

# Parthian Nineveh

A Thesis Submitted to the University of Oxford in Fulfillment  
of the Requirements for the Degree of Doctor of Philosophy (D.Phil.)  
Trinity Term 1995

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Wolfson College

*Abstract*

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The archaeology and history Parthian period (c. 150- B.C. - A.D. 250) in Iraq has received little serious attention from scholars in recent years. This thesis used objects in British museum collections from Nineveh as a focus for the study of this period in Northern Mesopotamia, combining traditional archaeological and numismatic analysis with scientific studies.

Chapter I presents a critical analysis of the excavated evidence for the occupation of Nineveh in the Parthian period with special attention to distinctive artefacts such as figurines, lamps, and molded bowls. Chapter II uses petrographic and chemical analysis of selected ceramics to elucidate the materials and methods of manufacture, with particular attention to identifying local and foreign wares. Special attention is paid to glazed wares. Chapter III is a numismatic study based on a major hoard of Parthian bronze coins from Nineveh. A complete re-classification of the hoard not only identifies a number of new coin types, but also provides a revised list of the rulers who issued coins at Nineveh. Chapter IV investigates all aspects of Roman involvement with Nineveh and its place in the stormy relationship between Rome and Parthia. Evidence is advanced for there having been contingents of Roman troops stationed at Nineveh and the site placed within its context in the state of Adiabene.

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# Introduction

The archaeology of Iraq has been much neglected from the period between the fall of the Assyrian, Babylonian, and Achaemenid Empires until the Islamic conquest. Although the Parthian period is taken here in the conventional sense as dating from about 150 B.C. to A.D. 250, it is appreciated that changes in material culture are not necessarily parallel to political developments. The succeeding Sasanian period (A.D. 250-650) is the subject of a recent Oxford thesis (Simpson, 1994); the preceding Seleucid Period has not yet received special attention.

Unfortunately, the archaeological record is incomplete, as few sites have been sufficiently recorded and studied. Since field archaeologists have neglected this period, the pottery of the period remains obscure, and the glazed wares have never been as attractive to collectors and art historians as the Early Islamic glazed ceramics of the region. When compared on the one hand to the technically more sophisticated Islamic wares (al-Hassan and Hill, 1986, pp. 166-170), on the other to Roman ceramics, Parthian pottery has usually been dismissed by art historians as simply inferior (Lane, 1965, pp. 6-9; Ettinghausen, 1938, pp. 646-648). No study to date has been directed toward the technology and origins of Parthian ceramics.

The intent of this thesis is to remedy this lack. Fortunately British collections are rich in Parthian material from one major site in northern Mesopotamia. The Ashmolean Museum, Oxford, has substantial quantities of pottery from the British excavations (1928-1932) at Nineveh available for sampling. Other museums in the U.K., notably the British Museum, The City Art Gallery, Birmingham, and the Fitzwilliam Museum, Cambridge also have Parthian ceramics from the same excavations. This study is an example of "rescue archaeology." As there has been no opportunity to travel to Iraq to examine collections or engage in fieldwork

there, the research has concentrated on combining traditional methods of material culture study with scientific analysis on what was already available from excavations.

In order to gain a full appreciation of the potters' craft during the period, it was necessary to consider the problem from a variety of angles. The archaeological perspective is somewhat arbitrarily divided on the one hand into consideration of object typology and context (stratigraphy), and on the other, object-technology studied through scientific analysis. When considering these two relatively separate factors, the task will be to harmonize and extract useful information from standard archaeological techniques and archaeological science.

In order to gain a wide perspective on the post-Assyrian periods at Nineveh, it was necessary to consider a variety of materials. Ceramics are a major focus, the object being to determine how, why, when and where they were made. Evidence for a datable period of Parthian occupation is also attested in the coinage recovered from the site; in particular the hoard of Parthian bronze coins and numerous surface finds. The finds (including coins) are sorted into groupings that roughly conform to date, and their function is explored. When all the information, discussed separately, is integrated into a historical framework, the extent of Parthian activity at Nineveh can be determined, and some explanation of the "Roman" finds on the mound can then be offered.

The available information from pioneer excavations at Nineveh does not in itself present a coherent picture of the past. In many cases the method of excavation was simply to extract monumental objects or tablets, with little thought of recording. A primary consideration for nineteenth century excavators was proving the existence of the ancient empires, like that of Assyria, mentioned in the Bible. Unfortunately for the Parthian period, monumental objects and tablets, coupled with Biblical fame, were not a stimulus for interest. However, excavations at the famous Biblical city of Nineveh provided extensive evidence for the

Parthian period in northern Mesopotamia, revealed in the process of seeking earlier Assyrian remains, which have always received more attention in the original publication and in subsequent study.

# Chapter I

## Nineveh: The Site and its Occupational History After 612 B.C.

### The Site and its Natural Setting

The region known as Mesopotamia, bounded by the two rivers of the Tigris towards the east and the Euphrates towards the west, is a broad trough some 1200 km. long and 400 km. wide. It runs from the Anatolian highlands in the north, to the head of the Gulf in the south. This region can be roughly divided into two distinct geographic zones, here described as north and south.

The geology of the region is not well understood, as there has been a dependence upon geological research sponsored by the oil industry. As a result, formations that have no bearing upon economic deposits have not been studied, and there has been little attempt at a general synthesis of regional stratigraphy. Ceramic studies of south Iraqi material have demonstrated that, given the lack of specific geological information, it was impossible to identify regional variation in petrofabrics that relate to discrete geological differences.<sup>1</sup> For south Iraq in particular, the majority of ceramic samples contained fine grained limestone, sandstone, and siltstone - some sediment apparently derived from erosion washed down the Euphrates and deposited on the plain - combined with locally derived flood plain material.

The north (Fig. 1)<sup>2</sup> can be characterized by the Miocene Euphrates limestone (Fars formation), with quantities of Quaternary material derived from the erosion of mountainous

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<sup>1</sup> This point was stressed by Mynors (1986, p. 37), and in a personal communication. Thanks are due to Dr. Mynors for directing my attention towards what little information is available on the geology of Iraq.

<sup>2</sup> The geological map given in Fig. 1, adapted from Guest (1966), is of interest for regional geography, as well as a general guide to the geology of the region, which will be discussed in Chapter II as part of the petrographic analysis.

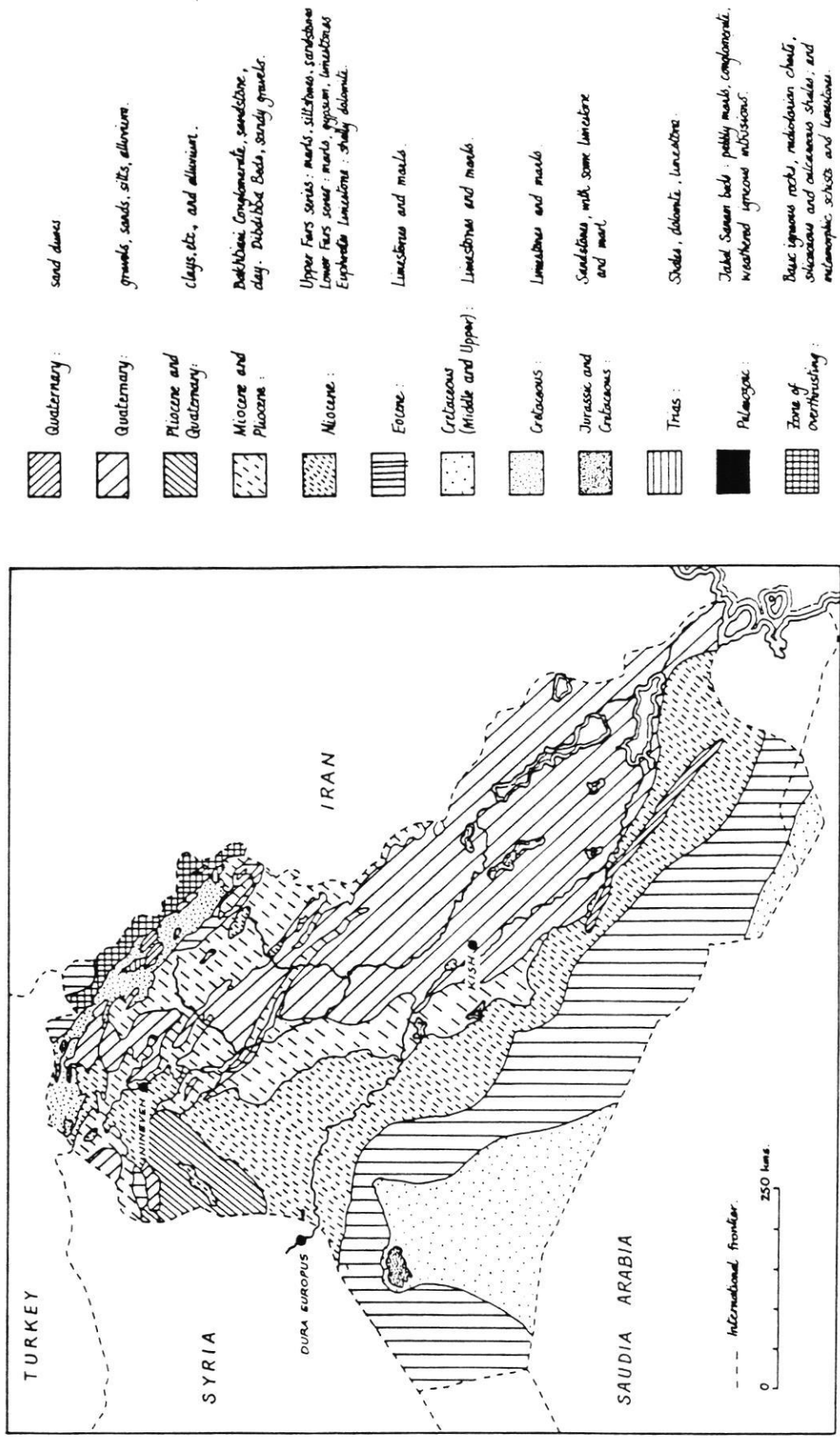


Fig. 1 Geology of Iraq (adapted from Guest, 1966, fig. 3).

terrain. The region extending from the Hit on the Euphrates to Samarra on the Tigris marks, somewhat arbitrarily, the division between north and south<sup>3</sup> (Berry, 1970, pp. 131-132). The northern region has an average land slope of roughly 30 cm./km., while the southern region is considerably flatter, averaging c. 10 cm/km., and as a result, the Euphrates in particular follows a meandering course that is subject to change (Adams, 1981, p. 8).

The southern region, of flat alluvium, is broadly characterized by Quaternary sediments, and is monotonous on a scale of miles. This region has undergone a period of plate tectonic movement (subduction) during the Pliocene, while there has been a corresponding rise of mountains in southern Anatolia and the Zagros. The Sinjar anticlinal structure, in its eastern extension, forms a divide for tributaries flowing north to the Himris river, and there is evidence to support the view that the westward deflection of the Himris is a recent (Pleistocene) adjustment, caused by the rise of the Jebel Sinjar (Mitchell, 1957, p. 571). It is clear that the region about Nineveh is quite unlike the south, where flooding and large deposits of riverine sediments are not uncommon.

Both regions are dominated by the Tigris and Euphrates Rivers, and vast amounts of detritus in suspension are deposited on the Mesopotamian plain. Both the Tigris and Euphrates collect their waters from about the same drainage area. The Tigris drains the southern slopes of the Taurus, while the northern slopes of the same mountain range form a part of the basin of the Euphrates. Mineralogical studies of recent sediments from these two rivers revealed that the same mineral species are represented in about the same relative

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<sup>3</sup> There have been archaeological theories that proposed that the southern region was reclaimed from the sea by a gradual process of delta formation. Lloyd (1943, p. 19) proposed that before 4000 B.C., the gulf was about 60 miles north-west of Baghdad, while in Sumerian times the head of the gulf lay near Ur, some 230 miles to the south-east. Further studies (Lees and Falcon, 1952, pp. 24-25; summarized by Zarris, 1992), using geological data, do not support such a hypothesis, and suggest that the head of the gulf may have been seaward of its present position at the beginning of the Sumerian period.

frequencies (Philip, 1968, p. 43). Further studies on the clay fraction using XRF demonstrated that minor variations in the (suspended) clay mineralogy over over the length of the rivers are very random (Berry *et al.*, 1970, p. 135). For the purposes of this report, petrographic and chemical examinations will then carefully consider sample variability in the light of expected natural variability.

The site of ancient Nineveh lies in Assyria, or northern Mesopotamia (Fig. 2), which is a hilly steppe land. There it is possible to grow crops without the irrigation<sup>4</sup> necessary for farming in the south.<sup>5</sup> This region is suitable for the production of cereal crops, but dry-farming methods without irrigation cannot compete with the productive output of watered alluvium, so that the region about Nineveh was supplied with canals (Fig. 3). As the region is not dependant on extensive irrigation, which requires constant control to remain effective, it is less vulnerable to starvation at times of political instability (Oates, 1968, p. 5).<sup>6</sup>

The site of Nineveh lies on the left bank of the Tigris, about a mile from the present bed of the river. The ancient walls outline a trapezium, a little more than eight miles in extent (Fig. 4). Within the walls lie two mounds. The larger of the two, Kouyunjik, is half a mile wide by a quarter broad, and about one hundred feet in height. The smaller mound, Nebi Yunus, the site of a modern village, lies about a mile south of Kouyunjik (C. Thompson and Hutchinson, 1929b, pp. 16-17). Because it is sacred to Muslims, as the purported burial place of Jonah, with a mosque and cemetery, excavation has always been very restricted there.

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<sup>4</sup> The region during the last glaciation is discussed by Butzer (1958).

<sup>5</sup> The climactic factors that dictate the use of canals is presented by Charles (1988, pp. 1-3). Of particular importance is the natural variability of rainfall in the south. Even in northern regions farmers would often use irrigation taking into account not infrequent dry years.

<sup>6</sup> A summary of political aspects of canals is presented by Renger (1990, particularly p. 38). It is clear that during the Ur III and Old Babylonian periods the state played a critical role in administering water.

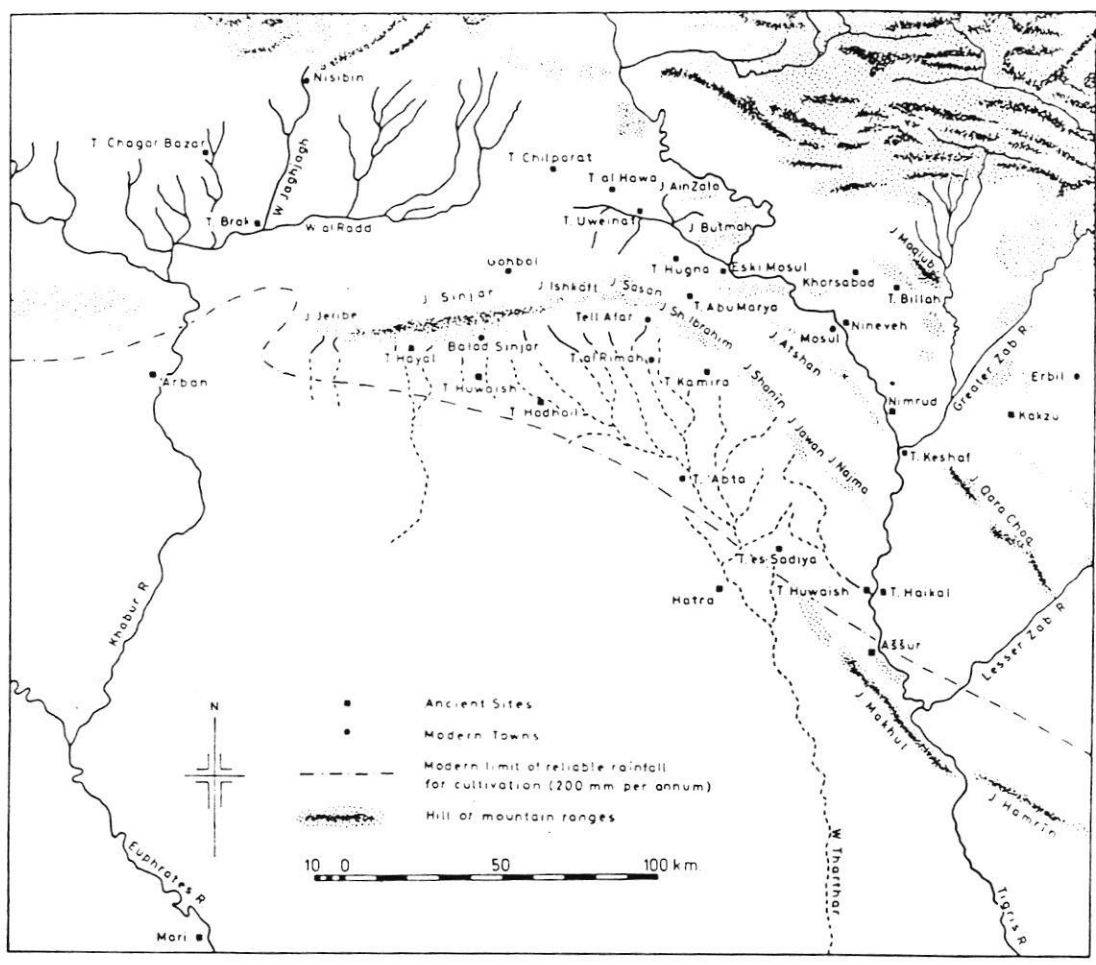


Fig. 2 The Mesopotamian Basin: Topography and Rainfall (after Oates, 1968, fig. 1)

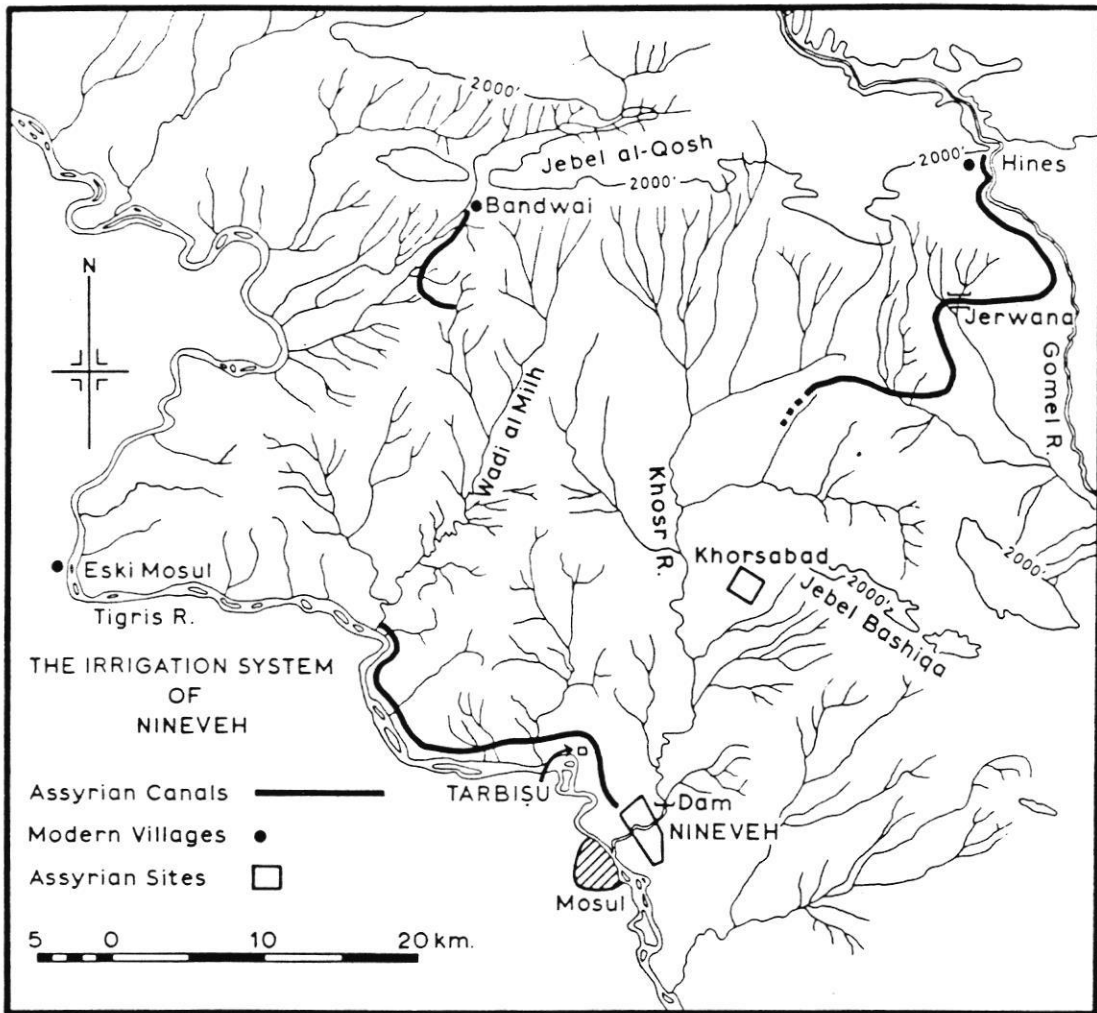


Fig. 3 The Irrigation System of Nineveh (after Oates, 1968, fig. 4).

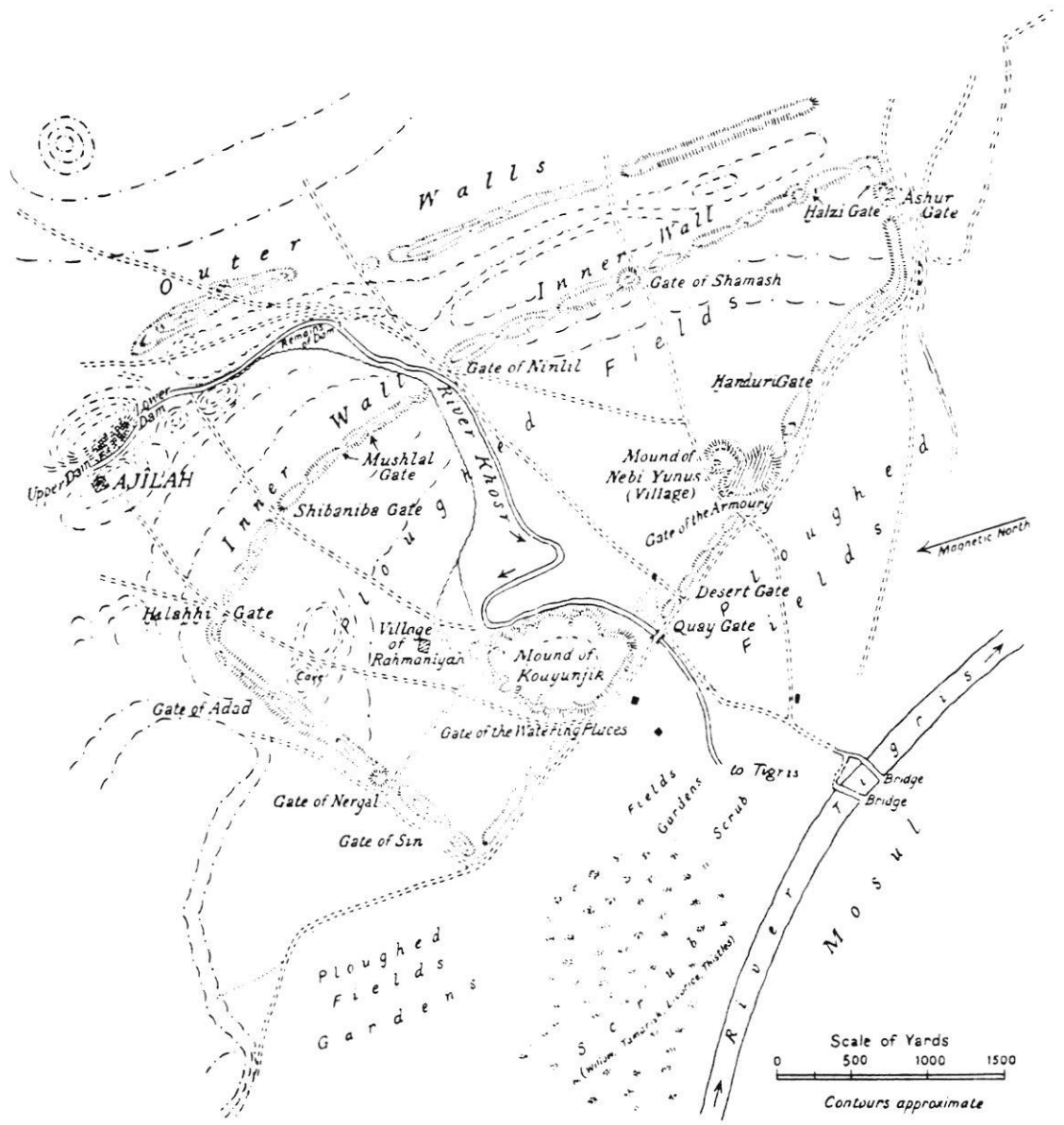


Fig. 4 General Plan of Nineveh (after Campbell-Thompson and Hutchinson, 1929a, pl. LXI).

The location of Nineveh is the northernmost point along the Tigris where downstream navigation is practicable. It was also a major depot in the overland East-West trade routes, and it was the obvious point where goods coming from east or west could be transported south (Algaze, 1986, p. 130).<sup>7</sup> Nineveh was also in a strategic administrative position at the point of contact between nomads of the steppe, farmers of the valley, and hill people (Oates, 1968, p. 52).<sup>8</sup>

As a result of its natural location and virtually continuous occupation from the sixth millennium B.C., if not before, there is great difficulty in identifying remains from the Parthian (or Roman) period in the area about Nineveh. There has been particularly extensive building activity from the Medieval period, evidenced in both standing remains and in small finds, when northern Mesopotamia was under the Atabegs of Mosul. As a result, the comparatively brief period of occupation during the Parthian period is overlain with rubble, both east and west of the river, as Oates reports of modern Mosul:

Here [the river crossing at Nineveh] the modern town of Mosul has effectively obliterated any trace of an earlier site. There was a pre-Islamic town here, of which the name Budh-Ardashir given by Arab writers suggests that it was founded or refounded by Ardashir I, perhaps as a deliberate rival to Nineveh, which seems to have retained in the Parthian period a Hellenistic character... There would in all probability have been an earlier suburb of Nineveh on the west bank, but the fact that it is never mentioned, except perhaps as '*ad flumen Tigrim*' of the *Tabula Peutingeriana*, suggests that it was of minor importance.

Oates, 1968, p. 77.

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<sup>7</sup> During the Uruk period there were significant links between northern and southern Iraq during the Uruk period. There appear to have been comparable administrative procedures, with the use of cylinder seals and tablets of much the same type. Nineveh at that time could have been a part of a much larger political entity (Collon and Reade, 1983, p. 41; Charvat, 1994, p. 13). Recent work at Tell Brak and Tell Leilan is clarifying this set of relationships (Matthews, 1994, p. 290). Population was high from an early period. There was also a substantial settlement on the site during the Protoliterate Period (c. 3500-3000 B.C.), when it may have been an important center for trade.

<sup>8</sup> Such interaction between north and south continued for millennia, into the Parthian period, but it is only during the latter phase that there was a network of trade between east and west (Fig. 5).

## Nineveh After 612 B.C.

The well-known Babylonian<sup>9</sup> and Median<sup>10</sup> attack of 612, which resulted in the destruction of <sup>11</sup>Nineveh and Neo-Assyrian power, was chronicled by many ancient sources. The *Babylonian Chronicle* (Grayson, no. 3: 43-45) notes the fall of the city, but does not record how it fell. Diodorus Siculus preserves a tradition which suggests that an unusually high flood of the river caused the defenses of the city to crumble, which is also suggested in *Nahum 2:7*. However, it is clear from other records, that the Tigris should not have been flooding at that time of year. In fact, when the city fell in July - August, the river would have been at the low water mark. The latter observation has led Scurlock (1990, p. 383) to speculate that the violent condition of the river was due to manipulation by the attackers:

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<sup>9</sup> Babylonian power was in ascendance during this period. In 621/620, Babylonian forces began a siege of Nippur, that was to end in its destruction. As a powerful rival city with strong Assyrian sympathies, it was an obstacle for Babylonian ambitions in the north. The Parthians later used the city for a similar purpose, to check the rising power of Characene in the Gulf (Keall, 1975, p. 625). Babylon then began to exert control in the middle and upper Euphrates region. Babylon at this time was in possession of an effective agricultural region which generated surplus far beyond need. As a result of surplus, it sought stone, wood, metals, and other luxury goods. In order to secure these prestige items, and to secure a wider political base, expansion was favoured, and a conflict with Assyria soon developed (Brinkman, 1984, pp. 105-111).

<sup>10</sup> "Median" in this case should be a political term, as a number of small Iranian groups (Median, Scythian and Cimmerian) had been forced to unite against the forays of the Assyrians. In 672 B.C. the Medes won the right to maintain their own state, with the stipulation that they must respect the heirs of the Assyrian throne. In 653 B.C. the Medes attacked Assyria, but were defeated by the Scythians (general introduction presented by Phillips, 1965), who were allied with the Assyrians, and from 653-624 the Scythians controlled Media. In 624 King Cyaxares defeated the Scythians and united the Medes into a state with their capital at Ecbatana. A unified army was created. The "Medians" brought a very diverse and efficient military to bear against Assyria (Dandamayev, 1994, p. 36).

<sup>11</sup> There is clear evidence for earlier, less successful attacks upon Nineveh. In 614 the Medes moved towards Nineveh, but were deflected, and instead captured Tarbisu, a nearby town, and then went on the attack Assur. This city was brutally destroyed, and unlike traditional Mesopotamian practice, the inhabitants were massacred (Von Voigtlander, 1963, p. 76).

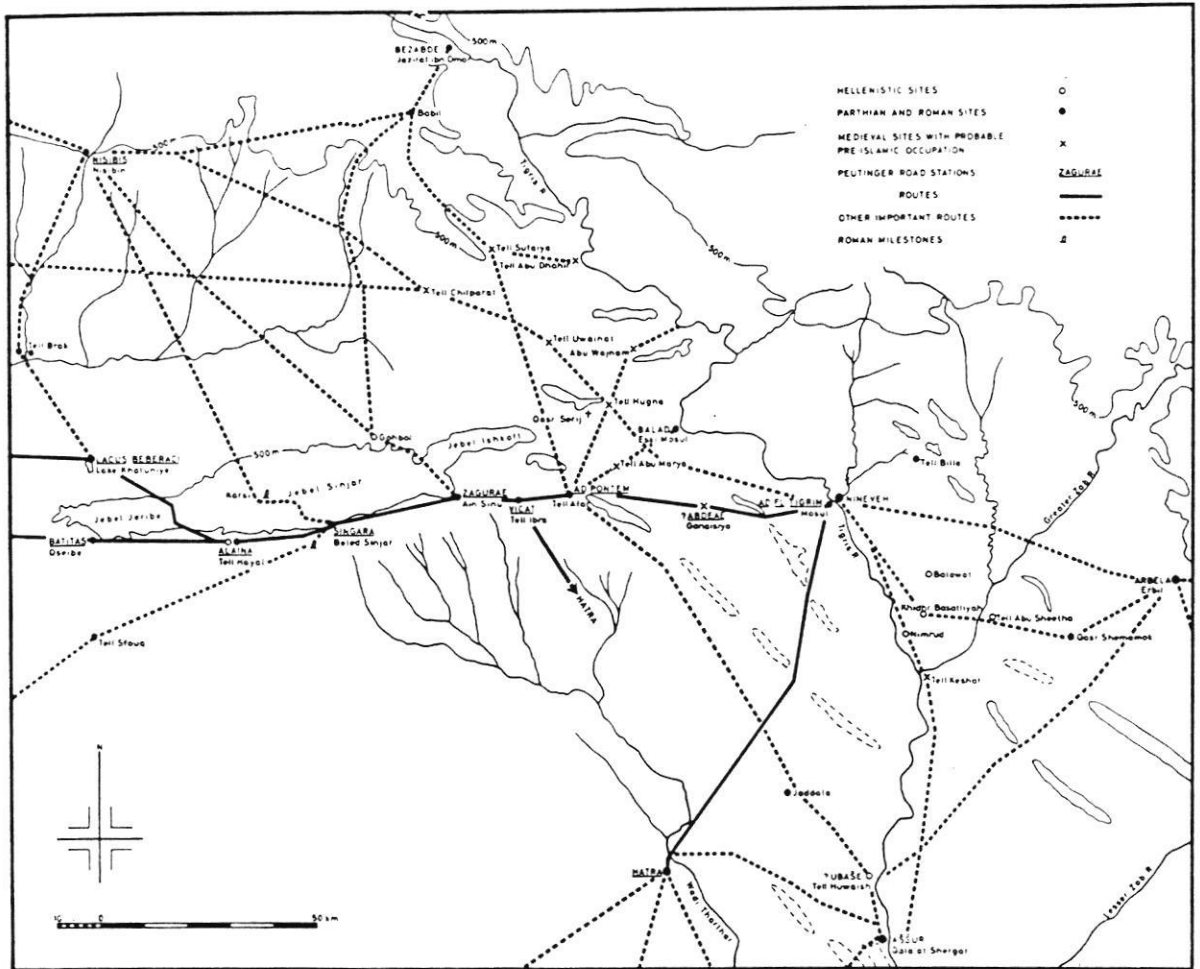


Fig. 5 Trade Routes in North Iraq in the Parthian Period (after Oates, 1968, fig. 5).

It is interesting to note in this connection that while the Babylonian chronicle series does not mention the fall of the former Assyrian city of Kalhu, it does note the capture in 614 B.C. of Tarbisu, a small city in the district of Nineveh of no particular importance other than that it was the site of a Neo-Assyrian crown-princely palace and lay near one of the canal projects which Sennacherib constructed to supply the environs of Nineveh with irrigation water. If the Medes and Babylonians controlled both the Tarbisu and Khosr canal systems by 612 B.C., it is conceivable that they could have been able to generate enough water flow even at low river to do some damage to the fortifications of Nineveh.

Scurlock, 1990, p. 383.

After the fall of Nineveh,<sup>12</sup> the chronicles suggest that the Babylonians were stationed at Nineveh for a time, before pursuing the last Assyrians moving in the direction Harran. After that point the chronicles do not mention anything more about the Medes, and they strangely do not mention the other Assyrian cities of Kalhu, Dur-Sharrukin or Arba'il. Assyrian power continued for a time. The last Assyrian king, Sin-Shar-Ishkun, died at Nineveh, while his son, Assur-uballit escaped to Harran. The Assyrians there were supported by the Egyptians as a buffer state against the Babylonians, as Egypt now had control of Syria and Palestine (Von Voigtlander, 1963, p. 79). The Medes appear to have taken control of northern Mesopotamia and eastern Asia Minor, but the exact nature of the relationship between the Medes and

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<sup>12</sup> In a recent article (Dalley, 1994) has presented a number of observations on the so called "Hanging Gardens of Babylon," placing their location in the city of Nineveh. As one of the traditional Seven Wonders of the World (Wohl, 1969, p. 32), they have received attention from a number of specialists, and is usually assumed to have been in the city of Babylon. She postulates that the description of the flooding of Nineveh (related by Diodorus) before the final siege applies to Babylon and not Nineveh (MacGinnis, 1988). She feels that the destruction of the site may not have been catastrophic or complete (Dalley, 1994, p. 56-57).

While the article contains a number of interesting points for further research, one feels that there has been little weight attached to the classical sources, and the recent evidence uncovered by Stronach (1992, p. 227-8) suggests that Nineveh was indeed attacked. It is also significant to note that the areas of habitation after 612 B.C. appear to be greatly reduced by comparison with the Assyrian period.

Babylonians is uncertain (Dandamayev, 1994, p. 38).<sup>13</sup>

By the end of the fifth century B.C., former Assyrian territory in northern Mesopotamia was popularly viewed as Median. Xenophon records a large city on the Tigris, Larissa, and a city in Assyria, Mespila, as former Median cities (*Anabasis* 3,4,7, 10). Relations between the two powers were soon strained, as both sides apparently accepted "political" refugees from the other side. During the Achaemenid period there was a sizable Iranian community of militia, traders and officials in Babylonia (Dandamayev, 1992, p. 154). The available evidence also suggests that there was an even larger Iranian population in the north,<sup>14</sup> with entire cities known as "Median." It is not clear if the Iranians inhabited restricted regions, or would have been distributed throughout the area. The Achaemenid "Royal Road" may have passed close to Nineveh (Graf, 1994, p. 179), perhaps indicating that the site supported a settlement at this time. It is noticeable that there are few remains recovered from Nineveh or elsewhere in the region that would indicate Achaemenid material culture was adopted on a large scale.

### **Achaemenid Occupation: The Seals**

Evidence for Achaemenid occupation is sparse. There are a few characteristic finds of pottery, and there are few literary references which suggest that parts of the mound were rebuilt, and that some public buildings were repaired. Cyrus II, along with encouraging

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<sup>13</sup> It is clear that the relationship between Medes and Babylonians began in early antiquity. There is good evidence for contacts between (Elamite) Iran and Babylonia during the Second Millennium B.C. (Zadok, 1987), and there is increasing evidence for interaction between Medes and Babylonians before the Persian conquest of 539 B.C. It appears that there were Medes in Babylon from the time of Nebuchadnezzar II, and that Babylonian businessmen were in western Iran at the same time (Zadok, 1976, p. 72).

<sup>14</sup> There is also evidence to suggest that Indo-Iranian groups were present in the region before this period. The Kassites, who appear to have had an element of Indo-Iranian in their language, were active in the region in the 16th-15th centuries B.C. The Mitanni, who are clearly Indo-Iranian, were also active in northern Mesopotamia and Syria (Mallory, 1991, pp. 38-42).

the success of Babylon in the south, may also have encouraged the revival of Nineveh, including the return of statues taken from shrines (Dalley, 1993, p. 134). As with other sites spanning the Achaemenid period in northern Mesopotamia, there is little material evidence suggesting the presence of Iranians (Curtis and Green, 1987, p. 77).

The only unequivocal material evidence for Nineveh, barring a few ceramics,<sup>15</sup> are a group of seals and sealings uncovered during the 1931-32 seasons (Fig. 26C, p. 87).<sup>16</sup> There are two seals (nos. 7 and 9) of clear scaraboid shape, and of frit, so that it may be possible to identify their region of manufacture given published parallels.<sup>17</sup> They are of "typical" Achaemenid form in that they represent the eclectic nature of the period that combined motifs from many areas to form a distinctive style. As a general observation, one can assume that they were used by private individuals, as they are of stamp and not cylinder form, and their execution is crude (Collon, 1987, pp. 90-93). The impressions, numbers 1,2, and perhaps 6, also may be Achaemenid. Number 14 is clearly Sasanian in both shape and design. One of the most interesting seals is number 10, which is of frit. In form it is unlike the other seals, while the impression is in keeping with what one would expect from an "eclectic" Achaemenid seal.

This date, however, may be too early, and there is reason to suspect that this seal could be of Parthian date. While there is still considerable controversy in defining what constitutes a Parthian seal (Debevoise, 1934b, p. 15; Bader *et al.* 1990, pp. 61-63) there is a growing body of evidence to suggest that they were generally set in rings as gems, and were commonly

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<sup>15</sup> There are few plainwares that suggest an Achaemenid date, although ceramics from this period in northern Mesopotamia in particular are not well understood.

<sup>16</sup> The current whereabouts of these seals is unknown. Dr. Simpson and Dr. Collon are unable to locate the seals at the British Museum.

<sup>17</sup> Unlike scarabs that are carved from stone, it is possible to attribute molded scarabs (Ward, 1994, pp. 190, 194).

decorated with animals. A group of impressions from Nippur offers the best evidence for the Parthian period in Mesopotamia (Gibson, 1994, p. 90). In addition, a recent group of Achaemenid and Parthian seals from Turkey offer interesting evidence for the shape of Parthian seals (glass gems 19 and 20, Yagci, 1993). None of the seals recorded by Campbell-Thompson are characteristically Parthian.

### **Greek Occupation**

Alexander decisively defeated the last Persian king at the so called battle of Arbela<sup>18</sup> a city which is only 23 km. east of Nineveh, and Greek inscriptions found at Nineveh indicate that the site had a small Greek settlement at some time thereafter. Shortly after 146 B.C. the ceramic assemblage changed, and one can conclude that the region was under Parthian control (Oates, 1968, p. 61- 66). The dividing line between what may be considered "Greek," and what is "Greek under Parthian control" is therefore difficult to discern, as at Dura-Europos. There may have been nothing more than a transition between the two periods. For the purposes of this report, "Greek" material remains will be considered with Parthian materials. If a date prior to Parthian occupation is warranted, it will be noted.

### **Excavations at Nineveh 1842-1989: Identifying Occupation After 612 B.C.**

In order to illustrate the varied history of excavation at Nineveh, I have compiled the following survey of excavations there. The year is given, with the months, if known. A list of relevant publications follows. Salient points of the excavation are mentioned, and Parthian

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<sup>18</sup> Although the battle itself took place some 25 km. away from that city.

objects are noted with particular emphasis. Short notes with extensive bibliographical information appear in Pallis (1956, pp. 345-7), and excavations after the 1932 season are listed in Scott and MacGinnis (1990, p. 63). The best summary of the earlier work at Nineveh is Campbell Thompson and Hutchinson (1929b), which often fills in gaps left by the earlier reports. Later excavations on the site are not completely published. As they are vital to my research, the excavations of 1927-32 are treated in detail after the general survey. It is quite difficult to pinpoint the exact location of early excavations (see Fig. 6 for a plan of the mound of Kouyunjik itself). Later excavations are identified on the map on Fig. 11, p. 37.

#### **Before 1836**

Hamilton, W.R. Paper read March 24, 1836 "Letter to the Secretary Containing a Greek Inscription," *Transactions of the Royal Society of Literature* vol. III, part I, 1837.

This outlines the find of a stone with Macedonian months carved on the face, clearly written over another calendar. It was dated (at that time), to the third century A.D. because of the irregular and crude lettering. The information itself appears to be garbled. No mention as to its current location can be found.

#### **Before 1838**

Budge, E.A.W. *By Nile and Tigris* 1920 (2 volumes).

Budge (Budge 1920, p. 27) describes a Jesuit Father, Maximilian Ryllo, who brought a collection of antiquities from Nineveh. Among the finds, which seem to be from the surface are seven Sasanian gems.

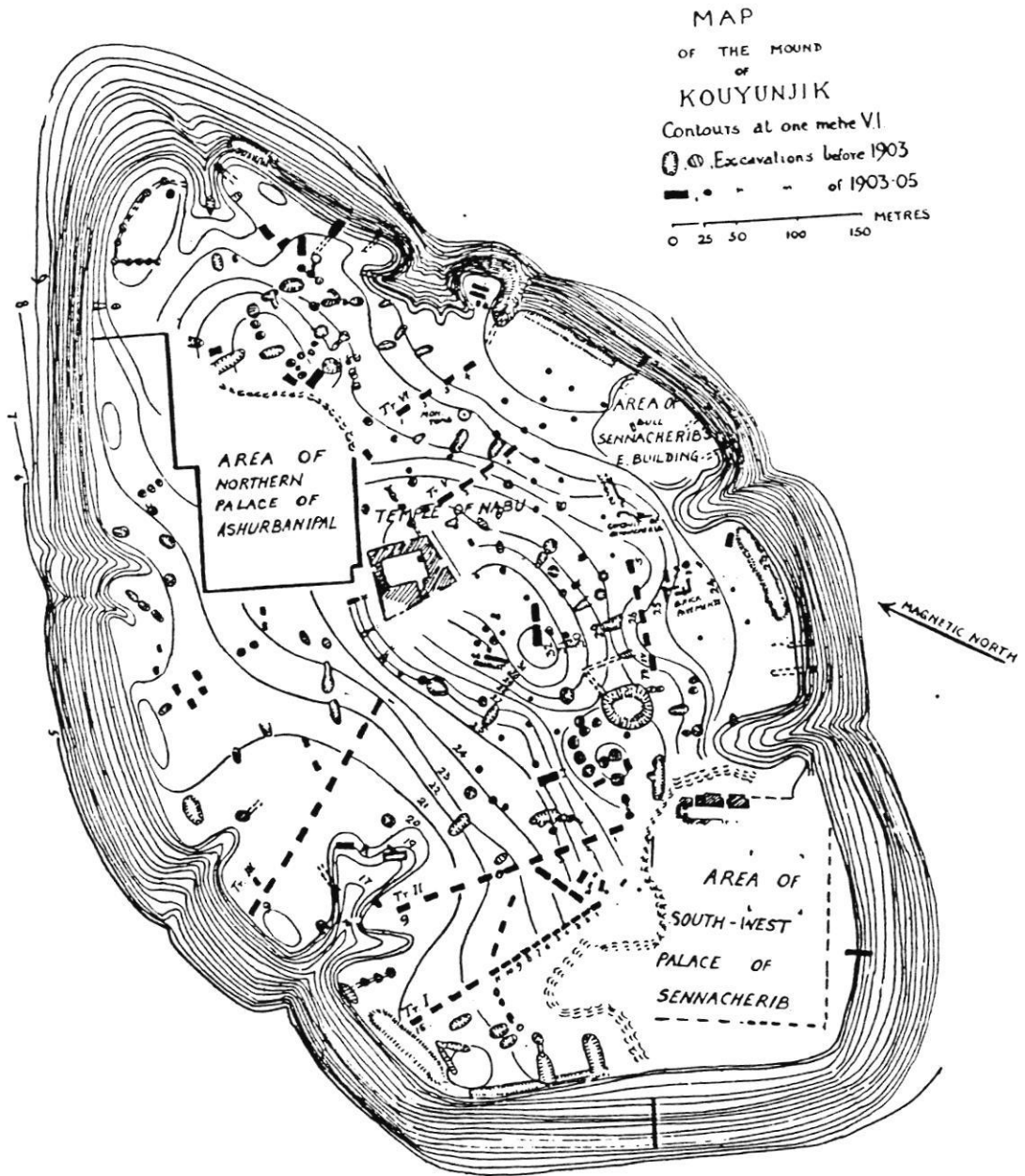


Fig. 6 Plan of the Mound of Kouyunjik (after Campbell-Thompson and Hutchinson, 1929b, plan 2).

### **1842 (off and on, at a minimal level)**

Layard, A. H.<sup>19</sup> *Nineveh and its Remains*, 1848-49.

Tobin, C. (trans.) M. Botta's *Letters on the Discoveries at Nineveh*, 1850.

Botta, representing French interests, was the first to uncover Assyrian remains in Mesopotamia. He began work at Nineveh in December, 1842 and recovered few items of interest from the site. Word soon spread of finds at a nearby mound, Khorsabad (ancient *Dur-Sharrukin*), where the workers were transplanted. The excavations at Khorsabad were fruitful. Botta targeted the ruins of a palace on a platform that yielded many sculptures. Excavations were hampered and greatly delayed, as local authorities proved obstructionist (Lloyd, 1947, p. 107). Nineveh was neglected, as, compared to Khorsabad, it yielded few sculptures (Tobin, 1850, p. 43).

Layard gives a summary of Botta's attempts, not withholding criticism: "He was satisfied with digging pits or wells, a few feet deep, and then renouncing the attempt if no sculptures or inscriptions were uncovered. By excavating in this desultory manner, if any remains of buildings were under ground, their discovery would be mere chance" (Layard, 1849, p. 119).

### **1846 (late spring) 1847 (15.5-24.6)**

Layard, A.H. *Nineveh and its Remains*, 1848-49.

Botta had a minimal work force on Kouyunjik, and the results were disappointing. Layard found, from experience, that Assyrian public buildings were built on a platform of sun dried

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<sup>19</sup> Sir Henry Layard, GCB, DCL, PC (1817-1894) had a wide ranging career in archaeology, and in government. He became Under Secretary for Foreign Affairs in 1852, and was elected to Parliament as a Liberal. From 1869 to 1877 he was minister in Madrid, and in 1877 he became Ambassador in Constantinople and was the first chairman of the Ottoman Bank. His life has sparked a number of historical accounts, perhaps the most thorough is Waterfield (1963), which relies upon much unpublished material, basically concerned with his political career.

mud brick. He would sink exploratory trenches down, and then branch out when he found a brick platform (Layard, 1849, pp. 119-120). As preliminary sounding of an area known later to be Sennacherib's palace<sup>20</sup> yielded nothing, Layard returned to work at Nimrud for the summer and there he tried the Nergal Gate, in the N.W. wall, and found two winged figures (now destroyed). He then returned to Sennacherib's palace to find a large number of carved orthostats. Nine rooms were cleared, and some tablets were recovered, which pointed to the existence of a library. The British Museum grant had almost expired, and a financial crisis and events in Europe greatly hindered continuing work at Nineveh. Yet the excavations continued so that the British could keep their claim to the site, under Ross and Rassam. After Layard's departure, work was reduced to a very small scale. Some small finds were recorded: "In the earth, above the edifice of Kouyunjik, a few earthen vases and fragments of pottery were discovered; but no sarcophagi, or tombs with human remains..." A few complete glass bottles and many fragments of glass were also recovered (Layard, 1849, p. 123-4). Nothing from the Parthian period is identified as such or recorded. Layard did attempt to record where particular objects were recovered from the mound, but the material for this season was severely handled on its way to the British Museum. The British community in India not only took or broke a number of small finds, but also mixed material from a number of sites. After a protest was raised, shipments were thenceforth sealed (Kubie, 1965, p. 217). This is one reason why some of the material at the British Museum is simply listed as "Nineveh or Nimrud."

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<sup>20</sup> Sennacherib (704-681 B.C.) at the beginning of his reign moved the capital of the Assyrian empire from Dur Sharrukin (Khorsabad) to Nineveh. Following a tradition of outdoing previous rulers in architectural grandeur, he built his new palace on a much larger scale. It was termed the "Palace without Rival," and seventy rooms of the structure contained limestone slabs carved with Sennacherib's exploits, including the siege of Lachish (chronicled in Kings 18:13-14). This was regarded at the time as highly significant, as archaeology confirmed a Biblical event (Russell, 1991, p. 1-3).

Despite the title, *Nineveh and its Remains* is basically concerned with excavations at Nimrud. The identification of the city of Nineveh was still disputed. The book soon became very popular, as it gave proof to Victorian religious conviction. For some period of time the money from this book funded Layard's further excavations (Kubie, 1965, p. 218).

#### 1849 (12.10) - 1851 (28.4)

Layard, A.H. *Discoveries in the Ruins of Nineveh and Babylon* 1853.

Layard, A.H. *The Monuments of Nineveh* 1853b.

Gadd, C.J. "A visiting Artist at Nineveh" *Iraq* 5, 1938, pp. 118-122.

Ross had uncovered further sculptured chambers while Layard was away; so, with further British Museum funding, Layard returned. The Palace of Sennacherib was to yield great numbers of tablets (chambers XL and XLI on Fig. 7). A long room 218 by 25 feet was uncovered, with orthostats depicting the erection of the palace. The chamber (XXXVI) with the famous "siege of Lachish" was found at the end of the season. Roughly two miles of bas-reliefs were recovered in the Palace of Sennacherib. An artist drew some panoramic views of Nineveh during the 1850 season. From 10-20 June, Mr. Malan rendered Layard's current excavations in pencil and watercolors; a selection is presented in Gadd (1938, pp. 118-122). A few of the drawings were later published by Layard. This artist's impression is the best illustration of the topography of the mound of Kouyunjik at this time.

Small finds were not well recorded by modern standards. A large hoard of 89 Roman silver coins was recovered, with a date range of A.D. 74-201. Seals, with Pahlavi lettering are clearly Sasanian (and identified as such by Layard). An illustrated stamped shard (Layard, 1853, p. 592) is also Sasanian or later. An engraving of finds recovered from the site (Layard, 1853, p. 593) also shows evidence of later occupation. There are glass vessels of a Partho-Sasanian type, a pilgrim flask, and a western style lamp. It would correspond to

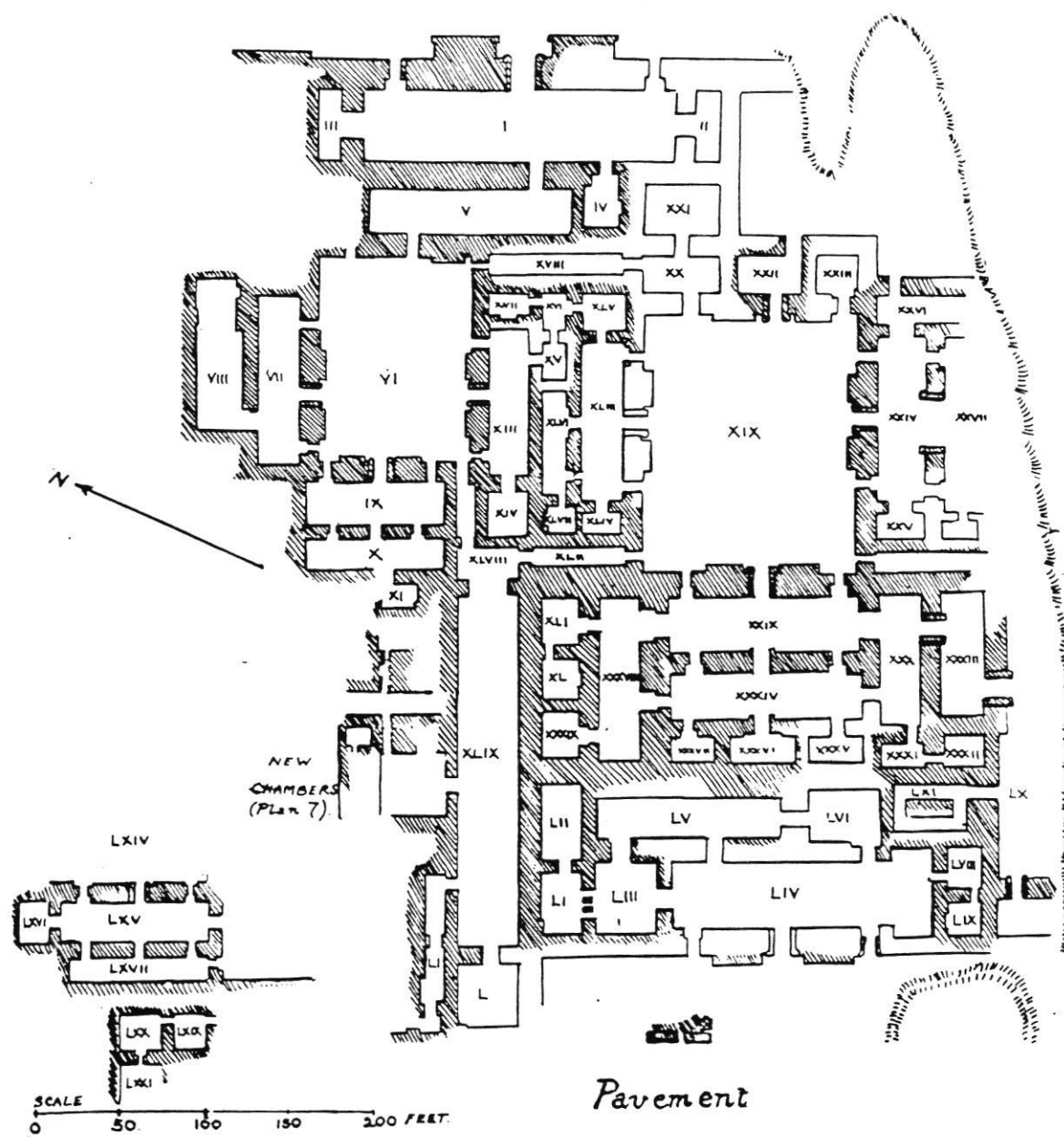


Fig. 7 South West Palace of Sennacherib (after Layard, 1853).

"Type III, late Hellenistic" style in Baur's classification and may be dated to the first century A.D. (Baur, 1947, p. 8). Later builders used Neo-Assyrian sculptured slabs in their foundations (Layard, 1853, p. 591).

Significant new information, carefully outlined in Layard's book of 1853, confirmed that Kouyunjik was the ancient city of Nineveh. The stone orthostats depicting the siege of Lachish, were particularly striking. Material excavated from Kouyunjik before this date may be labelled in British Museum records as "Nimrud."<sup>21</sup> During his first excavations of Nimrud (ancient Kalah), Layard assumed that the rich remains were from the ancient city of Nineveh. When he noted the presence of the mounds at Nimrud, Kouyunjik, Khorsabad and Karamles, he assumed that these represented parts of one royal city. He also accepted the reckoning of distances given in the book of Job to be correct.

#### **1852 (close of year) - 1854 (March)**

Hormuzd, R. *Asshur and the Land of Nimrod* 1897.

After Layard's retirement, his field director, Hormuzd,<sup>22</sup> took charge. Kouyunjik's north section was dug, at the time, by the French Archaeologist Place, who replaced Botta and was fresh from discoveries at Khorsabad. Place was generously given his position at Nineveh by Rawlinson. Rassam, while excavating the Temple of Ishtar, made forays to the north of the site to uncover the Palace of Ashurbanipal (Fig. 8); and, consequently, ousted Place. At the

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<sup>21</sup> Personal communication, Dr. Simpson, Curator in the Department of Western Asiatic Antiquities, British Museum.

<sup>22</sup> Born in 1826 in Mosul to a Chaldaean Christian community, Rassam became a Protestant and assumed English mannerisms. His command of English was weak, so that there are few publications, and his attention was further directed away from archaeology by permanent employment with the British authorities in southern Arabia, where he remained till 1868 (Reade, 1993, p. 48).

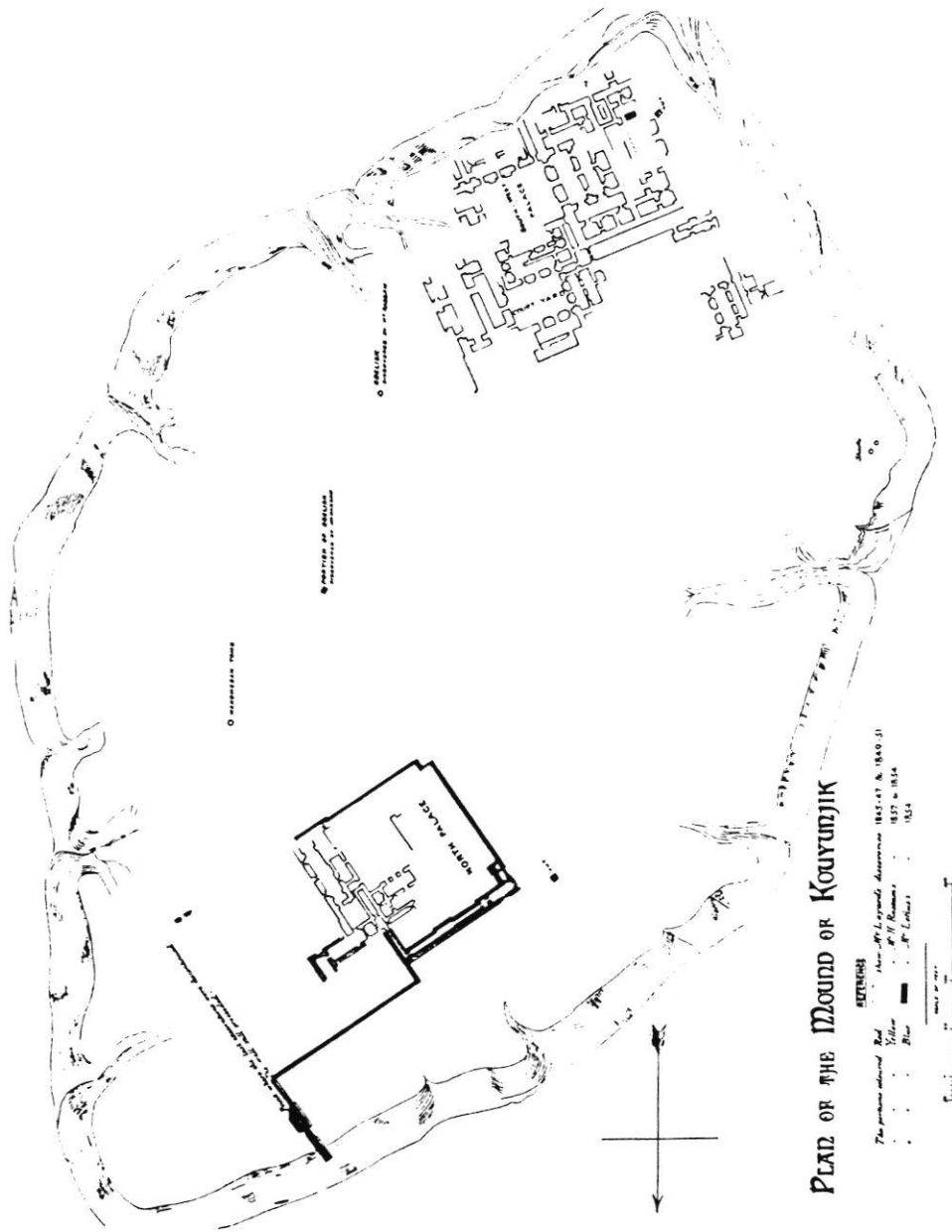


Fig. 8 The Mound of Kouyunjik (after Hormuzd, 1897, plan 1).



time, there was considerable unrest among archaeologists, as many sites were being contested (Lloyd, 1947, p. 150-5). Besides the famous sculpture, Rassam found several thousands of tablets<sup>23</sup> in the "lion-hunt room." He also found evidence for later occupation in the North Palace:

At the place (Fig. 9) where I discovered the great hall or courtyard, there existed the remains of a large building of some well-to-do Sasanian or Arab, which had also been covered over by earth, and made the place appear as if it had never been inhabited. Built into some of the walls of this house I found a great number of pieces of sculpture, which had been brought from the adjacent Nineveh edifices.

Hormuzd, 1897, p. 36.

Rassam also thought that a number of the orthostats were destroyed by lime-burners of the post-Assyrian period. It is with obvious disdain that Rassam mentions the later periods. In a letter from Matilda, Rassam's wife, to C. Rassam, his brother (Curtis, 1976) Parthian burials are described. They receive only a passing mention in Layard (1853, p. 350) and, in Rassam, a brief footnote. Perhaps the news of "treasure," that so interested the Turks, was thought to be better left undiscussed in a published report.

Mrs. Rassam reports that while opening new trenches to the north of the "old trenches," in January, 1852, some Parthian graves were uncovered. This would mean the Parthian graves were uncovered in the north section of the Palace of Ashurbanipal. The evidence is presented by Curtis (1976). Two graves contained bones and small amounts of gold leaf. The third burial contained a female body with gold earrings, many small gold buttons, a sheet gold face mask, two unguentaria, a cylinder seal, gold "spectacles," a gold foil mouth-piece, and a gold coin of Tiberius (A.D. 16-21). Of particular interest is a set of gold sheet

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<sup>23</sup> This discovery of large numbers of cuneiform documents were a strong incentive for further excavation. Tablets from the Kouyunjik collection in the British Museum are principally catalogued by Harper (14 volume series: 1892-1914).

impressions taken from a coin of Trajan (A.D.115). The other finds include further gold masks, gold mouth-pieces and gold jewelry. In the best preserved grave, the two pairs of earrings and covering for eyes (as well as face mask), lead Curtis to postulate that there was more than one body in the grave (Curtis, 1976, p. 53). Curtis also felt that there were perhaps a dozen graves uncovered; at least three were left unnoticed. Other less rich graves were also found, but the finds were not well described.

It is unclear if the latter graves are of the same date as the former, richer graves. There could have been a change in the fortunes of the site, or perhaps of burial customs, over a short period of time.<sup>24</sup> The presence of Roman coins in the rich Parthian graves from Nineveh give an idea of the date for the rich graves, while one may only assume in the absence of diagnostic finds that the associated poor graves are of similar date. The contents are in keeping with what one would expect for the Parthian period, but they could be from an earlier or later period than the rich graves. Without further information, their exact date will remain obscure.

#### **1854 (21.4) - 1855 (mid year)**

Loftus, W.K. *Report of the Assyrian Excavation Fund* Feb. 20, 1855.

Gadd, C.J. *The Stones of Assyria* 1936.

Hormuzd, R. 1897 (Appendix plans I and II).

Further clearing of the Palace of Ashurbanipal continued for the Assyrian Excavation Fund under Loftus, a geologist familiar with the region and his artist Boutcher (selected by Layard). Rassam had accepted a diplomatic post, and was unable to continue. Layard had

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<sup>24</sup> Pearson (1993, pp. 224-226) outlines a change in Danish Iron Age burial practice over a period of a few hundred years. In this case, the impetus for change, from "poor" to "rich" graves related primarily to economic conditions affecting the wider community. When interpreting the evidence, archaeologists may simply assume poor graves were from the less socially prominent members of society, and may not interpret the two kinds of graves as belonging to a different period.

established an Assyrian lobby - later named the Assyrian Excavation Fund - in London in order to coordinate efforts to put public pressure on the British Museum to continue funding exploration.<sup>25</sup> Museum efforts were continuing on a very limited scale under Rawlinson, who viewed the fund as a rival. The excavations by the Assyrian fund began shortly before Rassam completed his third season of work, and friction mounted as these excavations began encroaching upon terrain reserved for British Museum operations. The dispute was interrupted by the Crimean War (Brackman, 1978, p. 284). Nothing of the Parthian period seems to be recorded.

### **1873 (7.5-9.6)**

Smith, G. *Assyrian Discoveries* 1875.

Sponsored by the *Daily Telegraph* in London to find more tablets relating to Biblical themes, Smith found just that in the library of the South West Palace, among them the famous 17 lines of the Babylonian Deluge story (Mitchell, 1988, no. 33). The south east corner of Ashurbanipal's palace was also lightly excavated. Smith largely ignored uninscribed archaeological material and nothing of any interest for the Parthian period was recorded.

### **1874 (1.1-12.3)**

Smith, G. *Assyrian Discoveries* 1875.

Smith began work where he had left off the previous year, near the entrance of the South West Palace. He found inscriptions relating to the repair of the Ishtar temple and a later

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<sup>25</sup> Layard's support of this organization appears to have been directed against the emerging "Crystal Palace Company." Established in 1853, it sought to take "duplicate" Assyrian material left by Layard *in situ* and offer them for public sale. Although the details are not clear they appear to have had permission from the B.M. (Brackman, 1978, p. 284).

building was found with elements from the Ishtar temple. Smith concentrated on the area Layard had previously found to be rich in tablets. He encompassed an area about 700 feet around the "library," "...passing over the centre of the S.E. court of the palace, and then, turning west, running along north of the long gallery...thence southward over the chambers of the W. of the palace, and eastwards along the bottom of the S.E. court (Campbell-Thompson and Hutchinson 1929b, p. 53)." He found numerous small objects, pottery, glass and, at deeper levels, tablets. Few finds are illustrated or described.

The most striking find, however, was a stone lintel (now B.M. WAA 118896). It is well illustrated on the cover of the second edition of *Assyrian Discoveries*, and described by Smith:

...in front of one of the entrances I discovered the lintel of a doorway; it was formed of a block of stone six feet long, and was sculptured along the face. In the centre was an ornamental cup or vase, with two handles; on each side of the case stood a winged griffin or dragon, looking towards the centre...

Smith, 1875, p. 146.

He assumes that it was Assyrian, but Curtis sees it as "clearly Parthian in date." In form it would be in keeping with a slab used to top a doorway. It depicts two winged creatures of a feline form with large claws facing a central device, perhaps an altar (Fig. 10). This device appears on the metope of Hatrine temples of the early third century A.D. (Curtis, 1976, p. 60).

It is unfortunate that more attention was not paid to post-Assyrian architecture at this stage, as it is likely that using modern techniques of excavation, there would have been a discernable structure about this lintel. It is possible that the Parthian structure simply copied earlier Neo-Assyrian architecture, but there also may have been evidence for a pitched brick

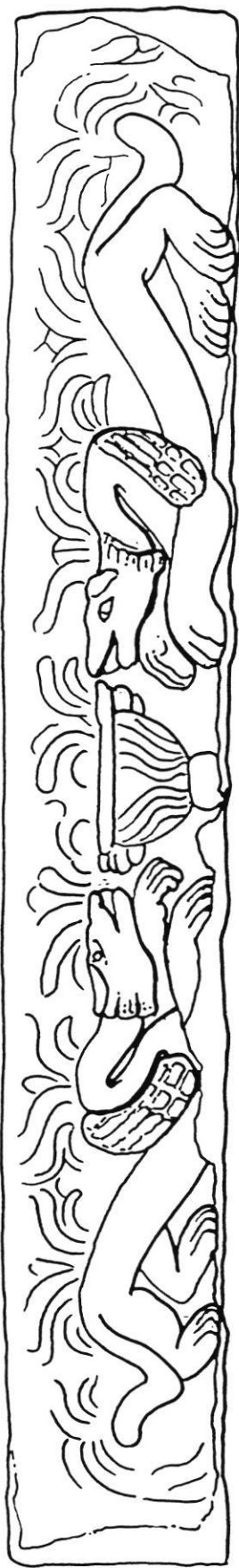


Fig. 10 Parthian Stone Lintel (adapted from Smith, 1875, cover).

vault, which has been considered a characteristic of Parthian architecture<sup>26</sup> in Mesopotamia (Kawami, 1982, p. 61). At Assur, the famous Parthian palace was constructed using very large baked brick laid in a fast setting gypsum mortar (Andrae and Lenzen, 1933, pl. 43f, 11, 13d and 22b). Whatever the case it appears that Smith did not record any different building materials used for this section of the palace. A re-excavation of this area may indicate the extent and nature of Parthian rebuilding.

Other Parthian finds, without a specified location, include a Roman terracotta lamp (Smith, 1875, p. 433). Baur's classification would place it in the third century A.D. (Type VI group 1, Baur, 1947, p. 46). A terracotta lamp feeder in the shape of a bird was also uncovered (Smith, 1875, p. 433). Smith (1875, p. 146) illustrates a "terracotta vase" or pilgrim flask of a common type. With a simple rolled rim, Curtis dates the example as broadly "Hellenistic," by comparison with an example from Nimrud (Curtis, 1976, p. 140).

Smith set out for his last expedition to recover quantities of inscribed material that was reaching the antiquities market. He reached Baghdad by June 1875, and he died in June 1876 in Mosul (Every, 1993, pp. 107-108). There is no publication of the material he purchased, but from scattered accounts it appears to be literary material from earlier periods.

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<sup>26</sup> The origins of the pitched brick vault appear to be Mesopotamian and not Iranian. Excavations at Tell al-Rimah from levels dating to the ninth century B.C. yielded "domical vaults," formed by either two or four intersecting vaults. These examples are more complicated than the simple vaults from Assur (Kawami, 1982, p. 63; Oates, 1965, p. 77 and pl. XXb; Oates 1970, pp. 20-23, pls. V-VI).

**1878 (7.1-17.5) 1878 (16.11-Jan) 1879 (27.9-11.11)**

Rassam, H., *Asshur and the Land of Nimrod* 1897.

Rassam left the continued excavation of Sennacherib's and Ashurbanipal's Palaces to overseers (Nimroud Rassam). Their primary task was to look carefully for inscribed material. A hoard of "not more than 145" Sasanian silver coins was found in the Palace of Ashurbanipal. (Rassam, 1897, p. 223). Work on the mound of Nebi Yunus was attempted, but political considerations stopped excavations.

The palace of Sennacherib yielded a coarse stone "Greek" statue, with an inscription "DIOGENES" (Rassam, 1897, p. 365). This statue, now in the British Museum (Inv. no. 1881-7-1-1), has been the subject of a detailed study (Invernizzi, 1989). Both on the basis of art historical and epigraphic evidence it can be securely dated to the second century A.D. (Invernizzi, 1989, pp. 630-631), a date in keeping with the Parthian stone lintel.

**1888-9 (winter) 1890-91 (winter)**

Budge, E.A.W. *By Nile and Tigris* 1920 (2 volumes).

Finding the palaces deeply buried under the backfill of earlier excavations, Budge sifted through the old trenches for tablets. In the chambers of the S.W. corner of the mound, two inlaid silver bracelets of the Sasanian period were recovered (Budge, 1920 p. 67).

One of the reasons Budge was sent to Iraq was to investigate the rumors spread about H. Rassam. The trustees were concerned that a large number of finds, especially tablets, were being sold by members of the excavation team. Budge, who harbored a grudge against both Layard and H. Rassam reported that the rumors were true. A court case ensued, and Rassam was awarded fifty pounds in damages for slander (Kubie, 1965, p. 272). The scientific journal *Nature* also charged Layard with obtaining a large number of Assyrian sculptures for his private collection, an allegation which was effectively denied (Brackman, 1978, p. 321).

Whatever the merits of the case, Budge clearly states in his writings the shortcomings of these two men. The Parthian material uncovered in 1852, including gold objects, appears to have arrived to the B.M. basically intact, but the material can not be assumed to be complete. Budge observed that Rassam was excavating far too much without consideration for systematic work or proper supervision.

### 1903 (3.3) - 1905 (11.2)

Campbell-Thompson and Hutchinson, *A Century of Explorations at Nineveh* 1929, pp. 57-71. King's report is given with slight additions from Campbell-Thompson's work.<sup>27</sup>

King planned a course of action by further clearing the S.W. Palace. Areas excavated in the 1903-1905 period are marked on Campbell-Thompson's map (Fig. 6). Chambers were found in the W., E. and S., and he extended the then known limits of the Palace. In the N. Palace of Ashurbanipal, on the N. side, the old Assyrian structure was found to be absorbed into a later one. On other sections of the mound, despite obvious attempts by previous excavators, King began further operations. He dug much deeper, about 40 feet, and spaced his trenches about the mound. Much information about the probable existence of structures on the mound was accumulated.

Little is recorded from later periods, although the British Museum has four Sasanian seals that clearly date from King's excavations (B.M. WAA 99411 1904-10-9, 444-447; after Simpson, 1994, p. 597). King's operations ended when Campbell-Thompson took charge in 1904. At the time a new palace was just being uncovered on the E. side of the mound. It was found to have been built by Sennacherib, although the structure (the *bit nakkapti*) was much damaged.<sup>28</sup>

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<sup>27</sup> There was no published report by King of his excavations. As Campbell-Thompson was present during the excavations, he undertook to publish the finds from that period of excavation. The original reports of King are housed in the British Museum.

Campbell-Thompson started by clearing the *bit nakkapti*, and the two other palaces. He found the Temple of Nabu just S. of the N. Palace. The map presented by Campbell-Thompson, (Fig. 6) locates King's excavations with relative precision.

The conspicuous gap between the work of King and Campbell-Thompson and later excavations was a transitional phase in the history of Iraq. After World War I the country was separated from Ottoman administration and placed under British Mandate. Upon independence, the country underwent an upheaval, and the British had difficulty maintaining order. They could not find a local government that would be acceptable to Shi'ites. The Sunni's, although a minority at that time, were in effective control of the country (Fromkin, 1989, p. 450).

In 1921 the British installed King Faisal (from Arabia), which resulted in relative stability for a short period of time. By late 1932, there was communist agitation in the country, and by August 1933, the Iraqi government initiated a pogrom against the Assyrian Christian community, located in northern Iraq (al-Khalil, 1990, p. xxv). Thompson's excavations were clearly within a window of opportunity, and one can understand why further funding for excavation was not forthcoming under such circumstances.

**1928-32 see full description below**

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<sup>28</sup> This structure was later re-excavated by Russell in 1989. An inscription that identifies the structure as the *bit-nakkapti* was found on the lower part of a bull colossus. The meaning is uncertain, but it is assumed to be a temple structure. The recent excavation cast doubt upon Russell's earlier hypothesis, and it is now fairly certain that the structure was part of the palace, and not separate (Russell, 1991, pp. 85-86).

## 1951-8

Mohammed Ali Mustafa. Incompletely published.

A translation of *Sumer* 10, 1954, 280-3 (in Arabic); is presented by J. Roberts in Scott, M.L. and MacGinnis, J. "Notes on Nineveh," *Iraq*, 1990, pp. 69-71.

During the 1954 season excavations on Nebi Yunus uncovered a shrine of Hermes about 100 meters N. of the N.W. corner of the mound (for the exact location, see Fig. 11, no. 31).

The small unfired mud brick structure was 3.0 x 4.4 meters in dimensions, with walls preserved to a height of 1.3 meters. The statue of Hermes (illustrated in Madhloum and Mahdi, 1976, p. 125; Iraq Museum, Baghdad no. IM 59094) was in the back of the temple with a bench, supposedly for votive offerings. In style it resembles Greco-Roman sculpture, but the methods of manufacture clearly place it in an eastern context of about the second century A.D. (Colledge, 1979, p. 232).

In the N.E. corner was a small room, with fragments of pottery (glazed and incised) resembling the first period, or fourth level, at Seleucia. A limestone altar with an inscription of Sennacherib and a Greek inscription were recovered just above the same site. This, and the limestone foundations that surrounded it, suggest a larger Hellenistic settlement "...on the west side of the city, in the area between Nebi Yunus and Kouyunjik, but perhaps the settlement also extended across to the east as well, as some pavements and broken stones have recently been discovered in this area" (Scott and MacGinnis, 1990, p. 70). The temple may have had many side chambers with shrines to other gods. Oates has pointed out that the plan could be Assyrian (Oates, 1969, p. 61). Evidence from Iran suggests that Greek religious rituals were practiced there during the Parthian period (Kawami, 1987, pp. 24-26). The same may have been the case in Iraq (Madhloum, 1969, pp. 43-49).

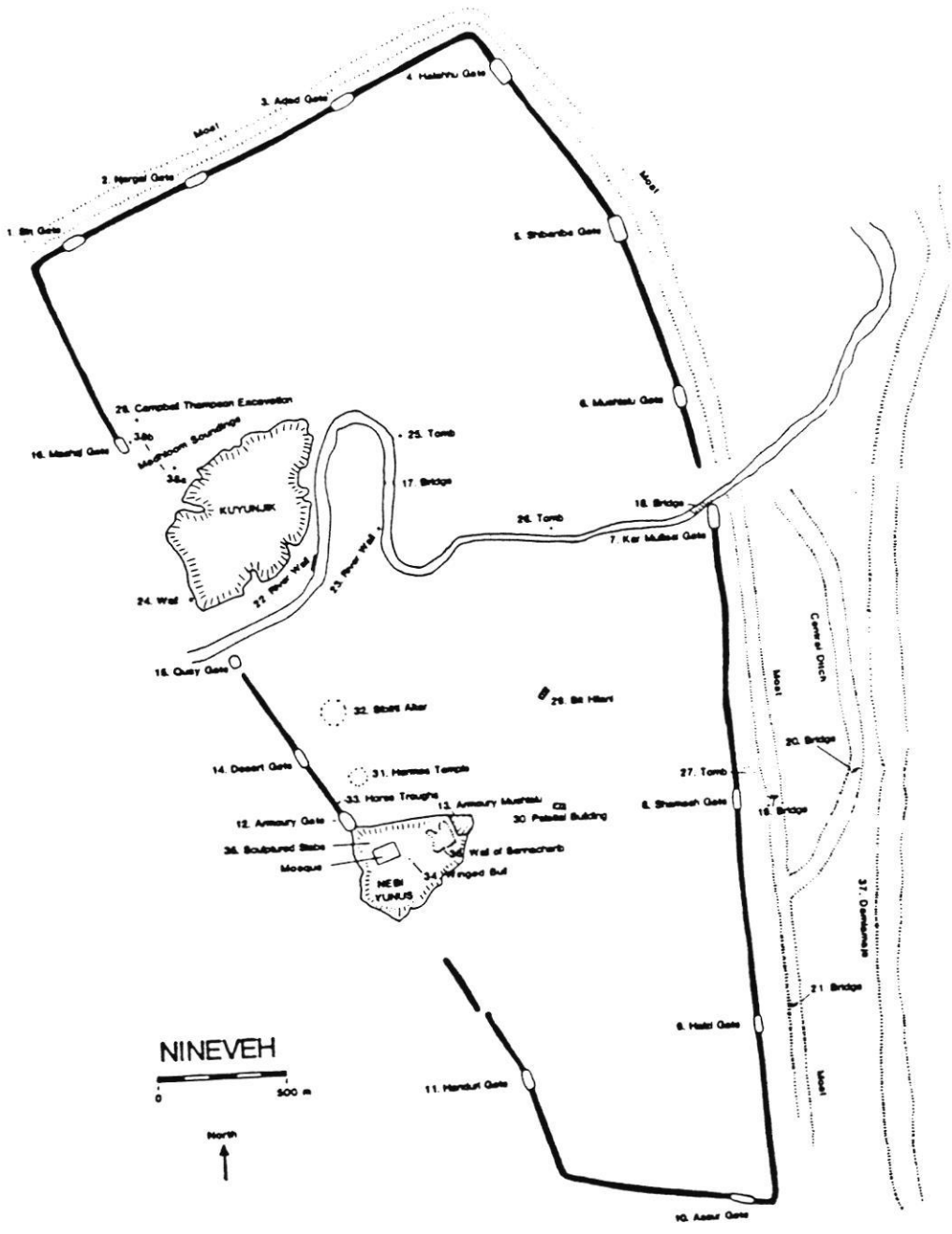


Fig 11 New Excavations at Nineveh (after Scott and MacGinnis, 1990, fig. 4).

There has been much debate over the meaning of "Hellenization," in recent decades, and the term is generally assumed to apply to the process whereby post-classical Greek culture assimilated peoples into a single entity sharing a common, although syncretic, culture. In Judea, it is widely assumed on the basis of literary sources that the region was Hellenized by the third century B.C. Recent interpretations, however, suggest that on the basis of material remains a wide ranging statement is inappropriate. It was only areas of critical military or strategic importance that were effectively Hellenized (Harrison, 1994, p. 103). It is then important to recall the strategic importance of Nineveh, as attested by numerous settlements before the coming of the Greeks, and also to appreciate that the present evidence for the settlement at Nineveh in the fourth and third centuries B.C. is limited in extent. Further excavation is required to reveal the nature of the "Hellenistic" city as a whole during this period.

#### **1965-1971**

Madhloum, T.A. "Excavations at Nineveh," 1965-7 *Sumer* 23, 1967, pp. 76-80.

The purpose of these excavations was to uncover and restore monumental architecture, along with halting the advance of modern Mosul. The Shamash gate on the E. section of the wall was re-excavated, after the earlier incursions by Layard and Rassam. One room of the six recorded chambers was cleared. El-Wally (1966), also mentions that the Halzi and Adad gates were uncovered and work began on Sennacherib's N. Palace. During the process some Hellenistic and Parthian graves were uncovered (El-Wally, 1966, p. "c").

In 1966 work began on the Palace of Sennacherib, first dug by Layard. A small chamber leading off the throne room was found to be a bathroom. A quantity of stone orthostats was recovered (Madhloum, 1967).

## 1967-68

Madhloum, T.A. "Nineveh the 1967-68 Campaign" *Sumer* 24, 1968, pp. 45-51.

The section of the wall directly N. and S. of the Shamash gate was unearthed and restored. The wall was found to have additions and repairs from after the reign of Sennacherib. 100 meters N. of the W. doorway of the Shamash gate, in a tunnel cut into conglomerate stone, 2 baked clay sarcophagi were found (Madhloum, 1968, fig. 7 no. 27). One contained a jar with small inscribed tablets, and an "Egyptian" frit *wedjad* cult amulet<sup>29</sup> was also discovered (Madhloum, 1968, p. 48). Pedersen and Troy (1993, p. 39) note that the majority of tablets date just before 612 B.C., and that the frit amulet dates from ca. 740 - 656 B.C. The graves may then be dated to the end of the Neo-Assyrian period.

On the wall's N. sector the Mashki gate was located and uncovered. The S. section was badly looted, but enough remains to state that the plan is unlike any other gate. In 1968 excavation began E. of the throne room, a large precinct in Sennacherib's palace. Five occupation levels were uncovered, the first Islamic, and the other four Hellenistic. "Generally speaking very scanty finds were produced by these levels: there were glazed potsherds and a number of intact Hellenistic or Parthian jars" (Madhloum, 1968, p. 50).

Soundings were taken at two points N. of the mound, a few meters E. of the modern distilling plant. In the first sounding three levels were found. The first yielded incised, unpainted shards, Islamic and Hellenistic types, the second, graves oriented to Mecca and, third, mud brick walls. The second sounding yielded houses and "numerous pottery finds" (Madhloum, 1968, p. 51).

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<sup>29</sup> The Egyptian amulet of the "Eye of Horus" style was in use for a long period of time. It relates to the story of Horus, as his eye was healed after being damaged. Apparently the story relates to the waxing and waning of the moon. It was used in all forms of Egyptian jewelry, as the eye was felt to have protective properties (Wilkinson, 1992, p. 43).

## 1968-69

Madhloum, T.A. "Nineveh The 1968-69 Campaign" *Sumer* 25, 1969, pp. 43-49.  
Postgate, N. "An Assyrian Altar from Nineveh" *Sumer* 26, 1970, pp. 133-136.

There was continuing restoration on the Shamash gate to the North and South. Mud brick restorations were suspended because of the fast rate of decay and the stone facade was replaced instead. Further work on the Mashki Gate continued along similar lines. A metal roof was erected above the throne and bath rooms of the Palace of Sennacherib. On the E. bank of the Khoser riverlet, a vaulted tomb was exposed when part of the N. bank collapsed. For the exact location, see the map, Fig. 11 no. 26. It was 35x35x7 cm. with an arch 90 cm high, 2.40 meters long and rests on a base built of bricks. A baked clay sarcophagus was inside, ornamented with a rope design (2.24 M long by 56 cm. high and 96 cm. long). No grave goods were found with the badly decayed body, as there seems to be evidence of a robber's hole. The tomb itself was large enough for more than one occupant. A hole 60 cm. high by 45 cm. long was found fitted with a stone and covered with mud. This is taken to be a "refilling" hole, used to place more bodies in the structure. The grave is clearly Parthian in date. Another structure was uncovered when the Khoser's N. bank collapsed, about a kilometer away from the previous site. It was hoped excavations would continue.

In 1968 Postgate "discovered," an Assyrian altar in the Mosul Museum. It was said to have come to light during the restoration of the walls of Nineveh. On one side it bears an inscription of Shalmaneser III to the seven gods; on the other there is an inscription in Greek, giving the name of Appolonius, (son) of Demetrios, the Archon; and the words "to the city." It is possible that Appolonius is the same man who is mentioned in an inscription published earlier by Campbell-Thompson (1929b, pp. 140-142).

**1980**

Manhal Jabur (director): No Report.

**1985-6**

Ball, W., and Black, J. *et al.* "Excavations in Iraq 1985-86," *Iraq* 49, 1987, pp. 242-3.

The mound of Nebi Yunus was explored by Iraqi archaeologists. The excavated area lies about 35 meters south of the tomb of Jonah. A winged human headed bull, made in blocks, measuring 5.7 meters long, 1.3 meters wide, and 3 meters high, was recovered (see Fig. 11 no. 34). It is of a similar description to the one recovered and reburied by Rassam. A glazed-brick and baked brick pavement are also reported.<sup>30</sup>

**1987**

Abd as-Sattar (director): No Report.

**1987 May to June (brief pilot campaign)**

Wilknison, T. and Mattherws, R. *et al.* "Excavations in Iraq 1987-88," *Iraq* 5, 1989, p. 259-60.

Stronach, D. "Excavations at Nineveh, 1987," *Mar Sipri* 1:2, 1988, pp. 1,5.

The primary goal of the season was to explore the mound for third millennium and earlier material and for areas of settlement of the seventh century B.C. Particular attention was focused upon town houses, as previous excavations had concentrated upon major royal buildings (Stronach, 1988, p. 1).

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<sup>30</sup> From the report the context of the glazed bricks pavement is unclear, it would appear that the glazed bricks were re-used for the pavement. It is unlikely that glazed bricks would be used to line a walkway due to their cost and lack of durability.

Stronach began in area KG, on the E. edge of the mound. He found - in descending order - three major levels: 1. a pre-Islamic platform 2. a late Hellenistic level and 3. a Late Assyrian level. In the N.W. corner of the mound in the Late Assyrian lower town, in an artisans quarter, a kiln and pottery, wasters, and metal fragment were recovered.

### 1989 (spring)

Nashef, "Archaeology in Iraq" *American Journal of Archaeology* 94, 1990-report by Stronach, p. 280).

Stronach, D. "When Assyria Fell: New Light on the Last Days of Nineveh," *Mar Sipri* 2:2, 1989, pp. 1,2.

On the S.E. flank of Kouyunjik, in a gully in Area KG, a number of late third millennium deposits were found, reaching back to Ninevite V pottery (early third millennium B.C.). In operation KS, the exploration of the *bit nakkapti* erected by Sennacherib (705-681 B.C.), the base of a *lamassu* statue and a paved gateway were uncovered. The lower town in Area MG was found to be an elite quarter. The major work was on the Halzi gate, where evidence of a repair, dated about 614 B.C. was found, along with the skeletons of nine soldiers. This represents the last days of Neo-Assyrian Nineveh (Nashef, 1990, p. 280). This attack appears to be unrecorded in cuneiform sources, and coincides with extensive repairs and modifications to the area about the Halzi gate. The gate was narrowed at least twice (Stronach, 1989, p. 1). The reports, and a personal communication with Stronach, indicates that no evidence from the Parthian period was uncovered.

## Spring 1990

Lumsden, S.. "Urban Nineveh: Investigations Within the Lower Town of the Last Assyrian Capital," *Mar Sipri* 4:1, 1991, pp. 1,2,3,8.

Stronach, D. and Lumsden, S. "U.C. Berkeley's Excavations at Nineveh" *Biblical Archaeologist* 55:4, 1992, pp. 227-233.

This project is a continuation of a survey of the area north of the mound of Kuyunjik, which is being threatened by urban development. Over one third of the ancient site has already been destroyed. Particular attention was given to Nineveh's urban neighbourhoods, which have been largely neglected by earlier excavations. Expansion of the city beyond the old city mound is indicated by scattered finds of pottery. Quantities of slag from the vicinity of the Sin gate indicate that this area of the mound may have been the "industrial" quarter. Hellenistic occupation appears to be confined to a small area in a large field to the east of Kuyunjik, near the bend of the Khosr river. Field scatters of pottery also indicate that most of the northern part of the city was abandoned after 612: "just as in the recent past, it reverted to cultivated fields interspersed with isolated farmhouses or small villages" (Lumsden, 1991, p 3). An area on the north west mound would appear to be a continuation of this quarter. The houses are flimsy (an "artisans quarter"), and there is some indication of both pottery and metalwork. Throughout the region there are infrequent scatters of Islamic pottery, indicating diffuse settlement during this period (Stronach and Lumsden, 1992, pp. 228-229).

# Archaeology of the Parthian Period at Nineveh

## Buildings and Stratigraphy for the 1928-1932 Seasons

It was in the course of the British Museum excavations (1928-32) that the best evidence for the Parthian Period was uncovered, and it is from these excavations that the primary evidence for my research derives. Most of the information in what follows is from published reports. Further information is also obtained from accumulations of material with notes, now in the Fitzwilliam Museum, Cambridge. The material from Nineveh at Cambridge was given to the museum by R. W. Hutchinson, who retained some unpublished ceramic material for his own use. While all pieces are fragmentary, some accumulations are accompanied by notes (examples discussed in the text are presented on Fig. 13) that state where the accumulation was from, or perhaps the proposed date of the collected material. The fragments and notes are now housed in plastic bags. They were apparently moved from other containers in about 1980 by a conservator. No other information is available (personal communication, Dr. Wilson)

The information from these accumulations will be integrated with the reports of Campbell-Thompson and recorded in footnote form. In a number of instances this source of information has provided critical data on the criteria used to date the ceramic assemblage from Nineveh.

The beginning of the excavations of R. Campbell-Thompson and R. W. Hutchinson targeted the Temple of Nabu (Fig. 12). The excavations were a logical continuation of the 1905 expedition under King. The 1928-1929<sup>31</sup> excavation revealed the Temple of Nabu, the

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<sup>31</sup> At this period in Iraq's history, there was much western involvement in the north, particularly British. 1927 is regarded as a "day of destiny," as it was in that year that a site twelve miles from Kirkuk was identified as a reservoir of oil (Longhurst, 1959, pp. 85-94).

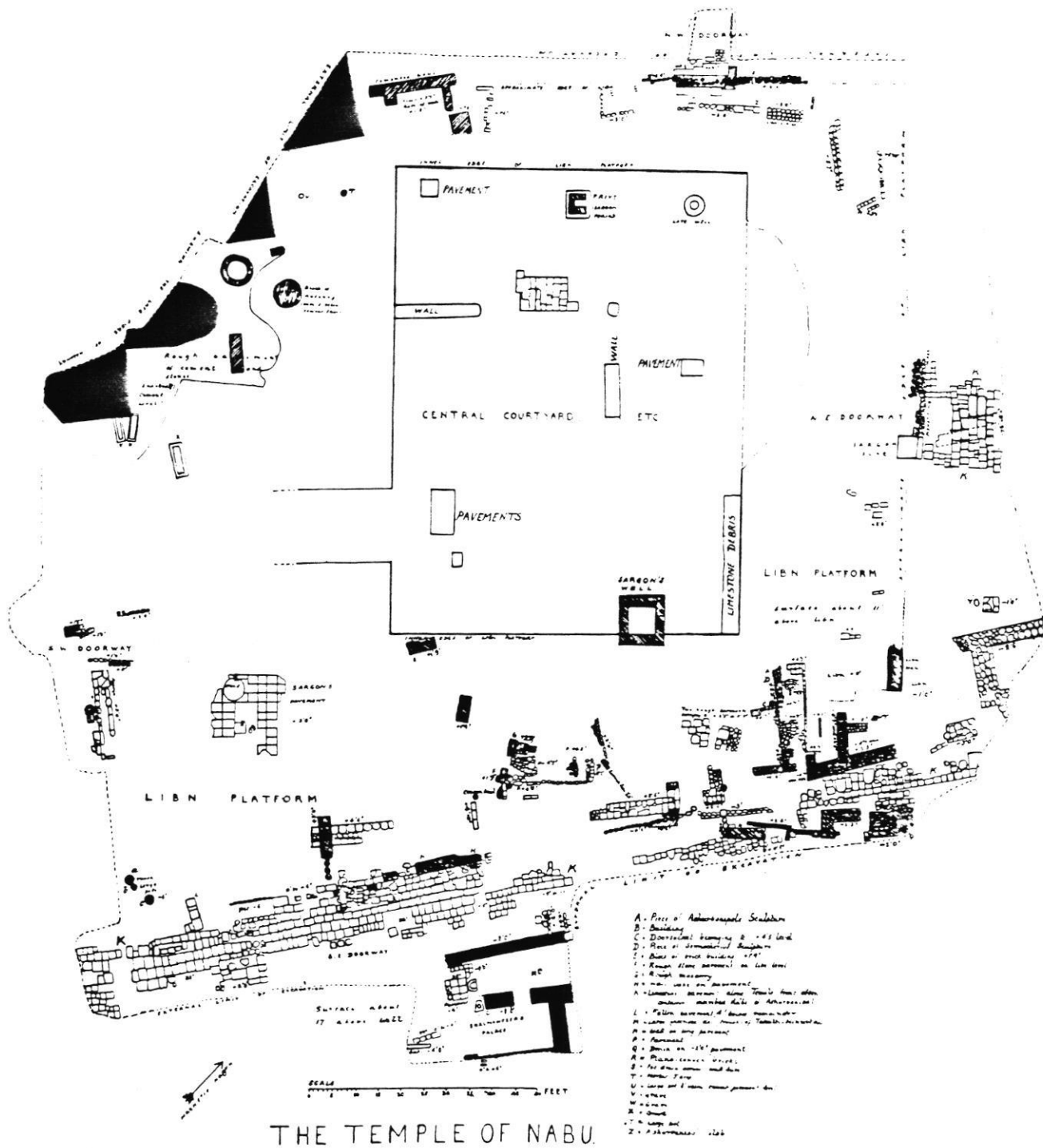


Fig. 12 Excavations During the 1928-29 Season (after Campbell-Thompson and Hutchinson, 1929a, pl. 8).

Assyrian? or Parthian?  
 pottery from Nabu site

Pottery from <sup>Ishizur?</sup> temple site  
 The red painted sherds are  
 certainly Parthian in date  
 The white glazed saucers  
 are probably of that date

Fig. 13. Notes that Accompany Accumulations of R.W. Hutchinson, now in the Fitzwilliam Museum, Cambridge (photocopies at 1:1).

first chambers of a Palace of Ashurnasirpal, and part of a house built by Sennacherib for his son.<sup>32</sup> Buildings were recorded by using the top of the "Sargon Well" as a zero line. This method of recording depth was used throughout Campbell-Thompson's excavations at Nineveh. The surface of the earth above the well-top varied, from about 10'-11' higher, and on the S.E., S.W., N.E., and N.W. it was about 16', 13', 11' and 7' higher, respectively. "At the same time, a very little study will show the disturbed state of the mound, and the uncertain value of evidence as afforded by record of the depths" (Campbell-Thompson and Hutchinson, 1929a, p. 104).

Few structures remained to any appreciable height from any period. There are definite rebuildings of Neo-Assyrian structures in the Parthian and later periods. Most noticeable in the reports, however, is the general lack of information regarding the overall layout of the city. To be fair, it is difficult to determine the date of a structure if there are few or no small finds from it; therefore, plans of contemporary buildings were rarely established.

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<sup>32</sup> The abbreviation "SH" stands for "Sennacherib's House," which is presented on Fig. 24 (and discussed below). In a group of finds - now in the Fitzwilliam Museum - from this area, identified by a note "Pottery from Sennacherib's House," one can gain an appreciation for the range of recovered material: 1 Assyrian vessel (half); 1 Parthian fish tail lamp (similar Fig. 60); 18 plainware fragments of roughly Partho-Sasanian date; 4 small (1-3 cm<sup>2</sup>) fragments of molded bowls; 3 plain Parthian incised handles, similar to the sampled example Fig. 47; and one Islamic waster. This is the only accumulation that gives any indication of the relative frequency of plain to glazed wares. In addition, it also indicates that the molded bowls could be frequently encountered.

## 1928-29

Campbell-Thompson, R.C. and Hutchinson, R.W. "The Excavations in the Temple of Nabu at Nineveh," *Archaeologia* 79, 1929, pp. 103-148.

This season was not a good one for architectural remains, since Campbell-Thompson did not understand who rebuilt the Temple of Nabu after its destruction.<sup>33</sup> As a result, the information needed to differentiate the date of the post-Assyrian repairs is lacking. It can be surmised from the later reports that much Parthian rebuilding took place within the framework of the Neo-Assyrian administrative buildings at Nineveh, whose fate in and after the fall of the city in 612 B.C. is uncertain.

A particular area of repair noted during this season of digging is in the E. corner of excavations (see Fig. 14). It was done at an unknown date after the destruction of 612 B.C.

A number of pieces of sculpture of the time of Ashurbanipal and Sennacherib were re-used in the rebuilt structure (Campbell-Thompson and Hutchinson, 1929a, p. 107).

## 1929-30

Campbell-Thompson, R.C. and Hutchinson, R.W. "The site of the Palace of Ashurbanipal at Nineveh, Excavated in 1929-30 on Behalf of the British Museum," *Liverpool Annals of Archaeology and Anthropology* 18, 1931, pp. 79-112.

This season saw the excavation of the "Palace of Ashurnasirpal." Work began on the S.E. side of the Temple of Nabu where the excavations left off in 1928 (Fig. 15). Occupation is well attested for the ninth century B.C., with the small burned brick palace of

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<sup>33</sup> The Fitzwilliam museum provides further information. An accumulation labelled "Assyrian ? or Parthian ? pottery from the Nabu site" (Fig. 13) contains 16 green glazed fragments of a Parthian date, 2 plain handles from Parthian jugs, one fragmentary Neo-Assyrian flask/small vessel, and one Sasanian triangular stamped fragment.

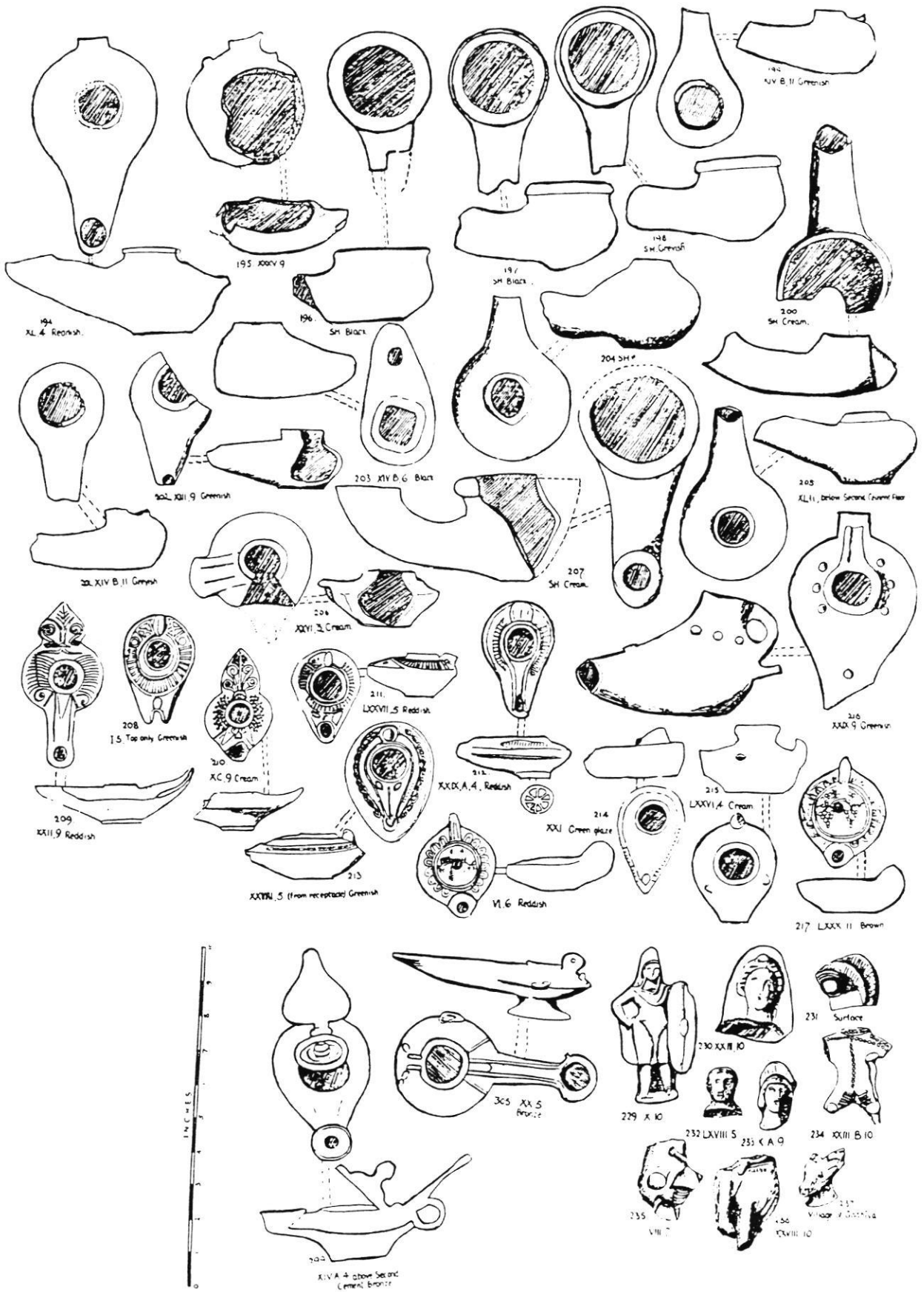
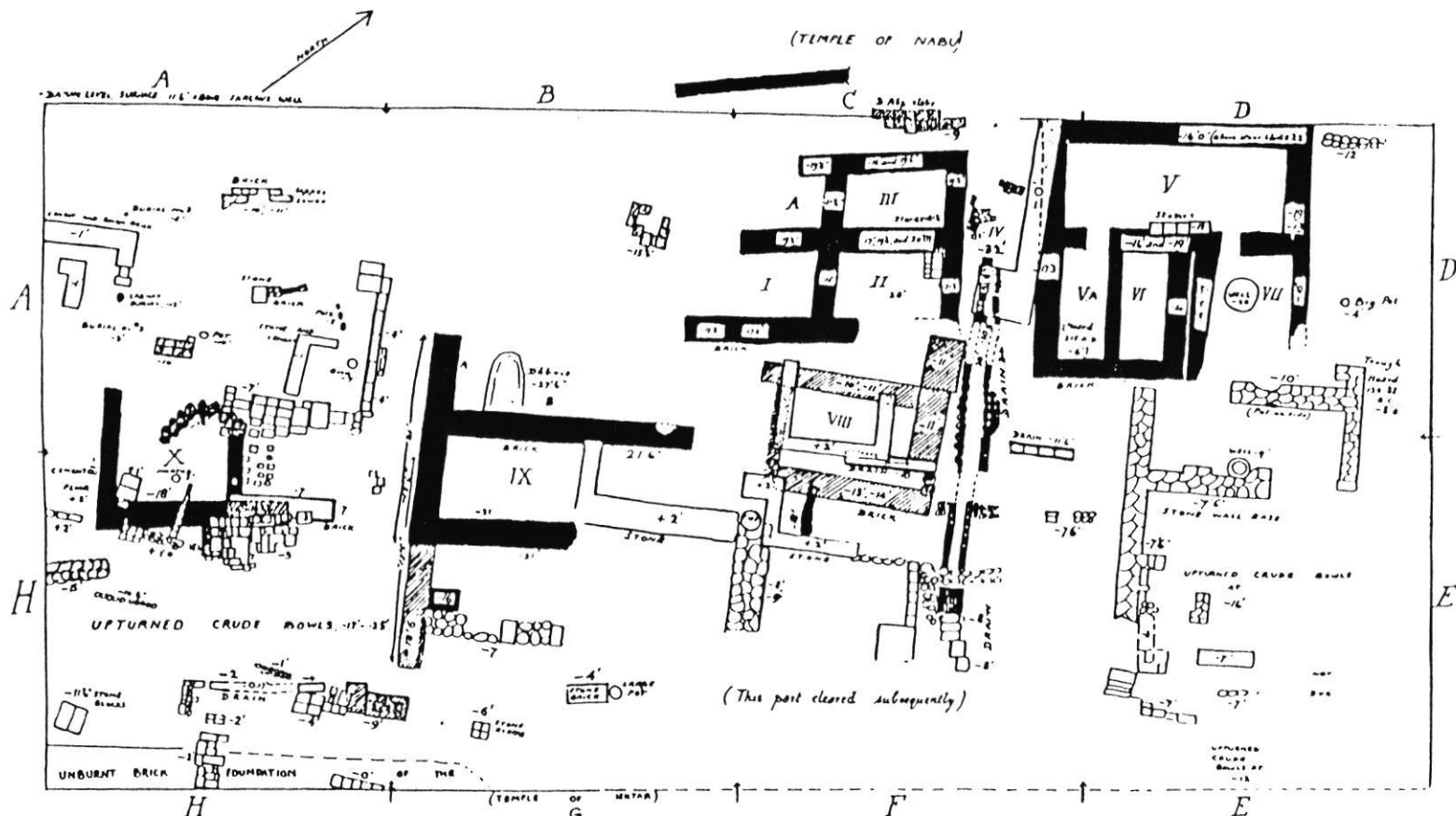


Fig. 14 Lamps and Figurines from the 1928-29 Season (after Campbell-Thompson and Hutchinson, 1929a, pl LV, LVI)



PLAN OF THE AREA EXCAVATED IN 1929-30. THE SITE OF THE PALACE OF ASHURNASIRPAL IN NINEVEH

Arabic figures represent the base of walls, etc., in feet above (+) or below (-) the datum level (the surface at the top left-hand corner). The superficial area has been divided into eight squares A-H, each 30' sq.

Walls believed to mark the old Assyrian sites, in black ; many of these restored in later periods. Walls approximately of the British period, stone , Assyrian bricks 

Fig. 15 The Excavations of the 1929-30 Season (after Campbell-Thompson and Hutchinson, 1931, pl. XXXIX).

