

LIBRARY
UNIVERSITY^{of}
PENNSYLVANIA



Rittenhouse Library

NUSH-I JAN III

THE SMALL FINDS

by

JOHN CURTIS

PUBLISHED BY
THE BRITISH INSTITUTE OF PERSIAN STUDIES

NUSH-I JAN III

THE SMALL FINDS

by

JOHN CURTIS

With an introduction by

DAVID STRONACH

PUBLISHED BY

THE BRITISH INSTITUTE OF PERSIAN STUDIES

Published by The British Institute of Persian Studies
c/o The British Academy, 20–21 Cornwall Terrace,
London NW1 4QP

© 1984 The British Institute of Persian Studies

ISBN 0 901477 03 6

Printed in England by Stephen Austin & Sons Ltd, Hertford.

CONTENTS

	Page
INTRODUCTION by David Stronach	v
CHAPTER I. THE SILVER HOARD	1
a. <i>Introduction</i>	1
b. <i>Bronze bowl</i>	1
c. <i>Double spiral pendants</i>	1
d. <i>Quadruple spiral beads</i>	3
e. <i>Earring</i>	6
f. <i>Finger-rings</i>	7
g. <i>Bracelet</i>	8
h. <i>Spiral rings</i>	8
i. <i>Various beads</i>	11
j. <i>Bar-ingots</i>	11
k. <i>Lumps of silver</i>	12
l. <i>Fragments of silver sheet</i>	14
m. <i>Square-sectioned silver bars</i>	15
n. <i>Lengths of rod and wire</i>	15
o. <i>Various rings</i>	16
p. <i>Miscellanea</i>	16
q. <i>Conclusions</i>	16
 CHAPTER II. OTHER FINDS OF THE MEDIAN PERIOD	 22
1. INTRODUCTION	22
2. SEALS AND SEALINGS	24
3. METAL OBJECTS	26
a. <i>Tools</i>	26
b. <i>Arrowheads/lanceheads</i>	26
c. <i>Fibulae</i>	29
d. <i>Pins</i>	30
e. <i>Earrings</i>	31
f. <i>Beads</i>	31
g. <i>'Buttons' and bosses</i>	32
h. <i>Pazuzu head</i>	33
i. <i>Spatula</i>	34
j. <i>Kohl stick</i>	34
k. <i>Miscellanea</i>	35
4. CLAY OBJECTS	36
a. <i>Figurines</i>	36
b. <i>Spindle-whorls</i>	37
c. <i>Loomweights</i>	38
d. <i>Macehead</i>	40
e. <i>Sling-bullets</i>	40
f. <i>Beads</i>	41
g. <i>Mortar(?)</i>	41
h. <i>Discs</i>	41

	Page
5. OBJECTS OF GLASS AND FAIENCE	42
a. <i>Vessel</i>	42
b. <i>Pendant</i>	42
c. <i>Decorative boss</i>	42
d. <i>Beads</i>	42
6. BONE OBJECTS	43
a. <i>Tools</i>	43
b. <i>'Spatulae'</i>	44
c. <i>Spindle-whorls</i>	45
d. <i>'Tally-bones'</i>	46
e. <i>Toggles</i>	46
f. <i>Pyxis</i>	47
g. <i>Inlay panels</i>	47
h. <i>Cheekpiece</i>	47
i. <i>Huckle-bones</i>	48
j. <i>Miscellanea</i>	49
7. STONE OBJECTS	49
a. <i>Blades</i>	49
b. <i>Spindle-whorls</i>	49
c. <i>Mortars</i>	49
d. <i>Beads</i>	50
e. <i>Pendants</i>	50
f. <i>Miscellanea</i>	50
CHAPTER III. FINDS OF THE PARTHIAN PERIOD	51
a. <i>Introduction</i>	51
b. <i>Metal Objects</i>	51
c. <i>Clay Objects</i>	52
d. <i>Objects of glass and faience</i>	53
e. <i>Objects of bone and shell</i>	53
f. <i>Stone Objects</i>	54
CHAPTER IV. UNSTRATIFIED AND SURFACE FINDS	55
a. <i>Introduction</i>	55
b. <i>Metal Objects</i>	55
c. <i>Clay Objects</i>	56
d. <i>Objects of glass and faience</i>	56
e. <i>Objects of bone and shell</i>	56
f. <i>Stone Objects</i>	56
APPENDIX I. ANALYSES OF SILVER OBJECTS by M. J. Hughes	58
APPENDIX II. THE SILVER WIRE JEWELLERY by W. A. Oddy.	61
CONCORDANCE OF EXCAVATION AND CATALOGUE NUMBERS	62
BIBLIOGRAPHY	65
LIST OF ABBREVIATIONS	71

INTRODUCTION

This, the first published fascicule of the Final Report on the excavations at Tepe Nush-i Jan, in Western Iran, offers a description of the objects found in the Median and Parthian periods. It describes in succession the silver hoard discovered in the first season, the balance of the finds of Median date, the finds of Parthian date and those objects that were either unstratified or found on the surface. Also included are two Appendices: the first on the purity (or fineness) of the objects from the silver hoard and the second on the methods that were used to produce the silver wire contained in the jewellery from the hoard.

The excavations at Tepe Nush-i Jan were sponsored by the British Institute of Persian Studies and were conducted over a period of five seasons between 1967 and 1977.¹ A full list of those institutions which supported the work and of those volunteers who took part in the excavations will appear in fascicule I of the Final Report. Nevertheless, it is only fitting in these pages to acknowledge the major assistance extended to the Expedition by the British Academy, the British Museum, the Ashmolean Museum, the Metropolitan Museum of Art, New York, and the Institute itself. In addition, these remarks cannot omit to mention five individuals: Warwick Ball, John Curtis, Rosalind Caldecott (Howell), Michael Roaf and Ruth Stronach, whose combined skills and experience made an inestimable contribution to the conduct of the work.

For permission to excavate at Tepe Nush-i Jan the Institute is much indebted to the Ministry of Culture and Arts. A further debt for aid of many kinds is owed to Mr. A. Pourmand, former Director-General of the Iranian Archaeological Service, and to Dr. Firouz Bagherzadeh, former Director of the Iranian Centre for Archaeological Research, as also to three other colleagues of long standing: Professor Ezzatullah Negahban, Mr. B. A. Shirazi and Mr. S. M. Khorramabadi. Those members of the Expedition who also served as representatives of the Archaeological Service – or of the Centre for Archaeological Research – included Ali Akbar Sarfaraz, in 1967, Manuchihr Imani, in 1970, Mohammad Zomorodian, in both 1973 and 1974, and Vesta Curtis (Sarkhosh), in 1977.

It should perhaps be stressed at the outset that the publication of the present fascicule of the Final Report is not indicative of a belief that nothing more remains to be done at Tepe Nush-i Jan. It would be difficult to defend a need for anything less than two further seasons at the site. At the same time, however, practical considerations must be said to weigh against any attendance on such 'final results', and it would seem to be preferable, especially given the generous determination of the British Institute of Persian Studies to meet the cost of this and three other fascicules, to begin to publish the results that are to hand.

It is a matter for gratification, therefore, that Dr. John Curtis, Assistant Keeper in the Department of Western Asiatic Antiquities at the British Museum, and for three seasons the Expedition Registrar, as well as an Area Supervisor at Tepe Nush-i Jan, has been able to provide the present finely written, comprehensive account of the small objects. The Expedition is further indebted to the British Museum for the range of assistance provided by the staff of the Museum's Research Laboratory, and in particular for the Appendices contributed by Dr. M. J. Hughes and Mr. Andrew Oddy.

The original field drawings of the individual items in the silver hoard were made by Susan Bird, and these were subsequently prepared for publication by Ann Searight-Macdonald and Max Oliver. Other drawings of objects from the early seasons are owed to Romayne Dawnay, while most of the remaining drawings – including both those made in the field and those prepared for publication – are the work of Rosalind Caldecott, to whom special thanks are due. Photographs of the objects are owed to various members of the expedition, but most notably to Georgina Herrmann and David Fleming.

¹ For the main preliminary reports on the excavations at Tepe Nush-i Jan, see D. Stronach 1969, M. Roaf and D. Stronach 1973, and D. Stronach and M. Roaf 1978. A full bibliography on Nush-i Jan is given in D. Stronach and M. Roaf 1979, 1, n. 2. To this list should be added D. Stronach 1977, 1979, 1981 and D. Stronach forthcoming, and M. Kylo and R. Hubbard 1981.

