M | 18.0; 4.4; 0.75 | Flat axe, complete. There are two other axes of this shape in the ritual deposits of the temple courtyard, one was corroded to no. 3, the other (TB 14120) was found with mirror 167. Fig. 252. | 7411 | 14119 |
| 19 | FS 1957 | 5 | M | 18.0; 1.1; 0.9 | Tool with a curved handle which is covered by the mineralized remains of a wooden haft/handle, ?marlin spike or an awl?. Found within a bitumen-lined basket (reg. no. 7194). Figs. 249 \& 252. | 7431 | 14124 |
| 20 | FS 1957 | 5 | M | 17.5; $0.85 ; 0.8$ | Large tool, incomplete. Corrosion on the upper half of the object suggests a wooden haft. Fig. 252. | 7416 | 14122 |
| 21 | FS 1958 | 5 | M | 23.7; $0.85 ; 0.9$ | Large ?awl. Part of a ritual deposit in the temple courtyard with sickle blades, toggle pin no. 50 \& silver objects nos. 131-53. Fig. 252. | 7419 | 14127 |
| 22 | FS 1957 | 5 | M | 28.5; 1.5; 1.6 | Gouge, working end incomplete, shaft has a groove which joins the bowl of the gouge. Found resting on top of the group that includes no. 3. Figs. 249 \& 252. | 7430 | 14123 |
| 23 | FS 1899 | 5 | M | 20.2; 3.0; 2.2 | Spanner-like tool with loop handle, complete. Rm 42, FSTC antecella, lower fill. Fig. 248. | 5717 | 13029 |

## Artefact Drawings



## Artefact Drawings

Figure 477. Copper/bronze pins (24-42), scale 1:2.

| No. | Area \& locus | Area <br> level | Phase | Dimensions 1.; dh.; ds. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 24 | FS 355 | 3 | M | 11.6; ds. $=0.3$ | Complete. | 1427 |  |
| 25 | FS 138 | 2 c | N | 14.0; w. $=0.2$ | Complete, shank square in section but probably too thin to be a tool. Rm 19, floor. | 694 |  |
| 26 | FS 506 | 3b | M | 12.3; 0.4 | Small spherical head. Complete. | 2459 | 8060 |
| 27 | SS 1301 | 4/3 | M | 5.8; $0.25 ; 0.2$ | Small spherical head. Complete. Area SS2. | 7501 |  |
| 28 | FS 1792 | 4/5 | M | 5.6; 0.5; 0.2 | Small spherical head. Incomplete, point lost. | 4992 |  |
| 29 | AL 20 |  | L/ M | 12.9; 1.5; 0.3 | Complete, conical head, square section shaft. | 1248 | 6081 |
| 30 | CH 691 | 7 | L/M | 18.0; 1.5; 0.6 | Conical, fluted head, incomplete. | 2257 | 8057 |
| 31 | FS 676 | 2b |  | 9.6; 0.8; 0.4 | Conical head. Wall in GLB. | 4988 |  |
| 32 | SS 813 | 5 | M | 7.1; 0.9; 0.3 | Incomplete, disc head. SSTC, Rm 18 floor. Fig. 257. | 4675 |  |
| 33 | FS 870 | 5 | ?M | 8.9; 0.75; 0.3 | Complete, disc head. From deliberate fill for construction of Level 5 building. | 5869 | 13044 |
| 34 | ST 11 | 2 | M | 11.3; 0.6; 0.3 | Complete, pyramidal head. Rm 2, upper floor. | 583 | 4028 |
| 35 | FS 1821 | 5 | L/M | 11.3; 0.6; 0.3 | Complete, pyramidal head. Fill between walls FS 1823 \& 1809. | 5136 |  |
| 36 | SS 675 | 4 | M | 3.6; 0.4; 0.2 | Pyramidal head, incomplete. SSTC, Rm 5 floor. | 5181 |  |
| 37 | FS 801 | 4/3 |  | 9.5; 1.1; 0.4 | Roll-headed pin (head formed by a flattened strip rolled round). Complete. Clearance layer. | 5185 | 12122 |
| 38 | CH 282 | 6 | L | 2.8; 0.6; 0.6-0.4 | Short roll-headed pin, complete. Rm 62 floor, destruction level. | 1003 | 5069 |
| 39 | FS 1020 | 2 a | N | 4.6; 0.3; 0.3 | Roll-headed pin, complete, from pit. | 1246 | 6080 |
| 40 | SS 1032 |  | ?M | 8.1; $0.3 ; 0.3$ | Complete, single groove divides head from shank. Fill west of Rm 21, SSTC. | 5887 | 13058 |
| 41 | ST 1105 | 13 | J | 7.6; 0.4; 0.2 | Flattened clover leaf terminal, bent into a loop, ?complete, ?point lost. | 300 | 1063 |
| 42 | SS 1213 | 3 | ?M | 8.5; 0.6; 0.3-0.6 | ? Incomplete, head divided from shank by 3 grooves. | 5207 |  |

Artefact Drawings


## Artefact Drawings

Figure 478. Copper/bronze toggle pins (43-65), scale 1:2.

| No. | Area \& locus | Area <br> level | Phase | Dimensions 1.; dh.; ds. | Comments | $\begin{gathered} \text { Reg. } \\ \text { no. } \end{gathered}$ | $\begin{aligned} & \text { TB cat. } \\ & \text { no. } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 43 | FS 355 | 3 | M | 16.8; 0.4 | Incomplete. Floor south of RDB. | 1373 | 6083 |
| 44 | FS 1306 | 3/4 | M | 18.5; 0.3 | Complete. Collapsed brick, below Rm 4. | 1817 | 7008 |
| 45 | SS 810 |  | ? N | 12.2; 0.3; 0.3-0.4 | Seems complete. | 5885 | 13055 |
| 46 | FS 1536 | 4 | M | 10.1; 0.2 | Complete. Fig. 259. Floor of hard packed earth directly on the walls of the Level 5 building. | 2793 | 9030 |
| 47 | FS 1883 | 5a | M | 12.6; 0.9; 0.3 | Complete, mineralized fabric assoc. with the perforation. Irregular oval head. Ritual deposit on top of the fill of the cella of the FS temple ( Rm 41 ) near its south wall, with nos. $48,49,67,68,75,76 \& 168$. Figs. $245 \& 247$. | 5748 | 13021 |
| 48 | FS 1883 | 5a | M | 13.8; 0.9; 0.3 | Complete, mineralized fabric associated with the perforation. Domed head. | 5719 | 13025 |
| 49 | FS 1883 | 5a | M | 16.1; 1.2; 0.4 | Complete, domed head. There is an identical pin from the same locus, TB 13032. | 5718 | 13020 |
| 50 | FS 1958 | 5 | M | 20.6; 1.0; 0.4 | ?Complete, domed head. Fig. 252. | 7417 | 14125 |
| 51 | FS 1639 | 1 | N | 6.8; $0.5 ; 0.35$ | Incomplete, disc head. Fig. 257. Cobble surface. | 4612 | 11141 |
| 52 | FS 1636 | 1b | N | 9.4; $0.5 ; 0.3$ | Complete, disc head. Fig. 257. Sherd / cobble layer. | 4280 | 11141 |
| 53 | ST 1 | 2 | M | 17.7; 0.4 | Incomplete, broken at perforation, grooves below perforation. Rm 1, upper level. | 412 | 3023 |
| 54 | SS 365 | 5 | M | 12.8; 0.9; 0.3 | Complete. Pyramidal head, some corrosion. Fig. 257. Rm 4. | 4673 | 11142 |
| 55 | SS 1096 | 1 | N | 7.5; $0.8 ; 0.4$ | Incomplete, truncated cone head. Fill above latest postAkkadian floor, west end of SS. ?Isin-Larsa (see p. 173). | 7472 | 14269a |
| 56 | FS 2312 | 2b | N | 7.1; 0.5; 0.2 | Spherical head, incomplete. Fill of storeroom 34. | 7440 | 14163 |
| 57 | SS |  | N | 8.0; 0.9; 0.2 | Flat head with 4 petals, corrosion between head \& perforation, possibly pomegranate-shaped head. Fell out of section. | 5001 | 12124 |
| 58 | FS 1856 | 2a | N | $\begin{gathered} 6.45 ; 0.3-0.4 ; \\ 0.3-0.4 \end{gathered}$ | Incomplete, small globular head. Rm 42, fill on floor. | 5877 | 13043 |
| 59 | CH | 4/3 | M | 10.9; 0.6; 0.25 | Complete, hemispherical head with ribbed shank between head and perforation. From an Akkadian brick. | 515 | 4023 |
| 60 | FS 1780 | 4/3 | M | 5.6; 0.6; 0.4 | Incomplete, ribbed decoration above perforation. Clearance below Level 3. | 4987 | 12126 |
| 61 | ST 52 |  | ? N | 4.35; 0.9; 0.3 | Melon-shaped head \& ribbed shank above \& below perforation, incomplete. Old spoilheap. | 513 | 4022 |
| 62 | SS 397 | 6 | L | 7.8; 1.2; 1.1 | Melon-shaped head, incomplete. Material around tannur 326, below SSTC. Fig. 260. | 4703 | 11143 |
| 63 | ST 105 | 4 | M | 11.6; 1.4; 0.3 | Complete but head corroded, ?fluted, shaft bent. L. when straightened 12.8 cm . Hearth with nos. $\mathbf{1} \& \mathbf{1 7}$ (also stone $\mathbf{2 2} \& 39$ ). | 995 | 5061 |
| 64 | FS 1714 | 3 | M | 6.6; 0.5; 0.2-0.3 | Incomplete, rosette-shaped head with ribbed decoration between head \& perforation. Rm 22 floor. | 4748 |  |
| 65 | $\begin{aligned} & \text { NSP } \\ & \text { Rm } 19 \end{aligned}$ |  | M | 9.4; 1.9; 0.25-0.4 | Complete, 2 wings or a crescent above perforation decorated with incised lines. Fig. 260. Naram-Sin Palace Rm 19. | 1634 | 7015 |

Artefact Drawings


## Artefact Drawings

Figure 479. Copper/bronze' small tools (66-93), scale 1:2.

| No. | Area \& locus | Area <br> level | Phase | $\begin{aligned} & \text { Dimensions } \\ & \text { l.; w.; th. } \end{aligned}$ | Comments | $\begin{aligned} & \text { Reg. } \\ & \text { no. } \end{aligned}$ | TB cat no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 66 | CH 215 | 6/5 | L | 6.6; 1.0; 0.3 | Wide blade chisel, complete. Fill of northern bin. | 489 | 3040 |
| 67 | FS 1883 | 5a | M | 7.7; 1.5; 0.6 | Chisel with a wide blade, complete. Ritual deposit on top of the fill of the cella of the FS temple ( Rm 41 ) near its south wall, with $47-9,68,75,76 \& 168$. Figs. $245 \& 247$. | 5722 | 13027 |
| 68 | FS 1883 | 5a | M | 8.9; 1.2; 1.0 | Chisel with a wide blade, complete. Fig. 247. | 5790 | 13033 |
| 69 | FS 1957 | 5 | M | 7.8; 0.3; 0.4 | Chisel with a narrow blade, ?complete. From the ritual deposits in the FS temple courtyard. Figs. 249 \& 252. | 7413 | 14121 |
| 70 | SS 852 |  | ?M | 4.5; 0.3; 0.25 | Chisel, complete. Fig. 259. Surface wash above Rm 20, SSTC. | 5003 | 12134 |
| 71 | FS 580 | 5 | M | 3.9; 0.4; 0.4 | Chisel, seems complete. Fill above cistern. | 2941 | 9035 |
| 72 | FS 1017 | 2a | N | 2.8; 0.3; 0.3 | Awl, seems complete. GLB Rm 31, fill on floor. | 1509 |  |
| 73 | FS 1352 | 3 | M | 3.7; 0.3; 0.25 | Awl, seems complete. | 1956 | 7179 |
| 74 | SS 21 |  | N | 9.8; 0.6; 0.4 | ?Awl, working end bent, complete. | 692 | 5064 |
| 75 | FS 1883 | 5a | M | 14.5; 0.6; 0.6 | Awl/ chisel, complete. Fig. 247. | 5720 | 13022 |
| 76 | FS 1883 | 5a | M | 11.2; 0.6; 0.5 | Awl, complete. Fig. 247. | 5721 | 13026 |
| 77 | FS 2246 | 3 | M | $8.4 ;$ ds. $=0.3$ | Enigmatic tool, one end bent the other end forked, complete, ?earpick. Bin in Rm 32. | 5774 |  |
| 78 | ER 10 | 2/1 | M | 7.1; ds. $=0.2$ | Tool, one end bent into a hook, possibly a weaving tool similar to a crochet hook. Complete. Floor surface. | 176 | 1069 |
| 79 | CH 19 | 3 | M | 5.9; 0.6; 0.4 | ?Gouge. Packing below wall V. | 459 |  |
| 80 | FS 605 | 3 | M | 7.5; $0.35 ; 0.3$ | ?Cosmetic applicator, flat blade \& shaft bent, ?complete. Lowest floor in vaulted building. | 3011 | 9029 |
| 81 | ST 111 | 6 | L | 7.4; 0.4; 0.4 | ?Cosmetic applicator, flat blade \& shaft bent, complete. Uppermost phase of platform, Level 6/5. | 1000 |  |
| 82 | FS 200 | 2 a | N | 4.8; 0.9; 0.4 | ?Kohl stick, incomplete, both ends broken. Rm 15, GLB, hard packed red clay. | 1062 |  |
| 83 | FS 40 | 2 | N | 5.2; ds. $=0.25$ | ?Kohl stick, complete. | 1093 | 6078 |
| 84 | CH 807 | 8a | L | 8.4; 0.4; 0.3 | ?Kohl stick, flat blade \& shaft bent, corroded \& ? complete. | 2757 | 9040 |
| 85 | FS 435 | 2 | N | 8.2; $0.6 ; 0.3$ | Tweezers, complete, found inside pot 803. | 2385 | 8055 |
| 86 | SS 835 | 4 | M | $\begin{gathered} 4.0 ; 1.6 ; \\ \text { ds. }=0.35 \end{gathered}$ | Tweezers, corroded but complete. Rm 16, fill. | 4691 | 11149 |
| 87 | SS 603 | 4 | M | 4.1; 0.6; 0.1 | Tweezers, complete. SSTC Rm 5, fill. An additional incomplete example from wall FS 554. | 4999 | 12128 |
| 88 | FS 1477 | 4/5 | M | $\begin{aligned} & \text { d. }=1.0 ; \\ & \mathrm{ht}=0.8 \end{aligned}$ | Bowl of spoon, handle lost, from gully over W. building. Identical example from SS 915 (reg. no. 5212). | 2582 |  |
| 89 | SS 631 | 3 | M | 3.6; 1.3; 0.7 | Spoon, incomplete. | 5010 |  |
| 90 | ST 52 |  | ?K | 6.0; 1.2; 0.3 | ?Spoon, ?spatula, incomplete. Old spoilheap. | 514 | 4024 |
| 91 | SS 836 | 4 | M | 7.7; 2.6; 0.6 | Clawed hook with three prongs, complete. Fig. 262. SSTC Rm 15 , fill on floor. | 4705 | 11127 |
| 92 | FS 578 | 3 | M | 6.5; 1.4; 0.5 | Clawed hook, 4 prongs, two of which are incomplete. Area of corrosion on shaft in which there are traces of wood; south room of vaulted building. | 2947 | 9022 |
| 93 | FS 2215 | 2 | M/N | 9.7; 1.35; 0.6 | Two-pronged fork, complete, from kiln fill. Fig. 248. A similar, but incomplete example from DH 2 (reg. no. 1426). | 5788 | 13024 |



## Artefact Drawings

Figure 480. Miscellaneous copper/bronze objects (94-122), lead objects (123-9), and an iron object (130), scale 1:2.

| No. | Area \& locus | Area <br> level | Phase | Dimensions 1.; w.; th. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 94 | FS 1002 |  | N | 6.0; 0.2 | Robust needle, large eye, ?incomplete. | 1218 |  |
| 95 | SS 75 | 2 | N | 7.3; 0.15 | Needle, incomplete. Floor in Rm B. | 769 |  |
| 96 | FS |  |  | 9.7; 0.4; dp. $=0.2$ | ?Needle, blunt end, complete. From dump. | 2456 | 8070 |
| 97 | SS 1070 | 4 | M | 4.2; 0.7; 0.4 | Oddity, similar to a roll-headed pin, except for the blunt end, another type of fastening? or possibly part of a hinge. SSTC, Rm 23, fill. | 5870 | 13041 |
| 98 | SS 686 | 4 | M | $\begin{gathered} 2.6 ; 1.0 ; 0.9 \\ \text { dp. }=0.3 \end{gathered}$ | Perforated weight/ plumb bob, incomplete. SSTC Rm 29, fill. | 5662 |  |
| 99 | CH 97 | 7 | L | 3.6; 2.0; 0.6 | Nail, large head, incomplete, point lost. Levelling for Level 7 floor. | 1067 | 5063 |
| 100 | FS 322 | 3/2b | M | 1.0; 1.5 | Stud, conical head, incomplete. Brick tumble south of wall FS 320. | 1089 | 6077 |
| 101 | SS 549 | 4 | M | 9.0;1.9; 0.8 | Nail, incomplete. SSTC, Floor of Courtyard 8 south of façade, the deposit of copper/bronze in this area included 5.5 kilos of lumps as well as nos. 102, 105, silver 158 \& gold 154-6. | 4115 | 10124 |
| 102 | SS 545 | 4 | M | 0.7; 0.6 | Tack, complete, 80 from this locus. | 4114 |  |
| 103 | SS 967 | 4 | M | 2.2; 1.0 | Nail, complete. Fill over east jamb of north doorway, SSTC Rm 23. | 7504 |  |
| 104 | SS 75 | 2 | N | 3.5; 1.0 | Nail, square head, bent shaft, complete. Floor in Rm B. | 770 | 5066 |
| 105 | SS 964 | 4 | M | 1.5; 0.6 | Small nail/tack, complete. Fill of courtyard 8, south of dais, cf. 101. | 7312 |  |
| 106 | SS 669 | 4 | M | 3.3; 0.3 | Nail, complete. SSTC Rm 25, fill. | 5082 |  |
| 107 | FS 1041 | 2a/1 | N | 1.6; 0.4 | Spiral ring, complete. Fill south of wall FS 1044. | 1245 |  |
| 108 | FS 527 | 4 | M | 1.5; 0.4 | Spiral ring, complete. Fig. 259. Fill within Level 4 walls. | 2754 | 9031 |
| 109 | SS 1219 | 4 | M | 1.7; 0.25-0.45 | Spiral ring, complete. SSTC Rm 21, fill. | 5342 | 12131 |
| 110 | FS 729 | 2c | N | 1.3; 0.3-0.4 | Spiral ring. Rm 57, floor. | 5002 | 12130 |
| 111 | FS 1958 | 5 | M | 3.7; 2.9; 2.2 | Six rings corroded together, some incomplete. Ritual deposit in the FS temple courtyard with silver objects nos. 131-4, 138-53. Fig. 252. | 7418 | 14126 |
| 112 | SS 1044 | 6 | L | 3.6-4.1; 0.5 | Ring, complete. Ash layer against wall face 1024. | 5895 | 13054 |
| 113 | FS 1633 | 1 b | N | 4.1; 0.3-0.4 | Bracelet, incomplete, one end broken. | 4686 | 11146 |
| 114 | FS 719 | 2b | N | 1.4-1.5; 0.3; 0.15 | Pair of earrings, complete. Fill below floor FS 655. | 4616 | 11145 |
| 115 | FS 1866 | 2a | N | 1.7; 0.3 | Fishhook, complete. Wall between Rms 40 \& 42 . | 5872 |  |
| 116 | FS 1958 | 5 | M | 1.7; 1.3; 0.2 | Spirals, incomplete. Similar to the silver beads from the same locus, nos. 141-3, but lacks any perforation, head of a ?pin. Fig. 258. | 7470 | 14270 |
| 117 | SS 395 | 4 | M | 2.6;0.8;0.2 | Blade, incomplete. SSTC Rm 9, fill. | 4659 |  |
| 118 | FS 166 | 2a | N | $\begin{gathered} 1.5 ; 2.3 ; 0.1 ; \\ \mathrm{dps} .=0.2 \end{gathered}$ | Oval plate with 2 perforations, folded, 1. = 2.6 approx. when unfolded. Fill on floor FS 232. | 686 | 5079 |
| 119 | SS 179 | 4 | M | 3.5; 2.5; 0.2 | ?Buckle or similar fastening, corroded and incomplete. | 1316 |  |
| 120 | FS 687 | 2b | N | 2.3; 0.6; 0.05 | Button, incomplete, one perforation extant, may originally have had two. Floor east of wall 676, GLB. | 4683 |  |
| 121 | SS 910 | 4/3 | M | 4.0; 0.6; 0.02 | Tube, made from folded sheet metal, complete. Fill above SSTC. | 5000 | 12129 |
| 122 | SS 501 |  | M | 2.8; 1.3; 0.3 | Fragment of plate with rivet attached and part of a perforation for a second rivet. Rivet $1 .=1.2 ; \mathrm{d}=0.45$. Topsoil. Identical example from SS 549 (reg. no. 4116). | 3199 | 10155 |
| 123 | CH 520 | 6 | L | 11.0; 0.5; 0.5 | Lead, ?cosmetic tool, complete, from street. | 906 | 5075 |
| 124 | CH 445 | 6 | L | 7.0; 0.7 | Lead hook, complete. Destruction debris. | 593 | 4019 |
| 125 | SS 948 | 5 | M | 4.95; 0.3; 0.2 | Lead rod, complete. SSTC, Rm 18 floor. | 7441 | 14164 |
| 126 | SS 958 | 4 | M | 5.3; 0.8; 0.1 | Lead 'dish'. Courtyard 8, upper fill. | 7240 | 14275 |
| 127 | FS 796 | 4/3 | M | $\begin{gathered} 3.6 ; 0.65 ; \\ \text { dp. }=0.15 \end{gathered}$ | Lead 'plumb-bob' / perforated weight, cylindrical but facetted. External area, mix of Level 3 \& earlier. | 5004 | 12119 |
| 128 | FS 1328 | 4/3 | M | 2.1; 0.3 | Lead earring, complete. Grey clay floor below RDB. | 1815 | 7019 |
| 129 | SS 1044 | 6 | L/M | 1.5; 0.25 | Lead spiral ring. | 5786 | 13036 |
| 130 | FS 810 | 5 | M | 2.4; 0.2 | Iron loop through handle of pot sherd. FSTC, Courtyard 6 fill. | 5910 |  |

94


B
108



123

127

29


130


# Artefact Drawings 

Figure 481. Silier and gold objects and beads (131-8, 157, 160-61) scale 1:2; (139, 153-6, 158-9), scale 1:1; (14051) scale 2:1; (152) scale 4:1.