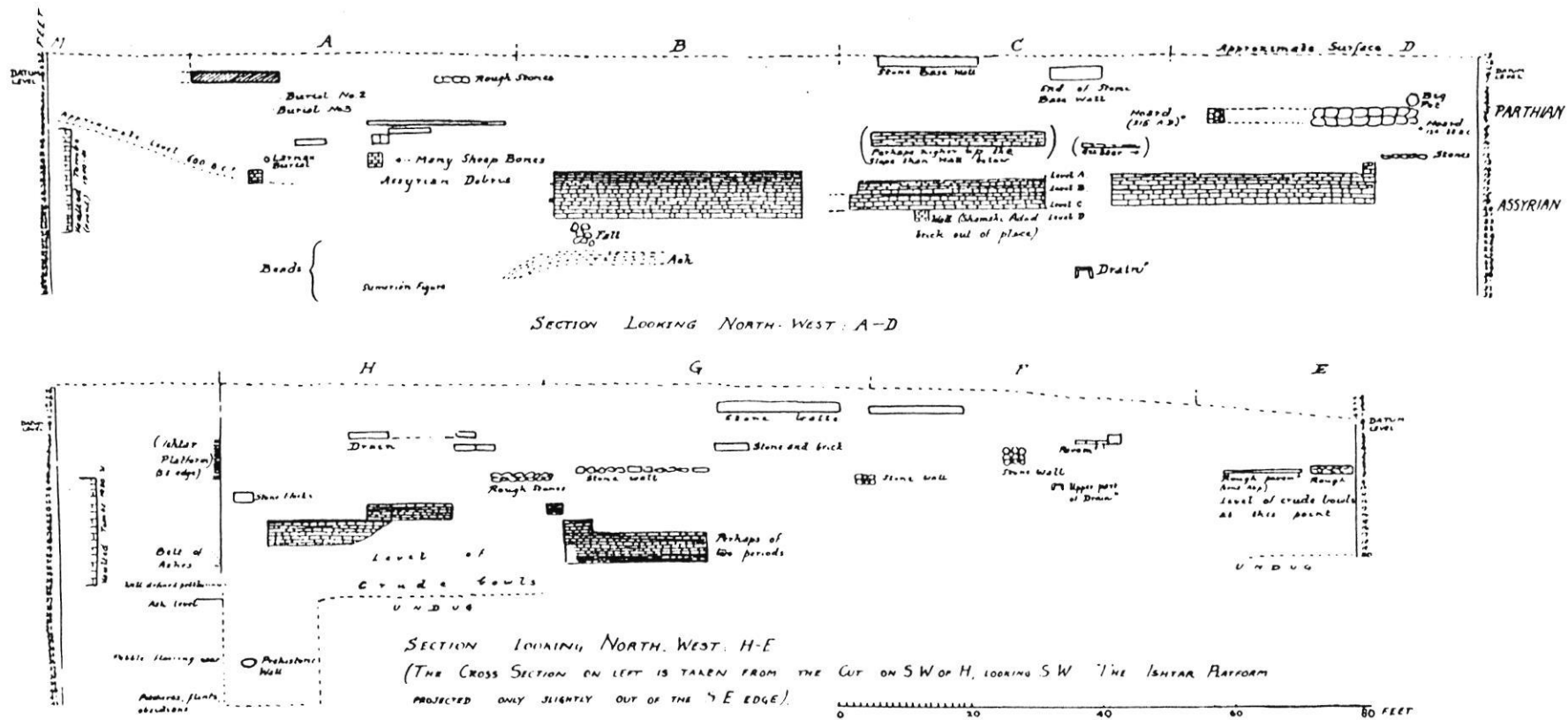


Fig. 16 Vertical Plan of the 1929-30 Season (after Campbell-Thomson and Hutchinson, 1931, pl. XL).

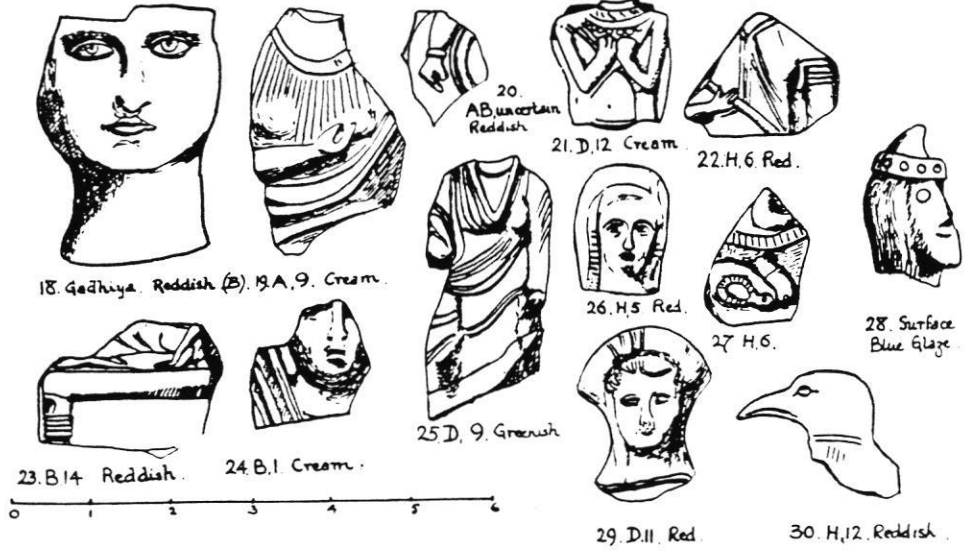
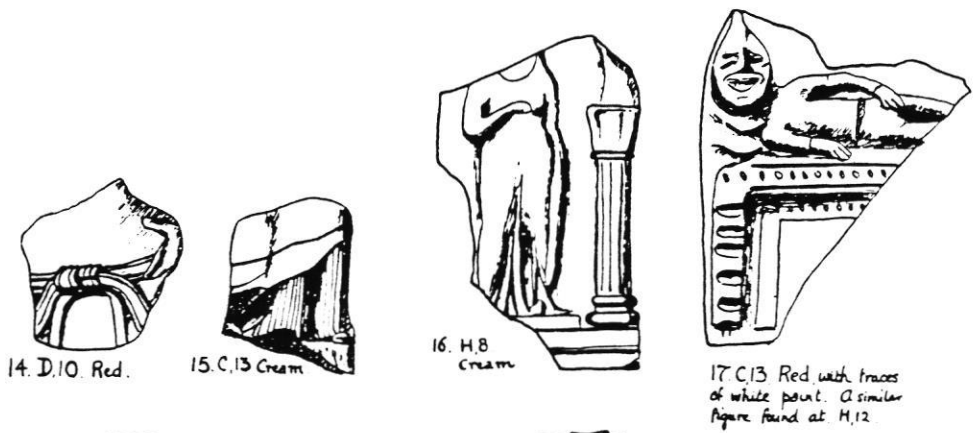
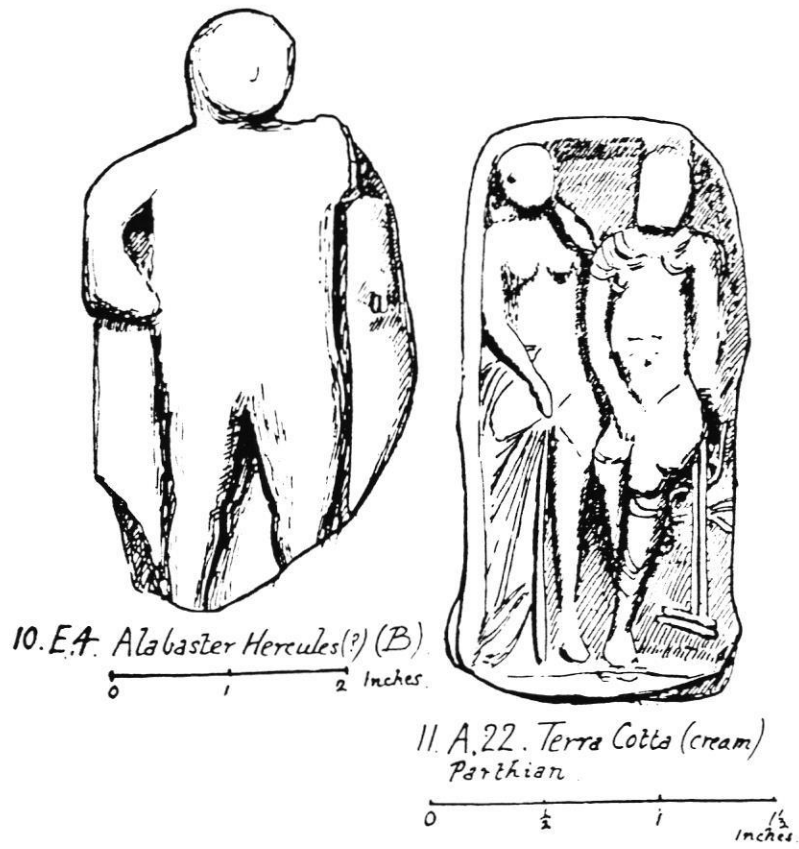


Fig. 17 Figurines of the 1929-30 Season (after Campbell-Thomson and Hutchinson, 1931, pl. XXIV).

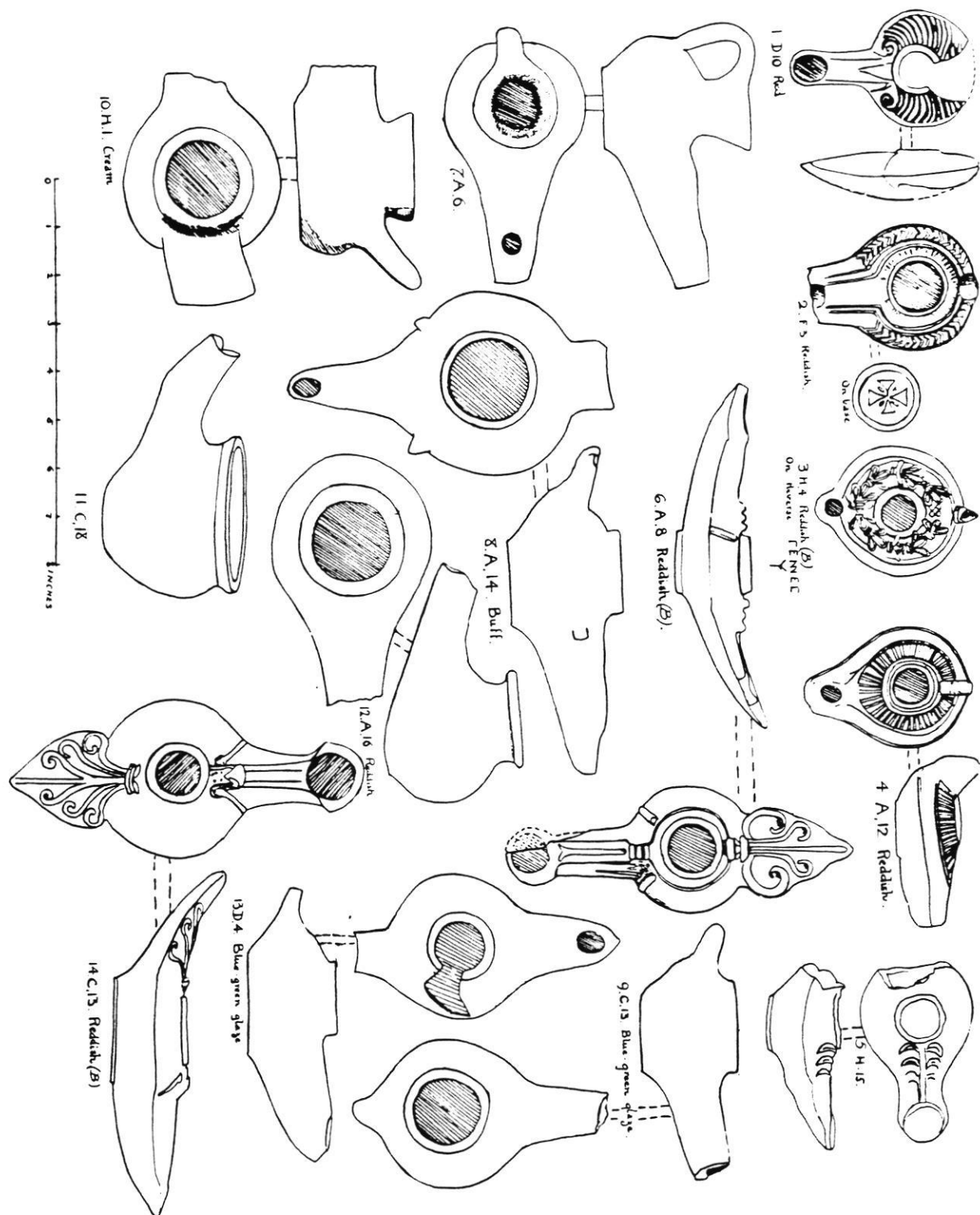


Fig. 18 Lamps of the 1929-30 Season (after Campbell-Thomson and Hutchinson, 1931, pl. XXVII).

Ashurnasirpal II. It is decorated with paintings, and glazed reliefs in brick. Stamped bricks indicate rebuildings by Ashurnasirpal's son, Shalmaneser III, and Shamshi-Adad V and finally his son, Adad-nirari III (Campbell-Thompson and Hutchinson, 1931, p. 83). Squares A-H, an area covering 200' x 100', yielded prehistoric material.<sup>34</sup> Late prehistoric beveled rim bowls were also uncovered in debris forming a slope in the vicinity of the Temple of Ishtar. They were buried upside down and were apparently used for offerings for the dead. Thompson also found examples of these bowls in a building that abutted the Temple of Ishtar. The date of its foundation is fairly secure, as an inscribed cylinder was uncovered with a dedication to Manishtushu King of Agade, who ruled from c. 2269-2255 B.C. (Campbell-Thompson and Hutchinson, 1931, p. 81). Vaulted tombs were also uncovered, associated with these bowls, in the 1930-31 season. The question of dating these bowls is critical for the whole complex of temple, tombs and slope and is discussed fully below.

Excavations confirmed that the Temple of Nabu was roughly contemporary in date with the Palace of Ashurnasirpal, but the Temple itself was about ten feet higher due to a rebuilding of the brick platform (Campbell-Thompson and Hutchinson, 1931, p. 80; for a section looking N.W. see Fig. 16). This means Campbell-Thompson's earlier opinion that the Palace was largely unaltered after the fall of Nineveh in 612 B.C. was wrong. Later rebuildings may have altered the plan of the Palace. It may be quite difficult at times to pinpoint at what period a certain restoration took place, as there are no inscribed bricks after Adad-nirari III

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<sup>34</sup> Areas A and B contained a "bead layer" from 27 to 33 feet below the surface. Although this layer was about six feet thick, and was an accumulation of material washed down from a wider catchment area, the majority of the beads were from an early period c. 2900 B.C. (Beck, 1931, pp. 427-437). It is significant to note that this layer is at the bottom of a hill. The top of the hill was apparently the region of the earliest settlement. Campbell-Thompson makes little note of the natural geography of the site, so that his stratigraphy has not been corrected for this variation in elevation.

(783 B.C.). Some work may be from the Neo-Assyrian period after this king or after the end of that period.

On the whole, the Parthian rebuilders tend to follow the line of the Assyrian baked brick walls in their restorations.<sup>35</sup> Chambers "A" to VII were extensively rebuilt. Particularly noticeable is the use of stone bases in the rebuildings of the post-Assyrian period. Also of the same level are wall bases made of broken baked Assyrian brick (see 1930-31 season S.E. sect. Q). "The explanation may well be that when the newcomers rebuilt the palace, they first used up the old bricks which were immediately at hand and were compelled to take stone for the remainder, as they pushed out farther away from the brick ruins" (Campbell-Thompson and Hutchinson, 1931, p. 91). The rooms may only be dated by examining the debris found within them. The majority of these rooms are dated by characteristic shards of Parthian green glazed wares.<sup>36</sup>

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<sup>35</sup> It is clear that Parthian builders were aware of the Neo-Assyrian palace, as stone rebuildings (often associated with characteristic Parthian green glazed wares) were aligned with earlier structures. It can be assumed that at least the foundations were visible. Kawami (1976) speculates that the arrangement of sculptures at Pasargadae, and perhaps also a hunting scene of Chosroes II (sixth or seventh century A.D.) carved at Taq-i-Bastan, could have derived inspiration from the palace of Sennacherib at Nineveh. If the latter observations are correct, then some of the Neo-Assyrian structures at Nineveh would have been intact, or would have been restored, so that artists of later periods could use earlier material (Dalley, 1993, p. 140).

<sup>36</sup> Although in the report of this season Campbell-Thompson identifies Parthian pottery from these areas, a note by R.W. Hutchinson with some ceramics (now in the Fitzwilliam Museum) from this season cast some doubts on the abilities of the excavators to separate Parthian from Neo-Assyrian Wares. A label is included with a group of pottery: "Assyrian pottery of period just before the restoration of the temple of Assurbanipal until 612 B.C." There are seven green glazed fragments, in various states of degradation. They are all representative of a type that is commonly encountered during the Parthian period, and there is no possibility that the fragments would today be considered Neo-Assyrian. From this note and other indications in the report, it is clear that the excavators were unsure of the date for the green glazed wares. As a result, much glazed material was retained for study.

Chamber five in the S.E. wall yielded three Byzantine coins of the sixth century A.D. Also found in the general vicinity of the wall at D, 6 is an interesting Roman bronze object. It is circular, engraved with an eagle. The inscription reads COH OPTIME MAXIME. It would appear to be a Roman military badge (now in the British Museum, labelled as coming from "D5," and not "D6" as indicated in the report, number 1930-5-8, 133), and Campbell-Thompson cites a parallel find discovered in York. A major coin hoard (Hoard II, discussed in Chapter IV) was uncovered slightly above the wall. Roman coins in many denominations were very well represented ranging in date from from A.D. 54 -Nero- to A.D. 212 - Severus and his son Geta - (Hill, 1931). The larger silver Roman issues were taken as standard currency in areas not aligned with Rome. The considerable number of smaller issues imply a Roman presence (discussed in Chapter IV). Perhaps they were left from a temporary Roman occupation during a campaign in the region.

Under the N.W. wall, in chamber VI, was a shard of Parthian pottery. The N.W. wall of chamber VII also contains Parthian shards. Taken together, chambers five through seven contain good evidence for later rebuildings. Campbell-Thompson also notes that: "...(Sporadic) finds of coins show that round section D, about the same level as the walls, the occupants used Roman coins down to the 3rd century A.D." (Campbell-Thompson and Hutchinson, 1931, p. 91). It can be assumed that earlier walls were rebuilt to form habitable spaces. Many stone buildings in the area attest to great activity in the vicinity. A hoard of coins was found under the S.E. wall. Composed of Parthian bronze coins and lead tokens, it is detailed in Chapter III. An alabaster statuette of "Hercules" was also found in section "E4," which is adjoining section D (Fig. 15). Sculptures of Hercules were relatively common in Iran during the Parthian period; two fine heads were recovered from Masjid-e Sulaiman (Kawami, 1987, fig. 22 and 23). An example perhaps closer to Campbell Thompson's

weathered example is that from Tang-e Sarvak (Kawami, 1987, Pl. 52. The latter example is executed in a more Greek style and is dated to the first or second centuries A.D. (Kawami, 1987, p. 89).

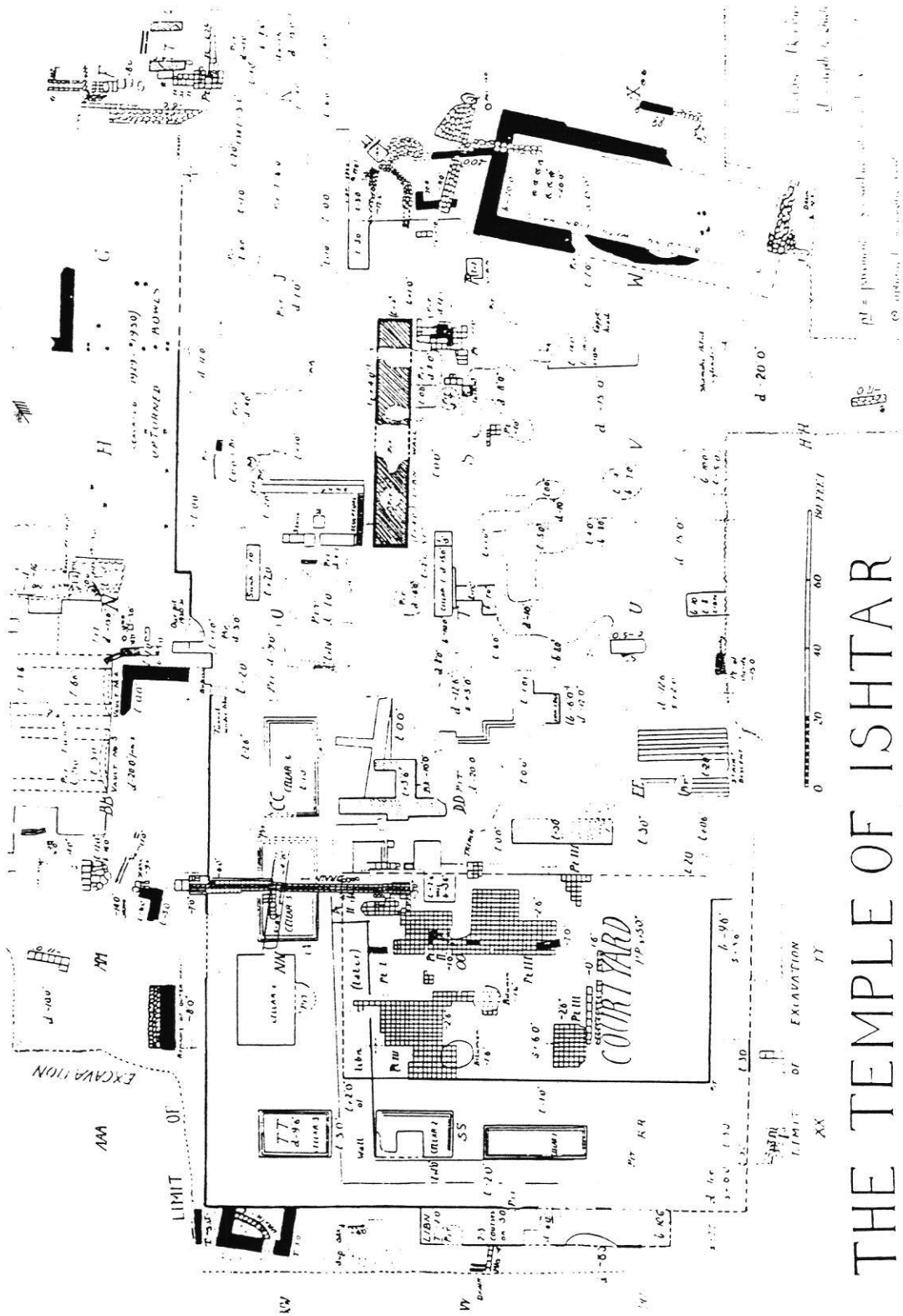
Also recovered during this season is a terracotta plaque (Fig. 17). It is clearly of a funerary character, a seated male (wearing armour) is portrayed with a female figure (presumably his wife) who clutches her skirt. Although it is of a small size, in style it is similar to Greco-Parthian funerary monuments. Assur and Dura Europos have yielded funerary monuments (on a larger scale) of a similar character (Mathieson, 1992, pp. 190, 197).

### 1930-1931

Campbell Thompson, R.C. and Hamilton, R.W. "The British Museum Excavations on the Temple of Ishtar at Nineveh," *Liverpool Annals of Archaeology and Anthropology* 19, 1932, pp. 55-116.

The excavations this season continued the clearance of the Temple of Ishtar (see Fig. 19). About two thirds of the unburnt brick platform (six feet thick and roughly 300' by 150') for this structure was uncovered. Campbell-Thompson also supposed that the majority of the platform, the seven cellars, and large building in section W were part of the pre-Parthian foundation. Few traces of the temple wall survived because of post-Assyrian building.

Vaulted tombs were found in sections N-BB. Covering a rectangular area 60' X 50', they are made of sun dried mud brick. Although they were looted thoroughly, Campbell-Thompson dated them to not later than 2900 B.C.; because of a large quantity of late prehistoric beads uncovered from the surface of the area in the previous year.



# THE TEMPLE OF ISHTAR

Fig. 19 Excavations During the 1930-31 Season (after Campbell-Thompson and Hamilton, 1932, pl. XC).



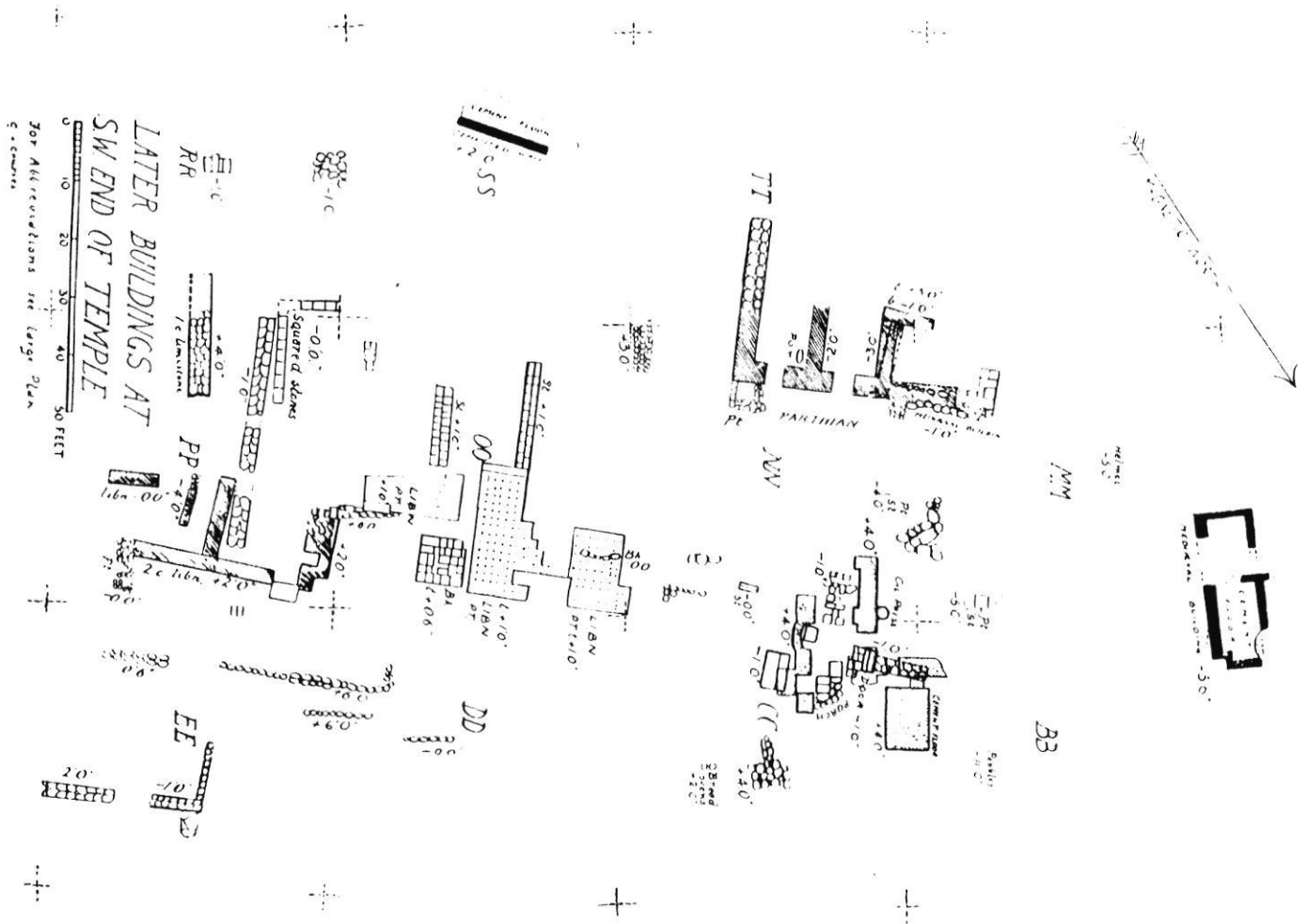


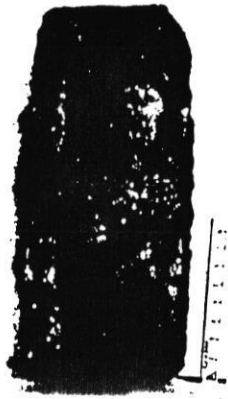
Fig. 21 Excavations During the 1930-31 Season: "Romano-Parthian" and Later Buildings of the Temple of Istar (after Campbell-Thompson and Hamilton, 1932, pl. XCII).



Fig. 22 Figurines from the Temple of Istar (after Campbell-Thompson and Hamilton, 1932, pl. LXVII).

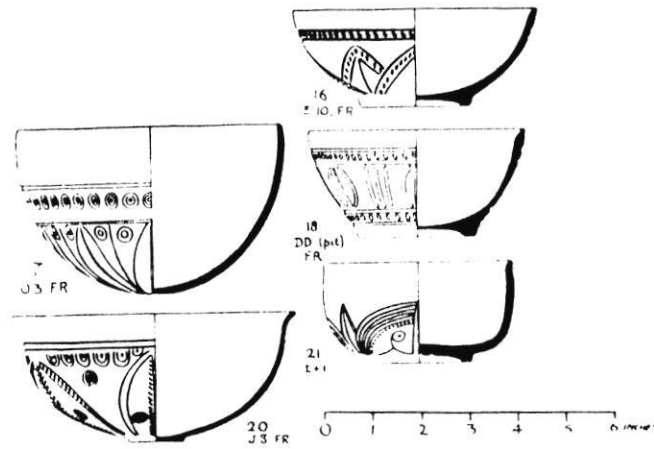


LIMESTONE CAPITAL.

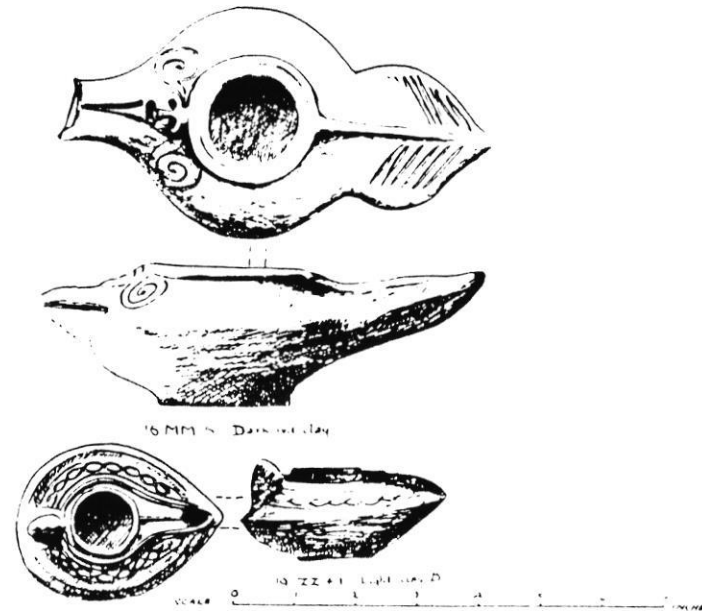


ROMANO-PARTHIAN SCULPTURE.

A



B



C

Fig. 23 Finds from the Temple of Istar (after Campbell-Thompson and Hamilton, 1932, A: pl. LI, B: pl. LII, C: pl. LXV).

Mallowan dated the beveled rim bowls<sup>37</sup> found there to c. 4000 B.C. (in Campbell-Thompson and Hamilton, 1932, p. 80). Algaze (1986) accepts a late Prehistoric (Protoliterate) date, but thinks the complex was a public building. He interprets the structure as vaulted rooms about a central courtyard, and postulates that it is probably a storehouse (Algaze, 1993, fig. 16). Using comparisons with the later Akkadian Period, he argues that this structure was a feature indicating a Protoliterate trade network with south Mesopotamia (Algaze, 1986). His theory does not explain the complex as a whole (temple, graves, and slope), even though the beveled rim bowls were found throughout. Beads are convincingly part of the vaulted tombs. One feels that the answer may lie in considering the context of the structure, which would suggest a burial site rather than a trade center.

This season was possibly the most productive for Parthian architecture. Unfortunately, later Medieval occupation of the area makes identification of exactly what is "Parthian" difficult (see Figs. 20 and 21).<sup>38</sup> After the destruction of 612 B.C., there was no clear evidence for occupation hereabouts until the third century B.C. The earliest coins date from the second century B.C.

In sections X, Q, K, F, W, R, and J are a group of houses. Their dates range from the Parthian period to the 14th century A.D. The houses on the N.E. side of the road appear earlier in date than the same level on the S.W. side. The S.E. side yielded Islamic pottery,

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<sup>37</sup> There has been much discussion over the precise nature of beveled rim bowls. (Ellison, 1984, p. 63-64). The bowls are one of the most common types of pottery from the Uruk period, and is used as a chronological indicator (they are usually dated to c. 3000 - 3500 B.C.). Also widely assumed to have been used for ration bowls, as many appear to have a standard volume. They have been regarded as votive objects used in religious services, or for making yoghurt and the distribution of rations (Johnson, 1973, pp. 129-139). No doubt the debate will continue as to their exact function.

<sup>38</sup> In this instance in particular, and in the report in general, the term "Parthian" is taken as a period of time, and may also apply to "Roman" finds recovered from the site.

with Byzantine, Abbasid, and later coins. The occupants did not use good limestone blocks for building as they did on the other side of the roadway. This is taken by Campbell-Thompson as an indication that the earlier occupation was long forgotten and covered. The earlier side has pottery and figurines indicative of Parthian occupation. Glass, of a Roman Syrian type, and a Roman bronze soldier's badge, both indicate Roman influence. Campbell-Thompson cites the earlier season's find of a hoard of Roman coins up to 215 A.D. in D, 6; he also mentions more coins: Antioch, 1-2 centuries A.D. (D,6 and Q+1), Parthian, 1 century A.D. (D, 1 and W, +10), Hadrian d. 138 A.D. (D, 6), Septimus d. 211 A.D. (D, 6), Caracalla d. 217 A.D. (D, 6 and D, 8), and Greek Imperial 2-3 centuries A.D. (D, 4). Section D can be reasonably dated c. 1-2 centuries A.D. by coins (Campbell-Thompson and Hamilton, 1932, p. 74).

The late buildings in sections T,U and V are difficult to understand. There are numerous walls of post-Assyrian rebuilding, and a figurine and two coins indicate some Parthian occupation.<sup>39</sup> The cement floors used here appear to be much later,<sup>40</sup> as one is associated with

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<sup>39</sup> The most important accumulation (now in the Fitzwilliam Museum) in terms of the Parthian period yields important information (Fig. 13). It clearly states "Pottery from *Ishtar* ? temple site The red painted shards are certainly Parthian in date the white glazed saucers are probably of that date." It is important to note that the section in italics *Ishtar* ? does not appear to be in the same hand. This note gives Hutchinson's thoughts on two ceramic types that are difficult to date, and ones that are not clearly dated in the published reports. The molded bowls in particular are potentially the most diagnostic - but unfortunately the most neglected - in the reports. The accumulation included: 1 blue glazed fragment; 17 fragments of white glazed ware; 1 palmette stamped fragment; 1 molded vessel shard of unknown shape; 4 Roman red fragments. Perhaps the most important single fragment is what appears to be a true Anatolian molded bowl of a type from Tarsus. It has a clear black wash and a very different design (E 26 1928z). There were also two molded fragments of a fine floral form; 7 of a geometric nature; 2 of a simple line design; and 3 with no decoration other than three rim bands. There is also a clear waster of a plainware vessel of a Parthian shape (XLVIII 9 E 261928 00).

<sup>40</sup> A note with an accumulation in the Fitzwilliam: "Christian pottery above the 2<sup>nd</sup> cement 12<sup>th</sup> or 13<sup>th</sup> Century A.D. Including Blue + green glazed Rakka type + a sherd of a Mosul jug." There is also an accumulation that may also arise from this season's excavations : "Christian

a Byzantine coin. Buildings on the S. and S.W. of the Temple may be dated to the Sasanian period by their coins (actually 4 Roman, 2 Byzantine, and one Sasanian ), with the cement floored house in SS +2, being much later. The buildings in MM, NN, and TT seem basically to have pottery and coins of the 12-13 century A.D. There are earlier finds of coins, however, that lead one to suspect an earlier lower and now destroyed occupation level, of about the second or third century A.D. Along with the coins was a piece of Roman or Parthian funerary sculpture (Fig. 23A). It is executed in a rather crude style, with a single draped figure facing forward. It resembles in the "attitude" and dress the figure of a reclining Hercules found at Masjid-e Sulaiman (Kawami, 1987, pl. 53) for which the excavator, Ghirshman, proposed a Seleucid date, while Kawami finds it's style and frontal pose of a later, Parthian date (Kawami, 1987, p. 207). The limestone capital (Fig. 23A) seemingly found in the same area, is even harder to place in time. No mention is made of it in the text, but from the photo it could be Parthian or Sasanian. It is of crude form, with "puncture" fluting and vines at the base.

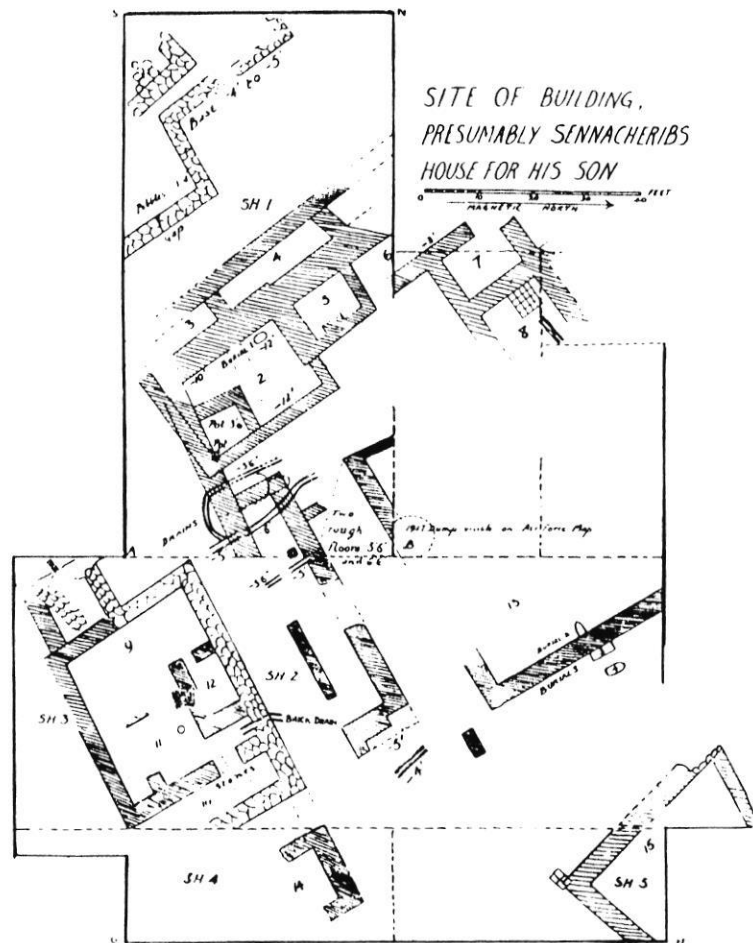
### 1931-1932

Campbell-Thompson, R.C. and Mallowan, M.E.L. "The British Museum Excavations at Nineveh 1931-32," *Annals of Archaeology and Anthropology* 20, 1933, pp. 71-186.

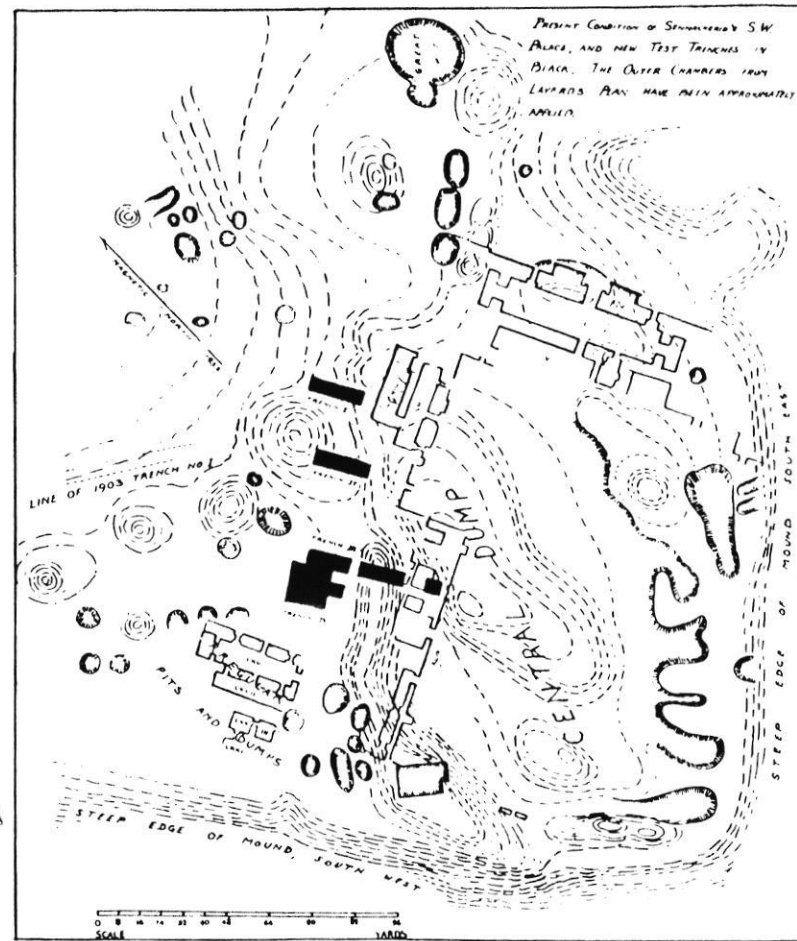
Two post-Assyrian buildings were certainly found, but other structures may also have been rebuilt (Fig. 24). Campbell-Thompson dates the structures from Seleucid to Parthian, which seems sound, based on the number of datable finds in the area. The majority of the finds indicate a Parthian occupation, as some fibulae, seals, and figurines would attest; but there

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pottery of earliest Arab period 8-9<sup>c</sup> A.D." It contains some of the finest Islamic molded fragments recovered from Nineveh.



LEFT: PLAN OF THE BUILDING EXCAVATED ON THE FLATS.



RIGHT: PLAN OF THE CONTOURS, SENNACHERIB'S SW. PALACE,  
AND NEW TRENCHES, IN BLACK.

Fig. 24 Plan of the Excavations at Nineveh 1931-32 (after Campbell-Thompson and Mallowan, 1933, pl. CVI).

is an earlier coin of Antiochus IV, and glass that appears to be Sasanian. In general, the finds indicate a long period of occupation in the first millennium A.D.

Both the buildings follow an earlier Assyrian plan, the only difference from the earlier building being that the later walls have limestone bases. One lies in S.H. 1, S.W. corner, and the other in S.H. 2-3, S.E. corner. Both mesh with the overall plan of the buildings in the area, but no indication of their function can be derived architecturally.

## **Parthian Period Burials**

This section details first the archaeology of the "Parthian" burials found during the excavations of Campell-Thompson. Then through a comparative study using evidence from other sites, it seeks to identify the types of burial particular to the Parthian period in Mesopotamia. The ceramic finds from other sites will not be discussed in detail (see Chapter II).

### **1927-28**

Level + 3' 6", xxii (10' deep, 5' below second cement). Baked clay bath with a few bones and part of a lamp. This was identified as possibly Parthian by Campbell-Thompson. He also identified (at the time), as ninth century B.C. a larnax burial 8' down, in "Sennacherib's House." It was just below a similar rifled burial, and the lower burial had the skeleton on the right side, head to N.E. 67 degrees. It had also a bronze cup with it. In his last report, Campbell-Thompson (and Mallowan, 1933, p. 76) revised his date and suggested it was in fact Parthian. This date seems correct when the grave-goods are compared with other Parthian graves found at Nineveh. A number of the graves were associated with later Islamic wares and the Medieval cement floors. Assyrian Larnax type burials were being re-used in the

fourteenth century or later (Campbell-Thompson and Hutchinson, 1929a, p. 110). The general picture is confused. Although they are not identified as such by Campbell-Thompson, there are other graves that may be Parthian (certainly post-Assyrian): 1. Level +2, XXXV (9' deep in Assyrian *libn* floor) grave (7'4" x 2' 5"). Built of square stones with a stone lid, one stone has an inscription of Ashurbanipal.

2. Level +3', XL. Skeleton female (?) laid on back, perhaps wrapped. Grave made of *libn* walling with two Assyrian bricks on top. Head to N.W. Perhaps like the grave above, this is an example of Parthian reuse of Assyrian material.

### 1929-30

The Parthians were certainly active in rebuilding the Palace of Assurbanipal, and burials were found from uncertain periods. The only burial mentioned by Campbell-Thompson as Parthian is in A 12. It was of the larnax type, and there was no certainty of date (Campbell-Thompson and Hutchinson, 1931, p. 93). For a more complete discussion see Chapter III, p. 293, Fig. 68, p. 294).

### 1930-31

There are vaulted tombs in sects N-BB. These are undoubtedly of early construction, and they could easily have been reused in a later period. All the finds, albeit small, seem to confirm a date of about 3000 B.C. No later finds suggest that despite plundering at some point, later occupants were unaware of the vaulted tombs.

### 1931-1932

Excavations in this season revealed a number of post-Assyrian burials. All appear to be of "Parthian" date, and are identified as such by Campbell-Thompson.

1. S.H., ch. 2. -11': 62 deg. Cylindrical coffin of clay in three sections. Single band of cable decoration. Plundered, with bones in confusion.
2. S.H. 2. Depth -7': 59 deg. Baked clay *larnax*. One broad end, 1'7" narrowing to 6," 2'9" in length.
3. S.H. 2. depth -7. Plundered, baked clay *larnax* with both ends rounded, with band of cable decoration. Coated with plaster inside and out.
4. S.H. 2 same depth and similar.
5. S.H. 4. 6' deep. A plain burial. Skeleton on left side, hands to mouth or head, head to East. Broken cup and small bowl plate (LXXVI,15, mislabelled on the plate as S.H. 2), both of plain ware.

From the position of the burials, S.H. 1, Ch.2 and S.H. 2 are obviously abutting and are later than the *libn* walls. S.H. 1 may be earlier than the others, but it is dated by Campbell-Thompson as certainly post-Assyrian.

While it is clear that grave goods were placed in some post-Achaemenid graves at Nineveh, there are complicating factors. A number of them were robbed, so that the nature of the goods is unclear. Graves with no finds may not have been recorded. Campbell-Thompson did not make notes of any structures housing coffins.<sup>41</sup> The majority of the burials appear, from the description, to be in bath-shaped<sup>42</sup> coffins. Traditional dating would place these before the slipper coffins, usually taken to be typical of the Parthian period, but there are problems. The *larnax* burials could be re-used, in which case the date is certainly after the families in question were gone. The tradition of *larnax* burial during the Parthian period

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<sup>41</sup> At Assur Parthian tombs were covered with pitched brick tomb chambers (Andrae and Lenzen, 1933, pls. 48,50).

<sup>42</sup> The coffins could have had a dual use. Many examples from other sites have holes, which can be interpreted as allowing putrefaction liquids and gasses to escape, or perhaps indicative of an earlier domestic function (Curtis, 1983, pp. 86-7). The general style of coffin remained popular from the Middle Assyrian to the Achaemenid periods (Strommenger, 1964, pp. 170).

may also be from the *later* Parthian period. From the evidence at Nineveh alone, using the assumption that slipper coffins indicate a later date,<sup>43</sup> these burials at Nineveh would appear to be from the earlier Parthian period. Until more is known the question remains open.

### **Potter's Quarter: In a Graveyard ?**

Particular attention was paid to attempting to locate what may have been a potter's quarter within the precinct of the graveyard. It has been noted that in the Near East there is a tendency to place pottery kilns in areas with a minimum of urban settlement, so that they are often associated with graveyards (Matson, 1974, p. 346). Simpson (1994, p. 271) also noted that pottery workshops of the Sasanian period could be located in graveyards. This observation gives further weight to the supposition that the Artisan class during the Sasanian period was of a low social order; and further led Simpson to suppose that potters (or other craftsmen) may not be Zoroastrian.

From what can be deduced from the information recorded on the ceramics from Nineveh, there is some evidence to suspect there was ceramic manufacture in the area of the graveyard. There is an unusually large accumulation of ceramic fragments in the area. There are also a number of kiln spacers found in the "graveyard," but there is a lack of further evidence. No kilns were recorded, and there is a lack of wasters; although it should be noted that at the time of excavation wasters may not have been recorded or preserved. At the same time, a

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<sup>43</sup> Debevoise (1934, pp. 16-17) notes that at Seleucia the majority of graves were of a simple type. They were enclosed in clay brick structures, and the bodies were placed in full length clay coffins. The sides of the coffin were parallel, ends rounded. They were often equipped with a clay lid. No slipper coffins were found in later levels, the practice appears to begin in level III (43 A.D. - 141 B.C.). The author goes on to speculate on the "Egyptian" influences that appear on the coffins.

profusion of broken ceramics in the region may also indicate funerary customs:

The transition from life to afterlife was thought to be facilitated by smashing pottery and other goods, by punching holes in vessels, or by inverting vases over the burial. Analogously, evil demons, plagues, sins and the like could be magically transferred to pots, and then exorcised with the breaking of their containers and the recitation of spells and incantations.

Foster, 1991, p. 298.

### **Parthian Burials in Mesopotamia**

Burial equipment ideally offers what would appear to be a solid basis for dating, especially when coins and other easily datable objects are found with items more difficult to date, such as pottery; unfortunately, reality is not so helpful.

At Seleucia the graves of the poor were not equipped with drinking or eating utensils. Only a fraction of the graves, probably with wealthy occupants, were so equipped. It is these rich graves in large structures that were most disturbed by later reuse. When unopened wealthy graves are found, complete pottery vessels can be recovered. At some sites, however, burials of the later periods were found without utensils. Seleucid, Parthian and Sasanian burials from Nippur conform to this tradition (Debevoise, 1934, p. 16; also discussed in Nissen, 1973 and Hrouda, 1973).

At Warka, Loftus describes the Parthian cemeteries as they were in the middle part of the last century. At this time, at Warka and environs, there were many rich graves that were being robbed regularly for their gold objects. Water jars and drinking cups, along with figurines were often deposited, outside the coffins, at their foot (Loftus, 1857, pp. 200-215).

## **Parthian Burials in Iran**

It is surprising that so few burials are recorded from the Parthian period in Iran. It is clear that there are quantities of material that should be associated with burials from the Parthian period in the Iran Bastan museum, but there are few published reports. There is a distinct divide in burial practices between eastern and western Iran, and over time. One of the reasons for a lack of reports is that a number of Parthian burials were of a simple type that would result from a cremation, as in eastern Iran. As a result, there are usually few burial goods, and little incentive for publication.

Perhaps the most interesting burials were recovered from Shahr-I Qumis, a site north-east of Tehran. There is evidence for mud-brick funerary structures of a multi-room plan. While the site had been disturbed by later intrusion, many of the rooms (of Site VII) yielded quantities of human and animal bones. Animals were unusually well represented by a number of species: horse, camel, pig, sheep, dog, and gazelle. The rather haphazard method of burial, with human and animal bones scattered together, led the authors to speculate that the occupants of the site may have shared some cultural traditions with the Scythians, who deposited horse remains in their burials. While the information from this site is unclear, it demonstrates that there is little for certain in considering Parthian burial practice:

Unfortunately, however, very little is yet known of the religious attitudes of the Parni-Parthians. And although certain contemporary inscriptions from Old Nisa can be said to show the presence of Zoroastrian believers, our evidence from Qumis is still too slight to say whether the builders of Site VII actually regarded themselves as Zoroastrians - or, indeed, even to consider to what extent they may have been influenced by elements of Zoroastrian religious practices.

Hansman and Stronach, 1970, p. 49.

### **Parthian Burials in Palestine**

Some evidence of the cosmopolitan nature of Parthian burials is given by a recent discovery in a town near Rajib, about 8 km. southeast of Amman, Jordan. While it is surprising to find a Parthian burial this far west, it can be placed within the Parthian sphere by the some ceramic finds. The material is in a private collection, so that the assortment of material had to be reconstructed. Finds attributed to the burial include a green glazed jar with twisted handles and applied knobs or pellets, while the shoulder is decorated with panels of incised lines. There were three other fragmentary vessels of a similar type recovered. There were also four small wheel made Herodian lamps, three late Roman mold made lamps, three piriform unguentaria, a fragment of sigillata, and fragments of assorted cooking pots. Coins included a Nabatean issue of Aretas IV (A.D. 21) and a copper of Titus and Domitian dating to A.D. 80/88 (Sauer, 1979, p. 134).

### **Parthian and Hellenistic Graves**

Although the evidence from Nineveh is sparse, there is good evidence for Hellenistic funerary practice that offers important evidence to suggest that a number of ceramic finds not associated with burials may have originally been intended as offerings. The range of figurines, tear vials, and molded bowls from Nineveh have similar parallels as grave goods from Greece.

Tanagra, 20 km. east of Thebes, has been the site of extensive excavations, and is an important type site for Hellenistic figurines. "Common" graves from the Hellenistic period (330-200 B.C.) were often arranged in a similar manner: a fully extended body was accompanied by a water jar near the head, and figurines were placed to the left of the head, one in each hand, and one or two by the feet. Figurines were at times placed on the covering of the grave, at times as many as fifty. Fragments from the same figurine were often found

in different parts of the grave, indicating that they had been broken in antiquity, and perhaps thrown into the graves during a ceremony. The same graves could also have quantities of tear bottles (Higgins, 1987, p. 56).

The late Hellenistic and Roman periods (200 B.C. to A.D. 400) at the site present a significant contrast to previous burial practices. There were few graves from this period recovered, with no evidence for figurines in graves from this site, or perhaps other sites in the region. This was a period of general poverty, and the grave goods reflect a restricted range. Graves contained inferior vases, slimmer tear-bottles, and numbers of relief ware pottery or Megarian bowls (Higgins, 1987, p. 61-62).

Grave practices from the later Hellenistic and Roman periods may indicate most significantly an economic decline. The absence of figurines, however, would suggest that there was a change in burial practices. The number of figurines recovered from Nineveh, along with tear vials and few examples of relatively complete moulded bowls leads one to suspect that burial practices at Nineveh resembled those of Tanagra to a certain degree.

### **Parthian Burials in Arabia and the Gulf**

Perhaps some of the newest excavations that have yielded Parthian materials are from recent excavations in Arabia.<sup>44</sup> The Parthian period in this region is characterized by extreme individual mobility and an extensive trade network (Vogt, 1994, p. 384).

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<sup>44</sup> A particular incentive for many western investigations of the pre-Islamic and early-Islamic periods in Arabia is the number of Christian remains now being uncovered there. Before the recent political unrest in many parts of the near East that redirected a number of archaeological missions to the more politically stable countries in the Arabian shield, there was little information, and little interest, in the archaeology of the area. It was long assumed that neither the Parthians nor Sasanians extended significantly into the area; and that Christianity did not exist on a large scale before or especially after the Islamic conquest. Both assumptions are now being revised. Recent work in Saudi Arabia (Langfeldt, 1994) has shown that there was a large Christian community there.

Dr. Sabah Abboud Jasim recently excavated a Parthian cemetery at Mleiha, Sharjah (Seminar for Arabian Studies, Oxford, 1994). There were a number of graves uncovered, one of which contained the body of a horse, decorated with numerous iron fittings encased in gold, and the body of a man. Characteristic finds of "Roman glass," (a few examples of lacrymatory vials) and assorted bronze objects date to the Parthian period. There were also a number of graves where the human occupant was accompanied by a camel. One had an almost complete green glazed pilgrim flask by the body of the camel. There were also finds of glass and ceramics and native coins in the style of Alexander (eg. Potts, 1990. pl. X). Dr. Jasim speculated that the graveyard was in use from the second century B.C. to perhaps the second century A.D. While camel burials are relatively common, the burial of a man and a horse is noteworthy this far south.

The most notable feature of burials in this region is their military character. A burial from the first or second centuries A.D. at Asimah, U.A.E. is a good example (Vogt, 1994, pp. 71-79). AS 24 is a subterranean grave with an oval shaft. The chamber itself was stone lined. The finds, which may represent more than one individual, include a large amount of organic debris (perhaps wood), 6 or more iron arrowheads, iron dagger, iron sword and iron scabbard fittings, a number of badly preserved glazed jars, a pilgrim flask, a miniature vessel (tear vial?) and some wares that resemble Iranian vessels from the 1-2 century B.C. There was also a silver rivet and bracelet, of no reliably datable type.

The military gear is in keeping with a date no earlier than the first century A.D., while a group of anthropomorphic plaques date slightly later. Mouton (1992, p. 118) notes similar crude "tokens," from ed-Dur, and speculates that they were not inlays from furniture, but rather tokens related to burial customs. This led Vogt (1994, p. 77) to postulate a date between A.D. 75 and 150 for the plaques, while noting that the other finds are more in keeping with a date between the 2nd and 1st century B.C.

It is clear that while Parthian burials of this region have little in common with those at Nineveh, there are common characteristics, notably the use of tear vials, and the presence of green glazed pilgrim flasks. It is interesting to note that the material considered here is of a military character, suggesting that this region was garrisoned by Parthian forces, perhaps similar to the later Sasanian garrisons that are recorded in historical sources. If the latter hypothesis is correct, one would expect to encounter a different suite of grave goods from a site such as Nineveh.

### **Eastern "Parthian" Graves**

Evidence for what could be considered an eastern Parthian burial has recently been excavated in northern Afghanistan. Tillya Tepe has yielded six graves of the first century A.D. The site was thought to have been a dynastic necropolis, as most of the graves had outstanding contents. The method of internment for one grave in particular bears comment. The grave itself was incorporated into the walls of an earlier Achaemenid settlement, and there was no indication of a tomb structure above the grave, which appears to have been dug in secret. In the shaft of the grave, the skull and forelegs of a horse were recovered.

The coffin was of wood, but it was completely wrapped in leather painted red, with additional floral ornament in white. Large gold discs and plates had been sown into the leather. The occupant, who was obviously a warrior, was accompanied by large amounts of gold and ceremonial weapons. Of particular interest is the local custom of securing the occupants jaw, in this case with gold ribbons attached to the headdress (Sarianidi, 1992, p. 110).

## **Summary: Parthian Graves at Nineveh**

Nineveh also offers rich evidence from the Parthian period, as excavations in the latter nineteenth century under Rassam (Curtis, 1976) yielded quantities of gold. Obviously Nineveh offers a variety of burial methods for this period,<sup>45</sup> and utensils could be placed in richer graves. Perhaps, as at Warka, the grave robbers were all too effective; Campbell Thompson was left with rifled burials. From comparable evidence from other sites, a few broad conclusions can be drawn:

A. Parthian burials in Mesopotamia share common features, and appear to have much in common with Greek burial practices in the use of figurines, tear vials, and molded bowls. While the latter could be due primarily to a discrete similarity in material culture at the time, it is clear that Mesopotamian burials have little in common with burial practices from further east, in Afghanistan.

B. The graves from the Arabian region are similar in their use of tear vials and other small items, but reflect a martial character that is similar to the contents of the burial from northern Afghanistan. The presence of probable Iranian vessels from the grave at Asimah suggest that the similarity could reflect the presence of garrison (or mercenary) troops.

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<sup>45</sup> Gold items may have given a visual indication of social position. Marcus (1993, p. 168-169) notes that a distinctive "lion" pin seems localized to Hasanlu, and that other types of pins are associated with female burials. Unfortunately there is not enough information to speculate as to the differences between male and female burials at Nineveh during this period. It is possible that similar patterns of adornment, localized into regions and perhaps sexes, existed in the Parthian period.

In general one can then simply divide Parthian burial practice into an eastern and a western tradition. Nineveh clearly belongs to the western tradition.

# Typological Test Cases: Figurines, Lamps and Molded Bowls

## Figurines

There are certain groups of objects, well dated elsewhere, that may be used to check the dating of the post-Assyrian structures at Nineveh. The figurines and lamps from Campbell Thompson's excavations are good example. They may be used as test cases for dating by comparative typology. The best cross-reference for the Ninevite figurines, because of the large sample size and good publication, is Van Ingen: *Figurines from Seleucia on the Tigris* (1939). It will be abbreviated "Ingen, 1939." Figurines will further be divided into two somewhat arbitrary groupings of "Greek" and "Parthian" styles.

Figurines that clearly belong to a different period are not considered here. There are a number of classic "Uruk" style female figurines, and there are a number of hand modelled figurines of uncertain date. It would appear that a number of the hand modelled figurines, particularly of animals, are of Sasanian date.<sup>46</sup>

For ease of reference, the figurines (and the other typological test cases of lamps and molded bowls) are considered on a season by season basis. The Roman numerals are the numbers assigned by the excavator according to his published plans, and place the object within a unit on a grid, which was projected across the excavation site, a new grid every season. The number in Arabic numerals was also assigned by the excavator, and refers to the object's depth in relation to "Sargon's Well," the datum line used for the entire excavation.

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<sup>46</sup> In a personal communication with Dr. Simpson, he noted that all Sasanian figurines he was familiar with were made either by hand modelling, or by pressing into a single faced mold. The latter method is clearly a classic Sasanian modelling technique for figurines, as there are a number with clear Sasanian designs from the unpublished collection from Dura now at Yale. A catalogue of some Sasanian figurines in Italian and Iraqi museums is presented by Ponzi (1967, pp. 57-92).

The figurines are mostly in Birmingham, these examples will be marked with a "B" and examples in the British museum have a "BM" designation. Due to the irregular manner in which the collections were formed, none of the illustrated figurines are in the Ashmolean, and Cambridge collections contain no figurines. There are a number of examples that are unaccounted for. This is due to the rather circuitous route of the collections. The majority of the figurines (and lamps) were given to the major financial sponsor of the excavation - Sir Charles Hyde - who then gave most of his material to Birmingham. Dr. Philip Watson, Keeper of Antiquities at the Birmingham City Museum, notes that local private collections are known to have material from Nineveh. Hyde apparently gave material to local individuals.

#### 1928-29

In this season, there are few published examples (Fig. 14, p. 49).

#### Greek Style

XXIII, 10 Female head.

X A, 9 Female head (types as in Ingen, 1939, pl. LV-LXIV).

*Surface* (B 413'61) Fragment of head.

#### Parthian Style

X, 10 (BM 1929, 10-12, 356) Standing soldier in tunic and trousers with large shield, (Ingen, 1939, pl. XXVIII). Similar example (BM 1882-5-221, 1780 55430).

LXVIII,5 Male head (very similar example, may be same mold, Ingen, 1939, pl. LXV, 468).

XXIII, B, 10 Male torso with "dot" decoration (no similar in Ingen, 1939 riders see pl. XXXII).

## 1929-30

See Fig. 17, p. 52.

### Greek Style

- D, 9 Draped female figure standing with hand to breast (Ingen, 1939, pl. XV).  
A, 9 (B 129'62) Fragment, female holding hand to breast (Ingen, 1939, pl. XVII, 113).  
C, 13 Lower section of female figure too small for certain identification.  
H, 5 / D, 11 / B, 1 Female heads (similar style to Ingen, 1939, pl. LV-LXIV).

### Parthian Style

*Surface* (B 403'61) Blue glazed head of male with cap. There is no stylistic parallel with any figurine from Seleucia (Ingen, 1939, pl. LXV-LXIX male heads). Because of this, and the blue glaze, one must assume it is post-Parthian, possibly Sasanian.

C, 13 Reclining figure of a male with a comical (?) expression. No ready parallels with Seleucia, (Ingen, 1939, pl. XLV). There are three examples in the BM, the illustrated example 1930-5-8, 193; others complete 1856-9-3, 218 (Loftos "Uruk" but presumably Nineveh); 1856-9-3, 219; 1856-9-3, 220. Fragmentary example in Birmingham 402'61.

H, 8 (B 128'62) Fragment of plaque with female figure standing in front of altar. Not even the subject matter is evidenced at Seleucia. May not be Parthian.

B, 14 Very small fragment of reclining figure.

D, 10 (B 126'62) Fragment of male (?) with belt and tunic.

There are also a large number of animals recovered from this season, as they are almost impossible to date with certainty, they are not included. The majority are in Birmingham. One example with "Sasanian stamps" is in the BM (no number ?).

This season saw the discovery of alabaster (gypsum) figurines. Although most examples are in a Greek style, there is uncertainty in dating. At Seleucia most alabaster figurines are from the later, or Parthian, period of occupation, particularly from the first to second centuries A.D; but many scholars, simply dating by style, would attribute the alabaster "Hercules" from Nineveh (Fig. 17, p. 52) to the Seleucid or early Parthian period rather than later. It has been proposed for Seleucia that bone and alabaster figurines may be more indicative of the

Parthian period than clay figurines (Ingen, 1939, p. 7). One alabaster figurine of a "draped matron" was recovered, apparently from the Parthian period. Keall (1970, p. 90 and pl. XIII) notes that there was also a similar terra-cotta figurine recovered from Nippur. He suggests that, because of their rarity, the alabaster figurine may be an import from Seleucia; while the terra-cotta example may be a local product.

The figurines all appear evenly distributed throughout this season's area of excavation at Nineveh. The only probable Parthian grave is in "A," and the bulk of the figurines lie a good distance away from the cemetery area. The only figurine, besides A, 9, in the burial area, is a striking terra cotta plaque (Fig. 16, p. 51). With two figurines in Greek dress, male and female. A most likely explanation for a more realistic figural representation of this kind is that the plaque had some funerary function; as the domestic figurines at Seleucia are of a completely different style (there are no examples in Ingen, 1939).

### 1930-31

See Fig. 22, p. 61.

#### Greek Style

F 11 Couple embracing. Seleucia offers no ready parallels (Ingen, 1939, pl. LV).

F 11 (B 346'52 L120) Draped standing female figure, lower section (Ingen, 1939, pl. XV, 106).

OO 3.5 (B 103'43) Standing female figure with right hand to breast (Ingen 1939, pl. XVII, 113).

*Side of Kouyunjik* Robed female figure and child (Ingen, 1939, pl. IV).

Q 3 Torso of nude male; very different style from those illustrated in Ingen (1939, pl. XIX-XX).

## Parthian Style

C 18 (B 102'33) Standing Parthian in reclining position, fragment of different example B 157'60. Similar example in BM ...102.33 C 18 4.

F 13 Forepart horse and rider (Ingen, 1939, pl. XXXIII).

S 6 (B 156'62) Horse and rider with lance (1939, pl. XXXIII, 240).

DD Pit (B 138'62) Horse with studs for saddle. This example could accept a rider. Riders separate from the horse are evidenced in Seleucia (Ingen, 1939, pl. XXXII).

NN 4 / OO 3.5 Reclining female figures of different style.

OO 3.5 head for above, different fragment but same style (Ingen, 1939, pl. XLV).

Q 2 Head of a soldier with a heavy helmet, for complete figures of different style (Ingen, 1939, pl. XXVIII, 193, this example could be Sasanian).

G 16 Male figure with tunic and long sleeves; I 2 Male figure with tunic, sleeves and trousers. no good parallels (Ingen, 1939, pl. XXIV).

I 2 (B 408'61) Male torso in tunic.

W 7 Male figure with Persian pointed hat, ready parallel from Seleucia (Ingen, 1939, pl. XXVIII, 199).

OO 4 Comical face, male (?); similar head from Seleucia listed as "female" (Ingen, 1939 pl. LXIII, 457).

VV 3 Head of a camel,<sup>47</sup> with a long stiff neck (Ingen, 1939, Pl. XXVI, 559) illustrates an example that was the mouth of a vessel. It had a hole cut through the mouth, and the inside lined with bitumen. A similar example, a complete camel pilgrim flask, is illustrated by Ingen (1939, pl. LXXVI, 557).<sup>48</sup>

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<sup>47</sup> Although the camel is often regarded as an "extra-urban" species that would not be at home in towns or villages, it is clear from archaeological evidence from other sites that camel bones could be associated with larger settlements (Wapnish, 1981, p. 107). The presence of camel figurines from a number of Parthian sites suggests that it was a common form of transport throughout the Parthian empire.

<sup>48</sup> It is significant to note that similar examples of camel figurines and vessels have been recovered from Arabia. A number of unpublished lectures at the 1994 Seminar for Arabian Studies included pertinent examples.

There are also a group of ceramic vessels with applied faces (nos. 21 and 22 on Fig. 22, p. 61). Campbell-Thompson illustrates two examples, both of a similar style from MM 3. There is also a third in the British Museum, but of a different fabric, with a similar design. All examples will be discussed with the molded bowls.

Of particular interest is a group of figurines located in OO. They range in depth from 3.5" to 4," and are all in typical Hellenistic style, perhaps indicating that this context is earlier than, or early in, the Parthian period.

#### *Figurines and Vessels:*

no. 28 (surface of mound) Figurine of cockerel, missing head. Buff clay.  
Fig. 25 (example from Nineveh but not from excavations of 1928-32).

Some of the most interesting evidence for the use of similar molds for figurines/vessels was uncovered during this season. Fig. 25 illustrates a vessel probably uncovered by Layard's excavations, now in the British Museum (1983, 1-1, 141, 139677). In style it resembles the bird figurines found at Seleucia (Ingen, 1939, pl. LXXXI), the only difference is that this example is clearly a vessel with a reservoir and spout. The example illustrated in Campbell-Thompson's plate (Fig. 22, no. 28 "surface") is quite similar, the only major difference is that this example is clearly a figurine. It has no trace of a spout, and although it is hollow, there is no opening into the reservoir. The reservoir is also of a different nature, as in the former example the two piece mold was carefully placed together as to allow the maximum amount of space between the two halves. The reservoir in the latter example is smaller, and appears to be simply the result of the method of manufacture, and not intentional. Unlike the example on Fig. 25, this example is plain, and not coated with a buff red wash.

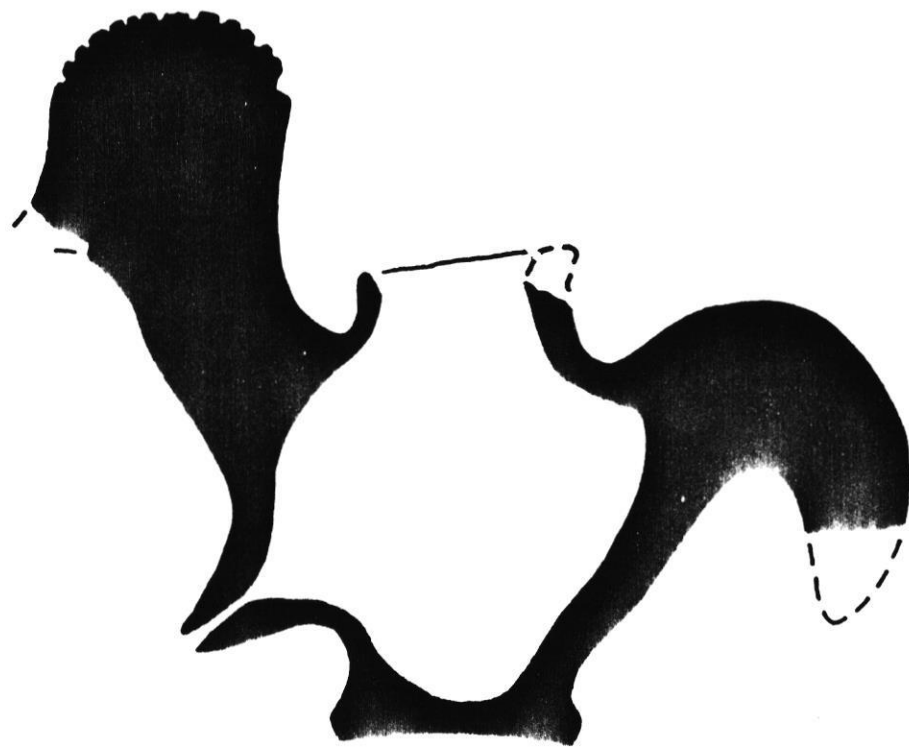
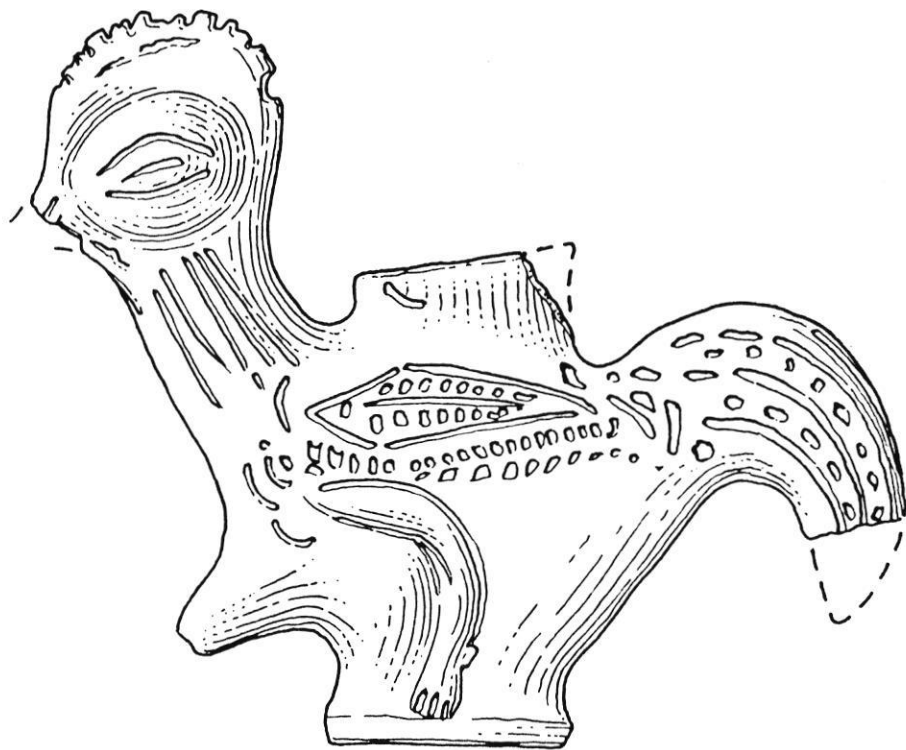


Fig. 25 **Molded Vessel** ( Scale 1:1 B.M. 1983, 1-1, 141, 139677).

While vessel no. 28 is not of a typical form, it is clear that the production of figurines and vessels should not be regarded as completely separate, although important evidence suggesting the manufacture of figurines and vessels were basically distinct is given in the petrographic report in Chapter II.

### 1931-1932

Few figurines were published for this season (see Fig. 26A). Four merit comment:

#### Greek Style

SW II 20 Draped female figure of baked clay, no head (Ingen, 1939, pl. XI, 155).

SW II 16 Couple executed in Greek style (Ingen, 1939, pl. LV). Examples from Seleucia appear to be more heavily modelled.

SW I 16 (B 847'52) Female head (Ingen, 1939, pl. LXII, 445). The artist for Campbell-Thompson appears to have misunderstood the subject, as the example in (Ingen, 1939, p. 256) is described as having the hair parted in the middle, a diadem, and a veil. The similarities may be close enough to suggest that the two examples were from a similar mold.

#### Parthian Style

SHIII and SH IV, 3 are two horse and rider figurines; as they are both glazed, they merit special attention.

The two glazed figurines closely resemble an example illustrated in Ingen (1939, pl. XXX, 216). The similarities may show that they originated from the same source, but, the style is so crude and the condition of the figurines so degraded that it is difficult to be certain. Few figurines were glazed, only three from Campbell-Thompson's excavations Nineveh, and only two (both riders) of the 1500 plus figurines from Seleucia were so glazed.<sup>49</sup>

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<sup>49</sup> Other glazed "figurines" recovered from the site were applied to vessels, so they were not considered with the other figurines (Ingen, 1939, p. 14).

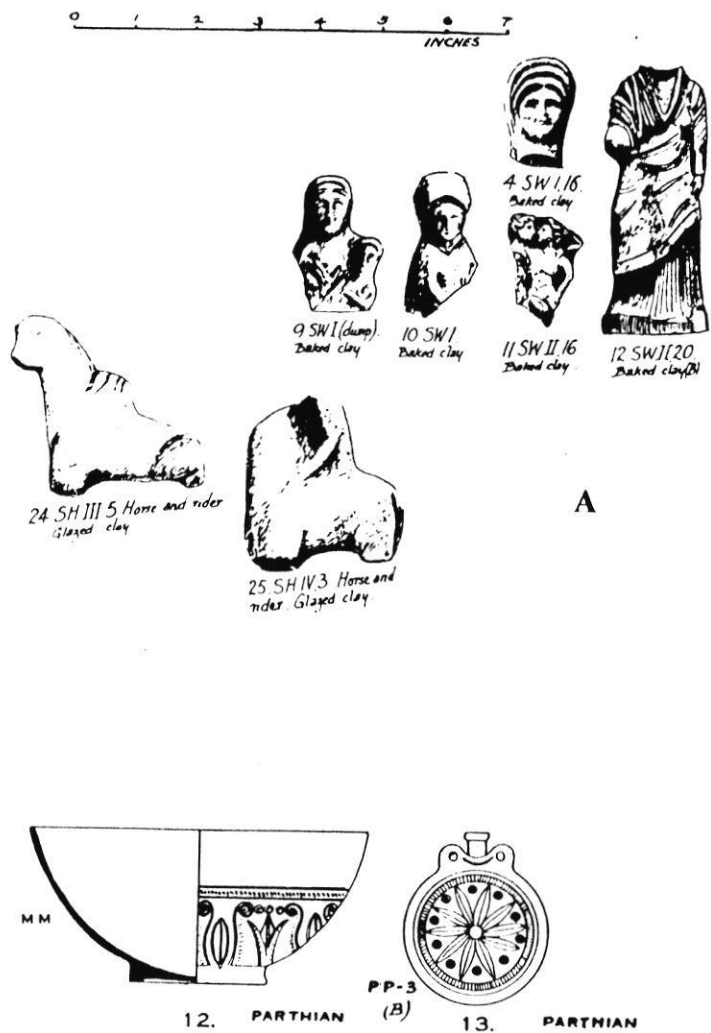


Fig. 26 Finds from the 1931-32 Excavations (after Campbell-Thompson and Hamilton, 1932, A: pl. LXXVIII, B: pl. LXXVI, C: LXXIX).

## Archaeological Aspects of Figurines

### Greek Style

Figurines may offer a rough guide to dating, as certain styles appear to be used predominantly in certain periods.<sup>50</sup> A classic "Greek" draped woman may indicate a Seleucid or early Parthian date, while a rider in tunic and trousers, a decidedly "Iranian" costume indicates a later date.<sup>51</sup> Particular attention should be directed towards the "Greek" style female figurines, as they are quite common at Parthian sites. At Nippur they are the most typical Parthian figurine type (Keall, 1970, p. 89). A set pose is often represented. A woman stands upright<sup>52</sup> with her right arm across the body, with her hand holding her hooded cloak (*himation*) as it passes over her left shoulder. The other hand slightly gathers up her skirt at the side of her body.<sup>53</sup> At Nineveh, there are no male Greek style figurines, and there are no nude figurines. This is in contrast to Nippur, where both types were encountered (Keall, pp. 90-92).

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<sup>50</sup> Keall (1970, p. 86) notes: "It is misleading to assume that there was an orderly development from Hellenistic to Oriental. Rather, the figurines typify the eclecticism of the period, with parallel appearance of Greek plasticity and Oriental linear tendencies." While this comment is useful when applied to individual examples, it *can* be assumed that there was a difference in style between groups of figurines from excavated contexts.

<sup>51</sup> There is still uncertainty about the method of manufacture of the Hellenistic figurines. The two-part mold method may be a continuation of earlier Mesopotamian (Assyrian) practice, or it may have been introduced by the Greeks (Van Buren, 1930, p. 40).

<sup>52</sup> The standing female figurine appears to have been the most popular type at Tanagra, and characterizes the period 250 - 200 B.C (Higgins, 1987, p. 120).

<sup>53</sup> While it may be pushing the evidence too far, one can speculate that this may have been a typical attitude for walking. Current dress codes of some Arabian countries require long skirts and veils. A similar attitude is adopted today while walking. The skirt is slightly raised when obstacles are encountered, and one hand is used for the adjustment of the veil.

Other figurines, such as the mother goddess types, remain relatively unchanged for long periods of time. The figurines excavated at Seleucia on the Tigris are instructive. Even though they are stratified, examples from a single category may be found at many depths. Obviously some shifting and misrecording can take place, but not on such a large scale. At Seleucia trends can be followed (with minor adaptations) following Ingen (1939, p. 8).

<u>Level</u>	<u>Types of figurine</u>
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Parthian Period

I. A.D. 115-20 Bone and Alabaster. Standing women and children.

II. A.D. 70-20 Bone and Alabaster. Standing women and children. Nude or semidraped males. Soldiers with large shields. Standing woman in *himatia* and two knobbed headdress.

III. 143 B.C.-A.D.70 Seated women and children. Nude or semidraped males. Soldiers with large shields. Standing woman in *himatia* and two knobbed headdress.

Seleucid Period

IV. 290- 140 B.C. Standing woman enveloped in a *himation*.

The available material from Nineveh fits well in the above classification for Seleucia, but a few classes of figurine are notably absent. There are no "Dwarfs and Grotesques," Musicians, complex figurines made of many pieces, or children. Male figurines in a "Greek" nude or semidraped aspect are few. All of the latter named types are common in Levels III-II at Seleucia. Perhaps the Ninevite material sits better within the later Parthian end of the scale, but it is very difficult to determine. Many types defy easy datability and have had long lives. Part of the reason for the durability of types is explained by the functions of the figurines. "They were not works of art *per se*, but objects made to serve some use: votive, apotropaic, amusing, or decorative. If votive or apotropaic, they were apt to be subject to the conservatism that so often characterizes religious art" (Ingen, 1939, p. 7).

## Horse and Rider Figurines

A type of figurine that is characteristically Parthian, the tradition of horse and rider figurines extends into the Achaemenid period. As with other forms of minor art, it would place the figurines into a larger art historical context if there were monumental art for comparison. Unfortunately, little is known of Parthian monumental art, particularly from western regions. Most sculpture originates from eastern areas, Iran in particular, and is of a completely different style from Parthian art from Mesopotamia. Scholars have frequently compared Parthian art to Greek art, but there is great difficulty in attempting objectively to describe these two schools. Particular objects expressed in the figurines, such as the equipment of the horse and rider, appear to be of Persian origin, and further appear to be a continuation of Achaemenid practice, suggesting that Parthian horse and rider figurines are a "native" development.

Farkas (1969, p. 73) assumed that the common horse and rider motif in Achaemenid art originated in the "Eastern Greek" sphere, which means in effect Greek craftsmen inspired by eastern tastes. The author goes on to suggest that there may not have been such a motif in Persian art until it was invented by the Greeks (Farkas, 1969, p. 76). Evidence for this hypothesis rests on the lack of horse and rider figurines from pre-Achaemenid periods in Iran.<sup>54</sup> The latter observation may have little bearing upon the question, as it is clear that the Persians were a nomadic, intrusive element into Iran. It is hardly surprising that a nomadic<sup>55</sup>

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<sup>54</sup> This overlooks the large numbers of horse and rider figurines recovered from Iron-Age contexts in Palestine, Jordan and Syria.

<sup>55</sup> There are four basic criteria for a nomadic group: a. maintaining animals in a state of domestication, b. habitual exploitation of marginal land, c. yearly migrations to correspond with seasonal changes, d. a "tribal" political structure (Gilbert, 1975, p. 54). There is clear evidence for the applicability of these four criteria to the Parthians in Central Asia. Parthians in Mesopotamia, however, may have exhibited a different structure.

group such as the Achaemenids, or later Parthians, should have figurines depicting horses and their mounts; but the urban societies of the Levant had had them earlier in the Iron Age.

### **The Archaeological Context of Figurines**

The figurines themselves appear most frequently at Seleucia in house shrines. Deposit in graves was less common, but figurines from these contexts are easier to date. It is possible that figurines were buried with their owners (Ingen, 1939, p. 33). Loftus also mentions the figurines being placed at the foot of the coffin at Warka (Loftus, 1857, p. 213). This would support Ingen's hypothesis. Discarded fragments were also used as a binder in mud bricks, or as filling.

It appears as if many of the figurines from Nineveh were loose in debris. Because many of the Ninevite figurines were found in such disturbed areas, it may not be possible to determine if they were for household or grave use. A somewhat arbitrary division may be drawn between Greek style and Parthian style. Figurines with typical male Parthian costume are easy to assign chronologically, as likewise are figurines dressed in typical Greek "flowing robes." As a general chronological observation, Higgins (1987, p. 119) noted that there was a significant divide between the classical period and the Hellenistic period. The later periods are characterized by a shift to an emphasis on secular figures. The same may also be true of the material from Nineveh, although better stratigraphy would aid this observation. Mother-goddess figurines and the large number of horse figurines were not considered, as these could have belonged to either period.

While the evidence from northern Mesopotamia is still insufficient for generalizations, it is clear that there is extensive regional variation in the styles of figurines. The examples recovered from Ctesiphon are good examples of figurines that show little Greek influence.

All examples appear to be from a very different tradition from the figurines of Nineveh or Dura. The female figurines from this site are of a different character, and would be classified as of Parthian style. Many of the female figurines are of a mother goddess type, which may also suggest that the few examples of that type recovered from Nineveh may be of Parthian date. Although the figurines from Ctesiphon are mold made, they are of a much cruder style, and show a general similarity of type, as well as fabric (from what can be distinguished from hand specimens); suggesting that these figurines were probably made locally (Hauser, 1993, plate 130-132).

## **Lamps**

Lamps also provide a good test case for establishing broad chronological horizons, while at the same time they present a varied corpus of material. Dating some types of lamp remains difficult, as the classic "Assyrian" pipe lamp of simplistic form (Fig. 27) was in use relatively unchanged till well into the Medieval period. The lamps based on a western model, associated with Hellenistic - Parthian settlements in the Near East, offer the tightest dates. Many sites offer abundant, stratified evidence of western types that may have traveled for some distance.

The following account uses the *Dura Final Report: IV Part III The Lamps*, by P.V.C. Baur, 1947, for typological comparisons. It will be abbreviated as "Baur, 1947." The main divisions are:

Mesopotamian (Baur, 1947, Type VIII).

Type I (Baur, 1947, Group 1).

A. Round tipped nozzle of any length with a large wick hole. A hand made nozzle is applied to wheel made base, and can slope upward at any angle (Fig. 28).



Fig. 27 "Assyrian" Pipe lamp ( Scale 1:1 Ashmolean Museum 1932.1114).

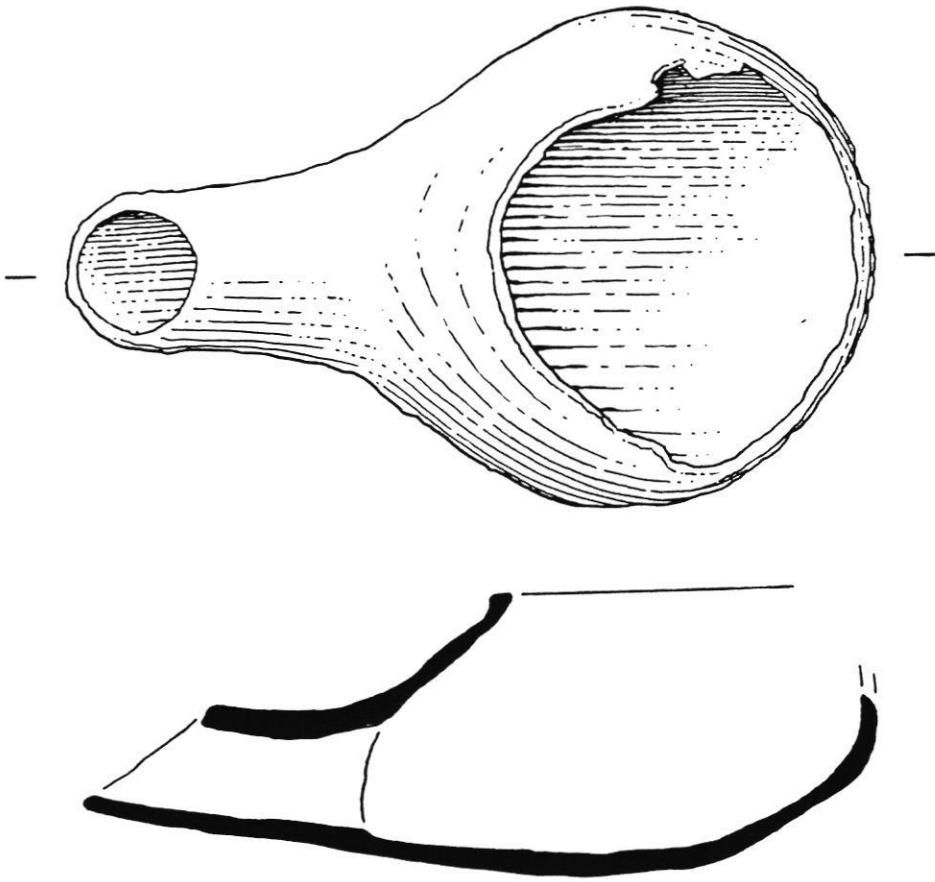


Fig. 28 Mesopotamian Lamp Type 1A (Scale 1:1 Ashmolean Museum 1932.1116).

B. Handles either of a large loop, or of a horizontal clay slab that would be useless for transport. 2 or 4 protuberances can decorate the reservoir (Fig. 29).

The "Eastern" or "Mesopotamian" style of lamps with a long spout and a round bowl body, offer many variants to the basic shape. They are difficult to date, as some types from Nineveh appear nowhere else. To date, no stratified site has been excavated that gives more than a general approximation of date.

Such a common object, like a cooking pot, could be expected to be made locally. The fuel used for these lamps would also seem to have been different from that in the western style lamps. Many examples of these lamps from Nineveh have evidence of a heavy deposit about the nozzle. The large open reservoir for fuel also contrasts sharply with the small opening and closed reservoir seen on the western lamps. While analysis needs to be done on the deposits, it would not be surprising to find that the local Mesopotamian style lamps used a different type of fuel, perhaps bitumen instead of imported oil. Sesame oil was used in Mesopotamia, while the olive did not grow well in the region. Olive oil purportedly gave a brighter light (Newman, 1932, p. 101). Clear references from the Talmud prohibit the exportation of olive oil from Palestine, as it was clear that the region could not support its needs. Further east the evidence for growing olives is even more restricted. There may have been small olive groves in Babylon, but production was no doubt on a limited scale. The olive groves of Greece, Italy and Africa may have supplied the near East with olive products (Heichelheim, 1938, pp. 138-139).

All these Mesopotamian style lamps adhere to a general set of criteria, which remains a standard through the Sasanian and well into the Islamic period. Perhaps the most indicative feature is a long spout, which is joined to the wheel-made body. Sasanian lamps from Choche had longer spouts than lamps from the pre-Sasanian period. Parthian lamps from Seleucia seem to confirm this trend, as they tend to have a shorter spout, and a more oblique

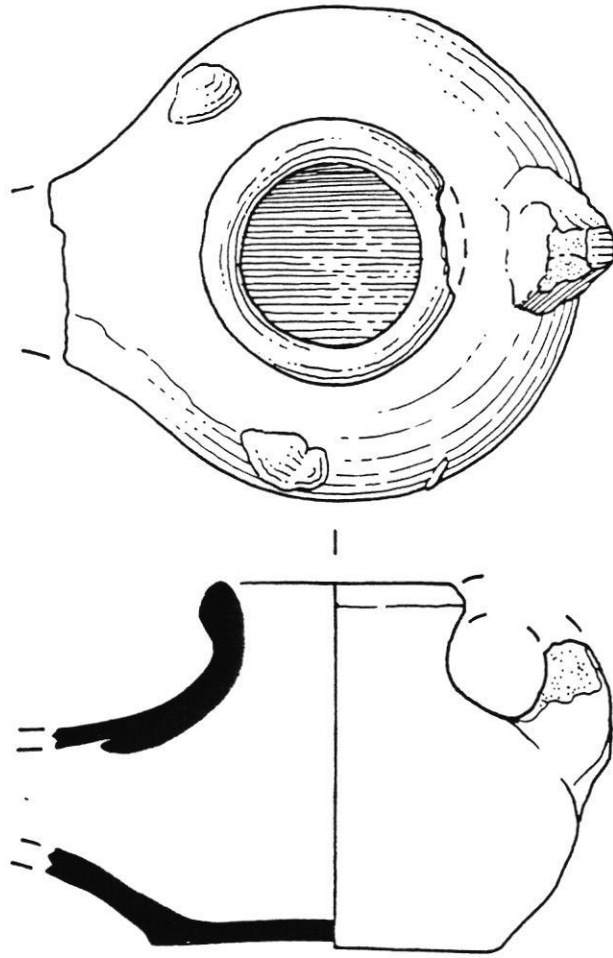


Fig. 29 Mesopotamian Lamp Type 1B (Scale 1:1 Ashmolean Museum 1932.1117).

angle of attachment (Ricciardi, 1971, p. 475). The spout can be glazed, and some examples from various sites appear to have a different type of glaze used on the very tip. Presumably this is for flame resistance (Baur, 1947, p. 59).

Type IA and IB lamps are well represented in the report by Baur. The basis for division is, at times, hard to quantify. Regional variation is no doubt part of the problem. Ricciardi (1971, p. 476) finds a general trend in the north towards a small flat horizontal handle. She asserts that the pierced ribbon handle is absent at Tell Mahuz and Nuzi, and finds it is rare at Nineveh. Lamps found at Tell Mahuz offer what can be considered a late Parthian or Sasanian type. Two lamps of Type IB are datable to the Sasanian period from Tell Mahuz (Ricciardi, 1971, no 80 and 86). The majority of other examples pictured by the Ricciardi conform to Group IB. This may place IB later than IA, as at Dura; although it is possible that both groups existed contemporaneously.

#### Type II (Baur, 1947, Group 2).

The mouth of the reservoir is smaller than Type 1, while the face is usually flat. The reservoir is always glazed; the outside can be partially glazed. The ring shaped handle is functional. Baur believes that this type can extend well into the Sasanian period (Baur, 1947, p. 59).

#### Type III (Baur, 1947, Gp. 2 nos. 397-400)

This group of lamps was not defined by Baur. Nineveh appears to have more examples than any other published site. As a result, particular attention will be paid to relating these lamps with the other well defined groups from other sites (Fig 30).

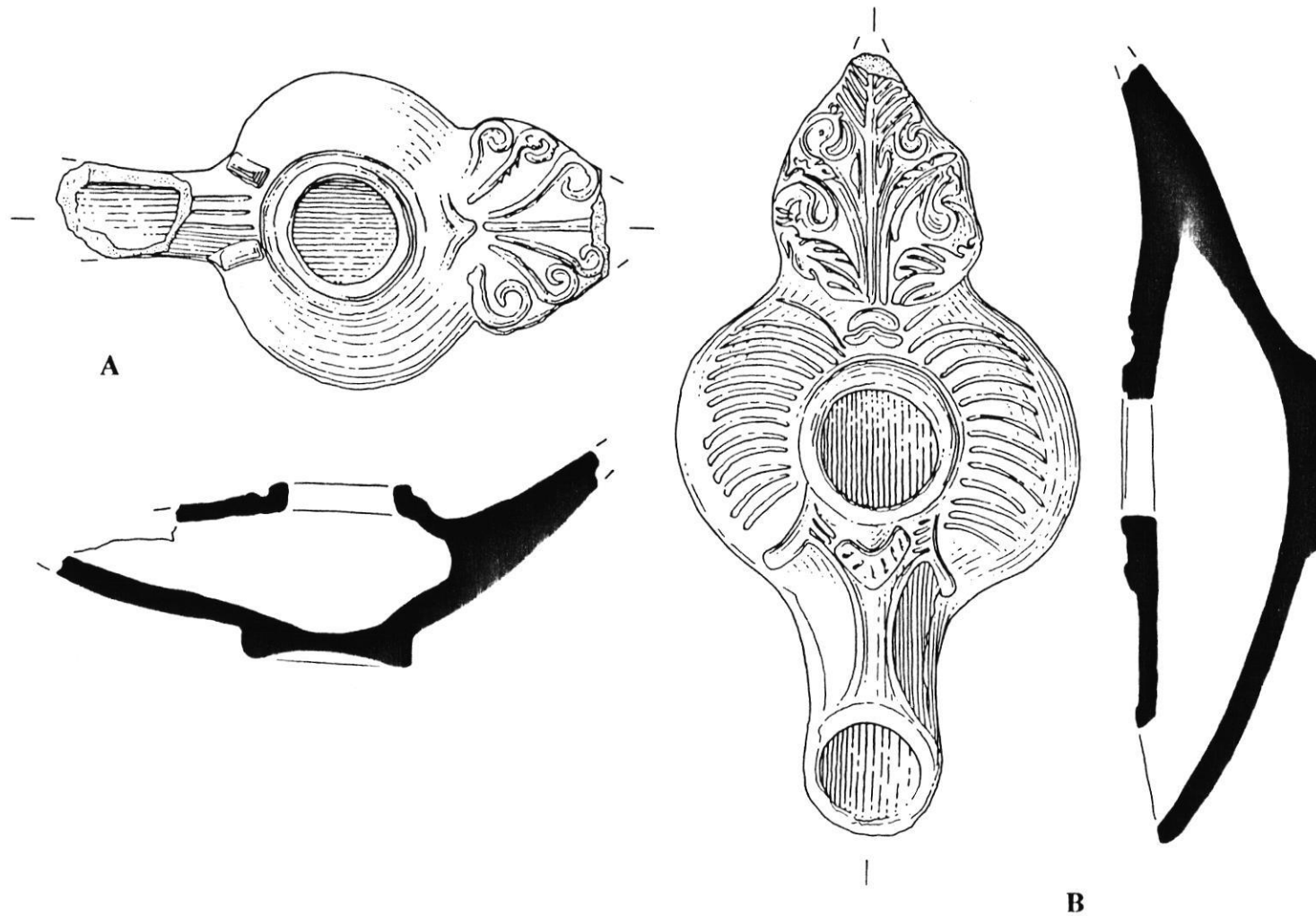


Fig. 30 **Mesopotamian Lamps Type III** (Scale 70% British Museum A: 48, 11-4, 267, 92952, B: 48, 11-4, 266, 92949, 1110 in red ink).

A "transitional" group between "western" and "eastern" types shows molded decoration and often a large handle. Curtis (1969) illustrates one example from Nimrud (no. 101, p. 140) and a fragment (pl. XIV no. 22). He mentions the examples from Nineveh, and finds no parallel at Hellenistic levels at Tarsus or Antioch. A broadly similar example has been found at Samaria (Curtis, 1969, p. 126).

These lamps offer what appear to be the best examples of material from a Parthian date. There have been sporadic finds of similar lamps from well-stratified Parthian contexts throughout northern Mesopotamia.<sup>56</sup> Various art-historical arguments also suggest a Parthian date, as many examples are molded in two-piece molds, a practice that is not used for figurines (St. John Simpson, personal communication) - a related industry - during the Sasanian period. The distinctive molded decoration is also reminiscent of stucco-reliefs, suggesting that these lamps are considerably influenced by Partho-Sasanian traditions.

A good example of a distinctive lamp, produced in a two piece mold using a very fine paste, is illustrated on Fig. 31B. In form it represents what may be considered a simplified Type III lamp. Lamps with such a "fish tail" are never decorated with ornate floral designs, and are often incised. This form of lamp is common into the Sasanian period. It is unclear what the tail may represent, as logically it could not imitate a fish-skin lamp, which would be highly flammable. More likely is that as the fish had significant religious significance in Mesopotamia (Neufeld, 1973, pp. 322-324), this type of lamp represents a decorative metallic form, perhaps used for some specific purpose. As these lamps are recovered out of context and without any indication of abundance, any "ritual significance" must remain speculative.

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<sup>56</sup> A number of fragmentary examples were presented at the conference "Continuity and Change in Northern Mesopotamia from the Hellenistic to the Early Islamic Period," Berlin, April 1994.

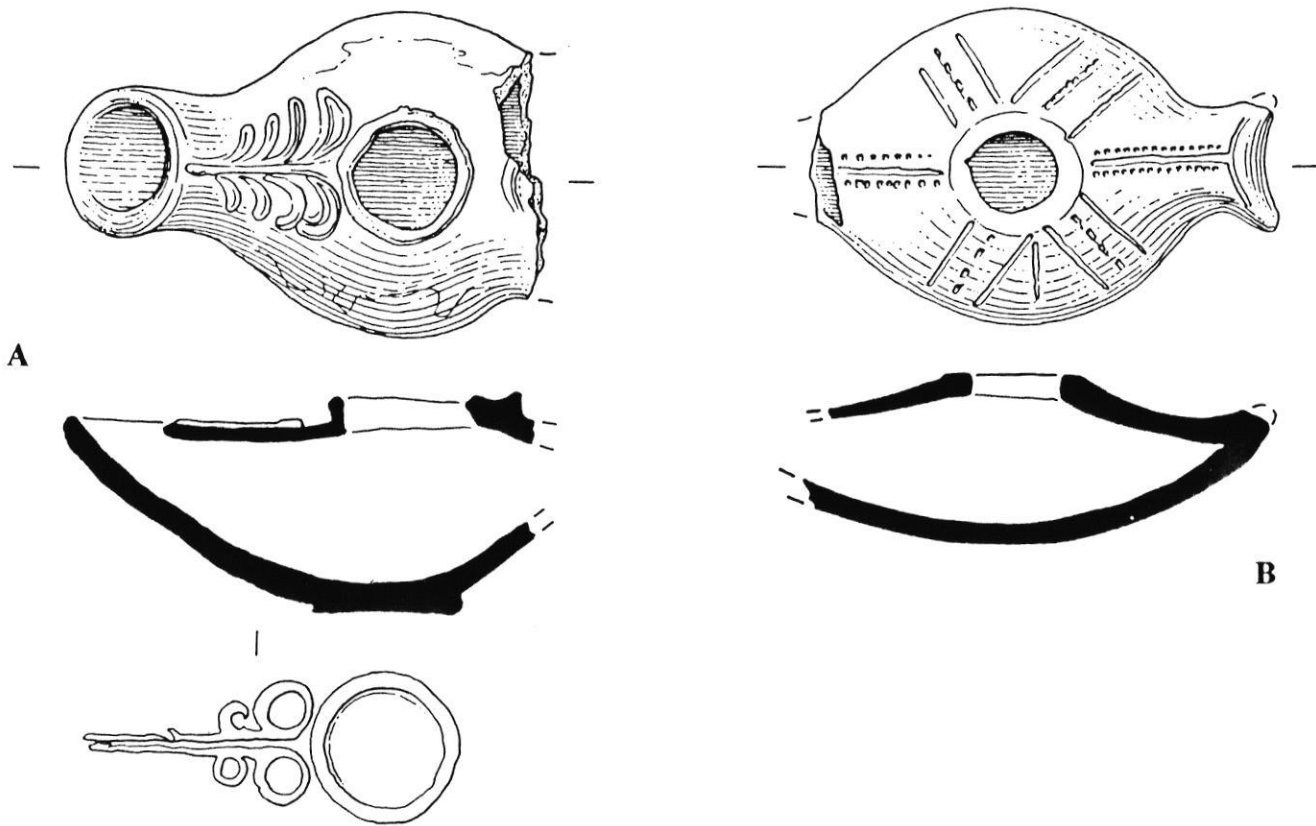


Fig. 31 Mesopotamian Lamps Type III (Scale 70% Birmingham A: 165'62, B: A 275'1984).

### Western Type

Roman or Syrian examples of a western form, mold made<sup>57</sup> (Fig. 32). Campbell-Thompson correctly classified as Roman, 3rd century A.D. nos. 217 and "VI,6" (both on Fig. 14, p. 49). The Roman lamps have distinctly smaller filling holes, and a relatively short spout. Lamps such as nos. 213 and 211 (also Fig. 14) are not of this period, however. They are reliably associated with Syriac inscriptions impressed in the cement where lamp 211 was found in a receptacle (Campbell-Thompson and Hutchinson, 1929a, p. 108). This is a warning that apparently good Roman shapes can be used for many years.

Items in the Ashmolean Museum will be marked "A" and the museum number will be given. Lamps in Birmingham will be designated by a "B," and examples in the British Museum with a "BM." As noted for the figurines, a number of examples, particularly of a finer form, are unaccounted for. The Figures are adapted from Campbell-Thompson, and the number corresponds to the assigned number on the figure. A Roman number was used to designate the section the object was found in earlier seasons, while later seasons used letters.

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<sup>57</sup> A discussion of molds is given in Rieche and Schalles (1987, pp. 60-61).

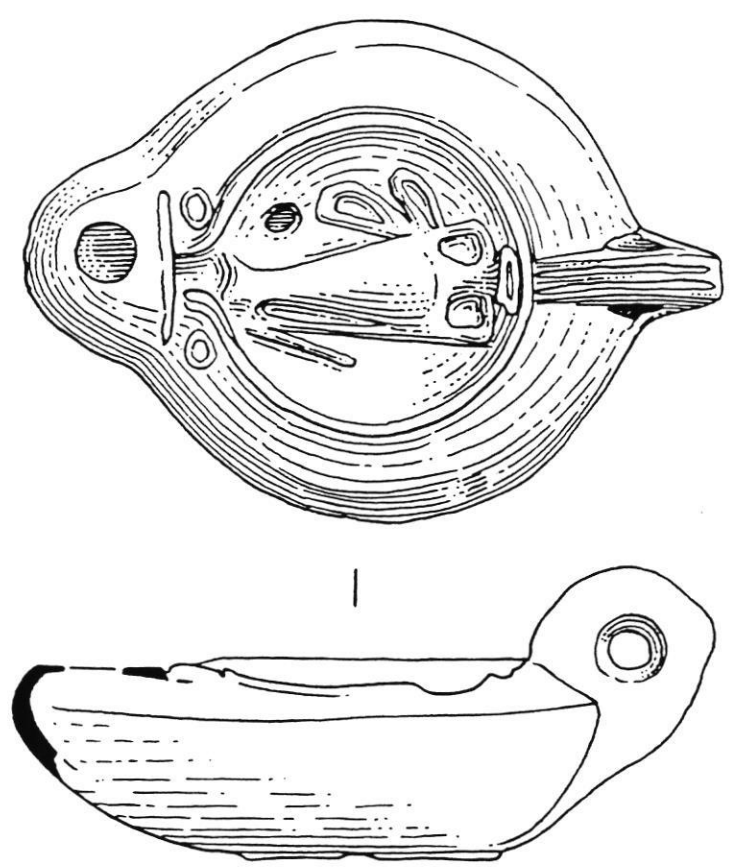


Fig. 32 **Western Style Lamp** (Scale 1:1 Birmingham 170'62).

## 1928-29

See Fig. 14, p. 49. There are a number of lamps of the "Mesopotamian" type in Birmingham that resemble the lamps recorded for this season. It is clear that in a number of cases they will remain unidentified, as the markings given by the excavators has worn off, and the breaks recorded in the drawings have changed due to years of handling in the museum.

### Type IA

196. SH.

197. SH.

198. SH This may be a glazed example of this group. It has a large reservoir, unfortunately, the tip is lost.

200. SH.

207. SH This example is hard to place (A 1932 1114). A similar example (Curtis, 1969, p. 143) is dated to the Hellenistic period. Assyrian examples have less pronounced rims (Curtis, 1969, p. 144). This lamp has a coating of "tar" in the reservoir and a particularly heavy deposit about the spout.

XVIII Not in Campbell-Thompson (A 1932 1116). Pinkish cast to clay, broken spout.

### Type 1B

194. XL, 4 small handle, small reservoir.

215. LXXVI, 4. (A 1932 1117). Two protuberances on the body and a useless handle.

216. XXIX, 9 (A 1932 1118). This is of classic 1B form with a useless handle and protuberances (8). Three clay dots are on either side of the reservoir, one on the base of the handle, and one on the front of the lamp towards the spout. There is also a circular area of roughness that may correspond to an applied ornament. The surface may have been glazed. Glazed varieties normally correspond to Type II. Because of its unique form, this example may not be Parthian.

## Type II

199. XIV, B, 11. "Greenish" description by Campbell-Thompson often means degraded glaze. Has a small reservoir and a handle.
201. XIV, B, 11 (A 1932 1115) Not glazed, but has such a small reservoir it is best in Group II.
202. XIII, 9 "Greenish" cast.
203. XIV, B, 6 Not glazed, but has Group II form.
204. SH Unusually bulbous reservoir; it could be later than the Parthian period.
205. XLII Below second cement. If this example is associated with the second cement, it is not Parthian, and the similar example above (no. 204) would not be Parthian.

## Type III

209. XXII, 9 Classic form with molded decoration and long handle. Very similar to illustrated example in Curtis (1969, p. 140 no. 101).
210. XII, 9.
195. XXXV, 9 Lamp with a side lug.
206. XXVI, 3 Much better condition than above.

*Dump*, not listed by Campbell-Thompson (A 1932 1119). This example has good molded decoration. Another example of the type (?), unlisted by Campbell-Thompson - A 1930 698. 195 and 196 are the only examples of this type found at Nineveh. Curtis (1969, p. 140) illustrates one example from Nimrud. He found that similar examples appear at Tarsus and date to the end of the second century A.D. (Curtis, 1969, p. 127).

## Western Style

### Roman

217. LXXXII.

*no number*, labelled "VI, 6." (B 170'62). This example corresponds to Baur, 1947, Type IX, roughly 3rd century A.D.

### Metal Examples

299. Bronze XIV, A, 4 Above second cement, it is thus associated with post-Parthian material. Similar to Baur, 1947, Pl. XIV no. 430, which dates to the mid second century A.D.

305. Bronze XX,5 Baur, 1947, Pl. XIV no. 423. Mid second century A.D.

### Syrian

208. I, 5 (A 1932 1122). Top only, molded decoration on top, with discreet fingerprints on reverse. "Greenish" cast noted by Campbell-Thompson is not apparent.