Part of the material contained in this fascicule was prepared for publication in the summer of 1979, during an eight-week study season held at Wolfson College, Oxford. It is a particular pleasure in this context to record our debt to the President and Fellows of Wolfson College, as also our gratitude, for help of every kind from the first season onwards, to Mrs. M. E. Gueritz, the Assistant Secretary of the British Institute of Persian Studies.

Last, but by no means least, I am more than grateful to Mrs. Vesta Curtis, co-editor of *Iran*, for kindly agreeing to act as the editor of the fascicules of this Final Report.

* * *

This Introduction would not be complete without more specific reference to the text which follows. In his treatment of the silver hoard John Curtis gives a full account of the unexpectedly varied chronological links of the objects that make up the collection. These same indications suggest that, while most of the objects could be contemporary with the deposition of the hoard c. 600 B.C., such items as the double and quadruple spiral beads were perhaps fifteen hundred years old before they came to be interred.²

At the extant parallels make plain, the double spiral pendants in particular have to be thought of as objects that either date back to the 3rd millennium B.C. or as products of a later period that are representative of a long surviving, if elusive, tradition. In what must necessarily be no more than a matter of opinion, it is my own inclination to part company with the view offered in the main text and to find for the second of these two alternatives. In support of this position it would seem to be a lively possibility, even on the evidence shown, that quadruple spiral beads (necessarily the type of bead most closely related to the double spiral bead) were produced at various sites in Iran down to the early 1st millennium B.C.³ Moreover, it must be counted as improbable that so many fragile objects of precious metal should have remained in circulation for well over a dozen centuries and that certain of the quadruple spiral beads should even appear to have come, just possibly, from the same original strings.⁴

The chief significance of the 7th century B.C. hoard from Tepe Nush-i Jan is not to be found, however, in the light that it conceivably throws on the late survival, within Iran, of certain long-lived forms of jewellery. As Dr. A. D. H. Bivar, himself a member of the Expedition in 1967, was the first to insist without equivocation (Bivar 1971), this striking collection of bar ingots, spiral rings, 'cut silver' and silver jewellery of different kinds was strictly intended to meet a monetary function. Such bulk silver was seen to stand within a Near Eastern monetary tradition in which silver in various forms – long before the invention of coin – had regularly provided a medium of exchange. In short, this single well stratified hoard from pre-Achaemenid Iran makes it possible to conclude – in line with other supporting evidence – that the earlier traditional currencies of Babylonia and Assyria were passed on to the Iranian kingdoms of the Medes and the Achaemenids, most notably in the form of bar currency (Bivar 1982), and that, against prior expectation, the entire region or Iran and its borderlands now deserves to be counted, in the centuries before Alexander, as a fresh field for numismatic research (Bivar 1982, 59).

Of further interest is Curtis' suggestion that the hoard may constitute part of an original 'temple treasure' from Nush-i Jan such as came to be hidden by the local priests during the final phases of the site's closure.⁵ While the monetary character of the hoard probably offers no obstacle to such an interpretation, it does go against expectation to suppose that the measured processes of closure would have been accompanied by a belated, spur-of-the-moment decision to place a significant collection of precious goods beneath the slim protection of a single incomplete brick. If we think of the payments in silver that were later made to workers at Persepolis (Cameron 1965, 172–3, 182–5), it is not inconceivable that there could have been occasion, in the course of the extensive

² See p. 17 below.

³ For full references to the Iron Age beads from Hasanlu, see p. 5 below.

⁴ Cf. p. 6 below.

⁵ P. 20, below.

filling operations, to bring bulk silver up to the mound – and of course we can only speculate as to the manner in which some official, or member of the work force, might then have found a fleeting opportunity to hide the bronze bowl and its silver contents in the manner described.

If the single earring and the various spiraliform beads from the silver hoard do little to illustrate any special character that Median art may have possessed, it can only be said that the same observation holds true for the few well preserved seals that have been found. Whether or not they should all be taken to be of more or less local manufacture,⁶ they unquestionably exhibit designs that find their origins in Assyria or in regions still further to the west. Even the Pazuzu head from Nush-i Jan (pl. XIII), which has been claimed as one of the few extant examples of Median art (Calmeyer 1974, 114–16), is obviously no more than a competent reproduction of a contemporary type of pendant from Assyria, if, in fact, it is not an import from this same quarter.

It is clearly beyond the scope of these few lines to enter into any exhaustive review of what might have been expected of the Medes in artistic terms, at least in the few short years of their pre-eminence in Western Asia. But before the dearth of arresting objects of artistic merit from the ‘Median’ levels of Godin Tepe, Tepe Nush-i Jan and Baba Jan Tepe should be made too much of, it deserves to be underlined that ancient Ecbatana, much the most likely source for objects of this kind, remains largely unexplored in scientific terms.

With reference to the objects encountered at Nush-i Jan itself, it is only appropriate to recall that the site’s several monumental buildings were far from being destroyed with their original contents still in place. Instead, a number of the principal buildings were carefully and deliberately closed. For this same reason many of the small finds from Nush-i Jan come from the immediately subsequent squatters’ occupation – and by this same token such finds are perhaps less distinguished than they might otherwise have been.

There is an attractive bonus to be derived all the same from the brief existence of the squatter occupation, in as much as it throws considerable light on the character and economy of a late Median village: a village which, as the excavations have shown, was at least in part ‘a centre of textile-weaving’.⁷

The date of the squatter settlement could be said to remain a little less firmly fixed than is indicated in the text below, where it is ascribed to the years 650–575 B.C.⁸ There is probably every reason, it should be stressed, to endorse John Curtis’ suggestion that the squatter settlement was occupied for three generations not two,⁹ but whether its effective life began in 650, 625 or 600 B.C. is something that, on the evidence available to date, still eludes absolute resolution. The issue is not without some relevance, of course, where the political, and perhaps also the religious, history of Western Iran is concerned. In particular, it would seem not unlikely that the exceptional measures that came to be visited on the Central Temple were a response to the dictates of a central authority; and, if this were indeed the case, it would be of real interest to know if such an authority already existed in the heartland of Media in or near 625 B.C., let alone as early as 650 B.C.¹⁰

Finally, the small finds from the Parthian levels at Tepe Nush-i Jan are themselves deserving of notice. Above all, when the testimony of such objects has been added to that of the local pottery and architecture, not to mention that of the faunal and floral samples (Kyllo and Hubbard 1981), it should prove possible to provide a not uninformative picture of a central Zagros village in the still little documented early to middle Parthian period.

David Stronach

⁶ Cf. p. 23 below.

⁷ See, for example, pp. 23 and 45 below.

⁸ P. 22.

⁹ P. 22 below.

¹⁰ Cf. Helm 1981 and Stronach forthcoming.

CHAPTER I. THE SILVER HOARD

a. *Introduction*

Among the small finds from Nush-i Jan, the hoard found at the end of the 1967 season is of particular interest and importance. It consists of numerous items of silver packed into a bronze bowl. This was found in the Fort beneath the floor of the passage leading to Room 23 (i.e. at the south-east corner of Room 24). It had been covered by an incomplete brick. There seems little doubt that the hoard had been deliberately concealed in antiquity, but for what exact reason cannot now be determined. Perhaps the owner, whether individual or corporate, hid it in the face of a hostile attack on the settlement at Nush-i Jan and was unable to recover it. Alternatively, it may be that somebody was looking for a safe place to deposit a valuable hoard of silver, in much the same way as people today sometimes hide money beneath their floorboards. In any event, David Stronach assumes that the Fort had already fallen out of use when the bowl was buried, and that the brick used to conceal it was taken from the debris on the floor (Stronach 1969, 15). In company with the other major buildings of the Median period at Nush-i Jan the main occupation of the Fort is presumed to have come to an end around 650 B.C. (Stronach and Roaf 1978, 10–11). Probably the hoard was buried shortly thereafter, but it is conceivable this could have happened at any time before the squatter occupation at Nush-i Jan finally terminated in about 575 B.C. We must therefore take this latter date as the *terminus ante quem* for the hoard.