| No. | Area \& locus | Area <br> level | Phase | Dimensions 1.; w.; th. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 131 | FS 1958 | 5 | M | $\begin{gathered} 6.7 ; 0.5 ; 0.3 ; \\ \mathrm{wt}=4.5 \mathrm{~g} \end{gathered}$ | Silver rod ingot, complete. An additional four items of the same shape with weights from 4 to 4.5 g . Ritual deposit in the FS temple courtyard with 116, 132-4 \& 138-53. Figs. 50, $51 \& 387$. | 7257 | 14004 |
| 132 | FS 1958 | 5 | M | 6.1; 0.25-0.3 | Silver rod ingot, complete, $\mathrm{wt}=2 \mathrm{~g}$. | 7253 | 14004 |
| 133 | FS 1958 | 5 | M | 7.1;0.2 | Silver rod ingot, complete, folded, length unfolded $=29 \mathrm{~cm} . \mathrm{wt}=8 \mathrm{~g}$. | 7254 | 14005 |
| 134 | FS 1958 | 5 | M | 6.3; 0.2 | Silver rod ingot, complete, folded, length unfolded $=23 \mathrm{~cm} . \mathrm{wt}=7 \mathrm{~g}$. | 7255 | 14005 |
| 135 | FS 1958 | 5 | M | 8.0; 1.2; 0.8 | Two strips of silver ingot twisted together, ?complete. $\mathrm{wt}=36 \mathrm{~g}$. | 7319 | 14003 |
| 136 | FS 1958 | 5 | M | $\begin{gathered} \text { d. }=3.8 ; \text { th. }=0.8 ; \\ \text { dp. }=0.3 \end{gathered}$ | Disc, formed by electrum sheet hammered over a silver ring. Decorated with 6 concentric circles of embossed dots. Perforated \& complete. Figs. 264 \& 387. | 7316 | 14009 |
| 137 | FS 1958 | 5 | M | $3.95 ; 0.7 ; 0.2$ | Disc, formed by electrum sheet hammered over a copper/bronze ring. Decorated with 7 concentric circles of embossed dots. Perforated \& complete. Fig. 264. | 7317 | 14008 |
| 138 | FS 1958 | 5 | M | 7.2; 0.6; 0.25-0.45 | Disc, formed by silver sheet hammered over a copper/bronze ring with embossed \& chased decoration in the form of a star set within concentric circles, 18 perforations ?for attachment to cloth, complete. Illustrated in its reconstructed state. Fig. 387. | 7318 | 14007 |
| 139 | FS 1958 | 5 | M | 1.9; 0.7 | Bead or tube casing, silver sheet, complete. | 7370 | 14002 |
| 140 | FS 1958 | 5 | M | 1.0; $0.95 ; 0.2$ | Flat-winged disc bead, silver. Fig. 266. | 7320h | 14006 |
| 141 | FS 1958 | 5 | M | 1.1; 1.2; 0.2 | Quadruple-spiral bead, silver, complete, central tube from which come 4 rods each of which is rolled to form a spiral. Two beads of this type in the deposit. Cf. Mallowan 1947, pl. 32.8 . | 7320e | 14006 |
| 142 | FS 1958 | 5 | M | 1.1; $1.25 ; 0.2$ | Quadruple-spiral bead, silver, complete, spirals in this case formed from rolled sheet rather than rolled rod. Fig. 266. | 7320f | 14006 |
| 143 | FS 1958 | 5 | M | $1.15 ; 0.7 ; 0.2$ | Double-spiral bead or pendant, silver, complete, spirals formed from rolled sheet. | 7320 g | 14006 |
| 144 | FS 1958 | 5 | M | 1.8;0.8; 0.2 | Flat-winged disc silver bead, decorated with incised lines at either end, incomplete. | 7320b | 14006 |
| 145 | FS 1958 | 5 | M | 0.4; $0.25 ; 0.15$ | Barrel-shaped silver bead formed by a sheet rolled twice \& soldered, complete, 10 beads of this type in the deposit. | 7320d | 14006 |
| 146 | FS 1958 | 5 | M | 0.25; 0.15 | Cylindrical silver bead formed from rolled sheet, but not soldered, 68 beads of this type in the deposit. | 7320d | 14006 |
| 147 | FS 1958 | 5 | M | 0.1; 0.2; 0.1 | Silver disc bead, 45 beads of this type. | 7320a | 14006 |
| 148 | FS 1958 | 5 | M | 0.2; 0.2; 0.1 | Silver bead, complete. Six beads of this type. | 7320c | 14006 |
| 149 | FS 1958 | 5 | M | 0.2; 0.2; 0.1 | Silver melon bead, complete, incised decoration. | 7320 i | 14006 |
| 150 | FS 1958 | 5 | M | 0.15; 0.2 | Gold bead, complete. | 7320 | 14006 |
| 151 | FS 1958 | 5 | M | 0.1; 0.15; 0.1 | Gold bead, complete. The deposit has an additional 2 gold beads varying in size between nos. $150 \& 151$. | 7320 | 14006 |
| 152 | FS 1958 | 5 | M | 0.15; 0.2; 0.1 | Gold bead, complete, incised decoration. | 7320 | 14006 |
| 153 | FS 1958 | 5 | M | 1.4; 1.15; 0.15 | Gold ring pendant, complete ( $\mathrm{dp} .=0.05$ ) | 7084 | 14000 |
| 154 | SS 549 | 4 | M | 0.7; 0.5; 0.03 | Sheet gold, 'surround', complete. SSTC, Courtyard 8 floor, south of façade. | 4385 | 11121 |
| 155 | SS 549 | 4 | M | 1.5; 0.6 | Fragment of sheet gold. | 4054 | 10141 |
| 156 | SS 549 | 4 | M | 0.7; 0.5 | Fragments of sheet gold \& a fragment of gold wire (l. = 1.9). Found with 2 further gold wire fragments. | 4070 | 10141 |
| 157 | ST 8 | 4 | M | 6.8 | Silver earring, complete, ash layer beneath courtyard pebbles. | 600 | 4018 |
| 158 | SS 549 | 4 | M | $2.4 ; 1.7 ; 0.4 ; 0.2$ | Animal pendant, perforated, incomplete, silver. | 4105 | 10140 |
| 159 | ER 233 | 5 | L | 3.0; 1.1; 0.5 | Cylindrical silver casing with 2 ridges, incomplete. Rm 41 floor. | 426 | 3026 |
| 160 | FS 89 | 2 a | N | 9.2; 0.3 | Silver ? pin, complete. | 693 | 5073 |
| 161 | FS 2313 |  |  | 6.9; 2.2 | Coarse ?silver/lead chain with a white ?marble disc bead attached. Level ? fill mixed with MELM debris. ?Possibly modern. | 7510 |  |

[^5]

## Artefact Drawings

Figure 482. Copper/bronze miscellaneous objects (162-8), stone moulds for metal objects (169-70), basalt mortars and other wessels (1-5), scale 1:t.

| No. | Area \& locus | Area <br> level | Phase | $\begin{aligned} & \text { Dimensions } \\ & \text { l.; w.; th. } \end{aligned}$ | Comments | Reg. no. | $\begin{aligned} & \text { TB cat. } \\ & \text { no. } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 162 | CH 124 | 1 | N | $\begin{aligned} & \mathrm{ht}=10.6 ; \\ & \text { rim d. }=14.0 \end{aligned}$ | Copper / bronze beaker. From deposit with nos. 163 \& 164 in fill beneath floor CH 122 . | 407 | 3020 |
| 163 | CH 124 | 1 | N | 5.1; 9.3 | Copper / bronze bowl. | 408 | 3021 |
| 164 | CH 124 | 1 | N | 4.1; 10.8; 9.6 | Copper/bronze strainer, handle missing. | 310 | 3019 |
| 165 | DH |  | M | 11.2; 7.0 | Copper / bronze loop, ?purpose, complete, found with nos. 6 \& 7. Strip w. $=2.6$, th $=0.5$. Fig. 253. | 1449 | 6091 |
| 166 | SS 839 | 4 | M | 5.5; 2.5; 1.0 | Copper/bronze oddity. In plan it is similar to a dagger blade, however the lateral section does not seem to taper sufficiently towards the edges for it to be a blade; incomplete. Floor material east of Rm 15 , SSTC. | 4685 | 11129 |
| 167 | FS 1957 | 5 | M | 14.5; 6.8; 0.3 | Mirror, incomplete, upper edge lost to corrosion. Fig. 252. Found with one of the flat axes (TB 14120) ritually deposited in the FS temple courtyard, see Fig. 42 for plan. | 7415 | 14118 |
| 168 | FS 1883 | 5a | M | 18.8; 8.9; 0.3 | Mirror, complete, 2 rivets at top of handle. From the same ritual deposit as nos. 47-9 etc. on top of the fill of the cella. Fig. 246. | 5807 | 13019 |
| 169 | FS 2310 | 2a/1 | N | 11.0; 7.8; 6.3 | Sandstone mould, incomplete, dies for 3 objects. Courtyard fill. | 7015 |  |
| 170 | FS 607 | 3 | M | 10.0; 9.4; 5.5 | Sandstone mould, incomplete, dies for 3 objects. | 2987 | 9116 |
| 1 | SS 904 | 3 | M | 12.8; 13.0 | Basalt mortar. 20 of this type were registered; 10 post-Akkadian, 9 Akkadian, 1 unstrat. | 4921 |  |
| 2 | CH 132 | 2 | N | 10.9; 13.5 | Basalt mortar, incomplete, found on a floor with 4 saddle querns. 27 of this type were registered; 8 post-Akkadian, 1, 10 Akkadian \& 4 Phase L. | 322 |  |
| 3 | CH 75 | 5 | L | 12.5; 14 | Basalt mortar. Type 3. A total of 4 of this type. | 226 |  |
| 4 | FS 2204 |  |  | 6.1; 27.0 | Topsoil. Basalt tray, complete. An identical item from SS Levels $4 / 3$ (reg. no. 5652, SS 722, 733 \& 775). 6 examples of this type were registered. | 5488 |  |
| 5 | ER 112 | 4 b | M | 5.5; $13.2 \times 11.9$ | Rectangular basalt vessel. A larger example from CH (reg. no. 132). Two other rectangular basalt vessels are deeper and incomplete (reg. no. 640, CH 417 \& reg. no. 4630, FS 1648). | 404 | 3035 |



## Artefact Drawings

Figure 483. Alabaster statuette and goblet, ?sandstone bowl (6-8), scale 1:2.

| No. | Area \& locus | Area <br> level | Phase | Dimensions | Comments | Reg. no. | TB cat no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6 | SS 949 | 4 | M | 8.6; 4.0; 2.8; dowel cavity $\begin{gathered} 1.8 \times 1.5 \times 0.9 \\ \text { dp. }=0.3 \end{gathered}$ | Alabaster statuette. Head missing. Male, with an elaborate hair / head-dress down the back. Figure wears a full-length robe which covers the left shoulder and arm. The upper edge is decorated with a series of loops and a fringe. The edge of the robe is also fringed. A dowel hole in the base is perforated front to back. Fig. 276. Rm 18 floor trample. | 7286 | 14017 |
| 7 | FS 2312 | 2 b | M | 4.6; 9.8 | Sandstone bowl decorated with four animal heads. Cross-hatched pattern on rim. Incomplete, some of base missing. Burnt and in poor condition. Fig. 278. Rm 34 fill. Similar vessel in alabaster from Halawa: Orthmann 1989, 83, fig. 52:1-3. | 7365 | 14027 |
| 8 | SS 852 |  | M | 10.0; 6.0 | Alabaster goblet. Incomplete. Cup decorated with a pattern of concentric diamonds. Heavy ridges where high ring base meets cup. Wash above Rms 20 \& 21. Alabaster handle 16 from same locus. | 4974 | 12051 |





## Artefact Drawings

Figure 484. Stone iessels and objects (9-29), scale 1:4.

| No. | Area \& locus | Area <br> level | Phase | $\begin{aligned} & \text { Dimensions } \\ & \text { ht; d. } \end{aligned}$ | Comments | $\begin{aligned} & \text { Reg. } \\ & \text { no. } \end{aligned}$ | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 9 | SS 549 | 4 | M | 7.7; 15.0 | Rosette bowl. Grey stone (or possibly Stone Ware). Incomplete. Fig. 277. Fragment of a pouring lip from the same locus in the same material. Courtyard 8 deposit. | 3952 | 10207 |
| 10 | CH 301 | 4 | M | $4.7 ; 1.18$ | Very gritty red sandstone tray, cut in a quadrant shape to fit on a mud-brick support in a re-entrant niche. Highly polished surfaces. | 518 | 4028 |
| 11 | ER 233 | 5 | L | 22.2; 13.9; 6.8 | Rectangular limestone vessel with two lugs at one end. The largest example of this type. Rm 41 floor. A further 14 examples; phase L ( $\times 5$ ); phase M ( $\times 4$ fragments); pits / topsoil in CH \& unstratified ( $\times 5$ ). | 396 | 3032 |
| 12 | FS 478 | 4 a | M | 7.4; 5.0 | Alabaster jar, incomplete. | 2249 | 8149 |
| 13 | CH 23 | 4 | M | 8.0; 4.7; 1.7 | Compartmented vessel. Alabaster. | 156 | 1055 |
| 14 | CH 23 | 4 | M | 6.0; 12 | Alabaster bowl rim. | 172 |  |
| 15 | FS 1808 | 5 | M | 5.0; 16 | Alabaster bowl rim, with incised decoration on rim. Mended with bitumen in antiquity. | 4975 |  |
| 16 | SS 744 | 3/2 | M | 6.0; 14.2 | Alabaster bowl, incised circle and dot decoration. 2 further examples; Phase M and unstratified. See also 46. | 5711 |  |
| 17 | SS 888 | 3 | M | 7.2; 4.6 | Alabaster vessel fragment, ?shoulder of a jar. Carved decoration in the form of bands, ovals and loops. | 4976 |  |
| 18 | SS 243 | 3 | M | 3.8; 3.7 | Goblet base. Black micaceous stone. | 3180 |  |
| 19 | FS 2354 | 2b | N | 8.0; 6.4 | Black steatite beaker fragment. Polished exterior. Use of drill has left pronounced rilling on lower interior. | 7396 |  |
| 20 | FS 1173 | 3 | M | 4.0; 16 | Soft stone bowl rim. | 1753 |  |
| 21 | SS 1070 | 4 | M | 7.1; 10.4 | Limestone bowl, incomplete. | 5936 |  |
| 22 | ST 105 | 4 | M | 8.2; 6.9; 2.5 | Rectangular vessel. Grey limestone streaked with red. Found with metal objects $1,17 \& 63$. | 732 | 5002 |
| 23 | CH 507 | 7 | L | 5.7; 14 | Limestone bowl, incomplete. | 847 | 5034 |
| 24 | ER 212 | 4 | M | 2.6; 19 | Limestone tray. | 344 | 3033 |
| 25 | CH 45 | 1 | N | 13; 24 | Grano-diorite conical bowl, incomplete. | 183 |  |
| 26 | SS 1096 | 1 | N | $\begin{gathered} 3.2 ; 4.3 ; \\ \text { dp. }=0.5 \end{gathered}$ | Macehead in fine white stone. Incomplete. Locus has IsinLarsa type pottery (pots 553-7). | 7366 |  |
| 27 | SS 734 |  |  | 6.5; 4.3; 3.9 | Basalt pestle. Topsoil. | 5503 | 13154 |
| 28 | SS 632 |  |  | 12.7; 11.5; 9.9 | Carved basalt fragment, ?lion's paw. Topsoil. | 4997 | 12050 |
| 29 | SS 647 | 3 | M | 5.8; 15 | Basalt potters wheel, incomplete. Knob very smooth and polished. Many striations on knob and upper surface. | 4922 | 12049 |

## Artefact Drawings

Figure 485. Small stone objects and vessels (30-53), scale 1:2, except 30-33 scale 1:1.

| No. | Area \& locus | Area <br> level | Phase | Dimensions | Comments | Reg. no. | TB cat. <br> no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 30 | SS 1017 | 5/6 | L/M | 1.6; 1.0 | Toggle, complete. Dark grey-green soft stone. Fig. 280. Sounding in Rm 21 floor. | 5458 | 13138 |
| 31 | SS 755 | 1 | N | 2.15; 1.1 | Toggle, incomplete. Alabaster. Fig. 280. | 5637 | 13137 |
| 32 | SS 549 | 4 | M | 1.7; 1.0 | Stud, complete. Serpentine. Another example (incomplete) in talc from SS 704 (TB 13135). | 4060 | 10055 |
| 33 | FS 1959 | 5 | M | 2.55; 0.55 | Haematite weight. Complete. $\mathrm{Wt}=2.18 \mathrm{~g}$. Pit in SW corner Courtyard 43. | 7179 | 14021 |
| 34 | SS 202 | 3 | M | 2.9; 2.1 | Haematite weight, complete. Cylindrical with 3 short incised lines. $\mathrm{Wt}=25.03 \mathrm{~g}$. | 2956 | 9123 |
| 35 | $\begin{aligned} & \text { SS } 636 / \\ & 647 \end{aligned}$ | 2/3 | M | 5.25; 2.2; 1.8 | Haematite weight, complete. Cylindrical with 5 short incised lines. $\mathrm{Wt}=46.92 \mathrm{~g}$. | 5323 | 12024 |
| 36 | FS 1760 | 2 | N | 2.0; 1.3 | Hemispherical weight. Haematite, complete. $\mathrm{Wt}=10.81 \mathrm{~g}$. Rm 34, pit/bin. | 4799 | 12033 |
| 37 | SS 910 | 4/3 | M | 2.9 | Spherical ?weight with flattened base. Limestone, white and black. Has been cut so that the black area forms a natural circle on the upper surface. Similar, but smaller, weight from DH 2 (incomplete) reg. no. 1188. | 5127 | 12054 |
| 38 | SS 25 | 1 | N | 5.2; 1.5 | Haematite polisher, faceted by use. Complete. Cf. Fig. 279. Another example from the same locus (reg. no. 735). | 817 |  |
| 39 | ST 105 | 4 | M | 2.6; 1.9 | Haematite polisher, surfaces very smooth. Complete. Found with metal objects 1, 17, 63. | 776 |  |
| 40 | CH 579 | 7 | L | 3.0; 2.7; 1.3 | Eye socket for life-size statue, incomplete. Grey-mauve soapy stone. Street. | 1102 | 6036 |
| 41 | surface |  |  | 2.5; 1.7; 0.8 | Eye inlay, complete, cavity to hold pupil. White ?limestone. | 1818 | 7142 |
| 42 | SS 746 | 3/2 | M | $\begin{gathered} 2.9 ; 2.0 ; \\ \text { dp. }=0.35 \end{gathered}$ | Finial or knob handle, complete. Dowel hole in the top, 1.1 cm deep. The dowel hole is intersected at right angles by a perforation. White ?limestone. Fig. 280. | 5825 | 13142 |
| 43 | FS 612 | 5 | M | 3.7; 2.6; 1.5 | Miniature celt, incomplete. Fine-grained grey stone with veins. Rm 1, fill above floor. | 3025 | 9125 |
| 44 | FS 802 |  | ?M | 1.5; 2.5 | Spool or bobbin, complete. Grey medium-grained stone, ?limestone. Baulk removal. | 5193 | 12030 |
| 45 | SS 852 |  | M | 6.9; 2.65 | Alabaster handle, incomplete broken at one end. 3 pronounced ridges. Wash above Rms 20 \& 21. Same locus as alabaster goblet 8 . | 4973 | 12052 |
| 46 | SS 652 |  |  | 10.0; 3.3 | Bowl rim, alabaster. Incised circle and dot decoration on the upper surface of the rim, a row of circles with dots on rim exterior and two rows running down the side of the bowl. Removal of access stair. 4 further examples; 1 Phase M, 3 Phase N. Cf. 16. | 4919 | 12053 |
| 47 | SS 584 | 4 | M | $\begin{gathered} \text { ext. 1. }=3.2 ; \\ 4.5 ; 1.4 \end{gathered}$ | Rectangular alabaster ?box, incomplete. Circle \& dot decoration on upper surface and base. Base also has incised lines radiating from the central cavity. The 3 extant sides are decorated with grooves and zigzags. One side of the box is perforated, the opposite side has a ?dowel hole from the interior cavity which does not pierce to the exterior. Floor of Courtyard 8. | 4568 | 11052 |
| 48 | SS 903 | 3 | M | $\begin{aligned} & \mathrm{ht}=3.5 ; \\ & \mathrm{w} .=3.5 \end{aligned}$ | Alabaster bowl rim. Carved decoration, 'dragged festoon' pattern. | 4920 |  |
| 49 | SS 964 | 4 | M | 13.2; 2.3 | Alabaster plate, incomplete. | 7350 | 14028 |
| 50 | SS 604 | 4 | M | 4.0; 2.1 | Miniature steatite bowl, incomplete. Black polished surfaces. | 4827 |  |
| 51 | SS 1092 |  | ? N | 3.8; 2.1 | Miniature marble bowl. Black with white veins, incomplete. | 6084 | 14037 |
| 52 | CH 563 | $\begin{gathered} 7 \text { or } \\ \text { earlier } \end{gathered}$ | L | 7.0; 2.0 | Small steatite bowl rim with excised decoration. Black, polished surfaces, originally inlaid. From terracing fill. | 1007 |  |
| 53 | ST 76 | 10 | ?K | 6.5; 2.5 | Small marble bowl. Pale grey, incomplete. | 680 |  |



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## Artefact Drawings

Figure 486. Baked clay anthropomorphic figurines (1-11), scale 1:2 (6 is unbaked).

| No. | Area \& locus | Area <br> level | Phase | Dimensions ht; w.; th. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | SS 1096 | 1 | N | 7.2; 2.5; 4.8 | Seated figurine with stool, ends of arms and face lost. Fill above latest post-Akkadian floor. Possible Isin-Larsa date (p. 173). | 7325 | 14066 |
| 2 | SS 222 |  | ? N | 5.8; 3.7; 2.5 | Head and torso of ?female figurine. Applied blobs (?curls or jewellery) either side of featureless face, plait on back of head. Topsoil. (Cf. Prag 1970, 87, fig. 9:75; Moortgat 1959, fig. 43c) | 3069 | 10077 |
| 3 | SS 560 |  | ? N | 7.8; 4.4; 2.2 | Female figurine, legs and part of face missing. Incised central parting, eyebrows and lashes. Coarse fabric \& highly burnished black fabric. Fig. 288. From topsoil. | 4314 | 11067 |
| 4 | SS 24 |  | N | 9.8; 3.6; 1.5 | Female figurine with necklace, head and feet missing. Fig. 287. | 673 | 5020 |
| 5 | SS 561 |  | ? N | 6.9; 4.5; 2.7 | Female figurine with necklace, coffee-bean eyes, appliqué blobs around face (earrings), high hairstyle with central parting which is perforated. Upper fill Rm 30. Fig. 286. (Cf. Moortgat \& Moortgat-Correns 1975, 51, fig. 24a-c; Badre 1980, pl.31:2.) | 4313 | 11066 |
| 6 | FS 2313 | 3 |  | 3.4; 5.2; 2.4 | Unbaked figurine torso, one hand holds an object that is broken ?a cup. Fill includes MELM contamination. | 7047 |  |
| 7 | SS 610 | 1 | N | 6.3; 2.0; 2.0 | Legs and feet of female figurine, probably of similar type to 2-5. (Cf. Moortgat 1959, fig. 42b.) | 4783 |  |
| 8 | FS 847 | 3/2 | M/N | 6.1; 4.0; 2.8 | Torso of figurine. | 5545 |  |
| 9 | FS 2354 | 2 b | N | 7.2; 5.2; 4.6 | Lower torso of female figurine. Similar-sized fragment of lower torso (without indication of gender) from ER 217 (TB 3044). | 7400 | 14106 |
| 10 | FS 1770 | 3 | M | 8.7; 3.5; 3.3 | Seated charioteer, missing head. Incised necklace of line and dots, three strand belt and apron. Incised hair on back of neck. Concave base. (Cf. Fig. 307.) | 4807 | 12068 |
| 11 | FS 862 | 5 | M | 7.0; 4.7; 3.3 | Charioteer. Perforation through shoulder ?to hold spear. Concave base; incomplete. Torso fragment with similar shoulder perforation from SS 607, Level 1 (reg. no. 4784). | 5643 |  |



## Artefact Drawings

Figure 487. Baked clay four-wheeled model vehicles (12-26), scale 1:4.

| No. | Area \& locus | Area <br> level | Phase | Dimensions ht.; l.; w. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12 | SS 603 | 4 | M | 6.7; 8.0; 3.8 | Four-wheeled 'battle car', complete. Fig. 298. Rm 5 fill. | 5114 | 12065 |
| 13 | AL 40 |  | L | $\begin{gathered} 3.1 \text { ext.; } 6.5 \text { ext.; } \\ 2.0 \end{gathered}$ | Four-wheeled vehicle, incomplete. Fine, greenish fabric. 'ED III destruction level'. Cf. Brak Area TC: Emberling et al. 1999, fig. 23:d. | 1076 |  |
| 14 | SS 761 | 1 | N | 5.9 ext.; 9.8; 6.3 | Four-wheeled vehicle, incomplete. Buff-orange fabric, some chaff. Protective shield mended in antiquity with bitumen. Fig. 300. | 5707 |  |
| 15 | FS 729 | 2 c | N | 5.5; 7.3; 4.5 ext. | Four-wheeled vehicle, incomplete. | 4769 | 12066 |
| 16 | FS |  | N | $12.5 ; 10 ; 7.6$ <br> all ext. only. | Fragment of large ?vehicle. Has a hub on only one side, \& not perforated. Lightly baked, chaffy fabric. | 710 |  |
| 17 | surface |  | ?K/L | 2.7; 13.5; 6.9 | Wagon fragment with seal impression. $D M 472$, sealing of ED style. | 4325 | 11042 |
| 18 | FS 620 | 1 | N | 3.8 ext.; 11.1; 6.2 | 4-wheeled wagon. Buff, gritty fabric. From topsoil. | 4324 |  |
| 19 | FS 428 | 3/2 | M/N | 7.0; 4.2; 3.0 | Fragment of wagon front. Buff, gritty fabric. From tannur. | 2499 |  |
| 20 | SS 809 | 4 | M | 9.2; $2.1 ; 6.2$ | Fragment of large vehicle front. | 4323 |  |
| 21 | TW 45 |  | J/K | 5.3;3.2; 5.7 | Fragment of a wagon tilt. Orange, gritty fabric with mica, paler surface. |  |  |
| 22 | TW 152 |  | J/K | 5.7; 4.8; 4.2 | Fragment of a wagon tilt. Buff, gritty fabric. |  |  |
| 23 | FS 1142 | 2 | N | $\begin{gathered} 5.3 \text { ext.; } 16 \text { ext.; } \\ 11.1 \end{gathered}$ | Base of wagon. Superstructure incomplete, possible indications of tilt. Buff, gritty fabric. | 1799 |  |
| 24 | FS 666 | 2a | N | $\begin{gathered} 5.4 \text { ext.; 20.2; } \\ 17.2 \end{gathered}$ | Base of wagon. Lacks the superstructure. Buff, chaffy fabric. | 4840 |  |
| 25 | ST 85 | 2 | M | 16; 19.8; 10.4 | Wagon with tilt, almost complete. Buff fabric with some chaff \& grit. Fig. 303. | 83.6 | 5092 |
| 26 | SS 958 | 4 | M | 11.5; 7.5; 9.3 | Fragment of the rear of a tilt wagon. Decorated with incised triangles. Buff, gritty fabric, well-finished surfaces. Ritual deposit in SSTC Courtyard 8. | 7272 |  |