211. LXXVII, 5 Found with a Syriac inscription in a receptacle (Campbell-Thompson and Hutchinson, 1929a, p. 108).

212. XXIX, A, 4.

213. XXIII, 5 Found by a Syriac inscription associated with lamp 211 (Campbell-Thompson and Hutchinson, 1929a, p. 108).

214. XXI. Green glaze noted by Campbell-Thompson.

The above lamps (212-14) are all later than the Parthian period.

### **1929-30**

See Fig. 18, p. 53.

### Type IA

11. C, 18 (B 164'62) Wide reservoir.

12. A, 16 (B 1098'38).

### Type IB

7. A, 6 (B 603'61) Long ribbon handle. Baur, 1947, no. 370, a similar example, dates to the second century. A.D., while the flat face of the spout makes this a candidate for Type II. The fabric of this example is clearly Islamic.

8. A, 14 Two protusions at either side of the reservoir.

10. H, 1 (B 269-1384) Wide usable horizontal handle, slightly sloping up.

### Type II

9. C, 13 Blue or green glaze. Similar example (perhaps same).

13. D, 4 (B 602'61) Horizontal handle and flat face of nozzle makes this a Type II; it is not noted as being glazed.

### Type III

1. D, 10.

5. H, 15 (B 165'62) Black surface due to deposits.

6. A, 8.

14. C, 13 This example has a "latch" on the farther side of the opening to the reservoir.

### Western Style

2. F, 3 (B 166'62) Christian symbol at the base may suggest "Byzantine" import, although there were Christian groups active in the Sasanian empire. Campbell-Thompson feels it is Sasanian (Campbell-Thompson and Hutchinson, 1931, p. 111). This lamp is of a type that was in use for a long period of time.

3. H, 4 inscription on the base. Baur, 1947, no 251, mid third century A.D.

4. A, 12 B. no. 404 Late Syrian 4-5 century A.D. Campbell-Thompson feels it is late Sasanian (Campbell-Thompson and Hutchinson, 1931, p. 111).

### 1930-31

See Fig. 23, p. 62.

### Type III

16. MM, 5 Executed in dark red clay, this example has a molded face between the reservoir and spout.

22. LL, 8 Executed in "brown clay," a more typical example.

Unlisted by Campbell-Thompson (A 1932.1119). A small red colored example, large handle with molded decoration.

## Western Type Syrian

17. No position, Brown clay, molded decoration.

19. ZZ, 1 ,

This season was peculiar in the restricted number of lamp types.

## **1931-32**

*This season has no published lamps.*

## **Ceramic Lamps and Metal Prototypes**

Campbell-Thompson classifies as Parthian a type of lamp that has a relatively small filling hole, a long spout, and a palmette handle, described in this report as Type III. This type of lamp is not well evidenced elsewhere. At Dura a few examples were reported (Baur Group 2 nos. 397-400 in the catalog) and at Nimrud (Curtis 1969, p. 140 no. 101 and Pl. XIV no 22). There are no lamps of this type from Mahuz, although some examples have a rude incised decoration on the spout (Ricciardi, 1971, no. 83). Whatever the case, this type of lamp was no doubt short lived. One feels that from the decoration, the potter is trying to imitate metal prototypes. Bronze lamps illustrated by Baur (1947, Pl.XV) have a large palmette handle to lift a cover from the reservoir. The metal examples also have a longer spout, unlike the standard western terracotta molded lamps. As bronze lamps were found at Nineveh, Ninevite potters had the stimulus of metal lamps. Lamp 299 (Fig. 14) from above the "second cement" floor, which would place it later than the Parthian period. It is mechanically similar to the lamp 305 on the same plate. The filling hole is covered by a metal plate, that can be lifted up by a thumb lever. The latter example, evokes a different style. It looks much like the clay Parthian lamp no. 216 from the same excavation. The terra cotta example is obviously based on metal prototypes.

This leads to a further consideration of Type IB. Lamps of this type can have protrusions, and other anomalies not explained by any terracotta prototype. Lamps decorated with clay lumps are considered "late" by Baur (1947, p. 58). Lamp 216 (cited above) from the 1928-9 season (Fig. 14) is a good example. There are a series of applied clay lumps about the filling hole, and there is what looks like a clay thumb lever below the circular handle. The vestigial thumb lever serves no purpose on a clay lamp, and the lever was misplaced below the handle as a decorative element. The applied clay knobs also are reminiscent of side lugs on metal examples (Baur Pl. XIV no. 430); only the clay spots are misplaced and multiplied. It would be safe to assume that lamp 216 was an "artistic imitation of an imitation metal lamp." As such, it should be later than about the second century A.D., and it is possibly later than the Parthian period. Bronze lamps of the Roman period are common about the second century A.D. at Dura, and many derivations in clay also exist (Baur, 1947, p. 74).

Lamps of Type II are somewhat problematical. Glazed lamps form a discrete grouping if taken together, but some unglazed examples exist. At Mahuz, few of the lamps are glazed. At Dura, where there is a wider date range, there are a sizable number of glazed examples. As a dating tool, presence or absence of glaze alone is not chronologically significant. The same types appear in glazed and unglazed forms, but in general, it may be surmised that the earlier Parthian period used more glazed types, while the Sasanian period had more unglazed examples (Ricciardi, 1971, p. 475). Taken as a whole the lamps from Nineveh date towards the later Parthian period.

## Molded Bowls<sup>58</sup>

As this group of vessels forms a very coherent archaeological group, they can easily be defined: a cup or bowl with a roughly hemispherical shape, usually made in a mold, although at times the design may be incised, with no foot or handle. The exterior surface is decorated, and from a variety of contexts it would appear that these vessels were used for drinking from the late third to the early first centuries B.C. They can be seen as taking over the function of the *kantharos* (Rotroff, 1975, p. 1). The origins of this particular type of vessel is far from clear, as these vessels appear in Athens and a number of other sites at the end of the third quarter of the third century. It has been suggested that this was the result of an innovation in one area and a very rapid diffusion of the style.<sup>59</sup> They are nevertheless an important indicator of date, and as Nineveh is rich in this material it will receive special attention.

Campbell-Thompson largely ignores molded bowls in his discussion of pottery. He does not illustrate any examples of this type in the two earliest seasons of excavation, but in the

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<sup>58</sup> The term "Megarian bowl," has at times been used to describe this group. It was originally assumed that this type of molded vessel was from Megara, although it is now clear that most of the original material was made in Athens. Because so many sites have subsequently yielded similar material, it was decided to use a non-specific term to designate these vessels so as not to suggest trade or place of origin.

Technological aspects of manufacture, as well as petrographic and chemical studies on eight diagnostic samples, are presented in Chapter II. This section will consider typological and historical aspects of this group.

<sup>59</sup> There is evidence of trade of either the metal prototypes (or ceramic vessels) in the Megarian style recovered from India. They were produced in a two part mold, joined together *vertically*. The most common shape is a cup with a outturned rim, flaring neck, pronounced shoulder, and hemispherical body. Decorative schemes vary, they are always floral or geometric with no figural decoration. The most common motif consists of long petals spreading radially from a small medallion (Begley, 1991, pp. 159-161). In both shape and style they resemble the molded bowls from Nineveh (particularly Figs. 10.3, 10.5, 10.7). Most finds of molded bowls are located on the west coast, but one cannot simply assume that they were the result of contact with the west via sea and not land. The Parthians apparently did not engage in sea trade to any extent, and as far as East-West trade was concerned, were content to control the land route across Asia (Whitehouse, 1991, p. 217).

last two seasons a few were illustrated. The following general descriptions are from Campbell-Thompson; further comments on the designs have been added.

### 1930-31

See Fig. 23B, p. 62.

16. E, 10, FR Brown buff ware. Tip of an impressed Roman letter on bottom. This example looks incised and not molded, rather simple design.

17. O, 3, FR Traces of red wash. This example has what would appear to be a molded decoration, with a floral motif on the bottom.

18. DD (pit), FR "Similar to 16" Examples of this type are very hard to define, as there are few shards of this type at the Ashmolean.

20. J, 8, FR Resembles 16. This is of a molded decoration type.

21. I 1 Brown Buff. This type is not well represented in shards.

### 1931-32

The single illustrated example for this season (see Fig. 26B, p. 87), along with a molded pilgrim flask, are both labeled "Parthian."

12. MM This has a complex floral decoration that could be either incised or molded.

The large number of shards of this ware in the Ashmolean Museum can be divided into three major groups; they were not catalogued by the excavators individually though some bear locus numbers:

### First group

These are characterized by molded designs with a decidedly floral nature. Leaves often emanate from a base rosette, and there are often concentric circles decorating unused space.

All bases are convex unless otherwise noted.

1932.984 Red wash Bowl (outer surface only) with deep molded designs of floral form, resembling metal prototypes (Fig. 33A).

1932.989 Red wash, unevenly applied to outer surface. The band about the rim is decorated with groups of concentric circles. Leaves emanate from a core at the base (Fig. 33B).

1932.990 "98 Pit" in pencil. Applied red wash, with molded design of concentric circles (Fig. 34).

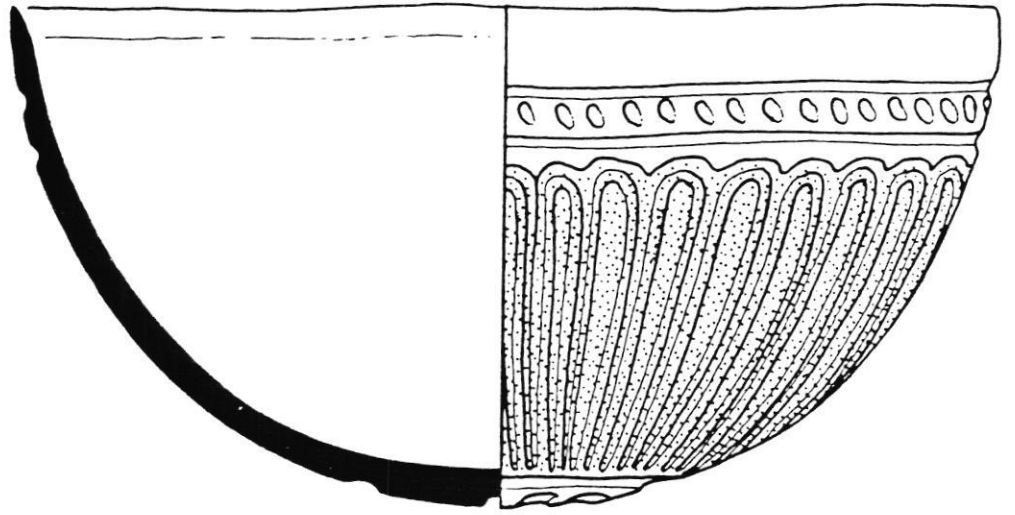
1932.991 "J 8" in pencil. Sloppy red wash. This example is quite different from the others in that it has both a small ring foot and a rim with a lip. The design is similar to the other examples of this group.

1991.316 (4) No wash visible.

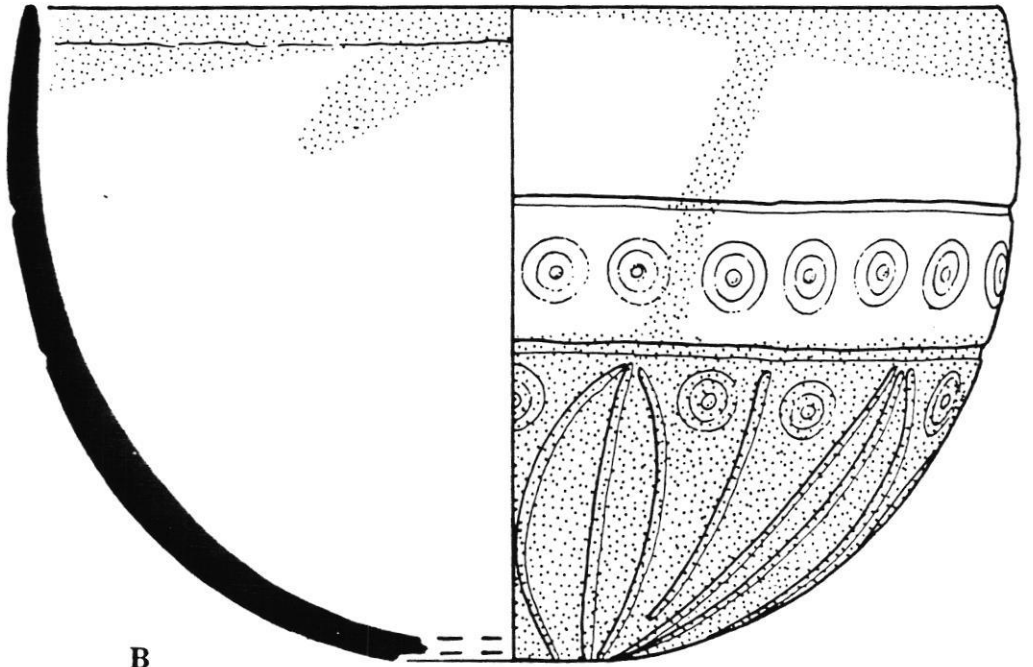
1991.916 (9) "XXII, 4" in pencil. Red Wash. Two rim bands frame concentric circle decoration.

1991.316 (10) Red wash. Design may be considered "geometric." Floral elements may be incised, while concentric circle "filler" appears molded.

1991.316 (18) No wash. Rosette base with leaves emanating.



A



B

Fig. 33 Molded Bowls Group 1 (Scale 1:1 Ashmolean Museum A: 1932.984, B: 1932.989).

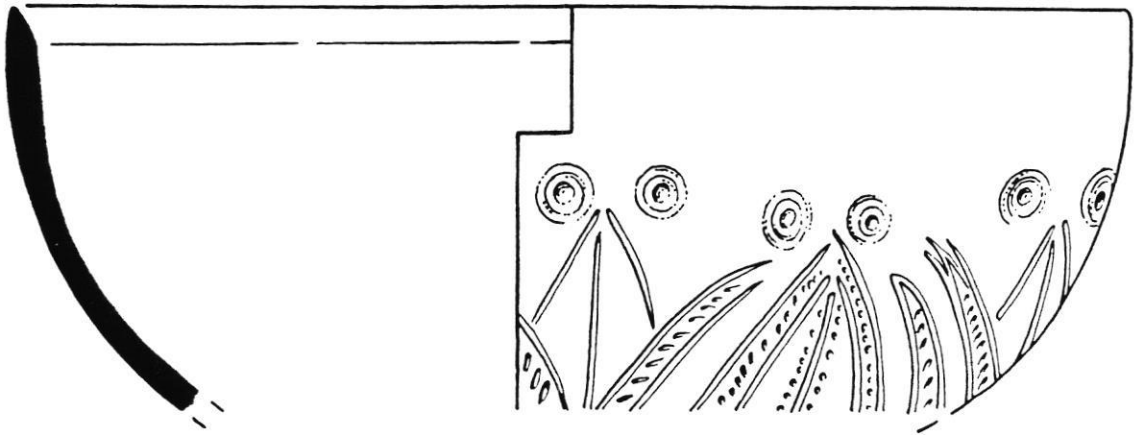


Fig. 34 Molded Bowl Group 1 (Scale 1:1 Ashmolean Museum 1932.1990).

### Second group

Wares show a "debased" floral design and exhibit simpler geometric designs. There is a greater range in types of bowls within this group.

1932.982 "DD 2" in pencil. Sloppy red wash, no base left, but this example has a very heavy lipped rim (Fig. 35A).

1932.985 Wash ? "P 4 DD" in pencil. This has a heavy ring foot (Fig. 35B).

1932.986 "E 10" in pencil. No wash. Ring around lip has a simple single dot filler. Ring foot.

1932.987 Unevenly applied red wash. Simple line and dot design to the body. Heavy ring foot.

1932.988 No wash. The line and dot decoration could be considered almost floral. It has an inverse ring foot.

1932.992 Sloppy red wash applied to outer surface, perhaps the most crude design of the type (Fig. 36A). Similar example recovered from Tell Rifa'at in northern Syria (Kenrick, 1981, fig. 243, 55).

1991.316 (2) No red wash, this example is heavily burnished.

1991.316 (4) No wash. Burnished surface.

1991.315 (5) No wash. This example seems to have incised lines (not molded).

1991.316 (7) Red Wash. 3 rim bands, thick vertical lines decorate the body.

1991.316 (15) "XXI" in pencil. Red wash. 3 rim bands, thick vertical lines decorate the body.

### Third group

This group is different from the other molded bowls, and in many respects resembles a coarser molded "Roman Red" vessel. These vessels have no decoration, but are made of the same fabric as the decorated examples.

1932.993 Red wash, much like 1932.992 but without decoration barring two rim bands (Fig. 36B).

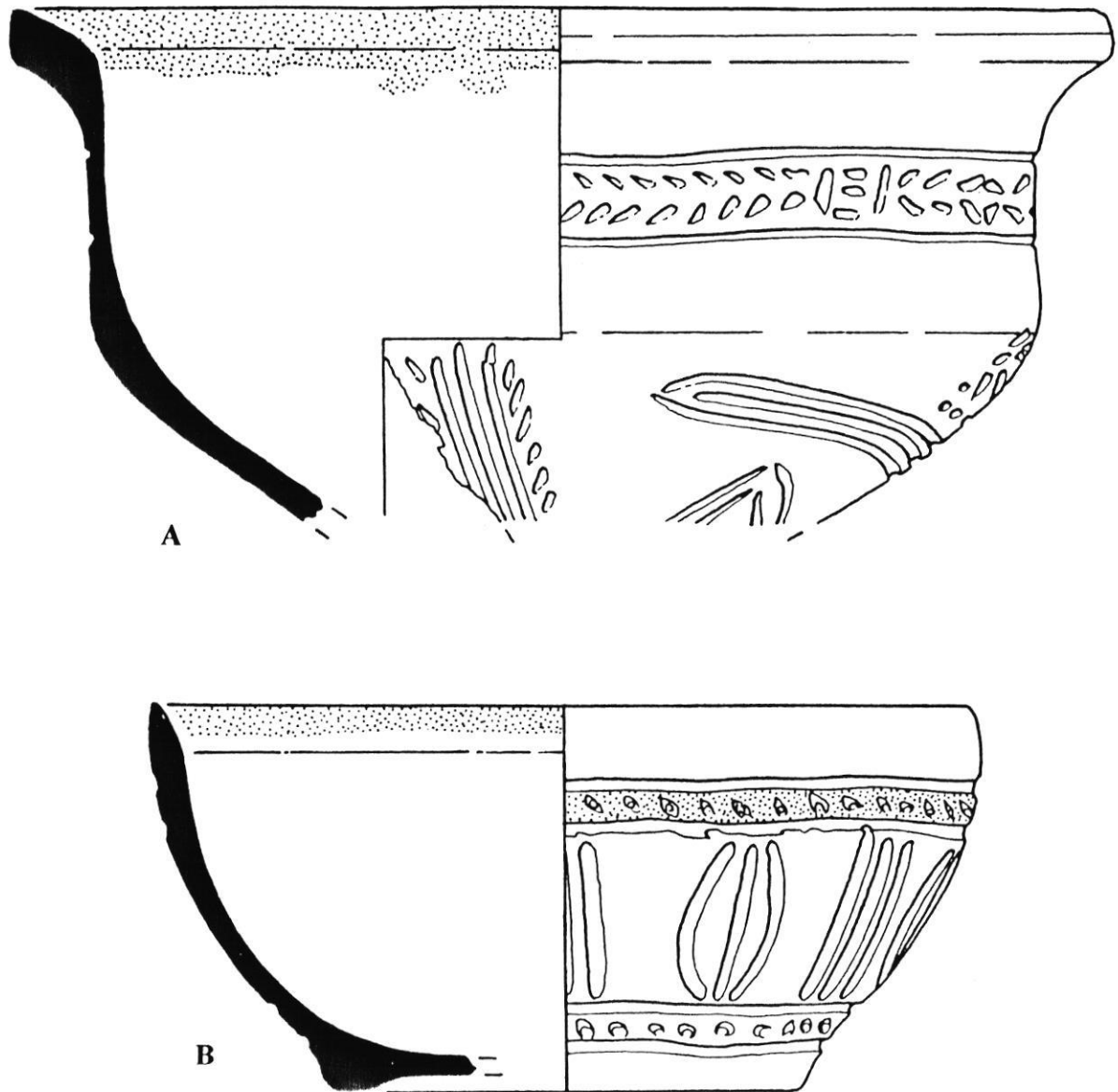


Fig. 35 Molded Bowls Group 2 (Scale 1:1 Ashmolean Museum A: 1932.982, B: 1932.985).

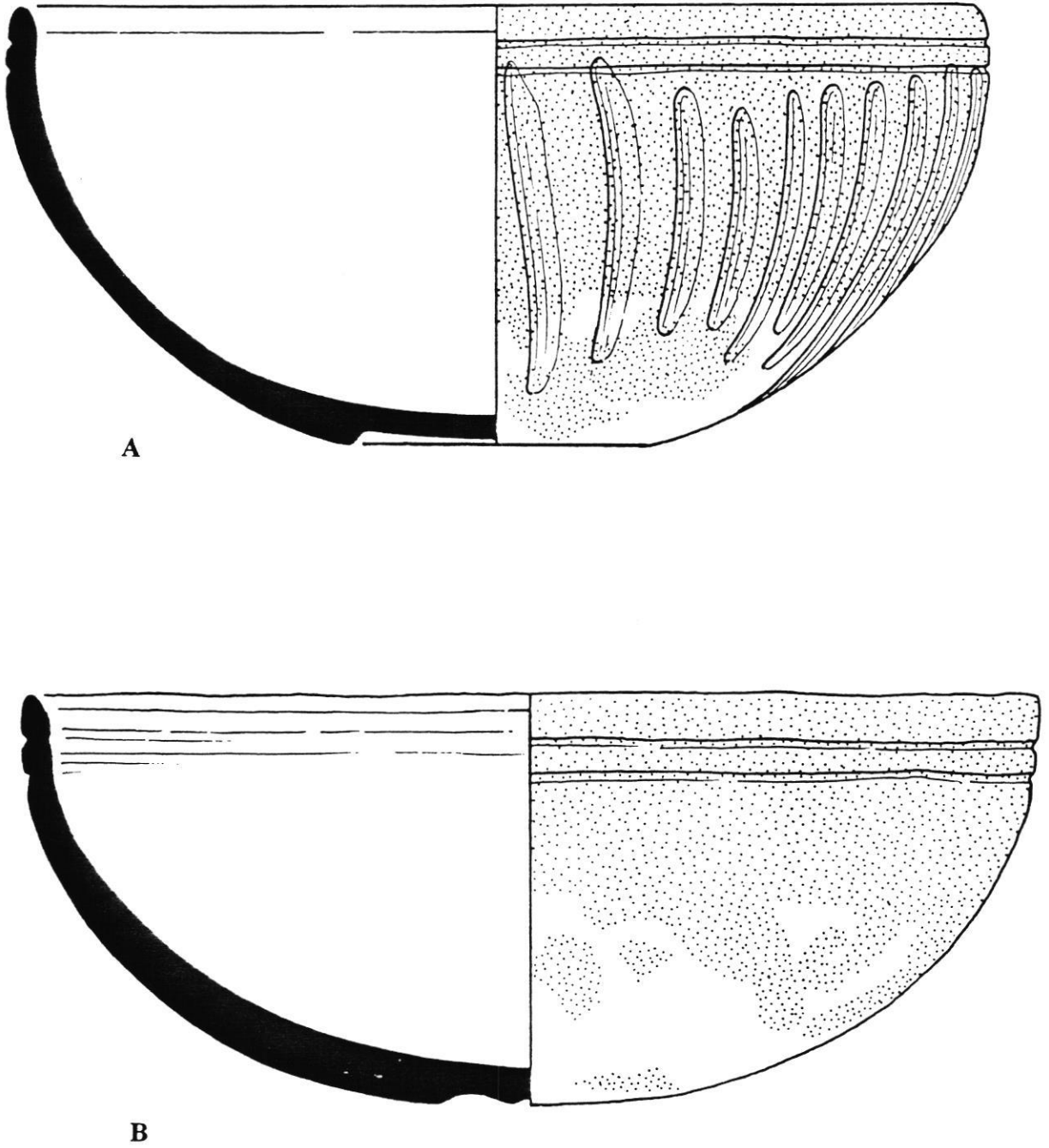


Fig. 36 Molded Bowls Groups 2 (A) and 3 (B) (Scale 1:1 Ashmolean Museum A: 1932.992 B: 1932.993).

1991.316 (8) 3 Red wash. Three bands around rim. This is too small of a fragment to make a definite assessment.

1991.316 (17) No red wash. 4 rim bands, and no decoration on this large fragment.

There are a number of theories that attempt to derive the first place of manufacture by comparing ceramic examples with what is known of metal vessels.

### **Molded Bowls and Metal Prototypes**

It is now generally accepted that the moldmade ceramic bowls, termed "Megarian" or "Pergamene" bowls, are imitations of Hellenistic metalware (Byvanck-Quarles, 1953). This places the material from Nineveh into perspective, as it may be seen as the precursor of Roman red wares (*terra sigillata*). There is, however, difficulty in dating this ceramic industry by prototype, as Hellenistic metalware is not easily dated. The particular hemispherical shape and the calyx of lotus petals that decorates the bottoms of many of these bowls suggest silver and gold prototypes of Alexandrian origin (Zahn, 1904, pp. 411-415). Zahn further elaborates, and suggests that the ceramic bowls themselves are of "Egyptian" manufacture (1904, pp. 413-418). While it is clear that the pottery was copying metalwork closely, one need not suggest that "Greek" potters need come into contact with "Egyptian" (or Alexandrian Greek) metalworkers. Perhaps the evidence from Egypt simply suggests that there was a widespread style of metalwork that was being adapted to ceramic forms.

Plaster casts, such as those found at Memphis in Egypt, have been advanced as methods of dissemination (Richter, 1958, p. 370). Other methods have also been suggested:

An analysis of this information [association with coins and stamped amphora handles] places the beginning of hemispherical moldmade bowls in Athens in the years between 240 and 220, somewhat earlier than they are attested on other sites, and therefore supports the suggestion that they were invented by Athenian potters. The latter half of this period was a

time of especially close friendship between Athens and Alexandria, and I have suggested elsewhere that the moldmade bowls originated as copies of Alexandrian silverware displayed at the first celebration of the Athenian Ptolemaia in honour of Ptolemy III Euergetes, probably in 224/3 B.C.

Rotroff, 1982, p. 331

The above description gives a plausible date (supported by finds) for the introduction of ceramic copies of metalware; although it would be best to regard considerations of the first trade fair that exhibited this material with scepticism. How closely the proposed date of 224/3 B.C. would correspond to the ceramic industries in the east is an open question. Unfortunately, eastern metalwork is even less well understood, and eastern vessel types only remotely resemble the molded bowls from Nineveh.

### **Iranian Metalwork and its Relation to the Megarian Bowls**

Metal bowls attributed to Parthian manufacture are scarce, so that any comparison between Parthian metal bowls and the distinctive molded bowls from Nineveh is difficult. It has been suggested that the vessel originated in Iran under the Achaemenids, as there is linguistic and archaeological reasons to suspect that the Greeks associated these vessels with "the east" (Rotroff, 1975, p.2). The observation, however, is difficult to demonstrate using existing material. Two particular examples are illustrative:

An example in the Sackler Gallery (S1987.144) is a shallow silver bowl. It sits on a relatively tall ring foot, with a thickened rim and an engraved line a centimetre below the top. The body is decorated with a double pattern of twenty-one radiating petals, with smaller petals between the wider ones. The shape of the bowl is thought to be descended from the Achaemenid *phiale* (Gunter and Jett, 1992, p. 80). The date of the bowl is assumed to be from the second to third century A.D., as similar examples are assumed to originate in

Palmyra (central Syria) of a similar date. Similar bowls with radiating petals in a continuous ornament originate from Sogdiana, of the sixth or seventh century A.D. Later examples, however, have a deeper shape and a more conical foot, often decorated with an omphalos or rosette (Marshak, 1986, fig 36 and 37; Azarpay, 1981, 121, fig. 53). Very good examples, of perhaps the first century A.D., have been recovered from Armenia (Khachatrian, 1989, p. 298). The site of Sisian yielded, in one grave, a number of different types of vessels. There were seven vessels recovered, three termed "basins" because they bear a foot (and may be classified as "eastern" in style); and four of a typical "Megarian" form, three of which have floral decoration. While the basins would be classed as "eastern" in inspiration, the other examples are most like the ceramic examples from Nineveh. Because of the Parthian inscriptions on the vessels, and their context within a burial, the author speculates that they may have been made in the region.<sup>60</sup>

Another example is of plainer form, but still has a shallow bowl and a flaring ring foot, forming a flangelike resting surface (Sackler Gallery, S1987.114). Petalled forms (vertical fluting) begin about one centimetre above the ring foot and radiate from the base to the rim on the exterior. The fluting ends on a scalloped moulding 2.5 cm. below the rim. The interior is decorated by a medallion 8 cm. in diameter, encircled by double grooves, of a male torso, three-quarters on, facing right. He wears characteristic Parthian dress, a coat over a tunic, and has curly hair and a beard. The figure appears to have been gilded (Gunther and Jett, 1992, p. 83).

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<sup>60</sup> The author places Armenia within the same cultural sphere as Syria and Asia Minor (Khachatrian, 1989, p. 308). Without more information regarding the distribution of the "basins," or footed bowls, one cannot simply assume that all examples of that type are made in the east; although evidence may suggest that the majority of examples are of eastern manufacture.

Similar silver bowls, with an interior medallion enclosing a chased figure are also evidenced in Roman silver plate of the late second century A.D. (Baratte, 1981, p. 44-45, pl. xiv, xv). The petal design on the exterior resembles decoration on the Hellenistic moldmade bowls (Rotroff, 1982, pp. 1-10). The form of the figure is similar to the stone funerary sculptures of Palmyra. The importance of this example is aptly summarized:

This bowl has no parallels and is therefore of exceptional interest in documenting silver plate of the late Parthian period (perhaps made in a Syrian workshop<sup>61</sup>). It is also important as a later Parthian prototype for the early Sasanian silver-gilt bowls with interior medallion enclosing a human bust.

Gunther and Jett. 1992, p. 85

Although bowls from the Achaemenid and Sasanian periods are easily dated by style, no such convention exists for Parthian bowls. A major problem lies in defining the terms "Greek" and "Parthian." The result is that vessels of a western (Hellenistic) shape and design are often assumed to be Greek. Vessels that are assumed Parthian have distinct motifs that associate them with Parthian art, and as a result many of the vessels are from eastern regions where Greek influence was minimal. The geographical division of east and west, reflected in the vessel shapes, then simply corresponds to a date of dubious validity.

As a result, metalwork is of little value in determining (art historically) the date of manufacture of the moldmade ware from Nineveh. One suspects current art-historical

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<sup>61</sup> The "Syrian" attribution is one that is often used by art historians. Strong (1966, pp. 110-121) finds a similar origin for these bowls, but places the date within the second century B.C. He draws some evidence to suggest that they may have been used for wine. The latter observation may be the most interesting. The ceramic vessels would appear to present a very delicate surface for the consumption of food, and one would instantly assume that they would be used for drinking - as the subsequent clean up would be considerably easier. Many art historians also postulate a "ritual purpose" for the metal vessels, an observation probably not valid for the ceramic vessels, as they are fairly common in a number of contexts at Nineveh.

definitions of "Greek," and "Parthian" may be limiting, but at the same time the evidence does suggest that molded bowls in the "Megarian" style so owe their inspiration to metalwork from an eastern source. The evidence factors against placing an origin for the ceramic imitations in Iran, as the western areas of Syria or the Caucasus region seem at present to offer the best parallels.

### **Typological observations: Dating the Bowls from Nineveh**

Perhaps the best indication of the date of the molded bowls (as a group) from Nineveh is presented by two fragmentary examples in the British Museum. The first example (Fig. 37A, B.M. 120469, clearly labelled as coming from the excavations of Rassam) is very well executed, with a fine grained, well fired body fabric and a well applied red wash. There is a very clear face molded on the vessel, that would appear to have an eastern Greek, or perhaps Greco-Parthian aspect. The over all design is much like a worked metal bowl; the strongly modeled face has a prominent chin, cheekbones and nose. There is also a small row of dots above the face, perhaps the face was framed by the row of dots in the complete example. Similar finely executed examples are not recorded in Campell-Thompson's report (see Fig. 22), but a vessel executed in the same *tradition* was recovered. As the illustration in the original report is unclear, one "coarse" ware fragment was re-drawn (Fig. 37B).

The molded face on the coarser fragment is quite different, and this example would be placed with the plainwares if not for its decoration. Instead of a relatively thin body wall, the most striking thing about the fragment is that it came from a very thick coarse vessel. There is no trace of any wash. Instead of the head molded along with the vessel wall, as the other

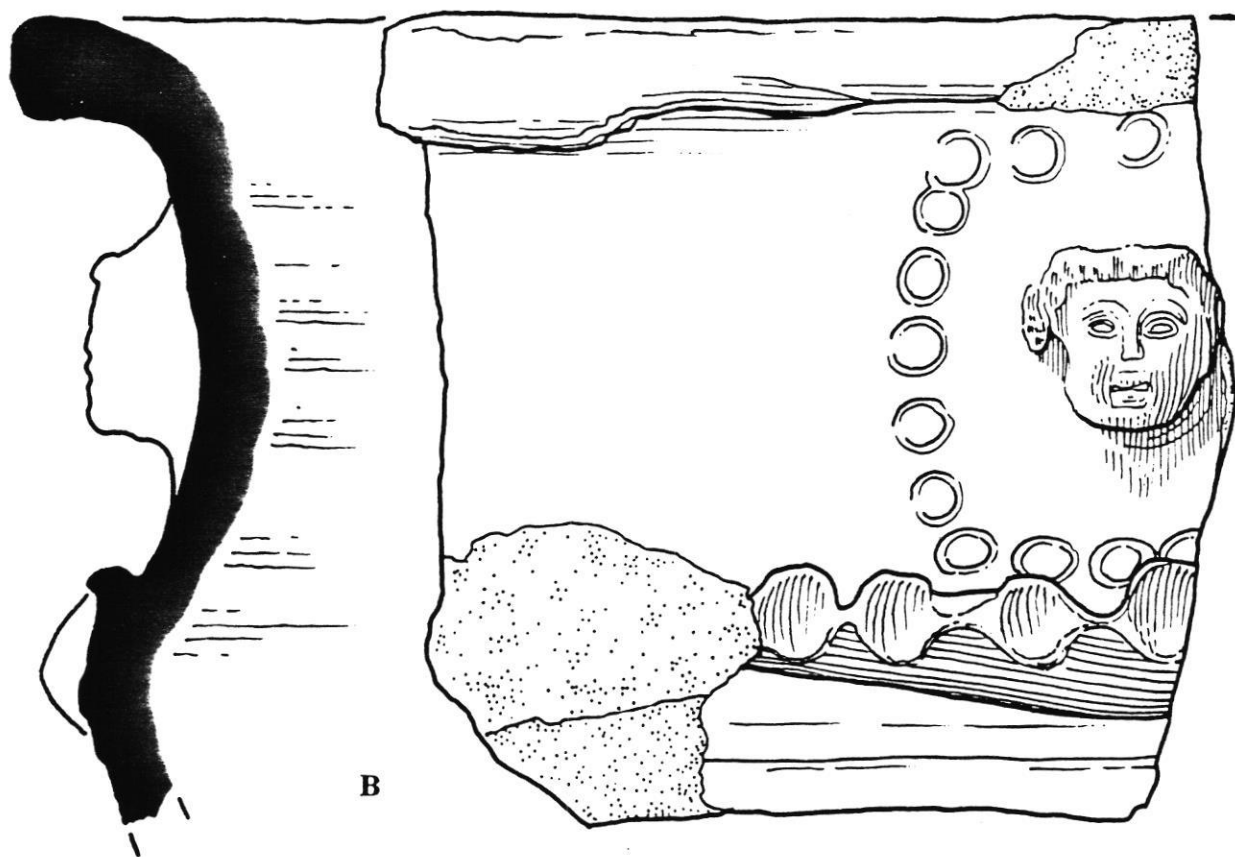


Fig. 37 **Molded Bowls** (Scale 1:1 British Museum A: 120469, Rm. 661, B: 1932, 12-10, 693. 137022).

example, this coarse vessel has simply had a molded head applied to the body, and the head is showing signs of pulling away from the bulk of the fragment.

The head on the second example is distinct. It is rendered in a crude fashion, and the molding simply highlights gross details of the face. Instead of a strongly modeled face, the coarse example has fuzzy features. Part of this could relate to the fabric and firing temperature, which would not permit the portrayal of fine detail. The face on Fig. 37B has neither high cheekbones nor almond eyes, and instead of hair the figure sports a typical Parthian cap (which is visible in the profile view). Instead of fine dots framing the composition, an outline of impressed circles is arranged about the face. The lower band of decoration (a ribbon of clay that has been depressed into dots at intervals) is instructive, as it is typical of Parthian ceramics from Mesopotamia and western Iran.

While it is clear that both vessels were designed for different purposes,<sup>62</sup> the similarity of design (but not of treatment) may lead one to suspect that the finer example prompted the latter. The most logical conclusion would be that both vessels were manufactured at about the same time, and art historical considerations taking both examples into account suggest the early Parthian period. Noting that these vessels exhibit a range of types and petrofabrics (discussed in Chapter II), one may conclude that these vessels were imported to the site for

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<sup>62</sup> While it may be premature to speculate on the functions of the vessels, it should be noted that the second example has a unique form among the plainwares, which normally correspond with the green glazed wares. It is possible that the coarse vessel was used "for ritual purposes." Bernard (1991, p. 32) discussed the Rhyta from Nisa and their possible function in an Arsacid royal banquet. A number of the figures on the Rhyta show scenes that portray eating, music and dance. The fineware vessel is different in this regard, as it belongs to a category that is relatively common, but the distribution of these vessels may suggest that a number of them originated from the area of the cemetery - perhaps as ceramic copies of metallic vessels. It is clear that more graves from Nineveh and surrounding sites must be recorded before more conclusions can be drawn.

a period of time in the early Parthian period, when Greek tastes were still prevalent.

### **Molded Bowls from Anatolia**

The best parallels for the designs are from Tarsus, modern Gözlu Küle in Turkey.<sup>63</sup> It has a long history of occupation, and the remains are particularly well stratified in the Hellenistic and Roman periods. These levels are well dated by a variety of datable objects, including large numbers of coins and lamps. The main divisions for Tarsus are (after Goldman, 1950, p. 36):

The Mid Hellenistic Unit: 3-1 century B.C.

Late Hellenistic Unit: second quarter second century B.C.

Hellenistic Roman: mid 2 mid 1 century B.C.

Early Imperial: late 1 century B.C., first half first century B.C.

Mid Imperial: 2 - late 3 century A.D.

The redware bowls are divided into two styles, "Megarian" and "Pergamene." The Megarian style first emerges in the Middle Hellenistic Unit, with appreciable numbers by the end of the third century B.C. They represented no more than a fraction of the total pottery recovered. There is no evidence that "Megarian" bowls were manufactured at Tarsus, as there were no molds found there. It is assumed that the majority of examples were imported from

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<sup>63</sup> In a personal communication with Michael Padgett, Curator of Ancient Art at the Princeton University Art Museum, he stated that there was no material from Tarsus held there. He states that all the material was retained by Turkey, save for 100 fragments that were released for temporary study and then returned. Miss Jones, the original publisher of the material, states that it may be housed in the Adana Museum. Machteld Mellink (Dept. of Archaeology, Bryn Mawr Coll.), who excavated the site after World War II, was unsure where material would be kept. The author travelled to Tarsus, where there were few small finds on display at the local museum, including two complete bowls. The museum at Adana also had a small amount of material, apparently from Tarsus, on display. The management of the museum at Adana stated that most of their material was sent to the main archaeological museum in Istanbul. I have been unable to locate the material there.

nearby places. The "Megarian" bowl well illustrates the tendency of the Hellenistic period to decentralize manufacture while maintaining a general uniformity of the products. Although closely related, the bowls of various regions form distinctive groups..." (Goldman, 1950, p. 163).

As a group, the Megarian bowls from Tarsus are of fine clay with black to red glaze (Caley, 1947).<sup>64</sup> The base - at times flattened to increase stability - is often decorated with a rosette. The narrow rim is offset from the body by a "bud" pattern, and the body is almost always decorated with a corolla of leaves. As time goes by the designs become less vegetal and can include other elements, including human figures. "Megarian" bowls continue till the beginning of the Hellenistic Roman Unit, and are phased out by the first century B.C. with the introduction of a new type of "Roman" redware (Goldman, 1950, p. 164).

By the mid second century B.C., "Pergamene" ware suddenly emerges (fully formed as a pottery type). It is characterized by a more "sober" design repertoire. Firing of the pottery is more uniform than the "Megarian" type, and there is hardly any evolution of profile (Goldman, 1950, p. 173). Later "Megarian" bowls are characterized by less vegetal design, with rouletting or stamping replacing intricate floral molding.

Till about the first century B.C. all the glaze used at Tarsus was of the common alkali glaze type. At this period, lead glaze emerges, and by about the first century A.D. it predominates. It is more "glassy" in appearance (when compared to Parthian soda-lime-alkali glazes), and is dark green or yellow green in color. This is a sharp break with the hundreds of years of black and then red glaze at Tarsus (Goldman, 1950, p. 196). The most popular shape of this

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<sup>64</sup> The fragments examined by Caley (1947, p. 389) were of a common type from Tarsus. They were coated with a dark green glaze on the exterior surface, while a yellow glaze was on the inside of the vessel. While these vessels are typologically similar to the material from Nineveh, their glaze colour was distinct.

new ware was the ring-handled skyphos, a shape used for silverware in the Augustan period. Although elaborate molded floral decoration is the rule, there are a few examples with crude incised lines decorating the body. Very few shards were recovered, but enough to indicate that there were some "Roman Pergamene" bowls glazed with lead (Goldman, 1950, p. 192).

The Tarsus pottery presents metallic based forms with a wider variety of designs than the moldmade examples from Nineveh. Although there is certainly variation in the designs at Nineveh, the Tarsus repertoire covers a longer time span. Many designs change over what would appear to be a period of time. The following examples illustrate how the designs on the bowls changes over time: The central floral design is well represented in the Megarian style vessels nos. 162 and "J" on Fig. 38. The veins of the leaf are clearly visible, as is the origin of the leaves at the core. There is a similar careful rendering of foliage in the Pergamene style vessel no. 314 (Fig. 39). Fig. 40, the Pergamene vessels of a later style, demonstrate a simplified vegetal repertoire "D" in particular clearly shows branches emanating from a circle on the bottom of the bowl, while "F" and "H" show a long palmette design. A similar design is found upon Megarian bowls from an earlier period accompanied by dots (Fig. 38, no. 163). The dots no doubt represent the leaves that were so prominent in the former example. Although vessels from different periods show tendencies to one class of design or another, it is clear that no fast rules can be drawn.

Goldman sees no hard division between the Hellenistic and Roman "Pergamene" bowls. In many cases, the divisions are kept only because of the obvious stratification and thus the relative dating of the excavated examples (Goldman, 1950, p. 173). There are some trends that can be followed, and, in general, the earlier pottery reflects more sophistication; although some cases, such as fragment no. 163 (Fig. 38), seem to defy the expected trends.

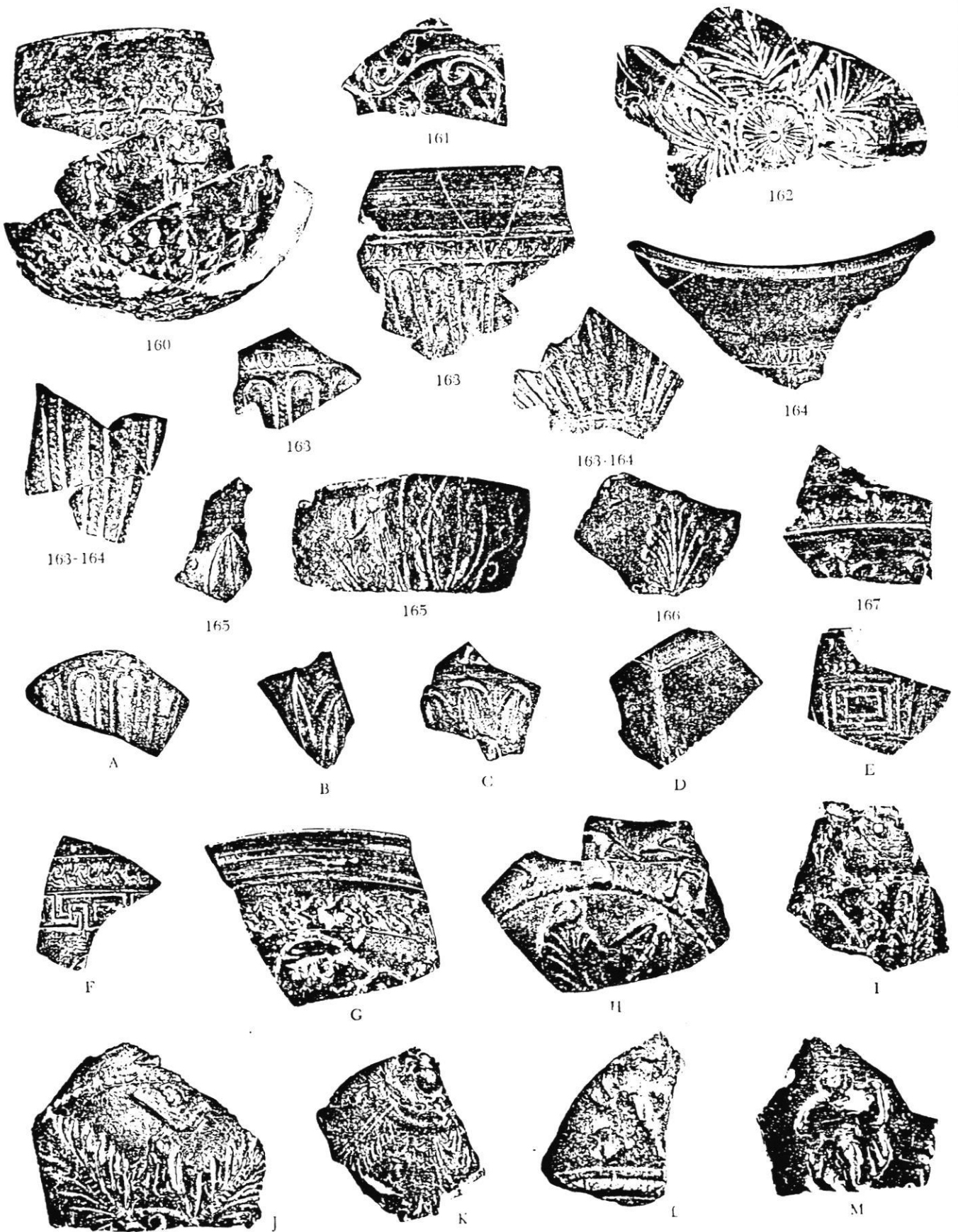


Fig. 38 Megarian Style Bowls from Tarsus (after Goldman, 1950, fig. 130)

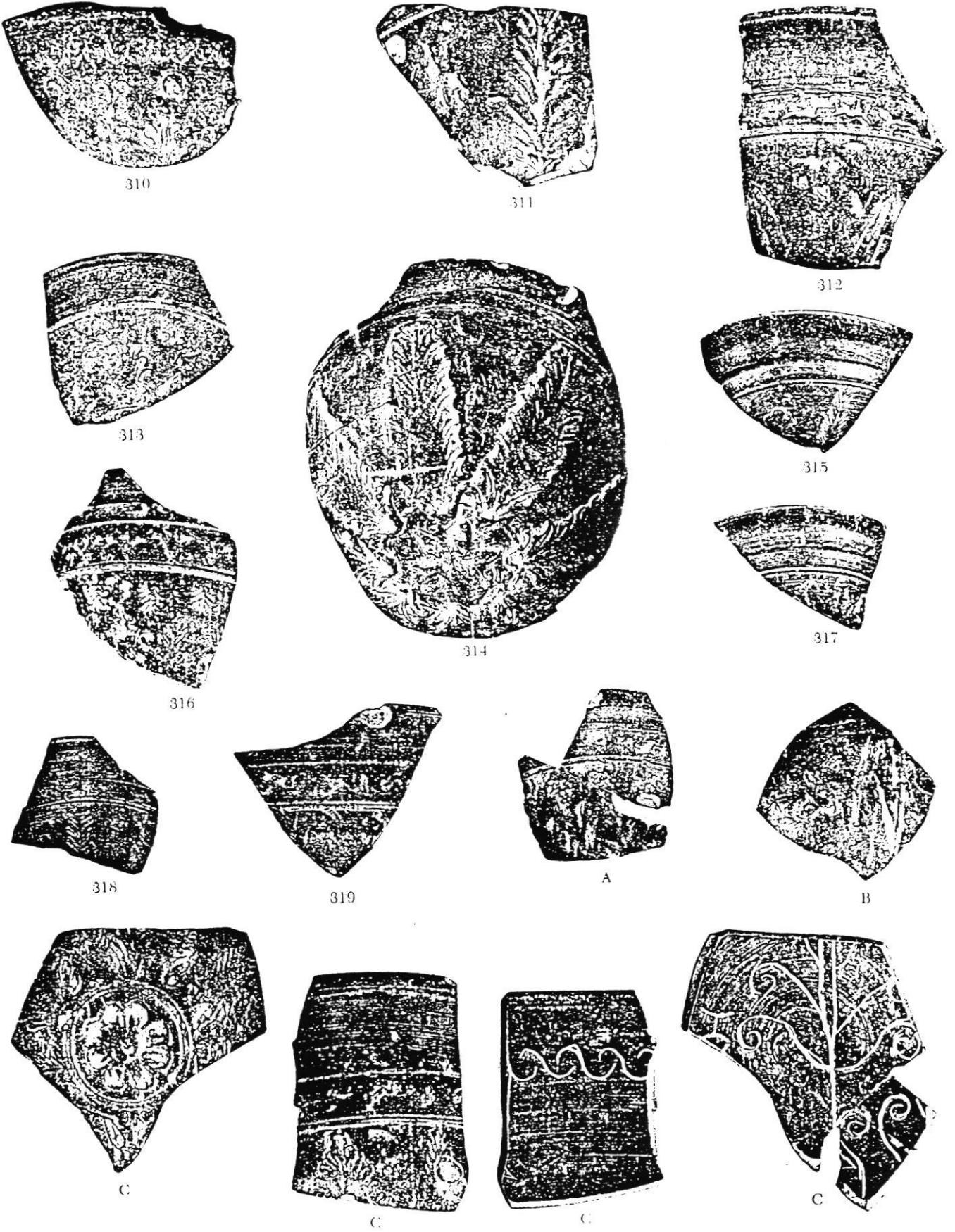


Fig. 39 Pergamene Style Bowls from Tarsus (after Goldman, 1950, fig. 139)

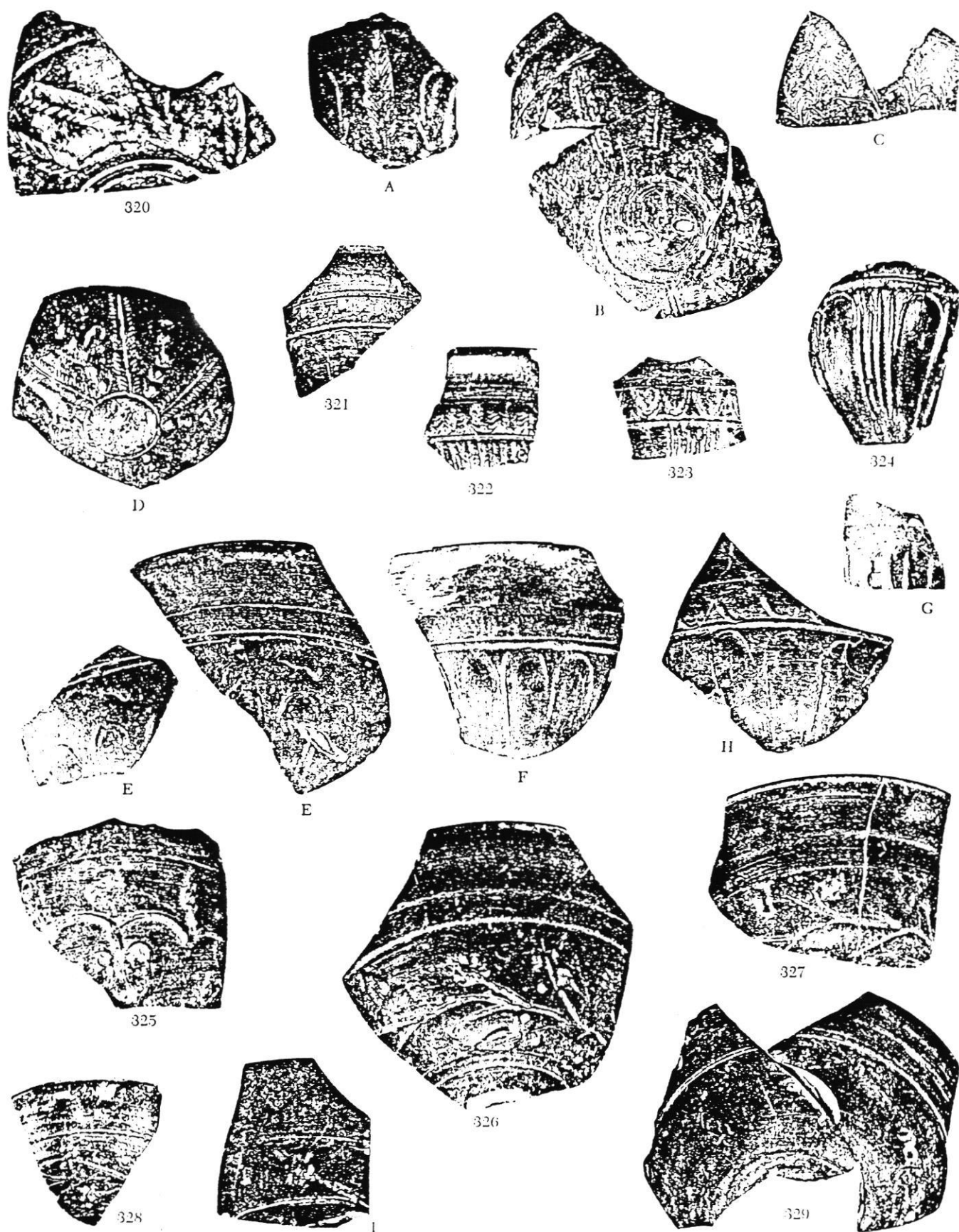


Fig. 40 Later Style Pergamene Bowls from Tarsus (after Goldman, 1950, Fig. 140).

Hellenistic bowls tend to be better fired, with more complex decoration. Later Roman forms are shallower, and some of the latest examples have decoration so degenerate and badly molded that it is difficult to see any floral elements. Ribbing, which first appears in the Roman period, is similar to glass vessels of the period (Goldman, 1950, pp. 177-78). It is easy to see how the crude design on some of the redware bowls at Nineveh, simply big incised lines, derive from the floral designs on "Megarian" and "Pergamene" bowls.

At Nineveh, as at Tarsus, it is difficult to assume that crude incised wares are the same date as what appear to be intricate mold-made wares. In general, the bowls from Nineveh conform to a tradition later than "Megarian," and are stylistically "Pergamene;" although it is difficult to cite specific parallels from Tarsus for the three Ninevite groups. The majority of the shards (certainly from group two) have their closest parallels in the "Pergamene" shards from the Hellenistic-Roman or the Early Imperial levels at Tarsus. One would also be inclined to think that the "Ninevite Pergamene" bowls were imported.

There are also a small number of other types of vessel that are clearly associated in both fabric and method of manufacture with the molded bowls:

#### **Molded "Lachrymatory bottles"** (tear bottles)

Typologically, and in particular decoratively, this class of ware is closely related to the molded bowls (Fig. 41). Although none were sampled, as there was no way to sample a section without causing damage to a diagnostic area, they are nevertheless significant. An appreciation of their origin directly relates to the origin of the molded bowls from Nineveh. Other sites offer some evidence of this type of vessel (undecorated); from Seleucia, from "8-10" examples were found "with fragments of as many more," associated with graves.

The vessels from Dura were assumed to have been imported, as they did not resemble the

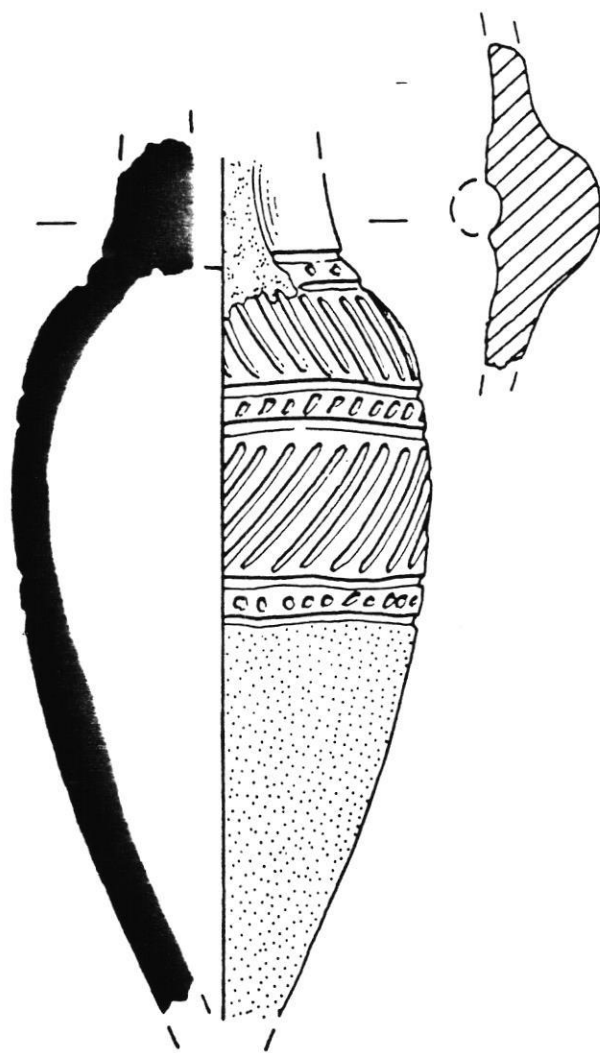


Fig. 41 Molded Tear Bottle (Scale 1:1 Ashmolean Museum 1932.998a).

local pottery. The bottles were covered with a red wash (perhaps to imitate gold,) and burnished vertically. They were also observed to differ markedly from the fine ware found at Dura. This led Debevoise to speculate that they had origins in the central or eastern parts of the Parthian empire (Debevoise, 1934, p. 32).

These vessels are often found in a fragmentary condition. This is due in part to their method of manufacture. Two halves of clay are set into a mold and removed when they are in a leather hard stage, when they are capable of being moved without deformation. Little attention was placed in making the region of the weld between the two halves more secure, and, as a result, they are often recovered in two halves. Because of the small orifice of the vessel (a problem shared with the pilgrim flasks) the inside weld of the vessel cannot be investigated. In molded vessels made in two halves with a wide enough opening, it is common practice to work the two halves of clay closer together (Lackey, 1982, p. 104). There is also a similar vessel of a form that suggests a funerary context (perhaps perfume or cosmetics ?) that is also attested from Nineveh (Fig. 43).

Evidence from the Agora at Athens suggests that the same shops manufactured several different moldmade products. Vessels of different shapes with similar designs suggest that a variety of shapes could be decorated with sections adapted from bowl molds. Lamps and figurines may also have been made in the same shop, although it is clear that the lamps and vessels shared few stamps, and the figurines shared only aspects of manufacture and not design. In Athens there was probably a small number of large shops that produced a variety of ceramic products (Rotroff, 1975, pp. 22-23). While it is clear that the molded bowls, pilgrim flasks, and tear vials<sup>65</sup> from Nineveh were made in the same manner, and perhaps in

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<sup>65</sup> All these vessels share a common method of manufacture and fabric. They may have been made in the same shop, and served a similar function. The archaeological context of the tear vials is clear. The vessels of an unknown shape (Fig. 43) have a similar context. The pilgrim flask, while also represented in non-funerary contexts, occurs in many Parthian burials from a number of areas. It is interesting to note that all examples of pilgrim flasks of the molded redware are so small as to suggest a votive purpose. It is unlikely that these vessels contained liquid, and the example depicted on Fig. 42 has seams that would not hold water.

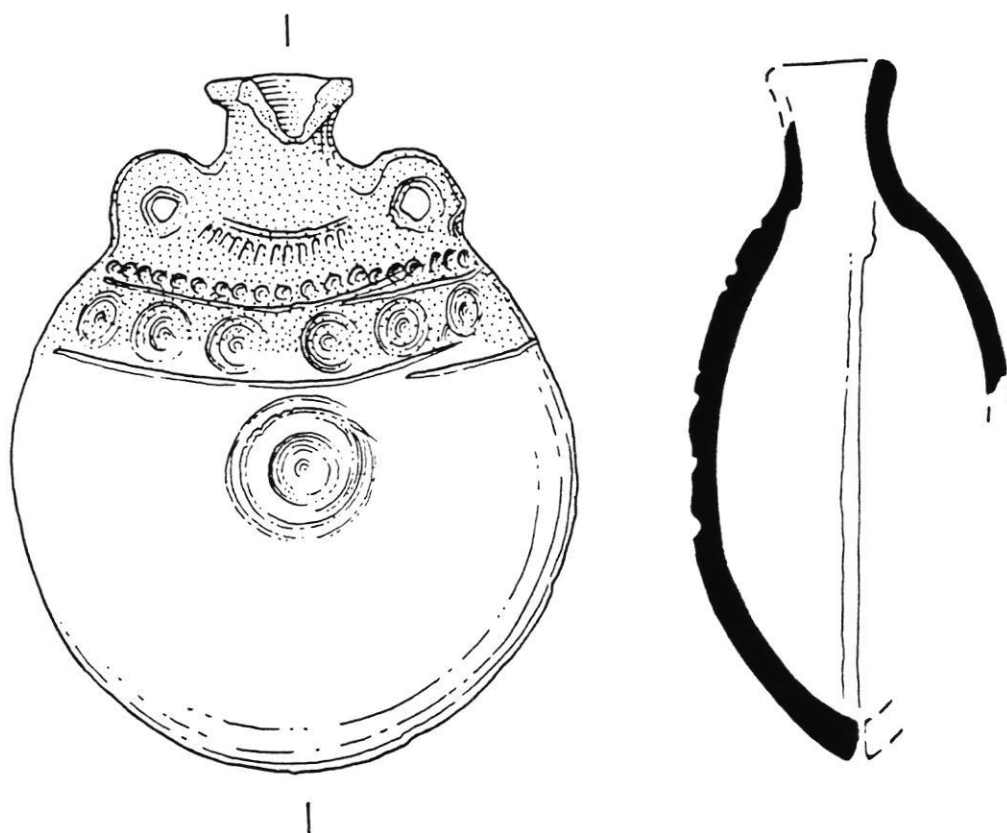


Fig. 42 Pilgrim Flask With Similar Method of Manufacture and Fabric to the Molded Bowls (Scale 1:1 Birmingham 1319.52).

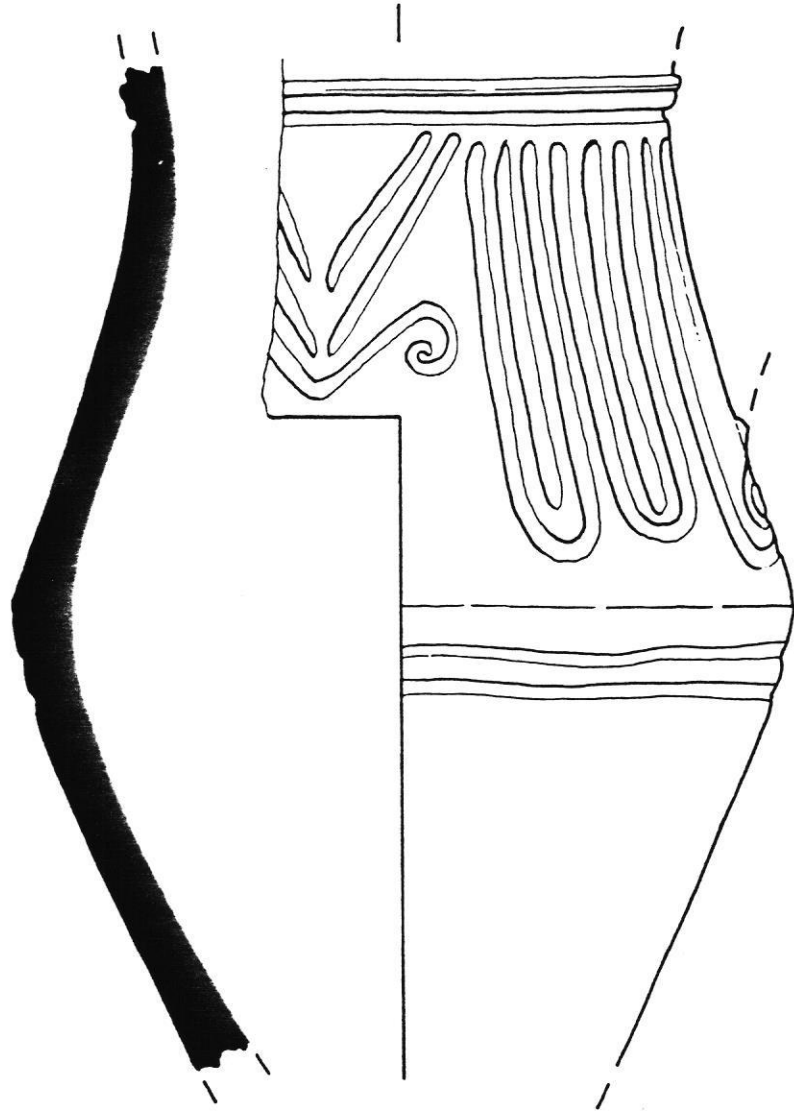


Fig. 43 **Moldmade Vessel** (Scale 1:1 Ashmolean Museum 1932 996a).

the same shop, there is clear evidence to the contrary for the production of other vessels, lamps and figurines (presented in Chapter II).

## **Summary: Parthian Occupation At Nineveh**

Summarizing the wide range of evidence from the British excavations in 1928-32 is far from a simple task, but when Parthian material recovered from these excavations are compared with what is known from other sites, a few areas of relative certainty emerge.

A. In date the majority of the finds indicate an early Parthian occupation, before the first century A.D. Evidence from other sites suggests that the Parthians arrived in the north of Mesopotamia shortly after 140 B.C. By the second century A.D. there is increasing evidence, both historical and archaeological, of Roman intervention in northern Mesopotamia (which is discussed in Chapter IV).

B. In Seasons 1928-1929, 1929-1930, and 1930-1931, a Parthian occupation is indicated particularly by a large number of lamps recovered from the area of the "Temple of Nabu"; by figurines and lamps from the area of the "Palace of Ashurnasirpal"; and by figurines from the area of the "Temple of Ishtar." Whilst elsewhere figurines are commonly found in funerary contexts, at Nineveh there may not be such a simple correlation, as they appear were no graves were found (or recognized).

C. The 1931-32 season in particular revealed a number of relatively complete Parthian period graves. They were not randomly distributed. They cluster notably about the section A in the "buildings built by Sennacherib for his son" (Fig. 24, p. 66), where at a lower level there is also evidence of earlier (Neo-Assyrian) burials.

D. The excavators were unsure of the date for the green glazed wares, and could not determine if they were Neo-Assyrian or Parthian. R.W. Hutchinson correctly identified molded bowls and white glazed wares as belonging to the Parthian period. As there appears to be little early Islamic settlement of Nineveh they had no difficulty in separating wares of a Medieval date from earlier material.

# Chapter II

## Petrographic Examination of Select Ceramics from Nineveh

### Introduction: The Use of Petrographical Method as Applied to Archaeological Ceramics

Note: *in this report, the term petrography will be used to refer to the description of minerals in ceramics. The term petrology implies the study of rock systems in their natural environment.*

The use of petrography in studying ancient ceramics<sup>66</sup> may well become an almost routine part of the post excavation study of a pottery assemblage.<sup>67</sup> To date, no previous study has dealt with Parthian ceramics. Near Eastern archaeology has been slow to adopt new techniques,<sup>68</sup> as petrography has been used to examine archaeological ceramics shortly after it gained wide acceptance as a geological technique. Strangely, ceramics from the New World predominate in early studies, even in Europe (Thompson, 1991, p. 17-18 ). Near Eastern Islamic ceramics are receiving an increasing amount of attention (Mason, 1994, p. 9), which is due in part to aesthetic incentives. The fact that petrography and other descriptive methods are being applied to ceramics is easy to understand, as, on the majority of sites, one must classify pottery carefully, as it is at the same time the most ubiquitous and potentially the most important indicator for both relative chronology and exchange mechanisms (Williams, 1983, p. 301). The techniques used are adapted from the geological sciences, and

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<sup>66</sup> In this report the term "ceramic" will be used in a wide context, and will not be used to denote any specific industry, such as those that use high temperature materials (those with vitrified bodies). This usage is in keeping with accepted "archaeometric" meaning of the word (Middleton, 1991, pp. 16-17).

<sup>67</sup> An introduction, from an archaeological perspective, is presented by Smith (1972). The method described is now considered to be standard procedure in ceramic studies.

<sup>68</sup> Barring the early investigations of Matson into the relationship between firing temperature and colour (1939; 1943).

when applied to ceramic archaeology, interpretation of the data also involves a consideration of human intervention (Freestone *et al.* 1982; Gerrard, 1991).

Upon considering the technique, it is obvious that many areas of difficulty arise when attempting to quantify petrographical data generated from ceramics. However, in comparison analytical chemical analysis techniques suitable for ceramics petrography has several distinct advantages (adapted from Porat, 1989 p. 13-14):

A. A direct comparison between the mineralogical composition of the ceramic and the proposed area of manufacture is possible. There is no need for an extensive database with large numbers of primary samples of the hypothesized geological area of manufacture.

B. Petrography is able to generate information regarding production technology, such as the nature of natural and added temper, and a range of probable firing temperatures. Technical advances in the method of manufacture can be addressed. Changes in the pottery over time, or regional variation, can be considered.

In comparison with chemical analysis, there are a few prominent disadvantages:

A. A relatively large sample of pottery is needed for petrography. Samples as small as one centimetre square can be utilized, but this is dependent upon the fabric. The larger the inclusion size, the larger the size of the sample required to gain a representative sample. Whole, non-restored vessels cannot be sampled easily, and for practical purposes a body of shards is required for relatively destructive analysis.

B. In order to fully exploit the technique, experience with the optical mineralogy, and knowledge of the local geology, are both required. In many cases the local geology is difficult to assess. In contrast, chemical analyses performed by many laboratories can be used, and the information processed by a personal computer.

C. Petrography, when compared to a more numerically based science, generates data that is more difficult to present and interpret. Methods have been devised to reduce the amount of subjective human error, but a certain amount of error in observation is inherent when individuals observe and record information. As a result, petrographical data cannot be processed for rigorous statistical treatment as convincingly as chemical data provided by, for example, neutron activation analysis (NAA).

An important advantage of petrography over the traditional chemical analysis is that any compositional changes recorded in the pottery during burial are usually detectable (Williams, 1983, p. 301). Whereas a chemical test may show that a certain group of samples contain a higher amount of calcium, petrography can reveal that there is a post-depositional infilling of carbonate associated with water damage of the matrix. Post-depositional infiltration may also explain the different origins suggested for certain types of pottery (Richards 1960; Williams 1977).

## Glossary

**Clay:** A natural material with particles of a very small grain size. It is composed of a minimum of 30 % hydrous aluminium silicates or occasionally hydrous magnesium silicates. When mixed with water it is plastic, it retains its shape upon air drying, and when highly heated it can form into a stony mass.

**Fabric:** When all the features of the sample are considered at once, this includes both the matrix and all inclusions.

**Grog:** Crushed ceramic added as a temper, distinct from a pellet in that grog has been fired. There may be a characteristic separation crack between it and the matrix because it does not shrink to the same extent during firing like the surrounding matrix. It may also be darker in colour than the surrounding matrix (Whitbread, 1986, p. 83).

**Inclusion:** This is the term most widely used in this report to refer to a discrete fragment of material that is enclosed within the matrix. It is also used to describe temper.

**Matrix (Paste):** The fine particulate matter surrounding the inclusions and binding them together, in this report it is used to designate clay. If the matrix has temper added, it will be referred to as a *body* or *body matrix*.

**Pellet:** An inclusion within the matrix with a different colour and texture. Inclusions within a pellet can be oriented in a different direction. A pellet could be due to inhomogeneous mixing of a single clay, foreign material being mixed into a clay, or possibly due to the mixing of two clays (Whitbread, 1986, p. 84).

**Petrofabric:** A term used here to designate a group of pottery (defined archaeologically) with similar fabrics.

**Petrography:** Term used specifically to refer to the observation and description of minerals in hand specimen and in thin section.

**Silt:** Small particles between 1/16 and 1/256 mm. in diameter.

**Sorting:** Term used to express the spacial size distribution in a sample. Eg. well sorted = small range of grain sizes.

**Temper:** Used to designate inclusions that were certainly added by a human agent. In this report this term is not used unless there is compelling evidence. Temper may be added to a clay in order to increase workability or to modify its characteristics during firing.

**Vitrification:** Involves the melting/sintering of primary components to produce a glassy phase. Amount of glass formed can be assessed by textural analysis using a SEM.

*This report is intended for a non-scientific reader, and is aimed at archaeologists and art-historians. Because the target audience may not be familiar with the procedures, expectations or limitations of the techniques used to study the material, relatively more attention is paid to explaining how and why particular procedures were used. A conventional archaeological typology of the ceramics, as is standard in many reports, is not included in this investigation. The primary area of focus will be to place the technology of Parthian ceramics into perspective; and to attempt to identify examples of pottery that were manufactured using a different technique or perhaps originate from a different area.*

## **Procedure**

In order to separate the ceramic assemblage into preliminary groups, the surfaces were carefully examined both by eye and with the use of a low powered binocular microscope. Examples were chosen on the basis of perceived differences within a given ceramic type. Examples of large groups (such as green glazed wares) were chosen from a larger corpus, in this instance there was little observable difference between examples. If possible a number of different areas of a vessel were selected, so that body shards, fragments of handles, and rims were selected. In the case of a more restricted group, such as the Terra Sigillata, two examples (that were easily available in the Ashmolean Museum) were sampled. The samples were cut using an electric saw, and treated with plastic so that the grains would not desegregate when the sample was polished optically flat (0.03 mm.). The ground and polished sample,<sup>69</sup> now attached to a slide, is thin enough so that most minerals, barring opaques such as iron, can be viewed through a petrographic microscope. In order to characterize opaque minerals, a polished section for *transmitted* light must be used. Few

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<sup>69</sup> There are difficulties associated with grinding and polishing a friable sample, such as a coarse ceramic material. It must be impregnated with a consolidating material, such as plastic or resin, and then subjected to grinding and polishing. Impregnation/embedding also leaves material around the sample, allowing it to be placed in a chuck so that the sample can be treated by machine rather than by hand. For an outline of the procedure see Humphries (1992, pp. 40-42).

opaque minerals were encountered in the material examined in this report, so that this technique was not used.

The microscope is fitted with a polarizing filter and a number of optical aids that are used to enable the identification of minerals. Of particular interest are the large mineral grains in the clay body of the sample - and by carefully recording the abundance and shape of particular mineral grains - some idea of provenance can be obtained, although there are many complicating factors.

### **Problems Associated with Provenance Determination**

Some of the problems inherent in provenance determination of ceramic material are:

- A. Rock or mineral fragments must be large enough for identification, if the fabric is too fine with few inclusions, chemical analysis will be more revealing (Peacock, 1978, p. 63). Conversely, because of the heterogeneity of most coarse ceramic samples, trace element determination may be "positively misleading," unless a sufficiently large sample is taken for homogenization (Shotton and Hendry, 1979, p. 82).
  
- B. Potters tend to choose rocks for temper that are weathered, as these are easier to break. They are subsequently harder to identify by the ceramic petrologist, because they have undergone alteration. (Williams, 1983, p. 302; Peacock, 1978, p. 65). Fortunately, this practice does not seem to obscure identification to a significant enough degree to impair the petrography of the samples from Nineveh.

C. Certain minerals alter at temperatures reached during firing, and some minerals, such as carbonate, may decompose completely (Morariu *et al.*, 1977, p. 188).

D. Because of the many variables inherent in provenance determination, emphasis is placed on comparisons with samples of clay or sand from local areas; or possibly pottery known to be of local manufacture. When samples of the local clays and tempers are not available, and when the local pottery is unknown, provenance determination is considerably more difficult.

Peacock (1978, p. 65) suggests using ancient and modern brick to gain information about the petrology of a region. Modern brick is especially useful, as it is often stamped with the makers name. Ancient brick may be assumed to be of local manufacture, but a number of wrecks (the Ile De Frusule, Provence, is the cited example), have contained cargoes of bricks and tiles. "However if care is taken to select the common fabrics from a site, and the petrology clearly relates to the local geology I believe that ancient brickwork can provide exactly the comparanda required" (Peacock, 1978, p. 66). Peacock has collected brick samples from the Mediterranean region, a similar exercise would be quite useful for Mesopotamia. Unfortunately, the two brick samples from Nineveh are not instructive. There are no large inclusions to give a better appreciation of the local geology, and it is clear that Neo-Assyrian brick was prepared using different methods from most of the pottery.<sup>70</sup> Perhaps the technological differences between brick and pottery in this instance would make comparison difficult.

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<sup>70</sup> It is from an earlier period, so that it reflects Assyrian traditions by its fine paste with few silt-sized inclusions and use of organic temper.

## Use of Textural Parameters to Determine Provenance

The determination of the area of manufacture for ancient ceramics by the identification and localization of diagnostic minerals can achieve quite convincing results. Unfortunately, many regions are characterized by geological successions which are monotonous on a scale of hundreds or even thousands of kilometres; making the mineralogical assemblages of ceramics produced in different areas appear similar (Middleton *et al.*, 1985, p. 64). This difficulty applies in particular to Southern Mesopotamia,<sup>71</sup> where, in addition, there are no detailed mineralogical maps to aid provenance studies.

Northern Mesopotamia is more promising (Fig. 1, p. 5). While there are few references to the local geology of the region (outlined in Chapter I, pp. 4-7), it is clear that the area exhibits regions that can be discerned (al-Kaissi and Mynors, 1987, p. 152). Although hampered by the lack of fieldwork in Iraq to sample local materials, "localizing" products is undertaken by using their (petrographic) texture as a guide.<sup>72</sup> This approach, termed "textural analysis," has been adapted from techniques used by sedimentary petrologists (Van der Plas, 1962). The majority of the studies, when applied to ceramic petrography, have concentrated on measuring grain size distribution; typically recording between 50 and 100 grains. Due to

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<sup>71</sup> Mason (1994, p. 40) noted that for the majority of the Islamic ceramics originating from southern Iraq, there appeared to be little difference chemically between two distinct petrofabrics. The samples from Nineveh also reflect this precedence of petrography over chemical analysis, and as a result, the chemical data is integrated into the discussion of petrofabrics and will not be considered alone (a view long held by scientists applying analytical techniques to ceramics, Norton, 1959).

<sup>72</sup> Archaeological ceramic studies have often been criticised for their lack of objective observation, as in many cases a report will simply describe a particular fabric as different from another (Peacock, 1970, p. 385). It is with these criticisms in mind that a more objective approach was devised. At the same time it was hoped that the tables of petrographic data were not overestimated. Particular importance is also attached to the verbal descriptions in this report, which often reflect differences that are not apparent on the tables.

the tedious and time consuming nature of this operation, doubt has been levelled at the efficiency of the method. As a result, computer assisted methods of grain size determination are being developed (Middleton, 1985, p. 64). Textural parameters will be stressed in this report, because many of the petrofabrics have similar amounts of minerals. Despite the rather subjective nature of the observation, the exact measurement of texture has been divided into many separate sections; in order to gain a wide understanding of the many observable differences. In this way it is hoped that an appreciation of the inclusions, in particular if they are added by humans or natural, can be achieved.

### **Chemical Analysis and Provenance**

Much attention has been devoted to the many questions that arise when chemical analyses, particularly those that concentrate on trace elements, are used to determine provenance. The main difficulties can be placed into two categories:

- A. Adding temper to clay may alter the overall composition of the matrix so that one could assume that clay from one source has separate origins.
  
- B. Tempering clay may lead one to assume that clays from two different regions were from the same source.

Both cases are similar, and in each case a characterization of the materials likely to be used as temper would aid in interpreting the chemical data. Logically, as the amount of temper approaches 100% the threat of overlap increases, but there is clearly a difference between

temper of high and low variability. Adding quartz temper,<sup>73</sup> which may be considered a temper with low chemical variability, simply has the effect of diluting the elemental concentrations (other than silica) in the paste. Adding tempers with more varied compositions may cause more confusing results, but even for temper with high variability, the amount would have to be in the range of 75-80% in order to affect the reliable separability of groups (Neff *et al.*, 1988, p. 170; Neff *et al.*, 1989, p. 58).

The same questions arise when one considers levigation, or human size sorting. Blackman (1992) studied this effect using samples collected from the region of Tell Leilan in Syria.<sup>74</sup> The author found that the removal of the sand sized fraction from the sample showed concentration changes of less than 5% for 15 of the 27 elements determined by NAA. The four elements that showed the most change were sodium, cobalt, zirconium and uranium. The removal of the sand fraction, therefore, did not compromise the ability to resolve groups, but a removal of all or part of the silt sized fraction caused considerable changes, in the range of 20 - 40% (Blackman, 1992, p. 122). The latter observation is the most significant, but, of the sample examined from Nineveh, only the white glazed wares and the Roman redwares have been so refined.

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<sup>73</sup> Olin and Sayre (1971) in their study of 16th century ceramics found that the North Devon pottery had a proportional lowering of elemental concentrations depending upon the amount of quartz sand added to the paste as temper.

<sup>74</sup> A region that is not far from Northern Iraq and one that may have a similar geological profile to the region about Nineveh.

## Analytical Scanning Electron Microscope

The analytical scanning electron microscope (ASEM) was used for the chemical analysis of pottery in this report.<sup>75</sup> The ASEM combines the imaging capability of a normal SEM<sup>76</sup> with the microanalytical capabilities of an electron microprobe, or electron probe microanalyser, EMPA (Birks, 1971, pp. 5-19). It measures the characteristic X-Rays that are generated when a sample is exposed to a beam of electrons. It is versatile, and can be used to analyze not only large areas, such as a region of the matrix, but also small areas, such as glaze, or individual inclusions. The sensitivity of the device is partially related to sample preparation. A sample needs to be ground flat,<sup>77</sup> and the minimum sample size required should yield a smooth surface several millimetres in diameter. In practice the material for ASEM can be taken from material left over from preparing a thin section for optical microscopy. The electron microprobe is simple to use in conjunction with visual observations.

Porat (1989, p. 35), found that a microprobe was best used at lower magnifications. She

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<sup>75</sup> Select samples were analysed. Samples from other ceramics were prepared for X-Ray Fluorescence Analysis by Dr. G. Schneider at the Free University of Berlin under a grant from the Meyerstein Fund for Archaeological Research. The results were not ready for this report and will appear in a separate publication.

<sup>76</sup> The imaging capabilities of the SEM have long been appreciated as being of value for studying archaeological remains. With a wide depth of focus and magnification range, materials such as bone, teeth, hair, and a number of kinds of artifacts can be observed and photographed (Brothwell, 1969, pp. 565-566). From this beginning, the SEM has become integrated into a number of archaeological disciplines, although some limitations were perceived as sample preparation is often a destructive process (Olsen, 1988, pp. 4-6). Recent studies using the SEM on archaeological materials have successfully addressed geological problems, particularly the origin of sediments in archaeological contexts (Bull and Goldberg, 1985).

<sup>77</sup> The surface must be representative of the sample as a whole, and polished smooth with a scratch free surface. There are a number of other factors that bear upon the results, and are discussed in Goldstein (*et al.*, 1984, pp. 449-451). A general discussion of the use of X-rays in chemical analysis is also presented in (Willard *et al.*, 1974, pp. 258-276). The application of electron probe microanalysis with particular reference to silicate minerals is presented by Potts, (1987, pp. 326-382).

noted that for her samples, x 40 was optimum, and that for higher magnifications the matrix composition varied from point to point. Preferring to use the electron probe at the lowest magnification possible in that case proved to be the best course. The majority of the pottery studied in this report, however, have quantities of coarse sand sized inclusions. It was necessary to restrict the scan size in order to avoid these inclusions and thus obtain repeatable results. In order to gain information about the matrix only, a region of the matrix was selected at x 400 magnification that was free from particles above the medium silt range. The bulk analysis then gives the composition of the matrix (and *not* the whole body) and the finer fraction of associated silt. All bulk chemical analysis of the matrix given in this report are an average of three such analyses at x 400 magnification. It was found that there was usually little variation in the totals for any one sample, and that the end result is probably a good indication of the composition of the matrix.<sup>78</sup> The ASEM analysis of the samples are presented in the appendix at the end of this chapter.

### **Postburial Factors Effecting Chemical Analysis**

An important consideration in the interpretation of chemical data are the effects of burial on the composition of the sample. While it may be the case that all samples were exposed to the same environment, it is also possible that burial conditions, particularly groundwater,

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<sup>78</sup> This shows that there is one general provenance for the material (barring isolated examples), and that there was probably little ground water contamination of extraneous elements. Hedges and McLellan (1976, p. 207) note that in the majority of archaeological contexts, there is unlikely to be any more than a few percent change in the *trace* element concentration in a particular sample. If the sample were exposed to unusual conditions, such as corroding bronze, there may be a larger fluctuation. Differences in soils also appear to have little effect on provenance studies using chemical analysis. The latter observations may also be applied to bulk chemical analysis. Wilson (1978, p. 223) also discusses factors that effect pottery during burial, and notes that barium, calcium and sodium are prone to leaching and deposition. In general, however, that author notes a lack of research on the topic.

could lead to different results. Fabric texture also plays a part, and one would expect that well fired wares, such as the white glazed samples, and low fired wares, such as the brick samples, would be effected by conditions to a different extent. No studies have been directed toward this problem for Mesopotamian material, but studies of Greek samples have led to the conclusion that Ca, Fe, Mn, Na and K are sensitive to burial conditions in that they can be either deposited or leached (Jones, 1986, p. 34-36). The chemical data for this report will take previous studies into account,<sup>79</sup> and some attempt will be made to estimate the amount of secondary mineral formation due to burial conditions from petrographic observations.

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<sup>79</sup> There have been few studies that address this region: Campell (1987) used NAA to examine Halaf period ceramics from Kharabeh Shattani; Davidson and McKerrell used NAA to examine Khabur headwater sites (1976), and then Tell Arpachiyah and Gawra (1980); Davidson (1981) continued NAA analysis of prehistoric ceramics from the area with his study of Tell Aqab material; and finally Dobel (*et al.* 1977) attempted to localize the Mitanni capital by NAA. These studies are limited by their lack of coordinated standards, and their restricted time span. For this report they were of little value. The most valuable study that will be considered in depth, as it considers "late" period material of Assyrian date, is Freestone and Hughes (1989).

# Organization and Symbols of the Petrographic

## Tables

The organization and symbols used in the chart (presented at the end of the thesis as tables) have been designed to convey as much information as possible, while remaining simple to use. It is hoped that discrete groups will be easily recognized. The samples of pottery, grouped according to archaeological considerations, are arranged horizontally. Basic ceramic types are represented, without undue consideration being placed on separating groups by nuances of typology. Particular attention has been focused upon integrating the discussion of petrography into an archaeological discussion. It was felt that all aspects of a particular vessel should be considered at once, archaeological and petrographic, in order to properly address the particular questions appropriate for each ceramic group (Goldberg 1988, p. 201). While both groups are finds from the same place, it is clear that the forming and firing technologies of vessels and figurines differ, as does the archaeological information about them.

### **Inclusion Type**

#### **Minerals**

These are arranged vertically down one column of the chart, with minerals in rough order of abundance. Quartz, usually the most abundant inclusion type, is above calcite or feldspar. Minerals such as quartz, calcite, and feldspar, that occur in a number of different types, are further subdivided. These subdivisions are discrete, and may be diagnostic.

### *Lithoclasts*

This section is placed in a separate box in order to differentiate minerals from rocks. Two man made inclusions are considered in the "Lithoclast" section; these are designated "pellet" and "grog." A pellet is defined as a region of clay that is distinct within the matrix, likely due to inhomogeneous mixing of clay; as such it cannot be considered temper. A piece of grog is strictly defined as a fragment of clay that has been previously fired. Although the difference between grog and pellet is easy to define, in practice distinguishing between them can be difficult (Whitbread, 1986, p. 83).

### *Infrequent Inclusions*

In order to make the chart more easily appreciated, inclusions that are represented by one or two examples are listed below and are given a number that appears in the chart.

1. Organic temper.
2. Granite.
3. Mica schist
4. Mudstone.
5. Primary hematite.
6. Bone fragment.
7. Epidote.
8. Kinked mica.
9. Aggregate (subhedral) amphiboles.
10. Biotite schist.
11. Quartz schist.
12. Chlorite schist.

A criterion for placing an inclusion in this category, rather than considering it separately, is the frequency with which it occurs in the samples. Basalt/Dolerite is placed on the chart, whereas granite is not often encountered in these samples, and is in the infrequent inclusions section. The presence of granite illustrates the problem of interpretation, since a sample with an abundance of this rock may not differ in provenance from a sample without granite. The presence of granite in a sample may simply relate to the fact that it is a coarse grained lithology (<1 mm.), and granite therefore is more likely to appear as disaggregated quartz, feldspar and mica. At the same time the presence of a number of minor inclusions may be revealing. It is significant to note that the moulded bowls (designated with lab number MG) have relatively large number of minor inclusions besides the basalt/dolerite listed on the chart; demonstrating a coarse temper, and perhaps an alternate provenance. Only two samples contain bone fragments. One is a Parthian plain ware (ME 2) and one is a Figurine (EM 2). Samples listed as having no minor inclusions may either be of such a fine fabric that they are not present, or possibly the one or two trace examples have evaded detection. In short, consideration of trace inclusions should rest on the presence of, and not the absence of, the evidence. Also included in this section is the amount of organic material observed. In most instances there may be small amounts of plant material, but these are not recorded because they are a natural inclusion in most clays. Organic inclusions are only noted when the material is abundant enough to be considered an added temper.

### Abundance

This measurement is expressed semi-quantitatively using symbols for every inclusion, determined by visual examination. A chart was used to estimate the number of inclusions, as the observed abundance of inclusions could be compared with a standard set of figures of known percentage (Matthew *et al.*, 1991). For this measurement, four fields of view were taken and described using the chart as a guide, and the resulting average of the three observations was recorded under this heading. The symbols ---, 0 and X, give an indication of relative abundance of the per cent of inclusions in the area of the slide. This estimate will be especially accurate for comparisons within groups of similar fabric, although the measurement is accurate enough to compare the relative abundance of inclusions between groups. In order to facilitate comparison between groups, the symbols correspond to an approximate ranking of observed inclusions: starting with --- one or two grains observed in the entire slide; moving through 0, X, XX to XXX. The symbols *roughly* correspond to the following values:

---	one or two examples in the entire sample
0	1-5 %
X	5-10 %
XX	over 10 %
XXX	20 %

The level of precision should not be overestimated. There can be both considerable variation in the number of grains present in certain regions throughout the sample, and there can be human error in estimating overall abundance. The method of using symbols is also superior to simply giving a numerical estimate of the overall percentage of each inclusion type because it facilitates rapid appreciation of similarities and differences within and between

groups.

## **Textural Analysis**

### **Total Number of inclusions**

The total number of inclusions within a paste directly affect the controllability of the clay, which refers to the extent that the mixture can be brought to a condition of a uniform consistency so that its properties are reliable and predictable. The more variable the composition or grain size, the more variable its performance. The second major factor is formability, the capacity of the material to withstand operations relevant to manufacture. In particular there will be differences in the clay-temper mix between ceramics that are mold made or wheel thrown (Bronitsky, 1986, p. 213). It is clear that the clay from the region about Nineveh is prone to shear, and that without temper to alter the plasticity of the clay vessels would develop cracks.

The overall semi-quantitative estimation of the *total* inclusion content (other measurements have given the abundance of one inclusion type at a time); is expressed using a numerical system, based on the chart after Matthew (*et al.*, 1991). Silt sized grains in the medium silt range and below are considered under the category *Silt in Matrix*. It will be noted for many samples that as the volume/number of inclusions rises, the size of the inclusions rise as well. This is partially due to the parameters used, as the smaller the inclusions, the more likely they will be considered under the heading *Silt in Matrix*. The two observations were kept separate because there may be no direct correlation between the amount of silt present and the abundance of larger inclusions.

1. Few inclusions in the silt size range, totalling about 1 percent of total field of view, with the possibility of few inclusions into the medium sand range.
2. Medium number of inclusions, totalling 2-5 percent of the field of view. Usually of a coarse silt/fine sand size, as in the White Glaze wares.
3. Larger number of inclusions, from between 20-30 percent of the average field of view. Wares of this category may vary in inclusion size.
4. This category has the largest number of inclusions of any group. This designation has been used sparingly, to denote samples of particular abundance. Wares of this category often range into the very coarse sand size, and are well represented by the Sasanian cooking vessel (EM 1).

### Silt in Matrix

A qualitative expression of the amount of silt sized grains in the matrix, below coarse silt size (below .312 mm.). Inclusions larger than this size are considered under the heading *Number of Inclusions*. The amount of silt observed is due to the amount originally present in the matrix, and the amount of the finer silt sized grains surviving firing. However, a simple estimation of the silt content gives no indication of maximum firing temperature. Determination of the amount of silt can be hampered by such factors as the amount of hematite precipitated from the matrix, or quantity of organic material, both of which may appear anisotropic. It is nevertheless an important indication of the fabric type. Measurement is expressed by a simple numerical scale, using the chart of (Matthew *et al.*, 1991):

1. There is little evidence of silt in the matrix (1 percent or less)
2. There is an appreciable amount of silt observed, over 2 percent of an average field of view.
3. If there is appreciably more than about 4 percent silt, then the sample is placed in this category. This category is frequently associated with little or no vitrification.

### Grain Size Parameters: Mode and Mean

Inclusion size (considering here only grains of coarse silt size .0312 mm. - .0625 mm. or larger) may seem at first to be a simple quantifiable measurement of observed grains, but there is some difficulty in giving a measurement that reflects the range of sizes often encountered. If simply the mean size were taken by itself, this would be an artificial construct that may factor a large number of small grains, or a small number of large grains that would not be present in quantity in the sample, into an "average." The mode is therefore taken as the first measure of grain size. This accurately reflects the most frequently occurring size of grain (Huff, 1954, pp. 30-35), or the value of the mid-point of the most abundant size interval. Most natural sediments are unimodal, with one grain size dominant, but bimodal and polymodal sediments are also encountered.

Although some samples may show bi- or polymodal distributions, it was decided in this case only to consider the larger mode in the size distribution. If the grains are well sorted, the mode and mean values will be more or less the same. In determining the mode, silt size grains below the coarse silt range are not included, as they were measured separately on a 1-3 numerical scale.

The mean grain size takes into account all grain sizes, excluding medium silt grains. The mean is a useful indication of grain size in that it gives information on the remainder of the grains that are not considered in the mode. It gives information, for instance, about the number of small or large grains present in the sample. A sample with distinctly more grains in the larger category may still have the same mode, but the mean may differ. In a sample with 100 0.05 mm. grains, an estimate of the mode does not indicate the presence of 50 0.1 mm. grains (or of oversized grains of 1 mm.). It should also be noted that a mode/mean

estimate based on visual examination is prone to bias.<sup>80</sup> There is a tendency for the observer to record the largest fraction of the inclusions, at the expense of the smaller grains. If the mode were determined by computer, it may have a value smaller than that determined by eye.

Because the mode and mean do not reflect the maximum grain size present in the sample, this will be considered separately in the next category.

The table of sizes is given below, after the *Udden-Wentworth* scale. It will be noted that grains of a very large and very small size have been omitted, as they are not applicable to the ceramics studied.

<u>Size in mm. of class boundary</u>	<u>Class Term</u>
2-----	
	very coarse sand
1-----	
	coarse sand
0.5-----	
	medium sand
0.25-----	
	fine sand
0.125-----	
	very fine sand
0.0625-----	
	coarse silt
0.0312-----	

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<sup>80</sup> The ribbon counting method was used to determine the size distribution. It was felt that this was at the same time one of the most accurate and the simplest method of determining size. In keeping with the recommendations of Middleton (*et al.*, 1985, p. 72-73) a minimum of 50 grains were examined using a graded graticule, and a "ribbon" of an appropriate size for the grains was used.

### Maximum inclusion size

This is a measurement of the largest grain in the sample. This measurement does not consider human inclusions, such as grog or pellets, which are often of unusually large size, and are not representative of the sample as a whole. On the chart, the units are microns, whereas in the text, the quoted units will be mm.; this is to make the number more easily comparable with the mode and mean values, which will also be given in mm. The maximum grain size may give some indication of sieving, and in any case it is a useful guide for determining petrofabrics on the basis of textural parameters.

### Inclusion shape

Grain morphology is another useful parameter used to interpret different sediments. A history of the environment of a particular grain can be deduced from a careful consideration of its surface features. The shape of a grain can be measured by considering the long, intermediate and short axes of a grain. For most purposes associated with interpreting the environment of a sediment, roundness measures are more significant than a consideration of sphericity or form (Tucker, 1981, p. 17). This report will focus on roundness to deduce the environment of a sediment, but grains that have a particular shape will be noted. Many schemes have been proposed to classify sediments on the basis of roundness, but perhaps the most commonly used is Pettijohn (*et al.*, 1973, Fig. 44A):

<p><u>Round</u> Grains have no sharp projections, and appear to have been transported and abraded in an environment long enough to lose all traces of fracture.</p>
<p><u>Subround</u> Shows some angularity, but not to a great extent, considerably more rounded than the subangular category.</p>
<p><u>Subangular</u> Grain shows some evidence of fracture, but the shape would not suggest that it was <u>certainly</u> recently fractured. This category is the most frequently used.</p>

Angular This category is reserved for grains that exhibit long projections and show little or no evidence of mechanical abrasion. This category is used sparingly, as there are few cases where the criteria are met. Small grains (e.g. coarse silt) will often appear to be angular. The smaller the grain size, the longer it will retain angular protrusions in comparison to larger grains, which abrade more quickly.

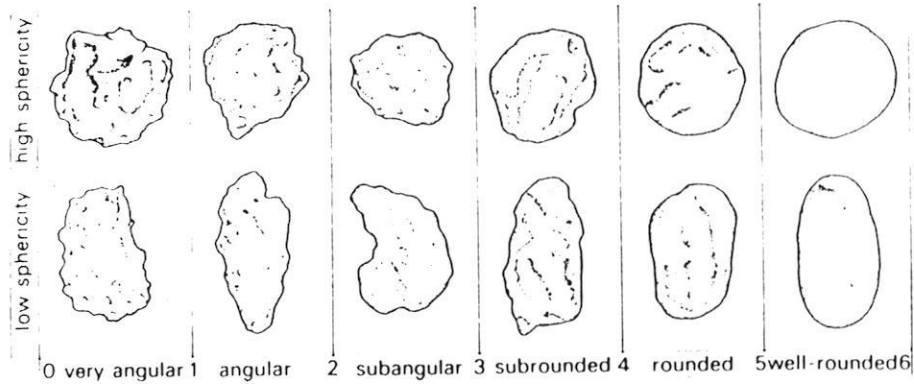
## Characteristics of the Matrix

### Matrix Colour

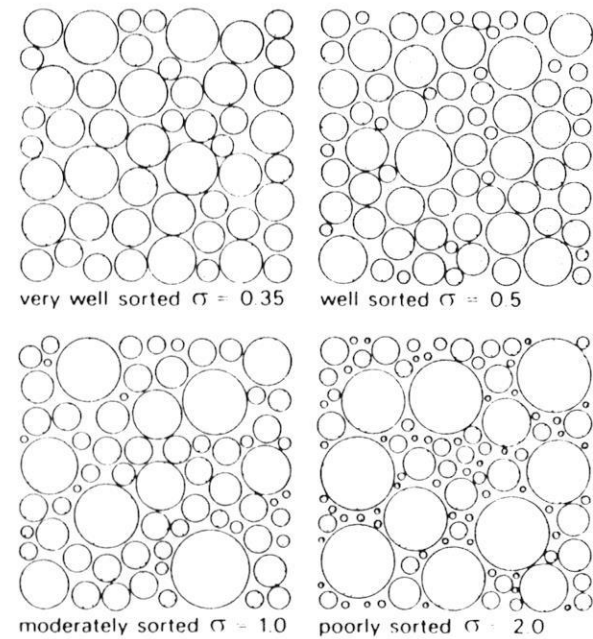
This is an observation with the naked eye, in reflected artificial (fluorescent) light,<sup>81</sup> and is made using the entire thin section. This is given numerically using an abridged table of the Munsell system. The *Rock Colour Chart* (Goddard *et al.* 1948) was used, partially in order to reduce the number of possible colours, while still striving systematically to describe colour. Very accurate colour descriptions were found to be irrelevant in other studies (Matson, 1971, p. 68). Natural variation in colour was taken into account to give an average colour. Particular emphasis was placed on grouping samples within a limited number of colours so that patterns could more easily emerge. Considerable caution should be used when addressing the colour of a ceramic object. Nicholson (*et al.* 1989, p. 84) noted considerable variation in colour from a "traditional" firing of pots in an Egyptian updraft kiln: "Sherds from the same firing of a single kiln could yield markedly different results as well as appear sufficiently different to be thought of as different or variant fabrics."

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<sup>81</sup> The systematic description of colour is subject fraught with difficulty. Ideally, Munsell charts should be use with daylight from the north, and observations in artificial light require special florescent tubes (Trend, 1995, p. 1). As colour is not used as a significant attribution in this report, it was felt that recourse to electronic colour meters was not necessary.



A: Categories of Roundness for Sediment Grains (after Pettijohn *et al.*, 1973).



B: Charts for Visual Estimation of Sorting (after Pettijohn *et al.*, 1973).

### Colour Name

In the table is a shorter version of the full name given in the chart; which adheres to the ISCC-NBS (Inter-Society Colour Council-National Bureau of Standards) system of colour names. Complete names for the colours used in the petrographic chart are as follows. A shorthand notation is also used on the chart, under the above heading.

**Munsell Code**                      **Colour Name**                      **Shorthand Colour Name**

5R 2/2	Blackish Red	B R
5R 4/6	Moderate Red	MR
5Y 5/6	Light Olive Brown	LO B
5Y 4/4	Moderate Olive Brown	MO B
5Y 5/2	Light Olive Grey	LO G
5Y 6/4	Dusky Yellow	D Y
5 YR 3/4	Moderate Brown	MB
5YR 4/4	Moderate Brown	M B
5YR 5/6	Light Brown	L B
10R 3/4	Dark Reddish Brown	DR B
10R 4/6	Moderate Reddish Brown	MR B
10R 5/4	Pale Reddish Brown	PR B
10R 6/6	Moderate Reddish Orange	MR O
10 YR 5/4	Moderate Yellowish Brown	MY B

## Isotropy

Observations of colour were also made using polarized light (or "under crossed polars") and with the tint plate in position, thus giving information on *isotropy*. This is an expression of the interaction between polarized light and minerals, which is related to the optical properties of the latter.

ANISO Anisotropic: clear colours and then extinction at 90 degree intervals (in degrees of stage rotation).
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WAN Weakly Anisotropic: shows colours and extinction as above, but to a lesser degree.
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ISO Isotropic: dark/extinct in all positions.
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In this instance only the smaller grains of the clay matrix were measured, and the isotropy of the larger grains was not taken into account. Isotropy can be related to the firing temperature of the clay, as the amount of glass increases with increasing firing temperature, and glass is isotropic; so with the larger amount of glass present, the less silt/clay is visible. This is not a reliable indicator, however, as there are other factors that affect isotropy. Anisotropic hematite may be abundant in an isotropic matrix. In addition, the clay type, the grain size of the clay, the organic matter present, and the kiln atmosphere all modify the colour under crossed polars.

## Vitrification

One of the advantages of the SEM is that it is able to give clear pictures at high magnification with a large depth of field.<sup>82</sup> As a result, the SEM has almost become a standard method for characterizing a ceramic sample (Tite, 1972, p. 251).<sup>83</sup> While there have been studies using the SEM to elucidate the matrix of ceramic samples from the Neolithic and Chalcolithic pottery of Mesopotamia - Hassuna, Samarra, Halaf, and Ubaidian wares - (Noll, 1991, pp. 232-254) to date there has been no effort to systematically examine ceramic samples from the Parthian period.

The section divides the samples into groups according to the amount of vitrification observed in SEM micrographs of the matrix,<sup>84</sup> all observed in polished section at 400 times magnification (Maniatis and Tite, 1979).

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<sup>82</sup> Optical microscopy may also be used to observe ceramic structures, but it requires similar sample preparation and considerable skill in resolving minute differences in colour using reflected light (eg. Neuberger *et. al.*, 1972). Proposals of using optical methods to observe microscopic ceramic structures have largely failed due to the relatively low cost of the SEM.

<sup>83</sup> The role of the SEM in archaeological ceramic studies is discussed by Tite (1992, pp. 111-112). The particularly powerful combination of images and analysis make the SEM the central method used to elucidate the microstructure of a ceramic body. It can be used to describe both the method of preparation of the materials, and to give an indication of firing conditions. Pore structure is particularly important, as changes in the shape of pores are not detectable using a non-visual method, such as mercury intrusion (Freeman and Rayment, 1968, p. 618). Technological examinations of ceramics ranging from the Neolithic to the Bronze Age were examined by Maniatis and Tite (1981, p. 74-75), who found that there tended to be a selection (or perhaps the preparation) of appropriate clays within a particular region. Ancient potters were aware of the different characteristics of high and low calcareous clays. Firing technologies also appeared to remain unchanged from the Neolithic to the Bronze Age if the samples examined from Southeast Europe and the Near East were any indication. Such observations may further refine archaeological observations of different ceramic industries, and may augment arguments for social stability or change.

<sup>84</sup> The SEM and other methods, such as optical microscopy and X-ray diffraction, have been used on the same sample and compared. While they yield similar results (Segnit and Anderson, 1972, p. 86), OM has significant drawbacks, most striking being that factors such as opacity can be influenced by a number of variables.

NV <i>No vitrification</i> is observed, individual grains in micrograph are separate and show no melt phase.
PV <i>Partial vitrification</i> , individual grains show some interconnection with surrounding matrix; although this is influenced by the unfired (original) texture of the ceramic. Fine particles will show more interlinkage than larger particles exposed to a similar temperature.
EV <i>Extensive Vitrification</i> . Sample shows definite glass phase, individual grains are linked together. There are can also be "bloating pores" if the sample is exposed to a reducing atmosphere.
CV <i>Continuous Vitrification</i> . Essentially continuous glassy phase extending over the entire polished section.

The clays encountered in archaeological ceramics<sup>85</sup> can be divided into high refractory non-calcareous clays (NC HR) with less than 10 % fluxes, and low refractory non-calcareous clays (NC LR) with between 10-20 percent fluxes, and with a CaO content less than 5 percent. Low refractory calcareous clays (C) have fluxes in excess of 15 percent, and from six to thirty percent CaO. For the majority of the clays in this report, it will be observed that they fall into the low refractory calcareous clay category. This is confirmed both by bulk chemical analysis , and by visual observations using the SEM. A chart relating firing temperature and vitrification is given below (after Maniatis and Tite, 1979, p. 127).<sup>86</sup> There

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<sup>85</sup> The literature on archaeological ceramics has been augmented by general studies on industrial ceramics. During the 1960's and 1970's the ceramic industry was pressured to generate ceramic products of similar colour. Ceramic structures from a number of different materials were examined using the SEM by Freeman and Rayment (1968); and by the early 70's, individual studies using the SEM focused on particular clay types, such as kaolinite (Segnit and Anderson, 1971). A number of studies of that period dealt with the changes of high-calcareous brick clays (eg. Peters and Iberg, 1978). Much is known about the various secondary structures formed during firing and their chemical composition and behaviour.

<sup>86</sup> Because there have been extensive re-firing experiments conducted on many types of clay commonly encountered in archaeological ceramics (eg. Tite *et al.*, 1982), there was no need to re-fire any of the ceramics encountered in this report to determine the firing temperature. Errors in determining firing temperature may occur at higher temperatures (above 1000 C.), and in such a case, re-firing experiments should be conducted. None of the ceramic samples

are other factors that also influence vitrification, but they will be discussed elsewhere.