Altogether there are 231 objects in the hoard comprising double and quadruple spiral beads or pendants, finger-rings, spiral rings, beads, an earring, a bracelet, bar-ingots and miscellaneous scraps of silver. All were in a remarkably good state of preservation, and although packed tightly together in the bowl could be easily separated. At the time of excavation the relative position of each item was carefully recorded, but there seems to be little significance in the way in which the pieces were packed into the bowl. Some of the more important pieces in this hoard were published by Stronach in his preliminary reports on the 1967 season (Stronach 1968, 1969), and the bulk of the material, excluding only the double and quadruple spiral beads and the earring, has been discussed in an important article by Dr. A. D. H. Bivar (1971) which he entitled 'A hoard of ingot—currency of the Median period from Nūsh-i Jān'. We shall be examining his conclusions in the final section of Chapter I. To facilitate discussion of the various elements in the hoard the items have been divided into groups each of which has been accorded a separate section. I should stress here, though, that I did not have an opportunity to examine the hoard material at first hand. Consequently I have been heavily dependent on the basic study by Bivar, although the divisions adopted here are to a certain extent different from his. For example, Bivar's section C ('cut-silver') has been subdivided into five groups in an effort to convey as precisely as possible the nature of the silver fragments. Of course this should in no way be taken as a criticism of Bivar's article, which as I have indicated is fundamental for the study of this hoard.

b. *Bronze bowl*

1. NU 67/166 (pl. II; MMA 69.24.13; Bivar 1971, pl. IIIc) Orig. diam. 16.8 cm., ht. 5.5 cm.

Plain rounded bowls of this sort with no distinctive characteristics merit little comment, as they are common to a number of different cultures and periods. It is worth remarking, though, that amongst well over 100 near-contemporary bowls found by Layard in Room AB of the North-West Palace at Nimrud in 1849–50, some ten are of the same general type as the Nush-i Jan bowl. These Nimrud bowls are just a little earlier than the date at which the silver hoard was buried, most apparently being of 8th century date.

c. *Double spiral pendants*

2. NU 67/129a (pl. II; IBM; Stronach 1969, pl. VIIIB, bottom; Maxwell-Hyslop 1971, pl. 252, 3rd from top) Complete, w. 5.0 cm., ht. 2.8 cm.

3. NU 67/136a (pl. II, fig. 2; BM 135077; Stronach 1968, fig. 7, top; 1969, pl. VIIIa, top; Maxwell-Hyslop 1971, pl. 252, top; Tait 1976, fig. 84, top right) Complete, w. 4.38 cm., ht. 2.32 cm., wt. 8.1 g. For analysis see appendix I.
4. NU 67/151a (pl. II; IBM; Stronach 1969, pl. VIIIb, top; Maxwell-Hyslop 1971, pl. 252, 2nd from top) Complete, w. 4.5 cm.
5. NU 67/159 (p. II; MMA 69.24.1; Stronach 1968, fig. 7, bottom; 1969, pl. VIIIa, bottom; Maxwell-Hyslop 1971, pl. 252, bottom) Complete, w. 5.2 cm., ht. 3.0 cm.

All four of these silver pendants have a horizontal sleeve for suspension at the top and a twisted wire stem with spirals on either side. In overall width they vary from 4.38 cm. to 5.2 cm. Each appears to have been hammered out of a single piece of metal, as no seams or joins can be detected in the horizontal sleeves. It is clear that the wire of the spirals was made by hammering, and was subsequently smoothed probably by being pulled through sand (see appendix II).

Double spiral pendants are of considerable antiquity, with one example dating from the Early Uruk period. This is a copper pendant of double spiral type with a ring for suspension at the top of the stem found in a level XI grave at Tepe Gawra (Tobler 1950, pl. CVII:51). In the historical period such pendants had a wide distribution. From IIIB and IIIC contexts at Tepe Hissar are pendants in silver and copper (?) which closely resemble the Nush-i Jan examples with horizontal sleeves at the top of the stem (Schmidt 1937, pls. LIV: H4326; LV: H3609, H2389). Hissar IIIB may be regarded as approximately contemporary with the Early Dynastic Period in Mesopotamia and IIIC contemporary with the Akkadian/Ur III periods with a terminal date of *c.* 1841 ± 65 B.C. (Bovington *et al.* 1974, 198). Also from level IIIB at Hissar is another type of double spiral ornament, a pendant made from a single length of wire with an omega-shaped loop between the spirals (Schmidt 1937, pl. LIV: H4333). Double spiral pendants may also be represented in Hissar II (*c.* 1st half of 3rd millennium B.C.) (Schmidt 1937, pl. XXX: H2982, H2659), but these examples are poorly preserved and it is not clear from the published drawings whether they originally had provision for suspension at the top of the stems. The same applies to a pendant from Tureng Tepe (Deshayes 1966, pl. III: 8) which comes from a context thought by the excavator to be contemporary with Hissar IC–IIA (*ibid.*, 3). At Ur, double spiral pendants in gold were found in the Royal Cemetery, in graves dated to the Early Dynastic Period (Maxwell-Hyslop 1971, col. pl. B. opp. p. 78 and pl. 22; BM nos. 121426, 122431 respectively). Another example in silver is now in the British Museum (BM 118601), but its exact find-spot at Ur is unknown. Apart from being much smaller than the Nush-i Jan examples, however – the Ur pendants vary in width between 1.6 cm. and 2.27 cm. – they are also different in form. Thus, two of them are made from a long piece of wire with the hole in the topmost twist of the stem serving as the suspension loop. The third is again made exclusively from wire and has two sleeves at the top, one above the other, made from coiled-round wire. At Ashur, double spirals in precious metal, from the Middle Assyrian tomb no. 45, form the centrepieces of elaborate ornaments (Haller 1954, pls. 34–35). By far the commonest type of double spiral pendant, though, is the variety with omega-shaped loop of which one was found at Hissar. Elsewhere in Iran, examples have been found at Tepe Giyan (Herzfeld 1941, 148, pl. XXX). This form enjoyed a wide distribution,¹ and is particularly well represented from sites in the Caucasus (eg. Schaeffer 1948, figs. 275, 277, 301; Uvarov 1900, *passim*; Tekhov 1977, *passim*). Sometimes the top of the loop is bent forward to make a hook. Of particular interest is a mould from Kouyunjik which has a matrix for making looped pendants of this type (Layard 1853a, 597, fig.) The existence on the same mould of a matrix for making amuletic plaques showing Lamashtu, perhaps lends support to Frankfort's suggestion (1944) that the double spiral pendant was to ward off evil spirits during pregnancy and childbirth.

It emerges that the only double spiral pendants directly comparable to the Nush-i Jan examples are those with the horizontal sleeves from Tepe Hissar. Not only are they similar in style and manufacture but also in size – they are between 4.0 cm. and 6.6 cm. in width. They differ from our examples only in that they do not appear to have twisted stems. In the absence of further

¹ For references see Herzfeld 1941, 148; Maxwell-Hyslop 1953, 78; Garbini 1960, 325.

parallels, then, we are obliged to conclude either that the Nush-i Jan pendants are contemporary with the Tepe Hissar pieces or that they are the products of a long-surviving tradition, not so far attested elsewhere. Of these alternatives, the first appears to me to be the more likely, especially as we have argued below (p. 6) that the quadruple spiral beads are also much earlier than the Median period. I am not necessarily implying that the beads were in current usage for more than 1000 years; they could, for example, have been found in ancient graves during the 8th or 7th centuries B.C. In any case, the presence of much earlier material in a hoard is not necessarily surprising, as it is quite a common phenomenon in the archaeological record. Two instances may be cited to demonstrate this. The first is at Thebes in Greece, where nearly 40 Western Asiatic cylinder seals in lapis lazuli, ranging in date from the mid-3rd millennium B.C. onwards, were found with other treasure in a Mycenaean building that was destroyed in the 13th century B.C. (Porada 1981). Similarly, a bead-maker's hoard at Babylon, buried in the Hellenistic or Parthian periods, included two inscribed cylinder seals of 9th and 7th century date respectively (Koldewey 1914, 220–2).² The single analysis that has been carried out (on no. 3) does not help in determining whether the double spiral pendants are of different date to other items in the hoard. The silver content (96.2%) is much higher than that of the two ingots analysed (nos. 92–3), but is comparable with one of the silver lumps (no. 132).