## Artefact Drawings

Figure 488. Baked clay two-wheeled model vehicles (27-34), model wheels (35-41), vehicle fronts (42-5) and wheled zoomorphic figurines (4ア-52), scale 1:4.

| No. | Area \& locus | Area <br> level | Phase | Dimensions ht; l.; w. | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 27 | FS 1107 | 2a/b | N | 7.9; 4.6; 4.5 | Two-wheeled platform car, almost complete. Vertical perforation in the upper surface of the front ?to hold a spear. Orange fabric. Fig. 301. Rm 3, pit in floor. | 1349 | 6181 |
| 28 | DH |  | ?M/N | 7.5; 4.8; 5.4 | Two-wheeled platform car, complete. Greenish fabric with chaff inclusions. Fig. 300, left. From surface. | 2868 | 9066 |
| 29 | FS 1369 | 5 | M | 5.3; 5.3 ext.; 6.3 | Two-wheeled straddle car, incomplete, front shield missing. Buff, gritty fabric. Fig. 302, left. | 1912 |  |
| 30 | SS 29 | 1 | N | 6.0 ext.; 6.3; 4.6 | Two-wheeled straddle car. Buff fabric. | 815 |  |
| 31 | FS 1515 | 3 | M | 5.6 ext.; $5 ; 4.4$ | Two-wheeled straddle car. Almost complete. Greenish fabric with chaff inclusions. Fig. 300. From Rm 1 wall. | 2790 | 9067 |
| 32 | SS 1096 | 1 | N | $\begin{aligned} & \text { 6.0; } 7.5 \text { ext.; } \\ & 7.2 \text { ext. } \end{aligned}$ | Two-wheeled platform car with modelled seat. | 7402 |  |
| 33 | surface |  |  | 4.7 ext.; 8.3; 4.1 | Two-wheeled ?straddle car. Buff, gritty fabric. A similar central-wheeled car came from FS 2337 (reg. no. 7210). | 2655 |  |
| 34 | FS 1680 | 1 | N | 4.6 ext.; 6.6; 5.9 | Two-wheeled vehicle. Salmon gritty fabric; variation of platform car. | 4402 |  |
| 35 | FS 2356 | 5a | M | $\begin{gathered} \text { d. }=6.8 ; \text { th. }=4.3 ; \\ \text { dp. }=0.6 \end{gathered}$ | Wheel with ?tyre. Pale surface, orange fabric with chaff \& grit. Fig. 304. Rm 24 fill. | 7434 | 14141 |
| 36 | FS 1494 | 3/2 | N | 4.0; 2.6; 0.4 | Model wheel. Decorated with incised lines indicating plank construction. | 2701 | 9068 |
| 37 | FS 2318 |  | M | 7.9; 5.4; 0.5 | Wheel, decorated with incised lines indicating planks and fastenings. Buff, gritty fabric. Rm 38, fill. | 7008 |  |
| 38 | FS 1755 | 2 | M/N | 7.0; 2.7 ext.; 0.5 | Wheel, has four perforations in addition to the axle perforation. Buff, gritty fabric. Levelling for Level 2. | 4797 | 12091 |
| 39 | SS 958 | 4 | M | 7.1; 3.9 ext.; 0.8 | Wheel, showing tripartite construction \& clamps, incomplete, one hub lost. Buff fabric with chaff \& grit. Fig. 304. (Cf. Lebeau \& Suleiman 1997, 115, pl. I:2). | 7213 | 14138 |
| 40 | SS 850 | 1 | ? N | 5.8; 3.5; 0.5 | Both faces decorated with fingernail marks ?spokes. Buff fabric. From topsoil. | 4770 | 12089 |
| 41 | FS 1629 | 1 b | N | 3.9; 1.5 ext.; 0.3 | Wheel, incomplete. Decorated with incised lines possibly indicating spokes. | 4202 |  |
| 42 | SS 934 |  | ?M | 6.5; th. $=1.4 ; 5.4$ | Vehicle front. Orange fabric. Cleaning MELM trench. | 5278 |  |
| 43 | FS |  |  | 7.0; 1.1; 5.8 | Vehicle front. Buff, gritty fabric with some fine chaff inclusions. | 2071 |  |
| 44 | FS 1364 | 3 | M | 3.4; 1.3; 4.9 | Decorated vehicle front. Salmon fabric with paler surface, girt and mica. |  |  |
| 45 | FS 1953 | 4/5 | M | 8.4; 3.9;4.9 | Vehicle front. Buff fabric. | 7005 |  |
| 46 | CH 250 | 5 | M | 3.7 ext.; 8.8; 5.7 | Possible ?wheeled vehicle or hollow ?animal figurine, box-like body, sides perforated for an axle, another perforation through front. Buff gritty fabric. | 405 |  |
| 47 | ER 103 | 3 | M | $\begin{gathered} 5.5 \text { ext.; } 7.0 \text { ext.; } \\ 6.3 \end{gathered}$ | Fragment of wheeled hollow ?sheep figurine. Holes for axles do not pierce body but are interrupted by a perforated ridge between the front legs. Buff fabric with chaff \& grit. | 332 |  |
| 48 | SS 795 | 3 | M | $\begin{gathered} 6.7 \text { ext.; } 9.2 \text { ext.; } \\ 9.0 \end{gathered}$ | Wheeled ?sheep figurine. Body rectangular and hollow as previous, wall th. $=1.0$. Found with an unbaked clay wheel reg. no. 5942 , d. $=5.1$, th. $=2.7$. | 5941 |  |
| 49 | FS 444 | 3 | M | $\begin{aligned} & \text { 6.4; 8.5; 10; } \\ & \text { all ext. } \end{aligned}$ | Wheeled hollow ?animal figurine, body is a wheel-thrown pot. Buff gritty fabric, some chaff. | 2178 |  |
| 50 | SS 834 | 4 | M | $\begin{gathered} 7 ; 7.8 ; 9.3 ; \\ \text { all ext. } \end{gathered}$ | Wheeled hollow ?animal figurine, body is a wheel-thrown pot. Salmon fabric. Rm 15, fill on floor. |  |  |
| 51 | SS 876 | 3 | M | 7.2; 7.1 ext.; 4.6 | Wheeled ram figurine, solid body, incomplete. Fig. 291. | 4839 | 12080 |
| 52 | FS 2292 | 2a | N | $\begin{gathered} 3.7 \text { ext.; } 9.4 \text { ext.; } \\ 5.2 \end{gathered}$ | Wheeled animal figurine, solid body, lacks head, probably a sheep or ram. Buff, gritty fabric. | 5989 |  |



## Artefact Drawings

Figure 489. Baked clay zoomorphic figurines (53-77) and model boat (78), scale 1:4, except 72-3, scale 1:2.

| No. | Area \& locus | Area <br> level | Phase | Dimensions ht; l.; w. | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 53 | DH 98 |  | ?M/N | 7.2; 7.8; 3.8 | Equid head with noseband \& decorated headband. Buff fabric. Fig. 308. | 1353 | 6185 |
| 54 | FS 564 | 5 | M | 4.5; 4.1; 2.1 | Equid head with decorated bridle. Buff fabric. Fig. 308. | 2783 | 9063 |
| 55 | SS 502 | 4 | M | 6.5; 8.4; 4.3 | Equid head with decorated bridle \& strapover muzzle; flat mane. Cf. similar flat mane on Tell Taya figurine (Reade 1971, pl. 25:e), identified by Bökönyi as 'horse'. | 3134 | 10076 |
| 56 | SS 224 | 3/2 | M/N | 8.0; 6.5; 3.9 | Equid with strapped genitalia. Buff gritty fabric. Fig. 311. | 3070 |  |
| 57 | CH 169 | 4 | M | 5.7; 5.3; 1.3 | Equid head with perforated muzzle. Pale fabric. | 356 |  |
| 58 | FS 1494 | 3/2 | N | 5.6; 8.2; 2.5 | Equid with perforated mane \& muzzle. Buff, greenish fabric. | 2700 | 9060 |
| 59 | FS 2270 | 5a | M | 5.6; 7.6; 3.1 | Equid with perforated mane \& impressed nostrils. | 5834 | 13105 |
| 60 | SS 1098 |  |  | 5.2; 9.2; 3.0 | Equid. Fig. 312. From topsoil. | 7399 | 14105 |
| 61 | SS 785 | 2 | N | 4.4; 7.0; 2.3 | Equid figurine with heavy noseband and the remains of a load or rider on its back. ?Donkey. | 5891 | 13106 |
| 62 | SS 944 | 4 | M | 5.7; 7.7; 3.3 | Equid with open mouth, ?braying donkey. Buff gritty fabric. Rm 18. | 6068 |  |
| 63 | SS 374 | 3 | M | 5.8; 11.0; 3.9 | Equid with perforated mane \& muzzle. Buff, slightly greenish with fine grit. | 4329 | 11072 |
| 64 | FS 1369 | 5 | M | 4.6; 8.3; 3.6 | Headless and legless animal figurine, ?equid, decorated with circular impressions (?reins \& harness). | 1911 |  |
| 65 | FS 858 | 5 | M | 7.7; 5.3; 3.3 | Goat. Greenish fabric. | 5588 |  |
| 66 | SS 662 | 3/2 | M/N | 5.9; 8.3; 3.4 | Goat. Orange fabric. Fig. 291. | 4942 | 12086 |
| 67 | FS 1869 | 2 | N | 6.6; 9.3; 3.8 | Ram figurine, muzzle perforated from side to side, this perforation is joined by another from the front. Buff gritty fabric. | 5411 | 13107 |
| 68 | FS 705 | 2 | N | 6.5; 8.8; 3.7 | Ram figurine, incised fleece. Fig. 290. | 4369 | 11070 |
| 69 | CH 23 | 4 | M | 8.4; 4.9; 6.3 | Ram figurine head, lightly fired, incised fleece. Buff. | 315 |  |
| 70 | SS 200 | 3 | M | 10.6; 16.2; 6.0 | Ram figurine, the largest animal figurine from the thirdmillennium levels. Fig. 293. | 2977 | 9056 |
| 71 | surface |  |  | 5.3; 6.5; 4.6 | Ram's head. | 3071 |  |
| 72 | SS 677 | 4 | M | 2.8; 3.5; 2.4 | Rm 25. Sheep head. Buff, yellowish fabric. | 5170 |  |
| 73 | SS 834 | 4 | M | 3.8; 3.1; 2.9 | Fragment of the rear end of an animal figurine, heavily decorated. | 4710 | 11071 |
| 74 | SS 850 |  |  | 4.5; 5.3; 2.6 | Hollow pig (or hedgehog) figurine with circular impressed decoration \& male genitalia. Face and ends of legs lost. Buff fabric with fine grit. From topsoil. | 4763 | 12070 |
| 75 | FS 1137 | 2 | N | 4.2; 8.2; 4.2 | Hollow musical instrument: possible bird pipe with incised decoration. Fig. 292. Perforated through back and below tail. Buff gritty fabric. Similar but less complete example from SS 1242 (reg. no. 5398). | 1798 | 7074 |
| 76 | CH 151 | 3 | M | 6.5; 6.6 | Solid bird figurine, head missing. Buff fabric. | 365 | 3043 |
| 77 | FS |  |  | 5.6; 3.6; 2.3 | Head of hollow bird figurine or bird-shaped spout. Ware 6a. Surface. | 2304 |  |
| 78 | SS 700 |  |  | 4.8; 10.2; 5.7 | ?Model boat. Orange-grey fabric, chaffy with some grit. Topsoil. | 5412 |  |


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## Artefact Drawings

Figure 490. Miscellancous baked and unbaked clay objects (79-126), scale 1:4 (baked unless otherwise stated).

| No. | Area \& locus | Area <br> level | Phase | Dimensions | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 79 | ER 68 | 1 | N | 4.9; 2.8; 3.9 | Head of anthropomorphic figurine. | 189 | 1078 |
| 80 | SS 222 |  |  | 4.6; 2.2; 3.5 | Foot of anthropomorphic figurine. From topsoil. | 3068 | 10078 |
| 81 | FS 2243 | 3 | M | 12.1; 7.3; 2.5 | Base for anthropomorphic statue. Rm 32, hole in floor. | 5686 | 13158 |
| 82 | SS 545 | 4 | M | 3.9; $2.5 ; 1.5$ | Eye socket for statue, dowel hole for eyeball attachment. | 4049 | 10079 |
| 83 | SS 1070 | 4 | M | 4.8; $2.0 ; 2.7$ | Odd triangular object. Complete. Holes in ridge do not pierce. | 5766 | 13086 |
| 84 | FS 1560 | 5 | M | 8.5; 3.5; 3.6 | As previous, incomplete, hole in broken end does not pierce. | 2851 | 9073 |
| 85 | CH D 6 | 1 | N | 3.9;1.2; 1.1 | Spindle whorl. Type 1. | 100 | 108 |
| 86 | FS 1633 | 1 b | N | 4.8; 1.7; 1.0 | Spindle whorl. Decorated. Much of base chipped. Type 2. | 4208 |  |
| 87 | SS 24 |  | N | 3.3; 1.8; 0.8 | Spindle whorl. Complete. Incised around base. Type 2. | 682 |  |
| 88 | FS 1450 | 2/1 | N | 3.3; 2.3; 0.9 | Spindle whorl. Complete. Incised decoration. Type 3. | 2076 | 8106 |
| 89 | FS 1285 | 3 | M | 3.8; $2.2 ; 0.7$ | Spindle whorl. Complete. Incised decoration. Type 2/3. | 1794 | 7098 |
| 90 | SS 834 | 4 | M | 3.5; 2.1; 1.1 | Spindle whorl. Complete \& decorated. Type 4. | 4709 | 11076 |
| 91 | SS 804 |  |  | 3.9;1.9; 1.1 | Spindle whorl. Almost complete \& decorated. Type 5. | 4149 | 11077 |
| 92 | ER 47 | 1 | N | 8.5; 3.5; 3.0 | Rectangular object, ?model brick. Impressed decoration. | 152 |  |
| 93 | SS 573 | 4/5 | M | 6.8; $2.6 ; 3.1$ | ?Model brick, complete, 6 found together in pit. | 4574 |  |
| 94 | SS 576 | 4 | M | 11.5; 6.0; 1.8 | Slab, perforated, complete, ?palette. | 4376 |  |
| 95 | SS 1053 | 4 | M | 5.5; 6.0 | Rattle, hollow perforated head, handle solid \& incomplete. Orange gritty fabric. Fig. 297. | 5697 | 13100 |
| 96 | SS 607 | 1 | N | 7.0; 4.0; 3.0 | ?Rattle, head perforated, incomplete. Ware 5. |  |  |
| 97 | FS 1830 | 5 | M | 3.3; 7.5 | ?Weight, one end pinched and perforated, complete. | 5093 | 12115 |
| 98 | FS 1640 | 2 | N | 8.6; 4.3; 2.0 | Oddity, ?tool rest, complete. Lightly baked. | 4254 |  |
| 99 | SS 850 |  | N | 3.8; 5.0 | ?Phallic object, hollow but not perforated, incomplete. Topsoil. | 4756 |  |
| 100 | FS 1124 | 2/1 | N | $8.2 ; 2.2 ; 2.2$ | Oddity, one end has cup-like indentation, other end flat. | 1609 |  |
| 101 | SS 136 | 2 | N | $4.8 ; 3.5 ; 2.2$ | ?Tilt fragment, decorated incised lines \& circular impressions. | 1071 |  |
| 102 | FS 1956 | 5 | M | 7.2; 6.0; 1.4 | ?Chariot front. 2 further Akkadian examples, from SS 686 \& CH 9 Tr. B. | 7086 |  |
| 103 | FS 757 | 3 | M | 3.4; 4.0 | Perforated cylinder. | 4598 |  |
| 104 | SS 135 | $3 / 2$ | M/N | 5.5; 4.6; 3.7 | Pottery lug handle re-used as a lid/stopper. Ware 5. |  |  |
| 105 | FS 566 | 1 | N | 7.0; 5.5; 0.7 | Potsherd reused as burnisher. Ware 5. | 2904 |  |
| 106 | SS 662 | $3 / 2$ | M/N | 4.9;3.8; 2.0 | Odd spoon-like object, incomplete, handle broken. | 4956 |  |
| 107 | SS 250 | 3 | M | 3.2; 3.2; 3.0 | Bead polisher, incomplete, incised decoration. | 3297 |  |
| 108 | SS 810 | 2 | N | 4.8; 3.3; 2.8 | Bead polisher, complete, incised sign on base. | 5859 | 13089 |
| 109 | SS 30 |  | N | 4.5; 1.3 | Bobbin to hold thread, complete. From cleaning. | 1009 | 5057 |
| 110 | FS 1804 | 3 | M | 2.6; 3.0 | Bobbin or spool, complete. | 5175 | 12073 |
| 111 | SS 965 | 4 | M | 3.5; 5.0 | Unbaked clay tube, incomplete, contains charcoal. | 7467 |  |
| 112 | SS 945 | 4 | M | 4.5; 3.4; 3.0 | ?Gaming piece, 2 circular indentations, oval base, complete. | 7129 | 14070 |
| 113 | SS 1091 | 3 | M | 10.8; 5.3; 5.4 | Terracotta oddity, one side perforated diagonally, other has part of a triangular fenestration. | 7239 |  |
| 114 | SS 838 | 5 | M | 3.0; 4.5 | Unbaked clay sling bullet, type 1. (Cf. Fig. 295.) | 4754 |  |
| 115 | FS 175 | 2 a | N | 3.5 | Unbaked clay sling bullet, type 3 . | 761 |  |
| 116 | SS 1005 | 4 | M | 3.0; 5.4 | Unbaked clay sling bullet, type 2. | 5462 |  |
| 117 | ST wadi |  | K | 2.6-2.2; 8.8 | Unbaked clay sling bullet, type 7. | 607 |  |
| 118 | FS 1898 | 5 | M | 2.9; 4.4 | Unbaked clay sling bullet, type 9 . | 5579 |  |
| 119 | SS 700 |  |  | 3.1; 4.0 | Unbaked clay sling bullet, type 6. From topsoil. | 5467 |  |
| 120 | CH 318 | 4 | M | 8.5; 4.3; 4.0 | Unbaked clay sling bullet, type 4. | 610 | 4065 |
| 121 | CH 318 | 4 | M | 10.4; 3.8;3.5 | Unbaked clay sling bullet, type 5 (see p. 278). | 610 | 4065 |
| 122 | DS 8 |  |  | 8.0; 4.5; 4.5 | Unbaked clay sling bullet, type 8. | 1559e |  |
| 123 | SS 719 | $3 / 2$ | M/N | 4.0; 2.9 | Unbaked clay jar stopper, type 1. (Cf. Fig. 296.) | 5460 |  |
| 124 | FS 1818 | 5 | M | 4.9; 1.0 | Unbaked clay ?lid, complete. | 5029 |  |
| 125 | FS 1955 | 5 | M | 5.3; 1.8 | Unbaked clay jar stopper, type 2. | 7260 |  |
| 126 | FS 820 | 2/1 | N | 9.5-10.2; 6.5 | Baked clay jar stopper, type 3. | 5389 | 13114 |



## Artefact Drawings

Figure 491. Baked and unbaked clay anthropomorphic figurines, counting discs, other tokens and miscellaneous objects (127-46), scale 1:2 (baked unless otherwise stated).

| No. | Area \& locus | Area <br> level | Phase | Dimensions | Comments | Reg. no. | TB cat. no. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 127 | FS 739 | 3 | M | 6.7; 4.65; 3.7 | Anthropomorphic figurine with concave base. ?Charioteer. Similar, but headless, figurines from CH 418 (TB 4052), FS 854 (reg. no. 5676) \& FS 505 (reg. no. 2412). | 4543 | 11068 |
| 128 | SS 1032 | 4/5 | M | 4.6; 4.1; 2.2 | Anthropomorphic figurine with concave base. ?Charioteer. Unbaked. Very similar figurine from FS 1727 (reg. no. 4762). (Cf. McAdam 1993, fig. 3:5, no. 282; fig. 3:7, nos. 291 \& 294). | 5542 | 13097 |
| 129 | FS 1625 | 1 | N | 4.4; 2.4; 1.8 | Anthropomorphic figurine with concave base. Lightly baked. Figurines similar to 128 \& $\mathbf{1 2 9}$ come from FS 1834 (TB 12069 \& reg. no. 5282, cf. Fig. 289), SS 825 (reg. no. 4596) \& SS 944 (reg. no. 6091). (Cf. Lebeau \& Suleiman 1997, 58, pl. I:b). | 4181 |  |
| 130 | SS <br> surface |  |  | 2.7; 1.2; 1.5 | Gaming piece with two horns, concave base, burnt black. | 4320 |  |
| 131 | FS 796 | 4/3 | M | 3.1; 2.7 | Base of figurine or gaming piece, black burnished surface. 2 further examples from SS 626 (reg. no. 4849 ) \& SS 700 (reg. no. 5390). | 4902 |  |
| 132 | FS 854 | 3 | M | 5.5; 1.6 | Counting disc, with central depression surrounded by smaller circular impressions. Unbaked clay. Fig. 174. | 5604 | 13088 |
| 133 | FS 854 | 3 | M | 5.9; 1.5 | Counting disc with central depression, surrounded by smaller circular impressions. Unbaked clay. Fig. 174. | 5694 | 13087 |
| 134 | SS 1032 | 4/5 | M | 4.4; 0.7 | Counting disc with fingernail impressions. Fig. 175. | 5535 | 13085 |
| 135 | FS 1303 | 3 | M | 4.5; 1.7 | Counting disc with impressions. Fig. 176. | 1882 | 7079 |
| 136 | FS 847 | $3 / 2$ | M/N | 4.2; 1.2 | Counting disc with circular impressions. Fig. 175. (Cf. Pecorella 1998, 71, fig. 4e.) | 5497 | 13084 |
| 137 | SS 549 | 4 | M | 3.2; 1.7 | Token (?counting disc) with fingernail impressions. | 4600 | 11079a |
| 138 | SS 744 | 3/2 | M | 4.9; 2.3; 2.2 | Tally with four grooves. Similar object in stone from Beydar (Lebeau \& Suleiman 1997, 58, pl.I:d). | 5546 | 13094 |
| 139 | FS 536 | 4 | M | pot: 4.0; 2.1; <br> token: 1.5; 0.4 | Miniature pot made around a calcite token which cannot be removed. Lightly baked. Lead loop through handle. Fig. 177. | 87.17 | 9223 |
| 140 | FS 1909 | 5 | M | 3.1; 1.1 | ?Token ?miniature vessel. Dish-shaped disc with scalloped edges, unbaked clay. | 5735 | 13091 |
| 141 | FS 1467 | 3/2 | M/N | 3.1; 0.65 | ?Token ?Lid. | 2205 |  |
| 142 | FS 490 | 2 | N | 4.3; 3.1 | Unbaked ovoid with incised ?sign. | 2289 | 8102 |
| 143 | FS 1682 | 3/2 | M/N | 7.1; 2.7 | Token or docket, triangular section object with 5 circular impressions. Unbaked. | 4580 |  |
| 144 | SS 37 | 1a | N | 4.5; rim d. 8-9 | Bowl rim with vertical tube which is also perforated twice horizontally. Dotted line gives outline of bowl rim. Pale brown/salmon gritty fabric. |  |  |
| 145 | SS 1032 | 4/5 | M | 3.0; 1.1 | Stud. | 5510 | 13082 |
| 146 | SS 33 | 1a | N | 2.5; 2.6 | Lid or stopper, grey burnished fabric with circular impressions, handle perforated. | 690 | 5023 |



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## Artefact Drawings

Figure 492. Bonte objects (1-18), scale 1:2; bone beads (19-23), scale 1:1.

| No. | Area \& locus | Area <br> level | Phase | Dimensions* | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | CH 467 | 6/5 | L/M | 9.7; 1.2; 0.4 | Point/awl, incomplete. | 711 | 5036 |
| 2 | FS 2315 | 2 | N | 8.0; 1.9; 1.1 | Scoop or spatula, incomplete. | 6075 |  |
| 3 | FS 109 | 2a | N | 8.8; 3.0; 0.5 | Perforated object, complete. ?Purpose. | 778 | 5038 |
| 4 | FS 738 | 2 c | N | 6.6; 1.4; 1.1 | A worked bone, ?tool, small cuts along one edge give a saw effect. | 4555 |  |
| 5 | SS 549 | 4 | M | 1.4; 1.0; 0.4 | Eye inlay. |  |  |
| 6 | SS 573 | 4 | M | 10; 1.6; 1.9 | Worked antler. Slice removed to give a flat surface which has incised lines and drilled circles. | 4560 |  |
| 7 | CH 476 | 6 | L | 7.8; 1.0-1.8 | Bone or ?ivory handle. Socketed to hold the working end of the tool. | 712 | 5039 |
| 8 | SS 549 | 4 | M | 5.0; 1.0-1.7 | Handle, incomplete. Stained green by the copper/bronze in the deposit. Another longer example $(1 .=7.35)$ from the same locus, TB 11046. | 4103 |  |
| 9 | FS 551 | 5/4 | M | 12.0; 0.7; 0.15 | Rod, pierced at both ends | 2710 | 9105 |
| 10 | CH 175 | 4 | M | 4.1; $0.6 ; 0.1$ | Toggle pin, incomplete. | 1192 |  |
| 11 | FS 746 | 3 | M | 3.8; $0.7 ; 0.2$ | Needle or toggle pin, incomplete. Rm 15 fill. | 4561 |  |
| 12 | SS 958 | 4 | M | 1.7; 0.45 | Head of bone or ivory toggle pin, decorated with incised lines. | 7331 |  |
| 13 | SS 172 | 3 | M | 5.0; 0.9 | Head of pin. Burnt. | 1112 |  |
| 14 | SS |  |  | 5.2; 0.6 | Head of pin. From topsoil. | 5087 | 12063 |
| 15 | SS 912 | 4 | M | 2.2; 1.1; 0.9 | Knucklebone, complete, one end carved to produce 6 projections. | 5026 | 12064 |
| 16 | SS 1084 | 4 | M | 2.7; 0.5; 1.1 | Perforated disc, ?spindle whorl. Complete, surfaces smooth and well-finished, some scratches on base. Rm 23 , pit in floor. | 5843 | 13060 |
| 17 | SS 1084 | 4 | M | 3.0; 2.4; 0.9 | Finial. Cylindrical, perforated, complete. A less regular and incomplete example from the same locus, reg. no. 5844. | 5842 | 13059 |
| 18 | SS 878 | 5 | M | 2.9; 2.2; 1.1 | ?Finial. Cylindrical, perforated, complete. | 5086 |  |
| 19 | FS 1799 | 4/3 | M | 3.2; 0.7; 0.2 | Pendant, complete, polished surfaces. Black. | 4910 |  |
| 20 | SS 945 | 4 | M | 4.8; 1.2; 0.3; 0.1 | Spacer bead, complete. Rm 18, lower fill. | 7026 | 14104 |
| 21 | SS 1240 | 4 | M | 1.1; 0.8; $0.7 ; 0.15$ | Fly-shaped bone bead. Another example from the same locus. Rm 21 floor. Fig. 240. | 5328 | 12148 |
| 22 | SS 240 | 4 | M | 0.2; 1.1; 0.5 | Disc or ring-shaped bead. Fill of antecella. | 3906 |  |
| 23 | SS 604 | 4 | M | 1.5; 0.5; 0.15 | Cylindrical bone bead. Rm 5 fill. | 5483 | 13322 |

* Bead dimensions are 1./ th.; d.; dp. or 1.; w.; th.; dp.