**Vitrification**                      **Firing Temperature in degrees C.**

	NC (HR)	NC (LR)	C
NV	< 950	< 800	<800
PV	950-1000	800-850	800-850
EV	1000-1050	850-900	850-1050
EV/CV	1080-1100	900-950	1050-1150
CV	>1100	>950	>1150

***Discussion of the Petrofabrics***

The term "petrofabric" is here used to describe the clay matrix, rocks and minerals of a ceramic specimen (Mason and Keall, 1991, p. 51). Groups will be discussed according to archaeological arrangement, with the "average" group being considered in the light of subgroups (if extant) that differ from the average. The subgroups take both petrographical and archaeological considerations into account,<sup>87</sup> especially if there are cases where the petrographical information alone is not sufficient in itself to merit placing the example in a subgroup. The group that represents the majority of the samples will be considered the "main group," in comparison with the subgroups. The designations do not imply a different region of manufacture. When the phrase *group as a whole* is used, it is here taken to mean the entire

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encountered fall into the latter category.

<sup>87</sup> Because there are a variety of uses for a ceramic vessel, the archaeological context will be regarded as an important factor in determining function. Middleton (1991) discusses a wide range of uses, from building materials to crucibles. It should be noted in this report that the majority of the material sampled here is from vessels, and barring one example, all appear to have a function of storage, transport, or decoration. As such, they show few technical characteristics of specialized ceramics, such as crucibles.

archaeological group (eg. green glazed wares), including the subgroups.

In addition, ASEM analysis will be integrated with the discussion of the petrofabric. The bulk chemical analysis using the microprobe has been directed to areas of the matrix with the fewest number of inclusions. This is in order to gain information on the composition of the paste, which is too small to study using a light microscope.

## PETROFABRICS

This section will concentrate on the petrofabric, and will outline the typology of the ceramics studied. For the purposes of this report, the ceramics have been divided into wares, which are both discrete and easily identified.<sup>88</sup> This is not an attempt to exhaustively study the types and frequency of the pottery recovered from Nineveh. The material available for study is clearly heavily sorted, and the small collection of vessels is particularly lacking in plain wares. In addition, it is almost impossible to establish with any accuracy the location and depth at which a particular fragment of pottery was recovered.

The petrographic tables of the ceramic samples discussed are located at the end of the thesis, pp. 416-424.

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<sup>88</sup> There has been criticism directed against the "nineteenth century" concept of *wares*, which is directed against systems that use complex terminology. In addition, the concept -to some- implies a static category, that does not take into account that: "...wares (i.e., bodies and surface treatments) are points along a continuum of technological development" (Majewski and O'Brien, 1987, p. 106). For this report the standard archaeological terms are used, and the latter objection is taken as not valid for a system that covers a limited period of time.

### Neo-Assyrian Vessels

Evidence from other northern Mesopotamian sites suggest that these two vessels date from about 800 B.C.<sup>89</sup> Each is covered by a severely damaged white glaze with a yellow band. The two examples are discussed without reference to subgroups, and differences between the two samples is assessed. Both appear to originate from different vessels on the basis of slight variations in shape and in fabric. The examples are from body shards that were not diagnostic, so they are not illustrated.

EM 9, 1993.52. Marked "B 10" Vessel (body) fragment of shallow dish. Pink body fabric, with a black core, has heavy organic inclusions. Semi-circular band of yellow glaze is surrounded by white glaze. 55 mm. x 66 mm. Sample size 45 mm. x 15 mm.

EM 17, 1993.53. Vessel (body) fragment of shallow dish. Pink fabric, white glaze with semi-circular band of yellow glaze. 50 mm. x 46 mm. Sample size 33 mm. x 19 mm.

There are appreciably more inclusions in EM 9 than in EM 17. A larger number of inclusions also suggests that minerals will be better represented, and there are also examples of orthoclase and microcline feldspar not found in EM 17. Both samples have large amounts of organic temper (grass, straw) similar to Late-Assyrian pottery (discussed below). Similar organic temper is used from the threshing floor of modern Bahirka, in northern Iraq, to temper sun dried mud brick (Matson, 1974, p. 77). If temper from a similar source were used for the material at Nineveh, one would observe a similar size range of organic inclusions. It is clear that the organic material was sorted in some way, and the sizes of the voids do not characteristically exceed 1 mm. Both samples also contain either grog and pellets.

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<sup>89</sup> The difficulties of dating these wares is summarized by Peltenburg (1969), who noted that these vessels were produced in quantity during the eighth to seventh centuries B.C. The tradition apparently did not continue into the Achaemenid period.

EM 9 has an extensively vitrified matrix, anisotropic with a high quantity of silt. EM 17 shows a similarly extensively vitrified matrix, with considerably less silt. Both mode and mean inclusion size is in the very fine sand range. Grains in EM 17 are also round, which stand in contrast to the subangular grains in EM 9.

When taken in the context of fine grained vessels, these samples are different enough from one another to warrant careful consideration. A number of Neo-Assyrian sites have yielded, on the basis of typology, what purports to be imported ceramics, so that the suggestion that these vessels could be imported is not out of place.

The chemical compositions of the two samples suggests that different clays were used to produce these vessels. EM 9 has 21% CaO, while EM 17 has 12%, a difference that is not within the expected range for samples from a similar source in Mesopotamia,<sup>90</sup> and is likewise a significant difference in the light of other samples examined from Nineveh.

Although this period is beyond the scope of this investigation, it is clear that a larger analytical programme should be directed towards wares of this period.

### **Late Neo-Assyrian Wares**

These wares are relatively easy to date. A number of sites with secure Late Assyrian levels have been excavated. Late Assyrian levels from Nimrud (J. Oates - Lines, 1954, pl. XXXVII) and Fort Shalmaneser (J. Oates, 1959) yielded few comparable shapes. Perhaps the best parallels are found from Khirbet Qasrij (Curtis, 1989, Fig. 43, 301-303, 323). The ceramics

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<sup>90</sup> Analytical studies of ceramics from a nearby site - Qasrij Cliff and Khirbet Qasrij - suggests that many elements have a spread of no more than 2-4% (Freestone and Hughes, 1989, p. 62). Although NAA is a much more precise technique, the differences between the two Middle Assyrian samples appear significant. A larger sampling programme concentrating upon this phase may be in order.

can be narrowly dated to first half of the sixth century B.C. (Curtis, 1989, p. 54). There have been few studies to treat the petrography of Assyrian wares. Material from the site of Seh Hamad was examined by Schneider (1994), who found that vessels from that site may be divided into a number of distinct groups based on gross petrographic differences that could be related to divergent provenance.

These vessels are easily divided into two subgroups on the basis of inclusion size. The first group:

MX 18, 1993.58. Buff plainware, base section, clear heavy organic temper visible on all surfaces. The interior of the base has deep cracks that do not extend to the outside of the vessel. Foot is 58 mm. in diameter, slightly bulbous, extending c. 20 mm. from body. Body of vessel is 10 mm. thick. In thin section, it is clear that the outer surface was well burnished or washed to 1mm. Sample size 19 mm. x 9 mm.

MX 19, 1993.59. Buff plainware, base section, surfaces are buff except for area about base that is reddish. Both inner and outer surfaces show trace (organic ?) staining. Base is a large flat disk of clay 63 mm. in diameter and c. 13 mm. long. Body is 16 mm. thick. Sample size 15 mm. x 30 mm.

MX 18 has small amounts of monocrystalline quartz and isolated examples of polycrystalline quartz. There are no grains of calcite or feldspar, and no lithoclasts. There is evidence of organic temper, as there are characteristic voids; and some voids still have the remains of carbonized straw. In this instance it is clear that the organic temper is not randomly collected plant material (or dung), as there is no indication of any variability in the shape of the voids. Many voids appear to be about 1 mm. long, suggesting that the temper may have been obtained from chaff, or that grass could have been cut; although determining the exact characteristics of the organic temper is difficult.

The restricted range of inclusions is in keeping with the overall number of inclusions, which is surprisingly small. There are few silt sized grains in the matrix, although the latter appears to be well fired, so that the smaller fraction of grains may have perished. The maximum inclusion size is .180 mm., which is comparable to the green glazed wares ME 8 and EM 11. Characteristics of the matrix easily separate this group from either the white or the green glazed wares. The matrix colour of these samples when taken as a whole are in the brown range (except MX 21), which by colour alone would suggest that the matrix resembles the Parthian plain wares or the molded bowls. Other characteristics of the matrix, most notably the small inclusion size, the organic inclusions, and the lack of lithoclasts, easily define MX 18 as part of a separate group.

MX 19 has a slightly larger range of inclusions than MX 18. There is a small amount of polycrystalline calcite, and about 5% of an average field contains monocrystalline quartz. Unlike the latter sample, MX 19 has a few small areas where polycrystalline calcite survives, and a small number of voids with a characteristic shape suggestive of calcite. There are trace amounts of plagioclase and amphibole. MX 19 contains more mineral inclusions than MX 18, although it has a smaller amount of organic material. The differences in the mineral inclusions cannot be ascribed to inclusion size, as MX 19's inclusions are in the very coarse silt range (which is smaller than MX 18). The silty grains are subround. This sample also has considerably more silt in the matrix.

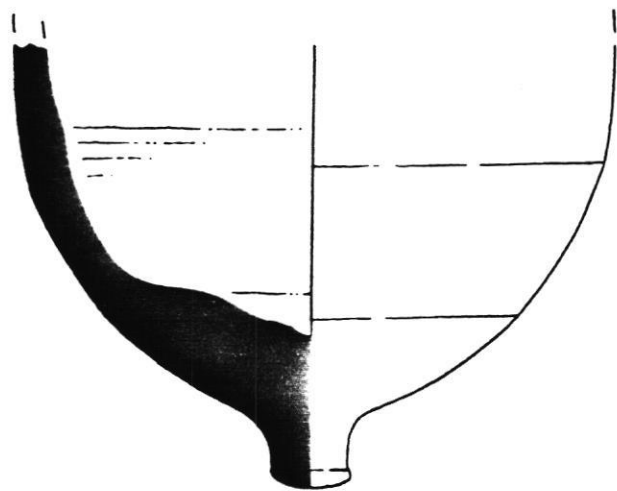
*Second group:*

MX 20, 1993.60. Marked " A 18" Base section, with a small button foot, 10 mm. in diameter and 12 mm. long. Enough of the vessel remains to suggest that it was about 75 mm. in diameter, body is 8 mm. thick. Buff inner surface has some trace (organic ?) deposits. Sample size 25 mm. x 5 mm (Fig. 45A).

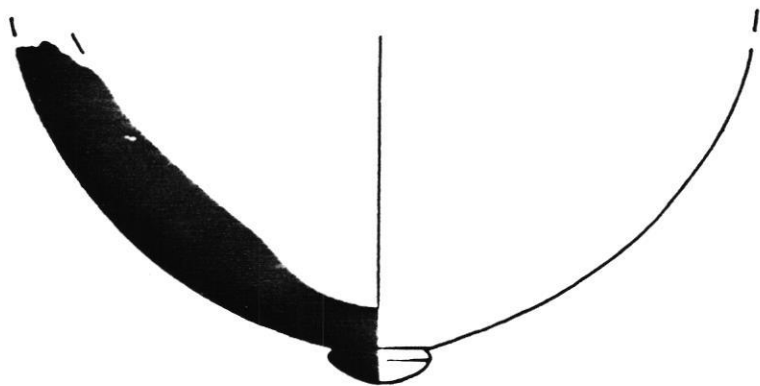
MX 21, 1993.61. Plain vessel with a small bulbous foot 11 mm. in diameter and extending 5 mm. from the body, which is 8 mm. thick. Enough remains of the vessel to postulate that it was about 95 mm. in diameter. Heavy bitumen coating in inner surface of vessel (up to 4 mm. thick). There is a layer of bitumen or tar roughly 2 mm. thick on the inner surface. Sample size 18mm. x 8 mm (Fig. 45B).

Both MX 20 and 21 are similar. MX 20 contains appreciable quantities of monocrystalline quartz and traces of polycrystalline quartz. This sample has few voids with the characteristic shape of calcite, but there is no evidence of a reaction zone; so that it is not certain if calcite was in fact present. MX 20, in contrast with MX 21, has no mica. There are trace amounts of plagioclase, and small amounts of hematite. The only lithoclast represented in chert. Inclusions are in the coarse silt range, with a maximum size of .300 mm. Inclusion shape is subangular.

MX 21 is similar to the latter sample, but has no appreciable polycrystalline quartz. There is a small amount of calcite, represented by fine sand sized voids, with small amounts of surviving polycrystalline calcite, and a clear reaction zone. This sample also has a small amounts of mica in the matrix. For some reason, the organic inclusions in this sample are more visible, most straw voids are about 1 mm. long. The characteristics of the inclusions are the same as MX 20. The minor differences in inclusions can be largely explained by different firing environments, and probably does not warrant dividing these two samples into different subgroups.



A



B

Fig. 45 Late Neo-Assyrian Vessels (Scale 1:1 Ashmolean Museum A: 1993.60, B: 1993.61).

### *Technical Aspects*

Important evidence for the way these vessels were fired comes from the site of Khirbet Qasrij, where a complete kiln was uncovered (Fig. 46).<sup>91</sup> It is a simple updraft kiln capable of producing temperatures in the region of 800-1000 C., which is suited for the high calcareous clays of Mesopotamia. Colours of the products of the kiln varied widely, from greys to white and yellow, which is what one may expect from a kiln that delivered a temperature variability within the range of 100 C. depending upon position in the kiln (Freestone and Hughes, 1989, p. 72-73).

Both the Neo and Late Assyrian vessels examined from Nineveh have a fine clay matrix, organic inclusions,<sup>92</sup> and a lack of non-organic temper. This is a significant observation, especially when compared to Hellenistic and Parthian wares, which were free from vegetal inclusions, and many samples contained what appeared to be crushed-rock temper. These particular characteristics of Neo-Assyrian vessels were also recorded for Late Neo-Assyrian material from Qasrij Cliff and Khirbet Qasrij. Barring one cooking pot, there was no evidence for the addition of mineral fragments as temper.

While the authors noted that it is difficult to determine if a clay has been levigated to remove coarse particles, the clay used in the vessels from these two sites was of a very fine

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<sup>91</sup> Notes on the reconstruction (Fig. 46) were presented by Simpson (1990, p. 122-123) who notes that the sinuous plan of the kiln may be a design feature and not due to use. He further notes that the perforated clay grate may have been flat and not curved as on the reconstruction. Such a kiln was probably not used to fire the Parthian green glazed wares, as all have an olive matrix colour. The updraft kiln is well suited to reduction and in order to alter the firing environment, modification must be made to the kiln structure (Dawson and Kent, 1984, p. 13). A similar kiln to Fig. 43C could have been used to fire the plainwares (discussed later in the report). The archaeological evidence for kilns in Mesopotamia is discussed by Moorey (1994, p. 144, 157-159).

<sup>92</sup> While there were no petrographic observations of "Palace Wares" from Nimrud (Rawson, 1954, p. 169), these wares do not appear to have contained organic inclusions. This finer class of Assyrian vessel (dating to the seventh century B.C.) is not included in the collections from Nineveh.

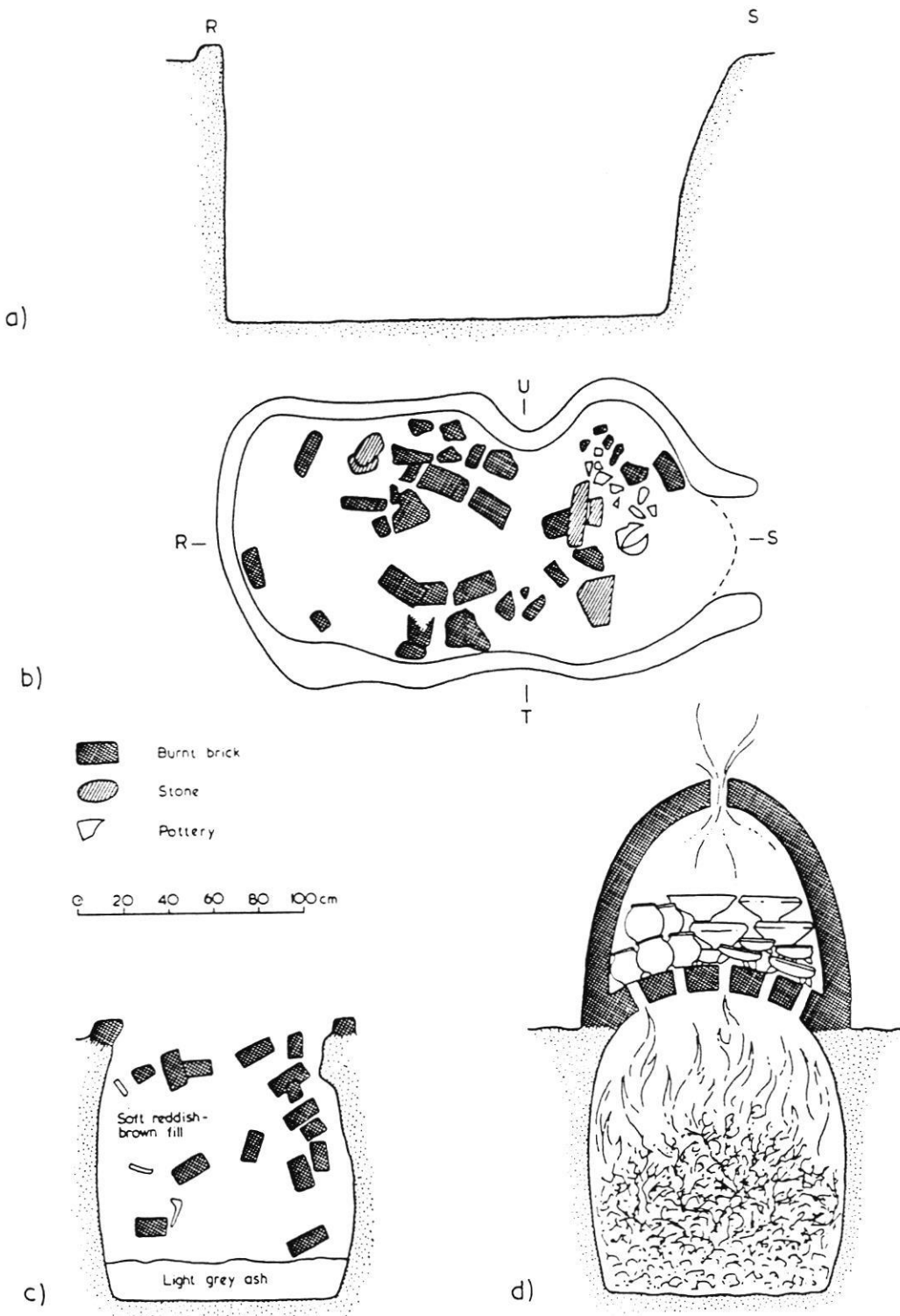


Fig. 46 **Plan of Kiln at Khirbet Qasrij**: A, C: sections through kiln; B: filling of rubble and pottery; D: hypothetical reconstruction (after Curtis, 1989, Fig. 20).

texture. As the local clays contained coarse grains of calcite, which would have caused problems with spalling, they assumed that the calcite was removed by levigation (Freestone and Hughes, 1989, p. 72). With the addition of vegetal temper (perhaps dung) the local clays were rendered workable. This is a practice which, as is clear from the Neo-Assyrian sample from Nineveh, has a long tradition. As organic temper is not used in the Parthian period, some consideration of its use in ceramics may place Parthian industries into greater context.

### *Organic Temper*

The use of organic temper in a ceramic paste directly effects not only the forming and firing of a vessel, but also its function. It has been observed that a number of vessels from various cultures have used organic material as temper. Modern scientific studies have shown it increases impact resistance without affecting resistance to thermal shock. The pores left by the burnout of organic material can, like aplastic inclusions, arrest the development of cracks. A number of nomadic groups have used organic tempered vessels apparently because of their proportionally lighter weight (Skibo *et al.*, 1989, p. 123). It is significant to note that vessels with organic temper were demonstrated to be unsuitable for cooking. A group of experimental vessels of similar characteristics to the Neo and Late Assyrian wares from Nineveh could not boil water.

As a technological choice, organic temper has advantages as well as disadvantages. The sacrifice is good abrasion resistance and good cooking effectiveness for a vessel that can be transported easily. In the case of the Neo and Late Assyrian wares from Nineveh, this may imply that these vessels were made for trade - but this argument does not take into account the forming of the vessel - which may have been the primary concern of the potters.

The use of organic temper provides several advantages during vessel manufacture. Clay that is sticky or wet can be formed into a vessel with less work than with added mineral

temper (Skibo et al., 1989, p. 137). Van Abraham and Jacobs (1992, p. 535) note that the local clays used in the Baghdad region do not need to have mineral temper added to reduce shrinkage. Instead, the major problem of the potters is stretching traces in the body wall due to lack of coherence in the clay. It was a common problem in the second millennium B.C. and still a difficulty in the Neo-Assyrian period (as MX 18 demonstrates). When poor clay is used to shape a vessel, particularly when pulling and molding clay, characteristic cracking will develop, indicating a lack of coherence in the clay and its resistance to tear. To prevent this, potters did and still add organic temper to the clay:

This way the structure of the substance was reinforced. By adding organic material the drying process was slightly slowed down, because organic material contains water for a longer period than clay. For the taller vessels chopped straw of a particular coarseness was used.

van Abraham and Jacobs, 1992, p. 535.

#### *Water Cooling Vessels ?*

The possibility that the Neo-Assyrian vessels - like those that were sampled from Nineveh - were used for water storage is small, as they are of a very small size. Further, their very permeable walls may not have been effective for cooling water. Schiffer (1988, p. 27) notes that in some cases a potter may select a clay with *less* permeability for a water cooling vessel. Once a threshold of permeability has been surpassed, providing more than a thin film of water on the surface of the vessel, performance is not increased. It is therefore unlikely that the Neo-Assyrian organic tempered vessels were used to more effectively cool water.

### *Summary: The Use of Organic Temper*

It is clear that the choice to use organic temper in a vessel is governed by a number of factors. The most convincing argument is that it enables a potter to use a poor clay to form vessels that require drawing and pulling. It is easily appreciated that the shapes of the Neo-Assyrian vessels in particular are relatively tall and thin,<sup>93</sup> quite unlike Hellenistic and Parthian vessels. It is not surprising therefore that the Neo-Assyrian wares used a different kind of paste from later and typologically distinct Parthian wares.

While it is interesting to note that the transportability of organic tempered vessels is increased, there is no evidence to suggest that there was a long-distance trade in Neo-Assyrian vessels to warrant choosing organic temper for that purpose. It is indeed unlikely that ancient potters understood many technical aspects of ceramics that are appreciated today. It is, however, interesting to note that vessels with similar amounts of organic temper as the sampled Neo-Assyrian wares could not boil water.

### *Bitumen*

MX 21 is a particular example in that it has a heavy bitumen coating on the inner surface. This is significant, because none of the vessels or sherds from Parthian Nineveh have a bitumen coating. When bitumen is referred to in this report it will be considered "archaeological bitumen," which can cover bitumen, asphalt or other petroleum products (Connan and Deschesne, 1992, p. 683). Seleucid/Parthian levels from other sites, particularly in the south (such as Bablylon), often have bituminous coatings, apparently on vessels of low

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<sup>93</sup> It is also apparent that these vessels were prone to a high degree of cracking, as almost all examples have characteristic cracks in the inside of the vessels (presumably because the outer surface was smoothed) showing cracking from pulling the clay upwards.

quality so that the surface would be rendered relatively impermeable without the added cost of glazing (Forbes, 1964, p. 88).

Bitumen was also used as a common remedy for many ailments from the Sumerian period onwards. The Assyrians used bitumen for external lesions, and it could also be mixed with wine, beer, or other fluids and taken in as a slurry. Bitumen from various areas was held by a number of classical writers to possess particular qualities (Forbes, 1964, p. 100-102). The vessels that contain bitumen may have originally been used to condense the crude oil and remove the lighter fraction to form bitumen (Forbes, 1964, p.64). It is clear that the substance had a variety of uses in antiquity, but perhaps the most obvious has been neglected.

Recent ethnographic studies in northeast Baghdad recorded that some potters used bitumen as fuel. Crude oil was continuously supplied, using a ladle, for the kiln, which generated a significant flame. The ceramics fired in this way did not differ from examples from the second millennium (van As and Jacobs, 1992, p. 541-543). Although bitumen may have been regarded as a luxury product in some areas, in Mesopotamia the majority was probably of local origin (Connan and Deschesne, 1992, p. 716). Bitumen was then at the same time used as a medicine, and a fuel.

While it is unlikely that MX 21 was used to provide fuel for a kiln, it is likely that such a vessel would be used to provide a lamp or perhaps other small flame with fuel. It is clear that lamps of the Mesopotamian type burned a different kind of fuel to the western type (discussed in Chapter I). If one of these characteristic vessels was used to store a fuel, then perhaps others were used for a similar storage purpose.

## Chronology of Glazed Wares

### *Glazed wares in Parthian Iran*

The distribution of glazed wares in the Parthian empire,<sup>94</sup> along with other ceramics from that period, follow a distinctly regional pattern. Although there are similarities between different regions, there is not a "typical" shape of decorative repertoire that can easily be used to characterize Parthian products. Haerink (1983) in his classic study of Iranian ceramics from this period divided Iran into nine distinct regions, and a number of regions appear to have a number of separate phases based on ceramic typology.

Perhaps the most striking aspect of Haerink's study is the general observation that glazed wares from the Achaemenid period are relatively scarce compared to Parthian glazed wares. Only after the fall of the Achaemenids did glazing first become popular in western Iran (bordering Mesopotamia), and later was represented in the region as a whole, although in some of the more inaccessible areas (such as highland Media) painted wares continued to be produced. Ceramics from north Iran, most isolated from east-west traffic, are the most distinctive. This region can be characterized by dark polished wares, commonly on legs, and clearly belong to a very different tradition (Haerink, 1983, pp. 149-173), which is remarkably like the earlier Iron Age ceramic repertoire in the area. For much of Iran, however, traffic between east and west played an important role in influencing local ceramics. In this way the technology of alkali glazing may be compared to the later dissemination of Islamic stonepaste technology, which is noted for its rapid introduction and spread throughout the empire.

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<sup>94</sup> The history of glazed wares in the Near East is presented by Mooney (1994, pp. 159-162).

Along with new glazing technology, there are a number of ceramic forms that have close parallels to Mesopotamian forms. While many of these shapes broadly imitate Greek forms, a number of vessel types, such as the glazed bowls and plates, appear to be indigenous shapes not influenced by western forms. Macroscopic examination of a number of Parthian glazed wares in the Iran Bastan museum was most instructive. Although some of the plain wares represented "indigenous" Iranian forms and technology, a number of glazed wares were so similar as to suggest that all were from the same ceramic working tradition. The consistency of the fabric, colour, and application of the glaze was the same. It would hardly be surprising if some of these wares recovered from Iran were imported from Mesopotamia.

This similarity of forms has not gone unnoticed. Vogelsang (1985, p. 162) noted that there were a number of shapes that appear to have Mesopotamian origins. Glazed "fish plates" appear to be restricted to western Iran, and small two handled glazed jars may also have a western (Hellenistic/Mesopotamian) origin. Perhaps the most diagnostic are the pilgrim flasks. From early Parthian period there is a change from a round to a more angular profile, and while the round examples have a long history in Iran, the angular vessels appear to be introduced, as the round pilgrim flasks remained popular in eastern Iran throughout the period.

The reason why glazing did not spread further east into eastern Iran is a question that has received little attention. It was addressed by Vogelsang (1985, p. 172) who suggested that it was the nature of Parthian rule that prevented the dissemination of glazing technology : "Perhaps the Parthians are to blame, as they had cut off Western Iran from the East in the late third and second centuries B.C.<sup>95</sup> By the time the Parthians had occupied Mesopotamia, the major driving force behind Western ceramic influence on the East had faded."

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<sup>95</sup> It is clear that a number of Parthian sites in eastern Iran witnessed periods of greater or lesser prosperity depending upon local conditions, and not simply because the Parthian administrative capital had moved to Mesopotamia. Sites such as Damghan, and Shahr-I Qumis (Hansman and Stronach, 1970), appear to be centres dependant more upon their own hinterland and less upon overall political trends (Trinkaus, 1983, p. 141).

While it is clear from the first century B.C. the administrative centre of Parthia was centered in the west, it may be surprising if political boundaries prevented the transfer of technology. One must also consider local geology. A technology<sup>96</sup> suited to a region that is dominated by major rivers, such as Mesopotamia and the surrounding area, may not be suitable for different regions, such as eastern Iran.

### *Glazed Wares in Parthian Mesopotamia*

The glazed wares from Nippur present important chronological indicators for glazed wares of the Seleucid-Sasanian periods in Mesopotamia. During excavations of the eleventh season at Nippur, which revealed a Neo-Babylonian temple structure in particular, there were extensive remains from later periods of occupation. The site, as is well known, is disturbed, so that little reliance should be placed on context, but from the available evidence from that season, an attempt was made to date the material.

There were characteristic Parthian green glazed horse figurines found in "Kassite" layers, and a theoretical model for the glazing traditions at the site was forwarded: During the Neo-Babylonian period, there was a continuation of the glazing tradition with no increase in material, and the palette appears also to extend into the blue-green range. In the latest level (level 1), of uncertain date, there was a distinct shift from green to white and yellow glazes

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<sup>96</sup> Glaze composition is much more significant than simply a technological choice, as Parthian glazing technology influenced the characteristics of their glazed vessels profoundly. It is well known that alkaline glazes of antiquity adhered poorly to clay, and were probably designed to be used with high silica bodies (faience). Lead glazing gives a coating that does not "creep," and delivers a glossy and durable coating. It is first attested in the first century B.C. in the "Roman" world (Hatcher et al., 1994, p. 431).

Many archaeologists simply rely upon visual determination in order to separate soda-lime-alkali glazed wares from lead glazed samples (eg. Khader and Soren 1964, p. 189). It is critical to maintain a firm line between vessels made in the Roman lead glazed tradition and the Mesopotamian alkali glazed tradition.

(Gibson, 1975, p. 16). Gibson acknowledges that the glazed horse figurines are common from the Parthian period, and given the disturbed layers of the site, one may assume that they did not originate from the Kassite period. It is also interesting to note that the white glazed wares are here assumed to originate from *later* levels.

Excavations of the twelfth season did not confirm earlier assumptions. The stratigraphy in area WB is much more reliable than the previous seasons. The earliest stratified glazed shard is of a flat base vessel that may have been from a flat based bowl, typical for the late Kassite assemblage. It was made on a fast wheel, of a dense pink buff clay. The glaze is a carefully applied thin white glaze, iridescent with corrosion (Franke, 1978, p. 81).

Vessels from Post-Kassite layers (eleventh to eighth centuries B.C.) are more difficult to date, as the stratigraphy is disturbed. Unlike the preceding period, the ceramics are characterized by a variety of shapes, and an increase in the number of finer ceramics. Very few glazed wares were recovered from this period, all of them were white glazed. The fabric of these Sherds is described as thick and brittle, yellow or buff, with straw temper. One example had the glaze applied over a black surface,<sup>97</sup> from which the glaze has flaked. A burial from c. 700 B.C. (uncertain date) contained a plainware jar with a glazed bowl inside. Of light-buff colour, the glaze is a light aqua fading to white, with a yellow glaze about the rim. This vessel had no parallels with other ceramics of this season (Franke, 1978, p. 85 - 86).

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<sup>97</sup> This would appear to be a case where the first firing of the vessel left a coating of carbon over the surface of the vessel. The glaze, when applied over this surface, is unstable. It is unlikely that a glaze would be applied over bitumen, although vessels from the period were commonly coated. The possibility remains that vessel with a layer of bitumen was glazed by accident, which may suggest that plain and glazed vessels were made in the same workshop. Without petrographic analysis, the situation remains unclear.

Levels from the late Neo-Assyrian and Neo-Babylonian periods were also disturbed. The glazed vessels from this season were white to light aqua in colour. Achaemenid levels are slightly more secure, and yielded a variety of glazed wares. The most characteristic vessels are bowls that are thinner and wider than the preceding period with blunt rims. They are glazed white over the surface of the vessel with a light green glaze about the rim. There are also light green glazed bottles (Franke, 1978, pp. 86-87).

What can be summarized from the above information is that white glazed wares can be assumed to be of an earlier date than green glazed wares. It is interesting to note that the white glazed wares from post-Kassite levels at Nippur were made of a thick fabric with organic temper. It is unclear if the presence of organic temper was simply mentioned in this case, or if it extends throughout the glazed wares from this site. This practice stands in contrast to the glazed wares from Nineveh, both green and white, which show no regular amounts of organic temper. It is also notable that the fabric for the white glazed wares from Nineveh are considerably finer than the green glazed wares. The Nippur material - where white and green wares appear to have similar fabrics, can be fairly easily ascribed to one period - while the white and green glazed wares from Nineveh are probably representative of different periods.

### ***Green Glazed Wares: Archaeological Background***

This group of pottery is perhaps the most complete of those recovered, as it appears that most diagnostic material with green glaze was recovered for study. It is clear that in the earlier reports, Campbell-Thompson felt that a proportion of the green glazed ware was Assyrian, but later he modified his view, and came to the conclusion that perhaps all the green

glazed ware is Parthian. Types of green glazed ware are generally distinctive,<sup>98</sup> but there are a few types of simple jugs that appear in non-glazed forms as well. As at other sites, such as Dura or Seleucia, more complex forms, such as those with elaborate twisted handles or applied design, are only found glazed.

Assessing relative frequency of the glazed material recovered from Nineveh is impossible, as it is clear that glazed vessels were preferentially collected. The most elaborately decorated wares are of a Sasanian date; but the most elaborate forms, with representations of Sasanian figures, and depictions of the Sasanian king, are not found at Nineveh (eg. Dura Toll, 1943, pl. XX, particularly 1934.608). Some of the earliest Islamic wares may also be included, but Islamic vessels from the Medieval period can be easily detected. The glaze will have a very different colour, and the body is made up of stone paste and not clay (see subgroup D, EM 20).

It is unclear if the glazed wares were used for a "domestic" purpose. It is clear that for examples such as the pilgrim flask, transport was suggested simply by the shape. Other vessels of this category are perhaps also best considered according to shape. All the dishes from Nineveh appear to have been for utilitarian use. Particular attention is placed upon the lips, which were all carefully made with a semicircular edge. This is of particular importance when considering strength:

Attainable values in material strength may be completely overshadowed by differences in shape. For instance the chipping resistance can be altered by a factor of 30 to 1. This is much more than can be done by changes in body composition. Plates should have a semicircular edge for best chipping resistance; sharp edges should be avoided.

Rado, 1969, p. 192.

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<sup>98</sup> Hauser (1993) presented a detailed description of material, including ceramics, from Parthian graves at Ctesiphon. His doctoral thesis is due to be published shortly under the title: *Chronologische und historisch-politische Untersuchungen zur oestlichen Jazira in vorislamischer Zeit* (Free University of Berlin 1994). Dr. Kroger and Dr. Hauser kindly allowed me to examine and photograph material in their care while I was visiting the museum in Dahlem.

## Samples

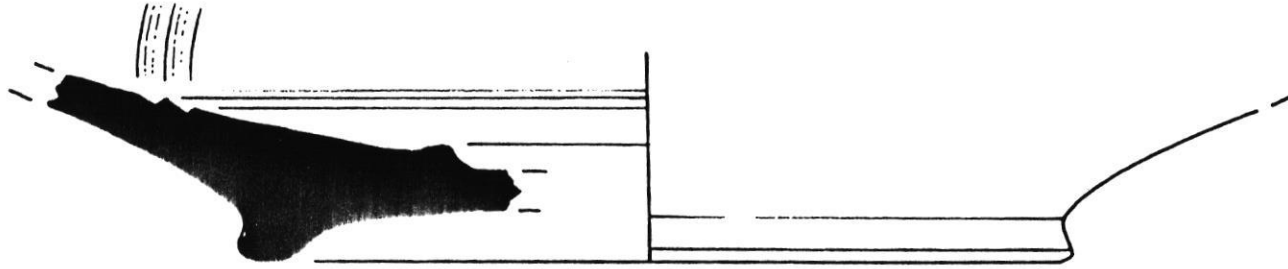
The main petrographical group is represented by ME 9, ME 10, ME 12 and EM 10; there are four subgroups, represented by ME 3, ME 11, EM 12, and EM 20.

ME 9, 1991.314.3. Green glaze dish fragment, with thick ring foot. Concentric circles due to turning on a wheel on the inner surface. Glaze is degraded in some areas, while showing a distinct metallic sheen in others. 76 mm. x 62 mm., 11 mm. thick. Sample size 40 mm. x 10 mm. (Fig. 47).

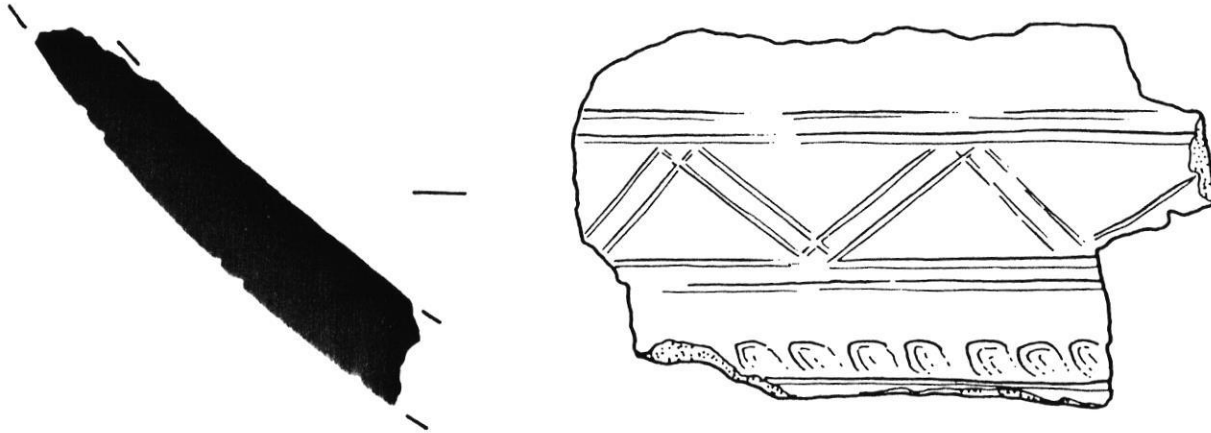
ME 10, 1991.314.5. Green glaze wall/base fragment. Heavy ring foot, heavily curved, with thick degraded glaze. A heavy white crust is forming in some areas; and there are metallic colours on the surface in reflected light. 85 mm. x 68 mm., 7 mm. thick. Sample size 45 mm. x 5 mm.

ME 12, 1991.314.10. Green glaze base fragment. Ring foot, glaze is considerably degraded. Dull colour, with no evident crust, homogenous grey/green with a matte surface. 58 mm. x 57 mm., 8 mm. thick. Sample size 30 mm. x 6 mm.

EM 10, 1991 314.21. Green/Blue glazed body fragment, dish ?. Glaze shows heavy degradation, inner surface shows a grey weathered crust, and outer surface shows areas isolated areas of blue in a grey/green weathered crust. 72 mm. x 54 mm., 8 mm. thick. Sample size 35 mm. x 10 mm.



**Green Glazed Dish Fragment (Scale 1:1 Ashmolean Museum 1991.314.3).**



**Incised Green Glazed Vessel Sherd (Scale 1:1 Ashmolean Museum 1991.310.1).**

Fig. 47

Both the matrix and inclusions easily define the above samples as a separate group, although there is some variation. All share major characteristics. Typologically, they all have a coating of green glaze<sup>99</sup> applied to both the inside and outside surfaces. The shade of green can vary. Some examples show a light green, usually associated with a matte surface, while others can have a smooth, brighter surface. In many cases it appears as if the present range of colour is mainly due to weathering of the glaze.<sup>100</sup>

Petrographically, the inclusions of the main group are similar. Minerals show the greatest uniformity, with similar amounts of all major minerals, barring feldspars and mica, which are the most variable minerals in all the petrofabrics so far examined. All examples from the main group have regions of secondary hematite precipitated from the matrix, as well as hematised mineral grains. Lithoclasts are not abundant when compared to the plain wares, but chert is common. Infrequent inclusions within the group show little. ME 9 has a grain of kinked mica, and ME 12 has a grain of granite and a grain of mica schist. EM 10 also has a grain of granite, like ME 12. Trace amounts of an infrequently occurring mineral should be noted, but

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<sup>99</sup> The Parthian green glazed wares have been studied using the Isoprobe (Hedges and Moorey, 1975; Hedges 1976), where all elements heavier than chlorine and in amounts greater than .5% will be detected over an area of about 1 mm. Similar Parthian glazes were examined using the ASEM, a much more sensitive technique, and will appear in a separate publication.

McCarthy (et al. 1995, p. 211), notes that lead was introduced in the Sasanian period. All Parthian material examined by others and for this study were lead free, and given the disturbed nature of Nippur and the uncertainties of dating a small fragment of pottery, one may also suspect that the "Sasanian" sample may be Islamic.

<sup>100</sup> In a personal communication with Blythe McCarthy, a doctoral student in materials science and engineering at Johns Hopkins University, she noted that the majority of the glazes from Nippur appeared opaque due to microcracks in the surface of the glaze that may obscure their original colour. The colouring agent in the glaze, copper, is known easily to leach out of the glaze, so that microprobe analyses tend to show lower amounts than may have originally been present. These results are in keeping with those from Nineveh, and it is clear from examining the green glazed material from Dura that material from that site did not experience nearly as much water damage as examples from Nineveh (or Nippur).

it would be best if they are not unduly considered, as their importance in relation to the sample as a whole cannot be assessed. Inclusion density is high, with all samples in the main group having from between 20 and 30 percent inclusions (a 3 on the scale). Inclusions range from fine/medium sand to the upper limit of medium sand to coarse sand. The maximum inclusion size varies considerably; ME 9 is 0.355 mm., while ME 10 has a grain 0.880 mm. long. Inclusion shape is more uniform, as all four members of the main group have subangular inclusions.

Characteristics of the matrix are variable. Matrix colour is similar for all four samples, being a light olive brown, barring EM 10 which is dusky yellow. Vitrification of the matrix is highly variable within the group, ranging from no observed vitrification to extensive vitrification. ME 10 shows no vitrification, but neither the inclusions nor the bulk chemical analysis support a divergent provenance. ME 10 is similar to ME 12 in all characteristics barring the degree of vitrification, suggesting that it is simply a lower fired example. Bulk chemical averages for CaO range from about 14% to 18%; representing what may be a range within a group from the same shop.

This group is probably best defined broadly to include a range of possibilities in terms of matrix colour and stages of vitrification, depending upon firing conditions. It is clear from the variable stages of vitrification that the glazed wares did not have a stringently controlled firing. Although the homogenous matrix colour may suggest that all samples underwent firing in a similar atmosphere, the high CaO content of the paste could produce a green body colour even if fired in a reducing atmosphere.<sup>101</sup> None of the green glazed wares have a red matrix

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<sup>101</sup> Chris Doherty, the ceramic petrologist at the research lab in Oxford, notes that there is considerable variability in the colour of a matrix that may not be governed by firing conditions alone. Considerable experience in industrial ceramics, notably the brick industry, demonstrates that simple formulas (such as those proposed by Matson) must be used with caution.

colour, like the Parthian plain wares. Both the matrix and inclusions easily define this as a separate group. There are some notable exceptions:

**Subgroup A:**

ME 3, 1991.310.1. Incised, linear design green glazed body shard, much like ME 2 except for glaze. The glaze shows variable colouration, appearing blue in some areas and grey in others. The majority of surface is of a "green cast." 67 mm. x 86 mm., 7mm. thick. Sample size 30 mm. x 12 mm. (Fig. 47).

This is an example with both a green glazed surface and an incised underglaze decoration, the only one recovered from Nineveh. In hand specimen<sup>102</sup> the decoration is barely visible underneath the thick green glaze. Other examples in this green glaze category do not show any trace of underglaze decoration. It is not uncommon for a coarse plainware vessel from this period to have a similar kind of decoration (see ME 2 Fig. 56). There are a few similar examples of glazed/incised wares from Dura, now in the collections at Yale.

The petrographic evidence, and archaeological/typological considerations, may suggest some affinities with the Parthian plain wares. Inclusions are distinct, as there are examples of siltstone and pellets. These inclusions do not occur in any other sample from the green glazed group. Other parameters are in line with the green glazed group as a whole, such as inclusion sizes, and matrix colour. Mode and mean values are within the normal range for the main group. The maximum inclusion size is 0.690 mm., the only example with a larger grain is ME 11 with a grain 0.880 mm. long.

The Parthian plain wares also have a similar inclusion size and can have examples of siltstone and pellets. It is tempting to conclude that ME 3 has petrographic affinities with the

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<sup>102</sup> This term refers to what is discernable by the naked eye, and applies to structures that are on a scale greater than .1mm.

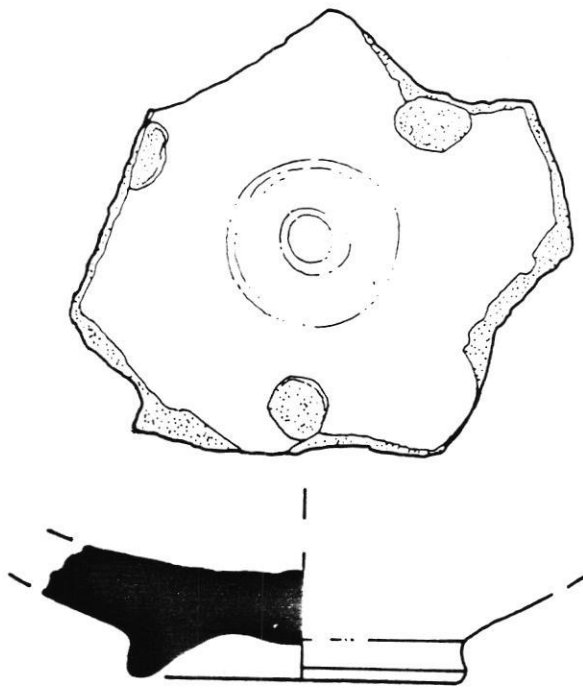
plain wares, although the characteristics of the matrix of the two ware classes are distinct. The plain wares all have a matrix colour that is based around a brown to red colour. All the characteristics of the matrix for ME 3 are in line with the green glazed group as a whole, and are insufficient to consider this sample as part of a separate group. Bulk chemical analysis shows that the matrix is not unexpected for an example of the green glaze group. Typologically, and on the basis of the siltstone and pellets, this sample does not fit smoothly into the main group and is best placed in a separate category. While it can be noted that it does share the inclusions with the plain wares (which it may resemble typologically) it is also clear that placing it within that group is inappropriate.

**Subgroup B:**

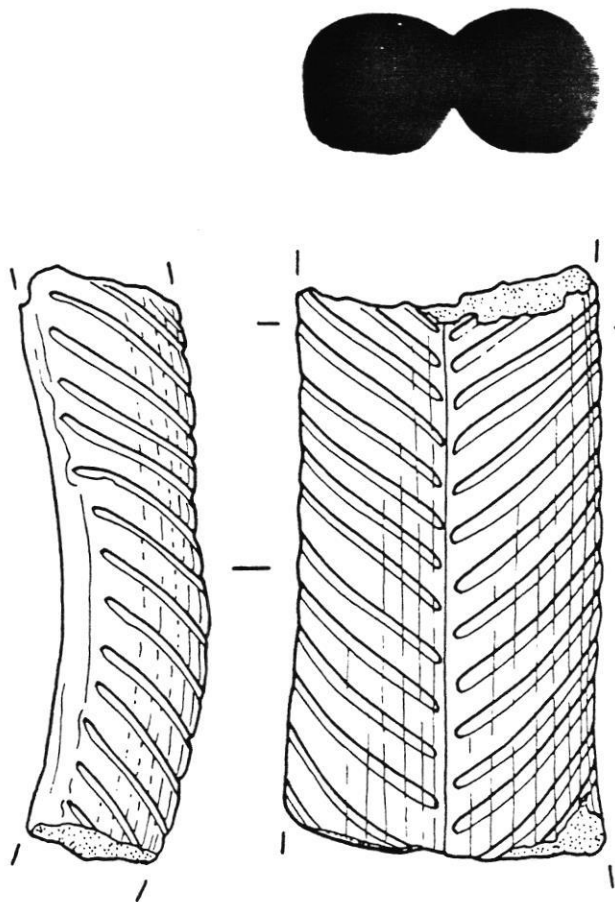
ME 11, 1991.314.6. Blue/green glaze dish fragment. Three marks, from kiln spacers on inner surface. Glaze is in very good condition. 54 mm. x 65 mm., 8 mm. thick. Sample size 27 mm. x 9 mm (Fig. 48).

Both typological and petrographical considerations separate this example from the main group. The glaze colour is particularly striking, as it is distinctly blue. All examples in the main group are shades of green. The condition of the glaze is also peculiar when taken into context of the other glazed wares from Nineveh.

The inclusions in ME 11 are distinct. It has distinctly less polycrystalline quartz than any example of the category except EM 3 (the pilgrim flask), and it has small amounts of shell (like ME 12). The presence of shell in this instance may be fortuitous, arising from an accident in firing. Other green glazed wares also may have contained shell that has simply been altered by firing beyond recognition. The presence or absence of this biogenic mineral is therefore not used as the sole criteria for establishing a group on petrographic



**Blue/Green Glazed Dish Fragment** (Scale 1:1 Ashmolean Museum 1991.314.6).



**Green Glazed Vessel Handle** (Scale 1:1 Ashmolean Museum 1991.314.14).

grounds. This mineral was noted because when present, shell exhibits particular structures based on its biological origin. Planes of fracture also differ from the same mineral derived from a non-organic source, so that the overall shape of the shell fragment can also be diagnostic (Bergman *et al.*, p. 779). Matisikainen and Alhonen (1984, p. 155) localized a particular group of Finnish Neolithic ware on the basis of clear water diatoms. The possibility exists for a similar study of the microfossils found in some of the Ninivite pottery.

Maximum inclusion size is 0.350 mm., which may also explain the lack of basalt/dolerite grains. It is also significant to note that the grains in this sample have a more rounded appearance (subround) in contrast with the main bulk (which is subangular). The characteristics of the matrix are in keeping with the main group, as is the analysis of the matrix.

On the basis of a blue glaze colour, which is often taken as indicative of the Sasanian period, one may assume that this sample is not from the Parthian period. The fine nature of the paste suggests that this sample - while not as fine as the early Islamic sample - is transitional between these two periods. It is significant to note that wares of this phase can be identified on the basis of archaeological criteria, but in order to fully characterize this phase a larger sample size is needed.

### *Technological Aspects*

While there have been few kiln sites recovered from the Sasanian period, the only reliably dated - to 300 A.D. the early Sasanian period - and fully published kiln is from Tal-I Malyan, Iran (Simpson, 1992, pp. 252-255). This kiln has a number of distinct features (Fig. 49).

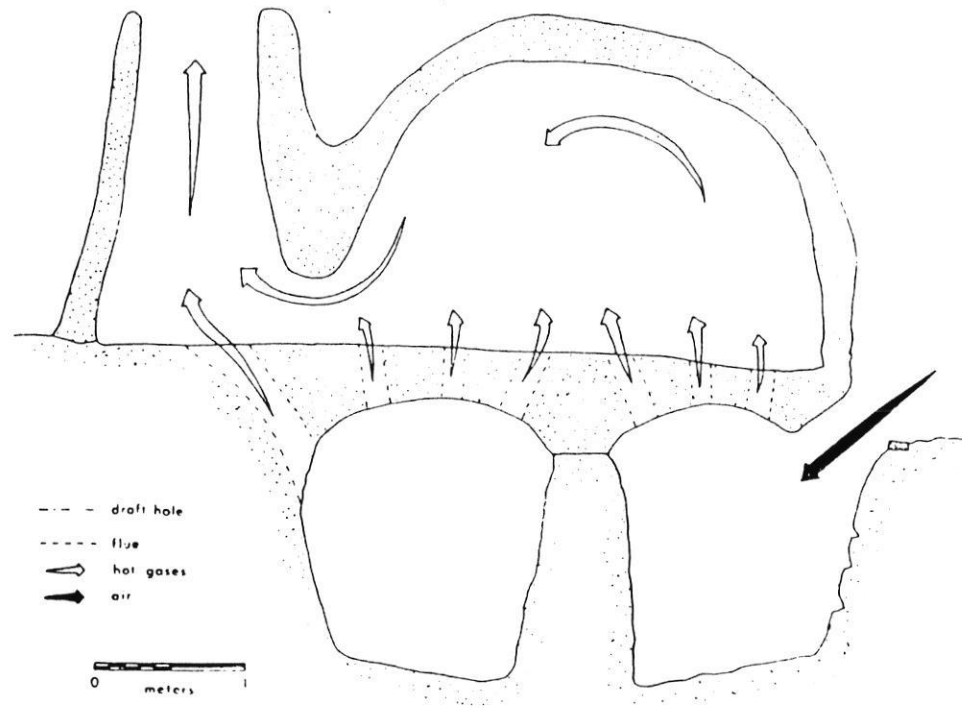


Fig. 49 **Plan (Hypothetical) of Sasanian Kiln from Tal-I Malyan** (after Alden, 1978, fig. 4).

While the kiln may not appear to differ substantially from the Late Neo-Assyrian kiln, the differences are significant. Firing the Sasanian kiln (as reconstructed) is more effective, as the indirect circulation through the kiln favours a more efficient transfer of heat, and reduces the problem of localized hot spots (that may lead to various stages of vitrification within a single firing).<sup>103</sup>

Kilns in particular must be carefully recorded and reconstructed, as subtle differences can be critical. Until more complete evidence emerges from Mesopotamia one may also conclude that Parthian kilns could use similar technology, although it is clear that glazed wares and plainwares were fired in different kiln environments, if not different kilns. All of the pottery associated with the kiln at Tal-I Malyan was unglazed.<sup>104</sup>

*Subgroup C:*

EM 12, 1991. 314 .14. Two lobed handle to vessel, green glazed. Glaze shows areas of white weathered crust and areas of buff green. 84 mm. x 33 mm., 16 mm. thick at its widest section. Sample size 20 mm. x 17 mm (Fig. 48).

Typological considerations would suggest that EM 12 would have a particular kind of paste since it is the only representative of a handle sampled in this group. Not surprisingly, its composition differs from that of a normal green glazed vessel body. Theoretically, the greater number of inclusions would lessen deformation with shrinkage. This aspect is especially important when attaching a handle to a body. If there is too much shrinkage of the

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<sup>103</sup> This type of kiln has been described as a "crossdraught," and is discussed by Simpson (1992, p. 255). He notes that the kiln was originally published (Alden, 1978, p. 82) as a downdraught kiln, which is: "only partially correct as this would have necessitated the placing of the firebox and firing chamber at the same level separated by a vertical baffle wall or bagwall."

<sup>104</sup> There were a variety of shapes represented, from bowls to jugs. A number of the vessels - spanning all the types - were decorated with a finger squiggle (Alden, 1978, pp. 85-86).

handle, it would pull away from the body as it dried. The body itself would have the handle applied when it was in the "leather hard" stage, and had already undergone shrinkage. In addition, a body fabric with too much aplastic material is difficult to work (Rye and Evans, 1976, p. 20).

Monocrystalline and polycrystalline quartz, as well as chert,<sup>105</sup> are all more abundant in this example than in any other from the green glazed group. The chert can be explained by the larger than average inclusion size, up to coarse sand (.5 mm. - 1 mm.). It is significant that the total number of inclusions in this sample is greater than any other example of the green glazed wares (the group as a whole). Inclusion shape is also differs from the main group, as EM 12 has inclusions that are clearly angular.

The colour, dusky yellow, is slightly different from the group as a whole, but since the firing conditions of this pottery was not stringently controlled, the slight difference in matrix colour means little. The matrix shows partial vitrification, which is perhaps the result of the larger inclusion size of this sample, which would require a higher temperature to achieve similar results. The bulk chemical analysis shows its composition to be within the normal expected variation. This example is important for two reasons. First, it is an important example of an applied element to a ceramic body. No other sample from the green glazed group as a whole is taken from a region other than the body. Second, this sample shows the variability possible within the same set of raw materials. It is clear the amount of the inclusions in this sample is greater than in the main group, but it is also clear that the same set of raw

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<sup>105</sup> Heating chert (and other minerals) can cause macroscopically observable changes in lustre and colour; although the changes may fall within the natural variability of that mineral. Some grains of chert can show considerable hematite, while other grains may show the intermediate stage where siderite has been recrystallized to an euhedral habit (for description see Borradaile *et al.*, p. 60). Only those features that are regarded as primary (before firing) will be noted in this report, unless they have a direct bearing upon a discussion of firing technology.

materials used in the main group is also used for this sample.

Subgroup D:

EM 20, 1991 314 (23). "Islamic" fragment, shallow dish (?) of blue/green glaze. Scratched outer surface of glaze shows considerable metallic sheen. 46 mm. x 48 mm., 4.5 mm. thick. Clear band of weathered but basically intact glaze survives to 250 microns thick. Sample size 20 mm. x 5 mm.

Typological considerations quickly separate this sample from the group of green glazed material. The colour of the EM 20 glaze is a striking, it is a metallic blue. The rim in particular is finely made, presenting a flat surface sloping inwards towards the vessel, unlike the relatively simple rims of the green glazed wares. This may be significant in dating: "In about 750 the forms of the Blue-painted ware change significantly, from bowls continuing a pre-Islamic tradition, to a radical new form, with a wedge-profiled foot-ring and a recurved rim, possibly influenced by the first imports of Chinese white wares" (Mason, 1994, p. 52). In hand specimen, the fabric appears to be of a much finer nature, with no sand sized inclusions. While all these parameters clearly mark this sample as Islamic, it was nevertheless important to sample, as weathered body shards from a similar vessel could be misleading; and could be mistakenly identified as Parthian.

Inclusions average considerably smaller than the main group, with mode and mean values in the coarse silt range. As a result of small inclusion size, quartz is only represented by monocrystalline examples, unlike *every other* green glazed specimen. There are trace amounts of calcite and plagioclase and *no lithoclasts*. The small number of inclusions are angular. In this instance, because of the small size of the aplastic material (in the coarse silt range), it can be assumed that it is simply a natural component to the clay. A potter would probably not add such small amounts of fine grained temper to a paste. The angularity is

simple to explain, as small angular grains in an aquatic environment would abrade very slowly (Mange and Maurer, 1992, p.4-6). Readily apparent from the chart is the extremely well sorted (Fig. 44B) nature of the inclusions. The maximum inclusion size is only 0.180 mm., while the next lowest examples within the green glazed group are in the 0.350 mm. range (eg. ME 10, 11, and 12). This suggests that either a pure clay source was being exploited for EM 20, or very effective levigation was being used.

Matrix characteristics also separate this example from the main body. Matrix colour is a dusky yellow - like EM 12 - but unlike the bulk of the samples; however, under the SEM, the matrix appears no different from the range of vitrification structures encountered in the group. It is well vitrified, with little medium sized silt. Bulk chemical analysis also suggests that EM 20 is different from the rest of the group, with high CaO content (21.2%). This sample has one the highest amounts of CaO of all pottery tested (except for Mesopotamian Lamps EM 7, 13 and the figurine EM 2). This would also relate to the very small number of inclusions in the matrix to obscure the CaO.

This sample is clearly from the Islamic period, and is representative of a different technology. It is quite distinct from the green glazed samples, having a conspicuous lack of lithoclasts, and variant chemical composition. The differences may be significant enough to propose a non-local origin.

### **Pilgrim Flask**

These vessels are presumed to be transport containers for liquids (Debevoise, 1934, p. 19). While Debevoise assumed that they were attached to humans, the large size of examples from Nineveh and elsewhere would suggest some were carried by animals. The examples from Seleucia that were not glazed were said to be in an "...obviously unfinished state"

(Debevoise, 1934, p. 19). Few examples from Seleucia have offset handles, presumably to make carrying easier.

EM 3 is typical for the type. It is made in two major sections, each half being much like a dish. The surface with the greatest curvature in this example was particularly thin, and it broke across the body. It clearly reveals the weld between the two halves of the body. Unlike contemporary (western) practice in ceramic forming, little attention appears to have been directed towards making the weld either strong or inconspicuous. There is no indication the region of the join was roughened, or that there was any trimming to lessen the weld.<sup>106</sup> The spout and handles are added later, in a similar careless fashion. This example has a green cast to the outer surface, suggesting that it was once glazed (unlike the example on Fig. 42, p. 133). This sample is kept typologically distinct from the main group of green glazed wares, although it shows similarities that group. This is to be expected, as these vessels were often glazed, although in many examples the glaze has weathered so that only a powder remains. The dating of this class of vessel is perhaps one of the most solid in the report. It appears as if the pilgrim flask is indicative of Parthian occupation. Similar vessels to EM 3 are encountered from a number of Parthian sites in south-west Iran (Haerinck, 1983, p. 35).

It is interesting to note that the majority of the pilgrim flasks recovered from Nineveh are of a small size, with a very low carrying capacity and small necks. One could assume that water, if it must be carried, would have been transported in skin sacks, or perhaps large

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<sup>106</sup> All other vessels made in two sections, including the molded lachrymatory bottles, appear to have been treated in the same manner. Contemporary mold made ceramics from Mexico also lavish little attention to the region of the weld. When appendages are attached to a figure, the vessel is moistened with the hand and the body is wetted by a few drops of water (Lackey, 1982, p. 81). This casual way of securing a join may suggest that modern western taste for carefully crafted ceramic vessels probably did not apply to the pilgrim flasks or even the molded lachrymatory bottles. It cannot therefore be assumed that moldmade vessels were necessarily more valued in antiquity.

vessels if evaporation was of concern. Instead the small size suggests that a more valued liquid, perhaps alcoholic or confectionary in nature, was carried in these vessels. EM 3 is one of the largest examples:

EM 3, 1930 704, marked "HH 7" Pilgrim flask, fragment with spout, two handles, and no base. 113 mm x 92 mm, spout 24 mm. long, areas average 6 mm. thick, but there is great variation throughout the vessel. Sample size 22 mm. x 4 mm. (Fig. 50).

The petrography suggests that the glazed pilgrim flasks were part of the same tradition as the green glazed wares, although this sample has many subtle differences. It is interesting to note that the inclusion size is in the finer range for the green glazed wares, the mean inclusion size is in the very fine sand range. This observation would be more significant with a larger sample size, but it could suggest that the paste used for the pilgrim flasks may differ slightly from the main group. Overall, the abundances of the same inclusions in both types of vessel are very clear. Amounts of quartz, calcite and chert are similar, although there is appreciably more plagioclase feldspar than the other green glazed wares (but not enough to show on the chart). The only lithoclast present is chert, which is also expected for the green glazed wares. The maximum inclusion size for this sample is within the expected range for green glazed wares (EM 3 has a grain 0.520 mm. long). The colour of the matrix, 5Y 5/6 is in keeping with the olive colour found in the bulk of the green glazed wares.

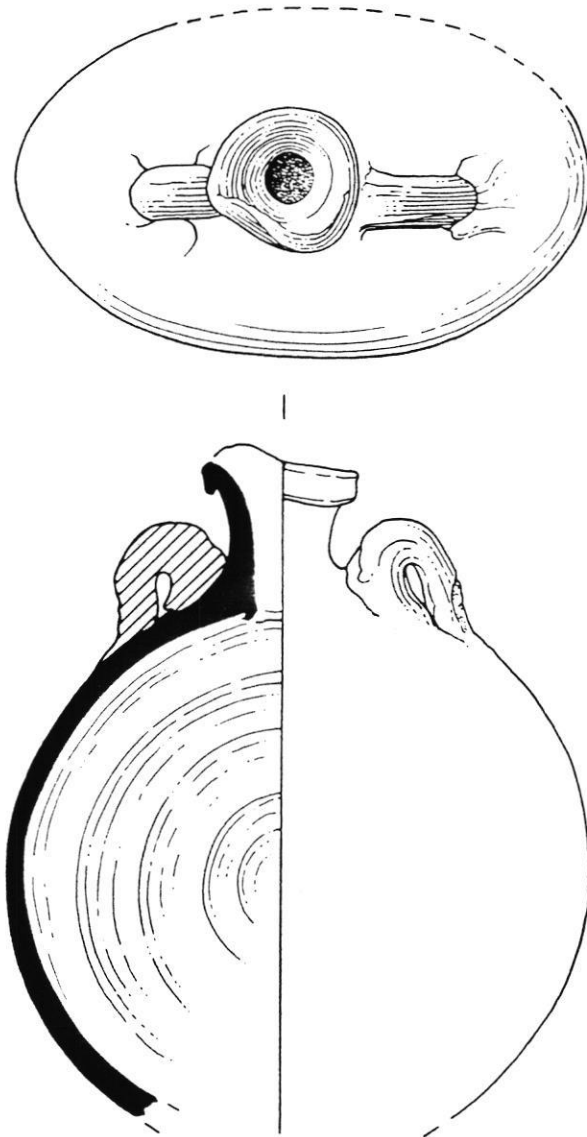
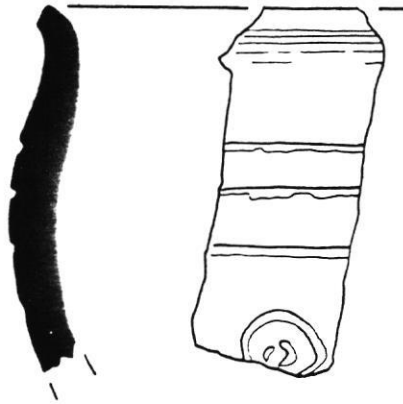
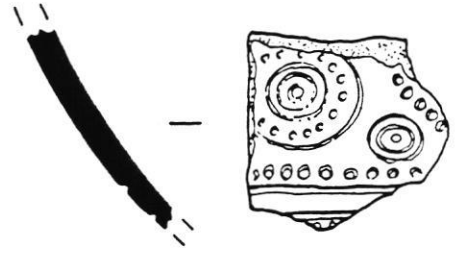


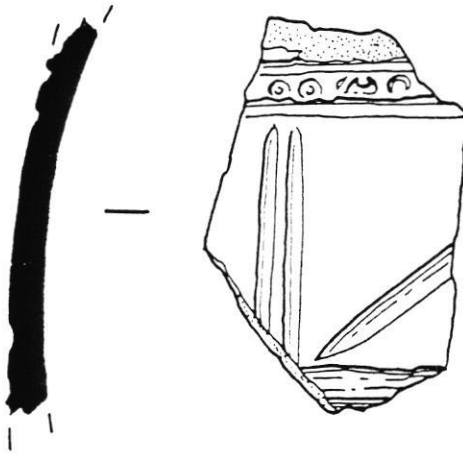
Fig. 50 Green Glazed Pilgrim Flask (Scale 70% Ashmolean Museum 1930.704).



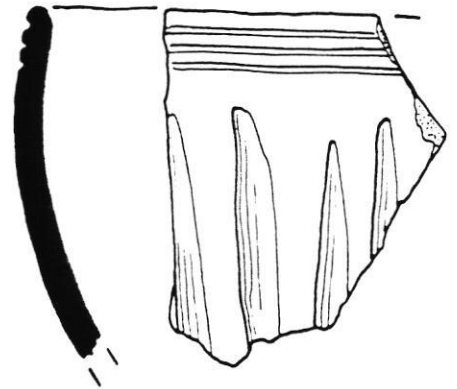
A



B



C



D

Fig 59 **Molded Bowl Fragments** (Scale 1:1 Ashmolean Museum A: ME 15, 1991.316.11  
B: ME 16, 1991.316.12 C: ME 18, 1991.316.16 D: ME 20 1991.316.20).

for the molded bowls to have large inclusions of iron, and also proportionally large grains of amphibole and pyroxene (which is unclear on the chart). This suggests a different area of origin from the green glazed wares.

When compared to the plainwares, some areas of similarity emerge, as there are some commonly represented lithoclasts. Two samples of the plainwares have conspicuously larger amounts of minerals, such as ME 2 and EM 15, and large amounts of chert. If this "coarse plainware petrofabric," can be considered separate, the plainware with finer inclusions, ME 4 and EM 16, offer a very close parallel. If the two "fine plainware petrofabrics" were placed with the molded bowls, they would not appear distinct on the basis of petrography; although the plainwares, as a whole, form a convincing group.

The number of inclusions in the moulded bowl group is uniformly high, with only ME 18 and ME 19 showing fewer than the average. Mode and mean values average in the fine sand range, although there are exceptions. Most notable is ME 20, with a considerably finer texture than the rest of the group. Mode inclusion size is very fine sand, and mean inclusion size is coarse silt. Not surprisingly, ME 20 has the smallest maximum grain size of .350 mm.

Inclusion shape within the group is quite variable, and most examples are subangular or angular, with the notable exception of ME 18, which has subround inclusions. The variability in texture of inclusions within this group indicates that there is more than one method of production, or perhaps centre of production; but compelling evidence for splitting this group into subgroups is lacking. There seems to be no rule linking archaeological and typological considerations with petrofabric. Unlike the green glaze group, which presents clear typological and petrographic differences, definition of subgroups within this group remains more elusive.

Matrix colours are in the brown range, with light brown and moderate brown being most often encountered. Isotropy is at times difficult to evaluate. ME 13 is clearly isotropic, while ME 20 has such a large quantity of anisotropic silt sized calcite and hematite grains that the matrix is obscured. ME 16, 17, 18 and 19 are likewise difficult to interpret, as the considerable anisotropic silt fraction obscures the matrix. Although other classes exhibited some variation in colour throughout the matrix, no other group shows such variation; which is obscured by giving simply the most prominent feature on the chart. This seems to be due both to the composition of the matrix and to differences in firing temperature. SEM micrographs are clear in showing that there is considerable variation in stages of vitrification, with a fairly even spread of vitrification textures in this group, ranging from no observed vitrification to extensive vitrification. This is distinct from the micrographs of the plainwares, which all show extensive vitrification. The matrix colour of the molded bowls is also quite different from the brightly anisotropic matrix (due to hematite) encountered in the "Parthian" plain wares.

The differences in the texture of the inclusions of this group suggest that there are at least more than one method of manufacture, if not region of manufacture, represented. Both the molded bowls and "fine plainware petrofabric" have similarities in the abundance and texture of inclusions. There is no similarity with the green glazed wares. Without more precise analysis of the matrix, or more examples of this pottery, defining the subgroups may be a matter of conjecture.

### *Method of Manufacture*

These vessels were made by pressing a slab of clay into a mold.<sup>131</sup> This technique is considerably faster than other methods of production. As an example (adapted from Arnold, 1985, p. 204): New World potters using a coiling method of vessel forming [a technique that is unsuited to Mesopotamian clays] can complete between 2 and 4 vessels per day. Potters from West Africa, using the paddle and anvil technique can produce about 8-10 pots per day. The potters of Mexico, using a vertical two piece mold, can complete a pot in 10-20 minutes, and given a seven hour work day, a maximum of 36-42 pots can be produced.

While one cannot assume that such production techniques are directly comparable to Mesopotamian conditions, this method could produce a large number of vessels, considerably more than hand modelling, and more than throwing on the wheel. This technique is also used to produce modern hobby ceramics, as it delivers "green ware" of very high quality at a low cost and with fewer flaws than those made on the wheel (Contrell, 1978, p. 2). Given the superiority of the technique, one is therefore surprised that it was not frequently used in antiquity, although it is likely that the technology of making the molds may have been beyond the average village potter.

A number of examples of these moldmade bowls, from Nineveh and elsewhere, suggest that the molds that were used to make these vessels were not easy to produce. A number of Ninevite vessels appear to have been made from molds that were worn, as the designs are not clear. Material from Athens could also be made to similarly low standards. The molds can be so worn as to render the designs barely visible. Other pots were made from molds that were obviously broken and mended (Rotroff, 1975, p. 21).

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<sup>131</sup> The voids encountered in this group are consistent with their forming technology, as there are very few voids. Operations that involve pressing use enough force to remove most voids from the paste (Vandiver, 1988, p. 142).

The technique of using molds offers some hope of localizing a ceramic industry to a particular site. Tarsus is a good example, as there have been molds and vessels recovered from that site that confirm a number of vessels were made there. In the case of the well known mould-made ceramics of the New World (Mochica), there have been very few molds recovered:

Unlike finished pottery, and perhaps ritual ware, a mold is the lowliest of household artifacts. Never would it be placed in a grave with a deceased person, and other chances of survival are slight. If broken once or twice, a mold is patched together and reused. Not until it is completely shattered is it discarded, and then its component parts are scattered at random. Moreover, when reduced to sherds a plain mold without effigy characteristics is practically indistinguishable from coarse utilitarian ware.

Foster, 1948, p. 362

During firing these vessels received special treatment. It is clear that a number of the Parthian green glazed vessels were separated from one another using three-footed kiln spacers, examples of which have been recovered from the site (Fig. 47). A number of the molded vessels from Nineveh also bear the marks of a particular kiln spacer designed to leave a round mark on the bottom of the bowl. Such rings have been recovered from a number of Greek sites, and are recovered from contexts as early as the fifth century B.C., and were clearly also used for other groups of un-footed vessels. Characteristic kiln spacers for molded bowls, relatively short and with a wide diameter, are recovered from the Hellenistic period (Rotroff, 1975, p. 21).

If such rings were recovered during the excavations of Campbell-Thompson, they are not reflected either in the reports or material recovered from the site. The presence of these rings would offer convincing evidence to support a local Ninevite manufacture, but until further work is done on this (or other Mesopotamian) sites, both the archaeological and petrographic observations will remain unclear.

## Mesopotamian Lamps

Difficult to assign typologically (see Chapter I, pp. 92-97 for discussion), there is the potential for a wide range of styles and dates within this group. The earlier type, represented by EM 19, may be Assyrian in date (see Fig. 25 for an example), although lamps of this same type continued into the early Islamic period. Probably the most secure Parthian date is offered by EM 7 (Fig. 27).

The lamps also present problems of interpretation petrographically. Typological groupings of the lamps do not conform to petrographical considerations. Abundance of minerals and lithoclasts, texture of inclusions, characteristics of the matrix, and ASEM analysis of the matrix are all variable within the group. Clearly, there are different methods of manufacture, if not different places of manufacture, represented in this category. The samples are divided into two subgroups on the basis of the texture of the fabric. Subgroup A consists of EM 5, and EM 7. Subgroup B contains EM 13, and EM 19.

EM 5, 1930 698. Small Mesopotamian style lamp with small spout. 63 mm. dia. 34 mm. high, base ring 28 mm. diameter. Sample size 4 mm. x 19 mm.

EM 7, 1932 1117. Marked "LXXIX." Buff Mesopotamian style lamp body. Two lobes on either side of spout, now lost. Simple upturned button handle; reservoir has flaring rim. Body 65 mm. diameter; rim 15 mm. high, 32 mm. diameter. Sample size 3 mm. x 13 mm. (Fig. 29).

EM 13, 1930 713. Marked "surface" in pencil. Mesopotamian style lamp, missing spout, rim to reservoir. Thick fabric of buff grey clay, with black deposits to the interior. 82 mm. diameter, 50 mm. high. Sample size 10 mm. x 6 mm.

EM 19, 1932 1115. "Assyrian" style lamp. Wheel made reservoir with applied spout. No handle, no base, spout does not slope upwards (mostly broken). Rim about reservoir evident. 118 mm. long, 50 mm. high, reservoir 66 mm. diameter. Sample size 16 mm. x 9 mm (similar example Fig. 28).

### Subgroup A

This subgroup can be referred to as the *fine lamp fabric*, as it is clear from the chart that both EM 5 and EM 7 have a finer paste than EM 13 and EM 19. EM 5 has an interesting suite of inclusions, including a large number of lithoclasts. Minerals are not particularly abundant. There are small amounts of quartz and calcite in comparison to the molded bowls or plainwares. This sample also has sandstone, siltstone, pellet and grog inclusions. Infrequent inclusions include an example of mudstone. Mode and mean values are both fine sand. The maximum inclusion size is 0.35 mm. The matrix has extensive areas of anisotropy due to large amounts of silty carbonate and secondary hematite, although CaO is only 15%, which is considerably below the other examples (both at 21%). Unlike EM 7 and EM 13, this example shows no vitrification.

Petrographically, EM 5 also resembles ME 15 (a molded bowl); both have smaller amounts of polycrystalline quartz than monocrystalline quartz. They also share trace amounts of sandstone, siltstone and pellets, and even the presence of mudstone as an infrequent inclusion. ME 15, however, has angular inclusions, and amounts of chert, along with few other minor differences. Their textures are very similar. Both have fine sand modal and mean values.

EM 7 is distinct from EM 5 on the basis of mineral inclusions, which are less abundant. There are only small amounts of monocrystalline quartz and calcite, and there are no lithoclasts. Modal and mean inclusion size is very fine/fine sand. Inclusions are clearly subround, unlike EM 5 and EM 13, which show subangular inclusions. The matrix is isotropic, and SEM micrographs show extensive vitrification. ASEM analysis shows that the CaO content is 21%.

When compared to the Partho-Sasanian lamps, EM 7 is considerably finer. Monocrystalline quartz is noticeably less, and the mode inclusion size is less. EM 7 is in the fine sand range, while EM 18 is in the fine sand range. Inclusion shape differs as well, and EM 7 is unique among the lamps for subround inclusions.

This sample is perhaps closest to the white glazed wares, although inclusion shape separates the fabrics. The apparent similarity of EM 7 with the white glazed wares may be more of a reflection of the textures of the paste, and does not seem to relate to provenance.

### **Subgroup B**

EM 13, (along with EM 19), has the coarsest fabric of this subgroup, forming what may be considered the *coarse lamp fabric*. When compared to Subgroup A, the abundances of polycrystalline and monocrystalline quartz is considerably greater. There is also more calcite, and examples of all three types of feldspars. Chert is very abundant, and there are one or two examples of basalt/dolerite, along with a granitic grain. The number of inclusions is not surprisingly higher, and mode and mean values are in the medium sand range. Maximum inclusion size, 1 mm., is one of the largest encountered. There are clear similarities between EM 13 and EM 19 in the abundance and characteristics of inclusions.

EM 19 has similar abundances of quartz and calcite, and has a greater abundance of orthoclase and microcline feldspars. EM 13 has slightly more chert, but both have basalt/dolerite grains. Mode and mean inclusion size are the same, although EM 13 has a larger maximum inclusion size. Matrix characteristics for both examples are similar, and both have a matrix colour in the brown range, while EM 19 has a matrix that appears anisotropic due to secondary hematite. Both examples are extensively vitrified. It can easily be appreciated that EM 13 and EM 19 differ in no significant respect from one another, and

they could be considered to be manufactured under the same conditions, and, from all indications, in the same place.

The coarse lamp fabric can most easily be compared with the plainwares (in particular subgroup A). Both the coarse lamp fabric and the two plainware samples, ME 2 and EM 15, have conspicuous abundances of quartz, although the plainwares have more calcite. The plainwares also can have quantities of chert, along with examples of lithoclasts not frequently encountered in other groups. Inclusion size differs, with mode and mean values of the coarse lamps averaging slightly higher than the expected range of the plainwares. Matrix colour is similar for the two groups, and degree of vitrification is the same. Both the coarse lamp fabric and the plainwares (excluding ME 1) have an extensively vitrified matrix. Plainware subgroup A and the subgroup B of the Mesopotamian lamps have significant similarities in texture of inclusions, suggesting that they could be related.

### **Partho-Sasanian Lamps**

This class of pottery emerges as distinctly more homogenous than the Mesopotamian Lamp category (see Chapter I). EM 14 (Fig. 60) is from a group that can be easily dated to the Hellenistic/Parthian period. EM 18 (Fig. 61) can be dated to the Sasanian period, but it is of a type that is more difficult to parallel.

The two examples are considered together, without subgroups.

EM 14, 1930 699, "HH" scratched on surface. Two piece mold-made fish tail and body section, believed to be from a Lamp. Incised decoration to surface. Pink clay with black coating on outer surface. 70 mm. long, body 68 mm. long; 36 mm. high and tail 45 mm. across. Small sample size, 5 mm. x 8 mm. Sample size 7 mm. x 5 mm. (Fig. 60).

EM 18, 1932 1118, labelled "XXIX 9." "Sasanian" lamp. Large Mesopotamian form with applied clay pellets to body ("vestigial rivets"). Applied roundel to front, now lost. Handle with "pouring lug" below. Very small wick hole and reservoir. 90 mm. high, 158 mm. long, body is 78 mm. wide at widest point. Reservoir 40 mm. diameter, lip 20 mm. high. Very small sample size, 7 mm. x 4 mm. (Fig. 61).

Both samples basically resemble each another, and they can be referred to as a single petrofabric without the need for subgroups or individual characterization. Both would be placed in the *fine lamp fabric* (as defined in the Mesopotamian lamps). EM 18 shows smaller amounts of polycrystalline quartz than EM 14, and has no observed examples of feldspar, amphibole, or chert. The small difference in inclusion abundance can be influenced by the small sample size of EM 18, which was taken from a complete vessel.<sup>132</sup> The mode and mean values for both samples is the same, in the fine sand range. The maximum inclusion size for both samples is in the coarse sand range.

Both EM 14 and EM 18 have a partially vitrified matrix with small amounts of silt.

The bulk chemical analysis of the matrix shows that the two samples differ slightly: CaO is 18% and 16% respectively. One feels that the small differences between the two samples is insufficient to suggest separate subgroups. Both EM 14 and EM 16 could have been manufactured in the same place.

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<sup>132</sup> In addition, the matrix was so hard as to make sampling difficult. This ceramic body was the hardest sampled.

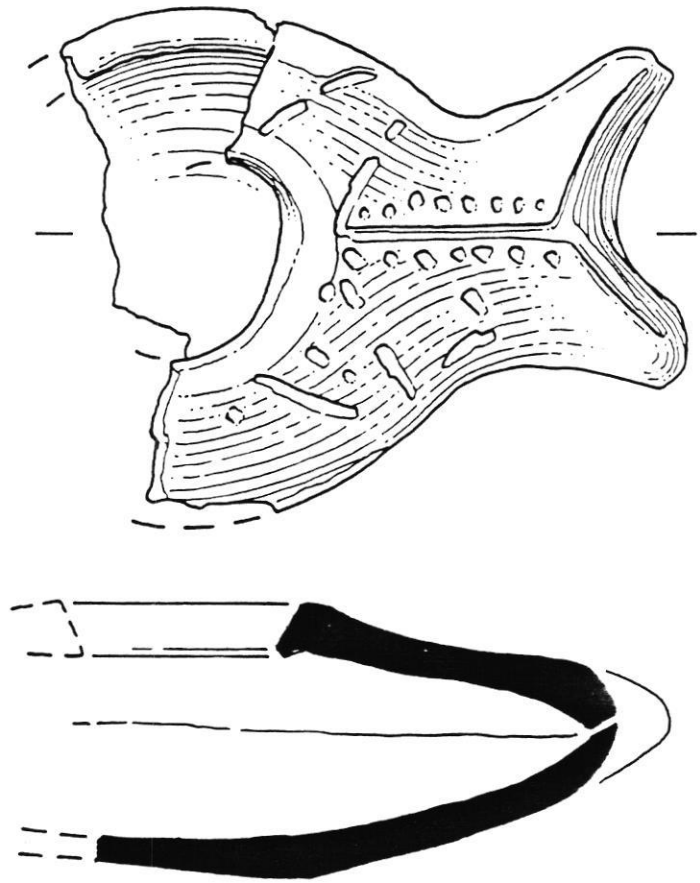


Fig. 60 Partho-Sasanian Lamp (Scale 1:1 Ashmolean Museum 1930.699).

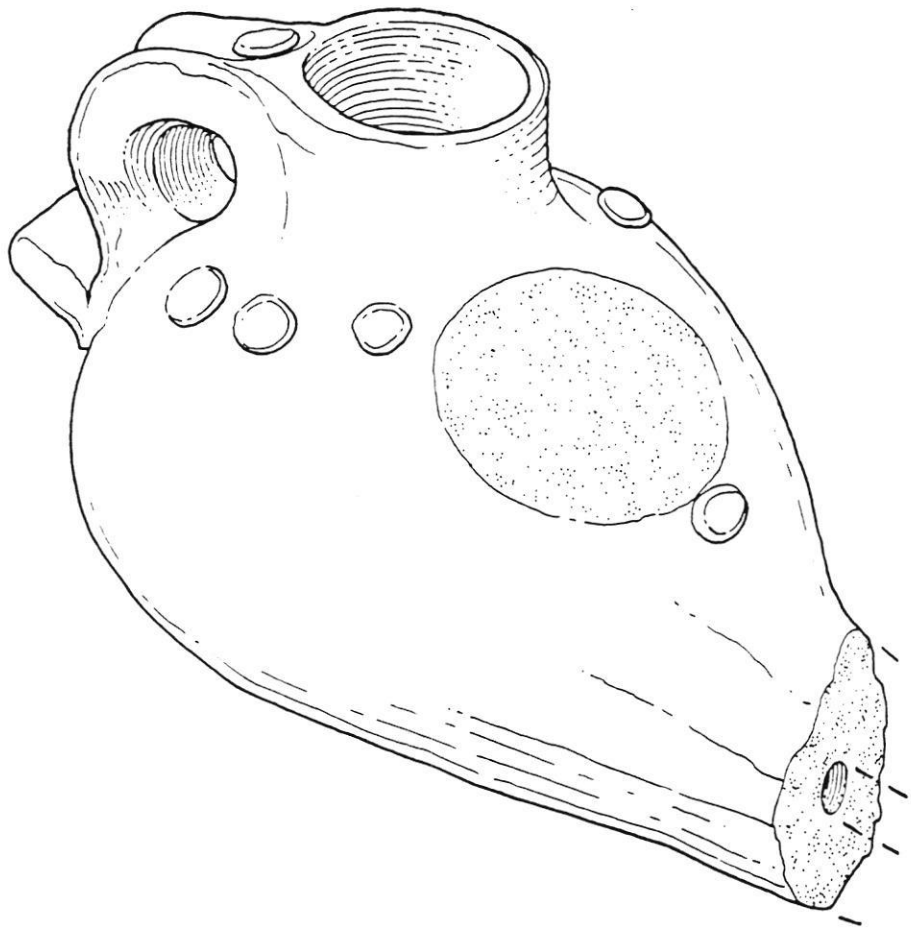


Fig. 61 Sasanian Lamp (Scale 1:1 Ashmolean Museum 1932.1118).

### *Technological Observations*

The Ninevite lamps (of both types) may be seen as having a broadly similar colour distribution as the Parthian plain wares, but the plain wares from Nineveh are clearly *more* vitrified than the lamps, which, when taken as a whole, vary from P to EV. This suggests that at Nineveh, the plainwares were fired separately from the lamps.

Observations from Seleucia relating to colour and firing are instructive. Large numbers of small lamps were recovered from Seleucia from the Hellenistic and Parthian periods. Of 97 examples brought to Michigan for analysis, it was found that the colour distribution was the same as for the other pottery, with fewer low fired examples and many higher fired examples. "This parallel distribution would indicate that the small lamps were fired in the same kilns with the pottery. Today the Greek and Near Eastern potters fill interstices in the kiln load with small vessels" (Matson, 1971, p. 73). Unfortunately, Matson does not offer any information as to what class of vessel (for example, glazed or plain wares) he is comparing with the lamps.

The great variability of the lamp petrofabrics is not surprising. Archaeological observations for Hellenistic and Roman lamps suggest that on the whole local industries were responsible for the manufacture of lamps:

Local ateliers grew up wherever there was a demand, but lamps of finer workmanship or of unusual shape were always saleable in areas far from their place of manufacture. Indeed, local lamp-makers often used imported lamps as archetypes, from which they took moulds; the lamp industry in Cyprus in the first century A.D. was almost wholly dependant for its archetypes on imported Italian lamps.

Bailey, 1976, 101.

A number of complete vessels from Nineveh, now in Birmingham, of characteristic western form would be prime candidates for further study.

## Sasanian Cooking Vessel

EM 1 is clearly different from all those encountered so far. Typologically, vessels of this form can be found in the latest phase of the Neo-Assyrian period (Freestone and Hughes 1989, p. 72). Out of some 12, 000 shards recovered from the site of Khirbet Qasrij, there were four identified as cooking pots, all of a similar shape to the example recovered from Nineveh (Curtis, 1989, fig. 41, 277-279). Significantly, the vessels were localized in area about an oven.<sup>133</sup> In a personal communication with Dr. St. John Simpson, he noted that similar material was recovered from Sasanian levels in northern Iraq. This example is then assigned to that date. The primary focus of the following discussion will be on the technical nature of cooking pots. As this sample is unique and will be described in detail:

EM 1 1991.307.2 Vessel body fragment, with large grains of calcite in a black/grey matrix. Red wash on outer surface. 41 x 38 mm., 9 mm. thick. Outer surface shows a layer of deposited carbonate, while the inner surface has a layer of wash, in areas up to 170 microns. Sample size 27 mm. x 9 mm. (Fig. 62).

This sample has prominent inclusions of angular calcite, the most calcite encountered in any fabric from Nineveh. The presence of large quantities of this mineral indicate two separate factors. The first is temper. Angular monocrystalline calcite requires extraordinary circumstances in order to retain its shape. By nature, it is a mineral that is more prone to degradation in solution rather than abrasion, and if it were transported even a short distance in water, it would have lost its angularity and have a round appearance. Angular minerals such as chert are not indicative of added temper, as they are naturally prone to fracture into angular grains. Also, chert is not prone to dissolution or abrasion. The calcite in this instance can therefore be assumed to be added temper that was fractured by a human agent.

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<sup>133</sup> This scarcity of cooking wares at the site may suggest that these vessels of a specialized nature were valued. Petrographic observations with other samples from the site suggest that the cooking wares were imported.

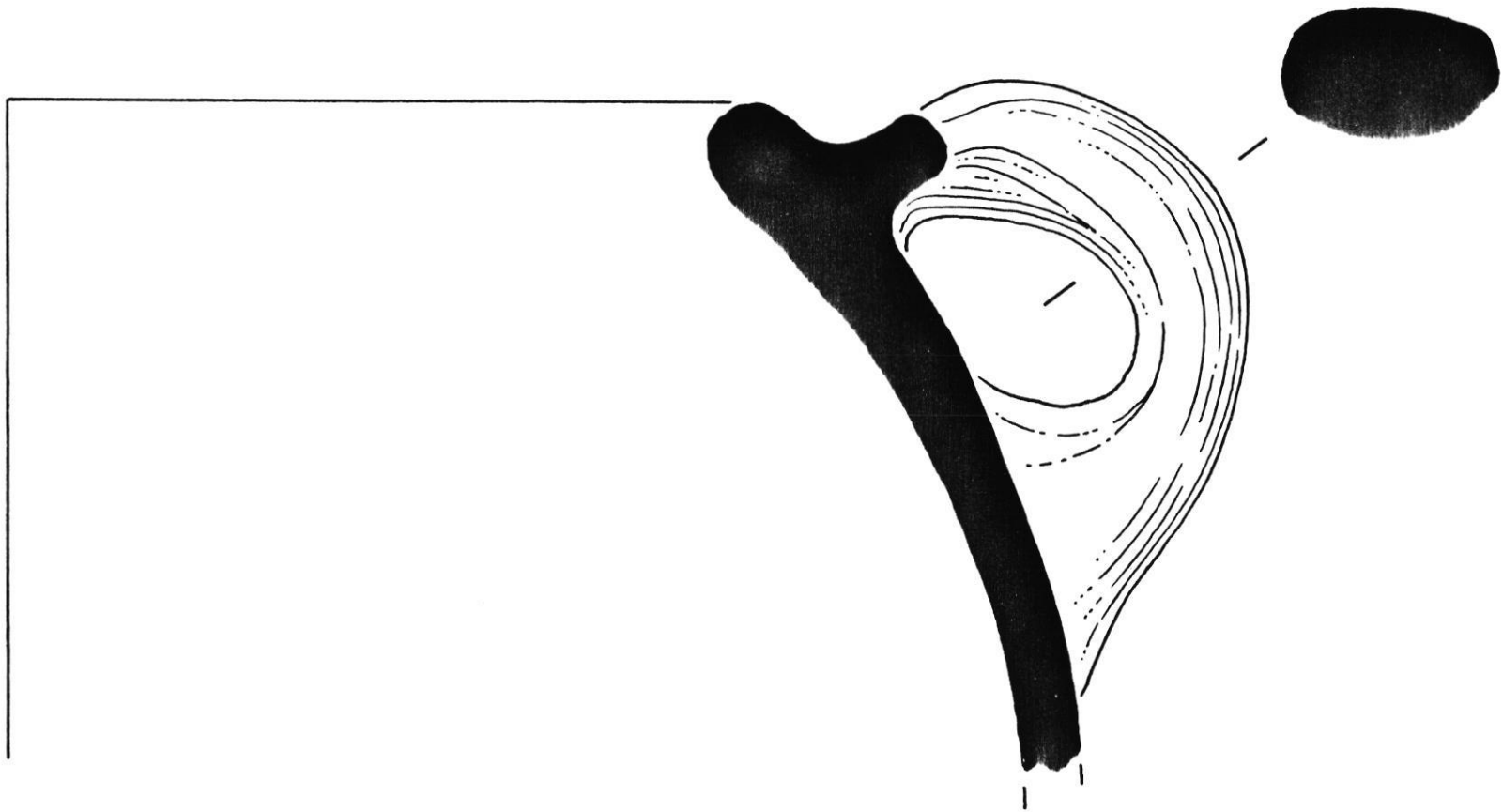


Fig. 62 **Sasanian Cooking Vessel** (Scale 1:1 Ashmolean Museum 1991.307.2).

The second factor is firing temperature. Pottery fired at higher temperatures (above ca. 850 C) will lose the fine silt and clay sized calcite grains which react with the clay to form calcium silicates or aluminous silicates in a vitrified matrix. Larger grains undergo a decarbonation and change to lime. Upon exposure to air the lime will take up water to form calcium hydroxide, which will then combine with carbon dioxide to re-form calcite. "In thin section it will be observed that although the original gross morphology of the carbonate particle may have been preserved, any internal structure will have been lost and the grain will be composed of a mass of fine-grained calcite" (Middleton, 1993, p. 11). The presence of angular monocrystalline calcite in its primary state indicates a lower firing temperature than the other samples. Other mineral inclusions, such as monocrystalline quartz, are difficult to estimate due to the overwhelming presence of calcite. The maximum inclusion size, 1.5 mm.

The matrix colour is unlike any other sample, and it is easy to separate from the other material by eye, even in hand specimen, as it is a black/red colour. This would indicate that there is an appreciable amount of free carbon in this sample, although it is difficult to determine if the carbon was from organic matter in the clay or as a result of sooting during firing (or both). The voids are not characteristic of large organic inclusions, and one must conclude that the free carbon, if it originated from the clay, was in small particles and not added as temper. In addition, there are long cracks in the matrix fabric. This would aid thermal stress resistance, if this vessel were used as a cooking pot. Cracks in the matrix would allow the surrounding body to expand into the voids without placing stress on the matrix as a whole. SEM micrographs show that this sample is not vitrified, which is consistent with the survival of monocrystalline calcite grains.

ASEM analysis shows very little calcite in the matrix, only 3%.<sup>134</sup> The microprobe analysis at 400 X gives a chemical composition of the matrix and inclusions in the matrix of medium sand and below. The probe was placed away from any inclusions that might alter a characterization of the matrix, and in this case calcite grains were specifically avoided. It is clear that the matrix of this example has considerably less calcium than the other wares, and there is considerable added calcite temper. Both the inclusions and the chemistry of the matrix indicates a separate provenance for this sample; which is in agreement with the results from a cooking pot recovered from Qasri'j Cliff by Freestone (*et al.*, 1989, p. 75).

### *Distribution of Cooking Pots*

It should be noted that there were probably other examples of this ceramic type from Nineveh. Due to its unusually crude nature, it is somewhat surprising that it was retained. Some general observations on ceramic production by individual households are summarized from twentieth century European and North African evidence below (after Peacock, 1982, pp. 17-25). The format is admittedly condensed, but it does emphasize some significant points raised by "crude pottery."

A. Traditional household utensils made for such uses as baking require a minimum of technology. Water jars or other specialized containers were purchased.

B. The primary motivating factor for household production of ceramics was poverty. When the harvest was finished, women would occupy their free time making vessels.

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<sup>134</sup> A similar low concentration of CaO was encountered by Bartl (*et al.* 1995, p. 171) for a number of samples of "Brittle Ware." These cooking pots had a wide temporal distribution, from the Hellenistic to the Early Abbasid periods. Calcite temper was added to the paste, apparently to give the vessel thermal-shock resistance. Both archaeological and petrographic observations suggest that this fabric was imported into north Iraq from a source in Syria. Perhaps the sample from Nineveh has a similar origin.

C. Kilns, if used at all, were primitive. In some cases a middleman with a small kiln would purchase the output from a number of families and fire them.

D. Ceramics of crude manufacture are an ancillary concern to the farmer, and as a result they are sold quite cheaply. Consequently, a number of crude vessel types have a very wide distribution.

While one may at first suspect that EM 1 was a local product, it is clear from the above description that only very crude wares were household products.

### *Technical Aspects*

Fire-resistant pottery, usually of a utilitarian nature, was afforded scant attention in archaeological literature up till a short time ago. Generally of a less "artistic" nature than other ceramic vessels, they nonetheless represent an essential aspect of ancient life (Brogiolo and Gelichi, 1986; Le Miere and Picon, 1994, p. 67). Aspects of their role in society have been explored (Simpson, 1968), as have more technical aspects of their function.<sup>135</sup> Typologically, they are often distinct, and provenance studies have found that they are cannot be assumed to have been made locally.

An important consideration is how one discerns a cooking vessel from a plainware vessel, which was, perhaps, used to carry water. One expects a different form of vessel, with different inclusions (discussed below), and also perhaps a different surface treatment. Schiffer (1990, p. 129) noted that vessels used for water and for cooking should have different surfaces for optimum performance. A water jar should be permeable to water for evaporative cooling, and a cooking vessel should be the reverse. Energy used to boil diffusing water is not used to heat the vessel contents. Surface treatments to keep water from migrating into

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<sup>135</sup> The many difficulties in quantifying thermal-shock resistance are outlined in Bronitsky (1986, pp. 249-260).

the fabric of the vessel (both inner and outer surfaces) consist of Slipping, polishing, smudging, and, least effective, finger texturing. Plainwares, used for water, and cooking vessels, are fundamentally different:

...the effects of surface treatment and other technical choices that influence permeability and evaporative cooling effectiveness are strongly mediated by factors such as air temperature and wind velocity that the potter and the pot user cannot completely control. On the other hand, in the case of cooking pots, heat from the fire itself overwhelms any influence of other environmental variables. Thus, evaporation and heat transfer rates of cooking pots are determined almost entirely by the potter's technical choices...

Schiffer, 1990, p. 133

The sample from Nineveh then is characteristic because of shape and because of surface texture. The outer surface is finger polished and smudged,<sup>136</sup> while the inner surface has a thick wash. Both characteristics are unlike any other plainware so far encountered.

Thermal shock resistance has been extensively studied by modern ceramicists on modern materials. Many of the same theories developed in this high-tech industry have also been applied to archaeological materials, basically cooking pots, with mixed results. The premises of thermal shock resistance hold that (after Woods, 1986, p. 157):

A. Characteristic shapes will be associated with cooking pots, as round-based, globular pots generate fewer stresses when heated than flat bottomed vessels.

B. Such materials as grog, calcite, and feldspars are used for temper instead of materials such as quartz, which expands in volume when heated. Calcite is a good example, as studies have postulated that it is used as temper because it has a similar rate of thermal expansion to a clay matrix.

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<sup>136</sup> It is possible that the black outer surface of the vessel was intentional, and not merely the result of use. Philpotts and Wilson (1994, p. 617) noted that for a North American ceramic vessel, probably a cooking pot, the inner surface was black. Because the vessel was low fired, and there was little vitrification, the fabric would have been very permeable if not for the black surface. Both the inner and outer surfaces had the same chemical composition, but the difference in oxidation state of iron apparently resulted in the formation of a barrier to water.

Many examples exist where pottery uses shapes and materials that conform to the above hypothesis. Rye (1976) found that both cooking pots from the Bronze Age in the Near East and a class of Melanesian pottery used calcareous materials, such as crushed shell. Other examples, however, show that generalizations as to the function of the vessel cannot be assumed from shape alone.

An excavation in a region close to Nineveh, from the last phase of the Neo-Assyrian period, at Qasrij Cliff produced one example of a cooking pot. Freestone (and Hughes 1989, p. 72) found that this pot, QC 81, differed substantially from the other fabrics. There were no organic inclusions, while there were large grains of quartz and calcite measuring from between .1 mm. and .5 mm. across. Unlike the other pottery from the site, which showed NAA results within an expected range, the cooking pot demonstrated other affinities. The results showed that the pot was made in a separate locality, and could not be explained in terms of differences in matrix composition due to cooking pot technology. Available petrographical information led Freestone to speculate the vessel had Syrian origins (Freestone *et al.*, 1989, p. 72-74).

### *Method of Firing*

From both typological and petrographic examination of this specimen it is clear that it was fired under very different conditions from all the other wares studied in this report. Rhodes (1968, pp. 6-9) discusses aspects of pit firing. It was a common technique of firing pottery in a number of different places and times, but is generally characterized by primitive societies. It involves the making of a pit of varying size in the ground, and the packing of the ceramics to be fired amidst quantities of fuel. A number of different fuel types have been used, from very fast burning grass to the relatively longer burning dung, the latter being

used, from very fast burning grass to the relatively longer burning dung, the latter being preferred as it holds its shape after turning to embers and protects the pottery from the effects of rapid cooling. More fuel could be added, but in most firing the maximum temperature reached was generated in an hour or less.

The firing atmosphere could not be controlled with certainty in such a situation. Wares fired under these circumstances are often easily characterized by a black surface.<sup>137</sup> Temperatures were limited to about 700 - 900 C,<sup>138</sup> and as a result the pottery was not well vitrified, porous, and easily broken. Glazes cannot be vitrified at this temperature. Because pottery reaches such a low temperature, burnishing is used as a method of decoration, as later stages of vitrification do not obliterate earlier pre-firing surface treatment.

### **Sasanian Ledge Handle**

This sample is typologically distinct from the cooking pot EM 1 (above), and the Sasanian stamped wares (considered below). The form of vessel is difficult to date, as ledge handled wares were manufactured for a long period of time. Dr. Simpson (personal communication) noted that the vessel may be Sasanian (or post-Sasanian) in date. Because cooking vessels are not often collected or published, it is difficult to propose parallels. In form the vessel clearly imitates a wheel-thrown vessel, although the paste is much too coarse to allow forming on a wheel. The lip in particular has received special attention, as it flares from the body. The vessel shows features suggesting it was used as a cooking pot:

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<sup>137</sup> Colour should not be taken as a simple guide, as even open hearth firing atmospheres can be controlled to give an oxidised firing.

<sup>138</sup> A number of modern experiments with open-firing ceramics have generated a significant amount of information (Woods, 1982, p. 11).

MX 16, 1993.55. Coarse reddish plain ware bowl fragment, about 50% intact. Heavy temper, slightly everted bulbous rim c. 25 mm. wide. Heavy ledge handle 46 mm. long. Heavily carbonized base broken in antiquity, apparently from heat fracture. Vessel is 8 mm. thick. Sample size 18 mm. x 9 mm (Fig. 63).

Although this vessel can be assumed to have been used as a cooking pot on the basis of both its form and evidence of being placed in a fire, it is kept distinct from the cooking vessel EM 1. The paste is of a very different nature and one could assume that due to a build up of cracks due to thermal stress this vessel was broken and discarded. It is clear that the paste of this vessel was not suitable for use as a cooking vessel, quite unlike EM 1.

The most striking aspect of this vessel is the large amount of alkali basalt with titanium aurgite. Grains of the latter could extend to 3 mm. long. Alkali Basalt was the dominant inclusion type, and was encountered in no other ware examined from Nineveh. Other inclusions were sparse in comparison. There were grains of monocrystalline quartz, and calcite, and conspicuous grains of plagioclase. There were large grains of pyroxene that were apparently associated with a rock source, as they did not appear abraded. All grains appeared angular except for the calcite, which also showed heat damage. The inclusions showed a strong bimodal distribution - one silt fraction associated with the clay and the larger fraction about 1 mm. long - one can safely assume that the larger fraction is added temper. The matrix was also unlike all other samples. It has a large fraction of silty grains - strongly anisotropic - and shows extensive cracking (with some infill of carbonate).<sup>139</sup> There is no difficulty in stating that this vessel was imported.

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<sup>139</sup> The carbonate infill suggests that the cracks were present in antiquity, and not the result of the burial environment.

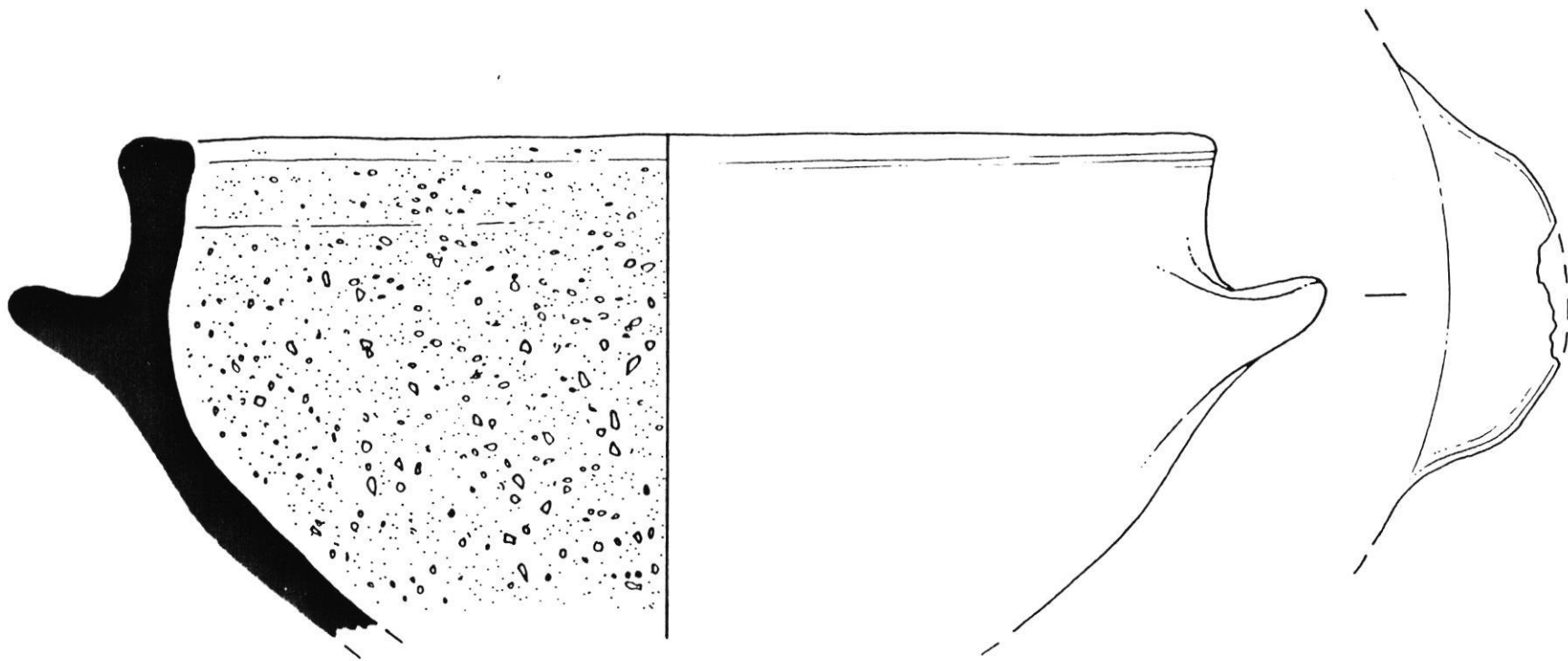


Fig. 63 Sasanian Ledge Handle Vessel (Scale 1:1 Ashmolean Museum 1993.55).

## Sasanian Stamped

These samples are from fragments that are relatively simple to date. There have been many excavated sites with this ware, and because it is decorated it is widely published. Simpson (1994, Fig. 32, 121, 122) illustrates examples from a number of sites. Parallels can also be found from excavations in the Saddam Dam basin (Suerenhagen, 1987, p. 131). All reports assign a late Sasanian date for the ware, while some degenerate types - unlike the material from Nineveh - are assigned to the immediate post-Sasanian period. This distinctive ware clearly had a limited chronological distribution.

A number of surviving glass vessels from the Sasanian period that bear medallions like those on ceramic vessels. In form the glass vessels are decorated by applied disks of stamped glass. Common motifs include common animals such as sheep or ibex, as well as mythical beasts (Balog, 1974, pp. 132-134, figs. a-f). Such applied designs are clear imitations of metalwork, where the inspiration for these ceramic vessels should ultimately be placed (for Greek vessels see Vickers, 1985, pp. 108-110).

While the exact nature of the ceramic vessel stamps - like the ones used for the examples from Nineveh - may remain a matter of debate, the surface of the clay stamps on the fragments show particular uniformity. Unlike the surface of the vessel as a whole, the circular area of the stamp shows smoothness when examined under a low-powered binocular microscope.