There is conflicting evidence about how such double spiral pendants were worn. Thus, there are two bronze figurines, unprovenanced but presumed to be from Syria, of a seated goddess wearing a necklace with a single double spiral pendant suspended from it and resting on the chest. Negbi (1976, 93, pls. 47–8) dates these figures to the 14th–13th centuries B.C. By contrast, modern ethnographic parallels show a different picture. Frankfort (1944) refers to a modern Egyptian practice in which pregnant women sometimes have wire spirals (with loops) tied to their bodies. In Sumatra such pendants may be found fixed to the upper part of the ear (Uvarov 1900, 367, fig. 300), and a leather headdress in the Königsberg (Kaliningrad) Museum, of unspecified origin, has double spiral pendants hanging around the edge (Uvarov 1900, 63, fig. 57). However the Nush-i Jan pendants, with their horizontal sleeves, were clearly intended to hang from a string which we may reasonably assume to have been a necklace.

d. *Quadruple spiral beads*

- | | | |
|-----|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6. | NU 67/108A | (pl. III; MMA 69.24.4; Stronach 1968, fig. 8, top left; 1969, pl. IXa, left) Complete, w. 2.7 cm., ht. 2.6 cm. |
| 7. | NU 67/108B | (pl. III; MMA 69.24.3; Stronach 1968, fig. 8, bottom left; 1969, pl. IXa, right) Complete, w. 2.7 cm., ht. 2.6 cm. |
| 8. | NU 67/108C | (pl. III, fig. 2; BM 135072; Stronach 1968, fig. 8, 3rd row, left; 1969, pl. IXa, centre; Tait 1976, fig. 84, top left) Complete, w. 2.55 cm., ht. 2.55 cm. wt. 3.8 g. For analysis see appendix I. |
| 9. | NU 67/113A | (pl. III; IBM; Stronach 1968, fig. 8, 3rd row, right) Complete, w. 2.45 cm., ht. 2.5 cm. |
| 10. | NU 67/113B | (pl. III; IBM; Stronach 1968, fig. 8, 2nd row, right) Complete, w. 2.55 cm., ht. 2.6 cm. |
| 11. | NU 67/113C | (pl. III; IBM) Complete, w. 2.97 cm., ht. 3.18 cm. |
| 12. | NU 67/113D | (pl. III; IBM) Complete, w. 2.97 cm., ht. 3.07 cm. |
| 13. | NU 67/113E | (pl. III; IBM) Complete, w. 3.18 cm., ht. 3.26 cm. |
| 14. | NU 67/115 | (pl. III; IBM; Stronach 1968, fig. 8, bottom right) Complete, w. 2.3 cm., ht. 2.55 cm. |
| 15. | NU 67/119 | (pl. III; IBM) Complete, w. 2.9 cm., ht. 3.2 cm. |
| 16. | NU 67/122A | (pl. III; IBM; Stronach 1968, fig. 8, 2nd row, left) Complete, w. 2.4 cm., ht. 2.55 cm. |
| 17. | NU 67/125A | (pl. III; IBM) Complete, w. c. 3.0 cm., ht. c. 3.0 cm. |
| 18. | NU 67/129B | (pl. II; IBM; Stronach 1969, pl. VIIIb, bottom; Maxwell-Hyslop 1971, pl. 252, 3rd from top) Complete, w. 2.34 cm., ht. 2.1 cm. |

² I am indebted to Dr. P. R. S. Moorey for these references.

19. NU 67/149A (pl. III; MMA 69.24.2) Complete, w. 2.0 cm., ht. 2.2 cm.
 20. NU 67/149B (pl. III; BM 135079–81; Stronach 1968, fig. 8, top right; Tait 1976, fig 84, middle row right, plus 2 spirals in lower row) Complete, w. 2.7 cm., ht. 2.95 cm., wt. 4.5 g. For analysis see appendix I.
 21. NU 67/149C (pl. III) Complete, w. 2.35 cm., ht. 2.3 cm.
 22. NU 67/156B (pl. III) Complete, w. (distorted) 3.35 cm., ht. 2.65 cm.
 23. NU 67/160 (fig. 2) Complete, w. c. 2.35 cm., ht. c. 2.4 cm.
 24. NU 67/156D (pl. III) Missing one spiral, otherwise complete, w. 2.8 cm., ht. 2.6 cm.
 25. NU 67/103 (fig. 2) Central tubular part and 2 coils only preserved, w. 2.35 cm.
 26. NU 67/151B (IBM) Central tubular part and one coil only preserved, diam. 1.2 cm.
 27. NU 67/165D (IBM) Central tubular part only, L. 1.6 cm.
 28. NU 67/96 Single coil only, diam. 1.15 cm.
 29. NU 67/101B Single coil only, diam. c. 1.0 cm.
 30. NU 67/104 (IBM) Single coil only, diam. c. 1.1 cm.
 31. NU 67/122B (IBM) Single coil only, diam. 1.1 cm.
 32. NU 67/122C (IBM) Single coil only, diam. 1.0 cm.
 33. NU 67/136B (BM 135078; Tait 1976, fig. 84, middle row, left) Single coil only, diam. 1.3 cm., wt. 1.1 g. For analysis see appendix I.
 34. NU 67/165A (IBM) Single coil only, diam. 1.15 cm.
 35. NU 67/165E (IBM) Single coil only, diam. 1.1 cm.

Quadruple spiral beads in silver are well represented amongst the hoard, with 18 complete examples and incomplete pieces and fragments representing at least five more. They vary in size from around 2 cm. in width to a little over 3 cm. All are manufactured in the same way from a single piece of metal, with the spirals being drawn out of the central tube. The central tube generally has a seam running along its length on one side. As with the double spiral pendants, the wire of the spirals has undoubtedly been produced by hammering (see appendix II).

The quadruple spiral beads from Western Asia have been gathered together in a recent article which usefully illustrates most of the known examples (Huot, Pardo and Rougeulle 1980). A survey of them seems to show that they fall into two distinct chronological groups which, as we shall see, also have some typological significance. The first group is represented by beads from Ashur (Haller 1954, 10, pl. 10a: 19 gold beads), Tell Brak (Mallowan 1974, 171, fig. 19: 1 silver bead), Selenkahiye (Van Loon 1977–78, 167, pl. 7: 1 silver bead), Alaca Hüyük (Arik 1937, pl. CCXLIX; Koşay 1944, pl. CIX: 12, 26; 1951, pl. CCVI: 14 gold beads), Kültepe (Özgüç and Akok 1958, 58, n. 68, pl. XIX: 8: 1 gold bead), Troy (Maxwell-Hyslop 1971, pl. 39, fig. 37b; Schliemann 1880, 489: nos. 836, 838; 490, no. 853; 501, no. 909: gold examples), and Poliochni on Lemnos (Brea 1957, 198, fig. 8: half of a gold bead).³ The beads from Troy, Poliochni and Alaca Hüyük all come from contexts which Easton, in a recent article, believes to be more or less contemporary and which he places on the basis of calibrated radio-carbon dates in the period c. 2700–2500 B.C. (Easton 1976, 162–3). Other scholars, however, would prefer much later dates: Calmeyer, for example, places Troy IIg (the level with which the beads should probably be associated) in the century and a half preceding Hammurabi (1977, 96). Huot (1980, 126) steers a median course and proposes bracket dates (which we shall follow here) of 2300–2100 B.C. for the beads from these three sites. The Brak bead was found in a pot buried beneath the floor of an Akkadian or Ur III house, and the Kültepe example comes from a child's grave associated with Karum level II which came to an end c. 1840 B.C. (Larsen 1976, 366). The Selenkahiye bead comes from a tomb of phase IV which its excavator suggests might have been destroyed at about the same time as the fall of the Ur III empire (c. 2004 B.C.) (Van Loon 1977–78, 172). Fortunately the

³We shall restrict ourselves to quadruple spiral beads made from gold or silver, and not discuss related forms such as the frit bead with gold overlay with Marlik (Negahban 1964, pl. III) or the frit beads and gold pendants from Ur (Maxwell-Hyslop 1971, 193, fig. 114, pls. 9–10). A bronze quadruple spiral plaque from period VIA (Early Bronze I) at Arslantepe, thought to be a buckle, is much larger and of a different form to the beads listed above (Palmieri 1981, 107, 109, fig. 3:5). Maxwell-Hyslop's reference to a quadruple spiral bead from Lothal (1971, 34), repeated by Huot (1980, 123, no. 13), is due to a misunderstanding: the bead illustrated by Durrani (1962, pl. XII: 14) is in fact from Troy.