Artefact Drawings
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## Artefact Drawings

Figure 493. Shell objects and beads (24-38), wooden object (39); clay beads (40-47) and bitumen bead (48); 24, 25, $33,34,4(1-48$, scale $1: 1 ; 26-32,35 \mathcal{E} 39$, scale $1: 2$.

| No. | Area \& locus | Area <br> level | Phase | Dimensions* | Comments | Reg. no. | $\begin{gathered} \text { TB cat. } \\ \text { no. } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 24 | SS 944 | 4 | M | 1.8; 1.7 | Shell stamp. | 6077 | 14048 |
| 25 | CH 339 | 4 | M | 2.3; 2.2 | Shell stamp. | 566 | 4033 |
| 26 | FS 1938 |  |  | 2.9; 2.5; 0.6 | Fragment of shell pendant or inlay. (Cf. shell bull pendant or inlay, Fig. 317.) Old spoilheap. | 7060 | 14050 |
| 27 | SS 310 | 4 | M | 0.9; 0.75; 0.15 | Eye inlay. | 4721 |  |
| 28 | SS 549 | 4 | M | $1.55 ; 1.0 ; 0.2$ | Eye inlay. Fig. 241. | 4097 | 10115 |
| 29 | SS 636 | 2 | N | 2.3; 0.5; 1.4 | Shell ring. | 4909 | 12057 |
| 30 | FS 2323 | 3 | M | 4.8; 1.7; 0.5 | Piece of cut shell. | 7062 |  |
| 31 | FS 375 |  |  | 3.6; 2.8; 2.4 | Shell, perforated for use as a pendant. Section cleaning. |  |  |
| 32 | CH 445 | 6 | L | 3.7; 2.1; 0.1 | Olive shell, perforated longditudinally for use as a bead. Polished surfaces, complete. | 590 |  |
| 33 | SS 545 | 4 | M | 1.4; 0.8; $0.7 ; 0.2$ | Nassa serta shell, perforated for use as a pendant. Fig. 241. | 3991 |  |
| 34 | SS 1240 | 4 | M | 1.2; 0.65; 0.6; 0.1 | Shell, perforated for use as a pendant. Rm 21 floor. | 5343 | 12155 |
| 35 | SS 686 | 4 | M | $\begin{gathered} 4.7 ; 1.1 ; 0.6 ; \\ 0.25-0.5 \end{gathered}$ | Cowrie pendant. Rm 29. An identical example found in SS 746 (TB 13066). | 5564 | 13065 |
| 36 | CH 801 | 7 | L | 0.2; 0.6; 0.1 | Shell disc bead. 20 beads of this type from CH 801. Found with 3 segmented frit beads (frit 44) and a black stone disc bead. | 2733 |  |
| 37 | FS 1188 | 3 | M | 1.4; $0.8 ; 0.2$ | Shell bead, complete. | 1686 | 7171 |
| 38 | SS 1240 | 4 | M | 1.1; $0.6 ; 0.2$ | Shell pendant, incomplete. Floor of Rm 21. | 5357 |  |
| 39 | SS 551 | 5 | M | 11.9; 6.7; 2.8 | Wooden object, incomplete. ?Furniture fragment. Found with another fragment of similar size and shape. | 3972 |  |
| 40 | FS 673 |  | N | 1.8; 1.4; 0.25 | Incised ovoid bead, baked clay. Pit, post level 1. | 4246 | 11150 |
| 41 | FS 629 | 1 | N | 4.7; 0.9; 0.2 | Cylindrical baked clay bead, incomplete. | 4161 | 11150 |
| 42 | CH 244 | 4 | L | 4.2; 1.0; 0.2 | Long bead with triangular section. Unbaked clay. | 509 | 4043 |
| 43 | SS 626 | 2 | N | 1.9; 1.5; 1.3; 0.3 | Baked clay pendant. | 4847 | 12149 |
| 44 | SS 569 | ? 3 | M | 2.2; 1.8; 0.1 | Incised 'wheel' bead, baked clay. From tannur. | 4322 | 11075 |
| 45 | SS 635 | 3 | M | 1.2; 1.2; 0.2 | Biconical baked clay bead. Black. | 4876 | 12146 |
| 46 | ER 233 | 5 | L | 0.9; 0.5; 0.15 | 6 segmented clay beads of this type, heavily burnt in destruction. Found on the floor of Rm 41 with a shell bead and silver casing 159. | 427 | 3029 |
| 47 | FS 202 | 2b | N | 4.5; 2.1; 0.4 | Large ovoid bead. Unbaked clay. Fig. 243. | 1021 | 5040 |
| 48 | SS 734 |  | N | 1.4; 1.3; 0.2 | Spherical bitumen bead, incomplete. From topsoil. | 5856 |  |

*Bead dimensions are 1./ th.; d.; dp. or 1.; w.; th.; dp.


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## Appendices

## Appendix 1

# Catalogue Information for Objects Published in Photographs 

Figure 185. Akkadian and Phase L Stone Ware. a) 1) SS 545 (M), the surface has been deliberately scratched to produce a red effect; 2) ER 111 (L), fabric red to slightly grey; 3) surface find, dark grey fabric, interior surface red; 4) surface find, fabric dark grey, interior heavily scraped; 5) CH 515 (L), very smooth, polished, slightly vitreous surface, rim edge-damaged in kiln; 6) SS 545 (M), note very deliberate ridging; 7) small surface sherd with deliberate horizontal and vertical scratching; 8) sherd from large jar, fabric medium grey.
b) Stone Ware \& Bichrome: 1) ER 241 (K); 3) DH $10=1790$; Stone Ware: 2) ER 221 (M); 4) FS 858 (M) lugged jar; 5) surface find, dark grey jar, rim streaked red and dark grey; 6) CH 445 (L); 7) SS 316 (M), red fabric.
c) Akkadian and Phase L Stone Ware: 1) Sherd of dark grey Stone Ware beaker with inlaid yellow bands, depth of yellow bands $<0.5 \mathrm{~mm}$; faint yellow streaking on interior; see Fig. 394:64: 2) SS 502, base interior of Phase M beaker, fabric as no. 1; 3) SS 242, dark grey beaker base, surface wiped in a manner more common on Phase L beakers; 4 \& 5) Light grey Phase $M$ beaker rims, lower example from CH 17; 6) FS 1477, interior of dark grey beaker, with marked yellow interior banding. 2nd row: 7) SS 1083, dark grey beaker rim, thin-walled (max. 3 mm ); $8 \& 9$ ) Light grey Akkadian rim and base, the latter from FS 847. 3rd row: 10) FS 505 , thin-walled, dark grey beaker rim; mended with bitumen in antiquity; 11) FS 2310, small, heavily ribbed bowl rim, dark grey core, red surface on interior; almost certainly a residual Phase L type; 12) SS 887, see Fig. 392:9, possibly a residual Phase L type; 13) FS 376 , Akkadian beaker rim. 4th row: 14) ribbed beaker rim, see Fig. $395: 106$; 15) bowl rim, see Fig. 395:91; 16) bowl rim, similar 15, see Fig. 395:90.
d) Orange wares and combed wash ware: 1) Fig. 402:285; 2) 'brittle orange ware', cross-stitch pattern, cf. Fig. 402:284; 3-5) Darkrimmed orange bowls, 3 sherds on upper right, red-rimmed example from SS 372, interior view FS 430; cf. Fig. 401. 2nd row: 6) darker version of 'orange brittle ware', cross-stitch pattern, cf. Fig. 402:283; 7) red-slipped jar rim, FS 125.3 rd row: 4 painted sherds of unknown types: 8) surface sherd, visible mica in temper; 9) surface sherd, visible mica, cf. Garfinkel 1999, 'Beth Shean ware', colour pl. III, 7!; 10) SS surface, 2 examples only; 11) (below 10 ) bricky fabric with mica. 4th row: 12,13 ) combed wash ware, SS 375, SS 934, see also Fig. 193.

Figure 193. Combed wash ware sherds. 1) surface, fabric 6 b , dark brown paint; 2) surface, fabric as 1;3) CH 189 (Level 5), fabric as $1 ; 4$ ) surface, fabric as 1 , surface orange with red-brown wash; 5) SS 515, surface deposits in SSTC, fabric as 1 but very gritty, visible white grits on surface (surface Munsell $7.5 \mathrm{Y} / \mathrm{R} 6 / 3$ light brown, paint 5YR 4/2 dark reddish-grey; 6) SS 541, Level 3, fabric as 1 but cream surface, warm brown wash; 7) SS 140, Level 2 , very gritty dark buff fabric, smeared brown wash; 8) SS 108, c. Level 2 , fabric as 1 , mica, dark red wash; 9) surface, fabric 5, brown wash; $10 \& 11,2$ sherds just above bottom row: SS 83, fabric gritty light brown, no mica; 11) red fabric and wash (Munsell 7.5R 5/6 red), grey-brown core; bottom row: 12) SS 870, Level 1, very gritty light brown fabric, no mica, brown wash (surface

Munsell colour 10YR 7/4 'very pale brown'; wash Munsell 7.5YR 4/2-3 'brown'); 13) surface, light brown gritty fabric, interior surface red; 14) CH $192=281$.

Figure 195. Incised and combed sherds. 1) DH 2, gritty warm buff fabric, cream surface, appliqué snake's head over rim; 2) FS 174 (1), gritty warm buff, some mica, pale orange surface; 3) SS 856 (1), very dark grey core, surface lightly burnished dark brown, Munsell 7.5YR 5/4 'brown', neck interior also burnished; 4) surface, gritty grey fabric, mica, warm buff surface, Munsell 7.5YR 7/3 'pink'; 5) SS 372, warm buff fabric, very gritty, some chaff; surface pale, Munsell 5Y 8/3 'yellow'; 6) FS 1613, very orange fabric, gritty, mica; Munsell 5YR 6/6 'reddish yellow'; 7) surface, buff fabric, cream surface, some chaff, Munsell $2.5 \mathrm{Y} 8 / 3$ 'pale yellow'; 8) FS 578, Level 2, fine brick-coloured fabric, well smoothed surface, mica, Munsell surface colour between 10 YR $8 / 3$ and $7 / 3$, very pale brown.

Figure 196. Incised and combed sherds. 1) ER 1, ware 5, sl mica; 2) FS 11, ware 5 b ; 3) CH $540,5 \mathrm{~b}$, sherd 318 from same vessel; 4) SS 693, 5, sl chaff; 5) FS 1757, ware 6, no mica, cream slip; 6) SS 300, 5 b, flaky fabric; 7) SS 562, ware 5 ; 8) SS 545 , ware 6 , buff surface.

Figure 197. Late Akkadian and post-Akkadian incised sherds. 1) FS $592=294 ; 2$ ) SS 370, topsoil, slightly gritty, fine grey fabric, SSTC east gate; 3) SS $563 \mathbf{= 2 9 6}$; 4) SS 64, Level 2, overfired greenish fabric; 5) FS 1688, mixed fill, slightly gritty, cream fabric; 6) (below 5) surface, similar fabric to 5 ; 7) SS 622, probably Akkadian, from a Level 3 wall, reused in Level 2; 8) SS 761, Level 1, slightly gritty cream fabric, black painted dots, fine cable pattern at base of sherd; 9 (below 8 ) $=\mathbf{3 0 0} ; 10$ ) SS 1261, Area SS Room 32, fill on destruction floor, Munsell 7.5YR 7/4'pink'; 11) FS 376, Level $3,=503$ fabric similar to $10 ; 12$ ) surface, gritty cream fabric.

Figure 205. a) Pattern-burnished and painted post-Akkadian types: 1) FS 1063 (Level 2a), vertical pattern-burnishing on interior; 2 \& 3) FS 301 (2b), interior and exterior of same vessel, sl. flared rim; 4) FS 16 (2a), pattern-burnishing on both sides, both horizontally and vertically on the exterior; 5-7) 3 small surface fragments, all pattern-burnished on both surfaces; 8) ring-based bowl sherd from nr Tell al Rimah, pink interior surface heavily burnished; 9) FS 1031 ( $2 \mathrm{a}, \mathrm{rm} 6$ ) = 516, fine ring base and pattern burnishing, pink and green streaking on exterior; 10) SS 175, stratification uncertain; 11) FS 22 (1).
b) Early Transcaucasian and other black sherds (p. 172): 1 \& 2) upper left, ST 92 (Level 3), but different vessels, 'Transcaucasian', both surfaces highly polished ('graphite-like' surface); 3) FS 696 (2b) = 245; 4) SS 149, handmade $=249$; post-Akkadian Stone Ware: 5) lugged bowl $=502$; 6) surface, very thin rim sherd; 7) surface sherd, very fine light grey fabric, highly polished exterior; 8) SS 224 (2), fabric very dark grey, highly polished surfaces; 9) fine almost black fabric, step-beaded bowl rim $=88 ; 10)=86 ; 11$ ) SS 150, uncertain stratification, very highly polished, blue, almost 'glassy' surface, sl gritty blue-grey fabric; 12) 'near Stone Ware' but lacks the glossy surface of the other pieces, fine sl gritty grey
tabric; 13) surtace, grey incised sherd, sl burnished surface, gritty grey fabric, dark core; SS in (1a) $=494$.
d) Fine Ninevite 5 incised and excised: 1) surface, very fine dark grey fabric, very small white grit temper; 2 ) $=1749$; 3 ) surface, small cup or bowl with beaded rim, very fine greenish-grey, wellsmoothed surface; +1 surface, light yellow-green, no visible temper; 5) pale yellow-green, interior streaked yellow and grey-green, everted rolled rim; 6) = upper sherd from 1774.
d) Painted Ninevite 5, except no. 10: 1) TW 189, upper pit with Ninevite 5 pottery, very few visible chaff marks; 2) TW 124, levelling fill/pit? overlying ED walls, very fine fabric, no chaff; 3) sherd from $1737 ; 4-6$ ) three small sherds with scarlet paint on a cream slip, the first two are surface sherds, the right hand example is from ST 96 (Level 8); 7) SS 540, very hard dense orange fabric, a few fine mica traces, ICPAES \#1; 8) FS 1524, very worn out-of-context sherd, orange fabric very similar to no. 8, ICPAES \#2; 9) TW 517, upper fill (ED), very fine gritty orange-buff fabric, some mica; 10 ) unique sherd from CH 96 (ED), very gritty fine bricky fabric, heavy small white grits and mica, pale slip', ICPAES \#6; 11) TW 3, unsealed surface pit, sherd from pedestal vessel, very fine warm buff fabric with light grey core, mica, ICPAES \#5.

Figure 206.1) SS 31, interior, 3) SS $55=$ exterior of 567 , both from the uppermost level in Area SS, gritty light salmon fabric, exterior fired pale yellow (Munsell 5Y 8/3), interior pale, salmon-coloured (Munsell 7.5 YR 7/4); 2) = 566, surface find, gritty brown fabric, much surface chaff, interior 5 YR 6/4, exterior 5 YR 6/6.

Figure 216. 1) FS 367, ware 5a; 2) Surface, ware 6, buff surface; 3) CH C 5, ware 5; 4) SS 545, ware 6a, pale cream surface; 5) SS 1203, ware 6 , no visible mica; light cream surface; 6 ) Surface, ware 5 ; 7) SS 690, fabric 6, light brown surface, heavy mica; 8) Surface, fabric 7; yellow-brown surface; 9) CH 16 , fabric 5 a (brown);10) Surface, dark brown fabric, little visible temper; 11) SS 603, ware 5 b ; 12) surface, brown to grey fabric, warm brown surface.

Figure 219. Potters' marks, largely jar shoulders. 1) SS 223, bricky fabric, mica, pale brown surface; 2) FS 1789, pale surface, chaff = Fig. $461: 1580 ; 3$ ) SS 812, medium sized jar, warm buff fabric, light brown surface; 4) (below 3) FS 858, buff, chaff; 5) SS 316, body sherd of large jar, dark grey fabric, heavy chaff, brown surface; 6) FS 1187, jar shoulder, buff fabric, mica, some chaff = Fig. 461:1584. 2nd row: 7) FS 1955, well-made jar shoulder, buff but drainsoaked, chaff; 8) SS 1208, not a stamp but a geometric seal impression, over-stamped with a C-shaped mark, buff, some chaff; 9) FS 1920, brown / buff, heavily burnt interior; 10) surface, warm buff, some chaff; 11) SS 809, well-made buff, only a little chaff. 3 rd row: 12) SS 545, light brown, very little chaff; 13) SS 917, brown surface, salmon/'bricky' paste, chaff, traces of burning on interior; 14) CH 189, fabric and burning as no. 13; 15) surface, warm buff, mica, chaff. 4th row: 16) FS 1920, heavily burnt, originally buff, some chaff; 17) FS 858, brick surface, mica, dark core; 18) CH 13 , warm buff, some chaff; 19) CH 17 , buff, some chaff; 20) FS 2320 , salmon/bricky fabric, light brown surface, little chaff.

Figure 220. 1) $=$ Fig. 205:9; 2 ) $=$ Fig. 205:2; 3 ) $=$ Fig. 205:3; 4) surface, fabric 5 , brown paint; 5 \& 6) TW 127, TW 125, same vessel. fabric $5 b$, brown paint; TT, fill near dig house, fragment of pedestal vessel, dark buff, relatively fine fabric, 2.5YR $4 / 1$ dark reddish grey ('purple'), ICPAES \#9; surface, warm buff fabric, gritty, some chaff, buff slip, paint Munsell $7.5 \mathrm{R} 4 / 2$ weak red ('dark brown'); FS 1476, bichrome, ICPAES \#89.

Figure 221. 1) SS 1200; 2) SS 1218 (fine red, regular 'streaking' on
interior); 3) SS 663, pale grey; 4) SS 1200 (coarser fabric than the others); 5) surface; 6) SS 1200; 7) SS 1200; 8) SS 1200; 9) SS 671; 10) surface, 'pale grey'; 11) surface, 'pale brown'; 12) SS 1200; 13) SS $1200 ; 14)$ SS 1218. All other sherds are variations of 'pale yellow'.

## Figure 222

1) SS 806; 2) surface; 3) surface; 4) SS 1218 ; 5) SS $1218 / 1221$; 6) SS $1200 ; 7$ ) SS 1200 ; 8) SS 984 ; 9) SS 1218. All are variations of 'pale yellow', with the exception of no. 8, which is more 'olive/grey' (Munsell $5 Y 7 / 2$ ). No. 9 is quite thick-walled ( 6 mm ); all have faint traces of chaff except $2,6,7,8$. Those with chaff are slightly thicker-walled. All are variations of pale yellow, no chaff.

Figure 223. 1) FS 1027; 2) CH 620; 3) SS 675; 4) surface; 5) SS 807; 6) SS 806; 7) FS 525; 8) surface; 9) SS 812, approaches 'light grey'; 10) surface; 11) surface; 12) SS 33; 13) SS 212.

Figure 224. 1) SS 1200; 2) SS 520; 3) SS 300; 4) FS 1088; 5) ST 126; 6) SS 545; 7) FS 1773; 8) SS 545; 9) SS 1200; 10) FS 2305; 11) SS 316, 'light grey'; All are variations of pale yellow, no chaff.

Figure 225. 1) SS 910, Munsell 7.5 YR 7/4 'pink'; 2) SS 889; 3) FS 1088; 4) Surface; 5) SS 812 ; 6) surface; 7) FS 536 ; 8) surface; an unusual sherd with a rolled seal impression over which there is an excised pattern; pale surface, salmon fabric; 9) surface; 10) SS $318=1745 ; 11$ ) surface; lower left 12) SS 803 ; Munsell 7.5 YR $6 / 4$ 'light brown'; 13) surface; 14) SS 944. All others variations of 'pale yellow', no chaff.

Figure 227. Imported sherds. 1) TW 127, pale grey, = ICPAES \#31; 2) CH 702, pale grey, Munsell 5 Y 7/1; ICPAES \#21; 3) ST 144, pale grey, Munsell 5 Y $8 / 2$ 'pale yellow', ICPAES \#27; 4 \& 5) ST 9, pale yellow, Munsell 5 Y $7 / 3$, ICPAES \#33; 6) ER 1 , fabric Munsell $2.5 \mathrm{Y} 6 / 4$ 'weak red', paint very worn but 2.5 R 5/3 to 5/4, ICPAES \#3; 7) TW 19, burnished brown, dark staining or burning, ICPAES \#13; 8) TW 127, surface Munsell 5YR 7/3 'pink', probable pedestal base, chaff \& large white grits, ICPAES \#7; 9. TW 32, warm buff, fine grit, ICPAES \#56; 10. HH 478 (third-mill. sherd from second-mill. brick), cream slip, purple-brown paint Munsell 10R 4/1 to 4/2, 'dark greyish red', ICPAES \# 14; 11) Surface, fabric 'weak red', paint 'dark reddish-grey', ICPAES \#11; 12) Surface, fabric \& paint similar no. 6 , this piece with cream slip, ICPAES \#8.

Figure 283. 1) Polished celt, dark, green-veined stone. L. 4.65 cm (TB 13147, FS 2245, level in street east of temple); 2) lower left, grooved wetstone, 1.7 .1 cm (TB 13150, SS 686, fill in or, possibly, just above SSTC Rm 29); 3) large whetstone, 1.13 .5 cm (reg. no. 5651, deliberate fill in SSTC Rm 14); 4) small polished celt, finegrained dark grey stone, 1.3 cm (TB 13146, FS 854, eroded Level 3 room east end of main baulk); 5) small haematite burnisher, 1. 2.6 cm (TB 13143, SS 1070, fill in SSTC Rm 23); 6) whetstone, 1. 6.0 (TB 13151, SS 1005, fill in SSTC Rm 23, as no. 5).