This smooth surface may factor against wood or another porous substance being used as a stamp, and may suggest that the stamp for the Sasanian vessels was glass (like Islamic vessel stamps: Balog, 1974, plate p. 135, it should be noted that no similar Sasanian stamps survive). Indeed, there is no need to propose that special stamps were made specifically for Sasanian ceramic vessels, as "stamps" may have been adapted from medallions from broken glass vessels; a hypothesis that is in keeping with the status of ceramic products in the ancient world. No doubt a large number of stamped glass and ceramic vessels, from the same site,

would be required to test this hypothesis. Unfortunately no such assemblage exists from Nineveh.

All samples from this class of ware share similar features and will be discussed as a single group:

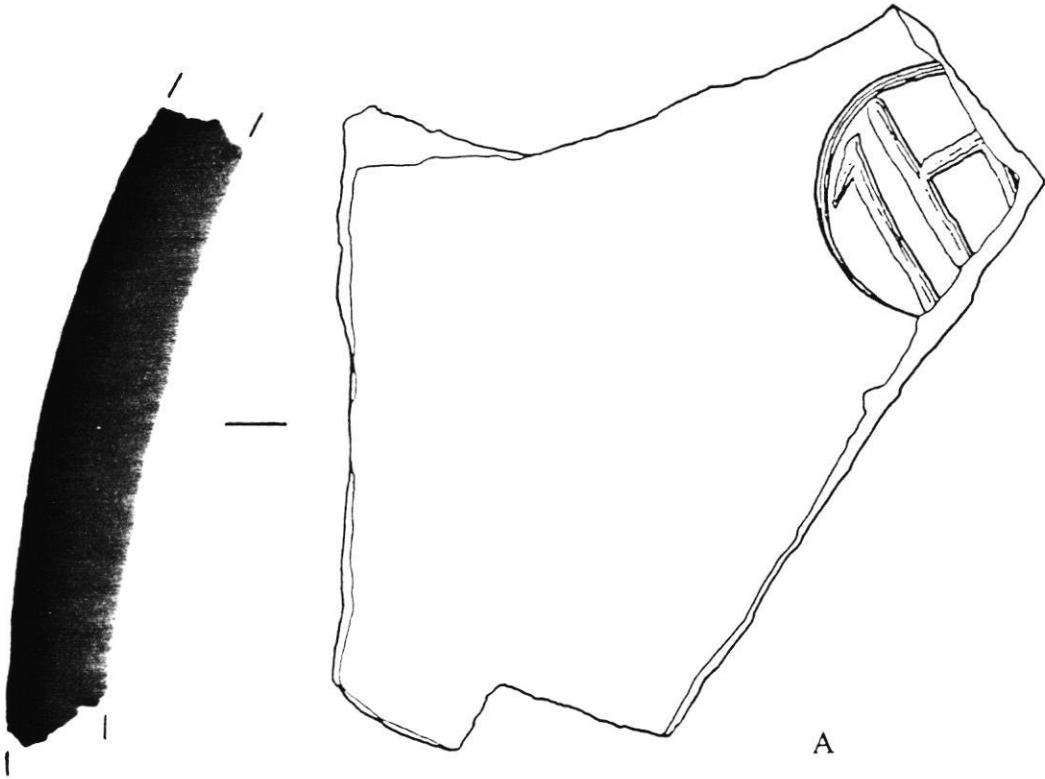
MX 1, 1932.1000a. Marked "CC +1." Reddish fabric with burnished or washed outer surface, stamped with simple line symbol within a circle, c. 25 mm. diameter. Inner surface has a thin black crust that may be bituminous. This is the thickest example of this type, 14 mm. thick. Sample size 19 mm. x 13 mm (Fig. 64A).

MX 2, 1932.1000b. Plainware body shard, outer surface appears to be washed so that it is a buff colour. It is stamped with a circular stamp 60 mm. in diameter. Circle has lines (or crenellations). Central design consists of a large cross, with a slightly larger vertical axis, with symbols in four quarters. The upper two quarters have each a single cross in the field, while the lower two quarters have astral symbols, what appear to be half moons. 7 mm. thick. Sample size 19 mm. x 7 mm (Fig. 64B).

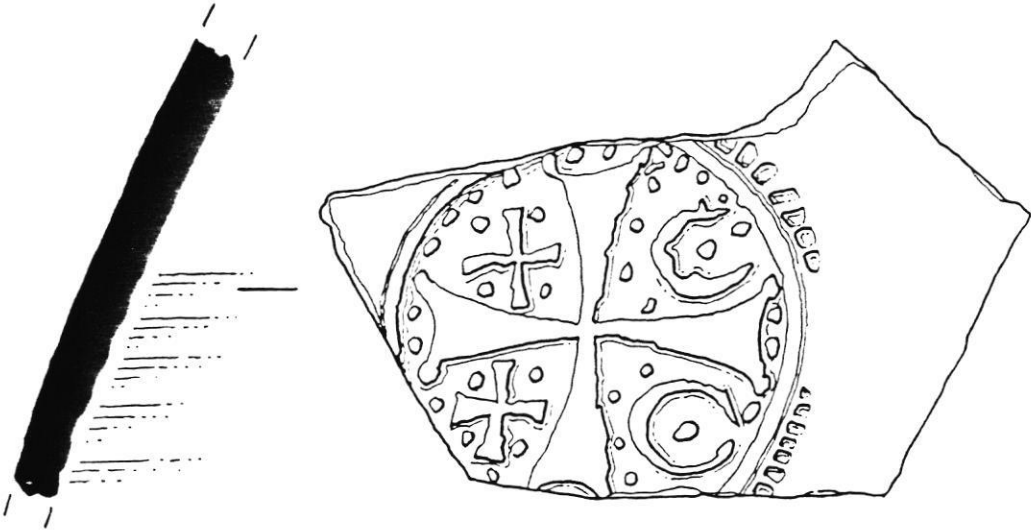
MX 3, 1932.1000c. Marked "M." Stamp design has lines (crenellations) facing towards the central design, which consists of a branch and the head and neck of a camel. The animal does not appear to be feeding. One corner of the shard has a single series of undulating lines. In contrast to the other two examples, both the outer and inner surfaces are a similar colour. 7 mm. thick. Sample size 22 mm. x 7 mm (Fig. 65).

MX 1 has appreciable quantities of polycrystalline and monocrystalline quartz, like all other examples. The group as a whole exhibits quantities of calcite, MX 1 is distinct in that it has a small amount of unaltered monocrystalline calcite, while MX 3 has small quantities of polycrystalline calcite, probably as a result of higher firing temperature. All examples of this group have feldspars, and mica. There is slight variation in the amounts of Amphibole and Pyroxene, and the same amount of hematite for all samples.

All samples have similar amounts of chert, while MX 1 also has trace amounts of siltstone, basalt/dolerite, and a good example of a pellet that is 1 mm. long. The few examples of grog in this sample are assigned to that category on the basis of a different colour. One or two examples of infrequently occurring inclusions alone is not sufficient to separate a group, especially since other parameters are similar. All examples have the same inclusion size, and all have a similar shape.



A



B

Fig. 64 Sasanian Stamped Wares (Scale 1:1 Ashmolean Museum A: MX 1, 1932.1000a  
B: MX 2, 1932.1000b).

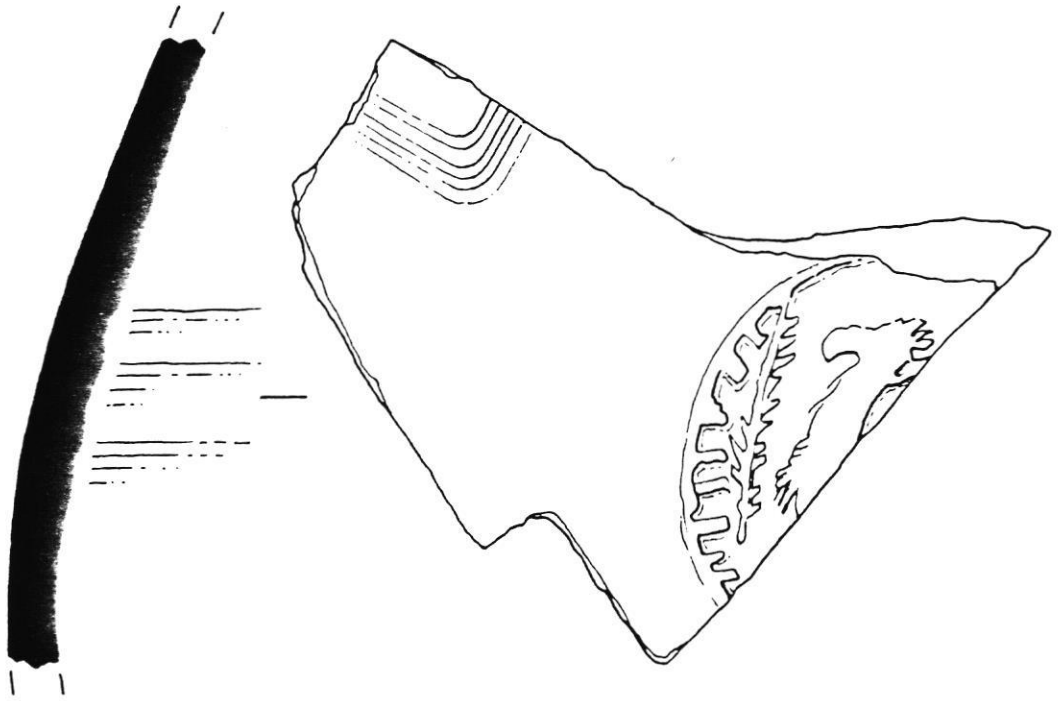


Fig. 65 Sasanian Stamped Ware (Scale 1:1 Ashmolean Museum MX 3, 1932 1000c).

The colour of the sherds is all in the brown range. One may assume from the petrographic observations that these wares are not like the other plainwares examined from Nineveh, and they show subtle differences from other samples. This could indicate a slightly different method of manufacture, or perhaps a different provenance.

### **Islamic Stone Paste<sup>140</sup> Ware**

Although it is beyond the scope of this report to discuss the Islamic period in detail, one sample of a typically Islamic ware was examined. It is clear from the extensive material remains at Nineveh that the site enjoyed considerable prosperity during the Medieval period.<sup>141</sup> It is also clear that unlike the early Islamic sample (EM 20), that appeared Parthian by macroscopic characteristics, this sample is distinct. Technological examination then concentrates upon the differences between this sample and the other samples examined in this report.

Islamic stonepaste ceramics were a relatively late invention of Islamic potters in response to Sung dynasty imports into the area; the use of this technology can be dated to the 12th century. Because they lacked both the raw materials and technology for similar wares, they revived the use of "Egyptian" faience. Instead of a body that was composed of silica rich iron clays, fired to a temperature range of 1200 c. the Islamic potters used a quartz paste, fired in the range of 1000 C (Tite, 1988, pp. 30-31).

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<sup>140</sup> The characteristics of Islamic stonepaste wares are discussed by Mason (1995).

<sup>141</sup> Nineveh was included as part the administrative district of northern Mesopotamia (or *al-Jazira*) which was recognized as having local idiosyncrasies. The city was mentioned by chroniclers in connection with a "battle among themselves," a civil war. The losses were apparently enormous, with 400,000 dead in total (Palmer *et al.*, 1993 p. 197) It is difficult to date this passage, but one may be able to assume that the region supported a sizable population in the early Islamic period.

Even in hand specimen it is clear that this vessel is not like the Parthian or Sasanian vessels.

MX 4, 1932.1180. Blue (aqua) glazed rim and body shard. Everted rim, enough of the body remains to suggest that it was a shallow bowl. Both the body and the fine fabric place this sample apart from the Parthian/Sasanian glazed wares. Outer surface shows patches of brown devitrification. There is no indication of any design. Shard size 40 mm. x 70 mm., 6 mm. thick. Sample size 20 mm. x 6 mm.

Both matrix and inclusions easily define this sample as separate from other samples examined (from both Dura and Nineveh) and from the Parthian green glazed wares in particular. The most striking aspect of the sample when a fresh fractured surface is examined by eye is its chalky white appearance. The matrix appears to be very hard, and there are no large inclusions.

When examined under the petrographic microscope, the inclusions appear to be very homogenous. There is an abundance of very angular monocrystalline quartz grains, and trace amounts of polycrystalline quartz. There are few (7-10) characteristic voids suggesting calcite, but there is no trace of any calcite remaining, the firing temperature was presumably high enough to completely decompose. There is a conspicuous absence of calcite and feldspar, which would have been present in the Parthian green glazed samples. There are also trace amounts of biotite, and there are probably several varieties of hematite. The smaller group of grains (from silt sized to fine sand) with perhaps 4-5 examples in the entire sample. These are fragments of ferruginous crusts (known as "laterite" in pure form). The latter probably do not originate from the materials of manufacture - one assumes a "clean" source of basically crushed rock - but instead is a product incorporated into the matrix from the area of manufacture. Such iron crusts form as iron hydroxide in an environment that is exposed to moisture, and then exposed desiccation (Kemp, 1985, p. 50). It dries into an iron crust, that dehydrates into hematite when fired.

The formation of these crusts is in keeping with what is known of traditional ceramic forming techniques. The floor of the potters workshop, or rammed earth, would no doubt have been exposed to water when material was being worked, and then dried in the evenings. Material would naturally precipitate from the earth floor and be incorporated into any paste that was being prepared. The observation of ferruginous crust in this sample suggests that some grains conservatively identified as "hematite" in the other samples (notably the Parthian green glazed wares) can be material that was incorporated into the sample during forming.

A larger class of hematite, about 10 examples ranging in size from 100 to 150 microns, show a clear reaction zone with the matrix. These grains are probably large grains of magnetite that had a fluxing effect on the surrounding matrix, so that a glass ring was formed. There are few lithoclasts, which is expected considering how carefully the inclusions were prepared. The third type of hematite is secondary, as the relict structure and shape suggest it is altered amphibole. There are few grains of chert, which tends to be of a larger size than the average mode and mean in the fine sand range. The maximum inclusion size is 530 microns. The inclusions differ most radically from the Parthian green glazed group by their extreme angularity. The majority of quartz grains in MX 4 have such sharp projections that one would immediately assume they the grains were not subjected to any form of transport.

The matrix characteristics also differ, although in this sample there is difficulty in resolving matrix from inclusions under the microscope. Overall colour is light olive grey. While the colour name would at first appear to be similar to colours in the olive range, such as the Parthian green glazed wares, both groups are distinct. Microscopically, the matrix and inclusions present resolve into a block of angular quartz grains, with a diffuse translucent white/grey colour (completely anisotropic), with some isolated regions of green glass. Some of the glass in this sample is certainly formed during firing. It is present only in localized regions between grains. Other grains, however, are certainly added by a human agent.

These grains occur with some regularity throughout the sample, and all exhibit peculiar properties. They have a similar size range as the quartz, but their shape is distinctive. The majority of fragments exhibit an angular shape that has been slightly altered by melting, which is distinct from the quartz which is not melted. Larger grains, over c. 150 microns, commonly exhibit a ring of secondary crystal growth on the outer surfaces: both wollastonite ( $\text{CaSiO}_3$ ) and cristobalite ( $\text{SiO}_2$ ) are present. These crystals have grown because the glass has been allowed to cool slowly; the crystals did not form originally in the glass because the glassmakers understood this process, and quickly quenched their vessels to obtain a clear vessel.

Many grains also have a void in the centre, which is probably due to the migration of alkali into the body of the sample. This was probably the intention of the potter, to flux the body of the vessel and lower the firing temperature needed to obtain a vitreous body. Preliminary investigations using the ASEM to map the distribution of alkali from the glass phase into the body has given uncertain results, and clearly a more thorough investigation of this phenomenon is needed before the exact nature of this alkali diffusion is known (personal communication with Chris Doherty).

### *Technical Aspects*

By introducing a lead-alkali glass to the body, the potters may have been intending to accelerate the vitrification of the body, to achieve a hard body at a lower firing temperature. The origins of this technology are unknown, but could be a continuation of pre-Islamic practice. It may, however, be suggested that the future of this technology was to lie in the development of stonepaste technology...

Mason, 1994 pp. 39-40.

None of the material examined from the Assyrian, Seleucid, Parthian/Sasanian periods had any indication of glass, which from all evidence would be soda-lime-alkali, like the glazes of the period. The vitrification of the green glazed wares appears to be random, as there is an

even spread of all states, from PV to EV. The white glazed wares do not contain any glass in their matrix, and have achieved EV. It is clear in the case of the white glazed wares that the glaze had a tendency to crawl away from the body, apparently due to the glassy surface, and a clear consequence of a more vitrified matrix. With such a consideration in mind, one may suggest that the vitrified body of the white glazed wares is not appropriate for the glaze used.

The clays from Mesopotamia did not need the addition of fluxes, as there is more than enough flux to vitrify the clay body. In the case of a body/matrix that is essentially pure quartz, iron from clay would not be present, and a flux would be deliberately added in this case. If the firing temperature of the green glazed wares was lowered, it would require a complete shift in the technology used for firing the vessels. This is apparently what the Islamic potters attempted to avoid by adding flux, they sought a highly vitrified body without having to use a higher temperature kiln technology (and more fuel), so they added glass as a flux.

The evidence from Nineveh then suggests that the Islamic practice of adding glass to the matrix did not extend into earlier periods. There are clear physical reasons why a potter manufacturing green glaze would not want a highly vitrified body, namely that the glaze would crawl. The potter must also alter his earlier firing technology and practice, as the addition of a flux would lower the vitrification temperature.

Clearly the need for a high vitrified body was stimulated by factors which did not exist in the Parthian and Sasanian periods.

## Figurines

For typological reasons they can be reasonably supposed to range in date from the about the middle Hellenistic to the late Parthian periods (see discussion in chapter I, pp. 79-91). EM 2 exhibits what is apparently a white clay slip. In Greece, it was standard practice to apply a slip before firing in order to give a solid base to paint (polychrome decoration was common) that would be applied after firing (Higgins, 1976, p. 109). The slip may also be applied to imitate an ivory figurine. Alternately, what may appear to be a slip may be simply an accumulation of calcium carbonate, which is characteristic of finds recovered from Northern Mesopotamia (Uprichard, 1989, p. 59). The layer was too friable to examine using the ASEM. A detailed typological investigation of the figurines is presented in Chapter I.

Particular attention will be paid to aspects of manufacture of this material in relation to the other ceramic products recovered from the site. Other studies of ceramics have largely ignored figurines. Matson (1971, p. 72) thin sectioned a small number of figurines, but only used the information to gain insight into the firing temperatures. Preliminary observations using the petrographic microscope to estimate firing temperatures proved to be unreliable when contrasted to the relatively more objective use of the SEM.

Both petrographic and bulk chemical analysis shows that this is a diverse group; however, as all samples share some characteristics, they will be considered together.

EM 2, 1932 1109. Female head from a figurine, shows evidence of a white slip or deposition of calcite. Mold-made in two pieces, detail obscured by heavy weathering. 55 x 62 mm. Sample size 20 mm. x 13 mm. (Fig. 66A)

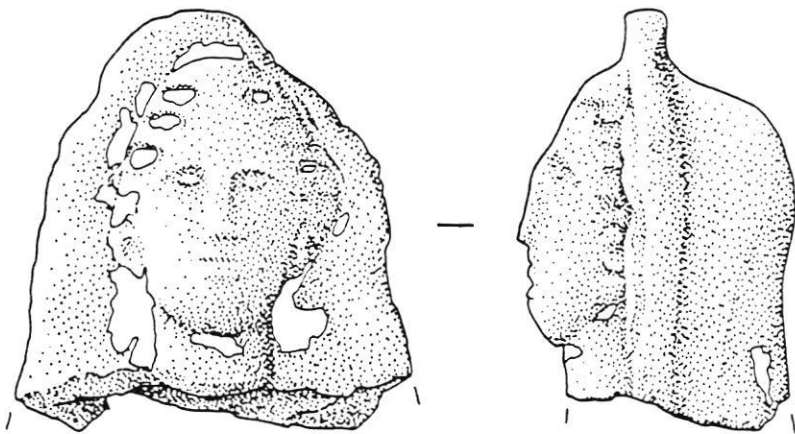
EM 4, 1932 1110. Standing female figurine on a base, only front half remaining. Drapery evident on figure. 73 mm. high - base is 35 mm. long. Sample size 16 mm. x 3 mm. (Fig. 66B).

EM 6, 1932 1103. Horse figurine with saddle and no rider. Mould-made in two pieces with no legs attached. 135 mm. x 110 mm. One surface shows wash, about 80 microns thick. Sample size 14 mm. x 7 mm. (Fig. 67).

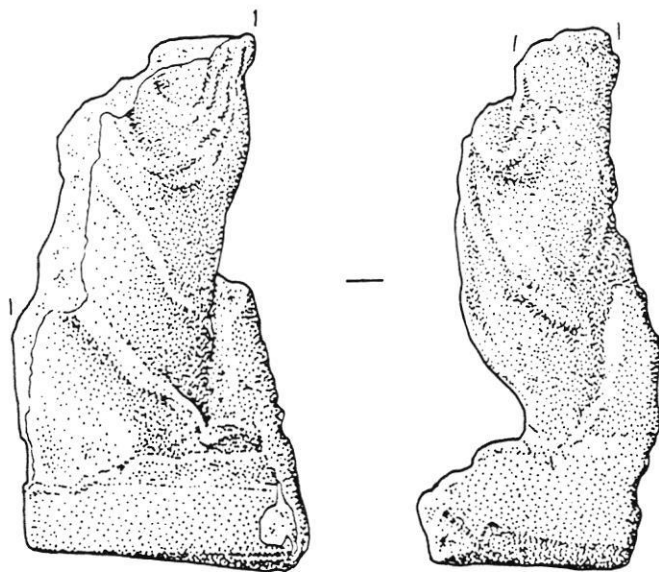
All the samples have a different suite of inclusions. EM 2 is interesting in that it clearly has examples of every mineral listed in the table, including grains of monocrystalline calcite. This demonstrates that the sample was not fired to a high enough temperature to turn the monocrystalline calcite into polycrystalline. In addition, this sample shares with ME 2 (plainware) the presence of a single bone fragment.

EM 4 is similar in the abundance of inclusions to EM 2, with a lack of shell and monocrystalline calcite, along with minor variation in other minerals, which may not be necessarily due to a difference in provenance. The lithoclasts, however, show another slight anomaly. There is a single siltstone grain and trace amounts of grog. Because the grain sizes for both samples are similar, one may conclude that EM 2 and EM 4 differ in the nature of their inclusions.

EM 6 has less polycrystalline calcite than the other samples in the group, and shares with EM 2 the presence of monocrystalline calcite. This is not surprising, as both EM 2 and EM 6 both show no vitrification in SEM micrographs. The abundances of minerals and lithoclasts point to affinities between the two samples.



A



B

Fig. 66 **Parthian Figurines** (Scale 1:1 Ashmolean Museum A: EM 2, 1932.1109  
B: EM 4, 1932.1110).

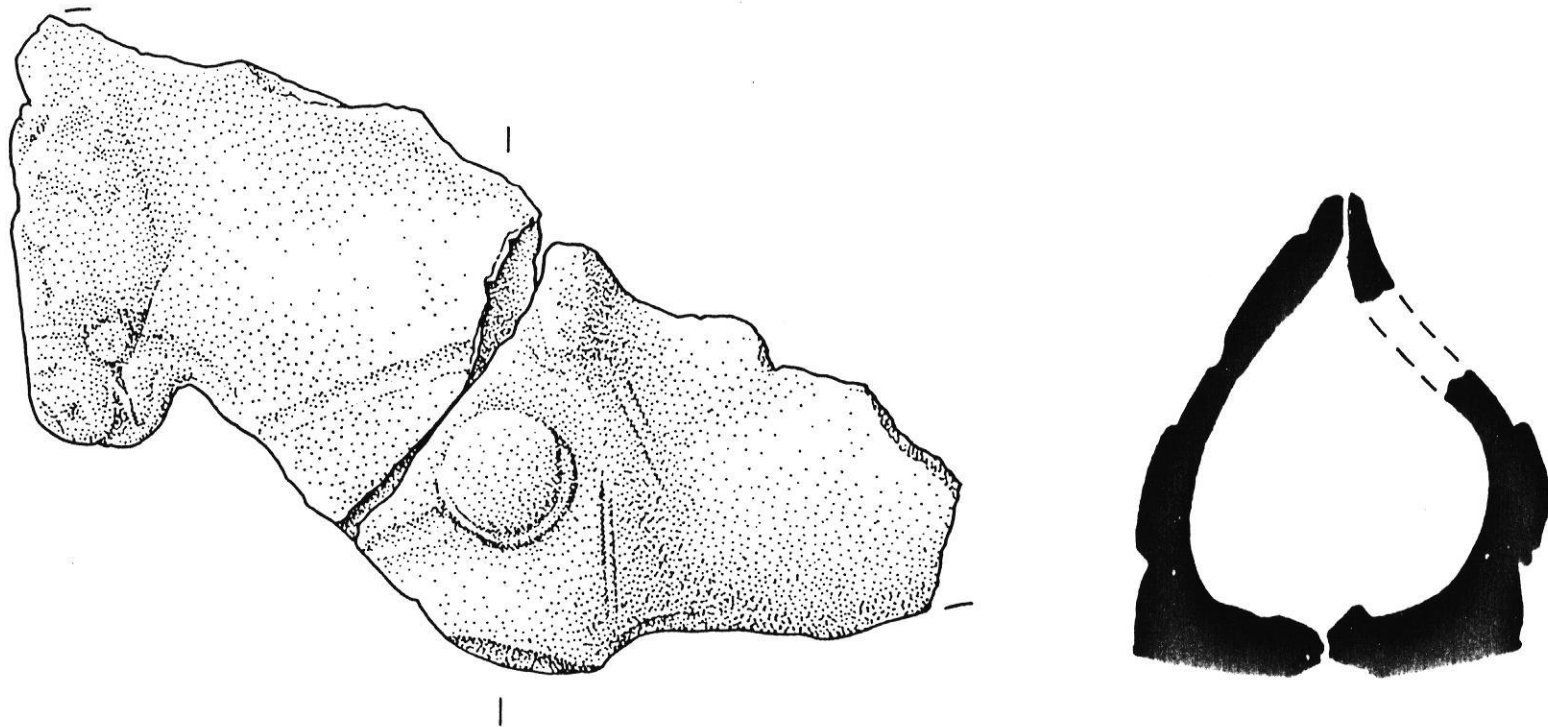


Fig. 67 **Parthian Figurine** (Scale 1:1 Ashmolean Museum EM 6, 1932.1103).

Within the group as a whole, the number of inclusions is high (3), and there is a correspondingly large amount of silt in the matrix, EM 2 and EM 6 show silt in excess of four percent of the total area. EM 2 has angular inclusions, while the remaining samples have inclusions that are subangular. Maximum inclusion size is variable, from fine sand to coarse sand. EM 2 has a grain 0.88 mm. long, while EM 4 has a grain 0.4 mm. long. It is clear that the figurines were all made from a paste with abundant inclusions (with grog or pellets) and were low fired.

The matrix is coarse, with considerable silt inclusions, and shows strong anisotropy. SEM micrographs show no interlinkage between grains, which are clearly not vitrified. The large quantity of silt present is not surprising, since the survival of silt sized grains is often associated with a low firing temperature, as is monocrystalline carbonate. EM 4 would appear to have similar matrix characteristics under lower magnification, but upon closer inspection it has some areas of isotropy within a matrix that appears anisotropic due to carbonate and hematite; it also has appreciably less silt than the other examples. EM 4 shows extensive vitrification in SEM micrographs.

The degree of vitrification in this case seems to be of little consequence to the final product, as EM 4, apparently the most vitrified figurine, does not appear to have any outstanding features when appreciated in hand specimen. Matson (1971, p. 74) noted that at Seleucia the post-revolt period (after c. A.D. 36) had figurines that were notably lower fired, with more "overfired" pieces (he did not have a means of assessing vitrification). He took this as an indication that the manufacture of these items was executed in a more haphazard way, suggesting economic difficulty after the historical revolt. Although this hypothesis makes sense from a historical standpoint, one must question here what he means by overfired, as it is clear from the samples from Nineveh that there could be a range of firing temperatures used with no ill effects visually.

Bulk chemical analysis shows variation within the group, as EM 4 and EM 6 have about 17% CaO compared to EM 2 at 29% , which is by far the most CaO of all the samples tested. SiO shows a distinct progression, EM 2, 45%; EM 4, 54%; and EM 6, 60%, that may show varying quantities of inclusions (the silica dilution effect).

The figurines not surprisingly share some characteristics with the plain wares. Both groups have examples of siltstone, and all figurines have pellets, but it is clear that from the matrix of the figurines that firing temperatures for the three examples varied. The large amount of temper used in the manufacture of figurines is not surprising, as there are clear indications in Akkadian literature that temper was mixed into the clay to make figurines. The context, comparing the making of figurines to the creation of man from clay, leads Foster (1991, p. 394) to state: "Just as bits of shells, grit, and chaff give added plasticity and durability to clay, so man's physiological and psychological complexities are paradoxically the source of his flexibility and strength." The adding of large temper to figurines, however, may only indicate that less care was used in their manufacture.

### *Aspects of Manufacture*

Few scientific studies have sampled figurines, and there have been no studies available to the author that consider figurines as an aspect of local ceramic production. In particular, no study has concentrated upon petrographic aspects of figurines. The former deficit is no doubt due to the perception that the manufacture of figurines is distinct from other ceramic products, and the latter is due to the difficulty in securing samples of figurines for destructive analysis.

Calamiotou (*et al.*, 1984) attempted to define a group of Hellenistic figurines from Anatolia using X - ray Fluorescence (XRF), optical emission spectroscopy (OES) and X-ray diffraction (XRD). It was found that the resulting data could not wholly support

archaeological divisions, as the differences between workshops was small and could be the result of textural differences in the clay rather than indicative of a different provenance (Calamiotou *et al.*, 1984, p. 113). Chemical data alone could not tell the difference between workshops, and structural flaws of the investigation soon became apparent:

The inability to place the present results within a framework of the local ceramic output of Myrina as a whole has been one limitation of the study. Treating the figurine workshops as an isolated aspect of pottery making at Myrina has prevented any objective means of assessing the significance of the anomalous compositions...

A broadly based petrological analysis program of the local pottery and clays, supplemented by judicious chemical analysis, would appear on the face to be called for.

Calamiotou *et al.*, 1984, p. 117.

Maniatis (*et al.*, 1982, p. 192) used both SEM and infrared spectroscopy to examine a group of Hellenistic figurines of varying sizes (60 cm. to nearly life size). The study showed that the clay used was a low refractory type, and the firing atmosphere was reducing-oxidising. Little or no vitrification was observed using the SEM, but the variability observed corresponded to archaeological groupings. The different temperatures observed in the group may not indicate that different technologies were used in firing (Maniatis *et al.*, 1982, p. 197).

This may indicate a circular argument: archaeological groupings probably used observations "by eye" on colour and firing conditions, and SEM micrographs supported the latter observations. For Nineveh it seems that the differences between the figurines is not simply due to differences in firing, but the distinct petrographic differences point to different methods of manufacture, if not different regions. From available evidence, the figurines produced at this site, regardless of size, were probably not made in a kiln (Maniatis *et al.*, 1982, p. 198).

*Figurines from Nineveh: Summary*

The evidence from Nineveh, when considered in the light of previous studies, further supports a number of observations:

A. The production of figurines and other wares is distinct. One may logically assume that the coarse plain wares would be petrographically similar to figurines. Although there are some similarities, most notably those associated with a low firing temperature, it is clear that the coarse wares and figurines were made in different ways, not from the same material. Bailey (1976, p. 93) suggested that lamps could be made along with Terracotta figurines, apparently because both could be made in molds. At Nineveh this is not the case, as the figurines and the lamps are distinct petrographically. The firing conditions for each type are different, suggesting a different technology was used. Aspects of Chinese manufacture - from the period 246 - 210 B.C. - are also clear in the distinction between vessel and figurine industries (Qu, Cheng, and Wu, 1991, p. 475).

B. The very low firing temperature suggests that a kiln was not needed to fire the figurines, and was probably not used. Matson (1971, p. 74) noted that of the 3000 figurines examined from Seleucia, there was a wide distribution of firing temperatures. He assumed that the less uniform distribution of heat was due to primitive kilns. Much of the difficulty may revolve around the definition of what constitutes a kiln. Neolithic figurines from Czechoslovakia were found in association with primitive open "horseshoe" kilns, that may also have served as hearths. The temperature range for these figurines was not above 1000 C. (Vandiver *et al.*, 1990, p. 62.). A similar primitive technology was probably used for the figurines at Nineveh, leaving obscure the effective difference between hearth and kiln.

## *Chemical Analysis*

As a test to the petrographic observations that suggest that this vessel is not compositionally the same as the other green glazed wares (although it is made in the same manner) the ASEM analysis was plotted graphically (Fig. 51). In order to present the analysis in context, another group of wares of a comparable texture - the molded bowls - are also plotted. In each case there are eight samples. In the plot of silica/aluminium, the Si roughly corresponds to the amount of quartz in the matrix, while the Al roughly corresponds to the clay fraction. As quartz is a very common mineral, there is a natural "silica dilution factor," so samples will clearly demonstrate less of other elements the more quartz is present. It is clear that the molded bowls and the green glazed wares, while they do share some characteristics, tend to segregate into clusters. The pilgrim flask (EM 3) is clearly the most different.

The next plot, Al/Na, compares the amount of clay to the amount of plagioclase feldspar. Overall it is interesting to note that the green glazed wares are the most variable, while the molded bowls appear to form more of a group. This is to be expected, as petrographic observations confirm that the green glazed wares demonstrate considerable variability in the number of commonly occurring inclusions.<sup>107</sup> The most interesting sample is EM 3, which appears so distinct as to suggest a completely different origin, supporting the petrographic observations.

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<sup>107</sup> This was also noted by Matson (1943, pp. 82-83) in his examination of green glazed wares from Dura. Quartz was recorded as being at the same time the most abundant and the most variable inclusion. Other inclusions were flint (jasper), calcite, biotite, iron, plagioclase, serpentine, augite, muscovite and hornblende. I have examined 19 samples from Dura petrographically, and it is clear that the green glazed wares have a similar method of manufacture to those at Nineveh. The results will appear in a later report.

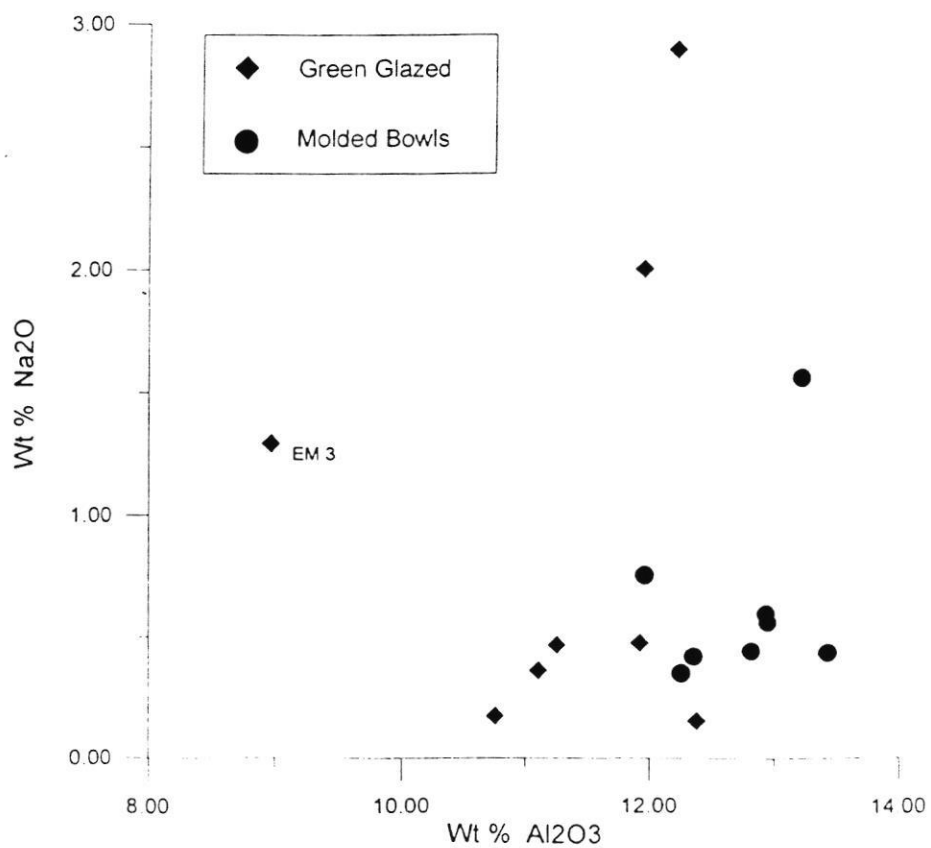
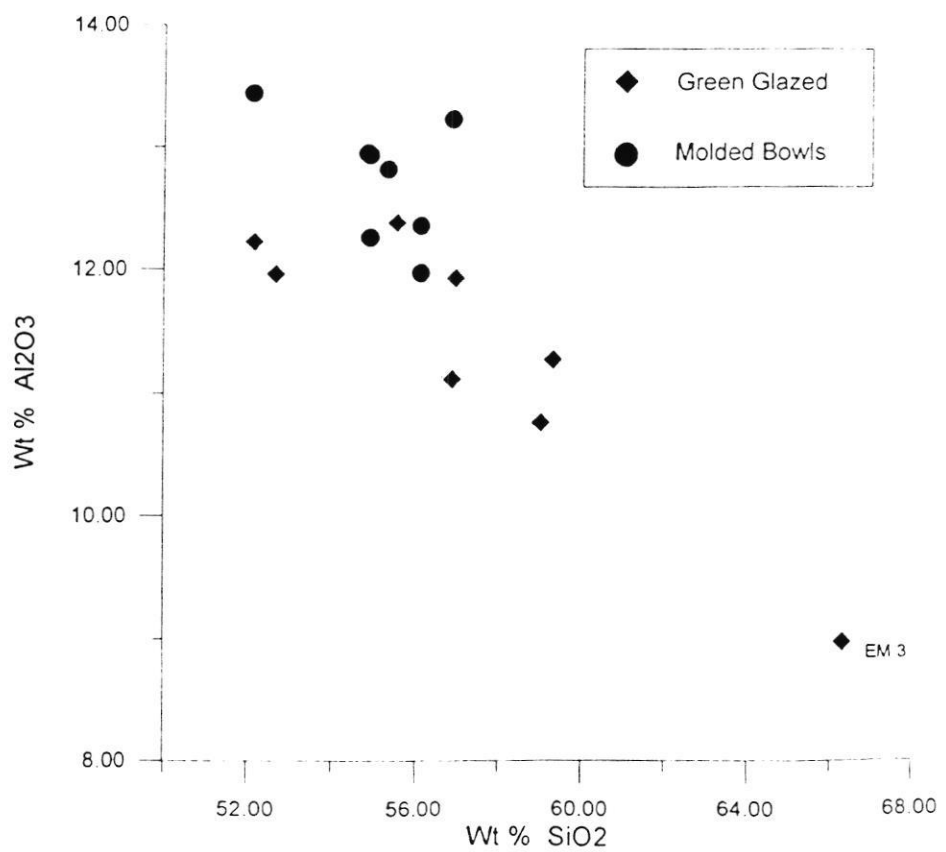


Fig. 51 Plot of SiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> and Al<sub>2</sub>O<sub>3</sub>/Na<sub>2</sub>O for Green Glazed Wares and Molded Bowls.

While a larger sample size and a technique that also considers trace elements would be optimal, it clear that the pilgrim flask, perhaps the most easily transportable vessel,<sup>108</sup> should be considered imported.

### *Technological Observations*

It has often been assumed that a vessel for transport or other utilitarian functions would by nature tend be coarse and less highly fired than a ware destined for more delicate tasks, and one could not expect a great degree of time, effort, or cost, to be placed in manufacture (Hannestad, 1983a). The petrography in this case seems to prove this assumption incorrect, as the paste used to make this example was of a finer than average nature. The degree of vitrification and the matrix colour also would suggest that this vessel was fired in the same way as its green glazed relatives. This may indicate that a vessel strong enough to survive rough transport would be better served by having a strong, well vitrified fabric.

### **Kiln Spacers**

These two samples were selected in order to more clearly define what fabrics were "local." Although it is possible for clay to be transported and formed into vessels and kiln furniture, one may assume that imported clay, owing to expense, may not be used for such a purpose. Instead, one may assume that even if clay were imported, kiln furniture would be made of local materials.

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<sup>108</sup> Ethnographic parallels suggest that the case for ceramic vessels being the prerogative of a settled society has been overstated. There are a variety of cultures that have traditionally transported numbers of ceramic vessels that would not appear to be easily moved. In such an instance, carrying slings, net bags, or special cushions can be used (Arnold, 1985, pp. 110-111).

From archaeological evidence it is clear that kiln spacers were used with the green glazed wares, as most vessels have characteristic scars in the glaze and the surface of the fabric (Fig. 53). The two samples were both similar to each other and most similar to the green glazed samples:

PAR 1. Birmingham "257'62," also "D 12" in ink. Fragment of a kiln spacer of same form to Fig. 52 (not sampled). In fresh fractured section matrix appears to be same as Par 2. Sample size 20 mm x 11 mm.

PAR 2. Birmingham "257'62," also "H 2" in ink. Fragment of a kiln spacer, similar form and fabric to example above. Sample size 19 mm. x 11 mm.

While it is clear that both samples are similar, they exhibit a degree of variability in both fabric and firing environment. The most noticeable difference between the two samples is that PAR 1 is a light brown colour, not like any other green glazed ware. The inclusions are in keeping with what one would expect for a green glazed sample. There are quantities of polycrystalline and monocrystalline quartz, and almost all of the calcite grains show an extensive polycrystalline structure. Inclusion density is high, with the majority in the medium sand range. All appear subangular.

PAR 2 is of a different nature. It is a dusky yellow colour, and the matrix is clearly more vitrified than the former sample (it shows EV under the SEM). As a result the silt grains associated with the matrix are more apparent. There is a clear tendency towards bimodal distribution. The larger "temper" fraction has similar amounts of all commonly occurring minerals. The calcite grains are represented by voids with small amounts of calcite adhering, further evidence of a higher firing temperature.

Both petrographically and chemically these samples suggest that one should assume that the green glazed wares are of local production. At the same time they also show the

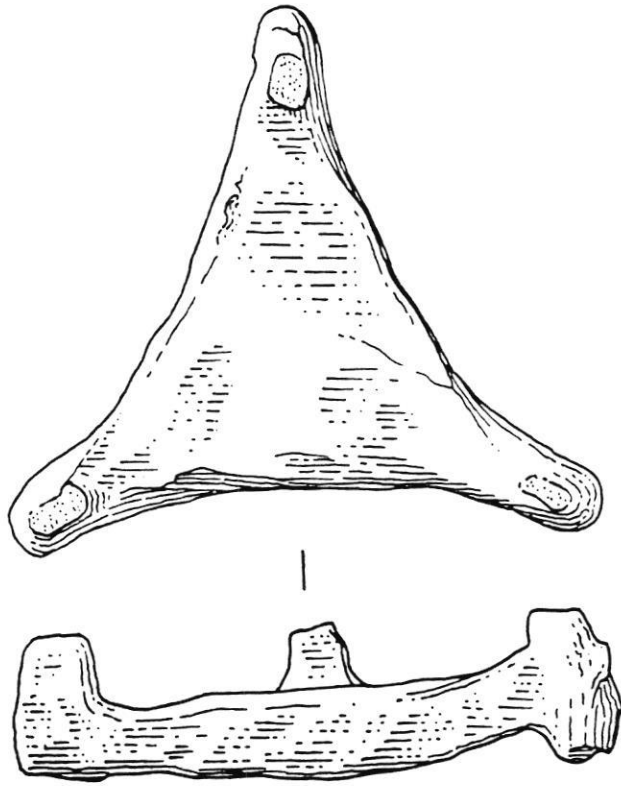


Fig. 52 Kiln Spacer (Scale 1:1 Birmingham 257'62).

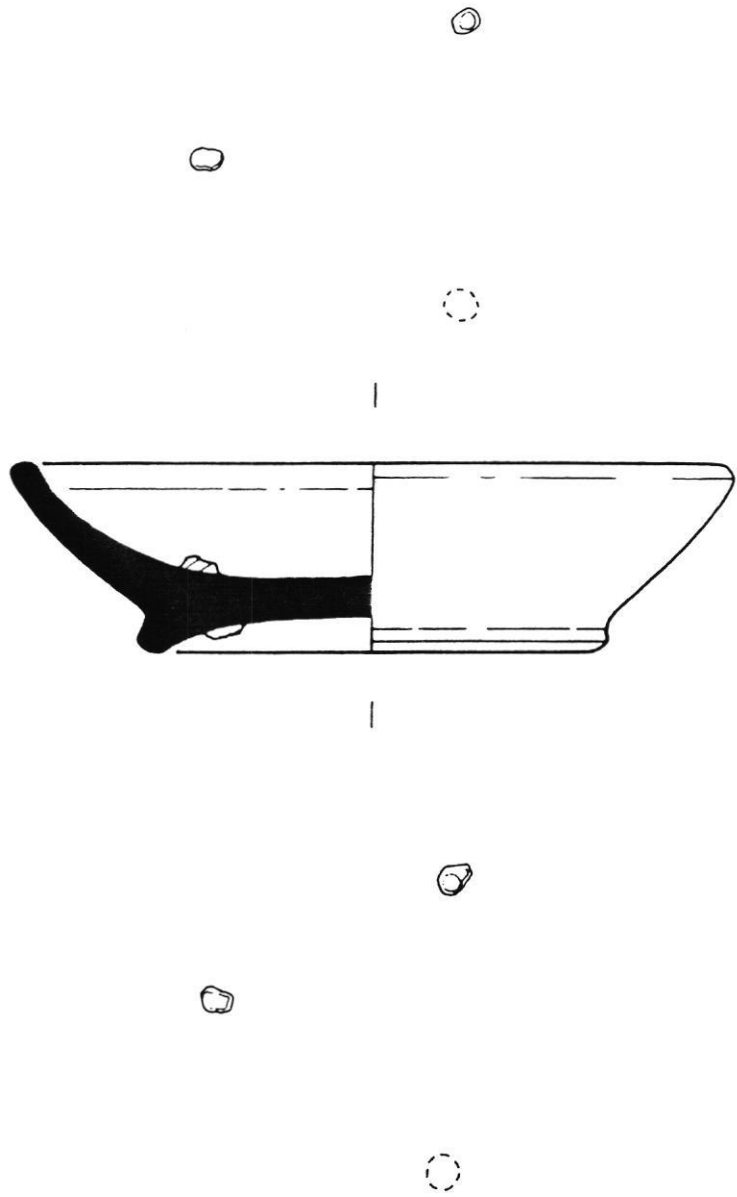


Fig. 53 **Green Glazed Vessel with Kiln Spacer Scars** (Scale 70% British Museum 1932, 12-12, 855. 137382, Ni 386).

degree of variability in this group, which is high. It is clear that Campbell-Thompson uncovered a kiln site (also see chapter I, p. 70) from the number of kiln spacers that were uncovered, but as no example properly recorded as to season one cannot assume that these two samples represent the products of one shop. As a tenuous observation, however, one can observe that most of the finds from Birmingham are from the 1928-1929 season, the excavation of the Temple of Ishtar.<sup>109</sup>

### **White Glaze**

Typologically this is one of the most difficult groups to assess. There are no good published parallels to this class of pottery (barring Nippur discussed above). Most examples are very small, and there are few diagnostic shards. All white glazed examples have a very fine matrix and are easily distinguished from green glazed shards in hand specimen. Seven Parthian green glazed shards average 7.5 mm. thick, while the white glazed examples average only 5 mm. thick.

It is clear from the very angular shapes represented that the vessels were thrown on a wheel and then trimmed.<sup>110</sup> The finishing of the vessels would then correspond to the lathe turning of metallic vessels. Using the lathe to finish metallic vessels was common practice. Not only could a mirror finish be imparted upon the surface, but projections could also be made sharp, and incised decoration could be added. A number of the plates have a similar

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<sup>109</sup> The archaeological context was discussed in chapter I, it is possible that a ceramic workshop was located in the "graveyard." Both samples appear to be marked by a member of the excavation, and if the letters are correct they indicate findspots some distance from one another.

<sup>110</sup> The origins of the lathe are unclear, but current evidence outlined by Hodges (1970, pp. 88-89) suggests that it originated in Egypt, perhaps adapted from the potter's practice of trimming pottery while on the wheel.

decoration to the green glazed wares on the inner surface of the base, which is decorated with concentric circles. This practice is similar to cast metallic vessels, which were also decorated with concentric circles about the base that radiated from a tiny filling hole (Hill, 1947, p. 253).

None of the white glazed ware fragments bear the characteristic marks of kiln spacers that are common on the green glazed wares. It would appear from the very smooth surface that considerable attention was paid to the vessel when it was fired. It is possible that saggars or large pot sherds were used to protect the glaze of these vessels from contact with other vessels during firing, if not from fire and ash. These thin walled vessels were more susceptible to breakage during firing.<sup>111</sup>

All examples of the main body of the group have a crackle or crazed surface.<sup>112</sup> It is unclear if this effect was an intentional crazing, as was achieved on certain classes of Chinese wares, or a by-product of use or perhaps burial conditions. The surfaces are all very smooth and have small areas of a metallic sheen.

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<sup>111</sup> Fournier (1973, p. 196) noted that for his (New World) Thin Orange wares, their fine surfaces and delicate walls would have made for high losses in firing if not for some kind of outer vessel as a shield. Coarse vessels have been recovered in many excavations, but they are not often identified by archaeologists as saggars. Modern potters in Acatecan (Mexico) no longer make saggars, and instead place their more delicate vessels inside a more robust vessel (Lackey, 1982, p. 144). Because of the very different colour and matrix characteristics between the other ceramics and the white glazed wares, the latter situation seems less likely.

<sup>112</sup> Crazing is defined as a glaze defect (at times intentional) where the surface of the glaze is covered by a network of fine cracks. The cracking occurs because the glaze contracts more than the body, and is unable to sustain the tension. Most glazes emerge from the kiln craze free and only develop cracks when exposed to everyday use. It may take many years for the stresses to become apparent. The end result in an earthenware vessel is that the glaze no longer acts as a barrier to water, and the vessel will begin to absorb dirt and moisture (Hamer, 1975, p. 87).

Perhaps the closest parallels exist from the island of Failaka in the gulf.<sup>113</sup> Vessels from this region are considerably thinner than the green glazed Parthian vessels recovered from further north, but there are few sites that have any white glazed wares. Most material from the gulf region is green glazed, although the glaze is so badly weathered it is difficult to discern colour (see particularly Hannestad, 1983 b, pl. 2). Museum collections at Yale from excavations at Dura did not show a single example of the white glazed ware. In the absence of further archaeological information one is relatively secure in assigning a Hellenistic/early Parthian date (see also Chapter I, pl. 13, p. 46; p. 136).

The matrix of the green glazed group would conform to a "common pottery" label in that it is mechanically weak and as a result is thicker than its more vitrified white glazed relative (Rado, 1969, p. 158). It is clear that the matrix of these vessels was not designed to withstand shock, as all the fragments that remain are small and brittle. Their angular shape would also not be conducive to everyday use, as there are a number of projections, including the sharp rim, that could become damaged. The glaze of these wares is also in unusually good condition, as there is little mechanical abrasion. Green glaze samples in thin section show a marked difference between inner and outer surfaces, such is not the case with the white glazed samples. No sample so far examined shows wear or scratches that would be consistent with frequent use. These wares may have occupied a privileged place in household ceramics, but

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<sup>113</sup> When examples of the white glazed wares were presented to Dr. Salles while he was in London, he stated that they were not like the material he had excavated from the site. He stated the majority of the vessels from Failaka were green, or were clearly weathered to a lighter shade of that colour. Instead, he noted that there were similar unpublished examples of white glazed ware, although it was not crazed, recovered from Hellenistic layers from Bahrain.

The material from Failaka was destroyed when Iraq occupied the Island, and there are no further plans to continue large scale excavations at the site.

it is unclear how they would have been valued in antiquity.<sup>114</sup>

There are 3 samples in the main group, ME 7, ME 8 and EM 8, with one placed in a subgroup, EM 11.

ME 7, 1991.313.6. "White crackle glaze" body shard. Shows almost no curvature, but presumed to be a dish. Glaze exhibits some metallic sheen. 39 mm. x 28 mm., 5 mm. thick. Sample size 36 mm. x 3 mm.

ME 8, 1991.313.10. White crackle glaze body shard, small example as usually encountered, but assumed to be a dish. 27 mm. x 31 mm., 4 mm. thick. Sample size 27 mm. x 4 mm.

EM 8, 1991. 314 .24. Marked "8 IIIXXX." White (with traces of green) glazed dish rim/body fragment. Glaze is thick with a trace of green in some small hairline cracks. Grey fabric shows a clear pink core. Cracked surface 70 mm. x 56 mm., 6 mm. thick. Sample size 22 mm. x 6 mm. (Fig. 54).

This group presents a relatively homogenous assemblage. There are small amounts of minerals in all the samples, with slight variation for infrequently encountered minerals, such as feldspar or amphibole. Calcite grains are all heavily damaged by a high firing temperature, but enough remains within voids to suggest that the paste for this group had appreciable calcite. Most of the "calcite voids" have a subangular morphology, suggesting that perhaps the calcite was intentionally added as temper. Calcite will weather rapidly in a natural environment. A more-or-less complete absence of lithoclasts also confirms a single group, although there is some variation. Chert is present in EM 8, but in small quantities. There is a pellet in ME 8 which is probably an accidental survival from manufacture and not indicative of a different method of production. There are no infrequent inclusions

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<sup>114</sup> Michael Vickers has proposed that the ancient world may have placed significantly different values upon objects made of lesser materials (eg. 1994b, p. 255). One would certainly hesitate to assume that these ceramics were regarded as "art."

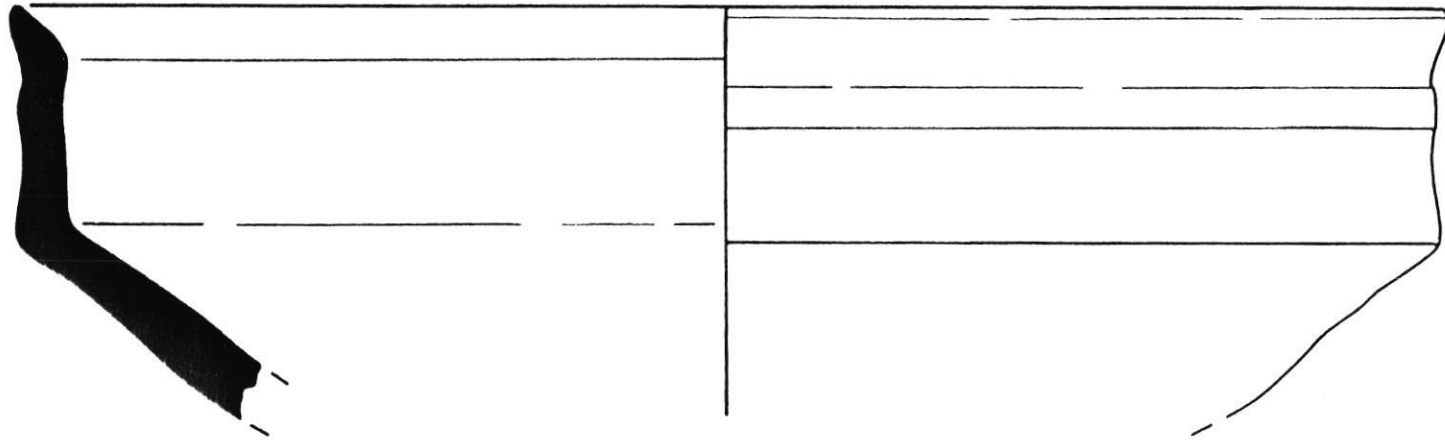


Fig. 54 **White Glazed Vessel -reconstruction-** (Scale 1:1 Ashmolean Museum 1991.314.24).

recorded, but it should be noted that the identification of minerals becomes more difficult the smaller the average grain size.

All samples from this group are easily separated from the green glazed group on the basis of texture and inclusions. Two samples have almost no inclusions (ME 7 and ME 8), and only EM 8 has slightly more. There is little silt in the matrix (no sample has above a 1 on the scale), which also relates to the small number of larger inclusions encountered. It is clear that the clay used in the manufacture of these vessels was either relatively free of large inclusions, or that the clay used was well levigated.

Mode inclusion size (there is no population of inclusions above very fine sand ) is coarse silt, and the upper limit is in the fine sand range (.125 mm. - .25 mm.). Few larger sized inclusions alter the mean inclusion size slightly, which is still in the very fine sand range. Maximum inclusion size confirms that the inclusions are considerably finer than the green glazed group, as there is no grain above 0.350 mm. long.

The matrix colour of this group (as a whole) varies slightly; EM 7 and 8 are both light brown, while EM 8 and 11 are reddish orange. The Munsell numbers and colour names differ far more than the actual colours, which are similar. All samples in the group as a whole are clearly isotropic, with the vast majority of the matrix appearing black in polarized light. SEM micrographs all show extensive vitrification, with the exception of ME 7, which is partially vitrified.

When the white glazed wares are compared with other samples, one striking similarity emerges. EM 20 could be mistaken for a white glazed example on the basis of petrography; even though it is (on the basis of typology) certainly from the Islamic period. The inclusions are similar, except that EM 20 has slightly more monocrystalline quartz. Neither EM 20 nor the majority of the white glazed wares have lithoclasts. Grain size parameters are similar,

except that EM 20 has slightly finer grains (in the coarse silt range). All the bulk chemical data of the white glazed wares for CaO ranges about 14%; with the exception of EM 11, which could be considered a subgroup on the basis of archaeological and petrographic differences as well.

### Subgroup A

EM 11, 1991 314.3. White glazed body fragment, showing no trace of green or blue, also has no sign of crackled surface. 89 mm. x 38 mm., 5 mm. thick. Layer of degraded glaze on both sides, 180 microns thick maximum. Sample size 35 mm. x 5 mm. in two pieces after polishing.

Typologically this example differs slightly from the others. In hand specimen the differences are apparent. The clay is reddish in a fresh fractured surface, and the glaze is distinct in that it has no trace of crackling or crazing. The surface appears matte rather than glossy. This different appearance of the glaze could be due to weathering, but it is clear that the glaze appears distinct from all other examples of the white glazed wares. The matrix of this sample is slightly more coarse than samples from the main group.

The composition of the inclusions does not differ significantly from the main group, although EM 11 has no examples of calcite or mica. There are textural differences that offer a more compelling reason for placing this sample in a subgroup. EM 11 is appreciated as having a slightly coarser inclusion size; despite the maximum size for this sample of only 0.18 mm. (e.g.: EM 8 has a maximum of 0.35 mm.). The mode is very fine sand, while samples from the main group have modal values in the coarse silt range. The mean average for this sample, very fine sand, is in line with the group as a whole. Inclusions are angular (as is EM 8). It should be noted that for grains of this size, apparent angularity is difficult to determine and - in a natural environment - the smallest grains may be more resistant to rounding than

larger grains of similar lithologies.

Bulk chemical analysis of the matrix shows EM 11 has 17.5% CaO; which may be considered to be within an expected range for that element, but it should be noted that the group as a whole averages about 14 % CaO. EM 11 appears to be slightly different in the concentrations of other elements as well (e.g.: Si and Fe). It can be noted, however, that there can be natural variation within a deposit of clay.

Archaeological and typological considerations, when taken together with textural differences, and the difference in matrix composition, suggests that EM 11 is different from the other white glazed examples. This may be due to a slightly different method of production, or, alternatively, the above observations may support an alternate provenance.

#### *General Considerations of Entire Group*

It is clear that all examples of the white glazed group are heavily levigated, and are distinct from the green glazed wares. Levigation refers to the process of removing unwanted inclusions from a raw clay.<sup>115</sup> A channel is often the method used for the purpose, and, after being screened for large inclusions, a quantity of raw clay is placed in a channel that is lined with baffles that act as barriers. More coarse material will collect at the end of the channel if the channel is constructed at a steeper angle (Hamer, 1975, p. 179). It is clear from the matrix characteristics of this group that considerable skill was used to obtain such a homogenous paste. The only similar examples on the basis of paste alone are the Roman redwares (and EM 20).

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<sup>115</sup> There is also a simple method referred to as "settling" that is used for some coarser ceramic vessels. This technique simply involves the differential settling rates of particles; clay is mixed in a pit with large amounts of water and left to settle. Because of the relative lack of control over the final product, it is unlikely that such a method was used for the white glazed wares.

### Parthian Stamped Plainware Vessel

This vessel is clearly Parthian, as the stamps on the vessel indicate (Parthian seals are discussed in chapter I). The design around the neck of the vessel also indicates date, as the zigzag or chevron pattern - along with the impressed points - are the most common elements of Parthian decoration on ceramics (Toll, 1943, p. 9).

MX 8, 1991.306. Very heavy plainware vessel with very heavy everted rim. Stamped design (in a vertically aligned rectangle) is of a stag with elaborate horns, stamp dimensions are 20 mm. x 15 mm. The region between the body and the impressed design is decorated with impressed triangles, with the lowest register decorated with impressed circles. Shard size 190 mm. x 90 mm., 22 mm. thick. Sample size 22 mm. x 19 mm. (Fig. 55).

The archaeological and petrographic characteristics of this vessel place it in a separate group from the other plain wares, or any other sample. The most diagnostic feature of this sample is the abundance of subround grains of polycrystalline calcite. There are also trace amounts of calcite that preserve their cellular structure. The calcite occurs in all size ranges, but is most frequent in the medium and fine sand ranges. From its shape and distribution, one may suspect that it is a natural component of the clay.<sup>116</sup> There are grains of monocrystalline quartz, and trace grains of polycrystalline quartz, although inclusion size would factor against the latter. A small number of hematite grains show the characteristic shape and structure of altered amphibole. There are few grains of chert (with one rounded grain 1 mm. long), and sandstone. The sandstone is loosely cemented and has large amounts of calcite, with quantities of quartz and few grains of plagioclase feldspar. There is a small number of notably rounded basalt/dolerite grains up to 1 mm. long.

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<sup>116</sup> Clay deposits in the vicinity of Tell Kadrich, northern Syria, could be taken and used immediately without recourse to further preparation (McGrath and Grabrovaz, 1981, p. 361).

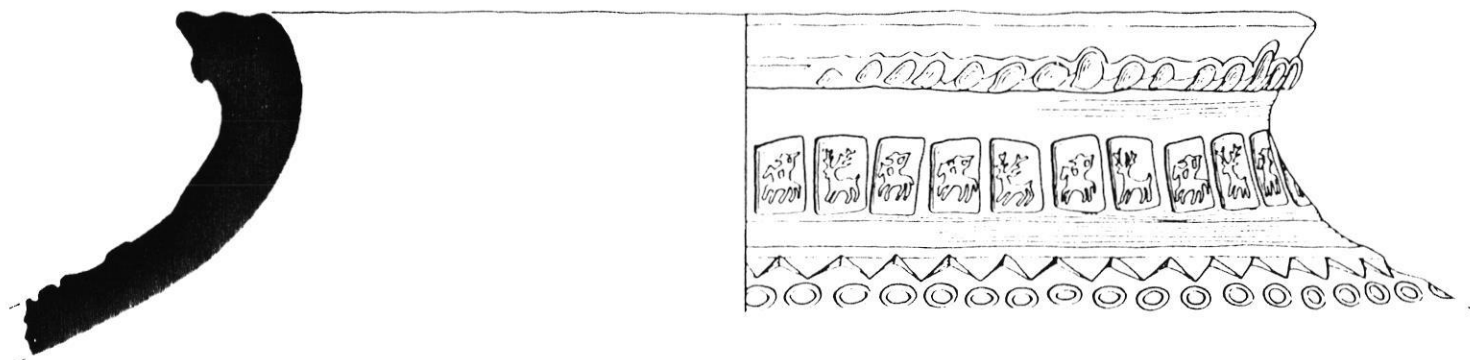


Fig. 55 Parthian Stamped Vessel (Scale 50% Ashmolean Museum 1991.306).

This sample has the greatest abundance of pellets of any type from Nineveh or Dura. Many pellets extend into the 1 mm. size range. While most appear to result from forming the vessel, there are some pellets that show structures that may suggest that they were present in the raw clay (Kemp, 1985, p. 36). About three inclusions may be grog.

Inclusions in the matrix are abundant, with amounts of silt, although exact determination of smaller inclusions is made difficult by the heterogeneous nature of the sample. Mode and mean inclusion size is fine sand, although there are rare singular grains that extend to 1 mm. Grain shape is sub-round, the few subangular grains of quartz are out of keeping with the majority of subround polycrystalline calcite grains. Matrix colour is pale red brown, and the matrix appears weakly anisotropic. There are considerable diffuse areas within the matrix that appear to be soil, and there are small areas that appear to be clay with few inclusions.

The method of manufacture of this sample is simple compared to the other ceramics surveyed in this report. The clay was probably untempered coarse clay that was not selected or processed like the green glaze examples. The large number of subround grains, of a similar size range to the other inclusions, suggests that there was no added temper. The origin of the inclusions in this sample may be derived from the sandstone. One would expect such a heterogeneous accumulation of material at the foot of a hill or slope. The individual grains of the sandstone, when disaggregated, can easily account for all observed inclusions. Such material would have little drying shrinkage, and be perfectly suited to a low fired coarse vessel.

On the basis of petrography one can assume that this vessel was not made locally, as all other plainwares (discussed below), and all other samples, are of a very different nature.

### **"Parthian" Plain Wares**

Typologically this assemblage of vessels represents more than one period. ME 1 is perhaps best ascribed to the Seleucid period. EM 16 is perhaps the most certainly Parthian, as it is an example of a form that is common in both plain and glazed examples. The other examples can be conservatively placed within the Seleucid/Parthian periods. There are quantities of plainware vessels of a typical Sasanian shape, indicating that some of the material may extend into the Sasanian period. Sherds that were characteristically Sasanian were avoided.<sup>117</sup>

Like the other ceramics recovered from the site, this assemblage has been sorted by the excavator. In the case of plainwares, other sites demonstrate that they constitute the bulk of ceramic finds, with glazed wares occupying a smaller percentage of the total. This may be due, at least in part, to the function of the vessels. Most of the undecorated plainwares were probably used for water, either carrying or storage. The surfaces of many of the vessels have been made slightly less porous<sup>118</sup> by a self slip, although a degree of porosity is maintained that would have cooled the remaining water by evaporation. This is in contrast to Assyrian vessels from the site, which can be lined with bitumen. No Parthian vessels from Nineveh were so lined, and it should be noted that the Assyrian wares, with straw temper, were extremely porous.

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<sup>117</sup> It should be noted that earlier excavations of Babylon yielded examples of Aramaic incantation bowls. Vessels from the site were the first to be discussed (Layard, 1853, pp. 509-526), and much work has subsequently been done on these bowls from other sites. These vessels are regarded as Sasanian in date, bearing magical inscriptions written in ink on plainware bowls, usually in Aramaic. They may have been used by a number of different denominations, and appear to have a many functions; their exact use is still a matter of debate (Isbell, 1978, p. 9). It is not clear why these vessels would be restricted to the Sasanian period.

<sup>118</sup> There are many factors that affect porosity, such as firing temperature and the particle size of the clay. Permeability decreases with increasing temperature (Bronitsky, 1986, p. 226).

Because plainware vessels do not stop water from entering their structure, they may have a limited lifespan. Microbial growth, and the accumulation of salts, may lead to rapid disposal. Matson (1965, p. 204) noted that in Beirut, individual drinking jars are kept on window sills for cool water, and are replaced six times a year. Vossen (1984, p. 343) also noted that vessels from Salvatierra, Spain, only lasted for one or two years, as they either broke in the course of use, or their pores became so clogged that they no longer cooled effectively. Deposits of salts and calcite are often observed on plainware vessels from Nineveh, but it is unclear if this is the reason for disposal, or if the salts accumulated post-depositionally.

In addition, it should be noted that, as in every other Near Eastern site, there is a considerable amount of material that is impossible to date. Plainwares are a particular problem. Matson (1971, p. 74) notes that the site of Seleucia yielded a staggering number of very fragmentary brown shards. Brown ceramics in collections, that were complete enough to be diagnostic, were scarce. Matson reasoned that the different rates of survival lay in firing temperature. The ubiquitous brown vessels were soft, low fired vessels. Salt crystallization can destroy porous bodies. Coarse grains of limestone that had not been fired to a high enough temperature to react with the clay would hydrate and spall. The latter point may be one reason why only one fragile fragment of a cooking vessel was retained by the excavators; and could also explain why four of the plainwares are EV while only one is PV.

The following description, because of the variability in the plainwares, describes the plainware samples in three subgroups. The group as a whole is defined in the context of other groups, in particular the green glazed wares. Subgroup A consists of ME 2, and EM 15. Subgroup B contains ME 4, and EM 16. Subgroup C is represented by one sample, ME 1.

ME 1, 1991.309.2. Rim/Body fragment. Impressed design of curvilinear nature, perhaps floral in derivation. 118mm. x 121 mm., 14 mm. thick. Marked "...XXX." Sample size 32 mm x 20 mm. (Fig. 56).

ME 2, 1991.309.3. Rim/body fragment, no glaze, with incised linear geometric design. 70 mm. x 56 mm., 7 mm. thick. Marked "XXIX 12." Sample size 32 mm. x 11 mm. (Fig. 56).

ME 4, 1991.310.2. Plain incised with linear decoration, body shard. Slight curvature suggesting large vessel, not unlike ME 3. 123 mm. x 112 mm., 9 mm. thick. Sample size 40 mm. x 9 mm.

EM 15, 1991.309.5. Marked "XXXI 5." Plainware rim/body fragment. Lip is turned out, double incised lines on shoulder of body. 80 mm. x 46 mm., 5 mm. thick. Sample size 14 mm. x 6 mm.

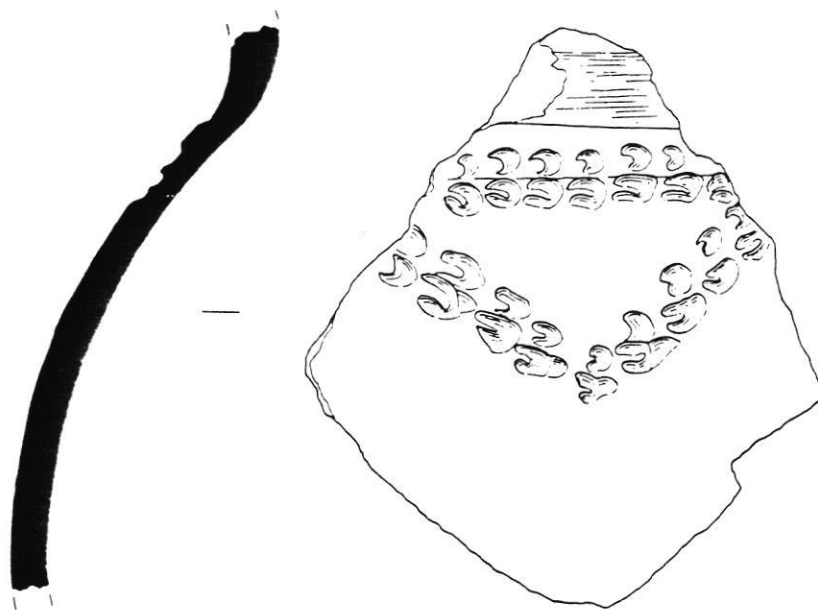
EM 16, 1991.309.1. Neck/body fragment, plainware vessel. Spout pinched at front to facilitate liquid flow. Two incised bands along shoulder of jar. Spout 76 mm. x 64 mm. 83 mm. high. 135 mm. long at largest section, 8 mm. thick. Sample size 16 mm. x 6 mm (Fig. 57).

#### Subgroup A

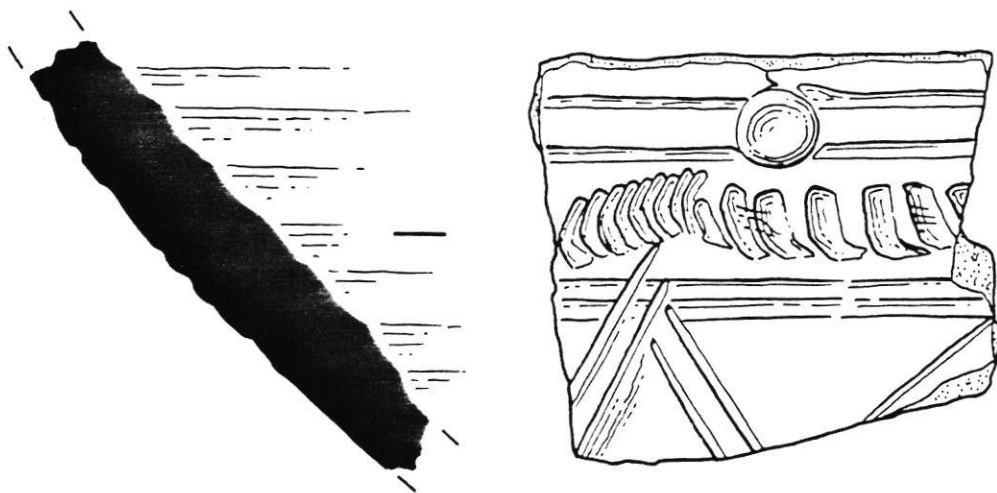
This group has the coarsest inclusions. Both ME 2 and EM 15 have large amounts of quartz, calcite and chert. Both samples contain basalt/dolerite grains, while EM 15 has examples of grog and pellets.<sup>119</sup> ME 2 also has a large 1-2 mm. long bone fragment. The only other sample to contain a bone fragment is a figurine (EM 2). A bone fragment can hardly be considered diagnostic; however, it is significant to note that no bone fragments

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<sup>119</sup> Pellets are in keeping with modern pottery techniques common along the Euphrates (Franken and van As, nd., p. 507). Local clays are collected in a dry state and soaked, at times for a short period of time. As a result there are pellets of clay that have not hydrated present in thin section. As pellets are not encountered in green glazed wares, one may assume that a different method of clay preparation (if not separate deposits) was used for the glazed wares. Egyptian Nile wares can be simply divided into coarse wares that utilize local riverine clays, and finewares that are prepared from clays that are obtained from special deposits free from large inclusions. A similar divide may have existed between plain and glazed wares in the Parthian period at Nineveh.



Parthian Plainware Vessel (Scale 50% Ashmolean Museum 1991.309.2).



Parthian Plainware Vessel (Scale 1:1 Ashmolean Museum 1991.309.3).

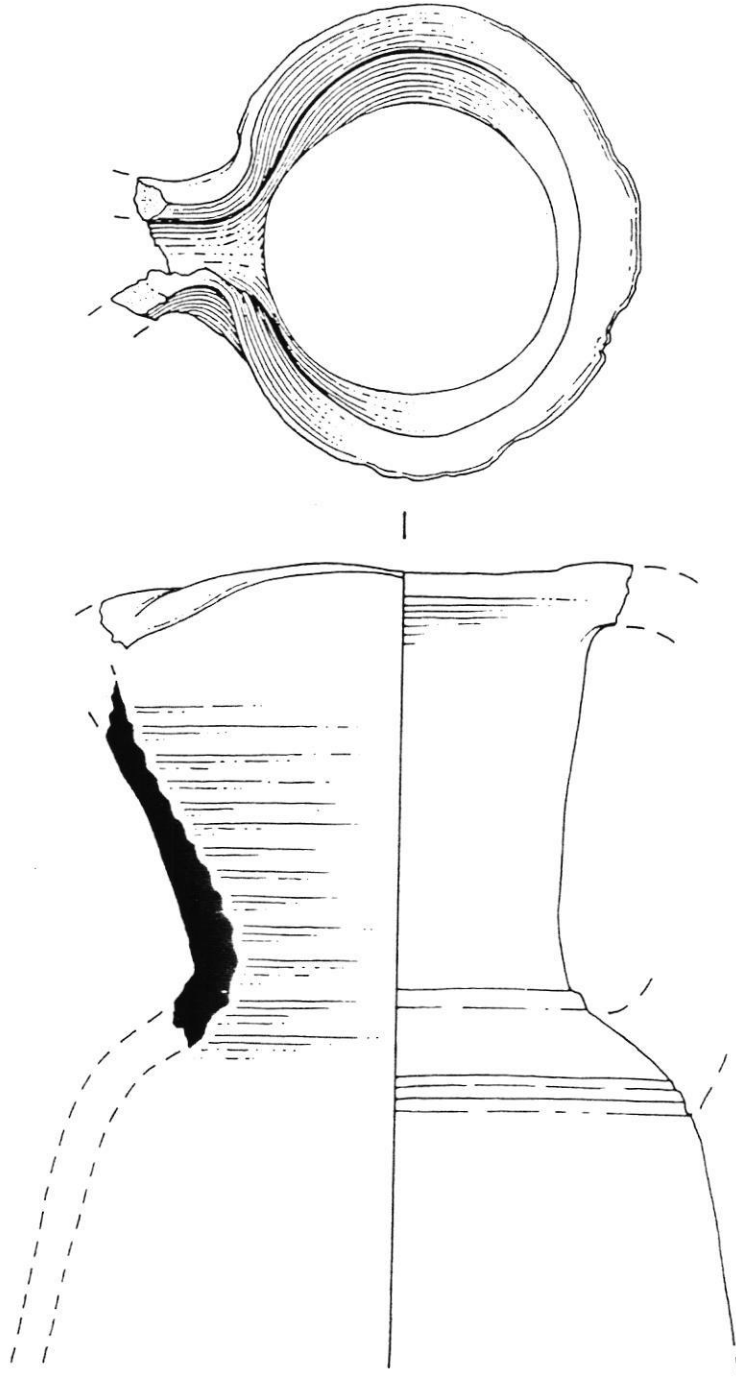


Fig. 57 Parthian Plainware Vessel (Scale 70% Ashmolean Museum 1991.309.1).

were found in the green glazed wares or in the molded bowls. It may indicate that relatively less attention was given to the inclusions in ME 2 and the figurine.

EM 15 also contains siltstone, which is only encountered in ME 3 (a subgroup) of the green glazed wares. Both ME 2 and EM 15 have the same mode and mean values (fine sand and medium sand respectively), and both have the same maximum inclusion size. It is clear from the characteristics of the inclusions that the two samples resemble one another to a degree, but the differences in infrequent inclusions suggest that they may have been made in separate locations. The characteristics of the matrix are similar, both examples have a similar colour, and they show extensive vitrification in SEM micrographs.

### Subgroup B

This group represents the finer textured wares. Both ME 4 and EM 16 show proportionally less quartz than samples from subgroup A, although ME 4 does have considerable amounts of calcite. ME 4 has a smaller number of coarse silt and above inclusions, but has a greater amount of medium silt and below inclusions. The modal and mean values, both in the very fine sand range, reflect this. The types of minerals encountered in ME 4, the small difference in lithoclasts, and the characteristics of the matrix, however, all suggest that this sample is simply made of finer materials.

### Subgroup C

One sample is placed in this group, ME 1. It is distinct from all other plainware samples, and strictly on the basis of inclusions it has the coarsest fabric of all the plainwares. Mineral inclusions differ slightly for what one would expect for subgroup B, with one striking exception. ME 1 has trace amounts of monocrystalline calcite, although some grains are

starting to show some evidence of heating and exhibit a faint polycrystalline structure. This sample shows distinct differences in the nature of the lithoclasts. There is more sandstone encountered in this sample than in any other, with many grains in the 1 mm. range. Most striking is the quantity of grog, which in many instances is so abundant as to dominate the field of view. Many examples of grog are more than 2 mm. in length. The grains show a clear difference in colour and very clear separation cracks from the surrounding matrix.

It is on the basis of the sandstone and grog that the number of inclusions is a "4." The sandstone affects both the mode and mean inclusion sizes. There is one grain of sandstone in the 2 mm. range. Matrix characteristics differ slightly. Despite the similarity in matrix colour and isotropy between ME 1 and samples from subgroups A and B; ME 1 only shows partial vitrification under the SEM. The survival of monocrystalline calcite also supports the lower firing temperature of this vessel. On the basis of inclusions this sample is clearly not manufactured in the same way; which is in keeping with archaeological and typological observations that would place this vessel in an earlier period.

### **General Considerations of the Entire Group "Parthian Plain Wares"**

#### *Method of Manufacture*

It is clear that some vessels from this category have not been formed primarily<sup>120</sup> on the wheel. Both Me 1 and ME 4 do not have the usual characteristics, common in wheel-thrown vessels, in particular the green glazed wares.

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<sup>120</sup> It is possible that final forming on a wheel could obliterate earlier forming techniques (van der Leeuw, 1976, p. 123). While a vessel can be shaped on a "fast tournette," to give the impression of wheel throwing (Rice, 1987, p. 134), these arguments often appear to be overstated.

A. There are no striations or ridges in the interior of the vessel. Green glazed vessels have had all exterior traces of throwing removed. There is also no noticeable thinning of the vessel wall.

B. All green glazed wares, particularly the bases of plates and bowls - which are robust enough to survive - have concentric striations on the vessel base, which is clearly where the base was cut (using cord or string) from a quantity of clay.

C. There are specific forms of fracture associated with throwing, as the crack would propagate along a line of weakness, and would follow a circular path (Courty and Roux, 1995, p. 18). Such cracks are infrequently encountered, but when visible they are only on glazed vessels, or plainwares that resemble the latter in method of manufacture.<sup>121</sup>

Internal structure of the ceramic vessel also betrays its method of forming. Bordet and Courtois (1967, pp. 1667), note that pinched and drawn pottery did not show preferential orientation of inclusions, a hypothesis that has been taken up by a number of ceramicists. Rye (1977, pp. 208-209) found that different methods of forming could be detected using X-ray images to discern the orientation of inclusions and voids. The arrangement of patterns in the ceramic structure were useful, and it was felt that a large sample size was needed to obtain

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<sup>121</sup> In this case, method of manufacture influences structural features: "The stronger development of microfissures found in the rapidly wheel-thrown ceramics suggests a more heterogeneous incorporation of water into the clay mass. Microfissures are interpreted as having developed during drying along discontinuous shear failures that would have formed during wheel throwing because of an increased hydric pressure. In this specific case, heterogeneity of the whole clay mass and random orientation of clay domains indicate a lower degree of reorganization that is tentatively assigned to the rapid throwing of the clay walls" (Courty and Roux, 1995, p. 35).

accurate results. While the study of the orientation of inclusions and voids using thin sections may not be ideal, in the case of the ME 1 and ME 4, they support the contention that these two vessels were not exposed to wheel throwing. The inclusions do not appear to follow any orientation, and the voids in particular are striking. They are both large (with many examples approaching 1 mm.) and more frequent than in the green glazed wares, where the voids are smaller (<.5 mm.) and have an elongate shape.<sup>122</sup>

The method of forming for these two samples is the "slab method." This method is one of great antiquity, and is suited to local materials. A ceramic vessel that is light enough to easily handle with a fairly even wall thickness is constrained by slumping, in that during forming, a plastic clay will only support so much weight. Most large handbuilt pottery is constructed in sections, and as each section is left to dry before the application of the next piece, it is structurally sound (Vandiver, 1988, p. 145). From visual examination of the two sections, there are areas that appear to be joins, consistent with the slab forming method.

### *Inclusions*

The maximum inclusion size shows particular uniformity, it is about .5 mm. for *all samples* (excluding ME 1), suggesting either that the natural sediment was well sorted or that the added temper was sieved (Rye and Evans, 1976, p. 14).<sup>123</sup> No other group of ceramic so

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<sup>122</sup> There have been attempts to calculate the amount of stretching a clay has undergone (Philpotts and Wilson, 1994, p. 611). Although the model is far from perfect, it starts from the premise that clay is stretched during coil forming, and proposes a numerical system of quantification. With such a model in mind, one may suggest that ME 1 and 4 were perhaps made by the slab method, as there appears to be very little stretching of the paste.

<sup>123</sup> The practice of sieving inclusions may not have been restricted to plainware vessels. Karanth (et al., 1986, p. 550) notes that a selected group of west Indian plasters from the second to third centuries A.D. were similarly treated; as large particles of temper in a plaster would be difficult to smooth. It is possible that a potter could have obtained quantities of sieved temper

far examined has such a definite upper limit. The evidence for sieving may be more apparent than real, but it is clear that the green glazed wares and the Parthian plain wares had very different methods of production.

The colour of the matrix can be appreciated as degrees of brown, quite different from the green glazed olive/yellow colour; even in hand specimen. The matrix in all examples is very distinctive, and at first it would appear under the optical microscope that it is anisotropic; but later observations suggest that large amounts of anisotropic hematite in the matrix obscure its real colour. Observing isolated areas of the matrix under high magnification (200X and 400X), it is clear that the matrix fabric is both isotropic and well fired. It is interesting to note that 4 samples in this category (barring ME 1) all have an extensively vitrified matrix. This is significant for two reasons. First, it shows a discrete difference between this class of pottery and the green glazed wares or molded bowls. Second, it shows that an unglazed vessel cannot be assumed to have been low fired. Based on the current sample, out of a mixed group of plain and glazed wares from Nineveh, one would be able to approach 100 % accuracy in separating these groups by petrographic means.

Chemical analysis of the matrix does not convincingly separate the plain wares from the green glazed wares, or the molded bowls, although concentrations of CaO tend to be slightly higher for the plain wares. The distinct petrographic characteristics of the two groups suggest that a different method of manufacture was used for each.

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in conjunction with, or perhaps from, a specialist in plaster.

### *Local Manufacture ?*

The petrographic variability in the plainwares may be expected, as logically one may assume that glazed vessels require a higher level of sophistication. One could also assume that there would be a limited number of shops that would produce glazed wares, especially if it were not an item of common use. The plain wares could have been produced in a locality to serve a particular function. Important evidence from Roman Egypt, from the site of *Oxyrhynchus*, indicates that a pottery was attached to a large estate that was involved in the production of wine. A lease of the third century A.D. outlines in detail the obligations of tenure. The lessor must supply the means of fabrication and materials: wheel, kiln, store-rooms, clays, temper are specifically mentioned, along with water, and pitch. The lessee is to supply the workmen, and he is to supply a set number of jars made to specific sizes (Cockle, 1981, p. 91). There were to be set payments throughout the year, which appear to correspond with periods of less activity in the vineyard. The pottery probably drew most of its workforce from farm workers who were unemployed during winter.

Unfortunately, the typology of the vessels in question was not given in the article, but it is clear that wine vessels may have been distinct typologically. Badler (1990, p. 25) used infrared spectroscopy on sediments found in a group of typologically distinct vessels from Godin Tepe in Iran (3500-2900 B.C.) and Byzantine vessels from Egypt. The vessel from Iran was decorated with two inverted "U" impressions on either side, suggesting that a rope was used to stabilize the vessel while it was laid on its side. The jars had narrow mouths and tall necks. The interior of the jar was lined with a slip that may have inhibited leakage. There were stoppers associated with the vessels, and some vessels showed evidence for the forceful removal of a stopper. Found in the same room was a large funnel (43 cm. dia.) that may have been used as a filter for the wine. These vessels had a capacity of about 35 litres, which would have made them transportable.

The vessels from Egypt conform to a similar plan, in that they too were designed to lie on their sides. In contrast to the vessel from Iran, which had a small base and flaring shoulder - making it barely able to stand upright - the vessel from Egypt had a long spike at the base, a flaring body, and a tall narrow neck (Badler, 1990, fig. 7, p. 30). It is clear that both vessels were designed to lie on their sides, but typologically the vessels are very different. If residues indicating that these vessels were used for wine production were not present in either vessel, one may assume a different function. The latter vessel is quite unlike any vessel recovered from Nineveh.<sup>124</sup>

If a similar system existed in the environs of Nineveh, it would hardly be surprising that vessels would differ petrographically. At the same time, if there were particular sizes of ceramic that were used for trade, as is implied in the lease, then one might find a number of vessels that superficially resembled one another.

### **"Roman" Red**

*note: for the discussion of this class of pottery in this report, the term "Roman Red," will be used, as the term "Eastern Sigillata" implies a provenance for this class of pottery that has yet to be established.*

British archaeologists describe this ceramic type if it is known to have been made in Italy as Arretine ware (after the site of Arezzo) and material from the "provinces," as Samian ware, after a term used by Pliny. Most European and American archaeologists use the term *terra sigillata*, which strictly refers to decorated vessels, a small percentage of the total corpus. The term is also used to refer to the majority of vessels, which are undecorated. Later wares

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<sup>124</sup> There is evidence for contemporary wine production in the region, but a similar system of manufacture may have been employed for water jars, see discussion/summary at end of report.

from Britain and Africa are termed red slipped ware. Red tablewares in this tradition were made from the first century B.C. to the Byzantine Period (Greene, 1986 pp. 158-159; Hayes, 1972).

The fact that so many cultures in the Mediterranean region used a similar form of pottery has led Vickers (1994) to postulate metallic prototypes for the ware:

...similarities between one fabric and another might best be seen not so much as the result of interplay between potters, but rather as a reflection of prevailing fashions in different places and at different times of wares made in gold. What holds good for the red pottery of Nabataea, India, Italy, Gaul, and North Africa probably applies to other kinds of sigillata around the Mediterranean: all were made in the shadow of urban elite dining practices that involved the use of gold vessels.

Vickers, 1994, p. 248.

There have been extensive studies that have replicated the forming technology of this ware in Germany (Hoffman, 1983). It is clear that raw materials, forming techniques (using molds and stamps), and glossing<sup>125</sup> and firing were all highly technical and required a high level of proficiency.<sup>126</sup> It is clear that when approached as an industry, this ceramic type had many facets that were influenced by contemporary practices in the production of metalwork.

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<sup>125</sup> The gloss coating was examined in thin section and under the SEM. It cannot be considered a glaze. Gloss coatings of a "Mediterranean" style are characterized as very thin, 0.02 mm. thick, and unlike a transparent or weakly coloured glaze, a gloss is opaque. As a general rule, glazes have been molten, while glosses have not been melted (Freestone, 1985, p. 63).

<sup>126</sup> Terra sigillata has been widely studied, and was apparently so technical that it had no parallel in the post-classical world. Many studies have been done to replicate the gloss surface. Early studies that sought to replicate the surface demonstrated that a particular type of iron rich clay (termed illite) must be used. The heavier particles must be settled out, and the fine particles used as the basis for the slip, which is fired in an oxygen rich atmosphere. The correct clay for the slip is essential, which explains why the manufacture of this ware is restricted to a few areas. Re-firing experiments, using Romano-British kilns, have yielded mixed results, and it is clear that particular attention must be devoted to controlling the kiln atmosphere (Bimson, 1956, p. 201).

There were few examples recovered from Nineveh. Because the sampled specimens are so small no reconstructed drawing can be convincingly offered, but they would both appear to be shallow bowls, of a type encountered at other sites in the region. Dura offers a very large range of types that embrace many centres of production. Material from Dura has been prepared for XRF, and will be compared to the material from Nineveh in a later publication. This class of pottery has been very well studied, some of the major topics are outlined below.

### *Eastern Sigillata*

This term applies to the fine red slipped ware which is characteristic of eastern Mediterranean late Hellenistic and Roman phases. This group of ceramics is especially important, as perhaps no other assemblage for this period offers as secure a date. This is the case especially for the decorated examples, but increasingly chemical characterization has been used to answer questions of provenance. Examples of similar pottery have been recovered from areas in Greece, Asia Minor and Egypt. This class of pottery was very plentiful in the second and first centuries B.C. Because of its widespread use, it is regarded as an important indication of trading patterns, and, partially for this reason, interpreting the results, and locating the region of manufacture is quite difficult. Recent archaeological opinion has shifted considerably regarding the centres of production of this ware (Elam and Glascock, 1988).

At first this ware was simply assumed to have been manufactured in Pergamon, and designated as "Pergamene ware," by Zahn in 1904. Later excavations, and an accumulating range of types of this ware, soon cast new light on this hypothesis. Waage (1948) and Goldman (1950), excavating at Antioch and Tarsus respectively, assigned the ware to "Syria"

and a date of about 150 B.C. Crowfoot *et al.* (1957) published a report by Kenyon that concluded that the ware was in fact a Roman product, and that it should date no later than 50 B.C. It was at that time renamed "Eastern Sigillata A." A later study by Lapp (1961) appeared to confirm Kenyon's hypothesis.

Gunneweg *et al.* (1983), using NAA on a large number of samples from Israel, found that Cyprus, rather than Syria, offers the closest chemical similarities to the material recovered from Palestine. Further samples from Tel Anafa were analyzed by Elam and Glascock (1988). This material is particularly important in that it has direct bearing on Gunneweg's hypothesis. The study samples an important division of eastern sigillata, the "proto-ESA Maroon wares," which have been a particular problem typologically. The material originates from a site in Galilee in a region contested by Seleucid, Phoenician, and Ptolemaic factions. Consequently, there is no clear indication of the political alliance at any given time.

The results of Elam and Glascock confirmed Gunneweg (1983) in that there is solid evidence linking that group of ware to Cyprus, although there are still many questions to be answered in regards to regional production of eastern sigillata. Out of all the groups of pottery recovered from Nineveh, this ware is the least likely to have been manufactured at the site. Circumstantial evidence for this is given by the location of other sites that produced redware. In Gaul it was noted that areas of production were located close to trade routes. Many potteries were near rivers or roads. The clay may also be important in the location of the site (Bedoyere, 1988, p. 10). When taken in context, Nineveh seems like an unlikely place for the manufacture of this ware, and one should look to a more central location. If these wares can be convincingly demonstrated to have been imported, it will give a good indication of the accuracy for the method of study. Because of the fine texture of the inclusions, particular emphasis is placed on ASEM results.

Two examples of this class of pottery were recovered from Nineveh, they are considered as a single group, but petrographic and bulk chemical analysis of the matrix merit consideration of each sample individually.

ME 5, 1991.312.1. Roman red ware, shallow dish fragment. Inner surface is glossed, while the outer surface is plain. 40 mm. x 45 mm., 10 mm. thick. Sample size 32 mm. x 6 mm.

ME 6, 1991.312.2. Roman red ware, body fragment. Both surfaces are glossed, inner surface is flat. 51 mm. x 26 mm., 12 mm. thick. Sample size 31 mm. x 12 mm.

This group, represented by ME 5 and ME 6, can easily be appreciated as having characteristics distinct from all the other pottery so far encountered. It can readily be ascertained from the chart that neither sample has any considerable quantity of aplastic material. The inclusions are of a very fine texture and simply by consideration of the inclusion size, these samples could not be confused with another group.

The two samples can further be divided into two sub-groups; but it should be noted that with one sample per group, this observation may be modified with more material. ME 6 has a few grains of microcline, in addition to plagioclase, but ME 5 only has grains of plagioclase. This difference in inclusions in itself may not signify a different provenance, and it may only reflect the larger grain size in ME 6.

Mean and median grain sizes for inclusions in ME 6 are in the medium/coarse silt range, with one void with a reaction zone (probably of a monocrystalline calcite grain before firing) 0.54 mm. long. ME 5 in contrast is considerably finer, as all inclusions, and median and mean values, fall below the medium silt range (0.0312 mm. - 0.0625 mm.). The largest void (again with a reaction zone) is only 0.17 mm. long.

Both examples share some similarities in the composition of the matrix, which may demonstrate a similarity of firing conditions. ME 5 and ME 6 both have discrete areas of hematite within the matrix, ME 5 has such an abundance of hematite that it is distinctly red in thin section (with no magnification). ME 6 appears green in thin section with no magnification, but has smaller areas of secondary hematite. It is not clear on the chart, but the arrangement of hematite within the matrix of both examples is particular to this group. On the basis of matrix colour alone neither could be confused with, for example, the plainware, or the molded bowls. However, both ME 5 and ME 6 differ slightly in colour, but when the colour variation within other ceramic groups is considered, the small variation should not be overemphasized. The two samples also differ in stages of vitrification. ME 5 is extensively vitrified, while ME 6 is not vitrified.

The analysis of the matrix also suggests that ME 5 and ME 6 are best placed into subgroups. Chemically the two samples differ; the CaO content of the matrix of ME 5 is 15%, while ME 6 is about 9%. Other elements, such as TiO<sub>2</sub> and FeO, also differ; the larger amount of iron in ME 5 may relate to the larger amount of observed hematite in that sample. Roman redware has been demonstrated by NAA to have been manufactured in a number of different locations, so that the differences in fabric could indicate that they were made in two different localities. The difference in texture between the two samples, the small difference in matrix characteristics, and the chemical differences, when taken with archaeological considerations, may suggest that the two samples have a different origin. It is possible, however, that ME 6 is simply a lower fired and slightly coarser relative of ME 5.

The gloss of Samian pottery has been extensively studied. It is thought that the gloss surface is the result of firing an illitic clay slip to about 950 C. The "black gloss" of earlier Greek wares required a lower firing temperature (c. 850 C.) to sinter, and a reducing

atmosphere (Tite, 1972, p. 250). Like the majority of Sigillata, the examples from Nineveh had a very fine layer of gloss, which was in too degraded a condition to study. In hand specimen the gloss was clearly scraped off a sizable amount of the sample during its lifetime, and burial in the rather moist environment of Nineveh has made the gloss extremely friable.

Further observations will be made using X-ray diffraction (XRF), to determine the relative amounts of trace elements. Perhaps with a detailed elemental "fingerprint," a more localized area of manufacture can be proposed.

### *General Considerations of Roman Redware*

Both samples of Roman redware are distinct petrographically from all other ceramics recovered from the site. Even when compared to the best manufactured group of Parthian ceramics, the white glaze, it is clear that production of the Roman red was far superior.<sup>127</sup> The clay of the Roman Red is more homogenous, and the gloss used is easily appreciated as more durable than Parthian alkali glazes. The vessel forms also are striking, as they are more angular than all but the white glaze wares. Historical sources for the manufacture of the Roman wares are helpful in elucidating the differences.

Evidence from vast pottery workshops in Italy, Gaul and Germany suggest that there was a distinct division of labour in the process of manufacture. A number of vessels from these areas bear name-stamps, and a number from Italy bear the name of a Roman citizen, and apparently the name of a slave (usually Greek). Between 10 and 20 slaves were average, while some of the larger establishments could have as many as 60. Mold makers also could

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<sup>127</sup> An unusually detailed account of the manufacture of Roman red appears in Bulmer (1980 pp. 29-48). It is clear that the Roman industry reached levels of sophistication, including a division of labour into many discrete units, that was unparalleled by Mesopotamian ceramic industries until well after the Islamic conquest.

have a particular stamp that was on the mold, (although it may have been subsequently covered by the potter. What is clear is that a number of functions were performed by craft specialists, and that large workshops may have allowed lesser ones to use their facilities (Greene, 1986, p. 160).

Vessel lists (from southern Gaul) were found to contain information about vessel size and type, number, and corresponded with a personal name (Peacock, 1983, p. 125, pl. 30). The lists easily explain why there are stamps on the ceramics, as they help to sort out the owner of a particular vessel if a large firing were made between many workshops.

Kiln production was no less specialized, as a number of elements were made of pre-formed units. Clay pipes were used to channel heat through the firing chamber without the risk of smoke damaging the red finish (Brown, 1976, p. 85).

#### *Summary Archaeological Implications of Roman Redware*

While it is significant to note that there were finds of Roman wares from Nineveh, there may be no direct correlation between Roman activity and pottery finds, especially for sites on the Roman frontier (discussed in Chapter IV). It is important to note that the two samples, because of their technological superiority, were probably not made at the site, and were imported from some distance away. It also demonstrates that far from being a backwater, Nineveh may have been involved in trade between east and west. Further observations must await more detailed chemical analysis.

## **Molded Bowls**

*A discussion of the archaeological context of these vessels was given in chapter 1, pp. 109-129 .*

These vessels fit into a general "unglazed" plainware category with molded or impressed decoration. There are also bowls with faces discussed under "Figurines," (discussed in Chapter I) and there are also Pilgrim flasks of the same fabric ( also considered in Chapter I). All these distinctive molded forms imitate metal vessels. Silver or gold vessels of the period have similar ribbed or floral decoration (Goldman, 1950, p. 193).

The fabric of the molded bowls is of medium grained clay, at times carelessly painted with a red wash (or glaze as at Tarsus). The bowls from Nineveh are painted with a low fired clay (wash or slip), and not a high fired (vitrified) gloss or glaze; as the surface of the Ninevite sherds are so degraded, it is difficult to determine exactly what it was like. It is proposed that the molded-incised bowls at Nineveh are an imitation of Hellenistic Pergamene bowls (Oates, 1969, p. 123). This hypothesis fits well with the probable date of the bowls, which could be Hellenistic or early Parthian.

From a typological/art historical standpoint, it is clear that there is more than one class of vessel within the moldmade group. The simplest, ME 13 and ME 14 (Fig. 53), represents little more than vessels that have been pressed into a mold to give a uniform shape. Decoration consists of 2 or 3 impressed bands. The next easily observed division in the group is that with designs. There can be examples of relatively complex curvilinear design, such as ME 16 (Fig. 54), or examples of more stilted geometric designs, such as ME 18. Finally, there is an example that appears to be a simple debasement of more complex design, ME 20 (Fig. 54).

It is clear that these vessels represent at least varying traditions and most likely encompass a considerable time span. Although there are differences between individual examples, the differences are not coherent enough to separate this category into distinct subgroups. ASEM analysis shows some variation in major elements like CaO, but the groupings thus obtained have no bearing on the petrographic groups. It is also clear that when plotted against the green glazed wares (Fig. 46A), the molded bowls emerge as a more homogenous group.<sup>128</sup>

The molded bowls are considered as one group, as there is no convincing criteria for splitting the group into subgroups.

ME 13, 1991.316.1. Plain rim/ body shard, 2 bands about rim of bowl. Buff clay, there is slight indication of a black wash. 55 mm. x 32 mm., 3 mm. thick. Sample size 39 mm. x 4 mm. (Fig. 58A).

ME 14, 1991.316.3. Rim/body shard. 3 rim bands, red wash inside and out. 55 mm. x 70 mm., 5 mm. thick. Sample size 30 mm. x 6 mm. (Fig. 58B).

ME 15, 1991.316.11 Rim/body shard. Buff clay with a grey core. Rim curves out. Design of curvilinear floral patterns and lines. There is evidence of a black wash surviving in concave areas of the design. 45 mm. x 19 mm., 6 mm. thick. Sample size 34 mm. x 6 mm. (Fig. 59A).

ME 16, 1991.316.12. Body shard with design of concentric circles and curvilinear floral designs. Outside has a clear red wash. 30 mm. x 25 mm., 3 mm. thick. Sample size 26 mm x 3 mm. (Fig. 59B).

ME 17, 1991.316.13. Body shard with red wash unevenly applied. The wash appears to have been spread over the surface by applying a small quantity and rotating the vessel at low speed. 61 mm. x 37 mm., 4 mm. thick. Sample size 43 mm. x 5 mm.

ME 18, 1991.316.16. Body shard with moulded lines and dots. 50 mm. x 31 mm., 4 mm. thick. Sample size 30 mm. x 4 mm. (Fig. 59C).

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<sup>128</sup> As the geology of the region can be relatively homogenous, evidence of differing provenance within this group may be slight, and possibly best reflected in textural differences in the sediment revealed petrographically.

ME 19, 1991.316.19. Body shard. Inner surface is fully coated with no gaps, while outer surface is coated by "dripping and turning," like MG 13. 30 mm. x 23 mm., 4 mm. thick. Sample size 34 mm. x 4 mm.

ME 20, 1991.316.20. Marked "XXX II." Rim/body shard. Three rim bands, and series of thick lines originating from bottom of vessel and projecting upwards. 40 mm. x 32 mm., 4 mm. thick. 40 mm. x 4 mm. in two pieces after polishing (Fig. 59D).

The molded bowls from Nineveh are characterized by relatively coarse inclusions. While not all of the bowls show great diversity in inclusion size and type, most have inclusions that are not encountered elsewhere.<sup>129</sup> Common minerals, especially quartz and calcite, do not differ substantially from the amounts encountered in the green glazed wares, but the lithoclasts<sup>130</sup> differ significantly from the green glazed wares. The examples that offer the closest parallels are two Parthian plain wares, ME 4 and EM 15. The molded bowls can have 1-3 examples of: sandstone, siltstone, basalt/dolerite, pellets and grog. Like other trace mineral/lithoclast inclusions, consideration focuses on the presence, and not absence, of material. There are, however, potentially diagnostic minerals in this class of ware, recorded under the infrequent inclusions category. For example, ME 14 contains a large grain of primary hematite (iron), epidote, and mica schist. ME 15 contains a grain of mudstone, ME 16 has aggregate (subhedral) amphiboles, and ME 20 has biotite schist. There is a tendency

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<sup>129</sup> In a petrographic study of Bronze Age IV ceramics from Tell Kadrich, northern Syria, Riley (1981, pp. 349-350) noted two distinct fabrics on the basis of different abundances of carbonates and plagioclase feldspar. These two minerals demonstrated the greatest variability in the molded bowl group from Nineveh.

<sup>130</sup> While chert with radial structures is not limited to this group, the best examples occur in the coarser grained samples. The presence of radiolarian chert in itself is not sufficient to separate this group into a discrete category, as chert may have a biogenic origin, and not surprisingly may preserve some cellular structure (Tucker, 1981, p. 214). It is significant to note that radiolarians may also be more abundant in certain chert horizons (Brasier, 1980, p. 84). Until a more detailed understanding of the sediments in the region about Nineveh is obtained, this must remain a general observation.

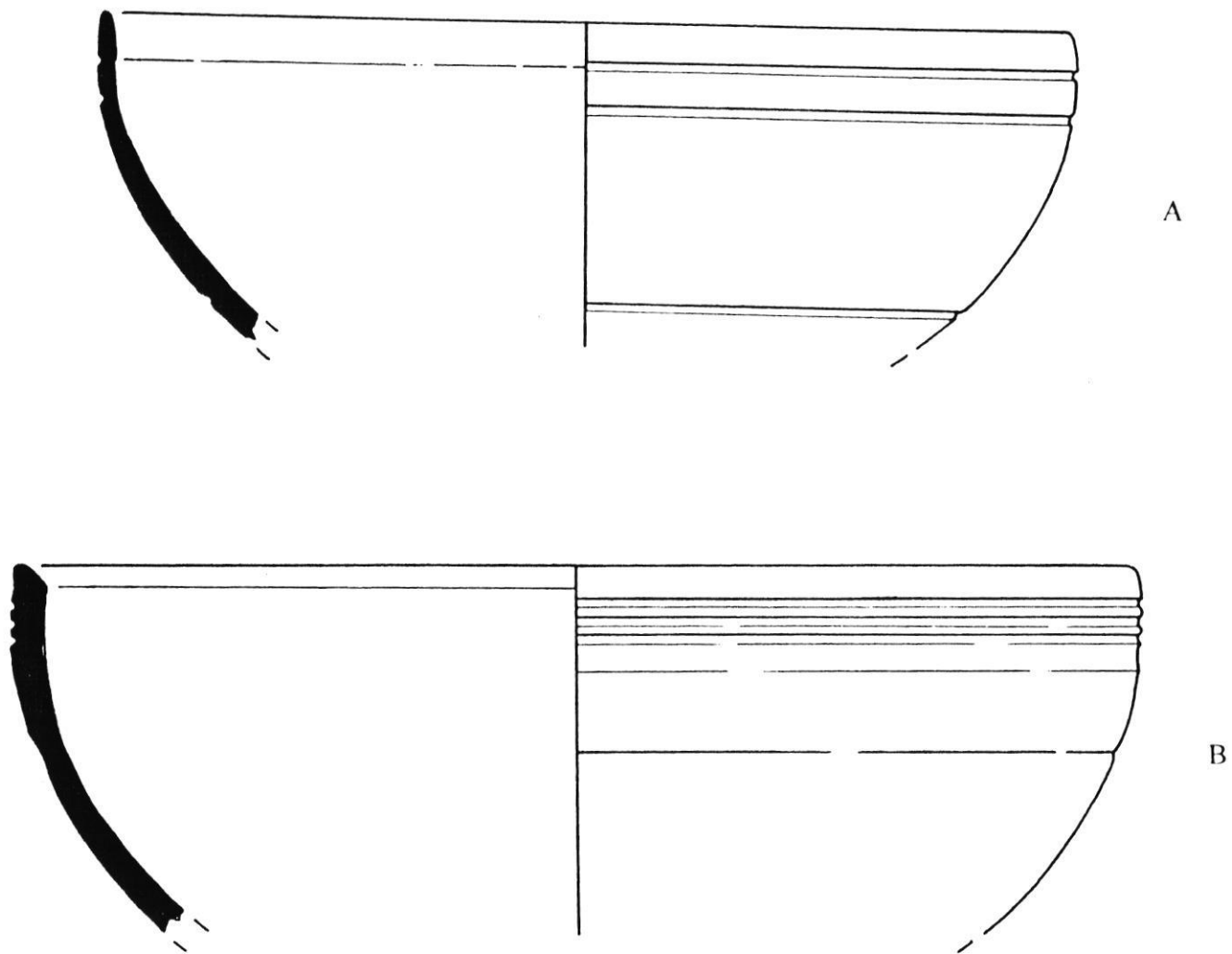


Fig. 58 **Molded Bowls** (Scale 1:1 Ashmolean Museum A: ME 13, 1991.316.1 B: ME 14, 1991.316.3).