Ashur beads come from a grave (no. 20) which can be quite well dated by virtue of the fact that there were three cylinder seals among the grave-goods (Calmeyer 1977, 88, figs. 2a–c). In general terms these indicate a date in the early part of the Old Assyrian period, but more precisely one of them (fig. 2d) may be compared with seals from Karum level II at Kültepe. An unpublished bead from a tumulus on Bahrain is listed by Huot (1980, 121, no. 2 and n. 5); it is ascribed to the period c. 2100–1800 B.C. Thus, for our first chronological group we have outside limits of c. 2400 B.C. and c. 1840 B.C. Except for the Kültepe example and a few of the beads from Troy (Schliemann 1880, 501, no. 909), all the beads in this group appear to have been manufactured in the same way, namely hammered from a single piece of silver. The exceptions just referred to are made up from a central cylindrical tube to which on either side are applied strips of metal hammered into a double spiral shape.

The second chronological group includes beads from Marlik (Negahban 1964, pl. VIc: 6 gold beads), Hasanlu (Hakemi and Rad 1950, fig. 43; Maxwell-Hyslop 1971, 181, pl. 136: 4 gold beads), Babylon (Reuther 1926, I, 19, 179, fig. 14a, II, pl. 55e: 6 gold beads), Larsa (Huot *et al.* 1978, 193, 218, fig. 13a, pl. V: 4: 1 gold bead), Mari (Parrot 1937, pl. XV: 12 gold beads), Veri in Russian Talish (de Morgan, J., 1896, 81, 83, fig. 85:12: 1 gold, 1 bronze bead), and from a kurgan at Lchashen on the shores of Lake Sevan in Armenia (Mnatsakanyan 1957, 151, fig. 11; Culican 1964, 38, fig. 1).⁴ At Babylon the beads were found in tomb 26 which Reuther regarded as Kassite, an attribution borne out by the presence in this tomb of an undoubtedly Kassite cylinder seal (Moortgat 1940, no. 557). The Mari beads come from one of the so-called Assyrian graves which Parrot dates to the 14th–13th centuries B.C. Although Huot says the Larsa example is ‘mal datée’, it was found between the bricks of a pavement provisionally attributed to Adad-apla-iddina (1068–1047 B.C.) suggesting that it is contemporary with or a little earlier than that monarch. The necropolis at Veri in Russian Talish covers a number of different periods, but the gold bead is attributed by Schaeffer to Late Talish 2–3, which he dates 1450–1200 B.C. (Schaeffer 1948, fig. 227: 39). Moorey, however, believes that in most cases Schaeffer’s dates are about two centuries too high (Moorey 1971, 24). The contents of the Lchashen kurgan, including daggers with distinctive open-work scabbards, are dated by Martirosyan to the 13th–12th centuries. The outside limits so far, then, for group 2 are c. 1350–1050 B.C., a timespan into which the Marlik tomb containing the quadruple spiral beads can be very conveniently fitted (Maxwell-Hyslop 1971, 192–3). The Hasanlu beads⁵ come from the excavations of Mahmud Rad in 1947; they were found in a grave on the eastern side of the mound, but we are not told whether there were any associated grave-goods (Hakemi and Rad 1950, 87). It was this area that produced most of the gold and bronze objects found during the 1947 season. According to Rad these rich graves were found opposite the Hasanlu primary-school, more or less in a row parallel to the stream and at a depth of 3 m. (*ibid.*, 18). These graves, and therefore the necklace as well, were dated by Rad to his period III which he terminated in the 8th century B.C. This dating for the necklace (i.e. 9th–8th centuries B.C.) has been followed by Ghirshamn (1963, 26, caption to fig. 27). However, the recent American excavations at Hasanlu have shown that there are graves of Hasanlu periods both IV and V on the east side of the mound (Dyson 1965, 196, 198). There seems no reason to suppose, then, that the necklace should not belong to Hasanlu V (c. 1350–1000 B.C.). Out of these group 2 beads, only one (from Mari) seems to have been made in a similar way to most of the group 1 beads, that is hammered from a single piece of metal. As it is an isolated example, it seems legitimate to regard it as a survivor from an earlier period. All the other group 2 beads are built up from a number of different pieces of metal with in most cases the free ends of the spirals being bound around the central tube in a rather distinctive way. Exceptional here, though, are the Larsa bead which is made up of seven different pieces of gold (Huot *et al.* 1978, 218, fig. 13a) and has small rings fixed to either end of the central tube, and the gold bead from Veri. This is described as ‘composé

⁴ Quadruple spiral beads have been found in Greece, at Mycenae, Englianos (Pylos) and Lakitha on Cephalonia (Higgins 1961, 81–2), ranging in date between the 15th and 12th centuries B.C., but they are not manufactured in the same way as the Western Asiatic examples.

⁵ I am indebted to Vesta Curtis for extracting the following information from the publication of Hakemi and Rad (1950).

de deux feuilles minces estampées et accolées' (de Morgan, J., 1896, 81). By contrast, the bronze bead from Veri, which is not illustrated, is said to be 'se composait de fils soudés enroulés sur eux-mêmes'. A number of unprovenanced quadruple spiral beads showing the characteristics of most of the group 2 examples are known (Maxwell-Hyslop 1971, 192), including three in the Cincinnati Art Museum (Culican 1964, pl. VIIIa). The latter are allegedly from Ziwiye, but if we are right about the date of these beads then this provenance must obviously be viewed with suspicion.

The important conclusion as far as we are concerned here is that quadruple spiral beads made from a single piece of metal, that is with the spirals drawn out of the central tube, all, with just a single exception, belong to the first chronological group dating from the late 3rd to early 2nd millennia B.C. Thus, we are confronted with the problem of whether the Nush-i Jan beads should be assigned to this early date, in which case they would have been around 1500 years old when hidden at Nush-i Jan, or whether they were manufactured around the 7th century B.C. in imitation of very ancient forms. The likelihood must be, in view of the complete lack of comparable examples in the intervening period (with the exception of the solitary example from Mari), that they belong to our first chronological group and, like the double spiral pendants (see p. 3 above), were already of considerable antiquity when buried at Nush-i Jan. Indeed, the possibility that the quadruple spiral beads might be very much older than the 7th century B.C. has also been recognized by Huot (1980, 127). One objection to the theory, however, is that many of the beads in our first chronological group are much smaller than the Nush-i Jan examples. For instance, those from Alaca Hüyük vary in width from 0.9 to 1.6 cm., the bead from Brak measures only 1.0 x 1.0 cm. and those from Ashur and Poliochni are even smaller. Nevertheless, the comparable beads from Troy appear, from Schliemann's sketches, to measure *c.* 2.3 x 2.5 cm. This would indicate then, that our theory, while not necessarily probable, is at least possible. As with the double spiral pendants, the three analyses that have been done here (nos. 8, 20, 33) do not help us to settle the question. It is interesting to note, though, that two of the beads (8 and 20) have sufficiently similar compositions to show that they are products of the same batch.

Although we possess, as far as I know, no illustrations from antiquity showing how quadruple spiral beads were worn, it is clear that they must have been strung on a necklace. In cases where quadruple spiral beads have been found together in graves, the excavators have usually reconstructed the necklaces with spiral beads alternating with stones, although of course we do not know whether they had good evidence for doing so. The necklace from Hasanlu, for example, is illustrated with the gold spiral beads separated by beads of various stones including lapis lazuli and agate. An elaborate gold pendant occupies the central position in the necklace (Hakemi and Rad 1950, 86, fig. 43).

Probably, then, the Nush-i Jan beads do not represent a complete necklace or necklaces. It is unlikely in any event that such a large number of beads — at least 23 — belonged to a single necklace. Indeed, we do not know whether the collection was found entirely at random, or whether it represents a specific number of necklaces. Nevertheless, it is worth remarking that some of the beads do fall into groups that indicate they might have belonged together. Thus, nos. 6, 7 and 20 are all exactly 2.7 cm. in width, nos. 18, 21 and 23 vary only between 2.34 and 2.35 cms., nos. 11, 12 and 17 vary between 2.97 and 3.0 cm., and nos. 8 and 14 are both 2.55 cm. I do not mean to imply, however, that we are necessarily dealing with four distinct necklaces: even on the same necklace the beads might have been graded according to size, with the largest at the centre and so on.

e. Earring

36. NU 67/139

(p. IV; MMA 69.24.5; Stronach 1968, fig. 9; 1969, pl. IXd) Silver earring with crescentic body supporting a pear-shaped pendant comprised of hollow balls of silver soldered together, with delicate granulation work filling the interstices. The holder at the top of the earring is now much twisted. Overall ht. 2.2 cm., w. 0.8 cm.