Figure 296. Top row: Type 1 stoppers left to right: a 4th-millennium piece (TW 338); from SS level 2 (reg. no. 4955) and (reg. no. 5033); unknown; from SS 719, Level 3 (123); another fourth-millennium piece from CH level 11 (reg. no. 1536). Middle row: Type 3 stoppers: from SS 744, Level 3/2 (reg. no. 5561); from SS 584, Level 4 (reg. no. 4623); from FS 655, Level 2 (reg. no. 4619); and a Type 2 stopper from SS 176, Level 4 (reg. no. 5931). Bottom row: Type 2 stoppers: unknown; from SS topsoil (reg. no. 4792); a second-millennium juss example from HH 463 and an Akkadian example from FS 1643 (reg. no. 4278).

## Appendix 2

# Brak Third-millennium Locus List 

| Area CH <br> 1976 wall no. | Level |  |
| :--- | :---: | :--- |
| V | 3 | Description |
| VII |  |  |
| VIII | 3,4 | west wall of Room 1, collapsed at end <br> of Phase 4, rebuilt in Level 3 |
| XI |  | Ph. L | | walls of small chambers, with |
| :--- |
| concentration of conical cups (Figs. 19 |
| XIV |


| Locus CH 97 CH 102 | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
|  |  |  | ashy soil, sb 95 |
|  |  |  | carbonized wood (hearth fuel), C14 BM-2915 |
| CH 103 |  |  | Middle Uruk level in earlier tell, sb 102, numerical tablet |
| CH 122 | 1 |  | beaten earth floor (east section) |
| CH 123 | 1 |  | collapsed mud-brick wall, s 122 |
| CH 124 | 1 |  | fine sandy fill under floor 122 (metal hoard) |
| CH 125 | 2 |  | late phase 2 wall |
| CH 12\% | 2 |  |  |
| CH 127 | 2 |  | bricky fill between walls 125,126 , late Level 2 |
| CH 129 | 2 |  | fill above floor 132 |
| CH 132 | 2 |  | floor illustrated in Fig. 207 |
| CH 135 | 2 |  | bricky rubble below floor 132 |
| CH 136 | 2 |  | level 2 wall |
| CH 137 | 2 |  | fill of plaster compartment assoc. wall 136 |
| CH 139 | 3 |  | floor assoc rebuild of wall XI |
| CH $1+3$ | 3 |  | floor of Level 3 building |
| CH 146 | 3 |  | loose fill s wall VIII |
| CH $1+5$ | 3 |  | street surface $=154$ |
| CH 150 | 3 |  | floor of laid sherds, latest 3 |
| CH 151 | 3 |  | yellow-brown clay, make-up for floor 150? |
| CH 152 | 3 |  | wall sb 146 |
| CH 153 | 3 |  | orange and grey brick rubble |
| CH 154 | 3 |  | rutted street surface |
| CH 156 | $t$ |  | vitrified debris from oven 158 |
| CH 160 | + |  | make-up for NSP working floor |
| CH 165 | + |  | fill of pit 166 |
| CH 169 | 4 b |  | street fill, compact earth with ashy pockets |
| CH 170 | + |  | secondary fill of pit 166 |
| CH 171 | 4 |  | west wall of Akkadian building |
| CH 173 | 4b |  | early Akkadian wall |
| CH 175 | 4 |  | wall $=$ XVII |
| CH 176 | 4 |  | = floor 26 |
| CH 179 | 4b |  | loose crumbly burnt sand, s 184 |
| CH 184 | 4 b |  | ash, charcoal and carbonized grain, sb 183 |
| CH 185 | 4 b |  | early level 4 wall |
| CH 187 | 4 |  | brick collapse east of wall 171 |
| CH 189 | 5 |  | levelling fill |
| CH 192 | 4 |  | ashy clay, surface on which wall 185 rests, s 207 |
| CH 195 | 5 |  | soft ashy earth (Level 5 levelling, includes Level 6 debris) |
| CH 200 | $t$ | 7 | E wall Akkadian building |
| CH 201 | $t$ |  | oven demolition material, NSP working floor, make-up for floor 176 |
| CH204 | 6 | 63 | south wall of grain bins, also Level 5 |
| CH 205 | 6 | 68 | west wall of rooms 68 and 56 (Level 5) |
| CH 206 | 6 | 67 | west wall |
| $\mathrm{CH} 20-$ | 4 |  | Level 4 floor |
| CH 209 | 6 | 63 | bin contents (late ED III bullae), $=$ re-raking of 6 destruction debris |
| CH 213 | 6 |  | earliest 5 ?, compact ashy clay |
| CH 215 | 5/6 |  | fill north of Rm 66 |
| CH 217 | 4 b |  | early Level 4 wall |
| CH224 | 5/6 | 63 | spilled grain against south face of wall 203 |
| CH 230 | 6 | 63 | primary fill of eastern bin |
| CH 237 |  |  | pit fill |
| CH 238 | 6 |  | pit, basalt mortar in base (Fig. 28) |
| CH 239 | 6 |  | void of 238 |
| CH $2+4$ | 4 | 7 | bricky fill |
| CH $2+5$ | 4 |  | ash level in street (distinctive line in section) |
| CH248 | 5 |  | soft, ashy brown soil, compacted to a firm surface, s 255 |


| Locus | Level | Rm | Description | CH 607 | 8 |  | pottery layer |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CH 423 | 5 |  | fill of drainage channel | CH 610 | 8 |  | = and sb 607 |
| CH 433 | 7 | 71 | W wall of 71, 70, Level 6 Rm 610 | CH 619 |  |  | mixed material, between walls 277 and 474 |
| CH 434 | 7 | 610 | N wall of Rm 610 | CH 620 | 7/8 | 72 | cleaning of Rms 72 \& 73 (Ninevite 5 sherds) |
| CH 435 | 7 | 71,61 | E wall, plaster in SW corner scorched to | CH 621 | 7/8 | 710 | under floor of room |
|  |  |  | black powder (7) | CH 641 | 10/11 |  | mixed material, fourth millennium |
| CH 437 | 5 |  | lenses of ashy clinker, sb 418 | CH 660 |  |  | pit with mixed ED material |
| CH 438 | 5 |  | base of brick oven (?smelting furnace), | CH 691 |  |  | uncertain context |
|  |  |  | possible assoc. Level 4 working surface; | CH 698 |  |  | cleaning, ED/Uruk mix |
|  |  |  | levelling for cement floor 247 | CH 702 | 7 |  | street fill |
| CH 442 | 7 | 710 | scorched E wall, Rm 710; E wall Rm 65 | CH 703 | 7 |  | street fill, sb 702 |
| CH 443 | 6 | 65 | fill of room | CH 801 | 7 |  | below and assoc. with Level 7 walls |
| CH 445 | 6 | 61 | destruction debris, s 449 | CH 807 | 8 a |  | fill in pit |
| CH 447 | 5/6 |  | levelling for floor 436 (heavily scorched) |  |  |  |  |
| CH 449 | 6 | 61 | floor deposit, s. 450 | Area ER |  |  |  |
| CH 450 | 6 | 61 | burnt floor, sb 449, 13 jars, clay bulla | Locus | Level | Rm | Description |
| CH 453 | 4 |  | void of drain consisting of jar 346 and 4 | ER 1 |  |  | eroded surface material |
|  |  |  | medium-sized storage vessels, placed on their sides, with tops and bases | ER 10 | 1\&2 |  | floor surface, -1.38 m ; south of Rm 9 (number used for both Levels 1 \& 2) |
|  |  |  | removed, to form drain running below | ER 11 | 1\&2 |  | wall, bricks $30^{2} \times 12$ |
|  |  |  | wall 390 | ER 15 | 1\&2 | 7 | material on first floor |
| CH 454 | 6 | 65 | floor | ER 17 | 3 | 3 | earlier phase in rm 3 |
| CH 458 | 7 | 710 | floor | ER 24 | 3 |  | construction level for phase 2 building |
| CH 461 | 6 | 62 | large oven | ER 25 | 4 |  | 'below level 2 '; pottery may be mixed |
| CH 463 | 6 | 62 | void of firepit assoc. oven 461 | ER 26 | 4 | 29 | floor assoc. wall H |
| CH 467 | 5/6 |  | compressed material beneath kiln 438 | ER 27 | 5 | 43 | sounding at east end of Trench 1 |
| CH 469 | 6 | 610 | E wall | ER 28 | 5 | 43 | (also RmC in notebook) |
| CH 471 | 6 | 610 | make-up for floor 470/251 | ER 29 | 5 | 43 | grey ashy soil underlying floor |
| CH 473 | 6 | 62 | clayish loam | ER 30 | 5 | 43 | orange compacted layer $c .10 \mathrm{~cm}$ deep, |
| CH 474 | 7 | 610 | major retaining wall, continues in use |  |  |  | sb 29 |
|  |  |  | in Level 6 ( S wall of Rm 610) | ER 31 | 5 | 43 | hard grey layer sb 30 |
| CH 476 | 6 | 610 | burnt bricks and scorched plaster, collapsed oven | ER 32 | 5 | 43 | mixed orange and grey bricky deposit, over all Trench 1 , directly beneath 26 ; |
| CH 480 | 6 | 610 | lower wall collapse, bright red/yellow/juss |  |  |  | burnt rubble and charcoal |
| CH 484 | 6 | 610 | burnt plaster | ER 33 | 5 | 43 | Phase L destruction level, burnt brick |
| CH 485 | 6 | 610 | destruction material |  |  |  | and plaster |
| CH 490 | 6 | 610 | tumble of fallen brick | ER 35 | 5 | 29 | rm with corbelled doorway |
| CH 495 | 6 | 610 | oven, fill $=476$ | ER 36 | 5 | 29 | below floor 26 |
| CH 497 | 6 | 610 | stair assoc. wall 404 | ER 37 | 5 |  | compacted fill with ashy lenses, |
| CH 500 | 6 |  | destruction material, levelling for Level 5 |  |  |  | below 36 |
| CH 503 | 6 | 610 | deposit in oven | ER 38 | 5 |  | bricky collapse to -45 cm |
| CH 507 | 7 |  | thick ash deposit, wall 205 trenched | ER 39 | 5 | 29 | heavily burnt bricky layer, below 38 |
|  |  |  | into it | ER 40 | 4/5 | 27 | mixed, removal of final stub of wall J |
| CH 508 | 7 |  | buttress adjacent retaining wall 474 | ER 41 | 5 | 27 | soft, ashy deposit, $30-35 \mathrm{~cm}$ |
| CH 509 | 6 |  | conical bowl deposit beneath SE corner | ER 42 | 5 | 27 | bricky rubble, $10-15 \mathrm{~cm}$ deep |
|  |  |  | of bin 203-5 | ER 43 | 5 | 27 | 35 cm dense deposit of carbonized |
| CH 513 | 5 |  | section of wall, one build with 405 |  |  |  | grain, below 42; also pot full of grain dense layer of ashy soil ( $20-30 \mathrm{~cm}$ ), |
| CH 510 | 6 |  | deposit in street, sb 444 | ER 44 | 5 | 27 | dense layer of ashy soil ( $20-30 \mathrm{~cm}$ ), tannur in NW |
| CH 515 | 6 |  | street fill |  |  |  | tannur in NW tunnel cupboard |
| CH 519 | 6 |  | street fill, sb 515 | ER 45 | 5 |  | tunnel cupboard |
| CH 520 | 6 |  | street fill | ER 47 | 1 |  | uppermost deposit, Trench 2 |
| CH 521 | 6 |  | deposit in street, sb 519 | ER 54 | 1\&2 |  | first layer of occupation debris, |
| CH 525 | 7 |  | western wall, southern bldg |  |  |  | Trench 12 |
| CH 527 | 6 | 62 | primary deposit in oven 461 | ER 55 | 2 | 19 | hard orange floor surface |
| CH 540 | 6 |  | loose ash with high pot content, street | ER 56 | 1 |  | removal of topsoil |
| CH 541 | 7 a |  | as 548 | ER 68 | 1 |  | Trench 1 |
| CH 548 | 7a |  | fill south of retaining wall 474, sb 541 | ER 69 | 5 | 27 | grey brick and ash debris |
| CH 551 | 7a |  | terracing fill | ER 70 | 5 | 27 | as 69 |
| CH 552 | 7 | 76 | retaining wall for terrace fills, N wall | ER 80 | 5 |  | tunnel cupboard |
|  |  |  | rm 76 (rebuilt as 277) | ER 81 | 4 |  | platform |
| CH 563 | 7+ |  | terracing fill ( $=551$ ) | ER 86 | $2 ?$ |  | locus not given in notebook |
| CH 579 | 7 |  | street fill | ER 102 | 4 |  | 40 cm deposit overlying cobbled floor |
| CH 583 | 7/8 |  | ashy deposit, sherds, bones, sb 579 |  |  |  |  |
| CH 588 | 8/9 |  | ceramic level, joins with pots in Level 9 (mixed material) | $\begin{aligned} & \text { ER } 103 \\ & \text { ER } 104 \end{aligned}$ | 3 |  | mud-brick tumble, upper fill in Level 5 |
| CH 595 | ?8 |  | casemate in ED boundary wall |  |  |  | building, sq 2 |
| CH 599 | ?8 |  | casemate $=595$ | ER 109 | 4 |  | sq 6 |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| ER 110 | 4 |  | sq 6, below upper 4 walls down to orange plaster floor |
| ER 111 | 5 | 45 | sq 6, burnt debris in Level 5 |
| ER 112 | tb |  | removal of early Level 4 walls |
| ER 115 | 5 |  | sq 6, $=111$ |
| ER 118 |  |  | sq 6, cleaning, upper levels |
| ER 202 |  |  | above platform, sq 2 |
| ER 205 | $t$ |  | sq 8 |
| ER 206 | 3 |  | square box cut into platform |
| ER 210 | 4 |  | sq 7, platform |
| ER 212 | 4 |  | sq 8 , platform |
| ER 216 | 4 |  | sq 7, layer 3, overfired green pottery (join 221) |
| ER 217 | 4 |  | sq 8, layer 3, c. 15 cm above Level 5 walls |
| ER 218 | 4 |  | sq 7 , layer 3, below platform, v. large jars |
| ER 219 | 4 |  | sq 8 , layer 3 |
| ER 220 | 4 |  | below platform, burnt fill in sq 8 |
| ER 221 | 4 |  | sq 7, m layer 3 (join 216) |
| ER 222 | 3-4 |  | sq 7 |
| ER 223 | 5 | 41 | upper brick tumble, room fill |
| ER 224 | 3 |  |  |
| ER 227 | 5 | 42 | fill of room ( $42=$ room B in notebook) |
| ER 228 | 5 | 42 | room fill |
| ER 230 | 5 | 43 | room fill |
| ER 231 | 5 | 41 | room fill, upper brick tumble |
| ER 232 | 5 | 43 | fill on floor |
| ER 233 | 5 | 41 | fill on floor |
| ER 236 | 4 |  | above $\operatorname{Rm} 41$ / E, sq 12 |
| ER 237 | 5 | 41 | floor material |
| ER 238 | 5 | 46 | ( $=\mathrm{Rm}$ D) |
| ER 241 |  |  | sounding beneath Rm A floor $(-50-80 \mathrm{~cm}) \text { (layer } 8 \text { ) }$ |
| ER 242 |  |  | sounding, grey ash layer (layer 9) |
| ER 300 |  |  | sq 12, upper fill in MELM excavation |


| Area ST |  |  |  |
| :---: | :---: | :---: | :---: |
| Locus | Level | Rm | Description |
| ST 1 | 2 |  | c. 150 cm light brown wash, STA |
| ST 2 | 2 |  | pottery within walls, $=85$, STA |
| ST 3 | 2 |  | pottery from N part STA, mix 2-3 |
| ST 6 | 3 |  | floor assoc. wall 3, $=92$ |
| ST 8 | 4 |  | ashy level beneath cobbles, ctyd floor, STD |
| ST 9 |  |  | 'sump', STD |
| ST 11 | 2 | 2 | upper floor |
| ST 12 | 2 | 3 | upper floor (snake pot) |
| ST 13 | 2 |  | STF, general clearance |
| ST 25 | 3 | 2 | lower floor |
| ST 51 | 13 |  | ancient 'tip fill', layers of ash and grey clay |
| ST 52 |  |  | compact brown deposit, cuts 51, includes spoil \& fill of wadis 55,56 |
| ST 55 |  |  | wadi cut, seals Level 7 wall |
| ST 56 | 13 |  | old course of main wadi, cuts 51, sb 52 |
| ST 74 | 8 |  | floor $=132 / 134$, assoc. wall 96 |
| ST 76 | 10 |  | levelling fill, high percentage Uruk sherds, assoc. wall 99 |
| ST 81 | 9 |  | fill adj stub wall in upper trench |
| ST 85 | 2 |  | upper floor in STA and 1978 trench |
| ST 86 | 8 |  | = floor 74, assoc. wall 96 |
| ST 88 | 9 |  | broken brick |
| ST 90 | 13 |  | ashy soft fill under Level 13 walls |
| ST 91 | 13 |  | wall sherds |
| ST 92 | 3 |  | original floor in STA Akkadian bldg (frit bowl) |
| ST 96 | $s$ |  | bricks of wall 1 (cf. 74) |
| ST 97 | 10 |  | s 98, assoc. wall 99 |
| ST 98 | 12 |  | top of lower terrace wall, beneath wall 99 |


| Locus | Level | $\mathbf{R m}$ | Description |
| :---: | :---: | :---: | :---: |
| ST 99 | 10 |  | Level 10 wall |
| ST 100 | 4 |  | floor overrunning 'red libn bldg', assoc. 'hearth' 105 |
| ST 101 | 11 |  | bricky fill, sb 76 |
| ST 105 | 4 |  | hearth on surface 100 |
| ST 106 | 5 |  | walls of 'red libn bldg' |
| ST 107 | $5 ?$ |  | small unrecorded area excavated in 1980 |
| ST 110 | 5 |  | fill over floor 112, sb 100 |
| ST 111 | 6 |  | $=118$, uppermost phase of upper platform |
| ST 112 | 5 |  | ashy fill, red libn bldg |
| ST 116 | 6 |  | distinctive ash and cobble layer, sb 115 |
| ST 117 | 3 |  | clearing operation |
| ST 120 | 4 |  | wall |
| ST 123 | 4 |  | removal of 'enigmatic brick structure' dug in 1981 |
| ST 126 | 6 |  | bricky and ashy fill |
| ST 127 | 7 |  | wall |
| ST 128 | 7 |  | ashy fill, sb 116, s 132, assoc. wall 131 |
| ST 129 | 8 |  | late phase of upper platform, constr on 134 |
| ST 132 | 8 |  | ash and bricky fill $=134$, sb 128,131 |
| ST 134 | 8 |  | ash and bricky fill, assoc constr of latest massive platform |
| ST 135 | 8 ? |  | ash-filled pit |
| ST 137 | 10 |  | floor sb fill 136, runs up to platform |
| ST 145 | 10 |  | sloping orange plaster floor, s 146, sb 137 |
| ST 146 | 11 |  | fill sb 145 |
| ST 1004 | 1 |  | west of wall A (incl Level 2 pots) |
| ST 1005 | 2 | a | Akkadian floor west of wall A |
| ST 1006 | 2 | b | Akkadian floor, west of wall C (dark grey Stone Ware jar; 1413 |
| ST 1008 | 2 |  | room east of wall A |
| ST 1010 | 2 |  | area north of wall D |
| ST 1012 | 2 |  | north room east of wall A, sb 1002 (decayed floor), down to hard yellow layer |
| ST 1014 | 2 | c | floor, STA (rm with plinth) |
| ST 1101 | 14 ? |  | upper part of 1103 |
| ST 1102 | 13 |  | ashy ?floor, lowest part of trench |
| ST 1103 | 14 |  | fill with incised Ninevite 5 , horseshoelugged cooking vessels |
| ST 1104 | 14 |  | fill above orange plaster floor |
| ST 1105 | 13 |  | undefined ashy, bricky fill |
| ST 1106 | 14 |  | orange plaster floor |
| ST 1107 | 15 |  | sb 1106, assoc. brb, plain Nin 5 |
| ST 1108 | 15 |  | sealed material on floor |
| ST 1109 |  |  | loose brown spoil, lower part of trench |


| Area FS |  |  |  |
| :---: | :---: | :---: | :---: |
| Locus | Level | Rm | Description |
| FS 3 | 1 | 15 | hard white surface, west of G |
| FS 4 | 1 | 18 | oven fill |
| FS 7 | 1 | 16 | room fill, s 16 |
| FS 8 | 1 | 15 | room fill |
| FS 9 | 1 | 17 | room fill, s 24 |
| FS 11 | 1 a | 2 | disturbed fill (MELM rm 2) |
| FS 12 | 1 b | 18 | fill west of 1 ; ?levelling for RLB |
| FS 14 | 1 | 4 | disturbed upper fill |
| FS 16 | 2a | 16 | cobbled floor, sb 7 |
| FS 19 | 1 | 18 | W of W wall of 1, level 1/2, s 216 |
| FS 20 | 1 |  | very late phase 1; post-RLB white plaster floor |
| FS 22 | 1-2 |  | burnt earth with much pottery, S of rm 17 |
| FS 29 | 2a |  | ash layer, destruction level ( $\mathrm{C}^{14}$ sample BM-1970) |
| FS 30 | 2a | 17 | down to level of ovens |
| FS 35 | 2a | 6 | bathroom |