C. The variability in both petrographic and chemical compositions (CaO in particular) suggests that figurines were not made in simply one or a few centres, like the green glazed wares, but instead made in a number of areas. Unlike the very homogenous figurines produced by Hellenistic or Chinese workshops, the material from Nineveh appears to have been a cottage industry. Evidence for a local industry may be found in Neolithic figurines from Czechoslovakia. There the "kilns" were near dwellings, and may have had many functions, including cooking food. There were bone fragments found in and near the hearths, but none were observed in the figurines themselves, although there may be some indication of bone by chemical tests made by earlier research (Vandiver *et al.*, 1990. p. 34.35; p 63).

### **Neo-Assyrian Baked Brick**

Both samples were extremely friable so that the usual procedure of examination in thin section using transmitted light was suspended in favour of a more suitable method. These samples were examined using reflected light before they were carbon coated for SEM examination. As a result their inclusions were not placed on the usual petrographic charts to be compared with material that had been examined using transmitted light. Both samples were taken from the interior of a brick, as the exterior surfaces had been exposed to groundwater. Examination using a low powered microscope suggested that the outer surface had a chemical composition altered by postburial factors, particularly CaO.

Both samples are discussed as one group:

B 1. Birmingham, *no number*. Sample from a large baked brick fragment.

B 2. Birmingham, *no number*. Sample from a large baked brick fragment, as above. Visual examination shows similar fabric in colour and inclusions.

Both samples are similar to one another in all respects. The most striking inclusion is the organic fraction, which like all Neo-Assyrian wares has perished during firing. In addition to the long voids characteristic of vegetal temper, there are also round voids up to 1 mm. in diameter. This may indicate that the organic fraction was obtained from dung, which would also contain liquid organic material that would tend to clump.

Like the other Neo-Assyrian wares examined from Nineveh, the paste of the brick samples was free of non-organic temper. The matrix of both samples did have medium silt sized grains (and below) of quartz, and there also appeared to be small amounts of opaque hematite silt. The matrix colour (also not directly comparable to material that has been thin sectioned) for both samples was a pale brown. The optical microscope resolved the matrix colour into isolated regions that were clearly more hematized. SEM micrographs revealed that the matrix of both samples was NV. Chemical analysis suggests that these two samples are similar to the Parthian plain wares.

### *Technological Observations*

Baked brick, especially in the region of Mesopotamia, played a critical role in Assyrian architecture.<sup>142</sup> While there have been surprisingly few studies directed towards elucidating the composition of mud bricks (barring studies of the glaze, Freestone 1991), studies from

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<sup>142</sup> Evidence for brick kilns is presented by Moorey (1994, p. 306). Glazed bricks are discussed from pp. 312-322.

Egypt reveal that un-baked mud brick was in extensive use until the arrival of the Romans and the widespread use of kilns to fire building materials. Many kinds of clay could be used to make fired bricks, the most typical and effective being alluvial clays tempered with up to 30% wind blown sand, the latter critical as it reduces the amount of drying shrinkage. In Iran and Iraq Shackley (1977, p. 66-67) notes that the baked brick can be characterized by silty clay used for the paste, with additions of windblown sand and crushed limestone used as tempering agents. The high amount of CaO in the paste gives the bricks their characteristic cream colour. Shackley continues, apparently contradicting her earlier statement, and notes that the red colour is due to firing in a reducing atmosphere.

On the basis of the samples from Nineveh, one may suggest that the observations of Shackley may be in need of modification, as both samples, and all material examined by binocular microscope, showed little trace of calcite temper. The paste for both samples was relatively free of non-organic inclusions (barring silt) and contained no appreciable calcite, much like the paste of the Neo and Late Neo-Assyrian wares. The colour of the bricks is also a buff to light red, which is in keeping with what could expect from the high CaO clays of Mesopotamia. Even if fired under stringent oxidising conditions, it is unlikely that a deep red colour would develop.

#### *Local Clays*

These samples were specifically taken in order to gain a better understanding of the local geology of Nineveh. It has long been assumed that, especially in the Roman Mediterranean, bricks represent a product of local manufacture and are not readily transported. Recent evidence, however, shows that this assumption may need revision. Betts (1991, p. 48) found that Roman tiles from York could be traded for considerable distances. Of particular importance was the river, by which large quantities of tiles from other regions could be

transported to and from the site. Medieval York had the bulk of all tile manufactured locally, while glazed tiles and floor tiles were the exception (Betts, 1991, p. 53). Matson (1986) studied glazed brick from Babylon, but does not devote attention to the problem of provenance.

The relationship between pot and brick manufacture is significant, especially from many sites in the modern Near East. In both Teheran and in southwestern Afghanistan, potters and brick makers use the same clay pits for their clay (Matson, 1974, p. 77). Based on the petrographic affinities between the Neo and Late Neo-Assyrian wares from Nineveh, one could assume that both exploited similar clay sources using similar technology. Further, it is clear that the Parthian plain wares, while they differ in their coarse mineral inclusions from the brick samples, share a similar chemical composition with the brick samples.

### **Ceramics from Nineveh: General Considerations**

It is clear that unlike Egyptian ceramic practices, which could remain stable for hundreds of years (Vandiver and Lacovara, 1986, p. 60), such was not the case with the Parthian period in Mesopotamia. Parthian practices constitute a distinct break with Assyrian traditions. Far from remaining static, there was considerable variation between periods and between different assemblages of ceramic products. Further, there is solid evidence, both archaeological and petrographic, for suspecting that a number of wares were imported (in order of presentation in the report):

Neo-Assyrian Wares: While only two wares were sampled, the chemical and petrographic variability may suggest that the two samples were representative of different shops, or perhaps made in different areas.

Late Neo-Assyrian Wares: These wares demonstrated a continuity of tradition from the earlier Neo-Assyrian period, and marked the last phase of an Assyrian vessel tradition. They demonstrated petrographic variability, and further chemical analysis using XRF should be revealing.

Green Glazed Wares: When placed into the context of the kiln spacers, it is clear that the majority of these wares are local products. Subgroup A is archaeologically and petrographically distinct. As it is a rare example of an incised glazed shard it is probably from either a distinct shop or perhaps imported. Subgroup B is a Sasanian shard that reflects a change in technology towards more effective levigation. Subgroup D is an Islamic sample of a finely levigated clay, marking a complete break with Partho-Sasanian traditions. The pilgrim flask, the most easily transported vessel, can be considered imported on the basis of archaeological, petrographic, and chemical differences.

White Glazed Wares: These wares, of a Hellenistic/early Parthian date, show a fine processing of clay that was not achieved again till the Islamic period. Because they are so refined, it is hazardous to speculate on their origin, while one may suspect on archaeological grounds that they are imported.

"Parthian" Plain Wares: These wares demonstrated the greatest variability of any samples. While the bulk of the wares on the basis archaeological, petrographic, and chemical considerations (especially when compared to Neo-Assyrian Bricks) suggest that these were local products, the stamped Parthian ware is so out of keeping with all other samples that one assumes it is an imported ware.

Roman Redwares: On the basis of a very limited distribution, and as these wares represent a very different technological suite, these two samples can be assumed to be imported.

Molded Bowls: While one may suspect on the basis of typological observations (which petrographic observations appear to confirm) that these wares are distributed across a span of time, if not a number of shops, the chemical analysis suggests that this group of wares is more homogenous than the green glazed wares. One may suspect that in this case it may be best to rely more upon the petrography than on the chemical analysis.<sup>143</sup>

Mesopotamian Lamps: These can be divided into a fine and coarse petrofabric. The coarse resemble the plainwares, while the finer fabric are similar to the Partho-Sasanian lamps. These wares can then be assumed to be locally made.

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<sup>143</sup> The effects of the two rivers on the geology of the region is discussed in Chapter I

Partho-Sasanian Lamps: Of a similar tradition to the Mesopotamian lamps, it is clear that while other classes of ceramic changed over time lamps remained much the same in fabric. This suggests that the lamps were more of a local "home" industry.

Sasanian Vessels: While the Sasanian stamped shards are similar to the Parthian plain wares, the two cooking vessels are imported. It is interesting to note that the vessel with the coarse basalt temper has failed.

Islamic Stonepaste Ware: The fabric of this ware has no similarities with any other sample, including the early Islamic sample (EM 20) considered with the green glazed wares. While Robert Mason (personal communication) feels that this ware is imported, the fabric is basically pure quartz. It is not generally accepted that quartz from various regions can be separated.

Figurines: Archaeological observations from other sites suggest that figurines were associated with lamp production, which clearly is not the case for Nineveh. Figurines were formed and produced using a variety of materials selected on the basis of ease of availability, and then fired in either crude kilns or open fires.

Neo-Assyrian Brick: As the bricks were organic tempered they demonstrated the greatest affinity with the Assyrian wares. The clay is fine with a lack of non-organic temper. Chemically the bricks resemble the plain wares.

## **Ceramic Industries at Nineveh**

It has become clear from the petrographic and archaeological study of the ceramics that there are three types of industry represented at Nineveh. This listing in no way exhausts the number of possible organizations that could have produced the ceramics discussed in this report. There is little ethnographic information to support archaeological and scientific observations that would place the ceramics into the following gross groupings:

### Home Industry

This has been identified by Peacock (1982, p. 24) as comprising vessels and utensils that could easily be made by a single family home with little technology. The Sasanian cooking pots (EM 1, MX16) do not fit into this category. The figurines, due to crude manufacture, should be placed in this category. Although the figurines may require a higher level of

sophistication than simple household utensils and pots, they are, nevertheless, distinct from other products that required a higher firing temperature. This is not to suggest that figurines were commonly made by numbers of households, but simply that an "artisan" capable of making the figurines may have produced them himself, without the need of assistants or large kilns. Industries of this kind are unlikely to appear in the archaeological record. This industry is perhaps the most distinct of those considered here, as a very different level of technology is represented.

#### Local Workshop Industry

This designation is distinct from the following (Workshop Industry), in that it is designed to serve a particular segment of society. This category refers specifically to plainwares in this report, which appear to have been made in a number of areas, and from textual sources may have been made for specific goods, such as to carry wine (see discussion under Parthian plainwares). Peacock (1982 pp. 46-51, 129-135) defines this industry as "estate production," and cites examples of brick manufacture in Roman and U.K. sites. An "estate" like the latter example, or like the one that produced wine jars in Egypt (Cockle, 1981) may also have supplied the surrounding community. Perhaps it is best to use a less specific attribution.

When characterizing this industry, the technology used to produce the vessels may not differ substantially from the workshop industry, the difference being mainly in scale. It is clear that the plainwares, lamps and figurines were made in many localities and with some variability in forming, raw materials, and firing. It is therefore prudent to include them in a separate group.

### Home and Local Workshop Industries

Both the above industries are directly influenced by another aspect of the society as a whole, which is simply the availability of agricultural land. Pottery making and other crafts are not surprisingly often a secondary choice to agriculture. Those with poor quality, insufficient, or no land will be forced to engage in a practice that offers considerably less stability than the regular income from crops. While both vocations do entail obvious risks, the potter is left with products that are not edible, and they must be converted into food. In modern India ethnographic surveys suggest that a rise in capital entails the abandonment of pottery, a trade that is associated with low status.

A similar situation also appears in Medieval Britain, where there are records of potters with insufficient holdings of 1-1.5 acres. There was a general trend to acquire more agricultural land, and records indicate that once above a threshold of property pottery was abandoned (Patourel, 1968, p. 110). One can easily appreciate that both of these above named methods of production entailed little capital investment, and that in periods of economic success, a number of ceramic workers would move on to more productive work.<sup>144</sup>

### Workshop Industry

The differences between a workshop industry and a home industry have been identified by Peacock (1982, p. 24-26). The potter in this case derives his entire income from his wares, and must produce wares of a certain quantity, quality and price. From a purely archaeological context, one may be able to determine if a product were from such an industry by the amount

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<sup>144</sup> As is the case in modern Iran, where local ceramic industries have been all but wiped out by the introduction of plastic vessels. Other crafts, such as metalwork, glassmaking, or textiles, have continued, and are popularly appreciated as being of higher status to ceramics.

of craft specialization. Rice (1984, p. 47) notes that craft specialization would normally lead to standardization or simplification (reduction in variety) of the raw materials used and the methods of manufacture employed. There may be a limited number of shapes or decorative styles represented.<sup>145</sup>

The technology used in this type of industry is necessarily higher, as there is investment in wheel, tools, kilns and space. Factors such as raw materials and access to a market will be considered in the siting of the establishment, as, in an ideal situation, the workshop would be near both. Because this industry is on a larger scale, it is likely that it is situated away from areas of dense habitation. An industry of this scale would also appear in the archaeological record; however, in the case of Nineveh, there has been little activity in elucidating non-royal structures. Excavations at the site in 1990 indicate that the area about the Sin gate, the northwest area of the mound, may have been an industrial zone. Quantities of slag were recovered, and the ceramic scatter may indicate pottery workshops nearby (Lumsden, 1991, p. 3, personal communication David Stronach). The case of green glazed wares from Nineveh it is clear that there are both a limited number of shapes represented, and evidence for a particular method of firing as distinct from the plainwares, which show great diversity. Other specialist wares, such as the white glazed wares, and the Roman redwares and molded bowls are also clearly representative of this division. In the latter case one suspects that the vessel molds may have been a significant investment.

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<sup>145</sup> The author also notes that there could be an elaboration of style and technique, as producers strive to meet the demands of a complex social system. This would apparently apply basically to luxury wares, and therefore may apply more specifically to objects made of a more intrinsically valuable material. Vickers (1985, pp. 111-112) discusses the role of precious metal vessels in classical Greece and goes on to compare their form with ceramic vessels. It is clear from such arguments that while there may have been some hierarchy among ceramic vessels, there was perhaps more of a difference between metal (and perhaps glass) vessels and ceramic vessels. It is still uncertain if the ancients appreciated workmanship in the way modern art collectors do.

## What Remains to Be Done

A. The abundances of ceramic types from this period is unknown. It is clear that the excavators retained only those pieces they found interesting, and that as a result glazed wares are over represented. Other vessel types may be absent altogether, as one assumes there would be other examples of more delicate wares such as cooking pots.

B. To date there is no indication of a pottery workshop on the mound from this period. This is hardly surprising because it would be unlikely there would be a workshop near a palace. There is a pressing need to excavate the surrounding areas of the mound for traces of workshops and kilns.

C. The distribution of ceramics in the outlying areas of Nineveh would determine the extent of trade about Nineveh. It should not be simply assumed that ceramic density will be related to distance from the production site. A study of the distribution of late Roman ceramics in Oxford (Fulford and Hodder, 1975, p. 32-33) demonstrated that riverine transport was significant in the distribution of ceramics, and that particular concentrations of Oxford wares were located about 70 miles away from the site. A similar situation could exist at Nineveh.

D. In order to make the petrographic observations more convincing, a characterization of the clays and sediments from Nineveh should be conducted. It is a common assumption that the ceramics from a particular region can be divided into local and imported categories on the basis of abundance alone.<sup>146</sup> In order to overcome what may be considered a weakness of

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<sup>146</sup> In this report, however, other archaeological and typological criteria are used to define what groups may be considered local and imported.

the method, a characterization of the available clays is appropriate, especially if more detailed chemical analysis is used on this material at some future date (Wilson, 1978, p. 220).

# Chapter III

## Coin Hoard I from Nineveh

### Introduction

This chapter will focus upon the Parthian hoard (here referred to as hoard I) uncovered during the 1929-30 season of British excavations at Nineveh. It is composed of coins and lead tokens and has - to date - received little attention beyond a general classification (Le Rider, 1967). Recent observations suggest that the earlier classification is in need of significant modification. A major aspect of this investigation is an attempt to clarify the range of rulers represented in the coins of this hoard, and to elucidate its historical context. Broadly speaking it is clear that the hoard belongs within the "Parthian" (150 B.C. to A.D. 250) period. The date can be further narrowed by the portrait of the king on some of the coins. Several coins bear the portrait of Artabanus I (127-124 B.C.); while a number are in the style of Mithradates II (123 - 88/7 B.C.). This investigation will propose that the majority of the coins were not issued by these rulers, and instead, belong to a slightly later period. As a result, the bulk of the hoard was struck within the aptly termed Parthian Dark Age, the period between the death of Mithradates II and the establishment of Orodes II (55-38 B.C.) as king of the Parthian empire (Morkholm, 1980, p. 33). During this period of Parthian history, it is unclear who was in power at any particular place. This is particularly the case for the region about Nineveh (Eiland 1992).

### **Coin Hoard I: Context and Range**

As has been shown in Chapter I (see pp. 48-57) the so-called "Palace of Ashurnasirpal," excavated in 1929-30, had undergone extensive reconstruction in the Parthian period. The coin hoard treated here is that marked "hoard 1" on Fig. 68, where the published plan of the excavations has been redrawn so that the remains of Parthian occupation are emphasized. It was found associated with a rubble wall at a depth of -8' from the datum line.

There were a number of burials uncovered during this season of excavation (see also pp. 68, 71), but only one burial was complete enough to attribute to the Parthian period. This burial is marked "burial 1" on the corner of Fig. 68. It may have used an earlier baked clay Assyrian *larnax* coffin, which would suggest that this area had been used for burials since at least that period. While there is some indication of fragmentary Middle Islamic structures that lie well above Parthian levels, there appears to be a conspicuous lack of Parthian rebuilding, but scattered small finds (of a Parthian date) confirm that this region was used as a cemetery, and suggest that many burials of this period had been subsequently destroyed. Nearby Parthian stone structures in the area may have had some association with the cemetery nearby. It is also clear that this was the site of later Medieval burials (marked 2 and 3 on Fig. 68), which also re-used earlier materials.

PLAN OF THE AREA EXCAVATED IN 1929-30:  
THE SITE OF THE PALACE OF ASHURNASIRPAL IN NINEVEH.

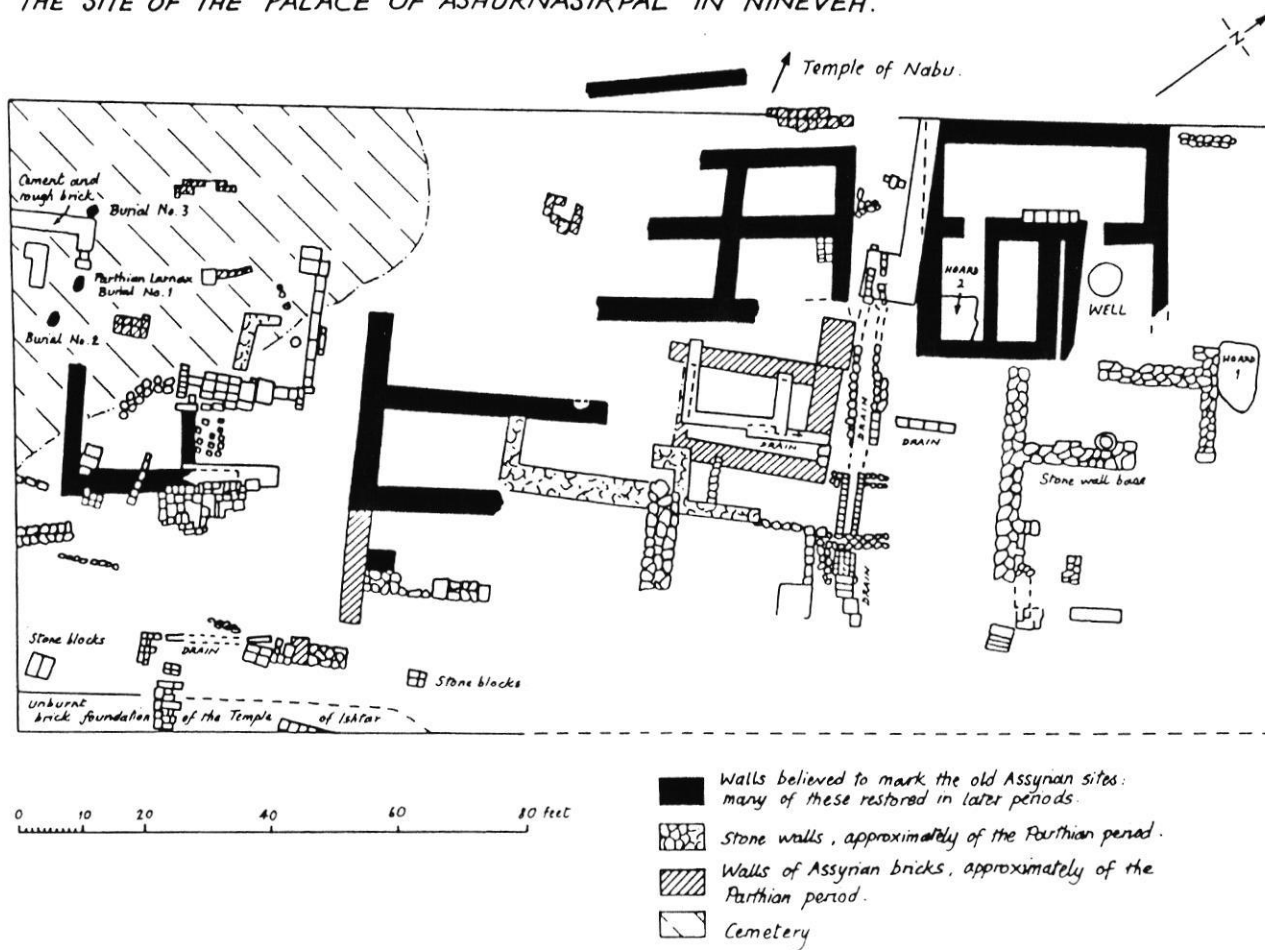


Fig. 68 The Excavations of the 1929-30 Season (adapted from Campbell-Thompson and Hutchinson, 1931, pl. XXXIX).

## **Parthian Bronze Coinage: Problems of Attribution and Chronology**

Only three major excavated sites have produced coins of the Parthian period. Seleucia produced a series of autonomous bronzes,<sup>147</sup> but there is considerable difficulty in attributing the issues. Most appear to date on either side of the so called Parthian Dark Age (c. 88/7 - 38 B.C.). Excavations at Nisa did not provide any well stratified coins. Excavations at Susa have yielded the most, including many examples of copper coinage from the Parthian Dark Age. Unfortunately, little information has been published on the exact stratigraphic relationships of individual coins (Simonetta, 1966, p. 24). As a result, Parthian issues are still basically attributed on numismatic and art historical grounds.

Most Parthian coins in all metals lack distinguishing titulary and rulers struck coins with no indication of date. As a result, numismatists have largely relied upon the subjective criterion of style to place issues into chronological order. A more methodical approach involves die-engraver identification. The premise of the method is that in all but the largest workshops there will be one engraver employed at any one time, and it is possible to arrange coins in an objective order. This technique is particularly successful for the coins of Orodes II and later (after c. 50 B.C.); where the reverse legend in Greek was progressively misunderstood, and the standard design underwent relatively logical degeneration (Sellwood, 1976, p. 3). The utility of this method for Parthian issues before this date is more limited. The coins from the Nineveh hoard show some engraver continuity between issues, but observations of this nature will be kept to a general level here. Particular emphasis will be placed here on a thorough discussion of the evidence; with a particular focus on placing the issues in a chronological order on the basis of

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<sup>147</sup> "Bronzes" is numismatic shorthand for bronze (copper and copper alloy) coins.

style(after Morkholm, 1980, p. 46). Less attention will be paid to the question of which particular ruler issued the coins, although major problems will be addressed as they relate to chronology.

### **Parthian Bronze Issues-Problems**

Identification of Parthian bronzes presents particular problems, while higher denomination issues of silver, the tetradrachms and drachms, are better understood. A good example of the problem is presented by a recent catalogue of coins from eastern Parthia (Koch, 1990). In a review of this work Sellwood (1993) suggests that a number of mintmarks are misunderstood, with the result that the dating of some coins of the eastern Parthian hoard are perhaps one hundred years too late. The above illustration may serve as a warning, as there is very little in Parthian numismatics that is certain (Sellwood, 1993, p. 312). With some of the silver issues, however, there are general observations that are commonly agreed upon.

The tetradrachms, used in the region of Mesopotamia, were struck almost exclusively at Seleucia on the Tigris between 141 B.C. and A.D. 227. The drachms circulated primarily in other areas of Parthian control, particularly Iran.<sup>148</sup> They were minted in a number of cities, as is clear from a variety of mint marks. Drachms are often studied in association with tetradrachms in order to secure a relatively more reliable date (Sellwood,

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<sup>148</sup> The Parthian monetary division between the eastern empire, which used the drachm, and the western empire, which used the tetradrachm, does not continue into the Sasanian period. Evidence suggests that the Sasanian drachm was used as standard currency throughout the empire (Bivar, 1976, p. 350). This could be due to the changing population, as the ethnic Greek element in the population was probably negligible during the Sasanian period. There is, however, evidence to support the existence of local base-metal coinage during this period.

1975, pp. 57-8). Bronze coinage can be of a completely different style from the silver coinage, so they cannot be simply compared. In addition, Parthian bronzes often lack inscriptions and other marks that can be used for identification.<sup>149</sup>

In general, it has also been observed that bronze issues are very common in all parts of the Parthian empire by the end of the first century A.D. to the beginning of the Sasanian period. In Susa and the eastern part of the realm, drachms were no longer issued in silver, and in the east the last silver issues appear from the reign of Sanabares I from c. A.D. 135-160 (Kock, 1990, p. 53-54).

A further difficulty lies in the collectability of the bronze issues. Before the modern phenomenon of ease of transport, Parthian coins were relatively scarce in the west, and as a result, all issues were highly regarded by collectors and numismatists. With the large numbers of coins now coming onto the market, aided by the widespread use of metal-detectors in the Near East, the relative price of Parthian coins has been dramatically lowered. As a result, collectors and numismatists have spent relatively little time in studying the less desirable copper/bronze issues, which are frequently in degraded condition. This has not always been the case, as in the middle of the last century there were collectors who attempted to classify the smaller denominations (eg. Scott, 1855). Unfortunately, the drawings of earlier ages are not sufficient to offer convincing parallels. Until the smaller Parthian issues are regularly published, with drawings or photographs, and perhaps a general guide book is produced, these issues will remain obscure.

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<sup>149</sup> The only coin from Nineveh that bears any indication of a mint mark is no. 68.

## A CATALOGUE OF PARTHIAN COINS FROM NINEVEH

*The following classification is a detailed analysis of hoard I (see also pp. 425-436). This hoard was previously classified<sup>150</sup> by Le Rider (1967). This classification is a complete revision, and significant differences emerge from a chronological standpoint. Many coins have been re-attributed, and a number of new types have been identified on the basis of method of manufacture. This classification divides the coinage into discrete categories, based on methods of manufacture and style, which are designated by a number. These categories are further divided into groups by a letter of the alphabet. Coins that are illustrated by figures are noted. The inventory number, British Museum number, and weight of illustrated coins are given in parenthesis. Coins of a similar style are referenced by number, taken from Sellwood's most recent *Introduction to the Coinage of Parthia* (1980).*

The British Museum received the entire hoard recovered from Nineveh. 597 coins were recorded in the inventory, while there is one coin (of type 10), and one perfect blank, that were not included, along with a further 18 fragments that were placed together in a group. The fragments are clearly from coins in the collection that are damaged, and none of the fragments bear any trace of design. All of the fragments are irregular, and do not appear to have resulted from clipping. No coins were removed from the hoard before arrival, although nos. 14, 34, 179, 396 581, and 588 are recorded as now housed in Paris. These coins will not be discussed in this investigation. There are 62 coins that were placed in the inventory that are too degraded for secure identification. Because the material was excavated, it is unlikely that any coins have been added to the hoard, as happens in the antiquities market.

After considering the coins of the hoard, it is hardly surprising that no similar coins were recovered from the site. It is unlikely that single coins, especially at that time, would

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<sup>150</sup> The coins were at this time individually weighed and entered into the register of the coin room at the British Museum. The weights by Le Rider (1967) are used in this report. Because no indication of diameter was previously recorded, any measurements are the responsibility of the author.

have been recognized and recovered during excavation. It is also apparent that these small bronze coins would not survive in any but an unusually favourable environment. The vessel that contained the hoard no doubt protected the hoard from water that caused extensive damage to the glaze and glass of the site.

### **Systematic Description**

Because the method of cataloguing these coins used by Le Rider (1967) was in need of modification, a new system is used here. The catalogue is divided into four columns. The first column gives the sample number, the next column gives a number according to obverse design, and the third an assigned number according to reverse type. The determination of obverse and reverse for this investigation is generally one of convenience, as there are no brocages to determine exactly which designs should be assigned to the obverse or reverse. In many coinages one may assume that the hammer would be a blank side, while the anvil would bear the design. Because a number of these coins have one blank side and one with the effigy of a horse, the latter was taken to be the obverse. It is clear that in the majority of the issues the horse was well-modelled, while the design on the other side (if any) was faint and indistinct.

The next column expresses the degree of roundness according to a semi-quantitative scale a-c, "a" being the most round, and "c" having a uneven flan. This criteria was found to be important when considering issues from many mints, and is particularly important for issues from the Nineveh mint.

The final column is reserved for longer descriptions, as there are a number of coins that because of their better state of preservation show more detail. There are also examples that

are not frequently encountered and have a longer description. In the latter case, the number 111 is assigned, and a longer description follows. Unless clearly stated, terminology used to describe casting refers to the method of manufacture used for the blanks before striking. There are few coins that are cast without striking, and they are discussed under "contemporary forgeries."

As the majority of the coins have a blank reverse, coins will generally be considered in relation to their obverse types. In other cases, where the reverse bears a head or other distinguishing mark, that will clearly take precedence over the obverse type. In the coins at the end of the inventory, nos. 576-597 (+1), the reverse is diagnostic, but as many bear an obverse portrait, both sides are carefully considered.

## Obverse Types

The majority of issues have a similar type, and this is the largest group of coins represented in the hoard (Le Rider, 1967, p. 10).<sup>151</sup> These coins bear the figure of a prancing horse.<sup>152</sup> There are many variations within this type of obverse design. There is

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<sup>151</sup> All the coins from the hoard are representative of what would generally be assumed to be a "barbarous imitation." As such, they have some close similarities in the way figures and designs are treated with other barbarous coins, such as the Celtic (eg. Allen, 1980) or perhaps Arab issues that copy Greek and Roman prototypes. None of the issues of this hoard would represent what may be considered "primary" coin design, all issues follow other coin types.

<sup>152</sup> The motif of a prancing horse is also common on Indo-Parthian issues, and appear in a rather crude form in issues of Arsakes Theos, believed to be a vassal king or contemporary of Gondophares (Bartlett, 1963 p. 44). Whitehead (1947, p. 35) notes that the motif of the prancing horse on the issues of Arsakes Theos are probably copied from bronze coins of Phraates II (138 - 127 B.C.); the author also illustrates a coin of Chorasmia of the "Parthian" period with a "slow horseman" reverse executed in a style much like the bronze issues from Nineveh (Whitehead, 1947, p. 38).

a distinct difference between examples that show the horse clearly, and those that show the horse in a very schematic fashion:

**1a1** Horse is executed in the finest style, the body demonstrates muscularity, there is a recognizable mane, and the modelling of the animal's face is clear. The legs are well defined and in proper proportion to the body. The animal is clearly prancing and not walking.

**1a2** The drawing of the horse is less clear, the body may be thicker, the legs may be too short or too long. There is little overall detail of musculature (Fig. 69A, no. 67, G. 1394, 0.45 gm.).

**1a3** Crude horse, legs and body are out of proportion. The animal is not depicted as prancing, but instead walks forwards slowly. The mane and details of the head may be separate from the main body of the animal. The legs may have received little attention, and the joints may be represented by dots (in which case it will also be described as a dot leg horse. An example of this type is presented by Colledge (1986, pl. XVII, gg), who suggests an early date for this issue, c. 124/3-90 B.C. As discussed below, "general considerations of type 2," the obverse and reverse types, when taken with historical evidence, suggests that not all the issues of this hoard should be assigned to Mithradates II .

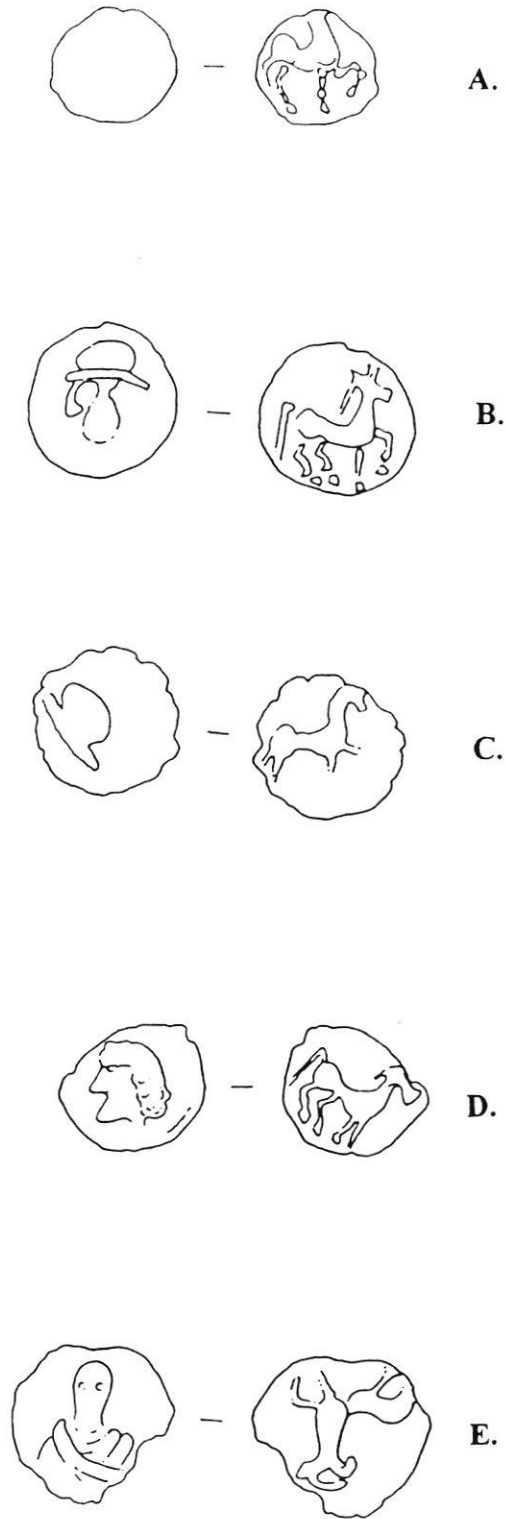


Fig. 69 **Bronze Coins from Nineveh.** Scale twice actual size (A: no. 67, G. 1394 B: no. 7, G. 1315 C: no. 36, G. 1342 D: no. 28, G.1395 E: no. 39, G. 1345).

**1a4** This designation is for the small number coins depict an ungulate and not a horse. The drawing of the animal is such as to leave no doubt, as there are clear curved horns. The position of the animal is in keeping with depictions of ungulates as are common in small Parthian bronze figurines<sup>153</sup> (example type 1a4/6, Fig. 69E, no. 39, G. 1345, 0.78 gm.).

7. 7 Examples (nos. 392, 584, 585, 586, 593, 594, 596. Winged victory.<sup>154</sup> Examples that are either worn or off struck are placed within category 7, examples in better condition are subdivided on the basis of what the winged figure carries. No. 392 bears a dot style winged victory advancing R. on the *reverse*, with a obverse type 1a2 horse. It is placed in group 7, although it is a design on the reverse, because the dot design is very clear.<sup>155</sup> No. 593 is the only one of two coins of this hoard to have an reverse design of a star pattern of 4 dashes. The only other coins with such a pattern are nos. 313 and 386 which are conventional in that their obverse types are 1a3. No. 596 has a winged victory on the obverse, but bears the unique representation of a rose bud on the reverse. Because of the great variety of reverse types represented in this group (7-7b), special attention will be given to the historical context of the victory coinage.

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<sup>153</sup> Or seal-impressions, an example is presented in Colledge, 1986, pl. XI, "b."

<sup>154</sup> The winged victory is common in the copper coinage of the Indo-Parthians. There is a long series (5 rulers, from Orthagnes to Sanabares) of such coins believed to be issued by the state of Arachosia (Maddowall, 1935, p. 137). In this case the symbol of Victory appears to be a state symbol, while the issues of Phraates IV (38-2 B.C.) often have a winged victory as an attribute.

<sup>155</sup> Nos. 361 and 513 have been given to the general category type III, as the winged figures do not appear to be a central feature of the design.

**7A.** *4 Examples* (nos. 587, 589, 590, 592, and no. 588 in Paris). The figure of the winged victory is clearly holding a thunderbolt.<sup>156</sup> No. 587 is unique of these examples in that it shows no trace of an reverse design, and instead bears a faint inscription. The other examples are all clearly of reverse type 4b, which has a small head in a bashlyk (soft cap with ear-flaps). Other examples with reverse type 4b do not show any trace of a winged victory. One example of type reverse 1aa has a faint winged victory in dots (no. 513). No. 361 could also portray a winged victory engaged in some sort of "ceremony," but this example is too worn to attribute fully (Fig. 70A, no. 592, G. 1898, 0.85 gm.).

**7B.** *1 Example* (no. 591). The figure of the winged victory is clearly holding a ribboned wreath. The reverse design of this coin is identified as type 3b, a long thin head with a high cap facing left, although the rendering is unique. The head bears what appears to be a soft cap with a pointed top,<sup>157</sup> and side flaps that extend down the head to the neck. The beard is short, and the neck has no trace of modelling. The bust unfortunately is considerably worn, so that no other details are visible (Fig. 70B, no. 591, G. 1897, 0.63 gm.).

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<sup>156</sup> A thunderbolt rendered in a similar style is given on the reverse of no. 468. This is the only example of this type from hoard I.

<sup>157</sup> This is in contrast to other bronze issues from Nineveh, which if they portray a ruler, the head bears the "Greek" diadem. This example is more in keeping with what is expected of a Parthian drachm. The cap is a feature that was common to the Parthians and to the Persians. There is continuing debate about the exact nature of Persian headgear, but it is clear that different types represent ethnic or social differences (Goldman, 1993, p. 52).

10. 5 examples ( nos. 579, 580, 583, 595 one coin not in inventory, and no. 581 in Paris). All examples show minor differences. The obverse depicts the head and neck of a horse, drawn in various degrees of proficiency. Artistically the bust of the horse is executed in a very different style from the standard obverse prancing horse, which led Le Rider to speculate that all extant examples were produced from different [obverse] dies (Fig. 70C, no. 583, G. 1889, 0.48 gm.).

The reverse types with this common obverse differ. No. 579 is 2a, while 580 appears to be 4b, and 583 and 595 are 3a. The example that is not in the inventory has a Pomegranate (reverse type 8, 5 other examples). This is a very important attribute, as the reverse type is shared by coins that have common obverse types. The latter observation may indicate that these coins (of type 10) are very limited products of the Nineveh mint.

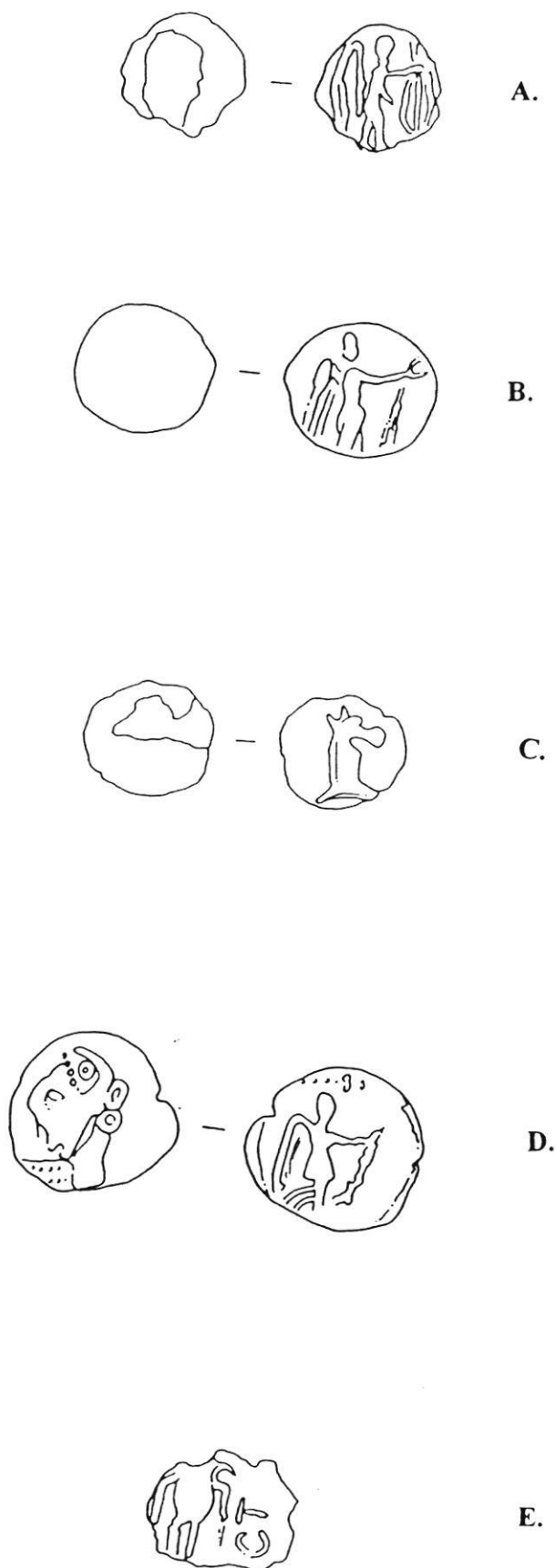


Fig. 70 **Bronze Coins from Nineveh.** Scale twice actual size (A: no. 592, G. 1898 B: no. 591, G. 1897 C: no. 583, G.1889 D: no. 584, G.1890 E: no. 597, G.1903).

## Reverse Types

**1A. 325 Examples.** Blank, no trace of design (Fig. 69A, no. 67, G. 1394, 0.45 gm.). It is common in crude coinages to have a blank hammer (reverse), while having the main design on the anvil (obverse).

**1AA. 58 Examples.** This group has been separated from the group as a whole and placed into a subgroup on the basis of traces of reverse design. Because this design is faint, and perhaps indistinguishable from examples of type 1a when exposed to less favourable conditions, it was felt that these examples should not be placed into a separate group altogether. A number of Parthian issues, particularly of bronze, placed less emphasis on the reverse die.

The design is often be represented by dots,<sup>158</sup> but at times simple lines are also used, to represent a figure seated on a low stool. The figure appears to be working with a long object, which considering the context is probably a bow.<sup>159</sup> In some examples a cape is represented by a single line. Other examples have dots in the surrounding field that

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<sup>158</sup> Personal communication, D. Sellwood. He notes that a number of designs on bronze coins could be executed by elongated dots (scorper). He suspects that in some cases the dots may have been a guide for the engraver to later join by lines (which at times were not connected), as is clear from a number of blundered inscriptions.

<sup>159</sup> The figure of a seated archer is of course very common on Parthian issues, and is employed on the majority of drachms and a number of tetradrachms, as well as a number of bronze issues. The beardless archer, dressed in a cloak and trousers, is thought to represent the founder of the dynasty, Arsaces. Alternatively, the figure could be an imitation of Apollo (Sellwood, 1980, p. 11). During the reign of Mithradates II, the coinage of type 26 changes from the Greek style *omphalos* to a high-backed throne, a motif which remained standard on Parthian drachms from that point on (Sellwood, 1980, p. 63). The design on the coins from Nineveh, however, is too fragmentary to determine what kind of throne is represented.

indicate that there may have been an inscription (or perhaps simply frame of dots), but there is not enough detail to reconstruct.

**II. 11 Examples.** This designation is given to coins that bear a faint inscription on the reverse, with no other trace of detail. No convincing drawing of the inscription can be offered.

**III. 29 Examples.** This designation is given to coins that are from distinct types that are too infrequent to classify fully, an individual description is given for some of the more significant examples at the end of the catalogue.

**2A. 19 Examples.** Large proportioned bust in the style of Mithradates II facing right with beard<sup>160</sup> and diadem. The clearest aspect of the portrait is the diadem and the top of the head, which is carefully styled and represented with lines and dots. All examples of this type also have a strongly modelled cheek, and a prominent nose. Le Rider generally attributed these issues to Mithradates II, although the crude nature of the portrait may also indicate that the issue was struck later (Fig. 72, p. 308, tetradrachm of Mithradates II). The successors of Mithradates II can also appear similar. Dark Age kings, including Orodes I and Sinatruces, were portrayed with heavy cheek pieces (Shore, 1993, pp. 108-111). While the coins from Nineveh do not have heavy cheek pieces, they do have

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<sup>160</sup> A very long beard is indicative of the portraits (coins and statuettes) of Mithradates II. His beard grew continually longer during his long reign. There was also a change in hair style after his reign. Long back and side hair came to replace the relatively close cropped Greek style (Mathiesen, 1982, p. 36).

characteristics that are cruder than the classic issues of Mithradates II.

**2B. 25 Examples.** Large proportioned bust in the style of Mithradates II facing left with beard and diadem. Prominent nose and eye (Fig. 69B, no. 7, G. 1315, 0.79 gm.).

#### General considerations of type II

This type was included in Sellwood's typology as no. 23.10 (Hemichalkoi), under the rule of Mithradates II (123 - 88 B.C.). In a personal communication with the author, he stated that this was done simply on the basis of portrait, and that historical considerations may suggest otherwise. In the light of the facing bust (coin type 6 from Nineveh) one may suspect that some of the coins in the style of Mithradates II could be from a later ruler.

Along long span of issues for the Ninevite coins is suggested by their range of obverse types. A small number have obverse types of the highest standard 1a1, while the majority have types that range from 1a2 (the most common) to 1a3. Few have a obverse type 1a4 (like the facing bust, no. 39). This may suggest that coins with the obverse type 1a2 could be issues of Gotarzes I, Sellwood type 33<sup>161</sup> (95-90 B.C.), Orodus I, Sellwood type 31 (95-80 B.C.), The Unknown King, Sellwood type 30 (80-70 B.C.), or Sinatruces, Sellwood type 34 (c. 75 B.C.). For historical reasons, that will be discussed in a separate section, one may suggest Gotarzes I may be the most likely candidate for the majority of 1a2 issues of type 2.

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<sup>161</sup> While attributions to ruler may change with more evidence, it is unlikely that the types as defined by Sellwood (1980) will be radically altered.

**2C. 2 Examples (nos. 35, 36).** This small group of coins bears affinity to the above group, but it is uncertain as to which direction the bust is facing. In neither example does the head appear to be off-struck, and from the condition of the coins one would assume that they were struck as they appear. The coins portray a diademmed top section of a head, which appears much like a cap, in the centre of the field. These coins may be "as struck" with unclear portraiture (Fig. 69C, no. 36, G. 1342, 0.92 gm.).

**3A. 4 Examples (nos. 3, 17, 583, 595).** Thin bearded head, with long high cap, facing right.

**3B. 5 Examples (nos. 32, 43, 357, 379 591).** Thin bearded head, with long high cap, facing left.

#### General considerations of type III

The head on these coins is not in keeping with the other portraits from the Nineveh hoard, and are quite distinct from the conventionalized portraits one expects on Parthian issues. On art historical grounds alone, one may suspect that they are Armenian issues, and historical evidence also suggests that this region was part of the Armenian kingdom for a period of time (Bedoukian, 1978). It is also possible that these coins represent issues of Mithradates I (171-138 B.C.) as they loosely resemble issues of Sellwood (1980) type 7 and 8. It is significant to note that the distinctive headgear, the bashlyk, does not appear frequently in later Parthian issues.

**4B. 17 Examples.** Small head in Bashlyk (soft cap with ear-flaps) with delicate features - all examples are worn - facing left. This type does not have a variant that faces right. From what can be determined, the head portrayed on these coins is in the style of Mithradates I (171 - 138 B.C.). The majority of these issues have flans that are round, but the obverse horse types are not usually to the highest standard. As all examples are worn, an "early," date is suggested.

**5A. 1 Example (no. 570).** Head with distinctive hair layered in tiers facing right.

**5B. 2 Examples (nos. 28-29).** Head with distinctive hair layered in tiers facing left.

Le Rider found that the reverse portrayed Phraates IV or Artabanus II; he admits uncertainty at this attribution. Much more likely is that these are issues of Artabanus I (127-124 B.C.). This ruler struck a number of small bronze issues in provincial areas. Good examples are presented on Fig. 71. The first example (A) is of a finer style, and clearly shows a portrait with a diadem. The hair is distinctly layered, which is unclear on the drawing. The other example, probably made at about the same time in a more provincial region (personal communication, D. Sellwood) shows a crude hairstyle that could clearly be simplified into something like the example from Nineveh. From the example on Fig. 71 B it is also clear that the nose was also an attribute that received little attention. (Fig. 69D, no. 28, G.1395, 0.45 gm.).

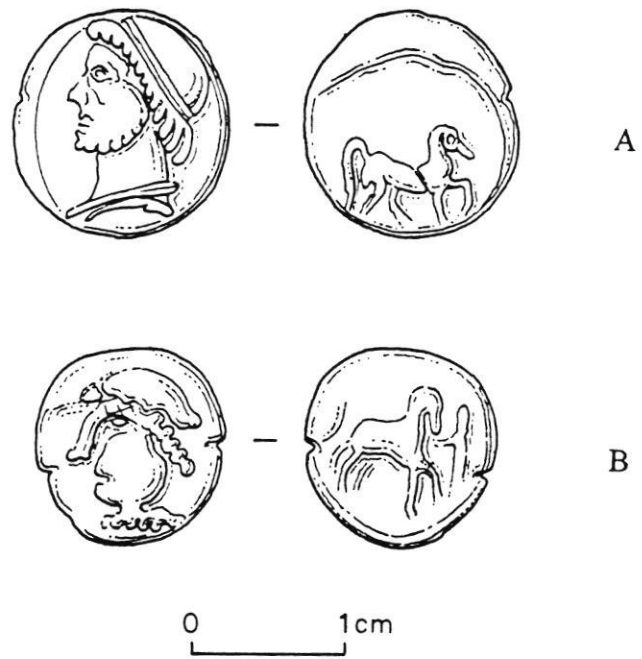
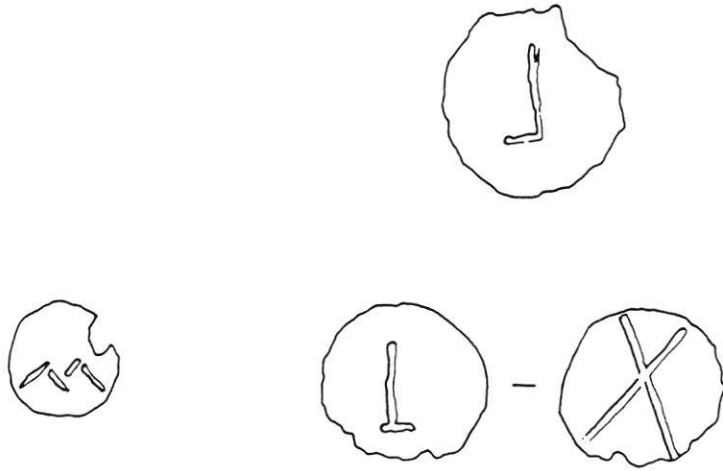


Fig. 71 **Bronze Coins of Artabanus I (127-124 B.C.).** Collection of David Sellwood.



(Magnified) Tetradrachm of Mithradates II (123-88 B.C.).



Lead Tokens from Nineveh. Twice actual size.

6. *One example (no. 39, Fig. 69e, G.1345, 0.78 gm)*. This is the only coin with the reverse portrait of the ruler facing forwards. The figure is draped with clothing, and it may wear a "necklace." There is no indication of a diadem or crown, and the head itself is indistinct. The obverse has a very degenerate figure, oppositely aligned with the obverse. From the horns above the animal's head, it appears as if the engraver mistook the horse for an ungulate.<sup>162</sup> The body is weakly modelled, and the legs are poorly defined, quite unlike examples of type 5, or the majority of the other examples in that there is no indication of punch and line execution.

Le Rider felt that the reverse may depict an "radiating bust from the front, which could be Helios or Artemis," although he admits that the interpretation is dubious (Le Rider, 1967, p. 7). At Susa, issues with an radiating bust of Artemis are encountered, but they are of a very different style (Le Rider, 1965, pp. 294-295).

The identity of the ruler who issued this coin is open to dispute. It is in the classic style of Phraates III, as he issued a well known facing drachm: "If we accept the previous profile (drachm) type as that of Phraates III as co-king under his father Sinatrukes, we should now attribute the facing bust drachms also to Phraates III, issued briefly upon his father's death" (Shore, 1993, p. 114). Sellwood (1980, p. 105) finds that the evidence would suggest that this series *began* under an Unknown king, perhaps named Darius<sup>163</sup> if

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<sup>162</sup> Stylistically this animal is well represented during the Parthian period, and it is common to find the horns of the animal represented by curvilinear lines extending above the head of the animal. It is often assumed that the stag was representative of the Saka, an Indo-European (Iranian) group related to the Parthians. Phraates III's coinage (eg. tetradrachms of Type 39) has the distinctive headdress of the king decorated with recumbent stags (Sellwood, 1980, p. 119). The latter observation may suggest his Saka affiliations (if this coin is indeed an issue of Phraates III).

<sup>163</sup> Although this king was related to the Arsacids, he was a vassal of the Armenian king (Sellwood, 1965, p. 128). It is difficult to separate the issues of Darius and Phraates

the classical sources are correctly interpreted. Sellwood further feels that the forward facing portrait is indicative of a king of Median extraction, and further notes that a medallion is worn in place of the usual torque.

Whatever the case, it is clear that this issue can be easily dated on the basis of style in the vicinity of 70 B.C., whichever hypothesis is correct (Waggoner, 1974, pp. 16-17). The evidence for the "unknown king," originally outlined by Wroth (BMC Parthia, 1903), has been subsequently rejected by many scholars (including Shore). Sellwood (1965, p. 1-5) outlines the historical evidence, and evidence from die-engraver sequences, to suggest that the "unknown king" ruled before Phraates III. A bulk of evidence must then be explained if these issues are all simply assigned to Phraates III.

8. *6 Examples (nos. 253, 293, 311, 372, 586, and one coin not in inventory).* Pomegranate. This motif is not common on the coins. It is clear that this device was intentional and not simply an unusually worn head. No. 372 also bears a faint and illegible inscription. No. 586 has the obverse type of a winged victory.

9. *3 Examples (nos. 287, 343, 424).* All examples of this type have a faint design of a single cornucopia on the reverse. It is possible that other coins had similar reverse decoration shortly after striking, but it is notable that it would not take much wear to make this motif invisible. No. 287 (1a1 obv.) is of a different denomination, as it has a flan fully 12.5 mm. in diameter (discussed under section dealing with weight). No. 424 (1a1

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III - and therefore to assign a date to no. 39 (Sellwood 1980: Darius, 36.1, 36.4, Phraates III 38.1, 38.4).

obv.) also appears to have a faint and illegible inscription on the same face. Coins with Cornucopia were issued during the reign of Mithradates II (Dichalkoi of Seleucia, Sellwood 1980: 23.4, ), and Orodes I (Chalkoi of Susa, Sellwood, 1980: 31.20). Because it was probably not specific to a mint or period, it would be unwise to base an argument on the cornucopia alone, but the obverse types of all three examples is 1a1, with the horse executed in a fine style. One could then suggest that these coins were issued in the earlier Dark Age period, perhaps even under Mithradates II (123-88 B.C.).

**Type III** The majority of coins placed within this group are unclear, wear and off-struck design prohibit a firm attribution. There are notable exceptions.

**Wreath** (*nos. 251, 321 and 436*). No. 251 has a reverse design within a wreath. The design itself has perished, but the wreath, executed in lines and dots, is clear. The "horse" on the obverse is in this example an ungulate. Similar coins, with a wreath on the reverse, are nos. 321 and 436. The wreath is clear, but none of these two coins have a trace of a central design. The horse on the obverse is of 1a2 style, and is quite different from no. 251. The latter examples may have had a small inscription within the wreath ?

**Mound** (*nos. 294, 397, 412*). All examples have a similar reverse, which is not a worn head, but a mound. It would appear from the way it is depicted that it is intended to represent a valued substance (salt ?), and not a geographical allusion. No. 294 has a obverse type of 1a1, and the other two a obverse type of 1a2. The small difference between the obverse types in this instance probably means little, and these issues can be

considered contemporary. Until more information is forthcoming, the motif will remain obscure.

**Dash-Star** (nos. 313, and 386). Both coins have a distinctive star pattern with 4 dashes on the reverse, which as noted, has affinity with no. 593, (a winged victory obverse). Both these examples, however, have a obverse type of 1a3, and visual examination suggests that they have the same obverse and reverse dies.

**Cast** (no. 380). This is a unique example, and differs from others in the group in both method of manufacture (it is cast) and design. The flan itself is notably thicker than any other examples of the hoard, while the coin has a small overall diameter. The blank has very sharp edges, indicating that it was cast into a mould and not poured onto a flat surface. Unlike the other examples of the hoard, the metal of this coin does not show striations from striking, and the quality of the metal is higher than the bulk of the coins from hoard I.

There is evidence that the obverse design was of strikingly high relief, although overall the coin has been exposed to amounts of wear, and upper corner has been chipped. The head on the coin is distinct, and while it has a short beard, there is no indication of side flaps. The head wears no cap. The *reverse* depicts a horse, although it is not "prancing." It is well modelled, and the body is distinctly "S" shaped. The legs are very small and stick like, and the attitude of the animal conveys a distinct sense of motion. This coin is discussed further under the heading of "contemporary forgeries."

**Thunderbolt** (no. 468). This coin is unique. It depicts a thunderbolt surrounded by dots on all sides. Thunderbolts were portrayed on coins of Mithradates II (Chalkoi of Susa, Sellwood, 1980, type 23.6). In the case of the coin from Nineveh, the date is not clear. The flan is not notably well produced (a "b" on the scale), and the obverse horse is not executed to a high standard (1a2). One would feel insecure about attributing this example to Mithradates II, as the bulk of characteristics suggest a ruler within the Dark Ages.

**Import** (no. 584). This is perhaps the most interesting coin of the entire hoard. It has a number of unique characteristics. The most readily apparent difference is of materials and manufacture. This coin was clearly struck on a very different blank, as the copper appears to be distinct from all other examples. The flan edges are also sharper than the majority of the hoard, and while there are few flan cracks, there is none of the distinctive radial cracking that is apparent in other examples from Nineveh. Upon closer inspection, this example also bears traces of an earlier coin that has been overstruck. While most of the design is obliterated by the most recent striking, the a region of the coin that was not overstruck (at about 1 o'clock) appears to have a series of rays emanating from a now obscured figure.<sup>164</sup>

The head on the obverse is distinct, and does not resemble Mithradates II, as suggested by Le Rider (1967, p. 10). Although it is worn, it appears "Phoenician" in character. The head sports an earring and a necklace. The prominent nose and eye are clearly visible, although most of the front part of the face is too badly worn for identification. The top of the head is decorated with dots and a larger circle, suggesting some kind of headdress.

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<sup>164</sup> Mr. Sellwood feels that the motif under the current strike may be similar to examples from Susa.

The reverse shows a victory in a similar pose with the other examples of type 7, although the figure of victory in this example wears a skirt, and the wings are more delicately detailed. The figure presents a ribbon, and presumably a wreath, although the latter detail is hard to verify.

The flan of this example is considerably larger than the other coins in this hoard, and the weight reflects its larger size. On the graph on Fig. 73, this coin clearly stands out from the rest of the issues of the hoard. Unlike the majority, whose weight is about .50 gm, this example weighs 1.01 gm. From both its distinctive style and sizable difference in weight, it would appear that this coin is not in keeping with the range expected within this hoard. This coin is almost certainly imported (Fig. 70D, no. 584, G. 1890, 1.01 gm.).

**Unknown** (no. 597). The obverse of this coin is too worn for identification. This coin was first described by Le Rider, who found that the reverse had the "head-dress of Isis" even though admittedly that motif would appear strange at Nineveh. He further notes that there are two letters clearly surviving. G.K. Jenkins presents a hypothetical reconstruction (Le Rider, 1967, p. 11). While it is beyond the scope of this paper to reconstruct an inscription on the basis of two letters, the other observations of Le Rider bear further investigation. The reverse does have a design that is not difficult to discern, especially when compared to other coins from this hoard. The figure is clearly human, a standing figure, and missing the head due to clipping. The condition of the coin is too damaged to allow description of the figure's attire, but clearly that it is executed in a crude style. Le Rider assumes that on the basis of style, this example was not struck at Nineveh (Fig. 70E no. 597, G.1903. 0.67 gm.).

## The Coins from Hoard 1

### Materials and Methods of Manufacture

All the coins of this hoard (barring the cast examples that are discussed separately under "contemporary forgeries") share common characteristics of manufacture, although there is significant variability in weight. The material used could best be described as copper, and it is clear that there are greater or lesser amounts of impurity in the metal. The copper for these coins was in plentiful supply throughout the region, and the technology for extracting copper from the ore was available since c. 3000 B.C. (Zwicker, 1991, p. 13, and p. 18 for a map of major copper mines). The type furnace used for smelting the copper ore was typically of specialized design, and of simple construction. It probably followed a simple plan: between 20-40 cm in diameter with a series of up to six tuyeres for a high rate of airflow, and about 50 cm. high (Bamberger, 1992, p. 151). Ceramic kilns of the period were capable of reaching the melting temperature of copper (1083 C.), but because of their large size - and correspondingly large fuel requirements - it is unlikely that they were used for this purpose. It is therefore likely that a small furnace used for smelting and working small amounts of copper would not be placed in a separate quarter, as is the case with ceramic kilns, but rather a copper furnace could be located near the area of minting coins.

The irregular weight is in keeping with an open casting, where droplets of metal are simply poured out onto a flat surface and allowed to cool.<sup>165</sup> Before a coin is struck from

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<sup>165</sup> D. Sellwood experimented with casting from a crucible into a mold (1963, p. 224-225, and personal communication) and noted that after a small amount of practice, one could expect to form blanks within a reasonably tight range of weights. Considering the professional metal workers of antiquity, there would probably be little need to carefully weigh the metal used in the coins, especially in the case of the bronze issues from Nineveh.

the blobs of solidified copper, they are flattened into blanks. A number of examples show radial fracturing and cracking of the flan, and many of the crudest examples deviate significantly from round. It is clear from the cracking of the flans that they were struck after the metal had cooled; as such cracks would not be formed if the metal was in a more plastic state.<sup>166</sup> Few marks remain from the original casting.

A few examples demonstrate a slightly different method of manufacture. A number of examples are roughly triangular. This is due to the crude technique employed in casting and subsequent clipping from a sheet of metal,<sup>167</sup> although a number of coins are chipped or fragmentary because of postburial factors. The shape of the sheet of metal used to fashion these coins can be reconstructed from one edge, which in all examples is circular. A disk of metal c. 1-2 inches in diameter was cast onto a flat surface and hammered into a sheet, that was then clipped so that two cuts were all that was required to free four blanks. All examples that have been "clipped from a sheet" fall into two categories, three are 1a (484, 491, and 531), and there is one example with traces of design on the obverse, no. 27. This primitive method results in blanks that are clearly of inferior quality and weight. Despite the small size of the coins from this hoard, there is variation (as much as a millimetre) in thickness between examples that have been clipped

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<sup>166</sup> Many authors have assumed that ancient coins were struck hot. Hill (1922, p. 34-35) notes many ancient coins appear to have cracks that would suggest cold striking. Sellwood (1963, p. 218) notes that there is little evidence of hot striking for any coins minted in antiquity, and notes that some silver blanks could have been struck from metallurgically "cold" temperatures below 200 C. Bhardwaj (1979, p. 81), in his metallographic examination of a variety of Indian coins notes a great diversity in minting temperatures and techniques. According to his observations, some coins were hot worked, cold worked, and then annealed.

<sup>167</sup> This was a common method of manufacturing thin coins, and was particularly used during the Middle Ages in Europe (Hill, 1922, p. 10).

from a sheet. This method of producing coins was not often used in antiquity, and because of the difficulty in obtaining a uniform thickness and therefore weight, this method was not used when coining precious metals (Brand, 1984, p. 91). The graph on Fig. 73 demonstrates (no. 247 is clearly clipped from a sheet, and nos. 120 and 354 also appear to have a similar origin; although they are badly degraded). The designs on the coins demonstrate that little attention was paid to engraving. These four examples do not appear to be "contemporary forgeries," as they are stylistically similar to crude examples struck from a cast blank. These examples are probably the latest products of the Nineveh mint.

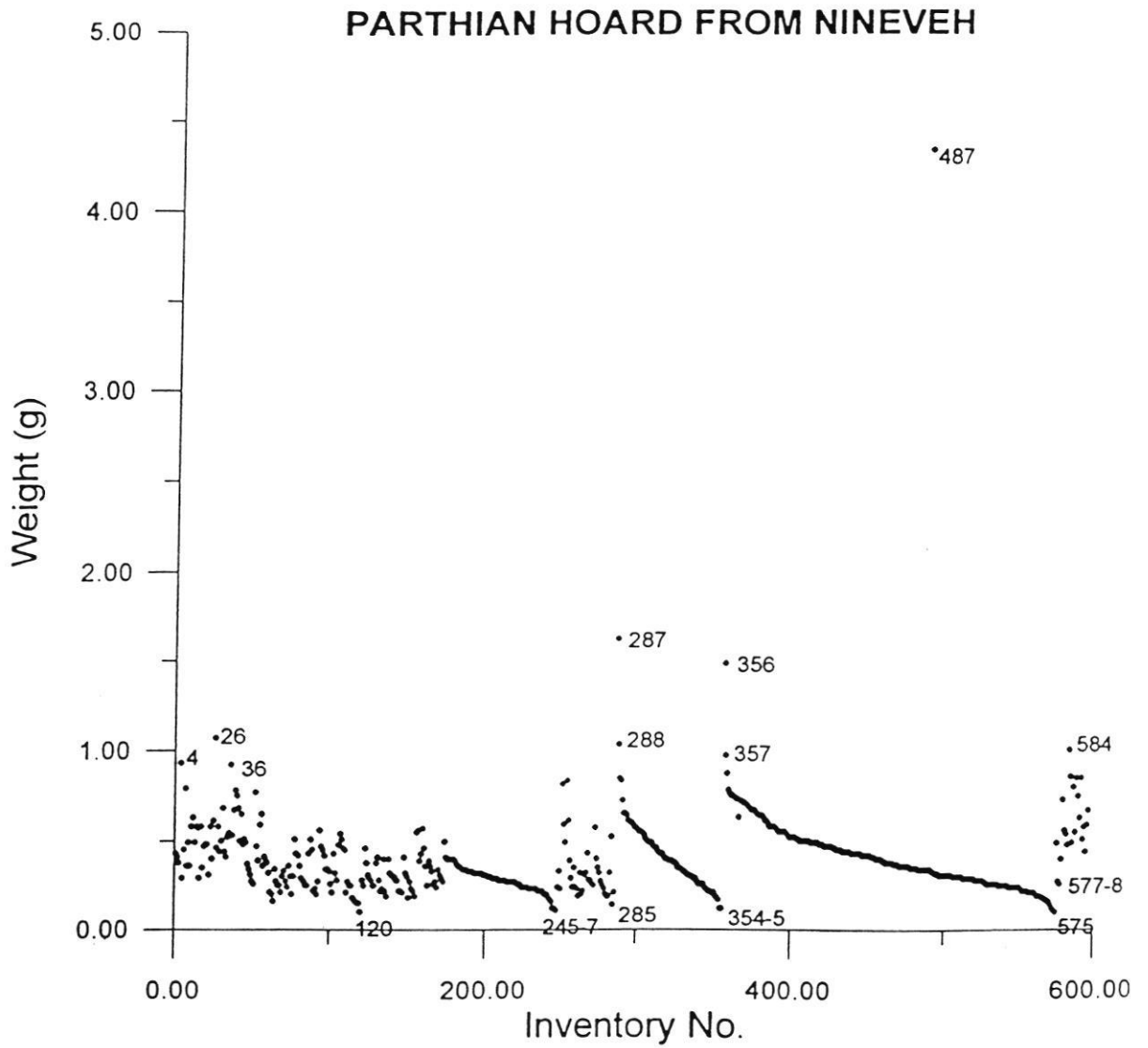


Fig. 73 Weights of Bronze Coins from Nineveh.

## Contemporary Forgeries

### Fine examples

The cast examples have been placed under a general heading. It is common practice to divide "forgeries" into two categories. The first group is the most difficult to detect, as they were made by professional forgers who were proficient in the techniques of minting, and who may have been (or perhaps are still) employed at the mint. This group requires the skills of modern numismatists to identify discrepancies in the design of suspect coins, and to judge whether the suspect coins are forged, often on the basis of the skill with which the design is rendered. It is also possible that coins produced in this manner were in fact legal issues of a mint in order to produce coins in the absence of dies (broken, missing etc.).<sup>168</sup>

Three examples of this type are nos. 362, 363 and 380. The descriptions note that the flans are "sharp." This refers to the edges of these flans, as they are distinct and form a fine line, quite unlike coin blanks that are cast and then struck. Both nos. 362 and 363 appear so similar that one would assume that they were cast from the same mold, and neither differ stylistically from the bulk of the hoard. The reverses are both blank, while the horse on the obverse is unusually well modelled, with considerable musculature. Number 380 is executed in a very different style. The obverse has traces of a design in very high relief, while the *reverse* horse is executed in a very crude style, like some of the "later" issues of the mint.

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<sup>168</sup> Personal communication D. Sellwood.

The most significant question to ask is whether these cast coins are standard issues of the Nineveh mint,<sup>169</sup> and, if so, why would they have cast so few examples? It may be more logically coherent to propose that the cast examples were the extra-curricular enterprise of a private citizen.

#### Crude examples

The other group of forgeries relied upon the acceptance of the greater public. These latter examples are by definition cast, a method which is more easily accessible to one of limited means, but easily detectable by anyone familiar with minting technique (Vermeule, 1954, p. 39).

It would obviously be extremely difficult to base an argument upon the finer points of the motifs used on these coins, given their degraded nature, but it can be easily appreciated that example no. 516 is a cast example. The reverse has the remains of a design in high relief, and the obverse bears a horse with no relation to other examples from the hoard. The animal is set in a frame of a roughly hewn die (it appears to emerge from a multi-sided figure), and is conspicuously small, only 3 mm. long. It is barely large enough to make out the details, which are very crude (1a3). This coin is clearly striking for its low standard of execution, an example of private enterprise by one not employed at the mint.

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<sup>169</sup> The coins of Mattathias Antigonus (except a small group), unlike all other issues of previous Hasmonaean rulers, were struck on flans prepared using a double mold (Meshorer, 1982, p. 89). It is interesting to note that this ruler, who struggled against his Roman supported contender Herod, ruled from 40 - 37 B.C. It may be more than a coincidence that he relied heavily upon Parthian aid, and there are references to Parthians assisting in his conquest of Jerusalem (Meshorer, 1982, p. 87. ) It would appear that this campaign against Herod is evidence of a long standing relationship between Jews and Parthians, which originally began as trade, and finally expressed itself in Parthian support for a the anti-Roman factions (Debevoise, 1938, p. 113).

Although no. 516 does not show any evidence of being cast with other examples, another example (no. 432) is clearly cast *en chapelet*,<sup>170</sup> and has a similarly crude horse as no. 516. The latter example has a small indentation into the flan where a small section of the flan remained attached to the "tree mold."

### Weight

The coins from Nineveh pose a particular problem. The coins from this hoard are of a small size (.20 - .50 gram, 7-10 m.), crudely struck, and show amounts of wear and oxidation. For the majority of issues, the variability in size and weight may not be indicative of any difference in denomination. It is clear from observations of a similar issue of "municipal" Armenian bronze coins that weight can vary considerably. One class of "Tyche" coin are unevenly distributed between 3.1 and 5.2 gm. The result is that the lightest coin is sixty percent the weight of the heaviest coin. Bronze issues with similar designs can be assigned into a type, that roughly corresponds to weight (Foss, 1986, p. 54). Similar data exists for eastern Seleucid coins (Newell, 1938, p. 270-4).

While the above information must be considered, it is also significant to note that there are a few coins that differ significantly from the average weights of the other examples. As Fig. 73 clearly shows, no. 487 (obv. 1a2, rev. 1a) is in a very different weight class, with a correspondingly large diameter. While it can be assumed that the majority of the

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<sup>170</sup> This term refers to the technique of casting whereby a series of molds (made of stone or clay) were joined together by a series of channels connecting the molds together. This would allow the metal to pass from mold to mold. Each half of the mold would bear the design of one side of the coin, one side could be open to yield a blank side (Hill, 1922, p. 2). It is clear that a two part mold was used for this example. The two halves were not exactly aligned, as either face of the coin is off centre.

hoard represent the smallest fractional bronze coinage, or *Hemichalkoi* as defined by Sellwood (1980, p. 66),<sup>171</sup> no. 487 is certainly of another denomination. One would hardly expect a mint to issue a coin approximately five times heavier than the average example by chance. The method of manufacture and the design do not differ from the majority of issues from the hoard. There is no reason to assume this example is a forgery. It is also clear that this coin was not simply the product of overstriking an imported blank, as the design is correspondingly larger to suit the increased flan diameter.

Other examples may be representative of other denominations, such as nos. 287 (1a1/9 12.5 mm. in diameter), 356 (1a1/1a) and 288 (1a3/1a). It is interesting to note the stylistic variability in these examples, suggesting that they were not the products of one mint year.

While all the latter examples differ in weight from the bulk of the hoard, the variability of similar Armenian and Seleucid issues may warrant a cautious interpretation. Another selection of three examples such as nos. 288 (rev. 1a), 357 (rev. 3b), and 26 (rev. 2b) are representative of various types, and do not differ on minor aspects of typology. These examples suggest a difference in mint weight over time, and it is significant to note that the issues that bear a portrait are conspicuously heavy. None of the portrait issues occur in the lowest weight category. It is not surprising that no. 584 differs in weight from the majority of examples, as there is strong evidence to suggest that this coin was imported.

Although a number coins with the lowest weights are fragmentary (nos. 245-6, 355), there are examples that are either cut from a sheet (such as nos. 120, 247 and 354), or examples that are small and thin (no. 285) without exception all the lightest examples are

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<sup>171</sup> Similar examples, with prancing horse rev. are Sellwood (1980) nos. 26.25 (Tetrachalkoi, Ekbatana); 27.6 (similar with long beard).

of reverse type 1a, with badly cast flans. If one were to assume date on the basis of weight, one must assume that light examples<sup>172</sup> of obverse type 1a were among the last issues of the Nineveh mint.

### **Die Alignment: Obverse and Reverse**

An important aspect of the coinage recovered from hoard 1 is the alignment between obverse and reverse. In many instances, in the early issues of a mint, the relative alignment of the obverse and reverse is random. Many issues are aligned so that obverse and reverse are in the same direction, although opposite alignment was practised at Ekbatana in the beginning of the Seleucid period. Perpendicular alignment is attested at Athens in c. 440 B.C. Once a mint standardizes its alignments, it tends to remain the same till the end of the mint's activity. When a mint abandons a relative alignment for an entire issue, it is usually due to an abnormal situation. Such a crisis is usually also accompanied by rushed striking and degradation of style. Within the Parthian political sphere, alignment does not appear to be mandatory. At Seleucia on the Tigris, coins are aligned during the reign of Seleucus II (ca. 230 B.C.). The mint of Susa, in contrast, did not begin alignment until the reign of Mithradates II; a hundred years later (Le Rider 1965, p. 20). The coins recovered from Nineveh do not appear to have any standard alignment, and there is considerable variation within a single group.

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<sup>172</sup> Simply on the basis of weight, one can easily perceive that examples with an obverse portrait do not extend into the lowest weights.

Die alignment can then be considered a non-diagnostic feature for this series of coins, although as a general observation the coins with a crude flan and degraded style appear to have alignments that vary with more regularity than coins executed in a better style (such as the examples with portraits). A good example is presented by coins with the obverse type 1a4 (example, Fig. 3e). In the latter case, it is clear that this troubled period in history was accompanied by a political crisis.

## ART HISTORICAL CONSIDERATIONS

Perhaps the most straightforward question to address is the nature of the coins. Could they have been tokens for trade, or perhaps tesserae? A number of tesserae<sup>173</sup> were made of ceramic material and bear depictions or inscriptions that suggest their use, such as for the theatre or associated with political gatherings. One must also consider the tesserae that are metallic, some of which were apparently issued by druggists in antiquity in order to advertise their cures (Head, 1908, p. 282). Simple art historical observations suggest that the copper issues of the Parthian hoard were coins and not tokens or tesserae, while the question of the lead tokens remains to be resolved.

### Obverse Design

#### *The horse*

A total of 578 coins of this hoard depict a prancing or slowly walking horse, facing right, on the obverse. This motif was popular among the coins of the Seleucids, and was

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<sup>173</sup> A variety of ceramic religious tesserae with a variety of symbols is presented by Colledge (1986, pl. XIX, j). The cornucopia was associated with Dionysus in a celebration of fertility.

also quite popular in many bronze Parthian issues, the collection of David Sellwood contains many examples. This continued use of this motif suggests that the Parthian rulers approved of the imagery invoked. The most obvious reason why a prancing horse would appear on a coin is because it represents an object of value. A horse would no doubt have represented considerable capital that would have been beyond the reach of many. As an initial assumption, perhaps it would not be too much to assume that the animal portrayed on the coin is male, as this would be the critical animal to control during stockbreeding, and would also be potentially the most valuable.

It was not uncommon in Europe during the eighteenth century for owners of a desirable stallion to advertise the dates they would be at local towns and the fee for covering a mare (Davis, 1989, p. 40). It is clear from Assyrian records that the principle of selective breeding was understood from at least that period. The stallion would, not surprisingly, be easily appreciated as an object of value, and perhaps a symbol that would evoke images of speed or strength. There are also ways in which the horse could be seen as indicative of royal control: "The stallion as leader keeps the herd together, and also stands sentry over it. He has no fear of wolves, and it is only rarely that they manage to snatch a foal from him. And it must be a bold wolf at that. The stallion is ready to fight not only predators but also rivals. The arrival of a strange stallion is a signal for a fight to the death" (Jankovich, 1971, p. 92). While the description may slightly exaggerate the nobility of the natural world, it does convey a stirring account of herd of horses allowed to roam free in a semi-wild state. Among the Kazakh and Kirghiz nomads of Central Asia, such a method for horsebreeding was common until the beginning of the twentieth century. Such an attitude to the horse (stallion) may have been shared by the Parthians, who were

familiar with horsebreeding, and who originated from the same region of Central Asia as was later inhabited by the Kazakh and Kirghiz.<sup>174</sup>

The horse, as a critical element in pastoral nomadism, and representing mobile capital, also came to occupy a function in religious ceremonies. In describing the nomads of north-west Turkmenistan of the fifth to second centuries B.C., Abetekov and Yusupov (1994, p. 31) pay particular attention to horse remains in burials, and find further evidence to support the status of the horse in ancient Iranian nomadic culture. Herodotus (I.216) noted that the Massagetae worshipped the sun, to which they sacrificed horses, and the horse was frequently depicted in the classic animal style of the steppes. Tacitus (*Annals*. VI.37) also noted that horses were regularly slaughtered for sacrifice by the Parthians. Philostratus also observed that the Parthian king Vardanes sacrificed a white horse from Nisa.

The religious significance of the horse can then be appreciated in the depiction of a prancing horse before a fire altar from Armazi in Georgia (Fig. 74). While it would appear from the association between the two figures that the artist understood the horse to be a sacrificial offering, one is left without the benefit of such clues on Parthian coins. Perhaps the motif of the horse on the coinage was designed to appeal to a wide audience, while at the same time offering religious connotations to those familiar with Iranian religious practice.

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<sup>174</sup> The Parthian capital in Central Asia is located in Turkmenistan, about 15 km. to the west of Ashkhabad, the capital of that country. The region is noted for large numbers of nomads, and is popular among tourists as a major rug weaving centre (Whittell, 1993, p. 78).

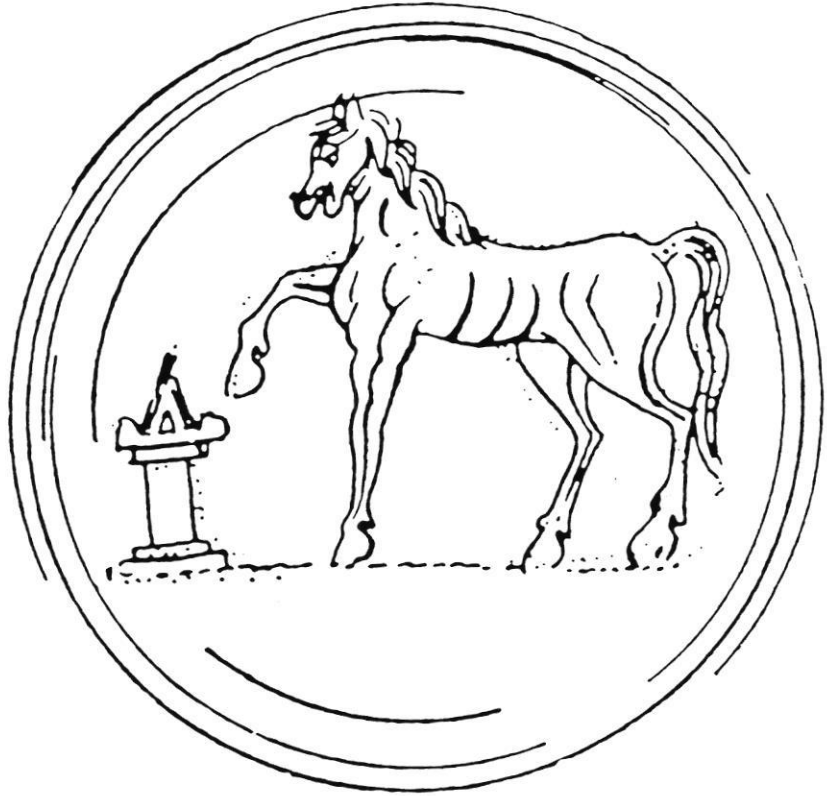


Fig. 74 Horse Before Altar (after Lang, 1986, fig. 3).

## Civic Coinage ?

In contrast to the Roman practice, many Greek states issued coinages (generally from an earlier period) that derived their identity not from the ruler who issued them, but from the city. As a consequence these coins show little deviation from a set plan, they would face the danger of not being recognized. Such a city issue was the badge or symbol of that city, which could not be radically altered for political purposes. Famous examples are the owl of Athens, or the turtle of Aegina, which were standards of purity and accepted currency in many states. It is from this Greek perspective of stable motifs that the bronze Ninevite issues should be appreciated, while at the same time it should be noted that there were a wider range of motifs portrayed on Parthian bronzes than on issues of silver, much like the Roman model of the third and fourth centuries. Clearly not valued for purity of metal, these Parthian bronzes were a symbol of Parthian control. They did not offer innovation or change like some Roman issues - as Parthian issues in general are conservative - but at the same time there is no evidence there are any distinctive city symbols used on the issues from Nineveh.<sup>175</sup>

Parthian issues, like some issues of Rome, simply adapted earlier motifs which apparently had little or no direct political overtones:

One can also easily understand that the coinage of some emperors only reflects their reigns in a very odd way: thus the coinage of Vespasian, at first sight innovatory, with its enormous range of changing types, in fact borrows almost every type from the Republic or earlier emperors.

Crawford, 1983, p. 59.

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<sup>175</sup> Because the horse appears on so many coinages from so many areas, one cannot conclude that the horse was a symbol for Nineveh. There are a few bronze issues in the collection of D. Sellwood that bear a Tamga, which are common on Sasanian seals and are thought to represent the symbols of particular families. While the provenance of these coins is unclear, one could suggest that these symbols had local significance.

A mint could be given general instructions to produce coinage as much like earlier models as possible. The result would be difficult to interpret from a political point of view, as there would be a variety of images, not representing any current propaganda.

The iconography and presumably the propaganda of some Roman coins could remain the same for relatively long periods. A particular case are the bronze folles of the early fourth century that depict a Genius. The symbol was that of another self, or semi-divine guardian, and stood for the unity of the Roman empire and people, especially during the turbulent fourth century. A number of mints throughout the empire, from Britain to north Africa and Syria produced coins with a Genius, and although there was some regional variation, it was a popular motif (Sutherland, 1963, p. 15). The common motif has led many commentators to speculate that there was a general lack of enthusiasm for coinage during this period, as there were such a large number of rigid, stereotyped issues. While the latter observation may be true, it may have been the intention of the moneyers to give the impression that there was a united, homogenous entity of government throughout the empire at this time. Operating in a similar manner to the Greek city coinage, the imagery on the coins was perhaps more important than the ruler who issued them.

Theoretically, at least, there could be a political reason for a similarity in the use of particular motifs between coins of different areas and even different times. Such may have been the case also in the Parthian empire. In a similar manner their bronze issues derive inspiration from a number of sources.<sup>176</sup> But the particular arrangement of motifs, and

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<sup>176</sup> It has long been noted that the earliest Parthian issues derive a considerable amount of inspiration from Seleucid issues: "At a first glance it might appear as if the Parthian coinage was a really original type, seeing that the figures on either side are Parthian figures and wear the Parthian cap or helmet. But a moment's comparison with the Seleucid coinage shows how unoriginal the type is." (Keary, 1885, p. 20). Like most

continuity of specific designs, may have some political meaning. Overall, a contemporary citizen of Nineveh may have appreciated the similarity of the issues from Nineveh to suggest a stable government; an entity that is not materially changed by either a change in ruler, nor one that is influenced by foreign activities. As these two historical phenomenon were actually a common occurrence during much of Parthian history, these aspects would no doubt have been valued and emphasized in official propaganda.

### Summary

While the standard Parthian unit of silver bore the portrait of the ruler and the figure of the seated archer, the bronze coins generally bore non-committal devices. The majority of the hoard show a horse on the obverse. When interpreted politically, this symbol is much less precise than the archer on the silver issues,<sup>177</sup> and perhaps to some communities may have been more acceptable.

While one coin bears a mint mark (no. 68), one cannot assume that such a general symbol as a prancing horse was related to place of issue.

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coinages, Parthian issues derive motifs from previous examples and then go on to adapt and modify these motifs to suit current needs.

<sup>177</sup> The archer may represent Apollo, or perhaps the semi-legendary founder of the dynasty, Arsakes. Whatever the case, this symbol is more specific than a representation of a horse.

## Attribution: Bronze Coinage from Nineveh

### reverse

One of the most striking aspects of these coins is the general lack of attention to detail, in particular the portrait of the ruler.<sup>178</sup> As a result, the ruler who issued many of the coins (particularly of reverse type 1a) will remain speculative. It is possible that the coins were struck with the latter observation in mind. Other Parthian coins, not surprisingly, reflect a tumultuous history, and one finds unclear portraiture on coinage struck during periods of unrest. During a particularly unstable period of Parthian history, two rulers were killed in short succession in battles against nomadic invaders. Phraates II died in 128 B.C., and Artabanus I, his uncle, died a four years later. Hyspaosines, prince of Characene, then began his conquest of Mesopotamia. This left mint authorities "...in something of a quandary as to whom they should recognize, the Seleucia mint authorities temporized by striking tetradrachms with the effigy of long dead Mithradates I." At the same time Artabanus' substantive issue of drachms and bronze coins was coming from the Iranian mints (Sellwood, 1986, p. 283).

A similar phenomenon of nebulous portraiture also appears to be the rule in peripheral regions not within the direct control of the Parthian empire. A recent hoard of silver coins from Fars (ancient Persis) contains a number of coins that continue a type issued by Vologases I (D. Sellwood, personal communication). Because of the lack of comparative material, it is difficult to attribute the coins from the Persis hoard, although there are

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<sup>178</sup> Parthian and Sasanian practice in this instance is markedly different. In contrast to the rather nebulous identity of many Parthian rulers, Sasanian kings characteristically had distinctive crowns, and most rulers have been known by specific attributes for a long period of time (Malek, 1993, p. 227-8). Parthian numismatics, in contrast, still focuses upon the identity of particular rulers, which is still open to debate.

inscriptions and some indication of engraver continuity. Some coins from the Persis hoard simply have a small alteration of the legend or design that indicates a different ruler. Unfortunately, the degraded condition of the coins from Nineveh does not allow much latitude for similar observations on engraver continuity.

### **Unclear Portraiture**

When viewed from a Roman perspective, this attitude would seem to be counterproductive, as an important factor in coinage was communication. Crawford (1983, p. 47-50) notes that a major reason for a Roman ruler to mint coins was probably to impress the general populace with his effectiveness. For the large majority of the population, their contact with the ruler's portrait and symbolic attributes on the coinage may be the most important source of information. Ancient historians understood coinage to be the prerogative of rule, while at the same time they did not appear to rely upon the symbols of the coins to formulate their opinions of the ruler. Edicts by various rulers also governed the way coins could be used and stated that coins struck by the ruling government must be accepted as currency (Crawford, 1983, p. 55).

There may also have been attention to denomination when planning a coin design. Roman coins of the third and fourth centuries employ a distinct set of designs according to metal. Gold coins often bore depictions of gods and symbolism that would lead one to suspect that they were designed to convey meaning to an upper-class, conservative audience. Silver coinage had a distinctly military flavour. Bronze coinage depicted images that would have the widest acceptability (Sutherland, 1963, p. 14). Indo-Greek issues show a similar design scheme. As a general rule, silver issues bear the portrait of the

ruler, while copper issues (which are square) exhibit gods or animals (Whitehead, 1947, p. 33).

### **Parthian Bronze Issues: Why Were They Minted ?**

A major question that quickly arises when considering any coinage, particularly these Parthian bronze issues, is the question of why they were minted, or perhaps what was their function ? Archaeological observations on Parthian bronze coinage are instructive, especially in the case of the bronze coins issued by the kingdom of Elymais. The relationship the kingdom of Elymais had with the earlier Elamites is still a matter of speculation, but the kingdom of Elymais emerged as a separate political entity during the Seleucid period. By the second century B.C., it had achieved a measure of independence. It was attacked by Mithradates I, and weakened, but it remained powerful enough to take Susa from the Parthians in 45 A.D. The Sasanian monarch, Ardeshir I, conquered and integrated the region in 215 A.D. (Alizadeh, 1985, pp. 180-1). While defining the precise way this kingdom related to the Parthian empire is difficult, an indication of the political situation in this region is expressed in their coinage.

### **Political Motivation ?**

Le Rider (1965, pp. 272-6), noted that in the period between 310 to 223 B.C., there were 33 coin types minted at Seleucia-on-the-Tigris, with 49 coin types at Susa. In the period 223 to 175 B.C., there were 314 coin types minted at Seleucia, with only 37 coins types minted at Susa. Le Rider concludes by suggesting that Susa was probably self-supporting at the first stage, while it later became an important commercial centre that controlled the

major routes between the Persian Gulf and Ecbatana and Seleucia. Susa became wealthy through trade, which is reflected in the coinage (Le Rider, 1965, p. 305). This hypothesis suggests that the foreign coins at the site are an indication of an extensive trade network, and perhaps only of secondary political importance. Other observers also agree with this hypothesis.

...Elymean kings seem to have achieved virtual independence from their Arsacid (Parthian) overlords at this time [ A.D. 75], and it is possible that these Elymean coins were issued more as an indication of political independence than for any real economic purposes. The extensive distribution of these coins, however, and their apparent circulation at even the smallest settlements would seem to argue against this possibility, as does their great number.

Wenke, 1976, p. 151.

While one may doubt the latter part of the argument, the former is worthy of further comment. A major incentive for striking the civic coinages of the Roman east may have been simple pride, an advertisement by cities and individuals (Howgego, 1990. p. 21).

There has been much debate as to the nature of "coining rights," especially when applied to eastern Roman issues that have been termed by some as "quasi-autonomous." This term has recently fallen out of favour, as these coins, which form a separate class of issues that do not bear an imperial portrait, have been interpreted as having significant political overtones. Butcher (1988, p. 30), notes that there are a number of assumptions that are not sufficiently supported to assume that these are "quasi-autonomous" issues. One of the assumptions is that emperors gave, and took away, the right of cities to strike issues without the imperial portrait. This implies that cities received the right to strike coins from the emperor, and that the lack of the imperial portrait was denigrating to civic pride. Neither assertion has been established. It is then dangerous to propose political alignment

from an analysis of the motifs used on coins, but more stringent observations may be able to discern central and peripheral regions within an empire.

The issues of Merv, in Southern Turkmenistan, give the impression of coins from a region outside of Parthian concern. The majority of coins recovered from that site are bronze, and there were very few silver drachms. During the Parthian period bronze coinage was issued by a local dynasty. The types closely followed Arsacid types, but the differences may suggest that this region should be considered a separate political entity. It is significant to note that the transition from the Parthian to the Sasanian periods was not accompanied by a clear break in coin types, as in Iran proper or Mesopotamia. Instead, there is still considerable debate as to which coin types should be considered the first Sasanian issues (Loginov and Nikitin, 1993, p. 226).

From a historical standpoint, this argument may simply be academic. A "peripheral" area may have reacted to a change of dynasties quite slowly. It would also appear that the bronze coinage from Merv serviced an economic need, as one could hardly suppose that the coins were issued simply to legitimize the ruling dynasty.

### **Economic Necessity ?**

The political reason the coins from Elymais were minted is still unclear, but factors beyond civic pride may have played an important role. Many of the outlying sites of the Susiana plain were probably engaged in the production of sugarcane, so that they required subsistence products from others. Polanyi (1968, p 102) hypothesized that for the economy of Athens, the wide-scale use of small denomination coins corresponded with

the rise of the retail market,<sup>179</sup> basically for purchases involving small amounts of food.<sup>180</sup>

If the latter hypothesis were the case in the Susiana plain, the large number of small bronze coins found in small rural hamlets reflects the fact that these villages were engaged in the production of luxury crops (Wenke, 1976, p. 151). As a result, they needed coins in order to procure food for themselves. Fig. 75 graphically depicts the results of an attribution of coins recovered from Susa. It is interesting to note that during the Dark Age, between about 88 B.C. and 55 B.C., there is a decline in the total output of coins minted both at Susa and at other sites.<sup>181</sup> The graph clearly shows that this decline is not unique. However, when the historical information is taken into account, one can speculate that the economic conditions during this period were not stable. In response, regional economies did not generate small coinages to meet a demand.<sup>182</sup> Perhaps the evidence suggests that during this period, the demand for coinage was less. The information is not conclusive

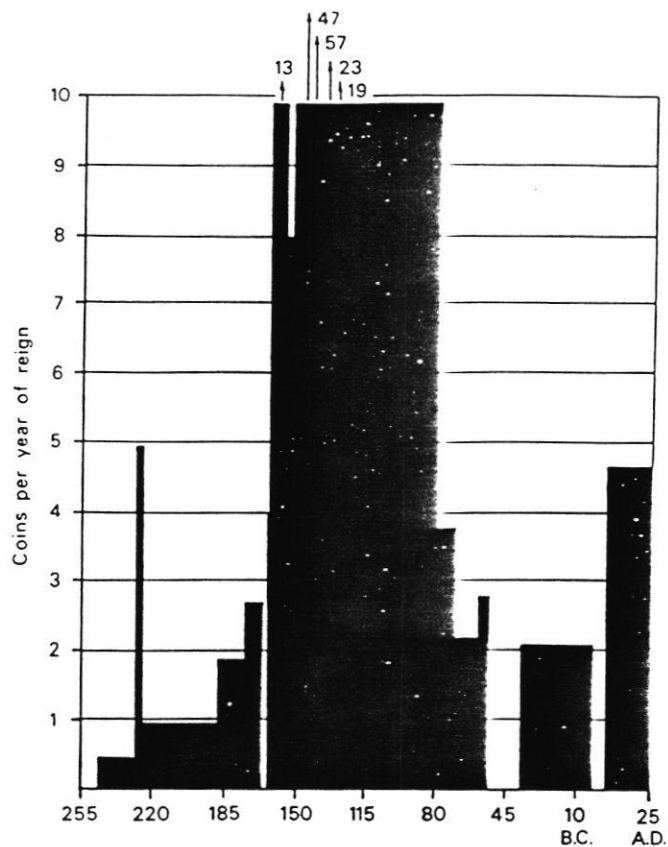
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<sup>179</sup> There are also other reasons why a state could issue such coinage. For example, a ruler could issue an emergency token bronze coinage to pay troops (Howgego, 1990. p. 9).

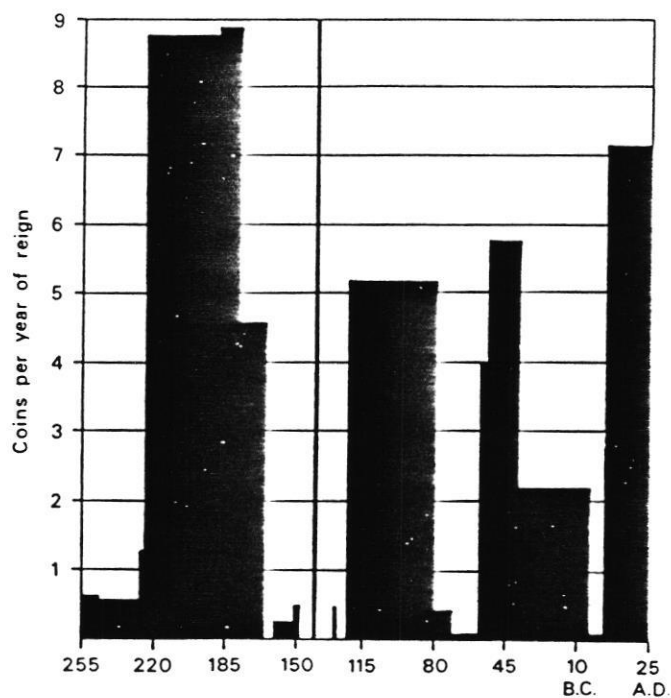
<sup>180</sup> Plato outlined a coinage for small daily purchases in the *Republic* (ii, 371b, 8-9).

<sup>181</sup> Calculating the total output of a particular mint is fraught with difficulty. Recent opinion on the subject (Buttrey, 1993, p. 350) suggests that great caution should be used when attempting to determine the quantity of coin produced, and the rate of attrition; it is clear that neither process was constant throughout time. The information here presented by Wenke should be interpreted with some caution.

<sup>182</sup> The prosperity of a city and the issue of coinage cannot be expected to coincide. An important reason why a city would issue bronze coinage could be civic pride, as mentioned above, and profit. An inscription from Pergamum from the reign of Hadrian (A.D. 117-138) stipulates that some goods must be paid for in bronze coin. Patrons with silver coinage would then have to change their money into bronze, at a small loss, in order to purchase some items. This tariffing of goods in silver or bronze may have been practised in much of the eastern Roman empire (Butcher, 1988, p. 26).



a) Coins found at Susa minted at Susa



b) Coins found at Susa minted at Seleucia-on-the-Tigris and other cities

Fig. 75 **Coin Finds During the Parthian Dark Age** (adapted from Wenke, 1976, tables 30, 31).

enough to suggest that anything so drastic as a "general economic collapse" occurred. It is likely that during such a situation, the average citizen was little effected and simply bartered rather than used coins. A similar case of what would appear to be a return to a barter economy is evidenced in north Wales in the 340's and 350's A.D. In this instance when Roman military presence left, coinage fell out of use. The result is a decline in coin finds after this period, while there does not appear to be a decline in population. One hypothesis is that because the region was only recently monetized, it soon reverted to earlier practice (Davies, 1983, p. 93).

It is also an assumption that coins are needed for a "monetized economy." Evidence from an estate in the Fayum, Egypt, shows that workers on the estate were paid in the local currency of the estate, which was reckoned in wine. These wine units were held in credit, and purchases of estate goods were deducted from the workers account. The managers also paid taxes, for which coins were presumably drawn, and also converted the wine units into cash. The latter two examples show that the units of wine could be seen as no more than another way of reckoning, and that in effect the estate economy was monetized with the use of coins kept to a minimum (Howgego, 1992, p. 16). Whatever the case, it seems as if there were some shift in the political or economic climate between the first century B.C. and the first century A.D., when the Kingdom of Elymais began to produce their own coinage. During the earlier period, municipal or local coinage was *not* produced in quantity at Susa (or elsewhere). This could suggest that before this date the state was not independent economically.

## The Lead Tokens

Evidence for the way local economies adapted to the Parthian Dark Age may be provided from the lead tokens (unpublished, with no museum numbers) from hoard 1.

Because of their delicate state these nine examples were at some point encased in plastic as a preservative.<sup>183</sup> All show some indication of having crude lettering or symbols scratched on their surface (Fig. 72, p. 313), which would factor for their status as a token of value, and not tesserae for advertisement, as a "ticket," or even as a charm (Head, 1908, p. 286). Four examples have a design on one side, a scratched "M." Their diameters are 6 mm., 2 x 7 mm., and 2 x 8 mm. Three examples have a reverse "L," and they have a significantly larger diameter, 14 mm., and 2 x 12 mm. There are two examples that do not conform to the two main groups, one has an inscribed "X," (11 mm.), and one example is inscribed on both sides. One side has an "X," and the other bears a reverse "L" (12 mm.). Because of their degraded state, it is unclear if the latter example is simply a better preserved specimen. The significant facts are that these tokens were included with the hoard of coins, and that they are scratched with non-random symbols. It is clear that they were designed to facilitate trade. One must then assume that they are either "counters," or perhaps they were intended to act as coinage. The term "token," when used for these examples then encompasses both possibilities, although one may suspect that they were used as a currency. Historically tokens were often issued in times when coinage was scarce, which may suggest such a situation existed at Nineveh during this period.

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<sup>183</sup> Lead tokens are commonly recovered in a very delicate state of preservation. A group of similar material from Behnesa (ancient Oxyrhynchus) had a low general average of preservation and execution (Milne, 1908, p. 287).

## Lead in Antiquity

The value of lead in antiquity was clearly variable, but it is clear that lead cannot be considered a precious metal (Moorey, 1994, p. 296). It was long used for a variety of purposes, including coinage, where it was added to copper to facilitate striking. A fragment of sheet lead was recovered from the third millennium B.C. at Nineveh (Campbell-Thompson and Mallowan, 1933, p. 146), and lead use from other site suggests it was often employed to repair objects because of its low melting temperature and relative plasticity.

Lead "tokens" in the Near East have a long history of use. Smith (1922, pp. 178-179) noted that in Assyria and Cappodocia<sup>184</sup> between 2250 and 1200 B.C. stamped circular "tokens" were made in gold, silver, and lead. Although this view of early lead coinage is now discounted (Moorey, 1984, p. 285), it demonstrates that this metal was long in use as a currency. That lead should be comparable (although at a high exchange rate) to other precious metals in antiquity - before the introduction of efficient lead smelting under the Romans - is hardly surprising. Unlike copper, which has a long history of smelting in the Near East, lead is comparatively difficult to process from ore. It requires high temperatures that volatilize a high proportion of the lead in the fluid slag (Hetherington, 1991, p. 32).

While there may be debate as to the introduction and purpose of lead tokens, the tokens from Nineveh are from a later period and are distinct in their crude method of manufacture. While the marks on the ingots and disks recovered from Assur are all cast,

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<sup>184</sup> Modern studies drawing upon textual and archaeological evidence, demonstrate that there was no simple exchange rate between lead and other metals. The information is too complex for a simple summary (Powell, 1990, pp. 76-80).

the examples from Nineveh all bear scratched characters,<sup>185</sup> which may suggest that these tokens were issued by a local merchant rather than a more central authority.

### Lead Coins

It is interesting to note that there were lead coins produced under the jurisdiction of Alexander Jannaeus (103 - 76 B.C.). Quantities of these coins, of this single ruler, have been recovered from Jerusalem, Hebron and the Transjordan. There are also similar lead coins struck by Demetrius III. While there will no doubt continue to be debate on the nature of these coins, some indication of their use and value may be gained by considering that they were an emergency coinage:

Lead coins were minted in the ancient world for a variety of reasons, ranging from the Seleucid pieces which may have functioned as real currency or which may have been locally struck imitations used as tesseræ, to official coins minted in Numidia in North Africa during the reigns of Jugurtha (118-105 B.C.E.) and Heimpal II (105-62 B.C.E.). These North African coins were legal tender, struck in large amounts, during a period contemporaneous with the reign of Jannaeus. Perhaps the impetus which caused such coins to be minted was a temporary shortage of copper.<sup>186</sup>

Meshorer, 1982, p. 83.

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<sup>185</sup> A few examples may have what may appear to be a cast design of a bust (?) but the condition of the examples is too degraded to be certain.

<sup>186</sup> I must disagree with the author when he takes the modern value of lead in relation to value of high quality bronze, and assumes that lead in antiquity may be assumed to be worth about half that of bronze. The experiments of Hetherington (1991) indicate that lead may have been more valuable than bronze. It is also worth noting that coins in antiquity were not usually graded on their quality of bronze.

### **Lead Token-coinage**

In eighteenth century Britain, there was a profusion of tokens issued by various agencies, to make up for the lack of officially minted small coinage. At this time, the government recognized private issues as tokens, but forbade the use (by private individuals) of the screw press for manufacturing coins or tokens (Cooper, 1988, pp. 124-125). Perhaps the legal aspects of token production at Nineveh was similar in that there could be no private *striking* of coins. A similar token currency of low value may also have been struck in Egypt during the second and third centuries A.D. A number of lead city issues, which follow recognized coin types and bear some indication of value, were minted during a period where hardly any coins of a lower denomination than a tetradrachm were issued by the imperial mint at Alexandria, although payments in lower denominations were mentioned in the literature, and there was no mention of payment in kind (Milne, 1908, p. 302).

The archaeological maxim, "Absence of evidence is not evidence of absence" could be applied at this stage of the argument. At the same time, it should be noted that it is dangerous to go too far beyond the evidence. There are, however, some significant problems associated with the recovery of similar tokens. If such delicate objects were encountered in an excavation, they may not be detected, and even if they were, they may not be recorded. Unless one finds such objects in close association with coins (such as in a hoard) they are impossible to date. If a hoard were uncovered and conveyed to the antiquities market, it is unlikely that such material would be saved, as it has essentially no value. While material of no intrinsic value could be retained or recorded after an excavation, much of the information about coins originates from the material obtained from the open market.

## Historical<sup>187</sup> Narrative

*Fig. 76 presents a map with relevant regions and sites of Parthian Mesopotamia.*

Although the portrait on type 3 coins is in an early style, as the head wears a cap, the head is so thin as to factor against simply attributing these issues to Mithradates I. Type 4B is a closer match, and one may assume that it is an issue of Mithradates I (171-138 B.C.). There are 17 examples represented, so that they make up a proportionally small percentage of the hoard.

The earliest coins that can be (almost certainly) identified are type 5 (A and B), which belong to Sellwood (1980) type 18 and 19. The former type is ascribed to an inter-regnal issue of c. 127 B.C. At this time there was a crisis in the Parthian empire. Phraates II (138-127 B.C.) was killed by nomad invaders who threatened to destroy the empire. At this time, it is unclear who is ruler, so the mint authorities harkened back to issues of Mithradates I (Sellwood, 1980, 54). It is possible that these issues were under the reigns of Himerus or Hyspaosines.

Type 19 coinage can be ascribed to Artabanus I (127-124 B.C.). Under this ruler the nomads were repulsed, and tetradrachms were struck in Mesopotamia. As the latter indicates that Parthian control was restored in the south, it is therefore historically probable that the issues from Nineveh indicate that northern Mesopotamia was also under Parthian control at this time. There are a total of three coins from this period in hoard I which attests to an unstable political environment.

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<sup>187</sup> The Parthian period is particularly suitable for using evidence from coins, as there were often contenders for the throne, who may have held - and then lost - particular regions. A careful surface survey of many areas of the Near East, perhaps incorporating excavation and examination of coins, may reveal the changing alliances of a particular region, and may delineate the boundaries between claimants during the Dark Age (Gibson, 1974, p. 14).



Fig. 76 Map of Parthian Mesopotamia.

## The Parthian Dark Age

The aptly termed Parthian Dark Age can be seen historically as a period of decline after an energetic, able ruler. Mithradates II came to the throne in 123 B.C. His reign is marked, like that of his predecessor of the same name, by notable successes (Debevoise, 1938, p. 40). He turned his attention to Babylonia, and by 121 - 120 B.C. bronze coins of Hyspaosines, the Characene ruler, bore the overstrike portrait and titles of Mithradates II (Bellinger, 1942, p. 61). Mithradates continued to add provinces to his empire, including regions of Bactria (Strabo xi. 9. 2). He campaigned against Artavasdes of Armenia, and he held Tigranes, the eldest son of the monarch, as a captive (Strabo xi. 14. 15). This marks the beginning of a period of close alignment between the Parthian and Armenian empires. Eventually the Parthian and Armenian thrones were intertwined by marriage.