Maxwell-Hyslop (1978) traces the origin of this type of earring, made up of hollow balls of sheet gold or silver, back to the second half of the 2nd millennium B.C. She cites examples from Babylon which have single gold balls attached to the hoops and gold earrings from a Middle Assyrian grave at Mari. The latter have pendants in the form of a cluster of hollow balls with three small granules fixed to each (Maxwell-Hyslop 1971, 178, pl. 131), but it is not clear whether the balls are really hollow.

From sites in Iran there are a number of examples of earrings constructed from hollow spheres. Two examples in gold were found with a burial of the Iron I period at Dinkha Tepe (Muscarella 1974, 43, fig. 7: 629 T), and there are silver earrings of comparable type from Necropolis B at Sialk (Ghirshman 1939, pl. XCV: S1476b and perhaps pl. XXVII : 8). An earring and a pendant from Marlik (Negahban 1964, figs. 78, col. pl. III) and a pair of earrings from Hasanlu (Hakemi and Rad 1950, fig. 42:1; Maxwell-Hyslop 1971, pl. 135) are also constructed from hollow balls, but the Marlik pieces reproduce pomegranates and the Hasanlu earrings are built up from large numbers of gold balls assembled in the form of inverted triangles. A silver earring from War Kabud in Luristan (Vanden Berghe 1968a, pl. 37b, right), while superficially of the same type, in fact has a pendant made out of small, solid globules.

All of these examples are lacking applied granulation, but two gold earrings from Susa, said to come from Neo-Elamite graves dated to the 8th–7th centuries B.C. *are* decorated with clusters of granulation and are thus closer to the Nush-i Jan example (Maxwell-Hyslop 1971, 228, pl. 211). Similar to the Susa pieces are two gold earrings in the British Museum (BM 90-10-11, 1–2; Maxwell-Hyslop 1971, pl. 212) which are unfortunately unprovenanced. These four earrings are all comparable to the Nush-i Jan example in that they are made out of hollow balls of gold and decorated with granulation work, although the granules are applied in clusters rather than covering the interstices.

Outside Iran, earrings of this type generally occur in late contexts. Thus, they are apparently not depicted on the Assyrian reliefs, nor do they seem to be represented amongst the surviving collections of Late Assyrian jewellery, such as those from Ashur (Jakob-Rost 1962) or from Nimrud (Curtis and Maxwell-Hyslop 1971). In the post-Assyrian period, however, examples become more numerous. We may cite plain examples without granulation from Lachish (Shea and Maxwell-Hyslop 1979), where one was found in the ‘great shaft’ and is probably to be dated either after Sennacherib’s destruction of the town in 701 B.C. or, more probably, after that of Nebuchadnezzar in 597 B.C., from the Achaemenid period at Deve Hüyük (Moorey 1980, fig. 13: 301–2), from late tombs at Tell Farah (Petrie 1932, pl. XLVIII: 572–3; Maxwell-Hyslop 1978), and from a 5th century hoard reputedly found in the Hauran area of the Jordanian–Syrian border (Kraay and Moorey 1969, pl. XXII : 131). An unpublished example in the British Museum (BM 80-11-12, 2103) comes from Babylon, and probably dates from the Neo-Babylonian period.

Two earrings of particular interest here, in that they have applied granulation work, are another from the Hauran hoard (Kraay and Moorey 1969, pl. XXII : 134) and an earring from Kamid el-Loz in the Lebanon made of silver balls with granulation in the interstices (Poppa 1978, pl. 5:10). This piece is especially close to the Nush-i Jan earring. It was found in a grave together with silver coins which can be dated to the early 4th century B.C. (Poppa 1978, 70, pl. 5 : 1–3).

The evidence seems to suggest, then, that the closest parallels to the Nush-i Jan earring range in date between the 8th–7th centuries (the Susa examples) and the 4th century B.C. (the Kamid el-Loz earring). In short, it emerges that our earring must be more or less contemporary with the burial of the hoard.

f. *Finger-rings*

37. NU 67/141

(pl. IV; IBM; Bivar 1971, no. C12, pl. IV) Spiral ring with wide, flat central band flanked by narrower bands. Apparently constructed from a single rod of silver. Diam. 2.0 cm., wt. 6.0 g.

38. NU 67/145 (pl. IV, fig. 2; BM 135085; Bivar 1971, no. C5) Ring made from sheet silver with abutting ends. Wide band decorated with 3 horizontal grooves and, at one end, 2 vertical grooves. Diam. 2.45 cm., w. 1.85 cm., wt. 17.88 g. For analysis see appendix I.

Unless they are found in graves and their relationship to the skeleton is clear, it is often difficult to positively identify finger-rings. This applies particularly to rings which are circular in section. On the other hand it is generally safe to assume that rings of appropriate size with wide flat bands were indeed worn on the finger. In the present case, therefore, we may certainly concur with Bivar's identification of nos. 37–8 as finger-rings (Bivar 1971, 103). It is clear from the Late Assyrian graves at Ashur that the wearing of finger-rings was a common practice in the first half of the 1st millennium B.C.; altogether nearly a hundred were found, mostly in silver or bronze (Haller 1954, *passim*).

g. Bracelet

39. NU 67/158 (pl. IV, fig. 2; IBM; Bivar 1971, no. C2, pl. IV) Open-ended silver bracelet, boat-shaped in section. Diam. 7.5 cm., wt. 90.5 g.

As the maximum internal diameter of this bracelet is only 6.2 cm., we can safely assume that it was meant to be worn on the wrist rather than the upper arm or ankle. As this bracelet had undecorated terminals and is otherwise quite plain, no significant comment can be made about its date or the distribution of the type.

h. Spiral rings

40. NU 67/97A (pl. V; Bivar 1971, no. C16) Diam. 2.1 cm., wt. 4.85 g.
 41. NU 67/100A (pl. V; IBM; Bivar 1971, no. C13) Diam. 2.1 cm., wt. 5.25 g.
 42. NU 67/100B (IBM; Bivar 1971, no. C36) Diam. 1.2 cm., wt. 0.75 g.
 43. NU 67/101A (pl. V; MMA 69.24.7; Stronach 1968, fig. 11, left; 1969, pl. IXb, right; Bivar 1971, no. C10, pl. IV) Diam. 2.5 cm., wt. 10.0 g.
 44. NU 67/105 (pl. V; IBM; Bivar 1971, no. C23) Diam. 2.0 cm., wt. 2.8 g.
 45. NU 67/107A (pl. V, fig. 2; MMA 1978.93.23; Stronach 1969, pl. IXc; Bivar 1971, no. C3, pl. IV) Diam. 4.2 cm., wt. 33.44 g.
 46. NU 67/110A (pl. V; MMA 69.24.6; Stronach 1968, fig. 11, centre; 1969, pl. IXb; Bivar 1971, no. C8, pl. IV) Diam. 2.5 cm., wt. 11.3 g.
 47. NU 67/110B (pl. V; MMA 69.24.8; Bivar 1971, no. C29) Diam. 1.6 cm., wt. 1.3 g.
 48. NU 67/110C (pl. V; Bivar 1971, no. C32) Diam. 1.5 cm., wt. 0.92 g.
 49. NU 67/111A (pl. V; MMA 69.24.9; Bivar 1971, no. C21) Diam. 1.7 cm., wt. 3.3 g.
 50. NU 67/114 (IBM; Bivar 1971, no. C33) Diam. 1.5 cm., wt. 0.8 g.
 51. NU 67/120A (IBM; Bivar 1971, no. C27) Diam. 1.3 cm., wt. 1.43 g.
 52. NU 67/123 (IBM; Bivar 1971, no. C35) Diam. 1.4 cm., wt. 0.75 g.
 53. NU 67/125B (IBM; Bivar 1971, no. C20) Diam. 2.3 cm., wt. 3.7 g.
 54. NU 67/126 (pl. V, fig. 2; BM 135073; Stronach 1968, fig. 11, right; 1969, pl. IXb, left; Bivar 1971, no. C11) Diam. 2.45 cm., wt. 9.88 g. For analysis see appendix I.
 55. NU 67/128A (pl. VI, fig. 2; IBM; Bivar 1971, no. C9) Diam. 2.4 cm., wt. 10.07 g. When found, this ring had a short length of silver wire securely bound around it.
 56. NU 67/130 (IBM; Bivar 1971, no. C28) Broken into 2 pieces, diam. c. 1.9 cm., wt. 1.4 g.
 57. NU 67/131 (pl. VI; Bivar 1971, no. C22) Diam. 2.2 cm., wt. 3.06 g.
 58. NU 67/134 (pl. VI; IBM; Bivar 1971, no. C7) Diam. 2.5 cm., wt. 12.12 g.
 59. NU 67/137 (pl. VI; IBM; Bivar 1971, no. C17) Diam. 2.0 cm., wt. 4.48 g.
 60. NU 67/144A (pl. VI; IBM; Bivar 1971, no. C25) Diam. 1.4 cm., wt. 1.82 g.
 61. NU 67/144B (pl. VI; IBM; Bivar 1971, nos. B63/C30) Diam. 1.3 cm., wt. 1.19 g.
 62. NU 67/148 (pl. VI; MMA 69.24.10; Bivar 1971, no. C26) Diam. 1.55 cm., wt. 1.6 g.
 63. NU 67/152 (pl. VI; BM 135084; Bivar 1971, no. C18) Diam. 2.0 cm., wt. 4.38 g. For analysis see appendix I.