| Locus | Level | Rm | Description | Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| FS 40 | 2 | 4 | grey libn wall, rebuilt in Level 1 | FS 317 | 2b | 16 | room fill |
| FS 45 | 2 | 1 | E wall, Rm 1, GLB, $=321$; cut by | FS 318 | 3 | 3 | room fill |
|  |  |  | RLB construction | FS 320 | 3 a | 1 | east wall, RDB |
| FS 69, 71 | 2/1 |  | location not recorded | FS 322 | 3 | 8 | brick tumble, 2 b \& $3=325$ |
| FS 84 | 1 b | 15 | levelling for floor | FS 323 | 3 a | 1 | N wall of RDB |
| FS 88 | 2a | 14 | floor beneath Level 1, Rm 16 cobbled | FS 325 | 3 | 8 | courtyard fill |
|  |  |  | floor | FS 326 | 2 | 19 | drain running under wall 291 |
| FS 89 | 2a |  | oval pit cuts 88 | FS 327 | 3 a | 5 | latest 3a floor |
| FS 90 | 2a | 17 | silty buff fill, pre RLB | FS 329 | 4 | 5 | east wall |
| FS 92 | 2a | 17 | burnt level $=29$ (1981 C14 sample) | FS 330 |  |  | cutting access stair |
| FS 97 | 1 b | 1 | contents of large cooking pot (on floor 120) | FS 331 | 2b |  | sherd floor (?courtyard), sb 308, 315, |
| FS 99 | 2a | 4/17 | red libn wall (Level 1, Rm 4); grey libn (17) |  |  |  | s 332, 333, E of 322 |
| FS 104 | 2 b | 13 | paved stone floor, 'burnt horizon' | FS 332 | 2b |  | feature: upright, parallel sherds, |
| FS 108 | 2 a | 20 | soft fill; fill with inbuilt fittings, red-plastered walls, below 17, Level 1 | FS 333 | 2 b |  | orange clay surround, sb 331 shallow depression N of 332 |
| FS 109 | 2a | 23 | soft fill to east, similar 108 | FS 334 | 3 | 19 | mixed fill under N part of 315 , some 2 mix |
| FS 111 | 2a | 23 | small, L-shaped oven, within fill 108 | FS 338 | 3 | 1 | firm grey floor $=346$ |
| FS 125 | 2a | 23 | soft silt | FS 340 | 3 |  | brick tumble in baulk |
| FS 136 | 2 b | 18 | child burial, 2 skeletons | FS 342 | 3 | 8 | bricky $=322$ |
| FS 138 | 2 c | 19 | floor levels | FS 343 |  |  | modern fill in two pits excavated in |
| FS 140 | 2 a | 18 | top of well 507 (cuts Level 5, rm 2) |  |  |  | previous season |
| FS 141 | 2 b | 3-4 | series of floors | FS 346 | 3 | 8 | hard grey floor $=327,338$ |
| FS 151 | 2a | 24 | soft grey silt, similar 109 | FS 351 | 3 | 4 | floor in storeroom, large jars, $=1564$, |
| FS 156 | 2a | 20 | floor in room with inbuilt fittings, below 17, Level 1 | FS 354 | 3 |  | sb 339 fill <br> fill to east of Rm 3, ctyd |
| FS 157 | 2 | 20 | floor $=156$ | FS 355 | 3 |  | brick tumble outside Rm 3 |
| FS 159 | 1 b | 2,17 | construction fill below RLB | FS 359 | 3 |  | grey libn wall in N baulk, E of 5 |
| FS 166 | 2a | 5 | soft brown silt | FS 365 | 3 |  | succession of levels, some burnt, |
| FS 167 | 2a | 19 | uppermost floor, hard-packed brown clay |  |  |  | N of wall 362 |
| FS 173 | 2a | 6 | soakaway in pit 211, beginning of drain | FS 367 | 3 | 42 | deposits on floor, some burnt |
| FS 174 | 1 b | 1 | brown loam packed with pottery, | FS 374 |  |  | section cleaning (first level) |
|  |  |  | levelling for RLB | FS 375 |  |  | section cleaning, (second level) |
| FS 175 | 2a | 1 | dark loamy fill | FS 376 | 3 | 45 | $=367$ |
| FS 178 | 2 b | 16 | fill of burnt room | FS 380 | 4b | 44 | S wall of rm |
| FS 179 | 2a | 2 | burnt fill | FS 392 | 4 | 40 | tablet deposit, against platform on W side |
| FS 191 | 2a | 21 | oval pit | FS 393 | 1 |  | surface soil |
| FS 195 | 2a | 19 | floor of hard grey silt | FS 395 | 2 |  | baked bricks, feature above NW corner |
| FS 197 | 2a | 4 | burnt fill, red plaster floor |  |  |  | of Rm 46 |
| FS 198 | 2 b | 19 | soft loamy pit fill | FS 416 | 2 |  | fill N of Rm 46 |
| FS 200 | 2 a | 15 | hard packed red clay, s 202 | FS 424 | 2/3 |  | hard earth assoc. oven N of rm 42, ? late 3 |
| FS 202 | 2b | 15 | loose grey levelling fill with rubble, | FS 425 | 2 |  | fill under Level 1, Rm 25 \& upper fill, Rm 41 |
|  |  |  | s 265, 250 (also Rms 13-14) | FS 428 | 2/3 | 41 | tannur, ?late Level 3 |
| FS 203 | 2 b | 15 | child burial | FS 430 | 3 |  | deposit sb 425, E of Rm 41 |
| FS 209 | 2a | 22 | silty buff fill | FS 431 | 3 | 41 | fill, N end |
| FS 211 | 2a | 6 | soakaway, see 173, dug to c. -2.0 m | FS 435 | 2 |  | pot within locus 425, bronze object |
| FS 213 | 2 a | 22 | silty floor deposits |  |  |  | within (reg. no. 2385) |
| FS 217 | 2 b | 13 | circular pit containing pot 218 | FS 436 | 2/3 |  | tannur beside tannur 427 |
| FS 218 | 2 b | 13 | top half of large storage jar on top of | FS 437 | 3 |  | pottery beside tannur 436 (?late Level 3) |
|  |  |  | second larger jar, sb 104; in 217 | FS 438 | 3 |  | fill below 395 |
| FS 235 | 2 b | 13 | large pot at end of drain, below Rm 13 | FS 444 | 3 |  | fill E of tannurs 427, 436 |
| FS 237 | 2 b | 13-14 | small pit, sb 104, cuts 259 | FS 445 | 3 | 46 | tannur within Level 3 walls |
| FS 242 | 2 b | 14-15 | small pit, cuts 202 | FS 451 | 3 |  | below 444 |
| FS 243 | 2 c | 4-15 | oven, built up against jamb of door, sb 202 | FS 453 | 4 b | 46 | Level 3 wall, W side of rm |
| FS 254 | 2 c | 13-14 | rectangular pit for at least 2 ovens, incl 243 | FS 457 | 3 | 46 | below the tannurs in Level 3 room |
| FS 259 | 2 c | 13-14 | grey \& brown silt room fill | FS 466 | 2 | 43,44 | fill above Level 3 walls |
| FS 267 | 2 b | 13-14 | sooty deposit | FS 471 | 3 |  | fluted wall (Fig. 73), S of Rm 44 |
| FS 269 | 2 c | 21 | large pit | FS 478 | 4 a | 40 | fill assoc. tablets 392 |
| FS 291 | 2 b | 18 | $\mathrm{N}-\mathrm{S}$ partition wall, below 2a floor | FS 482 | 3 | 40 | floor |
| FS 293 | 2 a | 18-20 | E wall of GLB, overlaid by red libn wall | FS 483 | 2 | 40 | jar inserted from Level 2, visible in Fig. 61 |
| FS 301 | 2 b | 5 | clearance under room | FS 490 | 2 | 25 | rough paving beside soakaway fr |
| FS 304 | 2b |  | cleaning, incl destruction debris, |  |  |  | vertical drain (Fig. 63) |
|  |  |  | Level 3, S of baulk | FS 491 | 1 | 25 | fill within oval structure, W end |
| FS 308 | 2 b |  | cleaning | FS 494 | 2/3 | 40 | clearance of tannur, NW corner of rm, |
| FS 309 | 2b | 18 | pit containing a tannur, cuts 315, beneath 304 |  |  |  | ? late 3 |
| FS 315 | 2b | 19 | grey ashy fill, arbitrary distinction from 317 | FS 504 | 5 | 2 | floor |
| FS 316 | 3 | 1 | fill within RDB $(=1114 / 1105)$ | FS 505 | 3 a | 9 | floor |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| FS 500 | 3b | 9 | floor |
| FS 507 | 2 a | 18 | = well 140 ( 507 cuts Level 5, Rm 2) |
| FS 509 | 5 | 2 | bench, W side |
| FS 510 | 5 | 2 | W wall |
| FS 515 | 5 | 1 | W wall |
| FS 519 | $t$ | 9 | fill below 3b floor, lenses of ash ( N end of rm ) |
| FS 523 | 4/5 |  | pit sb E wall, L3 Rm 9 |
| FS 525 |  |  | 1987, surface cleaning |
| FS 527 | 4 | 44 | fill |
| FS 529 | 2/1 | 25 | fill below Level 1 |
| FS 532 | 4 |  | levelling fill above S wall, Level $5, \mathrm{Rm} 3$ |
| FS 536 | 4 |  | levelling fill above Level $5, \mathrm{E}$ wall, $\mathrm{Rms} 1,2$ |
| FS 539 | 4 | 4 | fill below 4 b floor |
| FS 540 | 4 |  | fill below 536, containing saluki 541 |
| FS 546 | 5 | 5 | fill above floor containing equid 565 |
| FS 548 | 5/4 | 1 | red plastered surface over levelling fill |
| FS 549 | 5 |  | rubbish deposit at foot of wall, sounding E |
| FS 551 | 5/4 |  | working surface below 548 |
| FS 554 | 5 |  | fill below 551 |
| FS 562 | 3/2 |  | fill above horizontal soakaway, see 490 |
| FS 563 | 2a |  | drainpipe, part of 490 |
| FS 564 | 5 |  | fill $S$ of rm 3 |
| FS 566 | 3/2 |  | topsoil over Rms 47, 48 |
| FS 570 | 3 | 47 | upper fill |
| FS 571 | 3 | 48 | upper fill, below 566 (?2/3) |
| FS 578 | 3 | 48 | fill below 571 |
| FS 580 | 5 | 3 | fill beside N wall |
| FS 592 | 3 | 47,48 | clearance to floor level |
| FS 598 | 3 |  | fill above floor, W of Rm 48 |
| FS 600 | 5 | 3 | bench against E wall |
| FS 603 | 3 |  | ash deposit fr tannur, ctyd W of 46 |
| FS 604 | 3 |  | silt layer below 598 |
| FS 605 | 3 | 47,48 | original floor |
| FS 606 | 4/3 |  | levelling fill below 603 |
| FS 607 | 3 | 47,48 | removal of walls |
| FS 610 | 3 | 47,48 | E wall |
| FS 612 | 5 | 1 | $l i b n$ \& plaster debris above floor |
| FS 620 |  |  | 1990, topsoil clearance |
| FS 621 |  |  | Mallowan dumps |
| FS 623 | 1 | 7 | W wall, sherd foundation (MELM exc.) |
| FS 627 | 2a | 46 | E wall of ctyd |
| FS 629 | 1 |  | fill above 2a, Rm 43 |
| FS 630 | 2/1 |  | E wall of house, rebuilt in 1 |
| FS 631 | 1 |  | fill E of 630 |
| FS 640 | 2 | 49 | lower fill |
| FS 641 |  |  | Mallowan spoil |
| FS 647 | 1 |  | N wall, Rm 25 |
| FS 649 |  |  | upper fill, old tell surface |
| FS 653 | 2 a | 49 | upper black floor, packing beneath |
| FS 654 | 2 b | 49 | lower black floor |
| FS 655 | 2 b | 49 | libn foundation, 2 courses |
| FS 661 |  |  | MELM dump |
| FS 662 | 2 | 48 | upper rm fill |
| FS 663 | 2 | 47 | upper rm fill |
| FS 666 | 2 b | 47,48 | N wall of house, S side of street |
| FS 668 |  | 57 | W side; grey pisé; sherds, bones beneath |
| FS 673 |  |  | MELM fill |
| FS 675 | 2 |  | pebble surface, sherd street, N of 666 |
| FS 676 | 2 | 58 | E wall, pisé core |
| FS 677 | 2b | 54 | W wall |
| FS 680 | 2 | 57 | fill adj 668 |
| FS 681 | 2 | 57 | lower fill, broken brick |
| FS 682 | 2 | 57 | as 681 |
| FS 684 | 1 |  | levelling fill beneath Rm 25 |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| FS 687 | 2 |  | grey plaster floor, betw 54, 58 |
| FS 689 | 2 | 58 | fill with sea-bream (p. 66) |
| FS 694 | 2 b | 57 | broken libn above floor, NW corner |
| FS 696 | 2b | 46 | thick ash level above 697 |
| FS 697 | 2b | 46 | grey plaster floor, \& levelling fill, N end ctyd |
| FS 698 | 2 b | 57 | grey brick bin, later incorporated in 668 |
| FS 700 | 2 b | 57 | tannur |
| FS 704 | 2 b | 48 | original floor |
| FS 705 | 2 | 57 | grey libn platform, SW corner |
| FS 706 | 2b | 46 | orig floor, S end ctyd, $=697$ |
| FS 717 | 2 |  | broken libn fill, N of Rm 54 |
| FS 719 | 2 b | 49 | levelling fill below $655(2 / 3)$ |
| FS 729 | 2c | 57 | earliest floor |
| FS 733 | 3 |  | wall, partly under Level $2, \mathrm{Rm} 58 \mathrm{~N}$ wall |
| FS 738 | 2c |  | sloping surface below L2, Rm 49 |
| FS 739 | 3 | 21 | brick tumble on S side of street |
| FS 746 | 3 | 15 | grey brick fill, pre-Level 2 |
| FS 757 | 3 | 16 | fill above floor |
| FS 769 | 1 |  | pit/ cistern, cuts Level 2 Rm 53 |
| FS 789 | 3 a | 19 | deposits on 790 |
| FS 790 | 3 a | 19 | white plaster floor |
| FS 796 | 4/3 |  | upper fill below 790, over Level 5 |
| FS 798 | 4 |  | fill below 796 |
| FS 800 | 4 |  | fill below 798 |
| FS 801 | 4 |  | fill below 800 |
| FS 802 |  |  | baulk removal |
| FS 803 | 5 | 7 | upper fill, s 810 |
| FS 807 | 5 | 4 | fill above floor |
| FS 809 | 5 | 13 | lower fill, N doorway |
| FS 810 | 5 | 7 | lower fill below 803 |
| FS 813 | 5 |  | wall between Rms 2 and 13 |
| FS 814 | 5 | 4 | N wall |
| FS 815 | 5 | 13 | floor of Rm 13, extending into Ctyd 5 |
| FS 816 |  |  | topsoil, E end of E-W baulk |
| FS 818 | 1 |  | floor, E end of baulk |
| FS 820 | 2/1 |  | fill below 818 |
| FS 821 |  |  | slope of original tell, below 816 |
| FS 832 | 2 | 55 | upper fill, below 821 |
| FS 837 | 2 | 54 | floor, s 847 |
| FS 842 | 2 |  | floor E of 55,56; cb edge of tell 321 |
| FS 846 | 2 |  | floor N of 54, $=842$ |
| FS 847 | 3/2 | 54 | fill below 837 |
| FS 853 | 3 |  | broken libn, E end of baulk |
| FS 854 | 3 |  | floor, E end of baulk, ?destruction level |
| FS 858 | 5 |  | fill below 854, within upper walls |
| FS 862 | 5 | 14 | upper deliberate infill |
| FS 863 | 5 | 14 | fill above floor |
| FS 868 | 5 | 5 | sloping layers of deliberate fill for construction of Ctyd 5,6 |
| FS 870 | 5 | 5 | infill for construction of Level $5 \mathrm{bldg}=868$ |
| FS 879 | 6 |  | wall of bldg underlying FSTC (sounding D, Fig. 60) |
| FS 881 | 7 |  | wall in sounding D |
| FS 886 | 7 |  | floor of Level 7 building |
| FS 888 | 8 a |  | wall of small rectangular room, sounding D |
| FS 889 | 8 a |  | fill within wall 888 , sounding D |
| FS 890 | 8 a |  | floor below 889 |
| FS 891 | 8 a |  | uppermost floor, sounding D, room assoc. 888 |
| FS 894 | 8 a |  | floor within sounding D |
| FS 896 | 8 b |  | floor within sounding D, sb 894 |
| FS 897 | 8 b |  | massive walls, sounding D |
| FS 898 | 5 |  | jar inserted from base of fill/cobbling; probably head of drain |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| FS 1001 |  |  | topsoil over W half of 2a house, S of baulk |
| FS 1002 |  |  | $=1001$, incl MELM spoil |
| FS 1007 | 2a | 29 | pit, $W$ side of rm |
| FS 1013 | 2 | 27 | upper fill |
| FS 1014 | 3/2 |  | upper fill, passage betw Rms 2,3, Level 3 |
| FS 1015 | 2 b | 2 | burnt fill |
| FS 1016 | ? 1 |  | upper fill, removal of baulk over Level 2 |
| FS 1017 | 2a | 31 | fill above floor |
| FS 1020 | 2a | 2 | pit, E end of rm |
| FS 1026 | 2a | 27 | fill above counter with half jars |
| FS 1028 | 1/2a | 27 | fill above E wall |
| FS 1030 | 2a | 27 | $=1026$ |
| FS 1031 | 2a | 5 | fill above floor |
| FS 1036 | 2a | 31 | lower fill $=1017$ |
| FS 1041 | 1/2a | 4 | fill over $S$ wall |
| FS 1044 | 2a | 4 | large pit in middle of rm |
| FS 1045 | 3 | 3 | top fill |
| FS 1046 | 2 | 27 | libn bin in NW corner |
| FS 1047 | 3 |  | lower fill, below FS 1014 |
| FS 1054 | 2a | 27 | material assoc. 3 half-jars on counter |
| FS 1056 | 2a |  | fill below E wall Level 2a, passage 7 |
| FS 1061 | 3 | 3 | room fill, s floor 1067 |
| FS 1062 | 2a | 27 | fill on \& beneath latest floor, s 1063 |
| FS 1063 | 2 b | 27 | floor with ash, below 1062 |
| FS 1064 | 2a | 3 | lower fill |
| FS 1067 | 3 | 3 | floor, sb fill 1061, some burning |
| FS 1083 | 2a | 3 | removal of N wall |
| FS 1088 | 3 | 1 | fill, $W$ end of rm, to floor |
| FS 1093 | 2a | 3 | material on floor |
| FS 1105 | 3 | 1 | fill, NE corner, $=1088$ |
| FS 1106 | 3 | 1 | floor |
| FS 1107 | 2a/2b |  | robber shaft in 1106 (to tomb 1118) |
| FS 1116 | 3 | 1 | fill above floor, S side |
| FS 1117 | 3 | 8 | fill on ctyd surface |
| FS 1118 | 2 b | 1 | vaulted tomb chamber (see 1107) |
| FS 1122 | 3 | 1 | W wall |
| FS 1124 | 2 | 33 | topsoil \& upper fill (1 mix) |
| FS 1127 | 2 | 28 | W \& S wall, W end |
| FS 1137 | 2 |  | 'Uruk' fill, W of Level 3, Rm $2=1148$ |
| FS 1142 | 2 | 33 | lower fill |
| FS 1146 | 2 | 31 | fill above floor, W end |
| FS 1148 | 2 |  | deliberate fill on tell slope, W of 31, $32=$ 'Uruk fill' |
| FS 1154 | 2a | 28 | fill on and above floor, W end |
| FS 1155 | 2 |  | Uruk fill outside W wall, Rm 31 |
| FS 1166 | 2 | 33 | fill below W wall |
| FS 1168 | 3 | 6 | W wall |
| FS 1169 | 3 |  | upper fill ('Uruk'), W of Rms 6, 13 |
| FS 1171 | 2 |  | deposit with patch of cobbles, top of 'Uruk' fill |
| FS 1173 | 3 | 6 | fill, $S$ end |
| FS 1180 | 2a | 28 | pit in floor, W end |
| FS 1184 | 2 |  | $=1137$ 'Uruk' fill |
| FS 1185 | 2 |  | 'Uruk' fill, W of Level 3, Rm 6 |
| FS 1187 | 2 |  | W of 1148 ('Uruk' fill) |
| FS 1188 | 3 | 2 | lower fill, W end |
| FS 1194 | 2 |  | lower Uruk fill, below 1185, crushed libn \& loam |
| FS 1198 | 3 | 8 | broken libn over W wall |
| FS 1199 | 3 | 2 | upper fill, E end, o 1200 |
| FS 1200 | 3 | 2 | fill below 1199 |
| FS 1213 | 2 | 23 | N wall |
| FS 1219 | 2 | 29 | upper fill, W end (baulk removal) |
| FS 1230 | 2 | 30 | upper fill, W end (baulk removal) |
| FS 1248 | 2a | 31 | fill above floor, W end |
| FS 1253 | 2 | 33 | baulk removal (Uruk fill) |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| FS 1275 | 2 | 33 | baulk removal (Uruk fill) |
| FS 1282 | 3 |  | fill above ground surface, W of Rm 6 |
| FS 1284 | 3 |  | lower fill, W of Rm 2 |
| FS 1285 |  |  | fill below 1284, over terrace wall |
| FS 1292 | 3 | 2 | floor |
| FS 1296 | 3 | 6 | lower fill |
| FS 1303 | 3 |  | upper fill, W of Rm 2 |
| FS 1305 | 3 | 4 | surface soil, S side of rm |
| FS 1306 | 3 | 4 | fallen libn, below 1305 |
| FS 1309 | 3 | 1 | material on floor, E end |
| FS 1311 | 3 | 1 | material on floor, W end |
| FS 1313 | 3 | 13 | floor |
| FS 1314 | 3 | 1 | fill in baulk, middle of rm |
| FS 1325 | 3 |  | fill to east of Rms 3,4 |
| FS 1326 | 3 |  | fill E of Rms 3,4 |
| FS 1328 | 3 | 1 | floor \& fill just below |
| FS 1346 | 3/2 |  | W of terrace wall, N of Rm 9 (?Uruk fill) |
| FS 1349 | 3 |  | ground surface N of Rm 9 |
| FS 1350 | 3 |  | lower fill, E of Rm 9 |
| FS 1352 | 3 | 8 | E end, lower fill |
| FS 1353 | 3 | 8 | fill below 1350 |
| FS 1361 | 5 | 1 | upper deliberate fill, NE corner |
| FS 1362 | 3 | 5 | fill above floor |
| FS 1363 | 3 | 5 | ash layer below 1362 |
| FS 1364 | 3 | 1 | W end, material on floor |
| FS 1369 | 5 | 1 | deliberate infill, NW corner |
| FS 1370 | 5 | 2 | deliberate infill, S end |
| FS 1374 | 3 | 1 | material on floor |
| FS 1380 | 5 | 1 | infill, W side, $=1369$ |
| FS 1382 | 5 | 2 | infill, $S$ end |
| FS 1383 | 5 | 2 | material on floor |
| FS 1396 |  |  | topsoil over Level 3, Rms 41-45 |
| FS 1402 |  |  | upper fill, baulk |
| FS 1403 |  |  | MELM dump |
| FS 1414 | $2 ?$ |  | pit for oven, below 1396 |
| FS 1415 | $2 ?$ |  | fill above Level 3, Rms 10,11 |
| FS 1417 | 2 |  | broken libn, ? Uruk fill |
| FS 1435 | 2 |  | fill below 1402 |
| FS 1436 | 2 |  | fill above Level 3, Rm 2 N |
| FS 1439 | 3 |  | lower fill, S of Rm 10 |
| FS 1447 | 3 | 10 | collapse within Rm 10 |
| FS 1450 |  |  | topsoil above Level 3, Rm 9 |
| FS 1451 | 3 | 11 | floor, sb 1460 |
| FS 1452 | 3 |  | lower fill, W of Rm 10 |
| FS 1453 | 3 | 10 | fill on floor |
| FS 1460 | 3 | 11 | collapse within room |
| FS 1461 | 3 | 9 | fill within rm, on floor |
| FS 1465 | 2 |  | Uruk fill, E of L3, Rm 10 |
| FS 1467 | 3 |  | fallen libn, E of Rm 10 |
| FS 1471 | 2 |  | upper Uruk fill, S of Rm 9 L3 |
| FS 1472 | 3 |  | fallen libn, below 1471 |
| FS 1475 | 3 | 9 | burnt debris on original floor |
| FS 1476 | 4 |  | upper fill, betw L3 Rms 9,10 |
| FS 1477 | 4/5 |  | E-W gully in fill below 1476 |
| FS 1478 | 3 | 12 | fallen libn on cobbles, E end |
| FS 1493 |  |  | 1987 season, upper fill, sounding B |
| FS 1494 | 3 |  | upper fill over Rm 3 |
| FS 1500 | 2 |  | pit/? soakaway for Rm 6 drain (mix) |
| FS 1515 | 3 | 3 | upper fill, broken libn |
| FS 1524 | 3 | 3 | north doorway |
| FS 1525 | 3 | 3 | fill, s floor 1529 |
| FS 1527 | $5 ?$ |  | tannur, upper fill below Level 3 |
| FS 1529 | 3 | 3 | floor, sb 1525 |
| FS 1530 | 5 | 1 | upper fill over porch and S doorway |
| FS 1536 | 4 |  | floor below 1530 |
| FS 1538 |  |  | removal of baulk N of 1530 |


| Locus | Level | Rm | Description |
| :--- | :---: | :---: | :--- |
| FS 1539 |  |  | removal of N-S baulk above L3 Rms 3,4 |
| FS 1541 | 4 |  | upper fill below L3, Ctyd 8 floor |
| FS 1542 |  |  | =1539 |
| FS 154n | 3 | 8 | sherd pavement outside N door, Rm 3 |
| FS 154s |  |  | = 1541, W of Level 3, Rm 3 |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| FS 1728 |  |  | fill below 1727, on floor |
| FS 1738 | 3 | 14 | floor, W of 1726 |
| FS 1741 | 3 | 23 | tannur under bench, NW corner |
| FS 1755 |  |  | cleaning of earlier excavations, L3, N |
| FS 1757 | 3 | 28 | floor |
| FS 1758 | 3 | 31 | $=2240$, fill on floor |
| FS 1760 | 2 | 57 | bin/pit?, red plaster lining, cuts 729 |
| FS 1766 | 3 | 19 | fill, s 1778 |
| FS 1767 | 2 | 58 | E wall |
| FS 1768 | 2 |  | fill E \& W of 1767 |
| FS 1770 | 3 | 19 | fill |
| FS 1773 | 3b | 22 | sb floor 1709 |
| FS 1774 | 3b |  | floor, W of 1726, sb 1767 |
| FS 1776 | 3 |  | external surface E of 16 \& Ctyd 19 |
| FS 1778 | 3 | 19 | ctyd surface |
| FS 1780 | 4 |  | upper fill, below L3 Rms 15, 17 |
| FS 1789 | 5 |  | deliberate infill below 1780 |
| FS 1792 | 4/5 |  | fill below L3, Rm 14 |
| FS 1796 | 3 |  | fill S of Rm 3 |
| FS 1799 | 3 |  | floor below 1796 |
| FS 1804 | 3 |  | broken libn \& floor fill, E of Rm 30 |
| FS 1808 | 5 |  | = 1789 |
| FS 1809 | 5 | 10 | N wall |
| FS 1813 | 5 |  | upper fill, betw Rms 11, 12 |
| FS 1818 | 5 | 8 | 'trample', ? destruction debris |
| FS 1821 | 5 | 8 | fill, E end |
| FS 1823 | 5 | 41 | S wall of temple |
| FS 1825 | 5 | 8 | floor |
| FS 1826 | 5 | 8 | floor |
| FS 1829 | 5 | 11 | floor |
| FS 1830 | 5 |  | 'trample' ?, $=1818$ |
| FS 1833 | 5a |  | east wall of storehouse, west of passage 9 |
| FS 1834 | 5 | 6 | 'trample' on ctyd floor = 1818, 1830 |
| FS 1854 | 2 a | 41 | 1992 season, rm fill |
| FS 1856 | 2a | 42 | rm fill to floor |
| FS 1860 | 2a | 41 | removal of pink plaster floor |
| FS 1866 | 2a | 40 | wall betw Rms 40, 42 |
| FS 1867 | 2a | 41 | W wall |
| FS 1869 | 2/3 |  | debris below L2, Rms 40-44 |
| FS 1873 | 2b | 42 | room fill |
| FS 1875 | 2 |  | spit of mixed debris ( E area of sq), ?2/3 |
| FS 1876 | 2 b | 41 | rm fill, sb 1875, s 1883 |
| FS 1883 | 5 |  | at top of FSTC walls, above Rm 41 |
| FS 1885 | 5/4 |  | densely packed debris above FSTC |
| FS 1886 | 5/4 |  | soft layers, high organic/phytolith content many still articulated as reeds, above 41 |
| FS 1887 |  |  | removal of $S$ baulk |
| FS 1891 |  |  | tell surface, mixed debris |
| FS 1892 | 3 |  | patches of pink floor on hard packing, $\text { s } 1893$ |
| FS 1893 | 4/5 |  | mixed deposit $=1885$, 'ritual deposit ${ }^{\prime}$ on FSTC |
| FS 1897 | 4 |  | mixed debris on FSTC, N part of bldg |
| FS 1898 | 5 | 42 | fill, sb 1897, s 1899 |
| FS 1899 | 5 | 42 | lower fill, high phytolith incl reeds, often burnt |
| FS 1901 | 5 | 42 | clearance, W end, sb 1899 |
| FS 1904 | 5 | 43 | upper fill in ctyd, N end |
| FS 1906 | 5 |  | mix, N of N wall (incl 1896 equid), s 1907 |
| FS 1907 | 5 |  | heavily burnt material, sb 1906, ?contamination |
| FS 1908 | 5 | 41 | upper fill (cella), s 1909 |
| FS 1909 | 5 | 41 | lower fill, s 1911, sandy lenses, burnt patches |
| FS 1911 | 5 | 41 | deposit above floor, ash $+2-3 \mathrm{~cm}$ trample |