In 94 B.C. possibly upon the death of his father, Tigranes was placed upon the Armenian throne with Parthian aid, for which Mithradates was paid with the gift of seventy valleys, which at this time may have included Nineveh (Strabo xi. 14. 15: see also Appendix 1, pp. 402-403). It is possible that at this time coins with a bust in the style of Mithradates II (reverse type 2) executed in the finest style (obverse type 1a1) were minted. Tigranes soon formed an alliance with Mithradates of Pontus, and the rulers then proceeded to drive Ariobarzanes of Cappadocia from power. This activity in the Roman sphere of influence soon roused interest, and in 92 B.C., a Parthian ambassador was sent to meet Sulla on the Euphrates, the traditional boundary between Rome and Parthia. The Parthian ambassador offered friendship, and an alliance with Rome, which was quickly agreed by Sulla. The ambassador was executed upon his return for his failure to uphold

Parthian honour. The three rulers of Parthia, Armenia and Pontus, realizing the threat posed by Rome, became closely allied. This triple alliance of necessity was only fostered by the continued Roman intervention in the region.

Early in 91 B.C., Gotarzes, formerly a satrap, gained power in Babylonia. As Hertzfeld (1922, p. 35), copied from the relief at Behistun before its subsequent partial destruction: "Kophasates, Mithradates the overseer...Gotarzes the satrap of satraps, (and) the Great King Mithradates." The scene itself shows Mithradates, the "chief satrap," and the other "minor" satraps. It is important to appreciate at this time that Gotarzes is placed firmly below Mithradates in rank. Dobbins (1975) suspects Gotarzes is not a contender, but in fact the son of Mithradates II. The evidence revolves around two titles used for Gotarzes: *autokrator* "ruling by ones own authority" and *philopator*, "devoted to one's father." These two titles are explained by a political compromise. Gotarzes, the eldest son, at this time in his 40's, was given the southern part of the empire, while Mithradates pursued his interests in the north with his friend and ally Tigranes. Gotarzes is allowed the title of king, with the additional title of *philopator* to please Mithradates. Dobbins assumes this is evidence for a planned succession (Dobbins, 1975, p. 42).

While this is an interesting theory, it is unsubstantiated by any evidence. It would be strange if the inscription at Behistun did not mention Gotarzes was the son of the king, if indeed that was the case. While there may have been an accommodation between the two rulers, there does not necessarily need to be any familial connection. Keall (1977) noted that there could have been such an arrangement between Vologasses and Osroes. Sellwood (1962) proposed that these were in fact issues of Orodes I, an observation that appears to override highly complex arguments to the contrary. It is possible that at this time coins

with a bust in the style of Mithradates II (reverse type 2) executed in the debased style (obverse type 1a 2-3) were minted.<sup>188</sup> There is also evidence for Armenian expansion into northern Mesopotamia shortly after the death of Mithradates (Der Nersessian, 1969, p. 26). Since the northern region was probably held by Gotarzes at the time, one must believe that a "friend and ally" of Mithradates would quickly move against his son upon his death. At the same time, various victory coinages are struck in many small kingdoms, including the issue of Characene in 89/88 B.C.<sup>189</sup> One wonders if a small kingdom, such as Characene, would move against a Parthia still controlled by a powerful ruler such as Mithradates (and his son). It would also seem from later Parthian history that such a well planned succession was not the rule.

Both Gotarzes and his successor, Orodes, are mentioned by name in documents from this period, suggesting that it was necessary to denote exactly which ruler was in power.

Mithradates Sinaces, the governor of northern Mesopotamia, is also mentioned at this troubled time. Shortly before Mithradates' death, two brothers, Demetrius III and Philip, were fighting for the throne of northern Syria, and in the process an ally of Philip asked a pro-Parthian tyrant, Aziz, and the governor of northern Mesopotamia for aid (Debevoise, 1938, p. 49). This is significant when taken in context, as Aziz was clearly ruler of a buffer state friendly with Parthia.<sup>190</sup> Mentioning the governor at the same time as Aziz

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<sup>188</sup> It is therefore possible that these were issues of Orodes I, although one feels that they were probably shortly before this ruler. There are a total of 44 coins from hoard I of type 2, and because of their variability they may span a period of time.

<sup>189</sup> A date which may have also witnessed the type 7 issues from hoard 1.

<sup>190</sup> He may have issued coins in the style of Mithradates I, or perhaps with a blank obverse, in order to signal his lower status? This region emerged as the state of Adiabene during the second century A.D. The boundaries of the state are indicated on Fig. 76.

suggests that Mithradates Sinaces enjoyed a degree of autonomy. It appears that any intervention into northern Syria would be based upon his assessment of the situation. At this time of civil war, the local bureaucracy could have remained relatively stable, and decisions that normally would have been taken by the king would of necessity be dealt with on a local level. While the exact nature of the governors relationship with the Parthian throne is unclear, one must bear in mind that northern Mesopotamia emerged in the early first century A.D. as a distinct political entity.

After the death of Mithradates, Tigranes of Armenia reclaimed the seventy valleys, and proceeded to overrun the region of northern Mesopotamia. He took Adiabene and Media, and extended his power as far west as Syria, taking the title "king of kings" (Strabo xi. 14. 15). The Armenian king expanded his power by confirming regional dynasties. When Commagene was conquered, the coinage was struck with the portrait of Tigranes II on one side, and the reverse carried the lion of Commagene. Kings of Gorduene and Atropatene also stayed in power, and coastal Palestinian cities, which had been deprived of the right to strike coinage under the Seleucids, reclaimed that right. Laodicea, Berytus and Apamea began to strike coins in 76 B.C. (Bedoukian, 1978, p. 12). It is interesting to note that the one coin from hoard I that is certainly imported (no. 584), is of a Phoenician character, and could have been issued by one of the city states under Armenian control at this time.

The Parthian empire at this time was in disarray, and there are a number of kings who ruled for only a short period of time. Some kings from this period are only known from a single reverse type of coin. The intervention of the Armenian king into the northern area is of great importance, as it is clear that Nineveh and its environment were

held for a time by that ruler. It is possible that some of the bronze coins (of reverse type 3) were minted at Nineveh while it was under Armenian control. Art historical considerations suggest that while the recognized issues of Tigranes II (see Bedoukian, 1974, p. 30) are not directly similar to coins of type 3, they are also distinct from other Parthian issues. other issues from Nineveh. If a local coinage was struck, however, it may be made to imitate "Parthian" coins. Indeed, the political situation at the time may have been such that the engraver of the coins was not certain who was in power.

In 70 B.C., the aged Sinatruces's son, Phraates III, took the throne. In a letter of about that date, both Mithradates of Pontus and Tigranes of Armenia offered, for assistance in fighting Rome, to return the seventy valleys, Adiabene, and northern Mesopotamia. The evidence from Nineveh suggests that Phraates III, if not his predecessor, Darius, was already striking coins (type 6) in the region. The historical records suggest that Nineveh was held by these rulers for about twenty years. Unfortunately, the material remains of the region are not well enough understood to be able to define this period, if in fact there is any way to discern a change in political alliance from material culture. Parthian neutrality at this time spelt disaster for the kings of Armenia and Pontus, who were left to face Rome alone. The result was the reduction of these two kingdoms. Rome, at that time, was engaged in wars of succession of her own at home, and could not benefit from the reduction of these two kingdoms. Parthia then gained what the Romans had won. By 64 B.C., evidence suggests that Phraates held Adiabene, and Tigranes was left a much diminished region about Nisibis (Debevoise, 1938, p. 75).

Parthia, by nature of its now preeminent position in the east, was left with no rivals; and it was now clear that states such as Pontus or Armenia could only survive within the

Parthian sphere. Probably a major factor in pulling the Parthian empire out of its Dark Age was this action by Rome.

The end of the dark age is probably best placed shortly after Orodes II took the throne, at the battle of Carrhae in 54 B.C (see Appendix I, pp. 404-405). During this famous battle, Crassus lost the majority of his men, numbering some forty thousand, in an ill-conceived attack. The Roman army was ill-equipped to fight against mobile mounted forces. Evidence suggests the possibility that at this time the Parthians used the stirrup, which would assist the heavy mounted cavalry in particular (Herrmann, 1989, p. 765). The military commander who engineered the Roman defeat was killed, presumably a preemptive measure against a potential rival. Rome responded to its defeat with shock, and the Parthian empire emerged as a very real threat in the Roman east.

### **Determining the *Terminus Post Quem* for the Hoard**

Perhaps the most significant aspect of the hoard from an archaeological perspective is the *terminus post quem*, or the latest date possible for the hoard. Some Roman coins remained in circulation for hundreds of years (Greene, 1983, p. 63-4).

The coins of Hoard 1 are much more difficult to place with such a date, as it is unclear when the majority of the issues were minted. Where the reverse bears no portrait, one is left to assume a logical progression and degradation of style in reverse types. One may then assume that few if any issues are later than the end of the Dark Ages. If one were then to propose a *terminus post quem* for Hoard I, 55 B.C. is taken to mark the end of the Parthian Dark Age. There is slight evidence for issues struck after this date

## Summary

Summarizing the observations made above leaves many questions, points to many avenues for further research, and identifies some areas of relative certainty. It is clear that a careful consideration of the types of coins from this hoard, coupled with the careful use of historical sources, can reveal much about the history of northern Mesopotamia. The relative number of coins may also give a rough indication of political control of the north during the Parthian period. It is clear that the issues of Mithradates, as they encompass a number of variations, are the most numerous. In contrast, the issues of Artabanus and Darius/Phraates are represented by few coins. Each of these rulers had short reigns.

Type	Ruler	Date Range	Number of Coins
4b	Mithradates 1?	171-138 B.C.	17
5a/b	Artabanus I	127-124 B.C.	3
2a/b	Mithradates II (or later)	123-88 B.C.	48
7	successors of Mith. II	88-70 B.C.	12
2c	after Mithradates II	88-70 B.C.	2
3a/b	Armenian ?	90-70 B.C.	9
no. 584	Armenian (Phoenician)	c. 90 B.C.	1
6	Darius/Phraates III	c. 70 B.C.	1

One of the biggest questions is the proper identification of the unclear coin types. From historical records it is known that the local governor could act independently, could the large numbers of coins with no indication of ruler be from a "quasi-autonomous" issue?

Some of the most engaging questions with regard to the coins produced during this period revolve around the evidence from Susa, which suggests that there was no increase in the production of local coinage during the Dark Age. Why the kingdom of Elymais would produce coinage during the first century A.D. and not during this period is an interesting question. Are bronze coins properly seen as small units of value, or as political propaganda ?

Until more information is obtained, the coinage from Nineveh will remain very much in a Dark Age.

# Chapter IV

## Nineveh and the State of Adiabene in Relation to the Roman Empire

### Introduction

The emergence of Parthia as a political force by the reign of Mithradates II (123 - 88/7 B.C.) was of great concern to Rome, since the province of Syria was directly threatened by the Parthian presence in Mesopotamia. Throughout the Parthian period there were periodic raids into Roman territory from the east. In order to maintain control of the region, Rome entered into diplomatic alliances with, or at times directly controlled, Armenia and northern Mesopotamia. The northern region was viewed as critical. From such a base of operations Syria could be protected, and Ctesiphon, the Parthian capital in southern Mesopotamia, could be threatened. Roman diplomatic policy favoured the creation of small buffer states not directly aligned with Parthia. Such may have been the case for the state of Adiabene, which in the first century A.D. encompassed the region around Nineveh (Eiland, 1992).

Consequently, material evidence that points to a "Roman" military presence at Nineveh is of particular interest. The most obvious is any pottery that has been taken to be distinctive of workshops within the Roman Empire. However, this evidence is equivocal in its relevance to the presence of Roman troops in any specific place, as the following discussion makes clear. Isolated metal fittings and objects may be more instructive, but they are rare in the Nineveh excavations and may not always be sharply defined from "Parthian" equipment. A distinct problem is presented by the significance of the Roman coins found at Nineveh. This is treated here in relation to coin hoard II. Each of these categories is treated in turn here:

1. The political implications of the presence of Roman Red Ware (see also Chap. II, pp. 235-236).
2. Isolated metal finds of "Roman" military type.
3. Roman coins.

This chapter will close with a historical review of the state of Adiabene, of which Nineveh was a part, in the Parthian period.

## **Roman "Red"**

### **The political implications of the presence of Roman Red Ware**

Although it is impossible to determine if the fragments of Roman Red found at Nineveh (see Chapter II, pp. 229-236) result from trade or occupation, it is relevant to ask whether a Roman military occupation of Nineveh might be expected to have involved a change in ceramics?

While this question has not been discussed for Dura, where there was a range of ceramics used and traded throughout the period of Roman occupation. This question has been extensively studied for the Roman occupation of Britain. Greene (1979, p. 99) notes that in the first phases of Roman occupation, the army would have had little need of pottery; as use would have been made of metal cooking vessels. Representations of Roman mess tins attached to the shafts of legionary *pila* are clearly depicted on Trajan's column (Strong, 1976, pl. 80). There is also a striking lack of pottery finds from temporary marching camps. Other evidence, from both Spain and Germany, suggests that after a period of consolidation, Roman tastes for certain kinds of pottery needed to be met. Although local potters would be encouraged to manufacture Samian copies, there is clear evidence that many still preferred imported vessels as a mark of distinction. Coarse vessels for day to day use may have

remained unchanged. Although Roman military establishments did bring potters with them in Britain there were continuations of pre-Roman pottery types well after the conquest.

In summary, a quartermaster would only be concerned with providing cheap and usable pottery for the army (Greene, 1979, p. 103). On many sites there is no simple correlation between Roman activity and Roman ceramics. The army was, no doubt, a major consumer of ceramics, but the civilian trade would in many instances have determined the market, if only because culturally determined dietary habits would to some extent have determined what vessels were used (Dannell, 1979, pp. 177-179).

In assessing Roman activity in the area about Nineveh in particular, two salient factors must be considered:

A. As has been noted above, evidence from Britain and other regions is against any simple correlation between Roman ceramic types and local Roman activity. It is also clear that short term occupation need not stimulate an imitative ceramic industry.

B. Unlike Britain during the period of Roman conquest, the Near East was a society that was fully capable of providing a number of different types of vessels for specific needs (van As and Jacobs, 1992). Water jars were adapted to desert climates, and, as the need to carry water was extreme, large pilgrim flasks were also used. Vessel types of this utilitarian variety could hardly have changed with a Roman occupation, no matter how long. If the evidence of pottery is always likely to be equivocal, what of metalwork?

## **Metal Finds (of "Roman" Rather than "Parthian" Type)**

### **Parthian and Roman Helmets**

The early fourth century witnessed a dramatic change in Roman helmets. The helmets from this period are commonly termed "ridge helmets," because they are constructed of a continuous strip of metal from the face to the neck, with two half-skulls on either side. They were also usually outfitted with cheek-pieces, and a nasal bar attached to the helmet with ridges that were decorated as eyebrows. Although there are few surviving Partho-Sasanian helmets, they share the essential features of a composite construction.

Parthian helmets were recovered from the Temple of Ishtar at Nineveh, and one particularly good example is now in Baghdad (Campbell-Thompson and Hutchinson, 1932, pl. XIX). "The helmet has an iron browband, with a longitudinal strip and two lateral bands of bronze. The infill plates are of iron...The other examples of this group [north Iranian group] also said to be from Nineveh, are also in the British Museum.<sup>191</sup> (James, 1986, p. 118). The other helmets in the British museum are similar, with minor variations.

The reason these helmets were adopted by Rome at this time did not hinge upon greater protection, but rather greater economy. In the bipartite ridge helmets, there has been the elimination of all components that required a high degree of skill to manufacture. The level of manufacture of these helmets is a case in point, as they do not match second century examples. This led James (1986, p. 132) to speculate that the transition was due to the dire financial crisis facing the empire, and the establishment of arms factories supported by the

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<sup>191</sup> BM nos. 22497, and 22498. Dezso and Curtis (1991, p. 105) also note that three Partho-Sasanian helmets (the Sasanian example 22495) were recovered from Rassam's excavations at Nineveh, and that one of the helmets was probably recorded in the register as "an Assyrian bronze helmet," in July 1880.

state, rather than private craftsmen. They are, in effect, mass-produced helmets designed to outfit a large army.

*The metal finds<sup>192</sup> described as follows were in a degraded condition, and it is clear that the drawings in the reports of Campbell-Thompson would not correspond with the artifacts as they are today. It is also clear that there were large numbers of metal finds that were not recorded. While it is clear that the objects did come from the Nineveh excavations, their archaeological context is unclear, as findspots were not recorded on the artifacts (barring the Roman military badge).*

#### Bronze Military "Badge" (Fig. 77)

Small circular bronze disk of openwork design. Fragmentary eagle in centre and inscription about circumference, as described in Chapter I, p. 56. Although this is noted as coming from "D 6" on the figure it has a label that states it is from "D 5." This piece of metal is perhaps the most significant find from the "Roman" period at Nineveh; especially when it is placed into the context of other finds from the Roman sphere recovered during the excavations of Campbell-Thompson. Similar badges are common from many Roman sites, such as Mainz (Feugere, 1993, p. 228). Bishop and Coulston (p. 130) note that the motif had a general applicability: The most elaborate openwork *phalera* type had a central eagle clutching thunder-bolts, surrounded by an annular inscription. The eagle was an allusion to Jupiter, and was a popular motif applied to a variety of armour elements. Examples are cited from German frontier forts, Strasbourg, Lorch, and forts and towns in Britain. An illustrated example, similar to the one from Nineveh, was recently found at Carlisle (Bishop and Coulston, 1993, pl. 91:2).

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<sup>192</sup> Thanks are due to Dr. Simon James, from the British museum education service, who offered his opinions on this material and canvassed the opinions of other specialists from the museum.



6. D, 6. Bronze.

0 ————— 1 Inch

Fig. 77 Roman Military Badge B.M. 1930-5-8, 133 (after Campbell-Thompson and Hutchinson, 1931, pl. XXII).

### Caltrop (Fig. 78)

Iron spike of a "triangular form," constructed so that whichever way it is placed, a sharp spike is available to discourage the use of cavalry. There were a number of examples from Nineveh that were in a more advanced state of decay. A number of caltrops of iron, in various states of preservation, have been recovered from Nineveh (all in the City Museum and Art Gallery, Birmingham). These were not recorded in the reports or drawn, which is surprising considering how important these artifacts are when placed into context.

Caltrops (*triboli*) can be placed into historical context. They were commonly used during imperial times, although they may have been a Hellenistic development. They were commonly put around Roman military installations where a supply may have been kept at hand (Bishop and Coulston, 1993, p. 155, fig. 111: 8-11). Many examples were found at Dura and were commonly used within the Roman Empire.

It is significant to note that caltrops are only attested archaeologically to the Romans.<sup>193</sup> As the campaigns of Severus (A.D. 193-211; see also Appendix I, p. 413-414) were noted for their extensive use of cavalry, they could be of this period, but without reliable stratigraphy, this date remains insecure.

### Iron Curry Comb (Fig. 78)

Made of iron, with a bank of tines on either side of a ridge, this comb is similar to modern curry combs used to brush the horse's mane. There are a variety of unpublished combs and ridged beaters (presumably for textiles) recovered from Dura. The wooden material from Dura varies considerably in style. None of the textile beaters (in keeping with modern

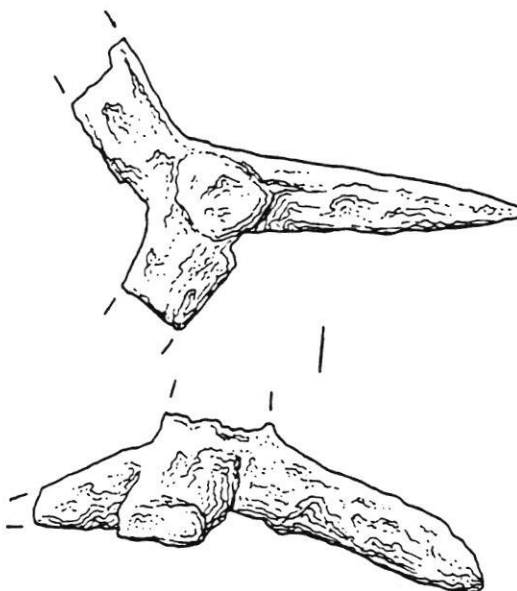
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<sup>193</sup> Because so few Parthian sites have been properly excavated, this observation should remain tentative.

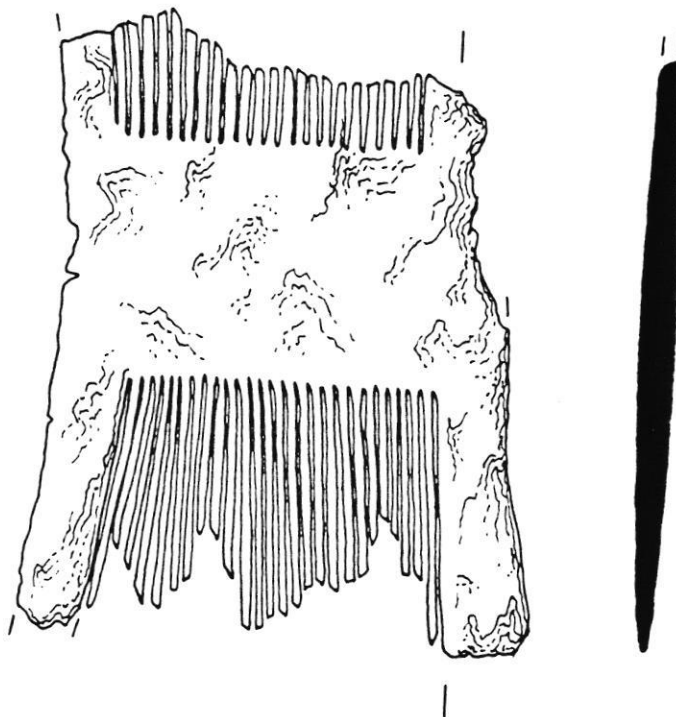
ridged beaters (presumably for textiles) recovered from Dura. The wooden material from Dura varies considerably in style. None of the textile beaters (in keeping with modern practice) are double sided. Combs for human use have considerably shorter teeth than the example from Nineveh (Roman combs: Galloway and Newcomer, 1981, pp. 73, 87). It is also significant to note that all examples of the latter appear to have been made of wood. Clearly one would expect objects of iron to be poorly represented archaeologically, but from the available evidence one could propose that the iron comb from Nineveh is a curry comb, perhaps for military use. Dating the object is almost impossible by context, but one could hazard the third century A.D.

#### Bronze Buckle (Fig. 79A)

The length of the tongue suggests that it had two symmetrical loops, the one on the left is broken off at the return of the vertical bar, and is not any wider than the drawing implies. The concave circular decoration about the inner bars of the buckle give this piece somewhat less decoration than is normally encountered published in buckles from the first century A.D. Dr. James notes that there are no close parallels, although in form the buckle is not out of keeping with Roman waist-belt buckles of the first century A.D. Military belts were important stores of wealth, as precious metal examples were often recorded as being exchanged for goods. Other examples were plated, and the decoration of this example from Nineveh may indicate that it was originally plated, as the surface shows a characteristic surface (although no plating remains). They were functionally concerned with both supporting the sidearm and also relieve the weight of a mail shirt (Bishop and Coulston, 1993, p. 96).



**Caltrop** (Scale 1:1 Birmingham 439'79).



**Curry Comb** (Scale 1:1 Birmingham 464'79).

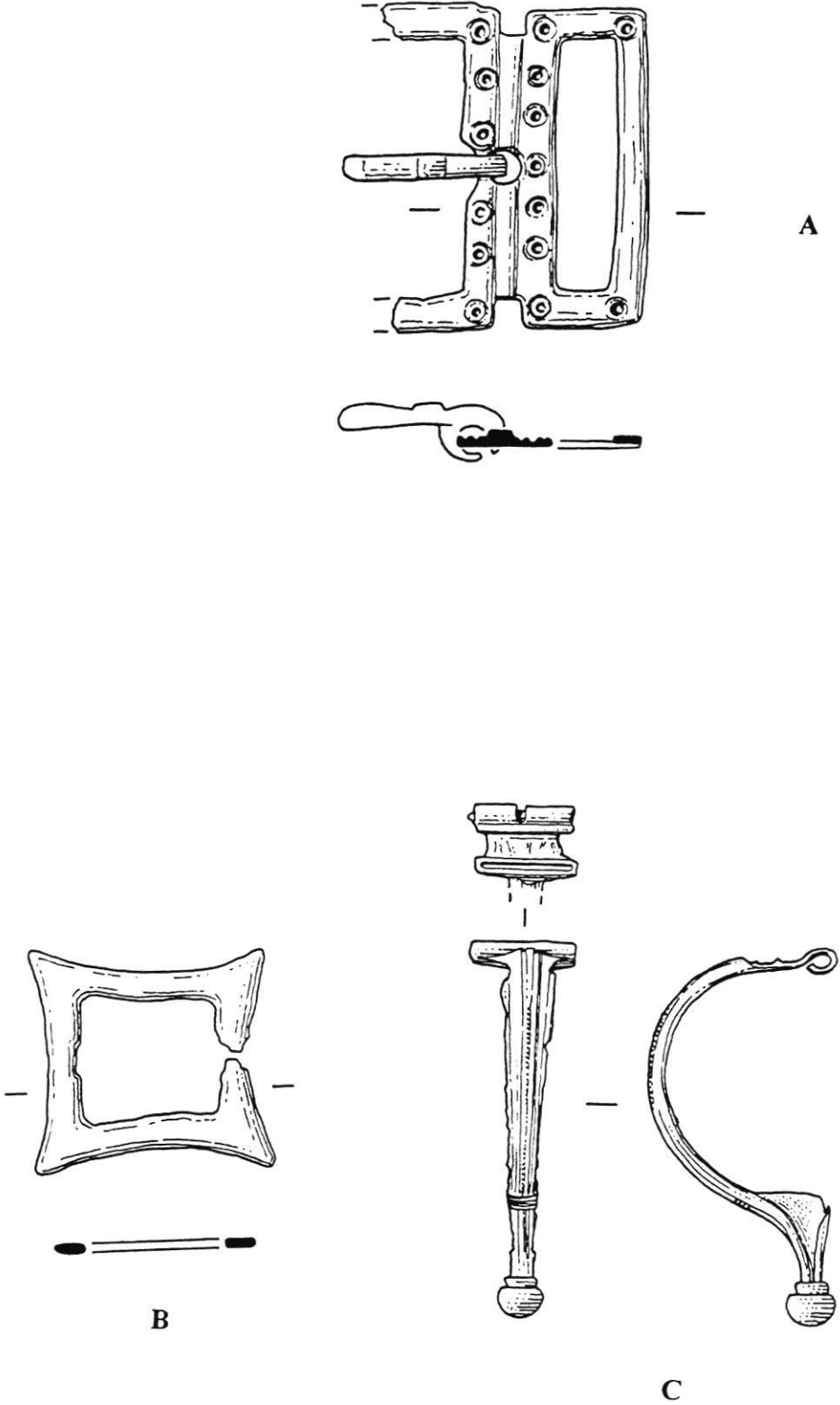


Fig. 79 **A: Buckle** (Scale 1:1 Birmingham 784'79); **B: Link** (Scale 1:1 Birmingham 785'79); **C: Fibula** (Scale 1:1 Birmingham 797'79).

### Bronze Belt Fitting (Fig. 79B)

Copper/bronze, of a very simple form, the link is not in keeping with western Roman finds. It is ascribed by Dr. James to a workshop in Palmyra.<sup>194</sup> A similar example is depicted as a link on the waistbelt of a Palmyrene man in Parthian dress, a statue now located just inside the gate of the Palmyra museum.<sup>195</sup> The bronze belt fitting was attached on each side by a link around the middle of each shorter side, which is consistent with the thinning on the left and the break on the right of the object.

### Bronze Fibula (Fig. 79C)

The fibula is of copper/bronze of a fine form with some indication of an inscription (detail on drawing) that is no longer legible. Fibulae were used to secure clothing. A pin was held in tension against the body of the brooch. This example is of the classic "Aucissa" type brooch. In form the example from Nineveh is a simple bow with a hinged pin. Similar examples first appear in Britain in c. A.D. 50. Some were made by a manufacturer called Aucissa, whose name appears on select examples. They are particularly well known from military sites (de la Bedoyere, 1989, pp. 121). They became common in Britain during the first and second centuries A.D., but were replaced by other distinctive types after that date. Decorated bronze examples are often plated, although there is no indication of plating on this example. This object offers the best indication of date and provenance of any metal find.

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<sup>194</sup> As the Palmyrenes were long in the service of Rome as auxiliary or mercenary troops they will be considered "Roman" here.

<sup>195</sup> The example is, to the author's knowledge, unpublished. Military "Palmyrene" dress is presented by Nicolle (1991, pp. 18-19, 38).

### Drawknife (Fig. 80)

Although of iron, this knife is in a complete enough state to warrant consideration. It is of a very distinctive shape, as the blade is curved and there is evidence of a very short tang, which would appear to be insufficient to bear the weight of the blade in normal use. A relatively complete example of a similar form was recorded as being recovered with a large number of metallic finds in the excavations of the "Temple of Nabu"<sup>196</sup> (Cambell-Thompson and Hutchinson, 1929a, pl. LVI, 258 "C, 8"). Although the example in Birmingham is clearly more degraded, it could be the same example, as iron left without conservation soon disintegrates. This is a type of knife with a handle at one end, and a ring on the other by which it is fixed to a bench and around which it pivots. Although it is unclear how this knife was used, there are a number of similar blades designed for medical use presented by Jackson (1990, fig. 1). In from this knife is difficult to place within one cultural context.

### Bronze Vessel Handle (Fig. 81)

This fitting is executed in a distinctly Roman style. In form it is much like a "crossbow type" brooch, although there are clear attachment areas where it was attached to a vessel. Handles of a similar type are common metal detector finds from the Roman period in Britain. A bronze vessel was roughly cast and then turned on a lathe. The handle, which was usually of a decorative form, was soldered on separately. As a result, they are often found separately. Similar examples from the first and second centuries A.D. can be found from Verulamium and London (de la Bedoyere, 1989, p. 79).

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<sup>196</sup> The majority of all metal finds, from knife blades and arrow-points, was recovered during this season from a number of areas of excavation. It is unclear why the metal finds would be concentrated in this area. The only other season that yielded small quantities of metal finds were the excavations at the Temple of Ishtar (Campbell-Thompson, and Hamilton, 1932, pl. LXV). This season's finds were 6 tripartite iron arrowheads, 2 flat bronze arrowheads, and one tripartite bronze arrowhead. A fragmentary iron spearhead was also recovered (N +1). Both points and spearhead are of forms that are notoriously difficult to classify or date. The same forms were in use by both Romans and Parthians.

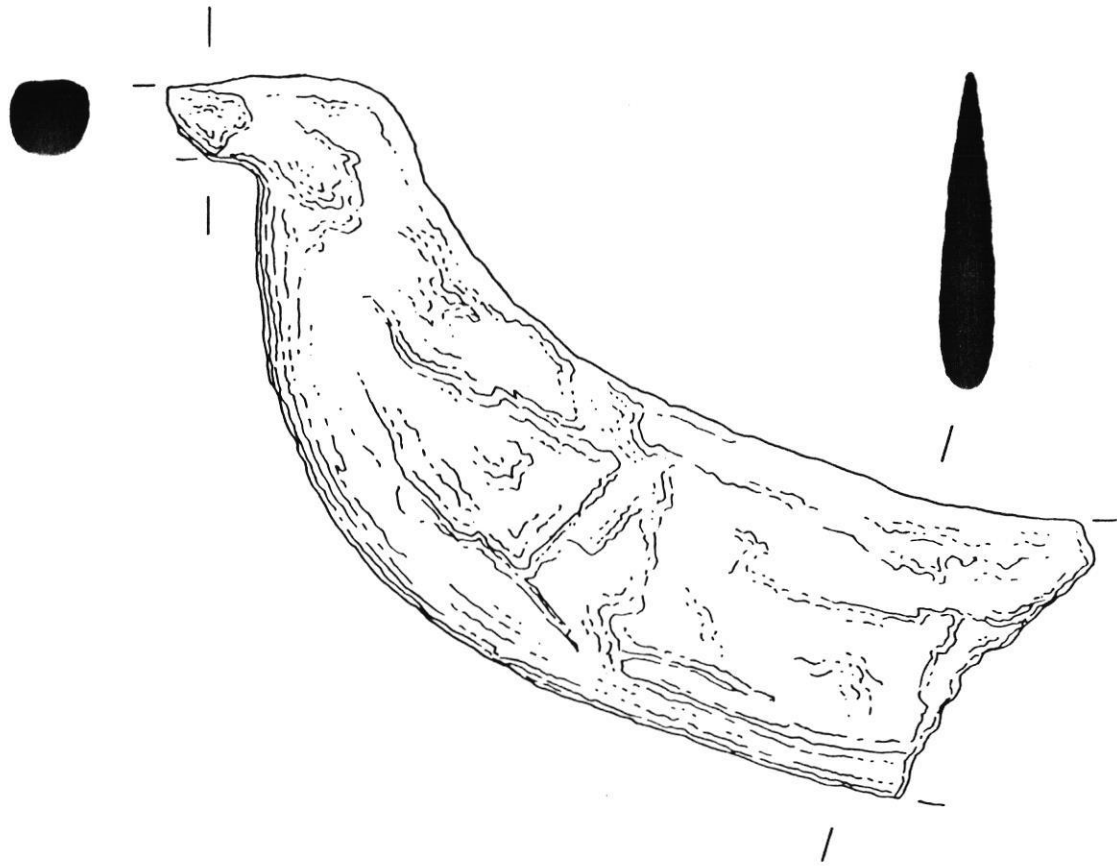
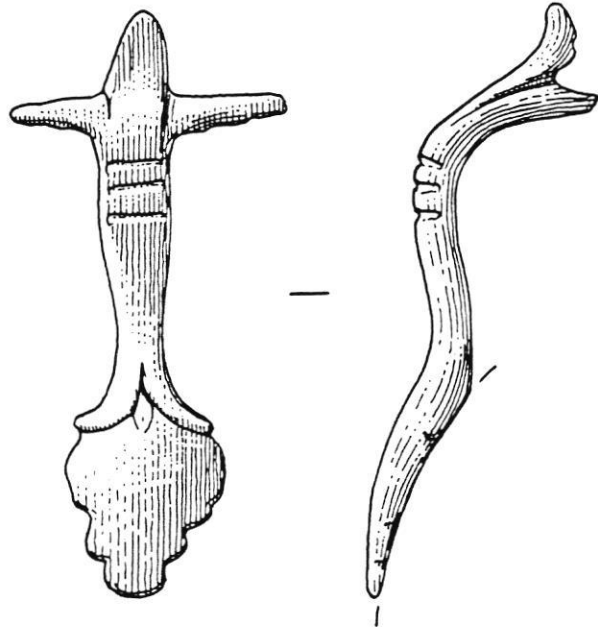
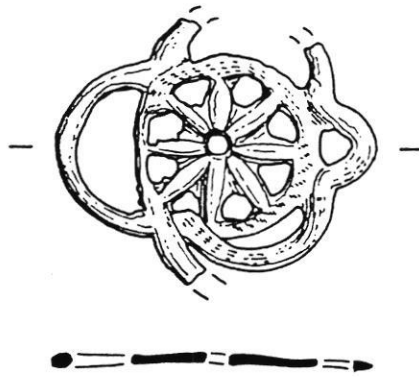


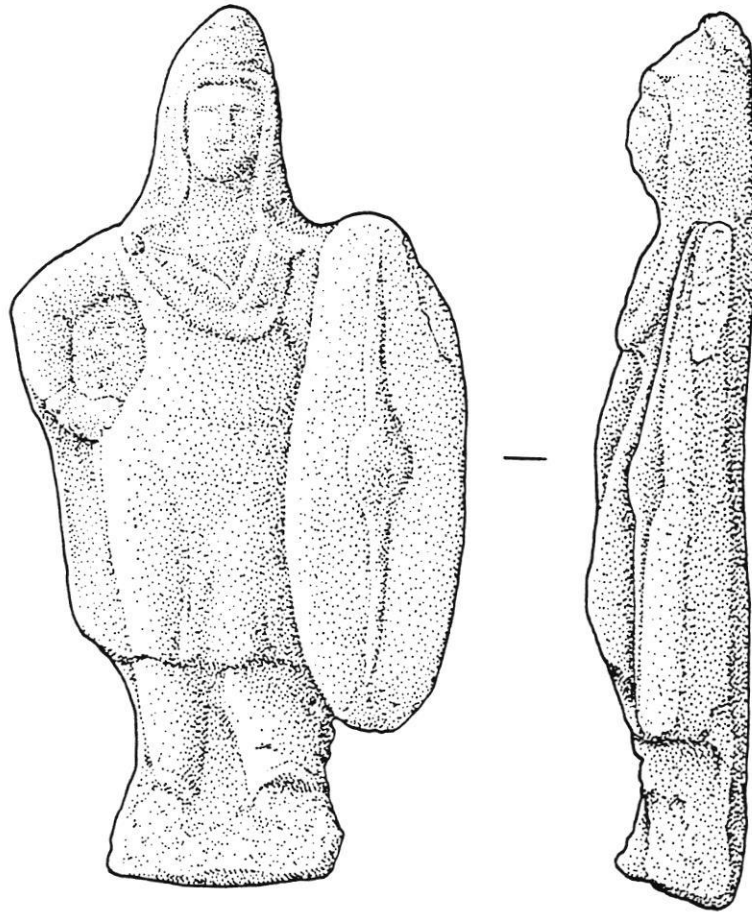
Fig. 80 **Drawknife** (Scale 1:1 Birmingham 812'79).



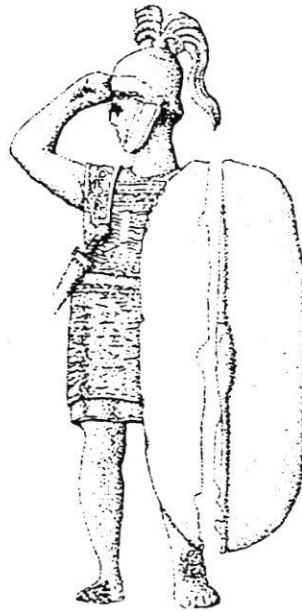
Vessel Handle (Scale 1:1 Birmingham 1156'52).



Applied Decoration (Scale 1:1 Birmingham 704'79).



Parthian Terracotta Figurine from Nineveh (Scale 1:1 B.M. 1929, 10-12, 356).



Legionary from the Altar of Domitius Ahenobarbus, Rome (after Bishop and Coulston, 1989, fig. 6).

### Bronze Applied Decoration (Fig. 81)

This small device, decorated with what appears to be a geometric floral pattern, appears to have been attached to leather or fabric. In form it is similar to small personal ornaments of the "Palmyrene" style (Nicolle, 1991, pl. E). It could correspond to Roman belt fittings. Although a range of forms were used in various places and at various times, military belts were often decorated with studs (up to 16 studs on a single belt). A number of Roman sites from various areas yield large numbers of decorative studs. As a result it is impossible to ascertain function. Such ornamentation was not uncommon in the first century A.D. (Bishop and Coulston, 1993, pp. 98-99).

### Terracotta "Parthian" Foot Soldier (Fig. 82)

This figurine is unlike any other example recovered from Nineveh, and is distinct from other typical Parthian figurines. Significantly, the figurine was not associated with a horse. The figure carries a large shield and wears a light cloth garments with a hood. There is no trace of armour or weapons, and no trace of metallic personal ornament.

The interaction between Roman and Parthian military technology - if not military personnel - is well illustrated by this figurine. The majority of male Parthian figurines are executed in the horse and rider style. It is easily appreciated that it is similar to a legionary from Rome, as such shields were standard equipment during the Republican period (Bishop and Coulston, 1989, p. 19); other examples of similar shields can also be found on mounted warriors from "Hellenistic" levels from a number of Near Eastern sites (Sekunda, 1994, pls. 21, 46). While the accoutrements of the figurine may not demonstrate the presence of Roman/Parthian auxiliaries at Nineveh, it illustrates the close interaction

between Romans and Parthians in military matters.<sup>197</sup> It is also clear that such interaction did not merely affect Parthian military technology.<sup>198</sup>

## Roman Coins

### A Roman Mint at Nineveh ?

The obvious interest Rome had in the area around Nineveh led some late nineteenth and early twentieth century numismatists to speculate that Rome minted coins at the site. A Roman Colonial series, minted from Trajan to Maximus, was assumed to have been minted at Nineveh.<sup>199</sup> This led numismatists to hypothesize a Roman city at Nineveh, *Ninica Claudiopolis*. The lack of documentary evidence, however, left doubts: "It is curious, that we have no notice in history of the actual name of Claudiopolis; but apart from the evidence of the coins, we know that Nineveh was a place of importance during the early part of the Roman Empire" (Vaux, 1857, p. 2) This led to further assumptions that there was a Roman colony of military veterans, probably founded by Claudius, established at the site (Kubitschek, 1902). This coinage is now assumed to have been struck in the town of Cilicia, in Anatolia (Head, 1977, p. 726). Even if evidence for a Roman mint at Nineveh is no longer accepted, the significance of the Roman coins found

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<sup>197</sup> For a discussion on the origins of cavalry and mounted weapons see Boss (1994). It is also clear that the Achaemenids were capable of fielding foot soldiers, although they are not commonly depicted (Sekunda, 1992, pp. 48-50).

<sup>198</sup> A summary of how Parthian military technology and strategy effected the Roman military is given by Kurtz, 1983, pp. 561-563; particular military technology - swords and armour - is discussed by Hoffmeyer (1961, pp. 58, 59)

<sup>199</sup> The issues of Trajan bear the reverse legend: COL.AVG.FELI.NINI.CLAV, and one issue of Maximinus has an inscription on the reverse: COL.NINIVA.CLAVD (Vaux, 1857, pp. 1-2).

there still deserves examination. Evidence for a Parthian mint there is stronger (see Chapter III, particularly regarding blanks, p. 298).

### **The Coins of Hoard II**

Although a detailed analysis of this hoard is beyond the scope of this investigation, the coins recovered from the second hoard (marked "Hoard 2" on Fig. 68, p. 294) should be briefly considered, as they cast important historical light on the site.<sup>200</sup> This hoard was examined and published by Hill (1931). As there have been no major re-attributions of eastern Roman mints since that time, the attributions presented by Hill (1931) have been retained here.

122 silver tetradrachms struck at Antioch on the Orontes  
29 silver tetradrachms struck in the Roman province of Syria  
3 silver didrachms struck in Caesarea in Cappadocia  
92 Parthian drachms  
142 Roman denarii

Hoard II (for archaeological context see p. 293) was found associated with the Neo-Assyrian structures at a depth of -6', and is composed mainly of Roman issues, dating within the Parthian period. 392 coins were recovered, of which 154 were given to the British Museum (the remainder were sent to Baghdad or given to private collectors). Surprisingly, there were only 92 Parthian drachms recovered, with the majority (attributed by Hill) from the reign of Gotarzes and Vologases I. The few coins from the reigns of Vologases V and Artabanus V (A.D. 213-27) were considered uncirculated, while those of the earlier period were in "slightly worn condition." The bulk of the hoard are Roman

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<sup>200</sup> The coins from this hoard are housed in the British Museum coin room, but are unfortunately not accessible as a single hoard. When they were placed in the collection they were distributed throughout in order of the rulers represented. As a result, it was not possible for the staff to make the hoard available to me.

denarii; 387 examples, ranging from Galba to Plautilla, with the later coins of Severus and his sons in "mint state." The rest were silver tetradrachms from Antioch or Syria, and there were a few examples of silver didrachms of Caesarea in Cappadocia (Hill, 1931, pp. 161-70). The composition of this hoard is much more in keeping with what one would expect for a hoard that was placed to be recovered later, as bronze coins by their very nature are a cumbersome token coinage of little intrinsic value (Carson, 1983, p. 66).

This hoard is similar to one recovered by A.H. Layard during his 1849-1851 excavation season at Nineveh when a hoard of eighty-nine silver denarii was recovered. No indication of numbers was given, but the following rulers were represented: Vespasian, Titus, Domitian, Trajan, Antoninus Pius, Marcus Aurelius, Lucius Verus, Commodus, and Septimius Severus. The result is that there is a date range from 74 to 201 A.D., and the latest issues have little or no wear. When Mr. Stuart Poole of the British Museum was consulted, he felt that the accumulation was buried by a Roman soldier during the second expedition of Severus into Mesopotamia (Layard, 1853, pp. 591-592).

#### **Adiabene and Rome: Material Evidence ?**

The political alignment of Nineveh within Adiabene is further illuminated by numismatic finds from some burials at Nineveh, excavated by Hormuzd Rassam in 1852, and now in the British Museum (see Chapter I, p. 27). Of particular interest are gold leaf impressions of bronze coins of Trajan, along with an aureus of Tiberius (A.D. 16 - 21). This gold coin of Tiberius may have served a specific function in the burial, as at Dura-Europos silver coins were often found tied around the pelvis of a body (Toll, 1946, p. 22). Similarly, in the Greek city of Seleucia, skeletons were accompanied by coins, usually in

the mouth or hand (Yeivin, 1933, p. 41). This led Curtis (1976, p. 60) to speculate that the coins were intended to pay for entrance into the afterlife. The connection with Rome during this period may be due to trade. Nineveh controlled an important river crossing and at different periods maintained trade contacts with Aleppo across the Syrian desert, with Babylon to the south, and with the Black Sea coast to the north-west. These routes were probably used during the first and second centuries A.D., and as Roman-controlled Armenia<sup>201</sup> was only a short distance to the north, Adiabene was no doubt exposed to much Roman cultural influence (Curtis, 1976, p. 61).

### **Roman Monetization: Case Studies**

At this stage the evidence from Nineveh has to be set in a wider context. Evidence for the impact of Rome upon other economies is meagre. The situation is complicated if the society in question had already used coins before the arrival of Rome. Britain has been well studied and, as there was little coin use before the coming of Rome, the region has often been used as an example.

Before A.D. 43 there was Roman bullion (and some silver coins), in circulation in Britain. After this date, British coins were pushed out of circulation. For a period of time there may have existed two economies, one based on Roman coinage, and one based on British<sup>202</sup> (Reece, 1979, p. 215-215). Did a similar dual economy exist at Nineveh as the

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<sup>201</sup> The region of Georgia, then known as Iberia was important to Rome as a trading partner (Vickers, 1995, p. 187). From about A.D. 30 to 60 it was ruled by a vassal of Rome, and during the first century it received a number of Roman colonists. During the Sasanian period Iberia appears to adopt more aspects of Sasanian culture. It appears to be a separate kingdom during the Parthian period (Rice, 1965, p. 236-237).

<sup>202</sup> Documentary sources are lacking, but many authors have speculated that there may have been one price for British coins, and one for Roman. The exchange rate would vary

region slipped into the Roman sphere ? While there may be no way convincingly to demonstrate this hypothesis, it is clear that there are Roman coin finds in Mesopotamia; but, as already noted, that region was already familiar with currency in the form of coins. A significant question is if any value was attached to Roman coinage beyond the metallic content.

While the evidence of the use of Roman coins from other sites in Mesopotamia is limited, there was a hoard of coins recovered from a Sasanian structure at Kish, in southern Iraq. The hoard was deposited in what appears to be a large private residence, and consists of 161 Roman bronze coins, ranging in date from c. A.D. 395 - 565 (Moorey 1978, p. 141).<sup>203</sup>

Evidence of the use of foreign coins in Iran, while incomplete, may also serve to clarify the use of foreign money. A hoard of valuables, found in a small box decorated with gold filigree, was recovered from Kisarabad, in Iraq. There was a gold earring, three Sasanian silver drachms, and a gold solidus. From the context one could assume that the hoard was accumulated on the basis of value. Considering specie alone the Sasanian issues were worth the least. This could suggest that proportionally greater value was attached to the Sasanian issues beyond metallic content. Hoards from frontier areas<sup>204</sup> between the Byzantine and Sasanian empires confirm that Byzantine gold and silver issues served as an

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<sup>203</sup> These coins are housed in the Heberden Coin Room in the Ashmolean Museum, and were re-examined by Miss Cathy King upon the request of Dr. Moorey (Moorey, 1978, p. 146).

<sup>204</sup> Mikolajczyk and Lowick (1976, p. 349) mentions a number of hoards published in a variety of journals. Some notable examples are from Armenia, Georgia, and the Urals. All of the mentioned hoards appear to be of silver and gold, with no bronze issues. The question of the use of Roman bronzes must still be addressed. It is likely that Roman bronze hoards from such areas attract little attention and are quickly dispersed for sale.

international currency, and that the presence of these coins in a hoard does not suggest political control.<sup>205</sup>

Evidence for the use of Roman coinage in more distant regions, such as Eastern Arabia, are instructive. The earliest Roman coin found in the Gulf area is an aureus of Tiberius, which had clear value as a gold coin. While this coin may have been detained on its way to India from Rome, as Indian traders demanded gold from the west, base metal coinage may not have played the same role. Few Roman coins have been recovered from Arabia, but the distribution of base metal coinage in East Africa, India and Ceylon, may suggest no more than that they were carried by traders on other business. Howgego and Potts (1992, p. 184) assume that base-metal coinage did not have any value outside the Roman Empire.<sup>206</sup>

### **The Use of Roman Coins at Nineveh**

Roman issues of precious metals were acceptable currency in the Near East. It also appears that small denomination Roman issues were in use in a various areas in

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<sup>205</sup> A good example of the interaction between the Roman/Byzantine and Sasanian empires is from Merv, in modern Turkmenistan. At this site a number of Roman coins were found of the smallest denominations. They were all badly worn, which suggested that they had circulated widely (Hobbs, 1994, p. 66). A personal communication with the author stated that a forthcoming article will address the historical implications of these coins. Thanks are also due to that author for pointing out a number of useful references concerning Roman coins from eastern sites. It is interesting to note that even this far from the centre of Rome the fractional issues apparently had value.

<sup>206</sup> Prawdzzic-Golemborski and Metcalf (1963, p. 85) suggests that a class of lighter follies of Justinian may have been struck for use in the south-eastern frontiers of the empire, for trade with Egypt and beyond. Because of the varied distribution of these coins in regions outside of direct Byzantine control, they may have been accepted as currency, and were probably not the stray coins brought back by traders. Because there have been so few recorded finds of base metal coinage of this period, however, any hypothesis concerning the nature of coinage outside its political realm must remain speculative.

Mesopotamia. The presence of Roman coinage does not imply political control,<sup>207</sup> but it is clear that there was a relationship between coinage and rule. Whether the Romans fostered a monetary strategy that embraced regions outside of their political control will no doubt remain an area of debate. It is perhaps best to consider the Roman issues from Nineveh in the context of other finds, which suggest that the site at some point came under Roman control. There is a growing body of evidence to suggest that by the second century A.D., Nineveh was controlled by the client state of Rome, Adiabene.

It is significant to note that Rome may have pulled regions into its economic, and later administrative, sphere. A "pump-priming effect" could be generated:

After initial stages of conquest of new areas, with their profits from captured spoils, the demands of garrisons, administrators and military and civil building works required money. An important objective would be to make the provinces not merely self-financing but profitable in terms of tax revenue. Rather than impoverishing the subjects of new provinces, taxation (initially in produce perhaps) would often have provided a stimulus to the use of money and markets.

Greene 1986, p. 62.

The resulting monetization of the economy might actually have allowed large landowners to increase the size of their estates, and at the same time to take on the political and social status of an estate owner in the Roman world. Native aristocrats were often in

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<sup>207</sup> Petrus Patricius, Frag. 11, FHG IV, p. 187 notes that the Persian King Shapur, on his way through Edessa, bribed the Roman soldiers there "to facilitate his journey" with "all the Syrian money he had with him" (Dodgeon and Lieu, 1991, p. 67). This passage suggests that the Persians looted coinage for use, at least for bribes. One would assume that bronze coinage was also taken.

receipt of large loans and other payments. In order to repay the loan in cash, agricultural wealth must be converted into coin. The ease of storage of coins, universal acceptability, and expectations of Rome, meant that individuals from all social levels would desire coins.

### **Romans or Parthians ?**

While the hypothesis presented by Poole (p. 376) may be correct, there is no reason to assume that the soldier in question was necessarily a Roman. It has long been appreciated that the Roman empire recruited numbers of *auxilia*, and two *alae Parthorum* are well documented. The widely held view that this unit was composed largely, or even exclusively, by Parthian deserters has been recently challenged by the discovery of a new inscription. Peterson (1966, p. 61), presents a gravestone that lists the names of four soldiers, bearing Semitic and Persian names - and a new unit - the *ala Parthorum et Araborum* (illustrated in Instinsky, 1958, p. 73). The name of this unit suggests its origins, as the two different tribes can be assumed to have both a common life-style and live in close neighbourhood. The date of the inscription offers further clues about the history of the region:

Taking A.D. 70 as the *terminus ante quem* of the inscription and looking to a period thirty years before our horseman's death, we would be led into the reign of Tiberius or of Caligula. In that case the origin of the *ala Parthorum et Araborum* is likely to be connected with Caligula's grant of Armenia Minor to Kotys in the year 38, for Kotys, as Cassius Dio says, received "afterwards" also "some tracts of Arabia," that is, Osrhoene or part of it. One should suppose that the newly installed king discharged the usual obligation of a client king and recruited the *ala*, or perhaps rather allowed it to be recruited, from among his subjects...

Peterson, 1966, p. 68.

## Historical Section

Historical records of the Parthian period that mention northern Mesopotamia are scarce and unclear, but it is certain that one cannot simply assume Nineveh was under direct Parthian control during the so called Dark Age (c. 88/7-55 B.C.), or during the second century A.D. Much of the difficulty in defining this period relates to the lack of Parthian written records. Instead, one must rely upon Greek and Roman authors, who often had little understanding of eastern geography and wrote from a hostile perspective. As a result, establishing the extent of Parthian influence, and an exact chronology, is difficult (Wolski, 1966, p. 37-40). To speak of a Parthian *empire* in the western sense is a misnomer, and Parthian control over various cultural regions may have been no more than a veneer.<sup>208</sup> Even regions that used Parthian coinage could keep political autonomy, and by the first century A.D. Parthian control in many regions was succumbing to fragmentation into smaller states (see Appendix 1, p. 415). Eventually, this process of fragmentation led to the downfall of the empire, and the dynasty established at Persis succeeded in overthrowing the last Parthian monarch in A.D. 226 (Keall, 1975). Nineveh may have been part of an autonomous region during the Parthian period.

### The State of Adiabene

The political alignment of the area about Nineveh is open to debate. During the Dark Age (c. 88/7 - 38 B.C.) it may have formed a separate political entity, under a powerful satrap or governor, or perhaps even a separate state.<sup>209</sup> The early history of the state of

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<sup>208</sup> This is not to suggest that this "empire" was incapable of raising a substantial military force. It was clear to the Romans after the battle of Carrhae that Parthia presented a substantial military threat. Perhaps the Parthians should be understood somewhat like the later Mongol rulers, who maintained a decentralized empire that could prove itself militarily potent if the need arose.

Adiabene is unclear, but written evidence exists from the first century A.D. At that time, a number of small client states were engaged in breaking away from Parthian control. A good example is cited by Tacitus, who records that a number of client kingdoms had cause to fear the Parthian ruler Artabanus III (see political background Appendix I, pp. 407-408). In the year A.D. 35, they organized a "...secret Parthian mission to Rome...supported by Abdus, a eunuch (for among orientals that condition, far from being despised is actually a source of power)" and "other leading men," whom one could suppose to be governors or officials. Emperor Tiberius agreed to support the plotters, but Artabanus succeeded in poisoning Abdus, and quelling the rebellion (Tacitus, *Annals*. VI, 31, tr. Grant, 1956). Evidence for further discontent is also available from other sources at this time.

Josephus mentions Izates, king of Adiabene, in *Jewish Antiquities* XX, 17 - 91. When he was a young man he was sent to Characene, where he was converted to Judaism. Such a bold step implies that Izates felt a degree of autonomy from the Parthian empire. The political motivation<sup>210</sup> for such a step should not be underemphasized, as converting to

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<sup>210</sup> It is significant to note that at about this time the Kingdom of Edessa (the capital is modern Urfa in S. Turkey) converted to Christianity. Abgar V (c. A.D. 13 - 50) was apparently converted upon recovering from an illness. Two relics were held responsible, one a letter from Jesus, and the other, a cloth with the imprinted features of Jesus. The event is recorded by a number of Byzantine and Early Christian writers (Wilson, 1979, pp. 143-153). When the king's son later reacted against the new religion, large numbers of the populace had been converted. Edessine coinage begins with Wa'el, a puppet of Vologases who reigned for two years before being crushed by L. Verus in 166 (Hill, 1922, p. xcvi). Designs on bronze issues of those two years appear to be heavily influenced by Parthian dress (Hill, 1922, pl. XIII, 6,7).

This Parthian "client state's" conversion to Christianity at this time was probably more than fortuitous. Both Rome and the Parthians were engaged in a struggle to control this region, and with such a step the Abgar at once secured the sympathy of a number of his subjects and strengthened his position by the respect of authority and order that was a well-known quality of the Christian community (Segal, 1963, p. 14). On a more immediate political consideration, the state of Adiabene may have wished to spiritually align its populace away from the religion of its neighbour state, Edessa.

Judaism may have signalled that Adiabene intended a closer alignment with the west. In 36 A.D., he inherited the throne from his father, despite the fact that he was not the firstborn. The queen, upon her husband's death, consulted with the leading nobles, and Izates was approved. He held high standing in relation to the other "king vassals" of the Parthian empire because of his support in placing Artabanus II back on the throne after he was deposed by his nobles. As a result, Adiabene received territory recently taken from the king of Armenia, a district called Nisibis (Josephus XX, 66-68; see also Appendix I, p. 408). Both Pliny and Dio Cassius seem to confirm this, suggesting that Singara was also part of Adiabene (Longden, 1931, p. 11). Adiabene at that time probably extended to the Khabur river (Teixidor, 1968, p. 4). During the Sasanian period, the term *Iranshahr* was used for regions that were within the Persian cultural sphere, particularly with regard to Zoroastrian beliefs. During the Sasanian period, the northwest frontier region, or Adiabene, was probably not included in this term; whereas Southern Iraq, with a Semitic population, was probably included in the territory claimed as part of the Sasanian domain (Frye, 1988, p. 15). The position of Adiabene in later periods<sup>211</sup> may outline a trend that began much earlier. During the Parthian period it has been hypothesized that Adiabene may have been the bridge between Semitic Mesopotamia and Iran proper, and it is noted that the modern Kurds in the region use a vocabulary in which numerous expressions are borrowed directly from the Semitic languages of Iraq before the Arab

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<sup>211</sup> Libanius *or.* LIX, 83-87 notes the Roman capture in 343 of a "not unimportant city of the Persians" during a foray by Constantine across the border (Dodgeon and Lieu, 1991, p. 179). They suggest that the city may be Nineveh. Ammianus Marcellinus (XVII, 7, 1) describes it as the "important city of Adiabene." Its seizure by Constantius may explain his title of "Adiabenicus Maximus" which he included as one of his titles by 354 (Corpus Inscriptionum Latinarum III, 3705 = Dessau 732, Berlin). Thanks to Dr. St. John Simpson for supplying this reference.

period (Eilers, 1986, p. 496). While it is beyond the scope of this thesis to discuss the origin of the Kurds, it is interesting to note that there is historical evidence suggesting that northern Iraq was inhabited by Iranian speaking people at this time.<sup>212</sup> While the distinction between the "Iranian" north and the "Semitic" south is perhaps too simplistic, the administrative language of the south at this time may have been Aramaic. From the standpoint of their material culture, however, there was little if any difference between Iranian and Aramaic speakers, and both may be considered "Parthian."

#### **Nineveh as Part of the Roman Frontier**

Although there has been little historical research directed towards elucidating the Roman period at Nineveh, Hutchinson (1934, p. 86) notes that a number of manuscripts of Tacitus' Annals contain a description of Nineveh as a "castellum." He notes that the term is used to denote a "little camp," while in practice it conveys a sense of permanency. It is often applied to a fort built to house a *cohors miliaria* or a *cohors quingenaria*. He finds that the term was probably used to describe the Parthian village atop the New-Assyrian terrace or perhaps a hypothetical village on the mound of Nebi Yunus (Hutchinson, 1934, p. 88). As such the term in this case would presumably have been used to denote a small settlement, and not a Roman fortification. Hutchinson never addressed the status of the village as Parthian or Roman. At the time there was little

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<sup>212</sup> A different language or culture may have been the stimulus for forming the northern region of Iraq into the separate state of Adiabene. This division was retained during the Roman administration.

evidence to suggest that Rome could have penetrated so far east, but subsequent excavations in the region support the idea of a Roman intervention in the region.

Aspects of Roman imperialism in the east have received attention for a long period of time, and there has been renewed interest in the subject as archaeological surveys have been compared with known historical sources. Scholarly opinion can be divided into two general lines of thought. Earlier investigations found a planned Roman establishment of control through a variety of political and economic programmes, with warfare no more than a cynical bid for power. Recently, scholars have challenged older assumptions, and analyzed Roman motives not as part of an overall economic policy, but rather as a "series of accidents." Economic benefits from warfare and political intrigue were not planned but fortuitous (North, 1981, p. 1). As evidence, authors cite many instances where Roman gains by warfare during the second century B.C. were not incorporated into any administrative structure, and were only taxed erratically (North, 1981, pp. 2-4).

A prime reason for conquest, and one that is often alluded to in classical sources, is the desire to emulate the conquests of Alexander. This motivation would be manifest particularly on a personal scale, and could be detected in the personal statements or action of individual commanders. The campaigns of Trajan (see Appendix I, pp. 410-412) are perhaps the most famous, and there are perhaps other Roman commanders who dreamed of fame from the eastern campaigns. Other motives beyond simple fame are also clear, as a large amount of Roman capital flowed into Parthian hands because of the luxury trade from the so-called silk route. This left the Parthians and their dependant and semi-dependant vassals with enviable quantities of wealth.

Three separate motives were involved in Roman expansion:

A. State controlled, which implies that the expedition was approved by the Senate. The campaigns of Lucius Verus are a good example (Dodd, 1911, p. 210-211).

B. Private enterprise for fame. Although there have been and will continue to be discussions on the motives for the campaigns of Trajan, it cannot be doubted that the emulation of Alexander was a factor (Longden, 1931, p. 29).

C. Private campaign for wealth, such as the expedition launched by Crassus (Appendix I, pp. 404-405). No direct Parthian threat precipitated his action, and the Parthians had every reason to believe that they were at peace with Rome. Motivation for his campaign is probably to be found in his status as the "wealthiest man in Rome," which was eclipsed by Pompey when he returned from the east in 61 (Sherwin-White, 1984, p. 280).

It should be appreciated that a Roman presence, for whatever reason, in the east may not manifest itself in clear material remains. The *limes* in Germany, or Hadrian's wall, were the result of policing a region with few settlements capable of supporting a sizable number of troops. The situation was different for the Near East, with a long tradition of large cities, that were located on major trade routes. While controlling a region in Germany using watch-towers and fortifications may be possible, such is not the case for large areas of the Near East, where rough terrain and desert would discourage a definite line of defense. Most of the decisive wars between Rome and Iran in Mesopotamia have hinged upon the control of a major city (Hodgson, 1989, p. 181).

There are a number of factors that make delineating the frontier between Rome and Parthia difficult. One of the most significant is the identification of remains. Northern Mesopotamia today can be appreciated as covering two distinct geographical regions, both

prone to specific ecological factors. Remains in north-east Syria are often obscured by layers of wind blown silt (Kennedy and Riley, 1990, p. 65). The region of the Tigris valley to the north-west of Mosul is obscured by great amounts of vegetation due to the high rainfall in that region, and Stein's aerial reconnaissance indicated the problem of identifying remains in the region (Kennedy and Riley, 1990, p. 64). The difficulty of conducting fieldwork in the region today has been compounded by modern methods of cultivation, which have claimed vast tracts of land.<sup>213</sup>

The next most important question to posit is: how far did the Romans penetrate into northern Mesopotamia ? This question may not be as simple as it would first appear, as there is still debate over how to define a Roman settlement. There does, however, appear to be a general consensus over the site of Seh Qubba in Iraq. This site, located on a high bluff above the Tigris, about 100 km. north-west of Nineveh, may be the eastern-most excavated site within the Roman Empire (Ball, 1989, p. 12). Roman remains occur in two levels, separated by an indeterminate period of time. The site was surrounded by a thick wall, and contained quantities of Roman pottery and "Roman" piping. There is also a building with a fragmentary mosaic executed in Roman style. This site may have been founded by a action by Trajan, Cassius, or Aurelius, and then perhaps occupied for a longer period of time by Severus (Ball, 1989, p. 11). In between these two occupations, it is unclear if the site was inhabited on any scale, although there is some evidence of Parthian pottery on the site (Campbell, 1989, p. 53). If this was indeed a Roman fortification, then the Parthians may have had little interest in manning it after a Roman withdrawal, as their military strategy was very different from Roman methods.

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<sup>213</sup> The writer was made aware of the problems presented by intensive farming on a recent trip to eastern Syria. There are large tracts of land that have been levelled and ploughed for agriculture when it is clear that there is not enough water in the vicinity to exploit such efforts.

## Niger in the East

Of the three contenders for the empire during the period of three emperors (see Appendix 1, p. 413), Niger was the most popular in Rome and the eastern empire, with 9 legions in support. Western Europe, especially Britain, was in favour of Albinus, and could muster an uncertain number of troops. Albinus was put out of the running by the conferment of the title of "Caesar," making him heir apparent over Caracalla and Geta. This rather credulous governor realized too late that such a promise was worth little. Central and eastern Europe supported Severus with 16 legions. In addition, if considered on simply geographical terms, the latter contender could more easily reach Rome from his power-base.

Niger quickly secured the eastern capital of the empire, Byzantium, but lost control of Egypt, which would have given him considerable leverage over Rome. Septimius' troops then began, by land and sea, their attack of Cyzicus, which was successful. His troops then successfully routed rebels in Nicea and then Issus, for which he claimed the title *Imperator* three times. Survivors of the battle claimed sanctuary in Adiabene, or the with the Parthians, the text does not make the difference clear (Platnauer, 1919, p. 90).

Niger's last stand took place on Mt. Amanus in Syria in A.D. 194. This was the first battle that convincingly demonstrated the superiority of cavalry,<sup>214</sup> as the battle was a stalemate until mounted troops got behind the enemy and delivered a powerful attack from the rear (Speidel, 1994, 150). Severus then sacked Antioch, a pro-Niger city, and went on to cross the Euphrates and lay siege to Nisibis, beginning what has later been termed the first Parthian war in A.D. 195. This action was directed against the Arabs and Adiabeniensians, who were regarded as Parthian vassals. Three states, Adiabene, Osroene and the Scenite Arabs

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<sup>214</sup> A trend which was to continue, so that by the Byzantine period, cavalry predominated in military campaigns (Bivar, 1972, p. 273).

laid siege to Nisibis during the civil war, and later claimed that they were aiding the cause of Severus, as the city was pro-Niger. They were unwilling to relinquish gains, and, in addition, were protecting Nigerian troops. The actions against these small states was not surprisingly successful, as Parthia did little to assist their vassal states.

The senate bestowed on Severus the titles *Parthicus Arabicus* and *Parthicus Adiabenicus*, which were accepted. The title *Parthicus* was refused. Severus was still threatened in the west by Albinus, and did not want to offend the Parthians into a war. This operation was criticised at the time for its lack of effect, but it is clear that Severus had more pressing concerns. Shortly after he defeated Albinus in France. Once again the cavalry played the critical role in breaking what appeared to be a stalemate. Pro-Albian troops were systematically rooted out, and operations shifted east.

### **The Second Parthian War**

In A.D. 197 a full scale Parthian attack necessitated the dispatch of further troops under the command of the emperor. This action is the second Parthian war. The emperor was supported by the major portion of the African legion, and he was joined by auxiliary troops from Britain, the *cohors Britannica civium Romanorum* from Dacia (Platnauer, 1919, p. 115). One may assume that in addition to the British cohort, there also would have been defeated troops of Albinus who would have served Severus. It was common practice to enroll such troops, as they were a ready source of trained manpower, and would quickly cause trouble if left on their own.

The historical records of British troops is significant, as there are the large number of

Romano-British fibula and other small bits of metalwork from Dura<sup>215</sup> and the fibulae of first century Romano-British type from Nineveh (see p. 368).

The Parthians lay siege to Nisibis, the city that was made a Roman stronghold after the first Parthian war. This war, however, was in reality a war directed against Parthia proper, and not simply against Parthian client states. Severus pursued a policy of aligning client states within the Roman sphere before moving on to Mesopotamia. Edessa, once a Parthian vassal state, submitted, and king Abgarus was granted the title of "King of Kings," an appellation which was used by the Parthian monarch. This action was sure to provoke a Parthian response, and it is clear that Severus had as his goal the reduction of the Parthian empire at the beginning of his military operations. Palmyra was similarly enrolled and given the *ius coloniae*. Both states sent troops to assist in the Roman expedition, Abgarus sending a contingent of archers, and the Palmyrenes may have offered cavalry.

The exact route of Severus is unclear, but he appears to have followed the Mygdonius and then established a camp to build boats at (Biblical) Carchemish (Platnauer, 1919, p. 116). Moving down the Euphrates like Trajan's forces, he sent half his troops to capture Seleucia, while the remainder went to take the deserted city of Seleucia. Ctesiphon fell to the united Roman armies with little effort, and in 198 the emperor was given the eleventh imperial salutation. His troops then began the return journey, and in 199 they failed to take Hatra. The army then moved on to Nisibis and then to Syria by A.D. 200. There is some indication of continued Roman presence in Mesopotamia.

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<sup>215</sup> Which are currently being catalogued but are to the author's knowledge unpublished. They are in the Yale University Museum.

## **The Province of Mesopotamia**

From circumstantial evidence, the province appears to be a creation after the second Parthian war. The province is recorded as being under the command of Valerius Valerianus, as was revealed by an inscription on a column found at Caesarea Maritima in 1961 (Speidel, 1992d, p. 219). This inscription records that he was in charge of the Mesopotamian imperial finance to the sum of 10,000 sesterces a year, and that he was in charge of the completion of the campaign against the Arabs. It is recorded that the first prefect of the province of Mesopotamia was Subatianus Aquila, and as he had been in office in A.D. 195, one would have expected him and not Valerianus to have commanded the troops in Mesopotamia.

Evidence of the way Mesopotamia was administered comes from an inscription on a sarcophagus from Carian Aphrodisias (the village of Old Geyre), in Anatolia. The date can be limited to the period between A.D. 198 - 217 on the basis of a title. The inscription outlines the career of a veteran of the Legio I Parthica, and mention the garrisoning of a site by the Tigris. This led Syme (1992c, p. 201) to speculate that: "...a distinction may have been made between two different parts of Mesopotamia, one in the vicinity of Chaboras and Euphrates rivers, guarded by Legio III Parthica, and one in that of the river Tigris, guarded by Legio I Parthica." It seems from the inscription that the *limes* at this time was based upon the Tigris.

## **Summary**

While it is clear that there is evidence of Roman activity at Nineveh - including small finds, ceramics, coins - and there is historical evidence (see Appendix I) to suggest that there was Roman activity in the area during the campaigns of Trajan and Severus, there are no structures to give any solid evidence to support long term occupation of the site. While it is possible that

the Parthian city offered suitable structures, further excavation is needed to clarify this period. The mound of Nebi Yunus, which may remain unexcavated because of the shrine on it, appears particularly attractive for further exploration. It is also possible that Roman activity took place as part of a "client state" relationship with Adiabene.

## Summary: Parthian Nineveh

Summarizing the wide range of evidence presented in this thesis is far from a simple task, but areas of relative certainty emerge, particularly regarding material culture. The majority of the finds indicate an early Parthian occupation, before the first century A.D. Evidence from other sites suggests that the Parthians arrived in the north of Mesopotamia shortly after 140 B.C. The bronze coins recovered from the site are particularly relevant here, as there are certainly issues of Mithradates II (123-88 B.C.) represented in hoard I (Chapter III, pp. 308-309), and few issues may be of Mithradates I (171-138 B.C., Chapter III, pp. 310-311). This is the most solid date for the arrival of Parthians in the region, as on other sites there is only ceramic evidence that has a much wider chronological range. This hoard also indicates that there were coins made at the site during the so called Parthian Dark Age, the period between the death of Mithradates II and the establishment of Orodes II (55-38 B.C.) as king of the Parthian empire. This little known period was one of great turmoil, and as a result it appears that the coins represent an attempt at regional autonomy. This could be due to Armenian intervention in the region at this time or simply the efforts of a local governor. Without further information the situation will remain unclear, but to date this hoard also represents the largest accumulation (of a number of types) of bronze coins from this period.

Beginning in the first century A.D., there is increasing historical evidence for the fragmentation of the Parthian empire. At this time Adiabene appears as a separate but allied state of "Parthia" proper, with close ties to Rome (Appendix I, pp. 408-412). Material evidence from this period, particularly the rich Parthian graves uncovered by Hormuzd Rassam (Chapter I, pp. 27-28), offer evidence for a "Romanization" of the region. There is

increasing evidence, both historical and archaeological (particularly numismatic, eg; hoard II, discussed in chapter IV, pp. 375-376)), of Roman intervention in northern Mesopotamia.<sup>216</sup>

There are scattered references to Nineveh in Roman sources, and it is clear that Roman policy was directly involved in northern Mesopotamia. Nineveh may be considered the furthest eastern outpost of Roman control. While the campaigns of Trajan (A.D. 98-117) may have left little trace, Severus (A.D. 193-211) clearly occupied many areas in northern Mesopotamia, and may have occupied Nineveh as well. Material remains from this later phase are scarce. The site enjoyed greater prosperity during the earlier Parthian period and then underwent a period of decline with the fragmentation of the Parthian empire.<sup>217</sup>

Identifying areas of Parthian occupation is difficult. It is clear that the entire extent of the site was not occupied in later periods (Hutchinson, 1934); but little systematic excavation has yet been directed towards settlement areas. As a result only structures near the earlier Neo-Assyrian palaces are well understood. Nothing is known of the mound of Nebi Yunus, which may bear a Parthian and perhaps a Roman settlement. The most systematic excavations were carried out under the direction of Campbell-Thompson. Although his primary objective was the recovery of Neo-Assyrian material, his reports contain the most material recovered from the Parthian period.

In Seasons 1928-1929, 1929-1930, and 1930-1931, a Parthian occupation is indicated particularly by a large number of lamps recovered from the area of the "Temple of Nabu"; by figurines and lamps from the area of the "Palace of Ashurnasirpal"; and by figurines from the

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<sup>216</sup> There is also new historical information that suggests that Roman policy in the region may have used Parthian auxiliary units. This may explain some of the Roman military equipment recovered from the site.

<sup>217</sup> Much like Dura-Europos on the Euphrates.

area of the "Temple of Ishtar." Whilst elsewhere figurines are commonly found in funerary contexts, at Nineveh there may not be such a simple correlation, as they appear where no graves were found (or recognized). This is in keeping with what is now understood of figurines, as the excavations on the Island of Failaka demonstrated that figurines from this period come from a variety of contexts. As a result many figurines may have had little or no religious significance (Mathiesen, 1982, pp. 74-75).

The 1931-32 season in particular revealed a number of relatively complete Parthian period graves. They were not randomly distributed. They cluster notably about the section A in the "Palace of Ashurnasirpal" (Fig. 24, p. 66), where at a lower level there is also evidence of earlier (Neo-Assyrian) burials. Nineveh also offers evidence of wealthier graves from the Parthian period, as excavations in the latter nineteenth century under Hormuzd Rassam (Curtis, 1976) yielded quantities of gold. Obviously Nineveh offers a variety of burial methods for this period. Parthian burials in Mesopotamia share common features, and appear to imitate Greek burial practices in the use of terracotta figurines, tear vials, and molded bowls. It is clear that the latter two grave goods were intended to replace metallic forms, as both were made using molds.

Mesopotamian burials of this period have little in common with burial practices from further east, in Central Asia and Afghanistan (Chapter I, pp. 76-78). The graves from the Arabian region are similar in their use of tear vials and other small items, but reflect a martial character that is similar to the contents of burials from northern Afghanistan, perhaps due to the stationing of a garrison or mercenary troops. There is no evidence for a similar situation at Nineveh. In general one can simply divide Parthian burial practice into an eastern and a western tradition. Nineveh clearly belongs to the western tradition.

The excavators were unsure of the date for the green glazed wares, and could not

determine if they were Neo-Assyrian or Parthian. R.W. Hutchinson correctly identified molded bowls and white glazed wares as belonging to the Parthian period. As there appears to be little early Islamic settlement of Nineveh they had no difficulty in separating wares of a Medieval date from earlier material. Lamps also appear to have presented the excavators with a problem, as little systematic study was directed towards lamps in the Mesopotamian style at that time.

While there has been recent work on the subject of lamps from the Parthian and Sasanian periods, few excavations have uncovered lamps that are here assigned to Type III (Chapter I, pp. 97-100; Figs. 30, 31). It appears that this distinctive type of lamp was also used in other sites in northern Mesopotamia, but similar evidence is lacking from the west (such as Dura) or from the south (such as Assur). This type of lamp was limited in geographical range, and also in time, as no examples appear from any site after the Parthian (or perhaps early Sasanian) periods. There are perhaps more examples of this type of lamp from Nineveh than anywhere else.

The same is true of the molded bowls (Chapter I, pp. 109-121). While they broadly follow a western shape, and are not out of keeping with examples from Anatolia (Tarsus in particular), they are clearly not products of that site. Similar material has been recovered from sites in modern Syria, and examples are also found as far away as Afghanistan and India. While this type of ware is clearly not limited geographically, it is limited temporally, as few examples occur from contexts outside the Seleucid/ Parthian period.

### **Ceramics from Nineveh**

It is clear that unlike the ceramic practices of traditionally conservative regions such as Egypt, which could remain stable for hundreds of years (Vandiver and Lacovara, 1986, p. 60),

the Parthian period in Mesopotamia offers a clear break with earlier ceramic industries. Parthian practices constitute a distinct break with Assyrian traditions in both the raw materials used and in the methods of forming. There is also solid evidence, both archaeological and petrographic, for suspecting that a number of wares were imported, and there is some indication that there was a difference between the clays used by Parthian and Sasanian potters.

The green glazed wares quickly emerge as the most important, as they are often associated with Parthian occupation in the region (Chapter II, pp. 179-183). The presence of kiln spacers (p. 203), indicates that the majority of the green glazed wares are local products. The incised glazed shard (p. 189) is probably from either a distinct shop or perhaps imported. The one "Sasanian" glazed shard (p. 190-192) reflects a change in technology towards more effective levigation (further Sasanian fabrics are needed from well-dated contexts). The Islamic sample (pp. 196-197) is of a finely levigated clay, marking a complete break with Partho-Sasanian traditions. The pilgrim flask (p. 197), the most easily transported vessel, can be considered imported on the basis of archaeological, petrographic, and chemical differences.

The most surprising aspect of the green glazed wares is that they may be considered the products of one region. There has been much speculation as to the origin of these ceramics, as many have assumed because they were glazed - and therefore represented a higher technology than the plainwares - that they must have been imported. It appears that regional centres, such as Nineveh, produced their own glazed wares. On the basis of material examined from Dura-Europos and Kish, it also appears that the methods and materials used in the manufacture of these wares did not differ significantly from the Ninevite samples. This indicates that there was a single method of manufacture over a wide geographical area. Further, it also places later Islamic practice of centralized ceramic manufacture into perspective. Centralized manufacture was the preserve of the (Medieval) Islamic period. During the Parthian period such central production occurred on a regional scale.

This thesis has also identified an important ceramic type, the white glazed wares (Chapter II, pp. 207-214). These wares are clearly distinct from the green glazed wares on the basis of archaeological considerations; although there appear to be no other sites in the region that offer quantities of this material. Other sites indicate that this material should be dated to the early Parthian period. These wares show a fine processing of clay that was not achieved again till the Islamic period. Because they are so refined, it is hazardous to speculate on their origin. One may suspect that they were imported.

The "Parthian" plain wares demonstrate the greatest petrographic variability of any samples. On the basis of archaeological, petrographic, and chemical considerations (especially when compared to Neo-Assyrian Bricks) the bulk of these wares may be judged to be local products (Chapter II, pp. 218-228).<sup>218</sup>

The molded bowls - on the basis of typological observations (which petrographic observations appear to confirm) - had a period of production distributed across a span of time (pp. 237-245). There may have been a number of shops producing such wares. The chemical analysis (p. 201) suggests that this group of wares is more homogenous than the green glazed wares. In this case it may be best to rely more upon the petrography than on the chemical analysis (the effects of the two rivers on the geology of the region is discussed in Chapter I, pp. 4-6).

The lamps present an interesting problem. Mesopotamian lamps can be divided into a fine and coarse petrofabric. The coarse resembles the plainwares, while the finer fabric is similar to that of the Partho-Sasanian lamps. These wares can be assumed to be locally made. Partho-Sasanian lamps are of a similar tradition to the Mesopotamian lamps. It is clear that

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<sup>218</sup> The stamped Parthian ware is so out of keeping with all other samples that one assumes it is an imported ware.

while other classes of ceramic changed over time lamps retained much the same in fabric. This suggests that the lamps were more of a local "home" industry. It appears from the texture of the lamps that they were not made with the figurines or any other wares, so that unlike evidence from a similar period in Anatolia, the lamps from Nineveh can be assumed to be the products of a simple household shop. Archaeological observations from other sites suggest that figurines were associated with lamp production, which clearly is not the case for Nineveh. Figurines were formed and produced using a variety of materials selected on the basis of ease of availability, and then fired in either crude kilns or open fires (Chapter II, pp. 273-280). The methods of manufacture clearly indicate that they were home industries that used a low level technology.

Two cooking vessels are almost certainly imported. It has often been assumed that cooking vessels, of a coarse nature, would be locally made. Recent petrographic studies indicate that the reverse is true. While the form and fabric of cooking vessels may be crude, the particular technical requirements of these vessels dictate that a particular clay source and inclusions must be used (p. 258). This is especially the case for Mesopotamia, where the local calcareous clays are unsuitable for cooking vessels. EM 1, the vessel with large grains of calcite, may have been imported from Syria (Dr. Freestone, personal communication). It is interesting to note that the vessel with the coarse basalt temper has failed.

### **What Remains to Be Done**

Future research can be divided into two categories. The first pertains to what can be done with further access to the site of Nineveh. The abundances of ceramic types from this period is unknown, as it is clear that the excavators retained only select examples. To date there is no indication of a pottery workshop on the mound from this period. This is hardly surprising because it would be unlikely there would be a workshop near a palace. There is a pressing

need to excavate the surrounding areas of the mound for traces of workshops and kilns.

The distribution of ceramics in the outlying areas of Nineveh would determine the extent of trade about Nineveh. It should not be simply assumed that ceramic density will be related to distance from the production site. In order to make the petrographic observations more convincing, a characterization of the clays and sediments from Nineveh should be conducted. It is a common assumption that the ceramics from a particular region can be divided into local and imported categories on the basis of abundance alone.<sup>219</sup> In order to overcome what may be considered a weakness of the method, a characterization of the available clays is appropriate, especially if more detailed chemical analysis is used on this material at some future date.

The second research programme - which should be conducted after a thorough characterization of the ceramic industries of Nineveh has been completed - involves placing the Parthian industries from the site into wider context. A larger-scale research project, encompassing the extent of the Parthian empire, should be initiated. Regional variations in ceramic manufacture should be characterized with a view towards elucidating trade during the period, and technological aspects should be considered in the light of a period of rapid political change. There are a number of vessels from western Iran that appear very similar to Mesopotamian fabrics that may have been imported to that region from the west. At the time the political gravity of the empire had decidedly shifted to Mesopotamia, and it is possible that Mesopotamian vessels were traded east. Parthian vessels from middle and eastern Iranian contexts suggest that for all purposes these regions were quite different from western Iran and Mesopotamia (Vogelsang 1985).

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<sup>219</sup> In this report, however, other archaeological and typological criteria are used to define what groups may be considered local and imported.

# Appendix 1

## Historical Sources Relating to Parthian and Roman History in Northern Mesopotamia

In order to place the historical events that play an important part in interpreting the material evidence from Parthian Nineveh into perspective, a listing of important occurrences has been compiled. Italicised material is of relevance to Nineveh and the state of Adiabene. Notes in bold type pertain to the Parthian dark age. The particularly useful reference Debevoise's *A Political History of Parthia* (1938) has been abbreviated as Deb. Parthian history from a Roman perspective is presented by Ziegler (1964) *Die Beziehungen Zwischen Rom und dem Partherreich*. References to papers published after these two works were compiled are also included.

94 B.C. Upon the death of his father, Tigranes of Armenia, a hostage of the Parthian court, was placed on the throne with Parthian aid. *The Parthians received "seventy valleys," which probably included Nineveh and environs (Der Nersessian, 1969, pp. 25-26).*

92 B.C. Sulla is offered an offensive and defensive alliance by a Parthian emissary. A treaty is concluded, but the emissary is executed for failing to uphold Parthian honour. At this time Parthia was not appreciated as a significant threat by Rome (Ziegler, 1964, pp. 20-24).

**88 B.C. War breaks out between two brother-contenders for the Seleucid throne. In the course of casting for allies, the ruler of Emesa is approached. In the same document Mithradates Sinaces, the Parthian governor of Northern Mesopotamia is also called upon. Mithradates II dies, and is replaced by Gotarzes from Babylonia, who is perhaps not of the Arsacid line.**

The Parthians at this time appeared to support the concept of a Syrian state under Seleucid rule, if that state were supported by a powerful Parthian King of Kings. Parthian policy in Syria was thwarted by Rome (Rostovtzeff, 1941, p. 843).

80 B.C. Tigranes builds a second capital, Tigranocerta. It is populated by peoples from conquered and annexed states. While the exact location is still open to debate, it is clear that it was situated in eastern Anatolia or northern Mesopotamia. The city marks the beginning of Armenian control of the region (Syme, 1988, pp. 245-246).

69 B.C. *Mithradates of Pontus and Tigranes of Armenia offer "seventy valleys," which are taken to include Adiabene and northern Mesopotamia, in return for aid against Rome.* The Roman commander Lucullus sends promises of reward if Parthian aid is not forthcoming. Phraates, the Parthian monarch, promises aid to both sides, and Lucullus prepares to attack Parthia. Roman troops in the east rebel (Ziegler, 1964, pp. 24-26).

66 B.C. Pompey is sent to replace Lucullus, and secures an agreement with Phraates to insure Parthian neutrality. Historical sources suggest that Adiabene, Mesopotamia and Gorduene were offered by Rome (Sherwin-White, 1984, p. 223). Tigranes the younger persuades Phraates to invade Armenia. Tigranes the elder defeats the revolt, and Pompey mediates the dispute.

65 B.C. A. Gabinius, a legate under Pompey, raids across the Tigris. Phraates learns that Pompey has seized Tigranes the younger, and as a result invades Gorduene, which he wins. Phraates sends an embassy to Pompey, and demands that his son-in-law

Tigranes the younger be released. He is concerned about Roman troops in the north, and stipulates a treaty recognizing the Euphrates as the boundary between the two empires. After Syria and Cappodocia were incorporated into the Empire, Rome ceased to recognize the Euphrates as a boundary (Isaac, 1992, p. 28). Gorduene is occupied by Roman troops and is given back to Tigranes the Elder (Braund, 1994, p. 171).<sup>220</sup> *Adiabene is apparently retained by Phraates.*

58/57 B.C. Phraates III is killed by his sons. Mithradates III succeeds the throne, but is driven off by his nobles. He seeks the assistance of A. Gabinius, but the reconquest was not acted upon. Mithradates then starts a civil war, winning Seleucia, where he strikes coins depicting Tyche with the palm of victory in her hand to commemorate the new ruler. These coins were apparently withdrawn from circulation. Mithradates is executed in 55 B.C. (Deb., p. 77).

54 B.C. M. Licinius Crassus, governor of Syria, upon the urging of Caesar, collects a large levee of troops and takes command of Syrian troops. With seven legions he begins laying a base of supplies in Mesopotamia. Crassus then winters in Syria, and then in the beginning of the campaign the next season follows the over-land route into the heart of Mesopotamia. The advice of his Armenian ally to keep to the hills was ignored. Orodes went to Armenia with the bulk of his troops to await the Roman attack he

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<sup>220</sup> There is some debate regarding the effect of Roman occupation of Colchis and Armenia. While some find that this action resulted in the marginalization and eventual fragmentation of the region (Braund, 1994, p. 176); others find that the Roman presence increased trade and stimulated expansion (Manandian, 1965, p. 79). There is no doubt, however, that Parthia was prevented from large scale interference in the region, a situation that lasted until the Sasanian period.

**expected from that front, leaving a small force of some ten thousand cavalry to guard Mesopotamia. On May 6 about forty-two thousand Roman troops encountered Parthian forces at Carrhae (Harran), and were decisively defeated. Rome also lost influence over Armenia. The Euphrates remained the boundary between Rome and Parthia till about A.D. 63, as Roman troops are so depleted as to leave the eastern provinces dangerously undefended.**

51 B.C. Pacorus I with a large force of Parthian cavalry and Arab allies crosses the Euphrates. This leads to a general uprising from the pro-Parthian faction in Syria. The Parthian forces successfully plunder the region of Antioch (Rostovtzeff, 1941, p. 984). Debevoise (p. 100) notes that the Parthian force was equipped for nothing more than a raid for booty, and had no intention of a war of conquest. As a result of this activity, there was a call for either Caesar or Pompey to take command of the eastern forces. Parthian forces withdrew and Parthian activity subsided, so that no further action by Rome was imminent. Debevoise (p. 104) notes that no Tetradrachms were struck between 52-40/39 B.C., suggesting that the seat of the Parthian empire effectively switched to Iran.

45 B.C. During the Roman Civil Wars, both sides called upon Parthian aid, and the Parthians actively encouraged civil war among the Romans. Q. Caecilius Bassus was besieged by Caesarian forces at Apamea and was relieved by a Parthian force under Pacorus. Because this operation was late in the season, Parthian forces did not stay long.

As a result of Parthian activity, Caesar began plans for a great Parthian campaign. Sixteen legions and ten thousand cavalry were prepared for the invasion. After Caesar was assassinated these plans were cancelled. *Antony then began a programme of removing pro-Parthian tyrants who ruled in cities in and near Syria, which resulted in a Parthian reaction.*

42 B.C. Parthian auxiliaries fight a losing battle on the side of the Republicans at Philippi in Macedonia against Octavian.

40 B.C. Antony makes a tour of the east, imposing heavy taxes on the inhabitants, and giving rise to indignation. Labienus persuades the Parthians to prepare an invasion of Roman territory, and in the spring Apamea is taken (Rostovtzeff, 1941, p. 1008). Most of Syria was taken in this campaign. Antigonus in Judea placated advancing Parthian forces by the payment of a large sum. A Parthian and pro-Antigonus force then descended upon Jerusalem and took the city. Almost all of Rome's Asiatic possessions were either in the hands of Parthia or directly threatened by Parthian action (Deb., pp. 112-113). In 39 B.C. Syria was retaken, and in 37 Antigonus was put to death and Herod became king of the Jews.

36 B.C. Antony makes an unsuccessful raid into Media Atropatene (Azerbaijan), which was controlled by the Parthians. He was urged by the Armenian king, his ally, to reduce this kingdom, with the obvious result that such an action would benefit Armenia. When the initial Roman assault on Praaspa (Takt-i-Sulaiman) failed, the Armenian allies deserted, leaving the Roman troops to make a costly retreat through the hills.

33 B.C. Antony takes direct control of Armenia, and makes a treaty with the Median king in an alliance against Octavian and the Parthians. There was an exchange of troops, and after initial success, the Median king was forced to flee to Roman protection. Parthia, Armenia, and Media were solidified against Rome.

20 B.C. The Imperial standards captured at Carrhae are returned. The restoration of the standards was recorded by the issues of Asiatic, Spanish, imperial, and senatorial mints. Artaxaxes, the Armenian king who cleared Armenia of the Roman troops left by Antony, was killed. The Roman appointee Tigranes II was sent to replace him.

10 B.C. Phraates is persuaded by Musa - his principal wife and an Italian by gift from Augustus - to give four sons (with two of their wives and four grandsons) from other wives as hostages to Rome. The action also appears to have been motivated by a desire to mollify Roman opinion (Syme, 1991, p. 446). The hostages gave Rome leverage over Parthian affairs for a period of time, as kings could now be requested from Rome. Their education in Rome, however, left candidates who were found to be unsuitable.

1 B.C. Artavasdes, the Roman supported king of Armenia appointed after the death of Tigranes II, is expelled due to his pro-Roman slant. Tigranes III and his sister-wife are appointed by the nationalist party. The new king soon dies, and shortly after the Romans placed another puppet upon the throne with Parthian approval. Augustus at this time was planning a wider Parthian campaign.

A.D. 18 The Parthian vassal state of Messene appears to be fully independent at this time, owing to weak central government in Parthia. Between A.D. 19 and 32 the East was quiet.

A.D. 35 Tiberius dispatches a grandson of Phraates IV, Tiridates III, to rule Parthia. He is aided by pro-Roman Parthian troops. He was accepted by the Greek cities in Mesopotamia,

such as Nicephorium and Anthemusia, and Parthian cities such as Halus and Artemusia. Seleucia greeted his arrival with acclaim. Artabanus sought refuge in Hyrcania, and returned with a force of Dahae and Sacae. The Roman candidate failed. *The Parthian empire was left in a very weakened state, and regions such as northern Mesopotamia were virtually independent* (Deb., p. 164).

A.D. 36 *Artabanus places himself under the protection of Izates II of Adiabene, his ally and vassal. He is re-installed, and as a result Izates receives the city of Nisibis and its surrounding lands, which were part of the Armenian kingdom* (Deb., p. 166).

A.D. 38 Artabanus dies and is succeeded by Gotarzes II. His brother Vardanes in A.D. 39 assumes the throne, and apparently at this time founds Ctesiphon. The two brothers reach an agreement whereby they split the empire, Gotarzes rules in the north. *The account of Philostratus suggests that Nineveh belonged to Adiabene and was under the jurisdiction of Gotarzes* (Deb., p. 169).

A.D. 41 Claudius releases Mithradates to reclaim the Armenian throne which had been taken by the Parthians. He secured the country, but treated his subjects with great cruelty, which elicited pleas for Parthian support. *The Parthian ruler attempted to obtain troops for an assault from his principal ally, Izates II of Adiabene, but was unable to persuade him. At the time Izates' five sons were in Rome. Vardanes began a campaign against this vassal, but as he was becoming too strong for the nobles, he was shortly removed, and his brother Gotarzes takes the throne* (Deb., p. 170).

A.D. 47 An appeal was made to Rome (by a pro-Roman faction) to send a Parthian ruler, Meherdates, son of Vonones I, and grandson of Phraates IV. He travels through Armenia. His party was met by messengers from the Karen family, who *conducted them across the Tigris through Adiabene and on to Nineveh and Arbela. Izates of Adiabene could do no more than exhibit friendliness in the face of such a military force.* Gotarzes forces a battle and wins.

A.D. 52 Pharasmanes of Iberia invades Armenia in order to expel the pro-Roman ruler. Armenia was in a civil war, and Vologases invades, taking the capital, Artaxata. *The presence of Parthian troops in the region encourage Adiabene to revolt, as they had become dissatisfied with the rule of Izates II. Izates is encouraged by Vologases to give up his special privileges granted to him by Artabamus II and assume a more limited role as simply a vassal. Izates prepares for war, and masses troops on the Upper Zab River, which separated Adiabene from Media. Vologases was prevented from carrying out his attack by an invasion of eastern Parthia.*

A.D. 54 Corbulo is appointed by Nero to reclaim Armenia. In the winter of 57/8 he invades Armenia and garrisons it with Roman troops, he soon captures the capital, and the Armenian monarch is forced to flee. Tigranes V was appointed by Nero as ruler.

A.D. 61-2 Tigranes invades Adiabene, and Monobazus, ruler of Adiabene, contemplates surrender to the Romans rather than capture by Tigranes. *The Parthian ruler then apparently placed his cavalry under to control of a leading noble, with orders to cooperate with Monobazus. The Parthian force prevails and then lays seige to the Armenian capital* (Deb.,p. 186).

Corbulo prepares to invade Mesopotamia in response, but both sides agree to withdraw and negotiate. Negotiations unsuccessful, and the contest is resumed. Corbulo bridges the Euphrates at Zeugma. A Roman force in Armenia was forced to seek terms. *Monobazus of Adiabene acts as witness* to the treaty which left Parthia in control of Armenia. Corbulo was later persuaded to abandon his fortifications on the east side of the Euphrates if Armenia was surrendered. Corbulo then proceeds to drive the Parthians out of Armenia.

A.D. 63 The Parthians agree that Tiridates is to receive the Armenian throne from Nero in Rome, and in 66 he arrives there after a land journey, as a Magian was not allowed to ritually pollute the water by traversing the distance by sea. Armenia remained under Roman influence.

A.D. 110 Pacorus sells the kingdom of Osroene to Abgarus VII (of Edessa), son of Izates, although the exact relationship this territory has with Parthia after this date is open to debate. At the same time Tiridates was deposed from Armenia by the Parthians, who placed a son of Pacorus on the throne. When the Parthians sought sanction from Rome, it was denied. Trajan prepares for war (Deb., p. 217).

A.D. 114 Trajan advances with a large force to Melitene, and receives a number of embassies from Caucasian kings. At Elegia (Turkish Ilica) the Parthian/Armenian king lays his diadem at the feet of Trajan, and instead of being crowned, he is killed in what is described as a misunderstanding. Armenia was then subjugated and made into a province. *Trajan then advanced into Mardin and Nisibis, which at that time were probably part of Adiabene. The king of Adiabene and his vassal, Mannus, had already conflicted with Roman troops settling*

*the south-eastern districts of Armenia and subjugating petty chieftains, of whom Mannus was one (Longden, 1931, p. 11). Mebarsapes, king of Adiabene, was forced to withdraw to Singara (Sindjar), Libana, and Thebeta, across the Tigris (Deb., p. 225-6). Trajan then moved to Edessa, which offered to submit without a fight, and Abgarus of Edessa was confirmed as phylarch.*

A.D. 114/115 (winter) Trajan withdrew into Antioch. He was awarded the title of "Parthicus," which was confirmed after his capture of Ctesiphon (Ziegler, 1964, pp. 102-103). Coins were struck with the legend ARMENIA ET MESOPOTAMIA IN POTESTATEM P.R. REDACTAE, which commemorates the creation of two new provinces.<sup>221</sup>

During the winter the troops constructed boats, and they were transported to the Tigris. The crossing was at a place "opposite the Gordyaeen mountains," which is still uncertain. *All of Adiabene was taken at this time, and the province of Assyria was formed. Debevoise (p. 230) notes that Assyria probably included Nineveh, Arbela, and Gaugamela.*

Trajan's land forces kept pace with his fleet, which were descending down the Euphrates. At some point below modern Baghdad, he transferred his fleet to the Tigris, and Ctesiphon fell without resistance. The northern region soon revolted, and the south was unstable. The Jews were in revolt throughout the eastern empire. This revolt is unusually bloody, and there was much fighting between Greeks and Jews in many eastern Provinces. In Mesopotamia the rebellion may have been part of a more general revolt against Roman rule (Fuks, 1961, p. 99).

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<sup>221</sup> There are few indications of Roman rule in Mesopotamia. The Romans clearly constructed roads for their campaigns, and a milestone was recovered in the Sinjar region of Mesopotamia (Cagnat, 1927, p. 54).

A.D. 116 Trajan appointed Parthamaspates as king of the Parthians. *The Roman garrisons in the north were either expelled or killed, and a punitive expedition reduced Nisibis and Edessa and left the region unable to respond* (Longden, 1931, p. 15). Trajan retreated from his newly conquered empire, and by 117 he prepared for another campaign. The Parthians rejected their Roman appointed king, and Rome lost control of the new provinces. Trajan died in Aug. 117, and the new emperor, Hadrian, dropped Roman claims to the new provinces.

There is much discussion about the so-called secret orders given to Hadrian by Trajan. The orders apparently requested that Roman forces be withdrawn from Mesopotamia. As these orders gave Hadrian some excuse for retreat, their origin is suspect. Recent evidence from Dura, however, suggests that these orders may not have been a simple fabrication (Teixidor, 1987, p. 188). Hadrian gives Osroene to Parthamaspates.

A.D. 136 *Rakhbakht, governor of Adiabene*, and another general take command of the twenty thousand foot soldiers from Ctesiphon to repel an invading force of Alans. After a decisive Parthian defeat, the Alans fail to exploit their advantage.

A.D. 161 Vologases launches his campaign against Armenia, which is presumably taken. Wa'el of Edessa is installed by the Parthians. Syria, which had long standing sympathy with the Parthians, threatens revolt. Lucius Verus, co-Emperor with Marcus Aurelius, is sent to the east (Dodd, 1911, p. 210) Parthian forces raid into Syrian territory.

A.D. 163 Avidius Cassius<sup>222</sup> is given control of a Roman operation to capture Armenia, which is taken in the same year. In 164 Cassius advances into Mesopotamia. A pontoon bridge is established at Circesium to cross the Euphrates. Dura-Europus was placed in Roman control. In Dec. 165 Seleucia and Ctesiphon were taken. The Romans are then routed by a raging epidemic of smallpox, which left their gains to be taken by the Parthians. It is possible that Roman forces are left in various other sites in Northern Mesopotamia (Issac, 1992, p. 30). It is unclear how any Roman gains in Mesopotamia were administered at this time. Roman control at the time could have been administered by client states. Numismatic evidence makes no direct references to the treatment of Mesopotamia after the war (Dodd, 1911, p. 267).

A.D. 166 The Romans launch an expedition to Mesopotamia. Edessa is taken, the Parthian appointee, Wa'el, is replaced by Ma'ne VIII. Nisibis is taken. Tiridates, a Parthian satrap in Armenia, was deported to Britain, and Armenia was more closely integrated into Roman hands. *The territory west of the Khabur, Carrhae and Edessa, were under increasing influence of Rome* (Deb., p. 254).

A.D. 193 Pescennius Niger in Syria, one of the three contenders for the Roman throne, receives aid from the rulers of Hatra, Edessa and Adiabene. Vologases of Parthia collects forces for the upcoming battle. Septimius Severus then launches a successful campaign against Niger, and during this operation Vologases foments a revolt in Osroene and Adiabene and uses troops from these regions to lay siege to Nisibis (Ziegler, 1964, p. 130). After Severus was determined the victor, Vologases offers to restore Roman prisoners (troops from Niger) captured in his raid, in exchange for recognition of his conquests. In 195 Severus

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<sup>222</sup> An outline of Cassius' life is given by Syme (1988b).

enters into Edessa, which makes common cause with his campaigns. Nisibis was taken shortly after, and Severus receives the title PARTHICUS ADIABENICUS. In 196, Severus was forced to withdraw, Nisibis was saved by decisive Roman action, but Armenia may have fallen back into Parthian control. There was growing hostility to Parthian ineffectiveness in Iran, and shortly after Vologases was forced to fight a rebel force from Persis and Media. The Parthians then launch a successful campaign to quell the revolt in Iran, and then turn to Adiabene. *Narses, king of Adiabene, had refused to participate in Vologases eastern campaign, and was becoming increasingly friendly with the Romans. Vologases invaded Adiabene, destroyed several cities, and drowned Narses in the Greater Zab.*

A.D. 197 Severus prepares to attack Parthia. He prepares boats, and following them down the river he captured Seleucia, Babylon, and Ctesiphon in 198. Parthia is seriously damaged, no more territory is gained for Rome.

A.D. 211 Caracalla seizes Abgarus IX of Osroene and rules that region directly from Rome.

A.D. 213 Caracalla prepares to invade Parthia from Nicomedia (Izmit), but instead Roman forces attempt to conquer Armenia. They fail in 215/216. Caracalla advances into Parthia, ravages a large part of Media, and takes the city of Arbela.

A.D. 217 Parthian forces regroup, and in the spring invade Mesopotamia, which was in Roman hands. Macrinus, the successor to Caracalla, meets Artabanus near Nisibis. Parthian cavalry was hindered by the use of caltrops, but the Romans were forced to purchase peace after a defeat. In 218 Macrinus was killed near Antioch.

A.D. 220 The growing revolt against Parthia encompasses not only Iran, but a number of other smaller states. The kingdom of Persis gains considerable power at the expense of Parthian authority. Ardashir of Persis, a group of Medes, *Shahrat of Adiabene*, and King *Domitian of Kerkh Slukh (Kirkuk)* invade Mesopotamia. Ctesiphon is captured (Deb., p. 268). The Parthian dynasty is replaced by the Sasanians from Persis.