64. NU 67/164 (pl. VI; Bivar 1971, no. C14) Diam. 2.0 cm., wt. 5.21 g.
 65. NU 67/165C (IBM; Bivar 1971, no. C37) Diam. 1.1 cm., wt. 0.7 g.

A total of 26 coiled silver rings were found with the hoard; they vary in diameter between 1.1 cm. and 4.2 cm., but most commonly they measure between 2.0 cm. and 2.5 cm. Generally they have tapered terminals, and are circular in section. Without having inspected the rings personally I am unable to say which are complete and which not. In general terms, however, it would seem that a good number of the large and medium-sized rings are complete, while some of the smaller ones are obviously not. In at least one instance (e.g. no. 45), one end of the coil appears to have been cut with a chisel, while in other cases the missing part of the coil has been crudely broken away.

Such spiral rings are well known in Western Asia, ranging in date from the 3rd millennium B.C. onwards. At Ur, for example, gold and silver examples have been found in graves of Early Dynastic, Sargonid and Ur III date (Maxwell-Hyslop 1971, 5, 23, 67, pl. 5). At Susa, a bronze spiral ring was recently found in a grave dated to the late 3rd millennium B.C. (Carter 1980, 106, fig. 43), and silver examples are known from tombs at Tepe Giyan and Tepe Jamshidi (Contenau and Ghirshman 1935, pls. 31, 76, 80). Their popularity in the first millennium is attested at Ashur, where at least 46 'Haarringe', either of silver or more commonly bronze, were found in the Late Assyrian graves and tombs (Haller 1954, *passim*). From Iron Age contexts in Iran, spiral rings are known, for example, from Dinkha Tepe, where bronze examples were found in five of the Iron II burials (Muscarella 1974, 86–7), from Tepe Sialk, where graves of Necropolis B contained bronze and silver specimens (Ghirshman 1938–39, II, 56, pl. XCIV: S1384, S1424b), and from Baba Jan where a single bronze example was found (Goff 1978, 56, fig. 14: 15). Elsewhere in Luristan spiral rings in both bronze and silver have been found in a number of cemeteries, such as Bani Surmah (Vanden Berghe 1968b, 57, fig.), Sardant (Vanden Berghe 1973a, 34, figs. 20–1) and Mīr Khair (Vanden Berghe 1979, fig. 18, pl. XI), of 3rd millennium date, and in Iron Age contexts from War Kabūd and Sar Kabūd (Vanden Berghe 1978, figs. 3:4–5, 5:6–7), Bard-i Bal (Vanden Berghe 1971, fig. 35), and Karkhai (Vanden Berghe 1973c, 29, figs. a–b). In the Achaemenid period, gold, silver or bronze spiral rings are known from the Treasury at Persepolis (Schmidt 1957, pl. 45: 32–33), from Deve Hüyük (Moorey 1980, 84, fig. 12: 312–3), and from graves at 'Atlit in Israel (Johns 1933, 53–4, fig. 10, pls. XVII: 408–9, XXV: 643, XXXVI: 980–1).

Until recently it was generally assumed that all the spiral rings of this type were items of jewellery, and they were most commonly identified as hair-rings. In recent years this assumption has been questioned, most notably by Dayton who has suggested (1974, 41) that many of the spiral rings found in archaeological contexts are 'a possible form of money or means of exchange'. In fact, there is textual evidence from the ancient Near East which shows that, during some periods at least, spiral rings, of various metals but particularly silver, were used as a medium of exchange. Sollberger was the first to recognize that the Sumerian word 'ḥar' (Akkadian *šewirum*) mentioned in Sumerian documents of the Ur III period might be currency. He wrote in 1956 (p. 23) – 'The rings in question would be similar to those helicoidal rings well known from North European tombs of the Early Middle Ages. Payments or gifts could be made by cutting off pieces equivalent to the desired amount'. The fullest and most recent treatment of the subject is by Powell (1978), who notes references to 'ḥar' in the Old Akkadian, Ur III, Old Assyrian and Old Babylonian texts. References are particularly numerous in the Ur III period, especially in the Ur metalworking texts. Powell writes (1978, 213) that 'these texts contain no direct reference to the exchange of valuable metals in the form of rings or coils, but notations such as the manufacture of 90 five-shekel silver 'ḥar' from 20 minas make it virtually certain that these objects were designed for the purpose of storing the metal in a convenient form that could be used either for trade by putting it on a balance and weighing it or, by melting it, for manufacturing other items'. Curiously, after the Old Babylonian period Powell has found 'no clear-cut case where "rings" have the primary function of money as opposed to ornamentation' (Powell 1978, 219). That is not to say, though, that they did not continue to be manufactured and disseminated for purposes of exchange thereafter. Because

the texts are silent on this matter, we should not necessarily conclude that the practice did not exist. There is also some iconographic evidence to support the hypothesis that rings had some monetary function, or at least were valued for their bullion content. This comes in the form of Egyptian tomb-paintings, mainly of the 18th Dynasty, which depict metal rings being weighed on a pair of scales. A particularly clear representation is from the tomb of Nebamun and Ipuky at Thebes (Davies 1936, pl. LXII). Although the rings shown seem to be closed rather than spiral, it does prove that small rings were considered a convenient form in which to store, transport, work or exchange precious metal. More evidence for the latter activity comes in the form of one of the Nush-i Jan rings – no. 55 – which had a short length of silver wire deliberately wrapped around it, presumably to bring it up to a required weight.

On the other hand, there are good and valid reasons for supposing that coiled rings of this size and type were sometimes worn as hair-rings. Thus, Woolley (1934, 241) notes that in the Royal Cemetery at Ur coiled rings were often found near the ears of the bodies, but as they often occurred together with earrings they presumably served a different purpose. They were occasionally found in front of the shoulder, suggesting that they held together a lock of hair that hung down to the breast. The spiral ring from Susa referred to above was found on the side of the skull (Carter 1980, 106, fig. 43). At Marlik, a gold spiral ring is said to have been used for holding hair in conjunction with a forehead band (Negahban 1964, 50, fig. 87).⁶ Moorey (1980, 84) points to a terracotta head from Sinjirli (Andrae 1943, pl. 34c) and two limestone statues from Vouni in Cyprus (Gjerstad 1937, pl. LXVI: 1, 3) which show such rings being used for dressing hair over the ear. The rings are shown covering the top part of the ear which has sometimes led to the belief that they are earrings fixed in the upper lobe of the ear, but their interpretation as hair-rings seems more likely.⁷

In fact, these two differing interpretations – coiled rings as either hair-rings or units of exchange – should not necessarily be seen as conflicting. They can be easily reconciled. It is very likely that coiled silver rings were treasured for their monetary value and were sometimes given in exchange. But this does not preclude their having also been ornaments. A comparable situation exists in the Middle East today, where a girl may be given in marriage with gold bangles and so on as part of her dowry. Patty Jo Watson records that at Sirdasht in the Kermanshah region, a girl is given by her father jewellery in addition to bedding and money to decorate her clothing (Watson 1979, 273). The possibility of spiral rings and other items of jewellery having the sort of dual function that we have just described was recognized long ago by H. J. Plenderleith. Discussing material from the Royal Cemetery at Ur, he says: ‘The more of less uniform size of objects such as earrings raises the question whether they could not have been used as a commercial medium with a recognized value’ (in Woolley 1934, 297). Also, he draws attention to the passage in Genesis (Ch. XXIV, v. 22) which describes how Abraham’s servant presented ‘a gold nose-ring weighing half a shekel, and two bracelets for her wrists weighing ten shekels, also of gold’ (*New English Bible*) to Rebecca, the future wife of Isaac. In texts of the Ur III period there is even some evidence for spiral rings (‘ḥar’) being given or presented. Thus Michalowski has gathered together a small number of texts from Drehem in which such rings are given, he believes, as part of a greeting ceremony. He suggests (1978, 8) ‘that the rings were presented to important travellers upon their arrival in a given city’. Clearly, such rings would have been treasured for their monetary value and could also, if appropriate, have been worn.