| Locus | Level | Rm | Description | Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| FS 1914 | 5 | 42 | pit fill, NE corner, ?search for deposit | FS 2302 | 2 |  | topsoil over L3 Rms 30, 37, 38 |
| FS 1916 | 5 | 42 | lower rm fill, mixed burnt debris | FS 2303 | 2/1 |  | upper fill, S of L2 Rms 35,38 |
| FS 1920 | 5 | 43 | lower fill (ash, thin trample, green ash) | FS 2305 | 2 |  | compact white surface, ?open area, |
| FS 1922 | 5 | 42 | orange plaster, sb 1916 (upper of 5 floors) |  |  |  | sb 2303 |
| FS 1923 | 5 | 42 | brick packing under antecella floor | FS 2306 | 2 |  | fill below 2302 |
| FS 1924 | 6 |  | below antecella, ?Level 6 building level | FS 2310 | 2/1 |  | upper fill, E end of rm S of Rm 39 |
| FS 1925 | 6 |  | hard compacted debris, sb 1928, 1929 | FS 2311 | 2 |  | E wall, rm S of Rm 39 |
| FS 1927 |  |  | mixed bricky debris, antecella | FS 2312 | 2 b | 34 | fill of storerooms |
| FS 1929 | 6 |  | sounding, pre-Level 6 wall sb 1923, beige brick | FS 2313 | 3 |  | fill between Rms 30,38, mix with MEL M fill |
| FS 1930 |  |  | wall sb 1927, pre-Level 6, beige brick | FS 2315 | 2 | 34 | open area S of Rms 35,38,39 |
| FS 1932 |  |  | wall sb 1923, beige brick, 4-5 courses | FS 2316 | 2 | 34 | rm fill, sb 2305; much pottery in bin |
| FS 1938 |  |  | 1993 season, old spoil | FS 2317 | 2 | 38 | room fill, sb 2315 |
| FS 1941 |  |  | fill S of L3 wall, sb old spoil heap | FS 2318 | 3 | 38 | fill, s floor 2336 |
| FS 1943 | 3 | 34 | fill, s 1951 | FS 2319 | 2 | 39 | plastered floor, ash, grindstones |
| FS 1946 | 3 | 35,36 | fill on floors | FS 2320 | 2 |  | fill S of Rms 35,38,39 |
| FS 1951 | 3 | 34 | floor | FS 2321 | 3 | 37 | courtyard fill includes oven/tannur |
| FS 1953 |  |  | mixed fill below L3 walls |  |  |  | s surface 2322 |
| FS 1954 | 3 |  | s 1955, 1956 | FS 2323 | 3 |  | fill against outer face, S wall, Rm 30 |
| FS 1955 |  |  | silty deposits over L5 collapse, sb 1954, s 1957 | FS 2324 | $5 a$ 2 | 30 36 | room fill 2 tannurs, fill, many sherds |
| FS 1956 | 5 | 43 | material on S wall rm 43, sb 1954 | FS 2329 | 2 | 36 38 | 2 tannurs, fill, many sherds walls |
| FS 1957 | 5 | 43 | infill, slopes W to E, sb 1955 | FS 2330 | 2 | 36 | rm fill, sb 2327 |
| FS 1958 | 5 | 43 | ritual deposit | FS 2331 | 2 | 37 | rm fill, sb 2337 |
| FS 1959 | 5 | 43 | large pit, SW corner, cuts wall corners | FS 2335 | 2 |  | fill, Ctyd N of Rms 36,37,39 (?mix) |
| FS 1960 | 5 | 43 | $3-5 \mathrm{~cm}$ trample, upper surface burnt | FS 2337 |  |  | MELM fill, W of L2, Rm 43 |
| FS 2200 | 2 | 55 | floor | FS 2338 |  |  | $=2337$ |
| FS 2201 | 2 | 54 | W wall | FS 2339 |  |  | fill over N wall, L1, Rm 20 |
| FS 2204 |  |  | topsoil over L 2, Rms 42-43 | FS 2345 | 2 | 34 | material on storeroom floor |
| FS 2210 | 2 |  | upper fill, sb 2204 | FS 2346 | 2 | 34 | walls |
| FS 2211 | 3 | 31 | fill | FS 2348 | 2 | 34 | plaster floor \& sherd layer beneath |
| FS 2212 | 3 | 32 | upper fill | FS 2351 |  |  | ?kiln fill |
| FS 2214 | 2 | 42 | upper fill, $W$ end | FS 2354 | 2 |  | fill, sb 2335 |
| FS 2215 | 2 |  | kiln, N of 42 | FS 2355 | 2 |  | fill, below 2320 |
| FS 2217 | 2 | 42 | lower fill, sb 2214 | FS 2356 | 5a | 33 | structure in W section, rm fill |
| FS 2218 | 3 | 32 | bin in NE corner |  |  |  |  |
| FS 2219 | 2 |  | floor assoc kiln 2215 | Area SS |  |  |  |
| FS 2220 | 2 | 42 | fill above floor, W end | Locus | Level | Rm | Description |
| FS 2222 | 2 | 43 | N wall | SS 2 |  |  | topsoil |
| FS 2227 |  |  | topsoil over L2, Rms 42, 43, E end | SS 3 |  |  | topsoil |
| FS 2233 | 2 b |  | fill below W end Rms 42, 43 \& W wall | SS 6 | 1 |  | first appearance of libn |
| FS 2236 | 3 | 31 | fill above floor | SS 11 |  |  | cutting section |
| FS 2237 | 3 | 31 | $=2236$ | SS 14 | 1a |  | ovens |
| FS 2239 | 3 | 32 | fill on floors 2255 | SS 18 |  |  | 2nd-mill. sherds, area E of wall 2 |
| FS 2240 | 3 | 31 | fill on floor; $=1758$ | SS 21 |  |  | Tr B, 1984 |
| FS 2243 | 3 | 32 | hole in floor; $=2251$ | SS 24 |  |  | not identified |
| FS 2246 | 3 | 32 | bin, SE corner | SS 25 | 1 |  | deposit with ovens 14,15 |
| FS 2248 | 3 | 32 | fill above upper floor in bin 2218 | SS 26 | 1 |  | Tr A, SW corner, $=25$ |
| FS 2249 | 3 | 31 | floor, sb 2240, s 2266 | SS 30 |  |  | Tr B , cleaning |
| FS 2250 | 5 | 9 | upper fill below L3 | SS 31 | 1 a |  | level below 25, 26 |
| FS 2252 | 3 | 31 | bench against E wall | SS 33 | 1 a |  | -88 cm , occup level under 31 |
| FS 2259 | 3 | 32 | lower NE corner of floor 2255 | SS 35 |  |  | not identified |
| FS 2262 | 3 | 31,32 | E wall | SS 36 |  |  | not identified |
| FS 2263 | 3 | 32 | animal hole | SS 37 | 1 a |  | below 19/25 |
| FS 2265 | 5 | 32 | silt on juss floor | SS 38 | 1a |  | Tr B, -85 cm |
| FS 2266 | 3 | 31 | plastered floor (?foundation) | SS 39 | 1 a |  | Tr B, NE |
| FS 2270 | 5a | 31 | juss floor | SS 40 | 1 |  | Tr A, pit, soft bl fill, cut by 50 |
| FS 2282 | 5a | 9 | hard compact surface in passage west of temple | $\begin{aligned} & \text { SS } 50 \\ & \text { SS } 51 \end{aligned}$ | 1 |  | sm feature cut into 49/50 Tr B, fill sb 30 s 63 |
| FS 2283 | 5a | 9 | passage surface | SS 55 | 1 |  | Tr B, libn tumble, s 80; ?1/2 |
| FS 2284 |  | 9 | ashy level sb 2283, plaster fragments | SS 56 | 1 |  | Tr B, fill, sb 30 |
| FS 2287 | 5 | 9 | red libn levelling | SS 62 | 2 |  | jar; cuts 63 (?1/2) |
| FS 2288 | 5 | 9 | grey bricky fill, adjacent temple | SS 63 | 2 |  | Rm B fill, ?uppermost floor |
|  |  |  | foundations | SS 64 | 2 |  | Tr B, N, s 85, 114 |
| FS 2290 | 5 | 9 | hard clay surface in passage, earliest 5 | SS 67 | 1 |  | fill, sb 46 |
| FS 2292 | 1 | 22 | upper fill in ctyd | SS 70 | 1 |  | yellow fill |


| Locus | Level | $\mathbf{R m}$ | Description | Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SS 71 |  |  | not identified | SS 250 | 3 | , | floor (fig. 130) |
| SS 75 | 2 |  | Tr B, floor, sb 63 | SS 252 |  |  | topsoil in sq 7 |
| SS 80 | 2 |  | grey fill | SS 253 | 3 |  | floor \& fill sb 245 (?mix) |
| SS 83 | 2 |  | fill, Rm B , sb 75 | SS 254 |  |  | surface clearance, S slope SSTC |
| SS 85 | 2 |  | pit, sb 64 | SS 255 |  |  | south slope, ?3/4 |
| SS 88 | 2 |  | Tr A, dark grey fill, ?kiln | SS 258 |  |  | mixed fill, sq 7, cb pit 262 |
| SS 90 | 2 |  | grey ashy fill, merges with 94 | SS 259 | 3 |  | sq 3, upper street fill, Fig. 130 |
| SS 94 | 2 |  | Tr B, floor debris \& fill | SS 262 |  |  | pit with 2nd-mill. pottery, sq 7 |
| SS 95 | 2 |  | Rm A fill | SS 266 |  |  | oven, below topsoil, sq 3 (tablet; ?2/3) |
| SS 100 | 2 |  | baulk removal | SS 272 | 3 | 4 | fill above floor 2 |
| SS 106 | 2 |  | = 89 clinker layer, much basalt | SS 276 | 3 | 4 | second phase of Level 3 wall |
| SS 108 | 2 |  | gritty pit fill, s fill 116 | SS 278 | 3 | 4 | fireplace in sq. 3 |
| SS 110 | 2 |  | brown powdery fill, s 130 | SS 279 | 2 |  | pit in sq 3 (cf. 232) |
| SS 113 | 2 |  | lumpy fill, N of wall 119, 3135 | SS 280 | 4 | 2 | fill above floor 1, sb 240 |
| SS 116 | 2 |  | depression filled with stones | SS 286 | 5 | 2 | fill below floor 1 (mb, silt + ash) |
|  |  |  | ? drain 111; sb 108 | SS 289 | 3 | 4 | latest version of east wall of Rm 4 |
| SS 119 | 1 |  | red libn wall, built on 2 wall | SS 296 | 4 | 6 | libn debris |
| SS 124 | 2 |  | Rm B wall; pottery as 136 | SS 300 |  |  | topsoil, S slope |
| SS 129 | 2 |  | red grey fill, betw 119 \& 120 | SS 302 | 4 | 18 | upper fill, $=310$ |
|  |  |  | sb cobbled surface 118 | SS 303 | 4 |  | cleaning W of Rm 18 (incl. goblet deposit) |
| SS 130 | 2 |  | $\operatorname{Tr} A$, hard packed grey fill \& libn | SS 310 | 4 | 18 | upper fill |
| SS 131 | 2 |  | floor below red-plastered bldg, s 138 | SS 312 | 4 | 18 | pot deposit S of SW corner of rm |
| SS 135 | 2 |  | fill, sb 113, 119, s 140 (?3) | SS 314 |  |  | baulk clearance |
| SS 136 | 2 |  | levelling fill, sb 116 (?2/3 mix) | SS 316 | 4 | 4 | fill (below Level 3 wall 297) |
| SS 138 | 2 |  | powdery libn fill, $2 / 3$ boundary | SS 317 |  |  | cleaning in sq 3 |
| SS 140 | 2 |  | fill below 135 (?2/3 mix) | SS 318 |  |  | MELM debris |
| SS 141 | 2 |  | = 138, s 146 | SS 322 | 4 | 7 | fill above juss pavement |
| SS 142 | 2 |  | oven (2/3) | SS 323 | 3 |  | sq 6, cleaning pit |
| SS 146 | 3 |  | grey fill, burnt (= Level 3 destr level) | SS 325 | 6 |  | wall below SSTC (Fig. 133) |
| SS 148 | 3 |  | lumpy red fill | SS 326 | 6 |  | tannur, Fig. 133 |
| SS 149 | 3 |  | pit, grey silty fill | SS 327 | 6 |  | single line of mud-brick |
| SS 150 | 3 |  | stones, libn lumps (?pit/levelling) | SS 329 | 7 |  | wall S of 325 |
| SS 152 | 2 |  | black gritty fill (?2/3) | SS 330 |  |  | wall associated with floor 334, two |
| SS 153 | 2 |  | pit/levelling fill ( ${ }^{\text {2/3 }}$ ) |  |  |  | construction phases; overlaid by |
| SS 169 |  |  | cleaning |  |  |  | isolated lenses of plaster floor shown at |
| SS 172 | ?2/3 |  | cleaning, prob. 3 |  |  |  | top of section, Fig. 133. |
| SS 175 | 4 |  | red clay packing over SSTC | SS 331 |  |  | plastered bins, cf. 330 |
| SS 176 | 4 |  | below 175 | SS 332 |  |  | wall (?6/7) |
| SS 179 | 4 |  | fill below 176 | SS 333 | 7 |  | wall, cuts 342 (Fig. 133) |
| SS 200 | 3 |  | 1987 season, top fill, MELM trench | SS 334 | 6 |  | red plaster floor in sounding below |
| SS 201 | 3 |  | upper floor, N of Rm 1 | SSTC |  |  | (cf. 330) |
| SS 202 | 3 |  | fill W of 201 | SS 336 | 6 |  | hearth, Fig. 133 |
| SS 203 | 4 | 1 | room fill | SS 338 | 6 |  | fill $W$ of wall 329 |
| SS 204 | 4 | 1 | floor | SS 341 | 6/7 |  | fill betw walls 332,342 |
| SS 206 | 3 |  | upper room fill, above Rm 4 | SS 342 | 8 |  | wall N of $332, \mathrm{cb} 333$ |
| SS 207 |  |  | topsoil | SS 351 | 7 |  | fill above lowest floor, sounding Fig. 133 |
| SS 211 |  |  | topsoil | SS 354 | 7 |  | lowest floor and fill below, sounding |
| SS 212 |  |  | topsoil | SS 356 | 5 | 4 | latest floor, sb 316 |
| SS 214 |  |  | pit, broken area (??3) | SS 362 | 7 |  | removal of wall 329 |
| SS 220 |  |  | 1988 season, topsoil, sq 1 | SS 365 | 5 | 4 | series of red plastered floors (7 in total) |
| SS 222 |  |  | topsoil, sq 3 | SS 370 |  | 10 | topsoil within 'east gate' |
| SS 223 | 3 |  | below topsoil to SSTC walls (mix) | SS 372 |  |  | broken red libn, east side of Ctyd 8 |
| SS 224 |  |  | 2/3 mix, sq 1, joins 522 | SS 373 | 4 | 8 | fill $=545$ |
| SS 225 |  |  | sq 4, topsoil | SS 374 | 3 |  | libn feature, sq 3, built against 376 |
| SS 231 |  |  | cleaning wall tops, SSTC | SS 375 | 3 |  | fill of libn feature 374 |
| SS 232 |  |  | $=279$ pit (incl cleaning E baulk) | SS 376 | 3 |  | brown libn, SW corner sq 3 (single course) |
| SS 233 | 3 |  | fill below topsoil, E of 234 | SS 377 | 3 | 3 | tannur in Rm 3 , sq 3 |
| SS 234 | 3 | 4 | sq $3, \mathrm{~W}$ wall, Rm 4 , rebuilt twice as 276,289 | SS 380 |  |  | wall in sq 8, grey bricks (not identified) |
| SS 236 |  |  | sq 3, fill below topsoil | SS 390 |  |  | removal of pisé construction around |
| SS 237 | 3 |  | fill in sq 4 |  |  |  | tannur, sq 3 |
| SS 240 | 4 | 2 | fill in antecella | SS 395 | 4 | 9 | fill, s floor 401 |
| SS 241 | 3 |  | fill in rm with pot, W of wall 234 (Fig. 130) | SS 397 | 6 |  | hard bricky material around tannur 326 |
| SS $2+2$ |  |  | clearance of area above Rm 4, SSTC | SS 403 | 5 | 9 | baked brick drain, floor 401 |
| SS 243 | 3 | 4 | fill above 250 | SS 405 | 5 | 9 | floor/?construction level |
| SS 245 | 3 |  | fill below topsoil, E of wall 234 (?2) | SS 411 | 3 |  | sq 3 houses, ?construction level |
| SS 246 | 3 |  | Level 3 fill in rooms above SSTC Rm 4 | SS 412 | 3 |  | removal of house walls |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| SS 413 | 4 |  | hard layer of broken libn, supporting jar 172 |
| SS 414 | 4 | 10 | floor |
| SS 415 | 3 |  | fill W of stairwell 6 |
| SS 416 | 3 |  | clay bin on floor 415 |
| SS 417 |  |  | large pit, date uncertain, above SSTC Rm 10 |
| SS 418 |  | 7 | topsoil above juss pavement |
| SS 423 | 3 |  | fill W of rm 6 SSTC |
| SS 501 | 4 | 8 | 1988, topsoil in sq 5 (no. used twice) |
| SS 502 | 4 | 8 | most finds assoc. façade; no. also used as equivalent 224 |
| SS 506 |  |  | sq 1 , wall surrounding tannur 512 (?2/3) |
| SS 509 | 3 |  | wall built on 522 |
| SS 511 |  |  | tannur, cuts level 2 walls |
| SS 513 |  |  | tannur, sb 224, cuts 506 (?2/3) |
| SS 515 |  |  | mix, includes uppermost ritual deposits on SSTC |
| SS 520 | 3 |  | fill, $=522$ |
| SS 522 | 3 |  | sq 1, levelling surface on red capping, sb $515,=223$ |
| SS 525 | ?3 |  | drain, cuts through red libn capping, SSTC |
| SS 527 | 3 |  | levelling / construction surface above 528 , sq 1 |
| SS 528 | 4 |  | red libn packing on SSTC, sq 1 |
| SS 532 |  |  | sq 6 topsoil, incl pit 544 |
| SS 534 |  |  | sq 8, topsoil and below, ?2/3 |
| SS 535 |  |  | black fill, sq 6, $=534$ |
| SS 540 | 4 | 8 | fill adjacent façade, sq 1 |
| SS 541 | 3 |  | fill, sq 6, sb 535 |
| SS 543 |  |  | baulk topsoil |
| SS 544 |  |  | unsealed pit, cuts façade wall, sealings (?2/3 mix) |
| SS 545 | 4 | 8 | fill in front of façade, incl ritual deposit |
| SS 547 | 4 | 16 | topsoil within SSTC walls, brown fill |
| SS 549 | 5 | 8 | juss pavement, $S$ of façade <br> $($ deposit $=$ level 4$)$ |
| SS 551 | 5 |  | S slope, below floor, broken libn + coarse grey fill |
| SS 553 |  |  | surface clearance on S slope, SSTC |
| SS 554 |  | 15 | surface, ? $3 / 4 \mathrm{mix}$ |
| SS 555 | 4 | 14 | fill |
| SS 556 |  |  | floor S of Rm 18, assoc. baked brick pavement level (?5) |
| SS 560 |  |  | 1990, topsoil clearance, E of Rm 10 |
| SS 561 |  | 30 | upper fill contaminated by pit fill (probably Phase N) |
| SS 562 |  | 30 | pit dug into Rm 30, date uncertain (prob Ph. N) |
| SS 563 |  |  | cut into Ctyd 8, W of Rm 30 doorway |
| SS 564 | 4 | 31 | bricky fill, sb 590 |
| SS 565 | 4 | 8 | hard bricky layer (?capping), W of Rm 30, cb 563 |
| SS 566 | 4 |  | hard packing over juss pavement, E of Rm 30 |
| SS 567 | 4 |  | removal of brick debris E of Rm 31 |
| SS 569 |  |  | tannur, level uncertain, cut into ctyd W of Rm 30 |
| SS 573 | 5 |  | drain pit W of Rm 30 |
| SS 576 | 4 | 30 | lower fill, softer libn and grey soil |
| SS 577 | 4 | 30 | large pot, SE corner of rm |
| SS 580 | 4 | 8 | fill W of Rm 30 doorway, cb 563 |
| SS 581 | 5 | 30 | bench |
| SS 582 | 5 | 30 | red plaster floor |
| SS 584 | 4 | 8 | thin grey layer over ctyd floor (?decayed libn) |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| SS 585 | 5 | 8 | floor, dark brown clay, sb 584 |
| SS 586 |  |  | soil over libn pavement, S of Rm 18 |
| SS 588 |  |  | pit, W side of Rm 30 , cuts blocking wall |
| SS 590 |  |  | topsoil, S end of trench, $=560$ |
| SS 591 | 4 |  | capping layer below 590 |
| SS 594 |  |  | topsoil in ctyd |
| SS 598 | 5 | 8 | sherds within ctyd floor 585, s baked brick pavt |
| SS 600 |  |  | topsoil, $\operatorname{Tr}$ A, 1991 season |
| SS 603 | 4 | 5 | upper rm fill |
| SS 604 | 4 | 5 | $=603$ |
| SS 605 | 4 | 5 | room fill |
| SS 607 | 1 |  | $l i b n$ rubble (door socket), covers $\operatorname{Tr} \mathrm{A}$ |
| SS 609 | 1 |  | tannur |
| SS 610 | 1 |  | tannur and associated ash, $\operatorname{Tr} \mathrm{A}$ |
| SS 611 | 1 |  | shallow pit, Level 1 or later |
| SS 614 | 2 |  | occupation fill, sb 607, s 615 (?mix with 1) |
| SS 615 | 2 |  | successive replasterings of floor, $\operatorname{Tr} \mathrm{A}$, sb 614 |
| SS 616 |  |  | baulk removal S of Rm 5 |
| SS 618 | 2 |  | pit in floor 615 (slag), cuts 626 |
| SS 622 | 3 |  | libn wall, $\operatorname{Tr}$ A, sb 607 |
| SS 626 | 2 |  | occupation levels immed. below 615, 636 |
| SS 629 | 2 |  | fill of tannur 620 |
| SS 630 | 3 |  | wall, $\operatorname{Tr}$ A |
| SS 631 | 3 |  | fill, $\operatorname{Tr}$ A, assoc. walls $680,640 \& 638$, s 633, 634 |
| SS 632 |  |  | topsoil, $\operatorname{Tr}$ D |
| SS 633 | 3 |  | fill above 634 |
| SS 634 | 3 |  | floor, $\operatorname{Tr}$ A, s 657 |
| SS 635 | 3 |  | fill S of wall 638 |
| SS 636 | 2 |  | pit, red libn rubble, sb 626 |
| SS 640 | 3 |  | wall, Tr A |
| SS 642 | 3 |  | fill of tannur 641 |
| SS 647 | 3 |  | floor assoc. walls 650, 630, 639, Tr A, ?work surface |
| SS 648 | 3 |  | loose crumbly layer, $=647$ |
| SS 651 | 2 |  | pit, cuts wall 650 |
| SS 652 |  |  | removal of access stairs |
| SS 655 | 2 |  | Tr. D, tannur |
| SS 657 | 3 |  | levelling fill over SSTC, $\operatorname{Tr}$ A; foundation for floor 634 |
| SS 662 | 2 |  | loose fill, $\operatorname{Tr} \mathrm{D}($ ? $1 / 2$ ) |
| SS 663 | 2 |  | red plaster floor, assoc. wall 661 |
| SS 668 | 5 | 25 | N wall of Rm 25 |
| SS 669 | 4 | 25 | rm fill |
| SS 671 | 2 |  | ? ctyd surface, S of wall 661 |
| SS 674 | 4 | 5 | fill above floor 675 |
| SS 675 | 4 | 5 | floor |
| SS 677 | 4 | 25 | deliberate backfill |
| SS 679 |  |  | topsoil above Rm 29 SSTC |
| SS 680 | 5 | 25 | libn floor |
| SS 683 |  |  | sq G, topsoil and baulk removal |
| SS 684 |  |  | topsoil cleaning above N wall, $\mathrm{Rm} 15, \mathrm{SSTC}$ |
| SS 686 | 4 | 29 | fill in and above Rm 29 (3/4) |
| SS 690 | 4 | 27 | rm fill |
| SS 693 |  |  | topsoil above Rm 15 |
| SS 700 |  |  | 1992 season, topsoil above curving, buttressed wall |
| SS 703 |  |  | topsoil on south slope |
| SS 704 | 2 |  | fill (?levelling) |
| SS 706 | 2/3 |  | fill above red plaster floor 708 (sq i) |
| SS 712 | 2/3 |  | fill sb 704 (?2/3) |
| SS 715 | 2/3 |  | floor fill |
| SS 719 | 2/3 |  | fill |
| SS 722 | 4 | 29 | loose rubbly infill |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| SS 727 | 4 |  | red libn rubble, E of curved wall |
| SS 731 |  |  | baulk removal |
| SS 734 |  |  | topsoil |
| SS 736 |  |  | tannur, below topsoil (?2/3) |
| SS 739 | $3 / 4$ |  | sherd packing, above SSTC |
| SS - +1 |  |  | fill over curving wall $(726,740)$, surface mix |
| SS 742 | 2 |  | white plaster floor |
| SS 744 | $2 / 3$ |  | levelling for floor 742 |
| SS 746 | 3 |  | fill on W side of curving wall, $=1003$ |
| SS 749 | 4 | 13 | fill, sb 686, s 754 |
| SS 754 | 4 | 13 | top of lower infill |
| SS 755 | 1 |  | below topsoil |
| SS 757 | 1 |  | burnt plaster floor |
| SS 758 | 1/2 |  | construction level for pisé walls |
| SS 760 | 4 | 13 | floor fill |
| SS 761 | 1 |  | levelling fill beneath house 756 |
| SS 769 | 2a |  | wall |
| SS 772 | 4 | 29 | fill sb 686 |
| SS 775 | 4 | 29 | fill |
| SS 777 |  |  | upper fill (area disturbed by MELM) |
| SS 778 | 2 |  | room fill |
| SS 780 | 2 |  | wall assoc. 769 |
| SS 785 | 2 |  | hard grey surface, sb 779 = 778 |
| SS 794 | 3 |  | grey pisé wall |
| SS 795 | 3 |  | ashy deposit |
| SS 803 | 3 |  | 1990: section cleaning; 1992: grey libn wall |
| SS 804 |  |  | 1990: cleaning; 1992: Level 3 wall |
| SS 806 |  |  | 1992: Level 3 floor |
| SS 807 |  |  | 1990: topsoil; 1992: Level 3 wall |
| SS 809 | 4 | 18 | rm fill; 1992: SSTC Rm 29 plastered floor |
| SS 810 | 4 | 18 | 1990: cleaning within rm ; 1992, fill above L3 |
| SS 811 | 4 |  | 1992: SSTC wall |
| SS 812 | 4 | 18 | 1990: deposit of sealings above floor 1992: red plastered wall |
| SS 813 | 4 | 18 | 1990: floor deposit; 1992: floor, Level 3 |
| SS 814 | 5 | 18 | 1990: floor, NE corner of rm; 1992: wall |
| SS 815 | 5 | 18 | 1990: floor, SE quadrant; 1992: <br> Level 3 floor |
| SS 816 | 5 | 18 | floor in SW quadrant |
| SS 823 |  | 15 | topsoil above SSTC Rm 15 |
| SS 825 | 4 | 15 | rm fill |
| SS 826 | 5 | 18 | floor make-up |
| SS 832 | 4 | 18 | mud-brick column, abutting SE corner of W door |
| SS 834 | 4 | 15 | lowest fill, s 836 |
| SS 835 | 4 | 16 | rm fill |
| SS 836 | 4 | 15 | floor clearance ( 1 cm trample) |
| SS 838 | 5 | 15 | large pit, infill supports door post (mix fill) |
| SS 839 | 4 | 8 | material on pavement |
| SS 850 |  |  | topsoil, 1991, Tr B (above Rm 19) |
| SS 851 |  |  | topsoil, Tr C |
| SS 852 |  |  | wash above Rms 20, 21 |
| SS 853 | 1 |  | tannur, $\operatorname{Tr} \mathrm{B}$ |
| SS 854 | 1 |  | fill betw 'walls' 861 |
| SS 855 |  |  | kiln, in use in Levels 1,2 (Fig. 131) |
| SS 856 |  |  | unsealed ash pit, post-1 |
| SS 858 |  |  | topsoil, Tr B |
| SS 859 | 4 |  | south doorway of Rm 11 |
| SS 863 | 1 |  | large pot, $\operatorname{Tr} \mathrm{C}$ |
| SS 864 | 2 |  | fill of kiln 855 |
| SS 865 |  |  | topsoil, beyond $\operatorname{Tr} \mathrm{D}$ |
| SS 868 | 2 |  | fill above 873, $\operatorname{Tr} \mathrm{C}$ (Fig. 131) |
| SS 870 | 1 |  | hard surface, incl cobbling, Tr B |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| SS 872 | 1 |  | eroded mud-brick, Tr C |
| SS 873 | 2 |  | floor, $\operatorname{Tr} \mathrm{C}$, several replasterings |
| SS 875 | 1 |  | fill of tannur 853 |
| SS 876 | 3 |  | fill above late 3 floor, $\operatorname{Tr} \mathrm{C}$ |
| SS 877 | 1 |  | broken libn, Tr C |
| SS 878 | 5 | 18 | sounding thru platform (?6) |
| SS 881 | 1 |  | cobbled surface, $\operatorname{Tr} \mathrm{B}(=870)$ |
| SS 884 | 2 |  | fill below 858, over L3 walls |
| SS 887 | $2 / 3$ |  | fill, Tr B |
| SS 888 | 3 |  | eroded walls, $\operatorname{Tr} \mathrm{C}$ |
| SS 889 | 3 |  | libn bench/ platform, assoc. 888 |
| SS 891 | 2 |  | stone feature, cuts 876 (?1) |
| SS 892 | 2 |  | wall enclosing firepit of kiln 855, Fig. 131 |
| SS 893 | 2 |  | " " ; rebuilt in Level 1 |
| SS 902 | 3 |  | area of hard earth (?platform), sb 876 |
| SS 903 | 3 |  | fill below Level 3 floor, s 911 (Tr C) |
| SS 904 | 3 |  | fill in $\operatorname{Tr} \mathrm{B}$ |
| SS 909 | 3 |  | fill below floor 886 (Level 3), Tr C |
| SS 910 | 3 |  | fill above SSTC, $\operatorname{Tr} \mathrm{B}(3 / 4)$ |
| SS 911 | 4 |  | surface of capping over SSTC, Tr C |
| SS 912 | 4 |  | capping over SSTC, Tr C, many large sherds |
| SS 913 | 5 | 25 | N wall Rm 25 (section Fig. 131) |
| SS 915 | 4 |  | fill adjacent wall betw. Rms 19, 24 |
| SS 917 | 4 | 25 | upper fill, tip lines visible |
| SS 919 |  |  | cleaning MELM dump, Tr E |
| SS 921 | 1 |  | Tr, hardened ?floor |
| SS 922 | 4 | 24 | infill, Tr B |
| SS 924 | 1 |  | Tr E , fill above upper walls |
| SS 925 | 1 |  | Tr E, fill adjacent wall (?2) |
| SS 929 | 1 |  | pit fill, Tr E |
| SS 934 |  |  | cleaning MELM trench |
| SS 935 | 3 |  | fill above 937, Tr B (? mix) |
| SS 936 |  |  | fill above collapse/ ash above SSTC Rm 27 |
| SS 937 | 4 | 24 | assoc. wall 668 (? mix) |
| SS 944 | 4 | 18 | 1993 season, upper fill $=809$ |
| SS 945 | 4 | 18 | lowest infill, sealings $+5-10 \mathrm{~cm}$ |
| SS 946 | 5 | 18 | bench NE corner |
| SS 948 | 5 | 18 | white plaster floor |
| SS 949 | 4 | 18 | 'trample' above 848 (goes under sills) |
| SS 950 | 4 | 16 | upper infill, loose, grey, ashy |
| SS 951 |  | 16 | pit in Rm 16 doorway, mixed material |
| SS 958 | 4 | 8 | upper infill, pottery deposit |
| SS 959 |  | 8 | topsoil (probably Level 4) |
| SS 964 | 4 | 8 | deliberate infill, sb 958 |
| SS 965 | 4 | 8 | lower " ", sb 964 |
| SS 966 |  |  | baulk removal S of Trs C, D |
| SS 967 | 4 | 23 | fill over N doorway |
| SS 1001 |  |  | 1992 season, upper fill sb 703 |
| SS 1002 |  |  | surface, sb 1001 (above Rm 21) |
| SS 1003 | 3 |  | loose fill above rm 21 (probably 3) |
| SS 1005 | 4 | 21 | red fill |
| SS 1009 | 4 | 21 | ashy layer, to floor |
| SS 1010 | 5 | 21 | floor, hard reddish clay |
| SS 1016 |  |  | loose ashy fill N of wall 1023 (?3/4) |
| SS 1017 | 5 | 21 | test trench below floor 1010 |
| SS 1018 |  |  | fill S of large pisé wall (?4) |
| SS 1022 | 5 |  | = DS pisé wall, runs up to Rm 20 |
| SS 1024 | 5 |  | massive dark libn (?) along S face 1022 |
| SS 1025 | 4 |  | conc of sherds on tauf wall 1022 |
| SS 1032 | 4/5 |  | ashy layer E of $1024(?=1044)$ |
| SS 1041 |  |  | cleaning tauf wall |
| SS 1044 | 6 |  | ash layer against wall face 1024 |
| SS 1045 | 6 |  | fallen brick to E of DS wall |
| SS 1046 | 4 | 11 | bricky collapse under fill, N doorway |
| SS 1047 | 4 | 11 | bricky wash, S side |