**Petrographic Tables**  
**and**  
**Bulk Chemical Analysis**

Table 1

		NEO-ASSYRIAN		LATE NEO-ASSYRIAN			
		EM 9	EM 17	MX 18	MX 19	MX 20	MX 21
QUARTZ	poly mono	0 0	0	— 0	— X	— X	X
CALCITE	poly shell mono	0 0	0		—		0
FELD	ortho micro plag	0 0			—	—	
MICA	bio muscov						0
AMPH					—		
PYROX							—
HEM	euhed anhed			—	0	0	—
CHERT						—	—
SANDSTONE							
SILTSTONE							
BASALT/DOLERITE							
PELLET		—					
GROG			—				
INF. INCLUSIONS		1	1,12				
<i>NUMBER OF INC.</i>		2	1	1	2	2	2
<i>SILT IN MATRIX</i>		3	1	1	3	2	2
<i>MODE INC SIZE</i>		F SND	VF SND	VF SND	VC SLT	C SLT	C. SLT
<i>MEAN INC. SIZE</i>		F SND	VF SND	VF SND	VC SLT	C SLT	C. SLT
<i>MAX. INC. SIZE</i>		690	520	180	200	300	300
<i>INCLUSION SHAPE</i>		S ANG	ROUND	S ANG	S RND	S. RND	S. ANG
<i>MATRIX COLOR</i>		10R 5/4	10R 4/6	5Y 4/4	5Y 5/6	5Y 5/6	5Y 6/4
<i>COLOR NAME</i>		MD. BRN	RD. BRN	MO B	LO B	LO B	DY
<i>ISOTROPY</i>		WAN	WAN	ISO	WAN	WAN	WAN
<i>VITRIFICATION</i>		EV	EV				

Table 2

		GREEN GLAZE									KILN SPACERS	
		ME 9	ME 10	ME 12	EM 10	ME 3 (INCISED)	ME 11	EM 12	EM 20	EM 3 (PILGRIM)	PAR 1	PAR 2
QUARTZ	poly mono	X X	X X	X X	X X	X X	0 X	XX XX	X	0 X	X X	0 X
	CALCITE	poly shell mono	X	0	0 0	X	X	X 0	X	0	X	X
FELD	ortho micro plag	0 0	0 0	0 0	0	0 0	0 0	X	0		0 0 ---	0
	MICA	bio muscov	0		0 0					0 0	0	0
AMPH		0	0	0	0	0	0	0		0	0	0
PYROX		0	0	0	0	0	0				0	
HEM	euhed anhed	0	0	0	0	0	0	0	0	0	0	0
CHERT		X	0	—	0	0	—	XX		X	X	0
SANDSTONE												
SILTSTONE						—						
BASALT/DOLERITE		—	—	—	—	—		—			---	
PELLET						—						
GROG												
INF. INCLUSIONS		8		2,3	2							
NUMBER OF INC.		3	3	3	3	3	3	4	2	3	4	3
SILT IN MATRIX		2	2	3	2	2	3	3	2	3	3	4
MODE INC SIZE		M SND	M SND	F SND	F SND	M SND	F SND	M SND	CR SLT	F SND	M SND	M SND
MEAN INC. SIZE		M SND	M SND	VF SND	M SND	F SND	F SND	F SND	CR SLT	VF SND	M SND	F SND
MAX. INC. SIZE		355	880	355	540	690	350	530	180	520	420	350
INCLUSION SHAPE		S ANG	S ANG	S ANG	S ANG	S ANG	S RND	ANG	ANG	S ANG	S ANG	S ANG
MATRIX COLOR		5 Y 5/6	5 Y 5/6	5 Y 5/6	5 Y 6/4	5 Y 5/6	5 Y 5/6	5 Y 5/6	5 Y 6/4	5 Y 5/6	5 YR 5/6	5 Y 6/4
COLOR NAME		LT. OLIV	LT. OLIVE	LT. OLIVE	DSK. YEL	LT. OLIVE	LT. OLIVE	DSK. YEL	DSK. YEL	LT. OLIVE	LT. BRN.	DSK. YEL
ISOTROPY		WAN	WAN	ANISO	WAN	ISO	WAN	WAN	WAN	WAN	WAN	WAN
VITRIFICATION		PV	NV	PV	EV	EV	EV	PV	EV	PV		

Table 3

		WHITE GLAZE			(stamped)	PARTHIAN PLAIN				
		ME 8	EM 8	EM 11	MX 8	ME 2	EM 15	ME 4	EM 16	ME 1
QUARTZ	poly mono	0	0	0	-- X	XX XX	XX XX	0 X	X X	X X
CALCITE	poly shell mono	0	0		XX --	XX 0	XX	XX	0	X --
FELD	ortho micro plag	0		0	-- 0	0 0 X	0	0		-- --
MICA	bio muscov	0	0 0							--
AMPH				0		0	0	0	0	--
PYROX						0		0		--
HEM	euhed anhed		0	0	--	0		X		
CHERT			--		--	X	X		X	X
SANDSTONE					--					0
SILTSTONE					0		--	--		--
BASALT/DOLERITE					--	--	--			--
PELLET		--			0		--	--		--
GROG							--			X
INF INCLUSIONS						3.6			11	
NUMBER OF INC.		1	2	2	3	3	3	2	2	4
SILT IN MATRIX		1	1	1	2	3	3	4	2	3
MODE INC SIZE		CR SLT	CR SLT	VF SND	F SND	F SND	F SND	VF SND	F SND	M SND
MEAN INC. SIZE		VF SND	VF SND	VF SND	F SND	M SND	M SND	VF SND	F SND	C SND
MAX INC SIZE		180	350	180	1 MM	530	530	520	520	2 MM
INCLUSION SHAPE		S ANG	ANG	ANG	S RND	S ANG	S ANG	S ANG	S ANG	S ANG
MATRIX COLOR		5 YR 5/6	10 R 6/6	10 R 6/6	10R 5/4	10YR 5/4	10 R 4/6	5 YR 5/6	10 R 4/6	5 YR 5/6
COLOR NAME		LT BRN	RED OR	RED OR	PR B	PLE BRN	RD BRN	LT BRN	RD BRN	LT BRN
ISOTROPY		ISO	ISO	ISO	WAN	WAN	WAN	WAN	WAN	WAN
VITRIFICATION		EV	EV	EV		EV	EV	EV	EV	PV

Table 4

		ROMAN RED		MOLDED BOWLS							
		ME 5	ME 6	ME 13	ME 14	ME 15	ME 16	ME 17	ME 18	ME 19	ME 20
QUARTZ	poly mono	0	0	X X	X X	0 X	X X	X X	0 0	X X	0 X
	CALCITE poly shell mono	0		X	X	X X	X X	X	0 0	X	0 0
FELD	ortho micro plag	0	0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
MICA	bio muscov				0		0	0		0 0	
AMPH				0	0	0	0	0		0	0
PYROX				0	0	0	0	0	0	0	0
HEM	euhed anhed		0	0	0 0	0	0	0		0	0
CHERT				0	0	0	0	0	0	0	—
SANDSTONE									—		—
SILTSTONE				—		—	—				
BASALT/DOLERITE				—		—			—		
PELLET						—	—		—		—
GROG											
INF. INCLUSIONS					5,7,10	4	9				10
NUMBER OF INC.		1	1	3	3	3	3	3	2	2	3
SILT IN MATRIX		1	1	2	2	3	3	2	3	2	3
MODE INC SIZE		<M SLT	C SLT	F SND	F SND	F SND	F SND	F SND	M SND	FN SND	VF SND
MEAN INC. SIZE		<M SLT	C SLT	M SND	F SND	F SND	F SND	F SND	VF SND	F SND	CR SLT
MAX. INC. SIZE		170	540	650	360	1MM	500	535	350	540	350
INCLUSION SHAPE		ROUND	ROUND	S ANG	ANG	ANG	S ANG	ANG	S RND	ANG	ANG
MATRIX COLOR		5YR 5/6	5Y 6/4	5 YR 4/4	5 YR 5/6	5 YR 5/6	5 YR 5/6	5 YR 4/4	5 YR 4/4	10 R 5/4	5 YR 5/6
COLOR NAME		LT.BRN	DSK.YEL	MD.BRN	LT.BRN	LT.BRN	LT.BRN	MD.BRN	MD.BRN	RD.BRN	LT.BRN
ISOTROPY		ISO	ISO	ISO	ISO	ISO	WAN	WAN	WAN	WAN	WAN
VITRIFICATION		EV	NV	EV	NV	EV	EV	PV	EV	EV	PV

Table 5

		MESOPOTAMIAN LAMPS				PAR/SAS LAMPS	
		EM 5	EM 7	EM 13	EM 19	EM 14	EM 18
QUARTZ	poly mono	0 X	0	XX XX	XX XX	X X	0 X
	CALCITE	poly shell mono	X	0	X	X	0
FELD	ortho micro plag			0 0 0	X X	0 0 0	
			0	0			
MICA	bio muscov						
AMPH					0	0	
PYROX				0			
HEM	euhed anhed						0
CHERT				XX	X	X	
SANDSTONE		—					
SILTSTONE		—					
BASALT/DOLERITE				—	—		
PELLET		—					
GROG		—					
INF. INCLUSIONS		4		2			
NUMBER OF INC.		2	2	3	4	3	2
SILT IN MATRIX		3	3	2	2	1	1
MODE INC SIZE		F SND	VF SND	M SND	M SND	F SND	F SND
MEAN INC. SIZE		F SND	F SND	M SND	M SND	F SND	F SND
MAX. INC. SIZE		350	520	1 MM	535	800	520
INCLUSION SHAPE		S ANG	S RND	S ANG	S ANG	S ANG	S ANG
MATRIX COLOR		10R 4/6	5YR 5/6	5Y 4/4	5YR 5/6	10R 3/4	10Y4 5/4
COLOR NAME		RD.BRN	LT.BRN	OLV.BRN	LT.BRN	RD.BRN	YL.BRN
ISOTROPY		WAN	ISO	ISO	WAN	ISO	ISO
VITRIFICATION		NV	EV	EV	EV	PV	PV

Table 6

		SASANIAN (ledge) (cooking) (stamped)				
		MX 16	EM 1	MX 1	MX 2	MX 3
QUARTZ	poly mono	X	0	X X	X X	X X
CALCITE	poly shell mono	X ---	XXX	X 0	X	0
FELD	ortho micro plag	X		---	---	---
MICA	bio muscov			0	---	---
AMPH				0		---
PYROX		X		---		---
HEM	euhed anhed			0	0	0
CHERT		0	X	X	X	X
SANDSTONE						
SILTSTONE				---		
BASALT/DOLERITE		XX		---	---	---
PELLET			---	0		
GROG				---	---	
INF. INCLUSIONS						
NUMBER OF INC.		3	4	3	3	3
SILT IN MATRIX		3	3	2	1	1
MODE INC SIZE		1 mm.	M SND	M. SND	M. SND	M. SND
MEAN INC. SIZE		1 mm.	M SND	M. SND	M SND	M. SND
MAX. INC. SIZE		3 mm.	1.5 MM	350	880	530
INCLUSION SHAPE		ANG	ANG	S ANG	S ANG	S ANG
MATRIX COLOR		10 R 4/6	5R 2/2	10 R 5/4	10 R 5/4	5Y 5/6
COLOR NAME		MR B	BLK RED	PR B	PR B	LO B
ISOTROPY		ANISO	WAN	WAN	WAN	WAN
VITRIFICATION			NV			

Table 7

		ISLAMIC	FIGURINES		
		MX 4	EM 2	EM 4	EM 6
QUARTZ	poly mono	— XXX	X X	X X	0 X
CALCITE	poly shell mono		X 0 X	X	X 0
FELD	ortho micro plag		0 0 0	0	0
MICA	bio muscov	—	0		
AMPH			0	0	0
PYROX			0		0
HEM	euhed anhed	—		0	
CHERT		—	X	X	0
SANDSTONE					
SILTSTONE				—	
BASALT/DOLERITE					
PELLET			—	—	—
GROG				—	
INF. INCLUSIONS			6		
NUMBER OF INC.		4	3	3	3
SILT IN MATRIX		NA	3	2	3
MODE INC SIZE		F SND	F SND	F SND	F SND
MEAN INC. SIZE		F SND	M SND	F SND	F SND
MAX. INC. SIZE		530	880	400	520
INCLUSION SHAPE		ANG	ANG	S ANG	S ANG
MATRIX COLOR		5Y 5/2	5 YR 5/6	5Y 5/6	10YR 5/4
COLOR NAME		LOG	LT BRN	LT. OLIVE	MD BRN
ISOTROPY		ANISO	ANISO	WAN	ANISO
VITRIFICATION		EV	NV	EV	NV

**Table 8**  
**BULK CHEMICAL ANALYSIS**

		SiO <sub>2</sub>	TiO <sub>2</sub>	AL <sub>2</sub> O <sub>3</sub>	FeO	MnO <sub>2</sub>	MgO	CaO	Na <sub>2</sub> O	K <sub>2</sub> O	P <sub>2</sub> O <sub>5</sub>	SO <sub>2</sub>
NEO- ASSYRIAN	EM 9	52.2	0.8	12.2	5.5	0.1	4.8	21.1	0.4	2.7	0.0	0.3
	EM 17	64.9	0.5	10.2	4.2	0.2	4.1	12.4	0.8	2.2	0.0	0.5
GREEN GLAZE	ME 9	59.3	0.7	11.3	6.2	0.1	5.1	14.1	0.5	2.4	0.0	0.3
	ME 10	57.0	0.5	11.9	7.1	0.1	4.8	15.4	0.5	2.8	0.0	0.1
	ME 12	56.9	0.6	11.1	7.2	0.3	5.1	15.6	0.4	2.7	0.0	0.3
INCISED	EM 10	52.7	1.3	12.0	6.4	0.0	5.2	18.4	2.0	1.8	0.0	0.3
	ME 3	55.6	0.6	12.4	6.8	0.2	5.8	15.4	0.2	2.7	0.0	0.5
	ME 11	59.0	0.6	10.8	6.7	0.2	5.0	14.6	0.2	2.7	0.0	0.2
	EM 12	52.2	0.8	12.2	6.0	0.0	6.0	17.1	2.9	2.1	0.0	0.7
	EM 20	52.2	0.7	12.2	6.4	0.1	4.0	21.2	0.6	2.0	0.0	0.6
PILGRIM FLASK	EM 3	66.3	1.0	9.0	4.2	0.1	3.0	13.2	1.3	1.7	0.0	0.2
	EM 3	66.3	1.0	9.0	4.2	0.1	3.0	13.2	1.3	1.7	0.0	0.2
KILN SPACERS	PAR 1	57.2	0.5	10.3	6.2	0.1	5.3	17.5	0.6	2.3	0.0	0.2
	PAR 2	58.4	0.5	10.4	5.9	0.2	4.7	15.3	0.7	2.5	0.0	0.1
WHITE GLAZE	ME 7	58.9	0.8	12.1	6.2	0.1	3.8	14.7	0.8	2.4	0.0	0.2
	ME 8	61.4	0.6	10.6	5.6	0.1	3.8	14.8	0.6	2.2	0.0	0.3
	EM 8	55.3	0.4	15.1	4.5	0.1	7.1	14.1	1.6	1.6	0.0	0.2
	EM 11	51.0	0.6	13.0	7.2	0.1	7.0	17.5	1.5	1.6	0.0	0.5
PARTHIAN PLAIN	ME 2	58.7	0.8	10.9	5.6	0.1	3.5	17.0	0.3	2.8	0.0	0.3
	EM 15	49.6	2.4	12.3	6.0	0.1	4.7	20.5	1.4	2.6	0.0	0.5
	ME 4	55.3	0.7	12.7	6.1	0.2	5.5	16.5	1.0	1.8	0.0	0.2
	EM 16	53.0	0.6	12.6	6.3	0.0	5.3	17.0	1.1	3.7	0.0	0.5
	ME 1	63.7	0.6	10.5	5.7	0.1	4.6	12.1	0.5	2.1	0.0	0.2
ROMAN RED	ME 5	55.3	0.9	12.8	7.0	0.1	5.4	15.1	0.4	2.5	0.0	0.4
	ME 6	63.1	2.2	12.8	3.9	0.1	4.4	9.7	1.2	2.7	0.0	0.0
MOLDED BOWLS	ME 13	54.9	1.5	12.3	6.7	0.2	4.4	16.9	0.4	2.7	0.0	0.1
	ME 14	56.1	0.5	12.4	6.4	0.0	7.2	13.0	0.4	3.4	0.0	0.5
	ME 15	56.1	0.7	12.0	6.5	0.1	4.2	17.2	0.8	2.3	0.0	0.1
	ME 16	54.9	0.8	12.9	7.2	0.1	5.1	15.0	0.6	2.9	0.0	0.4
	ME 17	59.4	0.6	10.9	5.7	0.1	6.6	12.7	0.7	2.9	0.0	0.4
	ME 18	56.9	0.6	13.2	5.7	0.2	4.9	14.2	1.6	2.8	0.0	0.0
	ME 19	52.1	0.8	13.4	7.1	0.2	6.6	16.4	0.4	2.7	0.0	0.3
	ME 20	54.8	0.6	13.0	7.3	0.3	5.0	15.2	0.6	2.7	0.0	0.5
MESOPOTAMIAN LAMPS	EM 5	53.5	0.6	11.3	6.8	0.0	9.3	15.0	0.6	2.5	0.0	0.4
	EM 7	51.3	0.8	12.0	6.5	0.1	3.9	21.4	0.9	2.4	0.0	0.7
	EM 13	49.6	0.8	13.0	7.4	0.1	5.0	21.6	1.1	1.3	0.0	0.1
	EM 19	53.9	0.9	13.2	6.4	0.3	5.4	16.6	1.4	1.5	0.0	0.4
PAR-SASANIAN LAMPS	EM 14	53.2	0.6	12.2	7.1	0.1	5.2	18.2	0.7	2.3	0.0	0.6
	EM 18	54.6	0.7	11.8	6.3	0.2	5.3	16.9	1.2	2.6	0.0	0.4
SASANIAN	EM 1	66.1	1.3	16.2	7.8	0.5	1.6	3.0	0.8	2.5	0.0	0.2
FIGURINES	EM 2	45.7	0.6	10.0	5.4	0.3	5.8	29.0	1.0	2.1	0.0	0.3
	EM 4	54.6	0.6	13.3	6.7	0.1	4.2	17.4	0.4	2.4	0.0	0.4
	EM 6	60.7	0.6	9.1	4.6	0.2	3.5	17.1	1.1	2.7	0.0	0.4
ASSYRIAN BRICK	B 1	57.4	0.5	10.4	6.2	0.1	5.2	15.3	0.7	2.5	0.0	0.2
	B 2	63.0	0.8	12.3	5.9	0.1	4.8	16.1	1.1	2.4	0.0	0.3

*all values are average of three regions of matrix taken at 400 x at 15 kv*

# **Catalogue of Hoard I**

**from**

**Nineveh**

Samp.No	Obv.	Rev.	Flan	Comments Obv./Rev.
1	1a1	2a	a	Flan 8 mm. diameter, horse 5 mm. long, of fine style.
2	1a1	2a	a	Similar horse to no. 1/Worn head facing R.
3	1a1	3a	a	Rev. head in high cap facing R.
4	1a4	2b	a	Rev. head with diadem facing L.
5	1a2	2b	b	
6	1a1	2a	a	Rev. head off-struck, facing R. ?/horse diff. style.
7	1a3	2a	a	Rev. head facing R. with emphasized hair, looks like a hat.
8	1a1	2a	b	Rev. head or bust has clear beard and necklace.
9	1a2	2b	b	Worn, but details visible.
10	1a1	2a	b	Rev. head to R. wearing "cap," with beard.
11	1a2	2b	c	
12	1a1	2b	a	Example 11 mm. diameter.
13	1a1	2b	b	
14	Example housed in Paris.			
15	1a1	x	b	Rev. large head, too worn to discern direction.
16	1a2	2a	a	Example 7 mm. dia.
17	1a2	3a	a	Rev. head in high cap to R.
18	1a2	x	a	Rev. appears to be a pellet on the edge of field.
19	1a3	2b	a	
20	1a2	2a	a	
21	1a2	2b	a	
22	1a2	2b	a	
23	1a2	2b?	b	25% flan missing, Rev. head is off-struck.
24	1a1	2b	b	
25	1a3	2b	b	Obv. crude horse with long tail.
26	1a2	2b	c	50% coin, appears as cast, 13 mm. dia.
27	1a2	111	c	Triangular flan. Rev. unintelligible design in high relief.
28	1a3	5b	b	Rev. head with stepped hair to L.
29	1a3	5b	a	Similar to 28.
30	1a3	2a	b	
31	1a2	2a	a	
32	1a3	3b	a	Rev. long thin head in high cap to L.
33	1a3	2b	a	
34	Example housed in Paris.			
35	1a3	2c	a	No trace of face under "cap."
36	1a3	2c	a	As above.
37	1a3	2a	a	Face worn facing R. by angle of cap ?
38	1a3	2b	a	Head facing L. by angle of cap ?
39	1a4	6	b	Badly cast flan. Clear facing bust (with faint inscription ?).
40	1a2	4b	b	Long thin head facing L., short beard.
41	1a2	4b	a	As above.
42	1a2	4b?	a	Rev. blob, could be worn head, five dots about top.
43	1a2	3b	a	Long thin head faces L.
44	1a2	1a	a	No design on reverse.
45	1a2	4b	a	Worn long thin head facing L. with 7 dots about top.
46	1a2	4b	a	Corrosion, head still discernable.
47	1a2	1a	a	
48	1a2	1a	a	
49	1a2	1a	a	Corrosion.
50	1a2	1a	a	
51	1a2	1a	a	Examples 40-51 have same obverse die.
52	1a3	1aa	b	Different horse from 52.
53	1a2	1aa?	a	Corrosion, Rev. dots not discernable.
54	1a2	1aa	a	7 mm. diameter as most examples of type. Rev. archer clear.
55	1a2	1aa?	a	Design in high relief that is not discernable.
56	1a2	4b	a	Corrosion, head to L. (faint inscription ?).
57	1a2	1aa	b	Rev. dot archer is in what appears to be a square field of dots.
58	1a2	x	b	

59	1a2	1a	a	
60	1a2	x	c	
61	1a3	1aa	a	Obv. crude style walking horse with fat body and stick legs.
62	x	x	d	Extensive corrosion.
63	1a3	1a	a	Similar crude walking horse to 61.
64	1a3	1aa	b	Thin head ? too worn to discern.
65	1a2	1aa	a	Obv. clear prancing horse.
66	1a2	1a	a	
67	1a2	1a	a	
68	1a2	1a	a	Obv. cons. lustre. Horse has "T" by back leg, "M" under prncng. hoof.
69	1a2	1a	a	
70	1a3	1a	b	
71	1a3	1a	b	
72	1a3	1a	b	
73	1a3	1a	b	
74	1a3	1a	b	
75	1a3	1a	c	
76	1a3	1a	a	
77	1a3	1a	a	
78	1a3	1a	b	
79	1a3	1a	b	Examples 70-79 all have similar Rev. horse, walking not prancing.
80	1a3	1aa	a	Rev. faint dot archer.
81	1a3	1a	a	Worn.
82	x	x	b	Too worn.
83	1a2	1a	a	
84	1a2	1a	a	
85	1a2	1a	a	Considerable corrosion.
86	x	x	b	Corroded.
87	1a3	2a	b	
88	1a3	1a	b	Dot leg horse/ Rev. Traces of design in high relief.
89	1a3	2a	a	Considerable wear makes att. difficult. Obv. dot leg horse.
90	1a3	1a	a	Dot leg horse.
91	1a3	1aa	a	Dot leg horse.
92	1a3	1a	a	Dot leg horse, similar to no. 91.
93	1a2	1a	a	
94	x	x	c	Heavy corrosion, appears to be Obv. type 1A.
95	1a2	1a	a	
96	1a2	1a	a	
97	1a2	1a	a	
98	x	x	b	Corroded, Type 1a?
99	x	x	x	50% flan, too little for attribution.
100	1a2	1a	a	
101	1a2	1a	b	
102	1a1	1a	c	70% flan as cast.
103	1a1	1aa	b	Rev. seated archer executed in linear style, trace insc.
104	1a1	1aa	a	
105	1a2	1a	b	
106	1a2	1a	a	
107	1a	3a?	a	Very worn, Obv. horse/ Rev. head indistinct.
108	1a2	?	a	Only top of head visible, rest off-struck.
109	1a2	1aa	a	
110	1a3	11	a	Worn, Rev. faint inscription.
111	1a3	1a	b	
112	1a3	1a	b	
113	1a3	1a	c	
114	1a3	1a	b	
115	1a3	1a	b	
116	1a3	1a	b	Corroded.
117	1a3	1a	b	
118	x	x	d	50% flan, corroded.

119	1a3	1a	b	Corroded.
120	x	x	d	50 % flan, corroded, triangular flan ?
121	1a2	1aa	a	
122	1a2	1a	a	
123	1a2	1a	b	
124	1a2	1a	a	
125	1a2	1a	a	
126	1a2	1a	a	
127	1a2	1a	a	
128	1a2	1a	a	
129	1a2	1a	b	Nos. 122-129 in similar style.
130	1a2	1a	b	
131	1a3	1a	b	Dot leg horse.
132	1a3	1a	a	Dot leg horse.
133	1a3	1a	a	
134	1a3	1a	b	All examples of this series similar dia. 8 mm.
135	1a3	1a	a	Dot leg horse/Dot archer ?
136	1a3	1a	b	Obv. nos. 131-136, dot leg horse of similar style.
137	x	x	b	Too worn to attribute.
138	1a2	1a	a	
139	1a2	1a	b	
140	1a2	1a	b	
141	1a2	1a	a	
142	1a2	1a	a	
143	1a2	1a	a	
144	1a2	1a	a	
145	1a2	1a	b	
146	1a2	x	d	Corroded.
147	1a2	1a	a	
148	1a2	1a	a	
149	1a2	1a	b	
150	1a2	1a	a	
151	1a2	1aa	b	Rev. dot archer is very clear.
152	1a2	1a	a	
153	1a2	1aa	a	Rev. dot design is unclear.
154	1a2	1a	a	
155	1a2	1a	c	Flan fragmented, as cast ?
156	1a2	2b	a	Example is 9 mm. in dia.
157	1a2	2b?	b	Similar to 156 but more wear.
158	1a2	4b	a	Same Obv. as 157.
159	1a2	2a?	b	Considerable wear makes attribution difficult.
160	1a2	2a?	a	As above.
161	1a2	4b	b	Head appears to be facing L.
162	1a2	1a	b	
163	1a2	1a	a	
164	1a2	1a	b	
165	1a2	1a	c	Missing small frags. from flan, as struck ?
166	1a2	1a	a	
167	1a2	1a	b	
168	1a2	1a	a	
169	1a2	1a	a	
170	1a2	1a	b	
171	1a2	1a	b	
172	1a2	1a	a	Corroded.
173	1a2	1aa	a	
174	1a2	1a	a	
175	1a2	1a	b	
176	1a2	11	c	Rough flan. Rev. traces of inscription.
177	1a2	11	b	
178	1a2	1a	c	

179	Example housed in Paris.			
180	1a2	1a	c	
181	1a2	1a	a	
182	1a2	1a	b	
183	1a2	1a	b	
184	1a2	1a	c	
185	1a2	1a	c	
186	1a2	1a	a	
187	1a2	1a	b	
188	1a2	1a	b	
189	1a2	1a	c	Missing frag. from flan.
190	1a2	1a	b	
191	1a2	1a	b	
192	1a2	1aa	a	Rev. Seated archer R. facing altar ?
193	1a2	1aa	a	Good condition, Rev. faint archer.
194	1a2	1a	b	
195	1a2	1a	b	
196	1a2	1a	a	
197	1a2	1a	a	
198	1a2	1a	a	
199	1a2	1a	c	50 % flan as cast ?
200	1a2	?	a	
201	1a2	1a	b	
202	1a2	1a	a	
203	1a2	1a	b	
204	1a2	1a	b	
205	1a2	1a	b	Rev. blob, very worn head ?
206	1a2	1a	b	
207	1a2	1a	b	
208	1a2	1a	a	
209	1a2	1a	c	50% flan, as cast ?
210	1a2	1a	a	
211	1a2	1a	a	
212	1a2	1a	b	
213	1a2	1a	a	
214	1a2	1a	b	
215	1a2	1a	a	
216	1a2	1a	a	
217	1a2	1a	d	50% flan as cast ? Too worn for attribution.
218	1a2	1a	b	
219	1a2	1a	b	
220	1a2	1a	a	
221	1a2	1a	a	
222	1a2	1a	a	
223	1a2	1a	a	
224	1a2	1a	b	Rough flan as cast.
225	x	x	b	Too worn for attribution.
226	1a2	1a	a	
227	x	x	b	Too worn for attribution.
228	1a2	1a	a	
229	1a2	1a	a	
230	1a2	1a	b	
231	1a2	1a	a	
232	1a2	1a	a	
233	1a2	1a	a	
234	1a2	1a3	c	50% flan as cast.
235	1a2	1a	b	
236	1a2	1a	a	
237	1a2	1a	a	
238	1a2	1a	a	

239	1a2	1a	b	
240	1a2	1a	b	
241	1a2	1a	c	
242	1a2	1a	a	
243	1a2	1a	a	
244	1a2	1a	a	
245	x	x	d	Too worn for attribution.
246	1a2	1a	d	50% flan as cast.
247	x	x	d	50% flan as cast, corroded.
248	1a2	1a	b	
249	1a2	1a	a	
250	1a2	1a	a	
251	1a4	111	b	Wreath with weak central design.
252	1a4	111	a	Weak design.
253	1a4	8	a	Pomegranate.
254	1a4	1a	b	Thick flan.
255	1a4	1a	b	Considerable corrosion.
256	1a4	4b?	c	Obv. horse (ungulate) has clear horns.
257	1a2	1a	a	
258	1a4	1a	b	
259	1a4	1a	a	Could be type 1aa.
260	x	x	b	Very badly corroded.
261	1a4	1a	a	
262	1a4	1a	c	
263	1a4	1a	a	
264	1a4	1a	a	
265	1a4	1a	a	
266	x	x	b	Badly corroded.
267	1a4	1a	b	
268	1a2	1a	a	
269	1a2	1a	b	Example 7 mm. in diameter.
270	1a2	1aa	a	
271	1a2	1aa?	b	Similar to 270 but more wear.
272	1a2	1aa	a	
273	1a2	1a	c	
274	1a2	1a?	b	Worn, shows traces of Rev. design, archer ?
275	1a2	1a	a	
276	1a2	1aa?	a	Worn, Rev. archer ?
277	x	x	a	Very worn.
278	x	x	b	Very worn.
279	1a2	1a	b	
280	1a2	1a	b	
281	x	111	a	Badly worn, but appears different type.
282	x	11	b	Badly worn, Rev. faint inscription.
283	1a4	1a	b	
284	1a2	1a	b	
285	x	x	c	Very badly corroded.
286	1a4	1a	c	
287	1a1	9	a	Large flan 12.5 mm. Rev. Comucopia.
288	1a3	1a	b	
289	1a3	1a	a	
290	1a1	111	b	Obv. well modelled horse/Off struck design.
291	1a2	1a	c	Corrosion.
292	1a1	1a	b	
293	1a1	8	b	Pomegranate.
294	1a1	111	a	Mound.
295	1a2	1a	b	
296	1a2	1aa	c	Rough flan, Rev. dot design
297	1a2	1aa?	d	Rev. faint dot design.
298	1a4	1a	b	

299	1a1	111	b	Design in high relief too worn for attribution.
300	1a1	1a	b	
301	1a2	1a	b	Pellet, could be very worn head ?
302	1a2	1a	a	
303	1a2	1a	b	
304	x	x	b	Very corroded, appears to be type 1a.
305	1a3	111	a	Rev. Design in high relief.
306	1a4	1a	b	
307	1a4	1a	c	
308	1a2	1a	c	
309	1a3	1aa	a	9 mm. diameter. Rev. light design in dots.
310	1a3	1a	b	
311	1a4	8	b	Worn.
312	1a3	1aa	a	Dot archer (with very faint inscription ?).
313	1a3	111	a	Rev. star pattern of 4 dashes.
314	1a2	1a	c	Obv. horse with long tail.
315	1a3	1a	a	
316	1a2	1a	b	10 mm. in diameter.
317	1a2	111	b	Off-struck design in high relief.
318	x	x	x	Very worn.
319	1a2	1a	b	Traces of casting marks.
320	1a3	1a	b	Obv. horse with very large snout.
321	1a2	111	b	Rev. design within wreath.
322	1a2	1a	a	
323	1a2	1a	a	
324	1a2	111	a	Very worn. Rev. design of solid lines, casting marks ?
325	1a2	1a	b	Worn.
326	1a3	1aa	a	Dot archer with long head.
327	1a2	1a	b	
328	1a2	111	b	Rev. faint dot winged victory and inscription.
329	1a1	111	a	Remains of design in high relief.
330	1a2	1a	b	
331	1a2	1a?	a	Off struck pellet or casting mark ?
332	1a2	1a	b	Casting marks ?
333	1a2	1aa	b	Dot archer with line cape.
334	1a3	1a?	a	Worn, blob or head ?
335	1a3	1a	b	
336	1a2	1a	a	
337	1a1	1a	a	
338	1a3	1a	b	
339	1a2	1a	a	
340	1a3	1a	b	Worn.
341	1a2	1a	a	
342	1a2	1a	b	
343	1a1	9	a	Small faint cornucopia.
344	1a4	1a	c	50% flan as cast.
345	1a2	1a	a	
346	1a3	11	a	Faint inscription.
347	1a3	1aa	a	
348	1a4	1a	b	
349	1a3	1a	a	
350	1a3	1a	b	
351	x	x	d	50% flan as cast, worn.
352	1a4	1a	c	
353	1a2	1a	b	
354	x	x	d	Appears to be very worn type 1a, triang flan ?
355	x	x	x	30 % flan remains, very worn.
356	1a1	1a	b	Very thick flan
357	1a3	3b	b	
358	1a4	1a	a	

359	1a3	11	a	
360	1a3	1a?	b	Worn overall, single dash on Rev. not part of design.
361	1a3	111	b	Obv. dot leg horse/Rev. dot winged figure confronts blob
<b>362</b>	1a1	1a	a	Cast, very sharp flan.
<b>363</b>	1a1	1a	a	Sharp cast.
364	1a3	2b	a	
365	1a4	1a	a	
366	1a3	11	a	
367	1a2	111	a	Dot design, not archer.
368	1a2	11	a	Irregular flan from bad cast.
369	1a3	1a	a	
370	x	x	d	Heavy corrosion.
371	1a2	1aa	a	
372	1a1	8	a	Pomegranate with faint inscription.
373	1a2	3b	a	
374	1a2	1a	b	Bad cast.
375	1a2	111	c	Traces of design in high relief.
376	1a2	1a	b	Corroded.
377	1a2	1a	a	
378	1a2	1a	b	
379	1a3	3b	a	Very worn.
380	1a3	111	a	Cast, very sharp flan.
381	1a2	1a	c	Rough cast flan
382	1a2	1a	c	Castling marks ?
383	1a3	1a	a	Dot leg horse.
384	1a1	1a	a	
385	1a3	1a	a	
386	1a3	111	a	Same as 313.
387	x	x	d	Too worn for attribution.
388	1a1	2b	b	Head appears intentionally defaced.
389	1a3	1a	b	Dot leg horse.
390	x	x	d	Appears to be type 1a.
391	1a2	1a	a	
392	1a2	7	a	Rev. Winged victory to R. off struck.
393	1a2	1a	b	Very worn.
394	1a2	1a	b	Very worn.
395	1a2	1a	b	
396	Example housed in Paris			
397	1a2	111	a	Mound.
398	1a2	2a	b	Head is very worn.
399	1a2	1aa	a	Cast ?
400	1a2	1a	a	
401	1a2	4b	c	
402	1a2	1a	a	
403	1a1	1aa	a	
404	1a2	4b	b	Head is very worn.
405	1a4	2a	a	Head is very worn.
406	1a3	2b	a	
407	1a2	1aa	b	
408	1a2	111	b	Worn design in high relief.
409	1a1	2b	a	
410	1a3	1a	a	
411	1a2	1a	c	
412	1a2	111	a	Mound.
413	1a2	1aa	d	
414	1a1	1a	b	
415	1a1	2a	b	
416	1a3	1a	c	Missing small frags. from flan.
417	1a3	1a	c	As above
418	1a3	1a	b	

419	1a2	1a	b	Horse with unusually long legs
420	1a2	1a	a	
421	1a2	2a	a	Only top of head visible.
422	1a1	1a	d	50% flan as cast.
423	1a3	1a	c	Very crude horse.
424	1a1	9	a	Cornocopia and inscription.
425	1a2	11	c	Rough flan.
426	1a2	1a	c	
427	1a2	1a	c	
428	x	x	d	Badly corroded.
429	1a2	1a	a	
430	1a2	1a	b	
431	1a2	11	c	
432	1a3	1a	a	Cast flan. Obv. exceptionally crude horse.
433	1a2	111	c	Traces of design.
434	1a2	1a	b	Very worn.
435	x	x	d	Badly corroded.
436	1a2	111	b	Design within wreath.
437	1a3	1a	a	
438	1a3	1a	b	Casting marks.
439	1a3	1a	c	Corroded.
440	1a3	1a	b	Worn.
441	1a3	1a	c	Casting marks.
442	1a3	2b	a	
443	x	x	b	Too worn for attribution.
444	1a1	1a	a	Example 8 mm. in diameter.
445	1a1	1a	a	Example 10 mm. in diameter.
446	1a2	4b	a	
447	1a2	111	b	Design in high relief.
448	1a2	1a	b	
449	1a2	1a	a	Corrosion.
450	1a3	1a	a	
451	1a2	2b	a	
452	1a2	4b	a	
453	1a2	1aa	a	
454	1a2	1a	a	
455	1a2	1a	b	
456	1a2	1a	a	
457	1a2	1a	a	
458	1a2	1a	a	Obv. 454-458 similar horse.
459	1a2	2a?	c	50% flan as cast, very worn.
460	1a2	1a	a	
461	1a2	1a	a	
462	x	x	b	Corrosion.
463	1a2	1a	a	
464	1a1	4b	a	
465	1a2	111	b	Rough flan, design in relief.
466	1a2	1a	a	
467	1a2	1a	b	
468	1a2	111	b	Thunderbolt surrounded by dots.
469	1a2	1a	b	
470	1a2	1a	a	
471	1a2	1a	a	
472	1a2	1a	a	
473	1a2	1a	a	
474	1a2	1a	a	
475	1a2	1a	a	
476	1a2	1a	b	469-476 all similar type.
477	1a2	1a	b	
478	1a2	1a	b	Traces of casting marks or design ?

479	1a2	1a	b	
480	1a2	111	b	Illegible design in high relief.
481	1a2	11	a	
482	1a2	11	b	
483	1a2	2b?	c	50% flan, head appears to be facing L
484	1a2	1a	c	Triangular flan.
485	1a2	1a	b	Corroded.
486	1a2	1a	b	
487	1a2	1a	b	Rev. dots from face of die ?
488	1a2	4b	a	
489	1a2	1a	a	
490	1a2	1a	a	
491	1a3	1a	c	Triangular flan.
492	1a2	4b	b	Head is very worn.
493	1a2	2a	b	
494	1a2	1a	b	
495	x	x	c	Bad flan as cast.
496	1a2	1a	b	Badly corroded.
497	1a2	1a	b	Surface corrosion.
498	1a2	1a	a	
499	1a2	1a	b	
500	1a2	4b	b	
501	x	x	b	Very corroded type 1a.
502	x	x	c	70% flan, corroded.
503	1a2	1aa	b	
504	1a3	1a	c	
505	1a2	1aa	b	
506	1a3	2a	a	
507	1a3	1a	a	
508	1a2	2b	b	
509	1a2	1aa	a	
510	1a3	1a	a	Worn.
511	1a3	1aa?	c	Numerous flan cracks, faint dot archer ?
512	1a2	1a	a	
513	1a2	1aa	b	Clear archer, also a small winged victory.
514	1a2	1a	a	Weak dots, could be archer ?
515	1a2	1a	b	
516	1a3	111	b	Cast flan, Obv. tiny horse 3 mm. long.
517	1a2	1aa	b	
518	x	x	b	Corroded type 1a.
519	1a2	1a	b	Missing c. 25 % flan as cast.
520	1a2	1a	b	
521	x	x	c	Corroded type 1a.
522	1a2	1aa	a	Weak dot design.
523	x	x	a	Corroded type 1a.
524	1a2	1a	a	
525	1a2	1a	a	
526	x	x	b	Corroded type 1a.
527	1a3	1a	a	Obv. crude horse with bird head.
528	1a3	1a	a	Dot leg horse.
529	1a2	1a	a	
530	1a3	1a	b	
531	1a2	1a	c	Triangular flan.
532	1a2	1a	b	
533	1a2	1a	b	Fragment missing.
534	1a2	1a	c	Fragment missing.
535	1a2	1aa	a	
536	x	x	b	Corroded type 1a.
537	x	x	b	Corroded type 1a.
538	1a2	1aa	a	

539	1a2	1aa	b	
540	x	x	b	Corroded type 1a.
541	x	x	b	Corroded type 1a.
542	1a2	1a	b	
543	x	x	b	Corroded type 1a.
544	1a2	1aa	b	
545	1a2	1aa?	b	Faint dot design.
546	1a3	111	a	Distinct but illegible design.
547	1a4	1a	b	Flan missing fragment.
548	1a3	3a	c	Irregular flan. Obv. dot leg horse.
549	1a1	1a	b	
550	x	x	d	Fragment, corroded.
551	1a3	1aa	b	
552	1a1	1aa	b	Small fragment missing.
553	1a1	1aa	c	Irregular flan, cracking.
554	1a2	1aa	c	50% flan as cast.
555	1a3	1a	b	
556	1a1	1a	b	Off-struck.
557	1a4	1a	b	Corroded, oblong flan.
558	1a2	1aa	b	
559	1a2	?	b	Head or bust, too worn to determine.
560	1a2	1a	b	Edge cracks on flan.
561	x	x	b	Corroded type 1a.
562	1a2	1aa	b	
563	1a2	1a	b	Corroded.
564	x	x	b	Corroded type 1a.
565	x	x	c	50% flan as cast.
566	1a3	1aa	a	Dot leg horse.
567	x	x	d	Heavy corrosion.
568	x	x	d	Heavy corrosion.
569	1a1	1a	d	
570	1a2	5a	c	Oblong flan.
571	x	x	c	Corroded type 1a.
572	1a3	1aa	c	Flan missing 30% as cast.
573	x	x	c	Corroded type 1a.
574	x	x	c	50% flan badly cracked, type 1a.
575	1a4	1a	c	Square flan, irregular edges.
576	2a1	1aa	a	Obv. horse facing left.
577	2a1	1aa	b	Horse facing left, same die as 576.
578	2a2	1aa	b	Horse facing L.
579	10	2a	a	
580	10	4b?	b	Worn.
581	Example housed in Paris.			
582	?	3?	a	Worn.
583	10	3a	b	
584	7	111	b	12 mm. diameter.
585	7	2b	b	
586	7	8	a	Worn.
587	7a	11	a	
588	Example housed in Paris.			
589	7a	4b	b	
590	7a	4b	b	
591	7b	3b	b	12 mm. in diameter.
592	7a	4b?	c	Worn.
593	7	111	c	Square flan. Rev. star pattern in 4 dashes.
594	7	2b	a	Obv. victory and traces of inscription.
595	10	3a?	b	Worn.
596	7	111	b	Rev. rose bud.
597	x	x	c	Uneven flan 8 mm. x 11 mm.

Not in Inventory  
10 8 b

## Bibliography

Abetekov A. and Yusupov H.

- 1994 "Ancient Iranian Nomads in Western Central Asia," in J. Harmatta, B.N. Puri, and G.F. Etemadi eds. History of Civilizations of Central Asia Vol. II, pp. 23-33 (Paris).

Adams R. McC.

- 1981 Heartland of Cities: Surveys of Ancient Settlement and Land Use on the Central Floodplain of the Euphrates (Chicago).

Alden J.R.

- 1978 "Excavations at Tal-I Malyan: Part I A Sasanian Kiln," *Iran* 16: pp. 79-86.

Algaze G.

- 1986 "Habuba on the Tigris: Archaic Nineveh Reconsidered," Journal of Near Eastern Studies 45:2: pp. 125-137.

- 1993 The Uruk World System (Chicago).

al-Hassan A.Y., and Hill D.

- 1986 Islamic Technology: An Illustrated History (Cambridge).

al-Kaissi B. and Mynors H.S.

- 1987 "Ceramic Analysis of Mesopotamian Wares in the Early Dynastic Period," in Researches on the Antiquities of Saddam Dam Basin Salvage and Other Researches: pp. 134-154 (Baghdad).

al-Khalil S.

- 1989 Republic of Fear (New York).

Alizadeh A.

- 1985 "Elymaean Occupation of Lower Khuzestan During the Seleucid and Parthian Periods: A Proposal," Iranica Antiqua 20: pp. 175-195.

Allen D.F.

- 1980 The Coins of the Ancient Celts (Edinburgh).

Andrae A., and Lenzen H.

- 1933 Die Partherstadt Assur (Berlin).

Arnold D.E.

- 1985 Ceramic Theory and Cultural Process (Cambridge).

- van As A. and Jacobs L.  
 1992 "The work of the Potter in Ancient Mesopotamia During the Second Millennium B.C. in P.B. Vandiver, J.R. Druzik, G.S. Wheeler and I.C. Freestone eds. Materials Issues in Art and Archaeology III: pp. 529-544.
- Azarpay G.  
 1981 Sogdian Painting: The Pictorial Epic in Oriental Art (Berkeley).
- Bader A., Gaibov V., and Koshelenko G.  
 1990 "New Evidence on Parthian Sphragistics. Bullae from the Excavations of Goebekly-Depe in Margiana," Mesopotamia 25: pp. 61-78.
- Badler V.R.  
 1990 "Drink and Be Merry! Infrared Spectroscopy and Ancient Near Eastern Wine," in W.R. Biers and P.E. McGovern eds. Materials Analysis and Archaeological Investigation: pp. 25-36 (Philadelphia).
- Bailey D.M.  
 1976 "Pottery Lamps," in Strong, D. and Brown, D. eds. Roman Crafts: pp. 92-103 (London).
- Ball W.  
 1989 "Seh Qubba, A Roman Frontier Post in Northern Iraq," in D.H. French and C.S. Lightfoot eds. The Eastern Frontier of the Roman Empire: pp. 7-15 (London).
- Ball W., and Black J. *et al.*  
 1987 "Excavations in Iraq 1985-86," Iraq 49: pp. 231-251.
- Balog P.  
 1974 "Sasanian and Early Islamic Ornamental Glass Vessel-Stamps," in D.K. Kouymjian ed. Near Eastern Numismatics, Iconography, Epigraphy and History: Studies in Honor of George G.C. Miles: pp. 131-140 (Beirut).
- Bamberger M.  
 1992 "The Working Conditions of the Ancient Copper Smelting Process," in P.T. Craddock and M.J. Hughes eds. Furnaces and Smelting Technology in Antiquity, pp. 151-158 (London).
- Baratte F.  
 1981 Le Tresor d'argenterie gallo-romaine de Notre-Dame-d'Allencon (Paris).
- Bartl K., Schneider G., and Boehme S.  
 1995 "Notes on Brittle Wares in North-Eastern Syria," Levant 27: pp. 165-177.

- Bartlett R.G.  
 1963 "Arsakes: Theos and Dikaios," The Numismatic Chronicle 7 ser. Vol. 3: pp. 37-45.
- Basalla G.  
 1990 The Evolution of Technology (Cambridge).
- Baur, P.V.C.  
 1947 The Excavations at Dura-Europus Part III: The Lamps ed. Rostovtzeff (New Haven).
- Beck H.C.  
 1931 "Beads from Nineveh" Antiquity 5: pp. 427-437.
- Bedoukian P.Z.  
 1974 "Some Unpublished Coins of the Artaxiads of Armenia," in D.K. Kouymjian ed. Near Eastern Numismatics, Iconography, Epigraphy and History: Studies in Honor of George G.C. Miles: pp. 27-35. (Beirut).  
 1978 Coinage of the Artaxiads of Armenia (London).
- Bedoyere G.  
 1988 Samian Ware (Aylesbury).
- Begley V.  
 1991 "Ceramic Evidence for Pre-*Periplus* Trade on the Indian Coasts," in V. Begley and R.D. De Puma eds. Rome and India: The Ancient Sea Trade pp. 157-196 (Madison).
- Bellinger A.R.  
 1942 "Hyspaosines of Charax," Yale Classical Studies 8: pp. 53-67.
- Berman A, Hanson J., Leiserowitz L., Koetzie T.F., Weiner S., and Addadi L.  
 1993 "Biological Control of Crystal Texture: A Widespread Strategy for Adapting Crystal Properties to Function," Science 259: pp. 776-779.
- Bernard P.  
 1991 "Les Rhytons de Nisa: a qui, a qui ont-ils servi ?," Histoire et Cultes de L'Asie Centrale Preislamique (Paris): pp. 31-38.
- Berry R.W., Brophy G.P., and Naqash A.  
 1970 "Mineralogy of the Suspended Sediment in the Tigris, Euphrates, and Shatt-Al-Arab Rivers of Iraq, and the Recent History of the Mesopotamian Plains," Journal of Sedimentary Petrology 40:1: pp. 131-139.

Betts I.A.

- 1991 "Thin section and Neutron Activation Analysis of Brick and Tile from York and Surrounding Sites," in A. Middleton and I. Freestone eds. Recent Developments in Ceramic Petrology: pp. 211-263 (London).

Bhardwaj H.C.

- 1979 Aspects of Ancient Indian Technology (Delhi).

Bimson M.

- 1956 "The Technique of Greek Black and Terra Sigillata Red," The Antiquaries Journal 36: pp. 200-204.

Birks L.S.

- 1971 Electron Probe Microanalysis (New York).

Bishop M.C. and Coulston J.C.N.

- 1989 Roman Military Equipment (Aylesbury).

- 1993 Roman Military Equipment from the Punic Wars to the Fall of Rome (London).

Bivar, A.D.H.

- 1972 "Cavalry Equipment and Tactics on the Euphrates Frontier," Dumbarton Oaks Papers 26: pp. 273-291.

- 1976 "Sasanian Coins from Ghubayra, Kirman," Coin Hoards 2: pp. 350-351.

Blackman J.M.

- 1992 "The Effect of Human Size Sorting on the Mineralogy and Chemistry of Ceramic Clays," in H. Neff ed. Characterization of Ceramic Pastes in Archaeology: pp. 113-124 (Madison).

Bordet P., and Courtois L.

- 1967 "Etude Geologique des Ceramiques Anciennes. Les Techniques de Fabrication," Comptes Rendus de l'Academie des Sciences Paris 265: pp. 1665-1667.

Borradaile G.J., Kissin S.A., Stewart J.D., Ross W.A., and Werner T.

- 1993 "Magnetic and Optical Methods for Detecting the Heat Treatment of Chert," Journal of Archaeological Science 20: pp. 57-66.

Boss R.

- 1994 "The Sarmatians and the Development of Early Germanic Mounted Warfare," Ancient Warrior 1: pp. 18-25.

Brackman A.C.

- 1978 The Luck of Nineveh: Archaeology's Great Adventure (New York).

- Brand J.D.  
 1993 "Scissel and Swarf," in M.M. Archibald and M.R. Cowel eds. Metallurgy in Numismatics Volume 3, pp. 87 - 98 (London).
- Brasier M.D.  
 1980 Microfossils (London).
- Braund D.  
 1994 Georgia in Antiquity: A History of Colchis and Transcaucasian Iberia 550 B.C. - A.D. 562 (Oxford).
- Brinkman J.A.  
 1984 Prelude to Empire: Babylonian Society and Politics, 747-626 B.C. (Philadelphia).
- Brogio G.P., and Gelichi S.  
 1986 "La Ceramica Medievale nel Mediterraneo Occidentale," in Atti Del III Congresso Internazionale, 8-13 Ottobre, 1984: pp. 293-316 (Firenze).
- Bronitsky G.  
 1986 "The Use of Materials Science Techniques in the Study of Pottery Construction and Use," in M.B. Schiffer ed. Advances in Archaeological Method and Theory 9:pp. 209-276 (London).
- Brothwell D.  
 1969 "The Study of Archaeological Materials by Means of the Scanning Electron Microscope; an Important New Field," in D. Brothwell and E. Higgs eds. Science and Archaeology: pp. 564-566 (London).
- Brown D.  
 1976 "Pottery" in Strong, D. and Brown, D. eds. Roman Crafts: pp. 74-91 (Dorset).
- Budge E.A.W.  
 1920 By Nile and Tigris Vols. I and II (London).
- Bull P.A., and Goldberg P.  
 1985 "Scanning Electron Microscope Analysis of Sediments from Tabun Cave, Mount Carmel, Israel," Journal of Archaeological Science 12: pp. 177-185.
- Bulmer M.  
 1980 An Introduction to Roman Samian Ware (Chester).
- Butcher K.  
 1988 Roman Provincial Coins: An Introduction to the "Greek Imperials" (London).

- Buttrey T.V.  
 1993 "Calculating Ancient Coin Production: Facts and Fantasies," The Numismatic Chronicle 153: pp. 335-351.
- Butzer K.W.  
 1958 "The Near East During the Last Glaciation: A Paleogeographical Sketch," The Geographical Journal LXXIVpart 3: pp. 367-369.
- Byvanck-Quarles van Ufford L.  
 1953 "Les Bols Megariens," BABesch: 28: pp. 19-20.
- Cagnat R.  
 1927 "Inscription Romaine du Sindjar au Nom de Trajan," Syria 7: pp. 53-54.
- Calamiotou, M. Filippakis, S.E., Jones, R.E., and Kassab, D.  
 1984 "X-ray and Spectrographic Analysis of Terracotta Figurines from Myrina: an Attempt to Characterize Workshops," Journal of Archaeological Science 11 pp. 103-117.
- Caley E.R.  
 1947 "Results of a Chemical Examination of Some Specimens of Roman Glaze from Tarsus," American Journal of Archaeology 51: pp. 389-393.
- Campbell B.  
 1989 "The Roman Pottery from Seh Qubba, North Iraq," in D.H. French and C.S. Lightfoot eds. The Eastern Frontier of the Roman Empire: pp. 53-65 (London).
- Campbell S.  
 1987 "Halaf Culture Pottery from the 1983 Season," in Excavations at Kharabeh Shatanni 1: pp. 56-62 (Edinburgh).
- Campbell-Thompson R.C., and Hutchinson R.W.  
 1929a "The Excavations in the Temple of Nabu at Nineveh," Archaeologia 79: pp. 103-148.  
 1929b A Century of Exploration at Nineveh (London).  
 1931 "The site of the Palace of Ashurbanipal at Nineveh, Excavated in 1929-30 on Behalf of the British Museum," Liverpool Annals of Archaeology and Anthropology 18: pp. 79-112.
- Campbell- Thompson R.C., and Hamilton R.W.  
 1932 "The British Museum Excavations on the Temple of Ishtar at Nineveh," Liverpool Annals of Archaeology and Anthropology 19: pp. 55-116.

- Campbell -Thompson R.C. and Mallowan M.E.L.  
 1933 "The British Museum Excavations at Nineveh 1931-32," Liverpool Annals of Archaeology and Anthropology 20: pp. 71-186.
- Campbell- Thompson R.C.  
 1934 "The Buildings on Quyunjiq, the Larger Mound of Nineveh," Iraq 1: pp. 95-104.
- Cantrell T.  
 1978 How To Pour Ceramic Molds (Seattle).
- Carson R.A.G.  
 1983 "Coin Hoards and Roman Coinage of the Third Century A.D." in C.N.L. Brooke, B.H.I.H. Stewart, and J.G.Pollard Studies in Numismatic Method: pp. 65-74 (Cambridge).
- Charles M.P.  
 1988 "Irrigation in Lowland Mesopotamia," Bulletin of Sumerian Agriculture 4: Irrigation and Cultivation in Mesopotamia Part I: pp. 1-37.
- Charvait P.  
 1994 "The Seals and their Functions in the Halaf - and Ubaid - Cultures (A Case Study of Materials from Tell Arpachiyah and Nineveh 2-3)," in Handwerk und Technologie im Alten Orient: Ein Beitrag zur Geschichte der Technik im Altertum (Mainz) pp. 9-15.
- Cockle H.  
 1981 "Pottery Manufacture in Roman Egypt A New Papyrus," Journal of Roman Studies LXXI: pp. 87-97.
- Colledge, A.R.  
 1967 The Parthians (London).  
 1979 "Sculptors' Stone-Carving Techniques in Seleucid and Parthian Iran, and their Place in the "Parthian" Cultural Milieu: Some Preliminary Observations," East and West 29 1-4: pp. 221-248.  
 1986 The Parthian Period: Iconography of Religions XIV, 3 (Leiden).
- Collon D.  
 1987 First Impressions: Cylinder Seals in the Ancient Near East (London).
- Collon D., and Reade J.  
 1983 "Archaic Nineveh," Baghdader Mitteilungen 14: pp. 33-41.

Connan J., and Deschesne O.

- 1992 "Archaeological Bitumen: Identification, Origins, and Uses of an Ancient Near Eastern Material," in Vandiver, P.B., Druzik, J.R., and Freestone, I.C. Materials Issues in Art and Archaeology III: pp. 683-720 (Pittsburgh).

Cooper D.R.

- 1988 The Art and Craft of Coinmaking (London).

Courty M.A., and Roux V.

- 1995 "Identification of Wheel Throwing on the Basis of Ceramic Surface Features and Microfabrics," Journal of Archaeological Science 22: pp. 17-50.

Crawford M.

- 1970 "Money and Exchange in the Roman World," Journal of Roman Studies 60: pp. 40-48.

Crowfoot J.W., Kenyon K.M. and Crowfoot G.M.

- 1957 Samaria-Sebaste. Vol. III: The Objects (London).

Curtis J.

- 1976 "Parthian Gold From Nineveh," British Museum Yearbook 7: pp. 47-66.

- 1983 "Late Assyrian Bronze Coffins," Anatolian Studies 33: pp. 85-95.

- 1989 Excavations at Qasrij Cliff and Khirbet Qasrij (London).

Curtis J. and Green A.R.

- 1987 "Preliminary Report on Excavations at Khirbet Khatuniyeh, 1985," in Researches on the Antiquities of Saddam Dam Basin Salvage and Other Researches: pp. 73-77 (Baghdad).

Dalley S.

- 1994 "Nineveh, Babylon and the Hanging Gardens: Cuneiform and Classical Sources Reconciled," Iraq 56: pp. 45-58.

Dandamayev M.A.

- 1992 Iranians in Achaemenid Babylonia (New York).

- 1994 "Media and Achaemenid Iran," in J. Harmatta, B.N. Puri, and G.F. Etemadi eds. History of Civilizations of Central Asia Vol. II, pp. 35-65 (Paris).

Dannell G.B.

- 1979 "Eating and Drinking in Pre-Conquest Britain: The Evidence of Amphora and Samian Trading, and the Effect of the Invasion of Claudius," in R.C. Burnham and H.B. Johnson eds. Invasion and Response the Case for Roman Britain: pp. 177-184 (Oxford).

- Davidson T.E.  
 1981 "The Neutron Activation Analysis of Prehistoric Pottery from Tell Aqab, Northeast Syria, in M.J. Hughes ed. Scientific Studies in Ancient Ceramics: pp. 21-32 (London).
- Davidson T.E. and McKerrell H.  
 1976 "Pottery Analysis and Halaf Period Trade in the Khabour Headwaters Region," Iraq 38: pp. 45-56.  
 1980 "Ubaid Pottery from Tell Arpachiyeh and Tepe Gawra," Iraq 42: pp. 155-67.
- Davies J.L.  
 1983 "Coinage and Settlement in Roman Wales and the Marches: Some Observations," Archaeologia Cambrensis CXXXII: pp. 78-94.
- Davis R.H.C.  
 1989 The Medieval Warhorse (New York).
- Dawson D. and Kent O.  
 1984 "Methods of Kiln Reconstruction," Bulletin of the Experimental Firing Group 2: pp. 13-17.
- de la Bedoyere  
 1989 The Finds of Roman Britain (Bath).
- Debevoise N. C.  
 1934 Parthian Pottery from Seleucia on the Tigris (Ann Arbor).  
 1934b "The Essential Characteristics of Parthian and Sasanian Glyptic Art," Berytus 1: pp. 12-18.  
 1938 A Political History of Parthia (Chicago).
- Der Nersessian S.  
 1969 The Armenians (Norwich).
- Dezso T. and Curtis J.  
 1991 "Assyrian Iron Helmets from Nimrud Now in the British Museum," Iraq: pp. 105-126.
- di Caprio N.C., and Vaughan S.J.  
 1993 "An Experimental Study in Distinguishing Grog (Chamotte) from Argillaceous Inclusions in Cermaic Thin Sections," Archeomaterials 7: pp. 21-40.

Dobbins W.

1975 "The Successors of Mithradates II of Parthia," *The Numismatic Chronicle* 7 Ser. Vol. 15: pp. 19-45.

Dobel A., Asaro F., and Michel H.V.

1977 "Neutron Activation Analysis and the Location of Wassukani," *Orientalia* 46: 3: pp. 375-382.

Dodd C.H.

1911 "Chronology of the Eastern Campaigns of the Emperor Lucius Verus," *The Numismatic Chronicle* 4 ser. XI: pp. 209-267.

Dodgeon M.H., and Lieu S.N.C.

1991 *The Roman Eastern Frontier and the Persian Wars (A.D. 226-363)* (New York).

Eiland M.L.

1992 "Roman Coins Found at Nineveh Provide Evidence of Trade Between Rival Empires," *The Celator* 6:10.

Eilers W.

1986 "Iran and Mesopotamia," in E. Yarshater ed. *The Cambridge History of Iran* 3 (1), pp. 481-504 (Cambridge).

El-Wailly

1966 "Introduction," *Sumer* 21: p. "c."

Elam J.M. and Glascock M.D.

1988 "A Re-examination of the Provenance of Eastern Sigillata A," in R.M. Farquhar *et al.* *Proceedings of the 26th International Archaeometry Symposium*: pp. 179-183 (Toronto).

Ellison R.

1984 "The Uses of Pottery," *Iraq* 46: pp. 63-68.

Ettinghausen R.

1938 "Parthian and Sasanian Pottery," in A.U. Pope ed. *Survey of Persian Art I*: pp. 646-680 (Oxford).

Evers S.M.

1993 "George Smith and the Egibi Tablets," *Iraq* 55: pp. 107-117.

Farkas A.

1969 "The Horse and Rider in Achaemenid Art," *Persica* 4: pp. 57-76.

- Feugere M.  
1993 Les Armes Des Romains (Paris).
- Finkbeiner U.  
1982 "Seleukidische und Parthische Graeber in Uruk," Baghdader Mitteilungen 13:  
pp. 155-162.
- Forbes R.J.  
1964 Studies in Ancient Technology (Leiden).
- Foss C.  
1986 "The Coinage of Tigranes the Great: Problems, Suggestions and a New Find,"  
The Numismatic Chronicle 146: pp. 19-66.
- Foster G.M.  
1948 "Some Implications of Modern Mexican Mold-Made Pottery," South-western  
Journal of Anthropology 4: pp. 356-70.
- Foster K.P.  
1991 "Ceramic Imagery in Ancient Near Eastern Literature," in P.B. Vandiver, J.  
Druzik and G.S. Wheeler eds. Materials Issues in Art and Archaeology II:  
pp. 389-413 (Pittsburgh).
- Fournier R.  
1973 Illustrated Dictionary of Practical Pottery (New York).
- Franke J.A.  
1978 "Area WB," in M. Gibson *et al.* Excavations at Nippur: Twelfth Season:  
pp. 53-106 (Chicago).
- Franken H.J. and van As A.  
nd "Potters who Used Euphrates Clay," Mesopotamian History and Environment:  
pp. 507-518 (Leiden).
- Freeman I.L, and Rayment D.L.  
1968 "Scanning Electron Micrographs of some Structural Ceramic Materials,"  
Transactions of the British Ceramic Society 67: pp. 611-618.
- Freestone I.C.  
1985 "The Nature of Surface Gloss," Bulletin of the Experimental Firing Group 3:  
pp. 61-69.
- 1991 "Technical Examinaiton of Neo-Assyrian Glazed Wall-Plaques," Iraq 53:  
pp. 55-58.

Freestone I.C., and Hughes M.J.

- 1989 Appendix III "Examination of Ceramics from Quasr'J Cliff and Khirbet Quas'J," in J. Curtis ed., Excavations at Qasrij Cliff and Khirbet Qasrij: pp. 61-75 (London).

Freestone I.C., Potter T., and Johns C.

- 1982 Current Research in Ceramics: Thin-Section Studies (London).

Fromkin D.

- 1989 A Peace to End All Peace The Fall of the Ottoman Empire and the Creation of the Modern Middle East (New York).

Frye R.N.

- 1972 "Byzantine and Sasanian Trade Relations with Northeastern Russia," Dumbarton Oaks Papers 26: pp. 265-269.

- 1988 The Golden Age of Persia: Arabs in the East (London).

Fuks A.

- 1961 "Aspects of the Jewish Revolt in A.D. 115-117," Journal of Roman Studies LI: pp. 98-104.

Fulford M.G. and Hodder I.

- 1975 "A Regression Analysis of Some Late Romano-British Pottery: A Case Study," Oxoniensia 39: pp. 26-33.

Gadd C.J.

- 1938 "A Visiting Artist at Nineveh," Iraq 5: 118-122.

Galloway P., and Newcomer M.

- 1981 "The Craft of Comb-Making: An Experimental Enquiry," The Bulletin of the Institute of Archaeology, London 18: pp. 73-90.

Gerrard, C.M.

- 1991 Sedimentary Petrology and the Archaeologist: The Study of Ancient Ceramics," in A.C. Morton, S.P. Todd, and P.D.W. Haughton eds., Developments in Sedimentary Provenance Studies Geological Society Special Publications: pp. 189-197 57 (London).

Gibson M.

- 1974 "Coins as a Tool in Archaeological Surface Survey," in D.K. Kouymjian Ed. Near Eastern Numismatics, Iconography, Epigraphy and History: Studies in Honor of George G.C. Miles: pp. 9-14. (Beirut).

- 1975 Excavations at Nippur: Eleventh Season (Chicago).

- 1994 "Parthian Seal Style: A Contribution from Nippur," *Mesopotamia* 29: pp. 89-105.
- Gilbert A.S.  
 1975 *Modern Nomads and Prehistoric Pastoralists: The Limits of Analogy,* The Journal of the Ancient Near Eastern Society of Columbia University 7: pp. 54-71.
- Goddard E.N., Trask P.D., De Ford R.K., Rove O.N., Singewald J.T., and Overbeck R.M.  
 1948 *Rock Color Chart* (Enschede).
- Goldberg P.  
 1988 "The Archaeologist as Viewed by the Geologist," *Biblical Archaeologist* 51:4: pp. 197-202.
- Goldman B.  
 1993 "Darius II, The Alexander Mosaic, and the Tiara Ortho," *Mesopotamia* 28: pp. 51-69.
- Goldman H.  
 1950 *Excavations of Gozlu Kule, Tarsus. Vol. I The Hellenistic and Roman Periods* (Princeton).
- Goldstein J.I., Newbury D.E., Echlin P., Joy D.C., Fiori C., and Lifshin E.  
 1984 *Scanning Electron Microscopy and X-Ray Microanalysis* (New York).
- Graf D.F.  
 1994 "The Persian Royal Road System," in H. Sancisi-Weerdenburg, A. Kuhrt, and M.C. Root eds. *Achaemenid History VIII*: pp. 167-189 (Leiden).
- Grant M.  
 1956 *The Annals of Tacitus* (London).
- Grayson, A.K.  
 1975 *Assyrian and Babylonian Chronicles* (Locust Valley).
- Greene K.  
 1979 "Invasion and Response: Pottery and the Roman Army," in R.C. in Burnham and H.B. Johnson eds. *Invasion and Response the Case for Roman Britain*: pp. 99-106 (Oxford).
- 1983 *Archaeology: An Introduction* (London).
- 1986 *The Archaeology of the Roman Economy* (London).

- Guest E.  
1966 Flora of Iraq: Vol. 1 (Baghdad).
- Gunneweg J., Perlman I. and Yellin J.  
1983 "The Provenience, Typology and Chronology of Eastern Sigillata," Qedem: 17.
- Gunter A., and Jett P.  
1992 Ancient Iranian Metalwork (Mainz).
- Haerinck E.  
1983 La Ceramique En Iran Pendant La Periode Parthe (Ghent).
- Hamer F.  
1975 The Potter's Dictionary of Materials and Techniques (Cambridge).
- Hamilton W.R.  
1837 "Letter to the Secretary Containing a Greek Inscription," Transactions of the Royal Society of Literature Vol. III part I.
- Hannestad L.  
1983 a Ikaros Vol. 2:1 The Hellenistic Pottery from Failaka (Aarhus).  
1983 b Ikaros Vol. 2:2 The Hellenistic Pottery (Aarhus).
- Hansman J. and Stronach D.  
1970 "Excavations at Shahr-I Qumis, 1967" Journal of the Royal Asiatic Society: pp. 29-62.
- Harper R.F.  
1892-1914 Assyrian and Babylonian Letters Belonging to the K(ouyunjik) Collection(s) of the British Museum 14 vols. (Chicago).
- Harrison R.  
1994 "Hellenization in Syria-Palestine: The Case of Judea in the Third Century B.C.E.," Biblical Archaeologist 57:2: pp. 98-108.
- Hatcher H., Kaczmarczyk A., Scherer A., and Symonds R.P.  
1994 "Chemical Classification and Provenience of Some Roman glazed Ceramics," American Journal of Archaeology 98: pp. 431-456.
- Hauser S.R.  
1993 "Eine Arsakidenzeitliche Nekropole in Ktesiphon," Baghdader Mitteilungen 24: pp. 325-420.
- Hayes J.W.  
1972 Late Roman Pottery (London).

Head B.V.

1908 "Ephesian Tesserae," The Numismatic Chronicle 4 ser. VIII: pp. 281-286.

1977 Historia Numorum: A Manual of Greek Numismatics (London).

Hedges R.E.M.

1976 "Pre-Islamic Glazes in Mesopotamia - Nippur," Archaeometry 18: pp. 209-211.

Hedges R.E.M. and McLellan M.

1976 "On the Cation Exchange Capacity of Fired Clays and its Effects on the Chemical and Radiometric Analysis of Pottery," Archaeometry 18: pp. 203-207.

Hedges R.E.M. and Moorey P.R.S.

1975 "Pre-Islamic Ceramic Glazes at Kish and Nineveh in Iraq," Archaeometry 17: pp. 25-43.

Heichelheim F.M.

1938 "Roman Syria," in T. Frank et al. ed. An Economic Survey of Ancient Rome: Vol. IV Roman Asia: pp. 121-257 (Baltimore).

Herrmann G.

1989 "Parthian and Sasanian Saddlery. New Light From the Roman West," in L. De Meyer and E. Haerinck ed. Archaeologia Iranica et Orientalis II pp. 757-809.

Herzfeld

1922 Am Tor von Asien (Berlin).

Hetherington R.

1991 "Investigations into Primitive Lead Smelting and its Products," in W.A. Oddy ed. Aspects of Early Metallurgy: pp. 27-40 (London).

Higgins R.

1976 "Terracottas," in Strong, D. and Brown, D. eds. Roman Crafts: pp. 104-109. (London).

Hill D.K.

1947 "The Technique of Greek Metal Vases and its Bearing on Vase Forms in Metal and Pottery," American Journal of Archaeology 51: pp. 248-256.

Hill G.F.

1922 "Ancient Methods of Coining," The Numismatic Chronicle 5 ser. Vol. II: pp. 1- 48.

1931 "A Hoard of Coins from Nineveh" The Numismatic Chronicle (Series 5) 11: pp. 133-142.

Hobbs R.

- 1994 "Roman Coins," one page (p. 66) note in G. Herrmann and K. Kurbansakhatov *et al.*, "The International Merv Project Preliminary Report on the Second Season" (1993) *Iran* 32: pp. 53-75.

Hodges H.

- 1970 Technology in the Ancient World (New York).

Hodgson N.

- 1989 "The East as Part of the Wider Roman Imperial Frontier Policy," in D.H. French and C.S. Lightfoot eds. The Eastern Frontier of the Roman Empire: pp. 177-185 (London).

Hoffman B.

- 1983 Die Rolle Handwerklicher Verfahren bei der Formgebung Reliefverzierter Terra Sigillata Doctoral Dissertation Ludwig-Maximilians-Universitat, Munchen (Berlin).

Hoffmeyer A.B.

- 1961 "Introduction to the History of the European Sword," *Gladius* 1: pp. 30-75.

Hormuzd R.

- 1897 Assur and the Land of Nimrod (New York).

Howgego C.J.

- 1990 "Why Did Ancient States Strike Coins?," *The Numismatic Chronicle* 150: pp. 1-25.

- 1992 "The Supply and Use of Money in the Roman World 200 B.C to A.D. 300," *Journal of Roman Studies* 82: pp. 1-31.

Howgego C.J., and Potts D.T.

- 1992 "Greek and Roman Coins from Eastern Arabia," *Arabian Archaeology and Epigraphy* 3: pp. 183-189.

Hrouda B.

- 1973 "Ergebnisse Einer Ruinenbesichtigung im Suedoestlichen Iraq," Baghdader Mitteilungen 6: pp. 7-18.

Huff D.

- 1954 How to Lie with Statistics (New York).

Humphries D.W.

- 1992 The Preparation of Thin Sections of Rocks, Minerals, and Ceramics Royal Microscopical Society Handbook Series 24 (Oxford).

Hutchinson R.W.

1934 "The Nineveh of Tacitus," Liverpool Annals of Archaeology and Anthropology 21: pp. 85-88.

Instinsky H.U.

1958 "Grabstein eines berittenen Bogenschuetzen der Ala Parthorum et Araborum," Germania 36: pp. 72-77.

Invernizzi A.

1989 "L'Heracles Epitrapezios de Ninive," in L. de Meyer and E. Haerinck eds. Archaeologia Iranica et Orientalis II: Miscellanea in Honorem Louis Vanden Berghe: pp. 623-636 (Ghent).

Isaac B.

1992 The Limits of Empire: The Roman Army in the East (Oxford).

Isbell C.D.

1978 "The Story of the Aramaic Magical Incantation Bowls," Biblical Archaeologist 41:1: pp. 5-16.

Jackson R.

1990 "Roman Doctors and Their Instruments: Recent Research Into Ancient Practice," Journal of Roman Archaeology 3: pp. 5-27.

James S.

1986 "Evidence from Dura-Europos for the Origins of Late Roman Helmets," Syria LXIII: pp. 107-134.

Jankovich M.

1971 They Rode into Europe (London).

Johnson G.A.

1973 Local Exchange and Early State Development in South Western Iran Anthropology Papers 51 (Ann Arbor).

Jones R.E.

1986 Greek and Cypriot Pottery: A Review of Scientific Studies (Athens).

Karant R.V., Krishnan K., and Hegde K.T.M.

1986 "Petrography of Ancient Indian Lime Plaster," Journal of Archaeological Science 13: pp. 543-551.

Kawami T.

1982 "Parthian Brick Vaults in Mesopotamia, their Antecedents and Decendants," Journal of the Ancient Near Eastern Society of Columbia University 14: pp. 61-67.

- 1987 Monumental Art of the Parthian Period in Iran (Leiden).
- Keall E.J.  
 1970 The Significance of Late Parthian Nippur (unpublished Phd. dissertation, Univ. of Michigan).  
 1975 "Parthian Nippur and Vologases' Southern Strategy: A Hypothesis" Journal of the American Oriental Society 95:4: pp. 620-632.  
 1977 "Political, Economic, and Social Factors on the Parthian Landscape of Mesopotamia and Western Iran: Evidence from Two Case Studies," in L.D. Levine and T.C. Young Mountains and Lowlands: Essays in the Archaeology of Greater Mesopotamia: pp. 81-89 (Malibu).
- Keary C.F.  
 1885 The Morphology of Coins (Chicago).
- Kemp R.A.  
 1985 Soil Micromorphology and the Quaternary (Nottingham).
- Kennedy D., and Riley D.  
 1990 Rome's Desert Frontier from the Air (London).
- Kenrick P.M.  
 1981 "Fine Wares of the Hellenistic and Roman Periods," in J. Matthers ed. The River Qoueiq, Northern Syria, and its Catchment: pp. 439-447 (Oxford).
- Khachatrian J.D.  
 1989 "Silver Bowls and Basins of Armenia in the Late Hellenistic Period," Iranica Antiqua 24: pp. 297-308.
- Khader A.B.A.B. and Soren D.  
 1987 Carthage: A Mosaic of Ancient Tunisia (New York).
- Kilmer A.D.  
 1987 "The Brick of Birth," Appendix C (pp. 211-213) in Azarpay, G. "Proportional Guidelines in Near Eastern Art," Journal of Near Eastern Studies 46:3: pp. 183-213.
- Koch H.  
 1990 A Catalogue of Coins from Eastern Parthia (New York).
- Kubie N.  
 1965 Road to Nineveh: The Adventures and Excavations of Sir Austen Henry Layard (London).

Kubitschek W.

1902 "Ninica Claudiopolis," Numismatische Zeitschrift 34: pp. 1-27.

Kurtz O.

1986 "Cultural Relations Between Parthia and Rome," in E. Yarshater ed. Cambridge History of Iran 3 (1) The Seleucid, Parthian and Sasanian Periods: pp. 559-567 (Cambridge).

Lackey L.M.

1982 The Pottery of Acatlan: A Changing Mexican Tradition (Norman Ok.).

Lane A.

1965 Early Islamic Pottery (London).

Lang D.M.

1986 "Iran, Armenia and Georgia," in E. Yarshater ed. Cambridge History of Iran 3 (1) The Seleucid, Parthian and Sasanian Periods: pp. 505-536 (Cambridge).

Langfeldt J.A.

1994 "Recently Discovered Christian Monuments in Northeastern Arabia," Arabian Archaeology and Epigraphy 5: pp. 32-60.

Lapp P.W.

1961 Palestinian Ceramic Chronology, 200 B.C. - A.D. 70 (New Haven).

Layard A.H.

1849 Nineveh and its Remains (London).

1853 Discoveries in the Ruins of Nineveh and Babylon (London).

1853b The Monuments of Nineveh (London).

Lees G.M., and Falcon N.L.

1952 "The Geographical History of the Mesopotamian Plains," The Geographical Journal 118: pp. 24-39.

Le Miere M., and Picon M.

1994 "Early Neolithic Pots and Cooking," in Handwerk und Technologie im Alten Orient: Ein Beitrag zur Geschichte der Technik im Altertum: pp. 67-70 (Mainz).

Le Rider G.

1965 Suse Sous les Seleucides et les Parthes: les Trouvailles Monetaires et L'histoire de la Ville: Memoires de la Delegation Archeologique en Perse: 38 (Paris).

- 1967 "Un Tresor de Petites Monnaies de Bronze Touve a Ninive," *Iranica Antiqua* 7: pp. 4-20.
- Lloyd S.  
 1943 Twin Rivers (Oxford).  
 1947 Foundations in the Dust (London).
- Loftus W.K.  
 1857 Travels and Researches in Chaldea and Susiana (London).
- Loginov, S.D. and Nikitin A.B.  
 1993 "Sasanian Coins of the Third Century from Merv," *Mesopotamia* 28: pp. 225-241, figs. 1-5.
- Longden R.P.  
 1931 "Notes on the Campaigns of Trajan," *Journal of Roman Studies* 21: pp. 1-35.
- Longhurst H.  
 1959 Adventure in Oil: The Story of British Petroleum (London).
- Lumsden S.  
 1991 "Urban Nineveh: Investigations Within the Lower Town of the Last Assyrian Capital," *Mar Sipri* 4:1: pp. 1,2,3,8.
- MacGinnis J.D.A.  
 1988 "Ctesias and the Fall of Nineveh," *Illinois Classical Studies* 13:1: pp. 37-41.
- Madhloum T.A.  
 1967 "Excavations at Nineveh A preliminary Report," *Sumer* 23: pp. 76-80.  
 1968 "Nineveh the 1967-1968 Campaign," *Sumer* 24: pp. 45-51.  
 1969 "Nineveh the 1968-1969 Campaign," *Sumer* 25: pp. 43-49.
- Madhloum T.A., and Mahdi A.M.  
 1976 Nineveh (Baghdad).
- Majewski T. and O'Brien M.  
 1987 "The Use and Misuse of Ninteenth-Century English and American Ceramics in Archaeological Analysis in M.B. Schiffer ed. Advances in Archaeological Method and Theory 11: pp. 97-209 (London).
- Malek H.M.  
 1993 "A Survey of Research on Sasanian Numismatics," *The Numismatic Chronicle* 153: pp. 227-269.

- Mallory J.P.  
1991 In Search of the Indo-Europeans (Leipzig).
- Manandian H.A.  
1965 The Trade and Cities of Armenia in Relation to Ancient World Trade, tr. N.G. Garsoian (Lisbon).
- Mange M.A., and Maurer F.W.  
1992 Heavy Minerals in Colour (Hong Kong).
- Maniatis Y., Katsanos A., and Caskey, M.E.  
1982 "Technological Examination of Low-Fired Terracotta Statues from Ayia Irini, Kea," *Archaeometry* 24:2 pp. 191-198.
- Maniatis Y., and Tite M.S.  
1979 "Examination of Roman and Medieval Pottery Using the Scanning Electron Microscope," *Acta Praehistorica et Archaeologica* 9/10: pp. 125-130.  
1981 "Technological Examination of Neolithic-Bronze Age Pottery from Central and Southeast Europe and from the Near East," *Journal of Archaeological Science* 8: pp. 59-76.
- Marcus M.I.  
1993 "Incorporating the Body: Adornment, Gender, and Social Identity in Ancient Iran," *Cambridge Archaeological Journal* 3:2: pp. 157-178.
- Marshak B.  
1986 Silberschatze des Orients: Metallkunst des 3. - 13. Jahrhunderts und ihre Kontinuitat (Leipzig).
- Mason, R.B.  
1994 Islamic Glazed Pottery: 700-1250 (unpublished D. Phil Thesis, Oxford Univ.).  
1995 "Criteria for the Petrographic Characterization of Stonepaste Ceramics," *Archaeometry* 37:2: pp. 307-321.
- Mason R.B. and Keall E.J.  
1991 "The Abbasid Glazed Wares of Siraf and the Basra Connection: Petrographic Analysis," *Iran*: 29: pp. 51-66.
- Mathieson H.E.  
1982 Ikaros Volume I: The Terracotta Figurines (Copenhagen).  
1992 Sculpture in the Parthian Empire Vol. I and II (Aarhus).

Matiskainen H., and Alhonen P.

- 1984 "Diatoms as Indicators of Provenance in Finnish Sub-Neolithic Pottery," *Journal of Archaeological Science* 11: pp. 147-157.

Matson F.R.

- 1939 A Technological Study of the Unglazed Pottery and Figurines from Seleucia on the Tigris University microfilm no. 660, 1945 (PhD dissertation, University of Michigan).
- 1943 "Technological Notes on the Pottery," in N. Toll The Excavations at Dura-Europos Final Report IV: The Green Glazed Pottery: pp. 81-95 (Yale).
- 1965 "Ceramic Ecology: An Approach to the Study of the Early Cultures of the Near East," in F.R. Matson ed. Ceramics and Man: pp. 202-217 (Chicago).
- 1971 "A Study of Temperatures Used in Firing Ancient Mesopotamian Pottery," in R.H. Brill ed. Science and Archaeology pp. 65-79 (Boston).
- 1974 "The Archaeological Present: Near Eastern Village Potters at Work," American Journal of Archaeology:78: pp. 345-347.
- 1986 "Glazed Brick from Babylon - Historical Setting and Microprobe Analysis," in W.D. Kingery ed. Ceramics and Civilization Vol. II: pp. 133-156. (Columbus Oh.).

Matthew A.J., Woods A.J. and Oliver C.

- 1991 "Spots Before the Eyes: New Comparison Charts for Visual Percentage Estimation in Archaeological Material," in A. Middleton and I. Freestone eds. Recent Developments in Ceramic Petrology: pp. 211-263 (London).

Matthews R.

- 1994 "Imperial Catastrophe or Local Incident?: An Akkadian Hoard from Tell Brak, Syria," Cambridge Archaeological Journal 4:2: pp. 290-302.

McCarthy B., Vandiver P.B., and Gibson M.

- 1995 "Innovation and Continuity in the Technology of Southwest Asian Monochrome Blue Glazes," in P. Vincenzini ed. The Ceramics Cultural Heritage pp. 207-218 (Faenza).

McCown D.E. *et al.*

- 1978 Nippur II The North Temple and Sounding E (Chicago).

McDowell R.H.

- 1935 Coins from Seleucia on the Tigris (Michigan).

- McGrath A., and Grabrovaz F.  
 1981 "The Kiln Dump at Tell Kadrich," in J. Matthers ed. The River Qoueiq, Northern Syria, and its Catchment: pp. 361-368 (Oxford).
- Meshorer Y.  
 1982 Ancient Jewish Coinage Volume 1: Persian Period through the Hasmonaeans (New York).
- Middleton A.P.  
 1991 "Ceramics: Materials for All Reasons," in S. Bowman ed. Science and the Past: pp. 16-36 (London).  
 1993 "What's (Not) in a Pot? Holes!" The Old Potter's Almanack: pp. 10-11.
- Middleton A.P., Freestone I.C., and Leese M.N.  
 1985 "Textural Analysis of Ceramic Thin Sections: Evaluation of Grain Sampling Procedures," Archaeometry: 27 pp. 64-74.
- Mikolajczyk A. and Lowick N.M.  
 1976 "An Early 7th Century Hoard of Coins and Ornaments from Kisarabad, Iraq," Coin Hoards 2: 1976: pp. 347-349.
- Milne J.G.  
 1908 "The Lead Token-Coinage of Egypt Under the Romans," The Numismatic Chronicle 4 ser. VIII: pp. 287-310.
- Mitchell R.C.  
 1957 "Recent Tectonic Movements in the Mesopotamian Plains," The Geographical Journal 123 part 4: pp. 569-571.
- Mitchell T.C.  
 1988 The Bible in the British Museum: Interpreting the Evidence (London).
- Moorey P.R.S.  
 1978 Kish Excavations 1923-1933 (Oxford).  
 1994 Ancient Mesopotamian Materials and Industries: The Archaeological Evidence (Oxford).
- Morariu U.V., Bogdan M, and Ardelean I.  
 1977 "Ancient Pottery: its Pore Structure," Archaeometry: 19:2: pp. 187-221.
- Morkholm O.  
 1980 "The Parthian Coinage of Seleucia on the Tigris, c. 90-55 B.C.," The Numismatic Chronicle LXL: pp. 33-47.

- Mouton M.  
 1992 La Peninsule d'Oman de la Fin de l'Age du Fer au Debut de la Periode Sassanide (250 av.-350 ap. JC). Unpublished Doctoral Thesis, Paris.
- Mynors S.H.  
 1986 Mesopotamian Ceramics of the Third Millennium B.C. with an Analysis of Pottery from Abu Salabikh, Kish, and Ur (unpublished dissertation, University of Southampton).
- Nashef  
 1990 "Archaeology in Iraq," American Journal of Archaeology 94: 260.
- Neff H., Bishop R.L., and Sayre V.  
 1988 "A Simulation Approach to the Problem of Tempering in Compositional Studies of Archaeological Ceramics," Journal of Archaeological Science 15: pp. 159-172.  
 1989 "More Observations on the Problem of Tempering in Compositional Studies of Archaeological Ceramics," Journal of Archaeological Science 16: pp. 57-69.
- Neuberger J., Hafner A. and Olteanu D.  
 1972 "Contribution to the Study of the Structure of Porcelain by Microscope Techniques," Transactions of the British Ceramic Society 71: pp. 89-91.
- Neufeld E.  
 1973 "Fabrication of Objects from Fish and Sea Animals in Ancient Israel," The Journal of the Ancient Near Eastern Society of Columbia University 5: pp. 309-324.
- Newell E.T.  
 1938 The Coinage of the Eastern Seleucid Mints (New York).
- Newman J.  
 1932 The Agricultural Life of the Jews in Babylonia (London).
- Nicholson P.T., and Patterson H.L.  
 1989 "Ceramic Technology in Upper Egypt: a Study of Pottery Firing," World Archaeology 21:1: pp. 71-86.
- Nicolle D  
 1991 Rome's Enemies 5: The Desert Frontier (London).
- Nissen H.J.  
 1973 "Sudbabylonien in Parthischer und Sasanidischer Zeit," Baghdader Mitteilungen 6: pp. 79-86.
- Noll W.  
 1991 Alte Keramiken und ihre Pigmente (Stuttgart).

North J.A.

- 1981 "The Development of Roman Imperialism," Journal of Roman Studies LXXI: pp. 1-9.

Norton F.H.

- 1959 "Clay Deposits as a Means of Identifying Pottery," in W.J. Young ed. The Application of Science in the Examination of Works of Art: pp. 139-144 (Boston).

Oates D.

- 1965 "The Excavations at Tell al-Rimah, 1964," Iraq 27: pp. 62-80.
- 1968 Studies in the Ancient History of Northern Iraq (London).
- 1970 "The Excavations at Tell al-Rimah, 1968," Iraq 32: pp. 1-26.

Oates (Lines) J.

- 1954 "Late Assyrian Pottery from Nimrud," Iraq 16: pp. 164-167.
- 1959 "Late Assyrian Pottery from Fort Shalmaneser" Iraq 21: pp. 130-146.

Olin J.S., and Sayre E.V.

- 1971 "Compositional Categories of some English and American Pottery of the American Colonial Period," in R.H. Brill ed. Science and Archaeology: pp. 196-209 (Cambridge).

Olsen S.L.

- 1988 "Introduction: Applications of Scanning Electron Microscopy to Archaeology," in S.L. Olsen ed. Scanning Electron Microscopy in Archaeology: pp. 3-7 (Oxford).

Pallis S.A.

- 1956 The Antiquity of Iraq (Copenhagen).

Palmer A., Brock S., and Hoyland R.

- 1993 The Seventh Century in the West-Syrian Chronicles (Liverpool).

Patourel H.E.J.Le

- 1968 "Documentary Evidence and the Medieval Pottery Industry," Medieval Archaeology 12: pp. 101-126.

Peacock D.P.S.

- 1970 "The Scientific Analysis of Ancient Ceramics: A Review," World Archaeology 1:3: pp. 375-389.
- 1978 "The Petrological Method: Problems and Approaches in the Roman Mediterranean," Symposium on Archaeological Sciences pp. 63-67 (Bradford).

- 1983 *Pottery in the Roman World: An Ethnoarchaeological Approach* (London).
- Pearson M.P.  
1993 "The Powerful Dead: Archaeological Relationships between the Living and the Dead," *Cambridge Archaeological Journal* 3:2: pp. 203-229.
- Pederson O., and Troy L.  
1993 "Egyptians in Nineveh," *N.A.B.U.* 2 (June): p. 39.
- Peltenburg E.J.  
1969 "Al Mina Glazed Pottery and its Relations," *Levant* 1: pp. 73-96.
- Peters T. and Iberg R.  
1978 "Mineralogical Changes During Firing of Calcium-Rich Brick Clays," *American Ceramic Society Bulletin* 57:5: pp. 503-509.
- Petersen H.  
1966 "New Evidence for the Relations Between Romans and Parthians," *Berytus* 16: pp. 61-69.
- Pettijohn F.J., Potter P.E., and Siever R.  
1973 *Sand and Sandstone* (Berlin).
- Philip G.  
1968 "Mineralogy of Recent Sediments of Tigris and Euphrates Rivers and Some of the Older Detrital Deposits," *Journal of Sedimentary Petrology* 38:1: pp. 35-44.
- Phillips E.D.  
1965 *The Royal Hordes: Nomad Peoples of the Steppes* (Norwich).
- Philpotts A.R., and Wilson N.  
1994 "Application of Petrofabric and Phase Equilibria Analysis to the Study of a Potsherd," *Journal of Archaeological Science* 21: pp. 607-618.
- Platnauer M.  
1919 *The Life and Reign of Lucius Septimius Severus* (Oxford).
- Polanyi K.  
1968 *Primitive, Archaic and Modern Economics* (New York).
- Ponzi M.N.N.  
1967 "Some Sasanian Moulds," *Mesopotamia* 2: pp. 57-92.

- Porat N.  
 1989 Composition of Pottery: Application to the Study of the Interrelations Between Canaan and Egypt During the 3rd. Millennium B.C. (unpublished doctoral thesis, Hebrew University of Jerusalem).
- Postgate N.  
 1970 "An Assyrian Altar from Nineveh" *Sumer* 26: pp. 133-136.
- Potts D.T.  
 1991 The Arabian Gulf in Antiquity Vol. II (Oxford).
- Potts P.J.  
 1987 A Handbook of Silicate Rock Analysis (Glasgow).
- Powell M. A.  
 1990 "Identification and Interpretation of long Term Price Fluctuations in Babylonia: More on the History of Money in Mesopotamia," *Altorientalische Forschungen* 17: pp. 76-99.
- Prawdzc-Golemberski E.J., and Metcalf D.M.  
 1963 "The Circulation of Byzantine Coins on the South-Eastern Frontiers of the Empire," *The Numismatic Chronicle* 7 ser. Vol. 3: pp. 83-92.
- Qu H.J., Cheng, Z.H., and Wu X.J.  
 1991 "Research on the Techniques of Making Pottery Figurines of the Qin Army," in Vandiver P.B., Druzik, J. and Wheeler G.S. eds. Materials Issues in Art and Archaeology II: pp. 459-477 (Pittsburgh).
- Rado P.  
 1969 An Introduction to the Technology of Pottery (Oxford).
- Rawson R.S.  
 1954 "Palace Wares from Nimrud Technical Observations on Selected Examples," *Iraq* 16: pp. 168-172.
- Reade J.  
 1993 "Hormuzd Rassam and His Discoveries," *Iraq* 55: pp. 39-62.
- Reece R.  
 1979 "Roman Monetary Impact," B.C. Burnham and H.B. Johnson Invasion and Response: pp. 211-217 (Oxford).

- Renger J.  
 1990 "Rivers, Water Courses and Irrigation Ditches and Other Matters Concerning Irrigation Based on Old Babylonian Sources (2000-1600 B.C.) Bulletin of Sumerian Agriculture 5: Irrigation and Cultivation in Mesopotamia Part II: pp. 31-43.
- Rhodes D.  
 1968 Kilns: Design, Construction and Operation (Philadelphia).
- Ricciardi R. V.  
 1971 "Sasanian Pottery from Tell Mahuz (North Mesopotamia)," Mesopotamia 5-6: pp. 427-482.
- Rice P.M.  
 1984 "The Archaeological Study of Specialized Pottery Production," in P.M. Rice ed. Pots and Potters Current Approaches in Ceramic Archaeology: pp. 45-54 (Los Angeles).  
 1987 Pottery Analysis: A Sourcebook (Chicago).
- Rice T.T.  
 1965 Ancient Arts of Central Asia (London).
- Richards E.E.  
 1960 "Report on Black Burnished Ware from Mumrills," in K.A. Steer: Excavations at Mumrills Roman Fort, 1958-60, Proceedings of the Society of Antiquaries of Scotland: 94, pp. 129-30.
- Richter G.  
 1958 "Ancient Plaster Casts of Greek Metalware," American Journal of Archaeology 62: pp. 370-371.
- Rieche A. and Schalles H.J.  
 1987 Handwerk und Berufe in der Roemischen Stadt (Cologne).
- Riley J.A.  
 1981 "Petrological Examination of Bronze Age IV Fabrics," in J. Matthers ed. The River Qoueiq, Northern Syria, and its Catchment: pp. 349-360 (Oxford).
- Rostovtzeff M.  
 1941 The Social and Economic History of the Hellenistic World (Oxford).
- Rotroff S.I.  
 1975 "Megarian Bowls in the Athenian Agora," (unpublished doctoral dissertation, Princeton University).

- 1982a Agora 21: Hellenistic Pottery. Athenian and Imported Moldmade Bowls (Princeton).
- 1982b "Silver Glass and Clay: Evidence for the Dating of Hellenistic Luxury Tableware," Hesperia 51: pp. 329-337.
- Russell J.M.  
1991 Sennacherib's Palace Without Rival at Nineveh (Chicago).
- Rye O.S.  
1976 "Keeping Your Temper Under Control: Materials and Manufacture of Papuan Pottery," Archaeol. Phys. Anthropol. Oceania II: pp. 106-37.  
1977 "Pottery Manufacturing Techniques: X-Ray Studies," Archaeometry 19(2): pp. 205-211.
- Rye O.S., and Evans C.  
1976 Traditional Pottery Techniques of Pakistan (Washington).
- Sarianidi V.  
1992 Tilya Tepe: The Burial of a Noble Warrior," Persica 14: pp. 103-130.
- Saur J.A.  
1979 "Parthian Glazed Amphora Found Near Rajib," Biblical Archaeologist 42:3: p. 134.
- Schiffer M.B.  
1988 "The Effects of Surface Treatment on Permeability and Evaporative Cooling Effectiveness of Pottery in R.M. Farquhar *et al.* Proceedings of the 26th International Archaeometry Symposium: pp. 23-29 (Toronto).  
1990 "Technological Change in Water-Storage and Cooking Pots: Some Predictions from Experiment," in W.D. Kingery ed. Ceramics and Society 5: pp. 119-136 (Waterville, Oh.).
- Schneider G.  
1994 "Rohstoffe und Brenntechnik von Keramik in Nordmesopotamien," in Handwerk und Technologie im Alten Orient: Ein Beitrag zur Geschichte der Technik im Altertum pp. 99-109 (Mainz).
- Scott M.L. and MacGinnis J.  
1990 "Notes on Nineveh," Iraq 52: pp. 63-73.
- Scott W.H.  
1855 "On Parthian Coins," The Numismatic Chronicle 17: pp. 131-173.

Scurlock J.A.

1990 "The Euphrates flood and the Ashes of Nineveh," *Historia* 39: pp. 382-384.

Segal J.B.

1963 *Edessa and Harran: An Inaugural Lecture Delivered on 9 May 1962* (London).

Segnit E.R., and Anderson C.A.

1971 "Scanning Electron Microscopy of Fired Kaolinite," *Bulletin of the American Ceramic Society* 50: pp. 480-483.

1972 "Scanning Electron Microscopy of Fired Illite," *Transactions of the British Ceramic Society* 71: pp. 85-88.

Sekunda N.

1992 *The Persian Army: 550-330 B.C.* (London).

1994 *The Seleucid Army* (Stockport).

Sellwood D.G.

1962 "The Parthian Coins of Gotarzes I, Orodes I, and Sinatruces," *The Numismatic Chronicle* 7 ser. Vol. VII: pp. 13-28.

1963 "Some Experiments in Greek Minting Technique," *The Numismatic Chronicle* 7 ser. Vol. 3 pp. 217-231.

1965 "Wroth's Unknown Parthian King," *The Numismatic Chronicle* 7 ser. Vol. 5: pp. 113-135.

1971 "Some Politic Alterations in the Parthian Series," in R.A.G. Carson *Mints, Dies and Currency*: pp. 33-37 (London).

1975 "Parthian Mints," *Journal of Numismatic Fine Arts* 4:3 pp. 57-60.

1976 "The Drachms of the Parthian "Dark Age," *Journal of the Royal Asiatic Society*: pp. 2-25.

1980 *Introduction to the Coinage of Parthia* (London).

1989 "New Parthian Coin Types," *The Numismatic Chronicle*: vol. 149: pp. 162-168.

1993 Review of Koch, *A Hoard of Coins from Eastern Parthia*, *The Numismatic Chronicle* 153: pp. 311-312.

Shackley M.

1977 *Rocks and Man* (London).

- Sherwin-White A.N.  
1984 Roman Foreign Policy in the East: 168 B.C. to A.D. 1 (London).
- Shore F.B.  
1993 Parthian Coins and History (Lancaster, Penn.).
- Shotton F.W., and Hendry G.L.  
1979 "The Developing Field of Petrology in Archaeology," Journal of Archaeological Science 6: pp. 75-84.
- Simonetta A.M.  
1966 "Some Remarks on the Arsacid Coinage of the Period 90 - 57 B.C.," The Numismatic Chronicle 7 ser. vol. 6: pp. 15-40.
- Simpson D.D.A.  
1968 "Food Vessels: Associations and Chronology," in J.M. Coles and D.D.A. Simpson ed. Studies in Ancient Europe: pp. 197-211 (Leicester).
- Simpson St. John  
1990 "Iron Age Storage and Ceramic Manufacture in Rural Mesopotamia: A Review of the British Museum Excavations at Qasrij Cliff and Khirbet Qasrij in Northern Iraq," Bulletin of the Institute of Archaeology 27: pp. 119-140.  
  
1992 Aspects of the Archaeology of the Sasanian Period in Mesopotamia (unpublished D.Phil. Oxford University).
- Skibo J.M., Schiffer M.B., and Reid K.C.  
1989 "Organic-Tempered Pottery: An Experimental Study," American Antiquity 54(1): pp. 122-146.
- Smith G.  
1875 Assyrian Discoveries: an Account of Explorations and Discoveries on the Site of Nineveh During 1873 and 1874 (London).
- Smith R.H.  
1972 "The Sectioning of Potsherds as an Archaeological Method," Berytus 21: pp. 39-53.
- Smith S.  
1922 "A Pre-Greek Coinage in the Near East?," The Numismatic Chronicle 5 ser. Vol II: pp. 176-185.
- Speidel M.P.  
1992 "A Veteran of Legio I Parthica from Carian Aphrodisias," in M. Speidel ed. Roman Army Studies 2: pp. 71-81 (Stuttgart).

Strommenger E.

1964 "Grabformen in Babylon," Baghdader Mitteilungen 3: pp. 157-173.

Stronach D.

1988 "Excavations at Nineveh, 1987," Mar Sipri 1:2: pp. 1,5.

1989 "When Assyria Fell: New Light on the Last Days of Nineveh," Mar Sipri 2:2: pp. 1,2.

Stronach D., and Lumsden S.

1992 "U.C. Berkeley's Excavations at Nineveh," Biblical Archaeologist 55:4: pp. 227-233.

Strong D.

1976 Roman Art (London).

Strong D.E.

1966 Greek and Roman Silver Plate (London).

Surenhagen D.

1987 "Hirbet Aqar Babira 1985," in Researches on the Antiquities of Saddam Dam Basin Salvage and Other Researches: pp. 129-131 (Baghdad).

Sutherland C.H.V.

1963 "Some Political Notions in Coin Types Between 294 and 313," Journal of Roman Studies LIII:pp. 14-20.

Syme R. (Sir)

1988 "Tigranocerta: A Problem Misconceived," in A.R. Birley ed. Roman Papers 4: pp. 245-251 (New York).

1988b "Avidus Cassius: His Rank, Age and Quality," in A.R. Birley ed. Roman Papers 5: pp. 689-450 (New York).

1991 "Janus and Parthia in Horace," in A.R. Birley ed. Roman Papers 6: pp. 441-450 (New York).

1992 "A Veteran of Legio I Parthica from Carian Aphrodisias," in M.P. Speidel ed. Roman Army Studies II: pp. 198-203 (Stuttgart).

Teixidor J.

1968 "The Kingdom of Adiabene and Hatra," Berytus 17: pp. 1-11.

1987 "Parthian Officials in Lower Mesopotamia," Mesopotamia 22: pp. 187-193.

Thompson R.

- 1991 "Shepard, Kidder and Caregie," in Bishop, R.L. and Lange F.W. eds. The Ceramic Legacy of Anna O. Shepard (Niwot, Co.).

Tite M.S.

- 1969 "Determination of the Firing Temperature of Ancient Ceramics by Measurement of Thermal Expansion: A Reassessment," Archaeometry 11: pp. 131-143.
- 1972 Methods of Physical Examination in Archaeology (New York).
- 1988 "Inter-Relationship Between Chinese and Islamic Ceramics from 9th to 16th Century A.D. in R.M. Farquhar, R.G.V. Hancock and L.A. Pavlish eds. Proceedings of the 26th International Archaeometry Symposium: pp. 30-34 (Toronto).
- 1992 "The Impact of Electron Microscopy on Ceramic Studies," Proceedings of the British Academy 77: pp. 111-131.

Tite M.S., and Maniatis Y.

- 1975 "Scanning Electron Microscopy of Fired Calcareous Clays," Transactions and Journal of the British Ceramic Society: 74:1: pp. 19-22.

Tite M.S., Freestone I.C., Meeks N.D., and Bimson M.

- 1982 "The Use of Scanning Electron Microscopy in the Technological Examination of Ancient Ceramics," in J.S. Olin and A.D. Franklin eds. Archaeological Ceramics : pp. 109-120 (Washington).

Tobin C.

- 1850 M. Bottas Letters on the Discoveries at Nineveh Tobin Tr. (London).

Toll N.P.

- 1943 The Excavations at Dura-Europos: Final Report IV. (New Haven).
- 1946 The Necropolis (New Haven).

Trend A.

- 1995 "Description of Colour and Measurement of Variations," The Old Potter's Almanack 3:1: pp. 1-3.

Trigger B.G.

- 1994 "The Coming of Age of the History of Archaeology," Journal of Archaeological Research 2:1: pp. 113-136.

Trinkaus K.M.

- 1983 "Pre-Islamic Settlement and Land Use in Damghan, Northeast Iran," Iranica Antiqua 18: pp 119-144.

Tucker M.E.

1981 Sedimentary Petrology: An Introduction (London).

Uprichard R.K.

1989 "Notes on Conservation," in J. Curtis Excavations at Qasrij Cliff and Khirbet Qasrij: p. 59 (London).

Van Buren E.D.

1930 The Clay Figurines of Babylonia and Assyria (Yale).

van der Leeuw L.

1976 Studies in the Technology of Ancient Pottery (Amsterdam).

van der Plas

1962 "Preliminary Note on the Granulometric Analysis of Sedimentary Rocks," Sedimentology: 1: pp. 145-157.

Van Ingen W.

1939 Figurines from Seleucia on the Tigris (London).

Vandiver P.

1988 "The Implications of Variation in Ceramic Technology: The Forming of Neolithic Storage Vessels in China and the Near East," Archaeomaterials 2: pp. 139-174.

Vandiver P.B., and Lacovara P.

1986 "An Outline of Technological Changes in Egyptian Pottery Manufacture," Bulletin of the Egyptological Seminar 7: 54-85.

Vandiver P.B., Soffer O., Klima B, and Svoboda J.

1990 "Venuses and Wolverines: The Origins of Ceramic Technology, ca 26, 000 B.P.," in W.D. Kingery ed. Ceramics and Society 5: pp. 13-81 (Columbus Oh.).

Vaux W.S.W.

1857 "On Coins of Niniva, Termessus, Etc.," The Numismatic Chronicle 19: pp. 1-7.

Vermeule C.C.

1954 Some Notes on Ancient Dies and Coining Methods (London).

Vickers M.

1985 "Artful Crafts: The Influence of Metalwork on Athenian Painted Pottery," Journal of Hellenic Studies 105: pp. 108-128.

1994 "Nabataea, India, Gaul and Carthage: Reflections on Hellenistic and Roman Gold Vessels and Red-Gloss Pottery," American Journal of Archaeology 98: pp. 231- 248.

- 1994b "Aesthetics in Archaeology," Cambridge Archaeological Journal 4:2: pp. 255-256.
- 1995 "Aristokratinnen im Kaukasus," Antike Welt 3:pp. 187-191.
- Vogelsang W.  
1985 "Parthian Pottery from Iran," Archaeologische Mitteilungen Aus Iran 18: pp. 157-172.
- Vogt B.  
1994 Asimah: An Account of a Two Months Rescue Excavation in the Mountains of Ras al-Khaimah, U.A.E. (Dubai).
- Von Voigtlander E.  
1963 A Survey of Neo-Babylonian History (unpublished Phd. dissertation, University of Michigan).
- Vossen R.  
1984 "Towards Building Models of Traditional Trade in Ceramics: Case Studies from Spain and Morocco," in S.E. van der Leeuw and A.C. Pritchard eds. The Many Dimensions of Pottery: pp. 339-406 (Amsterdam).
- Waage F.O.  
1948 Hellenistic and Roman Tableware of North Syria, Antioch-on-the-Orontes IV (Princeton).
- Waggoner N.M.  
1974 "The Coinage of Phraates III of Parthia: Addenda," in D.K. Kouymjian ed. Near Eastern Numismatics, Iconography, Epigraphy and History: Studies in Honor of George G.C. Miles: pp. 15-26 (Beirut).
- Wapnish P.  
1981 "Camel Caravans and Camel Pastoralists at Tell Jemmeh," Journal of Ancient Near Eastern Studies 13: pp. 101-121.
- Ward W.A.  
1994 "Beetles in Stone: The Egyptian Scarab," Biblical Archaeologist 57:4: pp. 186-202.
- Waterfield G.  
1963 Layard of Nineveh (London).
- Wenke R.J.  
1976 "Parthian and Sasanian Khuzestan," Mesopotamia 10-11 pp. 31-221.

- Whitbread I.K.  
 1986 "The Characterization of Argillaceous Inclusions in Ceramic Thin Sections," Archaeometry 28: pp. 79-88.
- Whitehead R.B.  
 1947 "Notes on the Indo-Greeks Part II," The Numismatic Chronicle 6 ser. Vol. 7: pp. 28-51.
- Whitehouse D.  
 1991 "Epilogue: Roman Trade in Perspective," in V. Begley and R.D. De Puma eds. Rome and India: The Ancient Sea Trade pp. 216-218 (Madison).
- Whittell G.  
 1993 Central Asia (London).
- Wilkinson R.H.  
 1992 Reading Egyptian Art (London).
- Wilknison T., and Matthews R. *et al.*  
 1989 "Excavations in Iraq 1987-88," Iraq 51: pp. 249-265).
- Willard H.H., Merritt L.L., and Dean J.A.  
 1974 Instrumental Methods of Analysis (New York).
- Williams D.F.  
 1977 "Black Burnished Ware from Mumrills: a Reappraisal of Sources by Heavy Mineral Analysis," in J. Dore and K. Greene eds. Roman Pottery Studies in Britain and Beyond. British Archaeological Report: 30: pp. 177-87.
- 1983 "Petrology of Ceramics," in D.R.C. Kempe and A.P. Harvey eds. The Petrology of Archaeological Artifacts: pp. 301-329 (Oxford).
- Wilson A.L.  
 1978 "Elemental Analysis of Pottery in the Study of its Provenance: A Review," Journal of Archaeological Science: 5: pp. 219-236.
- Wilson I.  
 1979 The Turin Shroud (London).
- Wohl H.  
 1969 "A Note on the Fall of Babylon," Journal of the Ancient Near Eastern Society of Columbia Univ. 1:2: pp. 29-38.

Wolski J.

1966 "The Decay of the Iranian Empire of the Seleucids and the Chronology of the Seleucids and the Chronology of the Parthian Beginnings," *Berytus* 12 fasc. 1: pp. 35-52.

1993 *L'Empire Des Arsacides Acta Iranica* 32 (Belgium).

Woods A.J.

1982 "Smoke in Your Eyes: Patterns, Variables and Temperature Measurement in Open Firings," *Bulletin of the Experimental Firing Group* 1: pp. 11-25.

1986 "Form, Fabric and Function: Some Observations on the Cooking Pot in Antiquity," in W.D. Kingery ed., *Ceramics and Civilization II* (Columbus).

Wroth W.

1903 *Catalogue of the Coins of Parthia* - British Museum (London).

Yagci R.

1993 "A Group of Achaemenidian Glass Stamp Seals in Collection of the Museum of Anatolian Civilizations," *Anadolu Medeniyetleri Muzesi* pp. 155-166 (Ankara).

Yeivin S.

1933 "The Tombs found at Seleucia," in L Waterman ed. *Second Preliminary Report Upon Excavations at Tell Umar, Iraq* pp. 33-59 (Ann Arbor).

Zadok R.

1976 "On the Connections Between Iran and Babylonia in the Sixth Century B.C." *Iran* 14: pp. 61-78.

1987 "Peoples from the Iranian Plateau in Babylonia during the Second Millennium B.C.," *Iran* 25: pp. 1-26.

Zahn R.

1904 "Thongeschirr," in T. Wiegand and H. Schrader eds., *Priene* (Berlin).

Zarins J.

1992 "The Early Settlement of Southern Mesopotamia," *Journal of the American Oriental Society*: 112: pp. 55-97.

Ziegler K.

1964 *Die Beziehungen Zwischen Rom und dem Partherreich* (Wiesbaden).

Zwicker U.

1991 "Investigations on the Extractive Metallurgy of Cu/Sb/As Ore and Excavated Smelting Products from Norsun-Tepe (Keban) on the Upper Euphrates (3500-2800 B.C.)," W.A. Oddy ed. Aspects of Early Metallurgy: pp. 13-26 (London).