| Locus | Level | Rm | Description |
| :---: | :---: | :---: | :---: |
| SS 1053 | 4 | 11 | doorway, floor deposit, +20 cm |
| SS 1070 | 4 | 23 | bricky, ashy fill (pit contamination) |
| SS 1079 | 4 | 23 | grey bricky collapse, sb 1070 |
| SS 1080 | 5 | 23 | grey libn floor, red plaster |
| SS 1081 | 4 | 23 | fill below bench level, sb 1079 |
| SS 1083 | 4 | 23 | shallow pit, centre of floor 1080 |
| SS 1084 | 4 | 23 | contents of 1083, much ash \& bone |
| SS 1091 | 3 | 43 | upper fill, contaminated by pit 1092 |
| SS 1092 |  |  | pit cuts N wall, Rm 43, 2 human crania |
| SS 1093 | 4 | 43 | upper fill, sb 1091 |
| SS 1094 | 4 | 43 | lower fill, sb 1093 |
| SS 1095 | 5 | 43 | floor |
| SS 1096 |  |  | Isin-Larsa material, fill above latest floor, W end SS |
| SS 1097 |  |  | material from floor below 1096 |
| SS 1098 |  |  | material above and beside curving wall 740 , tell edge |
| SS 1099 | ? 1 |  | material assoc. red libn walls, area of 1098 |
| SS 1100 |  |  | floor $=1097$ |
| SS 1101 |  |  | upper fill beside wall 740 to W (cf. 1098) |
| SS 1200 |  |  | 1992 season, below Level 2 floors, Tr D |
| SS 1202 |  |  | topsoil (incl some old spoil) |
| SS 1203 | 3 |  | Tr D, fill in eastern rm, Fig. 132 |
| SS 1208 | 3 |  | Tr D, fill below Level 2 floors |
| SS 1210 | 3 |  | red plastered floor, sb 1203 |
| SS 1212 | 3 |  | fill above floor of west room, Fig, 132 |
| SS 1213 | 3 |  | thin wall abutting pisé |
| SS 1218 | 3 |  | fill S of rms, Fig. 132, down SSTC surface |
| SS 1219 | 4 | 21 | fill, s 1235 |
| SS 1221 | 3 |  | fill above floor, W rm Fig. 132 |
| SS 1222 | 3 |  | fill, sb 1212 |
| SS 1224 | 3 |  | red plastered shallow basin, floor 1210 |
| SS 1225 | 3 |  | removal of compacted floor surfaces, 1210 |
| SS 1227 | 3 |  | $=1218$, S part of trench |
| SS 1232 | 3 |  | removal of Level 3 walls, Tr D |
| SS 1233 | 4 | 20 | fill above floor |
| SS 1235 | 4 | 21 | fill above floor |
| SS 1238 | 4 | 20 | floor deposits |
| SS 1240 | 5 | 21 | floor, $=1010$ |
| SS 1241 |  |  | cleaning 1990 tr, around Rm 20 walls, SSTC |
| SS 1242 |  |  | ancient backfilling in Tr D , prob 4 |
| SS 1243 |  | 14 | topsoil and upper fill |
| SS 1244 | 4 | 14 | rm fill |
| SS 1245 |  |  | fill S of Rm 16, SSTC |
| SS 1249 | 5/6 |  | libn platform under Rm 14, dug to 6 courses |
| SS 1250 |  |  | topsoil, area S of Rm 11, SSTC |
| SS 1256 |  |  | topsoil, E of Rm 11, SSTC |
| SS 1257 | 3 | 34 | upper fill (p. 92) |
| SS 1258 | 3 | 35 | upper fill (p. 92) |
| SS 1259 | 3 | 11 | ritual deposit on infill, SSTC |
| SS 1261 | 3 | 32 | fill on floor, 1267 |
| SS 1267 | 3 | 32 | floor, sb 1261 |
| SS 1269 |  |  | topsoil, Rm 36, Fig. 125 |
| SS 1273 | 3 | 35 | fill above floor, sb 1258 |
| SS 1274 | 3 | 35 | floor, sb 1273 |
| SS 1275 | 3 | 34 | fill above floor, sb 1257 |
| SS 1276 | 3 | 34 | floor, sb 1275 |
| SS 1277 | 3 | 33 | floor |
| SS 1279 | 3 |  | upper fill S of Rms 32-33, 4/3? |
| SS 1283 | 3 |  | fill, S of 32, s 1288 |
| SS 1284 | 3 | 33 | fill above floor |
| SS 1286 | 3 | 37 | uppermost Level 4 floor |
| SS 1288 | 3 |  | '', rm S of 32, W of 37, Fig. 125 |
| SS 1301 | 4/3 | SS2 | burnt deposit against wall faces |


| Area DH |  |  |
| :---: | :---: | :---: |
| Locus | Level | Description |
| DH 1 |  | illicitly excavated material, on surface ( Ph L ) |
| DH 2 |  | surface scraping over whole area |
| DH 4 |  | clay-lined pit, just below surface, ashy fill |
| DH 6 | 2 | removal of grey libn wall |
| DH 10 | 3 | floor level with large no. pots, step A |
| DH 15 | 1 b | light brown earth on mb paving |
| DH 19 | 2 | firm grey, brown fill, sb 15 (incl child burial) |
| DH 22 | 2 | dark brown fill to floor, some ash, large pot sunk from this level, sb 19 |
| DH 25 |  | clearing of Phase 1 walls |
| DH 38 | 1 | soft fill |
| DH 39 | 1 | yellow / white soft floor surfaces |
| DH 40 | 1 b | arbitrary locus, some mix |
| DH 41 | 1 b | ashy dark earth |
| DH 42 | 1 | soft, grey earth, just below surface |
| DH 45 |  | surface scraping |
| DH 52 | 1 | cobbled surface, late 1 (large rubbish pit??) |
| DH 56 | 1 | soft black pit fill (cut from above surface) |
| DH 57 | 1b | early Phase N, occupation surface, 2 tannurs |
| DH 58 | 1 | soft black pitfill ( $\quad=52)$ |
| DH 64 | 1 | soft brown pit fill |
| DH 66 |  | pottery surface, 69 (?1/2) |
| DH 69 |  | soft, black ashy |
| DH 74 | 2 | ? open area, child burials, sb 40 |
| DH 76 | 3 | packed earth \& brick frags, s 78 |
| DH 78 | 3 | deposit on floor, s 89,91 |
| DH 79 | 3 | pottery on floor, cb 56, related to 10 |
| DH 81 | 3 | brown earth fill, sb 74 |
| DH 85 |  | cutting back section |
| DH 89 | 3 | brown earth, merges with 91, sb 78 |
| DH 91 | 3 | burnt layer, red \& grey patches, sb 78 |
| DH 92 |  | cutting back $W$ section |
| DH 93 | 3 | low libn wall |
| DH 96 | ?3 | brown earth, crumbly mb, sb 19 |
| DH 97 | 3 | cobbled surface |
| DH 98 |  | cutting back N section |

Area AL
All material is from late Phase L structure ('ED III destruction level').

Area DS
All material is from deep cut adjacent to SSTC pisé wall (Fig. 111).

Area TW*
Locus Level
TW 2
TW 3
TW 6
TW 11
TW 14
TW 19
TW 20
TW 30
TW 32
TW 36
TW 45
TW 111
TW 113
TW 116
TW 122
TW 123
TW $124 \quad$ levelling fill $/$ pit $=111,122$
TW 125 late pit, cuts \& joins 127

Locus Level Description
TW' 127
TW 130
cleaning operation (mix with 122-125)
dark ashy level, directly overlies ED I walls
TW 1332 pit below ash level
TW $144 \quad 2$ fill assoc Level 2 walls
TW 146 fireplace assoc. Level ?1/2
TW 152 cleaning
TW $178 \quad 2 / 3 \mathrm{mix}$, cleaning 1987 area
TW 189 pit $(?=123)$, Nin 5 pt \& excised

Locus Level Description
TW 227
TW 517
large pit cut by $O B$ trench fill below OB walls

Area JJ
Surface scrape on high ridge to the east of Area ER.
Area CW
Surface scrape on NW ridge, below FS.

* The Area TW excavations are published in Volume 3.


## References

## Abbreviations used in References

AAAS Annales archéologiques arabes syriennes
AEM Archives Épistolaires de Mari
AfO Archiv für Orientforschung
AJA American Journal of Archaeology
AJPA American Journal of Physical Anthropology
Alt.For. Altorientalistiche Forschungen
An. St. Anatolian Studies
AOAT Alte Orient und Altes Testament
ARES Archivi Reali di Ebla Studi
ARET Archivi Reali di Ebla Testi
ARM Archives Royales de Mari
ASE Abu Salabikh Excavations
ASJ Acta Sumerologica (Japan)
ASOR American Schools of Oriental Research
AUWE Ausgrabungen in Uruk-Warka, Endberichte
BAH Bibliothèque archéologique et historique
BaM Bagdader Mitteilungen
BAR British Archaeological Reports
BASOR Bulletin of the American Schools of Oriental Research
BCSMS Bulletin of Canadian Society of Mesopotamian Studies
BIAA British Institute of Archaeology in Ankara
$\mathrm{BiOr} \quad$ Bibliotheca Orientalis
BiMes Bibliotheca Mesopotamica
BM (NH) British Museum (Natural History)
BMP British Museum Press
Brak 1 Oates et al. 1997
BSA Bulletin of Sumerian Agriculture
BSAI British School of Archaeology in Iraq
BzTAVO Beihefte zum Tubinger Atlas des Vorderen Orients
CAD Chicago Assyrian Dictionary
CAJ Cambridge Archaeological Journal
Chuera Kuhne 1976
CSMS Canadian Society for Mesopotamian Studies
DM D. Matthews 1997a, with seal number
ERC Éditions Recherche sur les Civilisations
EUP Edinburgh University Press
FAOS Freiberger altorientalische Studien
HANE/S History of the Ancient Near East, Studies
JAS Journal of Archaeological Science
JAOS Journal of the American Oriental Society
JCS Journal of Cuneiform Studies
JFA Journal of Field Archaeology
JNES Journal of Near Eastern Studies
MAM Mission Archéologique de Mari
MARI Mari Annales de Recherches Interdisciplinaires

MASCA Museum Applied Science Center for Archaeology
MDOG Mitteilungen der Deutsches Orient Gesellschaft
MHEM Mesopotamian History and Environment Memoires
MIAR McDonald Institute for Archaeological Research
MSAE Materiali e Studi Archeologici di Ebla
NABU Nouvelles Assyriologiques Brèves et Utilitaires
NHAII Nederlands Historisch-Archaeologisch Instituut te Istanbul
OBO Orbis Biblicus et Orientalis
OBTR Dalley et al. 1976
OIC Oriental Institute Communications, Chicago
OIP Oriental Institute Publications, Chicago
OUP Oxford University Press
Or Orientalia
PAM Polish Archaeology in the Mediterranean
RA Revue d'Assyriologie
RAI Rencontre Assyriologique Internationale
RGTC Répertoire géographique des textes cuneiformes
RIM Royal Inscriptions of Mesopotamia
Rimah C. Postgate et al. 1997
Rimini Rouault \& Masetti-Rouault 1993
RLA Reallexikon der Assyriologie
SAOC Studies in Ancient Oriental Civilisation
SBzA Saarbrücker Beiträge zur Altertumskunde
SEb Studi Eblaiti
SEPOA Société pour l'Étude du Proche-Orient Ancien.
SIMA Studies in Mediterranean Archaeology
SMS Syro-Mesopotamian Studies
Taya Reade 1982
UAVA Untersuchungen zur Assyriologie und vorderasiatischen Archäologie
UCP University of Chicago Press
UE Ur Excavations
UF Ugarit-Forschungen
UMI University Microfilms International
UMP University Museum of Pennsylvania.
UVB vorläufer Bericht über die von dem Deutschen Orient-Gesellschaft Ausgrabungen in UrukWarka
WA World Archaeology
WVDOG Wissenschaftichle Veroffentlichung der Deutschen Orient-Gesellschaft
WZKM Wiener Zeitschrift fur die Kunde des Morgenlandes
Zeitschrift für Assyriologie

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## Excavations at Tell Brak

## Vol. 2: Nagar in the third millennium BC

Tell Brak, ancient Nagar, was one of the most important cities in northern Mesopotamia in the third millennium BC and a focus of long-distance trade. It was also, for about a century, a provincial capital of the Akkadian Empire founded by Sargon of Agade. This is the second of three volumes on the 197693 excavations at Tell Brak. The construction level of Naram-Sin's Palace, discovered by Mallowan in the 1930s, has been used as a point of chronological reference to provide the first well-dated corpus in northern Mesopotamia of archaeological material of the second half of the third millennium. The major Akkadian buildings at Tell Brak are the first wellpreserved examples to be discovered at any site, and include a great ceremonial complex and a unique caravanserai that housed the donkey caravans bringing metals from Anatolia. During the ritual closure of these buildings beautiful silver jewellery was deposited, along with numerous copper / bronze tools and some of the caravan donkeys themselves. Specialist reports provide detailed historical, geomorphological, ceramic, faunal, botanical, microstratigraphic and other data.

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## Cover illustration:

Human-faced bison sculpture, limestone.

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[^0]:    10. Rings (107-14) (Figs. 252 \& 259)

    Most of the rings are probably too small to have

[^1]:    53 minas of silver: price of 11 mules.
    9 minas 50 shekels: price of 250 sheep at $1 / 3$ shekel each, 255 sheep at 1 shekel each.

    56 minas 20 shekels of silver: price of 5780 'stone-weights' of wool, that is at 1 shekel for 3 'stone-weights';

    5800 'stone-weights' of wool at 1 shekel for 4 'stone-weights'. Total: 119 minas 10 shekels (the value of?) 200 jars of oil,
    NIzi, the ur ${ }_{4}$ official of Nagar, has received.

[^2]:    *Since the Aegilops chaff occurring in these samples is of the A. tauschii or crassa type (see Fig. 324), the Aegilops grain in the samples is assumed to belong to one of these two species.

[^3]:    1546

[^4]:    *Ninevite 5 material from SS \& FS is out of context.

[^5]:    Bead dimensions are either l./ th.; d.; dp. or .l; w.; th.; dp.