One question we have not yet touched on is the date of the spiral rings from Nush-i Jan. Owing to the wide range of parallels, however, only a few of which we have noted, nothing definite can be concluded here. The rings could be of 7th century date, but they might equally well be much earlier.

⁶ Three bronze rings from graves ascribed to level II at Tepe Hissar are identified as finger-rings, but they are rather different from our specimens, being made from thin wire tightly coiled six or seven times (Schmidt 1937, pls. XVIII: H3911–2; LIV: H2106).

⁷ But in some present-day primitive societies, such as amongst the Maasai of Kenya and Tanzania, earrings are sometimes suspended from the upper lobe of the ear (Beckwith and Saitoti 1980, *passim*).

i. *Various beads*

- 66–72. NU 67/132 C1–7 (pl. VI) 7 concave biconical silver beads, one of them much distorted. Diam. 0.65–0.8 cm., L. 0.7–0.8 cm.
- 73–4. NU 67/132 D, E (pl. VI) A spherical silver bead, diam. 0.75 cm., and a fragment of another.
75. NU 67/138 A (pl. VI, fig. 2) 2 spherical(?) silver beads, diam. 0.65 cm., threaded onto a length of silver wire which at one end twisted into a coil.
76. NU 67/153 C (pl. VI) A cylindrical silver bead with join along one side, L. 0.85 cm.
77. NU 67/120 F (pl. VI; IBM) Bead in form of a thin strip of silver tightly coiled to produce something resembling a modern spring. L. 1.35 cm.
78. NU 67/132 F (pl. VI) Another, L. 0.65 cm.
- 79–81. NU 67/138 B1–B3 (pl. VI, fig. 2) 3 similar, Ls. 0.55 cm., 0.75 cm., 0.9 cm.
82. NU 67/142 D (pl. VI) Another, L. 0.7 cm.
- 83–4. NU 67/153 A–B 2 similar, Ls. 0.75 cm., 1.0 cm.
85. NU 67/156 C Another, L. 1.4 cm.
86. NU 67/165 B (IBM) Another, L. 1.0 cm.

Biconical and spherical beads in gold or silver are generally made by hammering a layer of foil over a central core, and presumably the Nush-i Jan examples were manufactured in the same way. In the case of the cylindrical bead no. 76, a join may be clearly seen along one side.

Spiraliform beads in metal of this sort were particularly popular in the Talish (de Morgan, H., 1905, figs. 421–9, 582, 660–4; Maxwell-Hyslop 1971, pl. 15a) and in the Caucasus (Chantre 1885–7, II, pl. XXIX; Tekhov 1977, figs. 18, 23, 55, 113; Kozenkova 1977, pls. XIX, XXI, XXIII). In both areas large numbers have been found, either threaded on strings or used as clothing ornaments.

j. *Bar-ingots*

87. NU 67/146 (pl. VII, fig. 2; MMA 69.24.11; Stronach 1968, fig. 10, bottom; 1969, pl. Xa, bottom; Bivar 1971, no. A1, pl. I) Complete, L. 9.2 cm., w. 2.2 cm., wt. 100.7 g.
88. NU 67/155 (pl. VII, fig. 2; IBM; Bivar 1971, no. A2, pl. I) Complete, L. 7.8 cm., w. 1.9 cm., wt. 100.3 g.
89. NU 67/117 (pl. VII, fig. 3; IBM; Bivar 1971, no. A3, pl. I) One end cut away, L. 6.9 cm., w. 0.9 cm., wt. 40.7 g.
90. NU 67/161 (pl. VII, fig. 3; IBM; Bivar 1971, no. A4, pl. I) One end only, L. 3.1 cm., w. 1.6 cm., wt. 24.0 g.
91. NU 67/157B (pl. VII, fig. 3; IBM; Bivar 1971, no. A5, pl. I) Section from middle, L. 2.9 cm., w. 1.5 cm., wt. 23.5 g.
92. NU 67/150B (pl. VII, fig. 3; BM 135083; Stronach 1968, fig. 10, centre; 1969, pl. Xa, centre; Bivar 1971, no. A6, pl. I) Complete, L. 5.35 cm., w. 0.92 cm., wt. 18.31 g. For analysis see appendix I.
93. NU 67/150A (pl. VII, fig. 3; BM 135082; Stronach 1968, fig. 10, top; 1969, pl. Xa, top; Bivar 1971, no. A7, pl. I) One end only, L. 3.6 cm., w. 1.35 cm., wt. 17.58 g. For analysis see appendix I.
94. NU 67/147B (pl. VII; Bivar 1971, no. A8, pl. I) One end only, L. 2.3 cm., w. 2.0 cm., wt. 16.42 g.
95. NU 67/157A (pl. VII, fig. 3; IBM; Bivar 1971, no. A9, pl. I) One end only, L. 4.2 cm., w. 1.5 cm., wt. 13.4 g.
96. NU 67/125C (pl. VII; IBM; Bivar 1971, no. A10, pl. I) Section from middle (?), L. 3.14 cm., w. 0.87 cm., wt. 12.19 g.
97. NU 67/140A (pl. VII; Bivar 1971, no. A11, pl. I) Section from middle, L. 2.12 cm., w. 1.28 cm., wt. 11.51 g.
98. NU 67/163B (pl. VII; IBM; Bivar 1971, no. A12, pl. I) One end only, L. 2.0 cm., w. 1.78 cm., wt. 8.4 g.
99. NU 67/135B (pl. VII; IBM; Bivar 1971, no. A13, pl. I) One end only, L. 1.0 cm., w. 1.4 cm., wt. 3.02 g.

Without having access to the objects themselves, it is obviously difficult to determine whether some pieces of cut-silver derive from ingots or from something else. Consequently, in this and the succeeding section I have closely followed Bivar's classification. Altogether he has identified 13 pieces of silver as bar-ingots or fragments thereof. Three of them are complete, one has its end chopped off, and the remainder are sections cut from the end or middle parts of bars. All the ingots share common features in that they are long and thin with rounded ends. Within this framework, however, they vary considerably in outline-shape and form of section. They range from wide ingots with 'bow-tie' shape to narrow, straight-sided ingots. Sometimes the shape is irregular (e.g. nos. 88, 95). The sections are likewise various, sometimes quite flattened (no. 87) and sometimes almost square (no. 91). Often one surface of the ingot is slightly hollowed out.

These bar-ingots are, of course, secondary castings, made either from melting down ingots produced directly by the smelting operation (primary ingots), which are generally bun or cake-shaped, or from melting down scrap silver. They were probably made in open moulds, either of clay or stone, of the type found at Tell Brak (Mallowan 1947, pl. XXXIX) and Chagar Bazar (Mallowan 1937, pl. XVIII), from the late 3rd and early 2nd millennium B.C. respectively. From the metalworker's point of view, bar-ingots were a convenient form to produce for a number of reasons. They could be easily stored (bronze ingots from Hasanlu were found packed in a bundle), and also easily transported, and pieces could easily be chopped off for manufacturing or for exchange purposes. The universality of bar-ingots may be demonstrated by the occurrence of copper examples in Syria-Palestine dating from the EB IV period, c. 2400–2000 B.C. (references collected by Dever and Tadmor 1976, 174, 176) and by the wide distribution of silver examples in the Late Roman Empire period (e.g. Painter 1972, pl. XXIX a–b). That is not to say that they may necessarily be found in intervening periods or in different areas; it is clear, though, that too much significance should not be attributed to the bar-ingot as a typological form. In Iran, bar-ingots in bronze or copper were found by Stein at Hasanlu, belonging to the so-called 'metal-worker's cache' (Stein 1940, 394–5, pl. XXVI: 3, 4). Some 31 of these are now in the British Museum; they range in length from about 20 to 28 cm., and in width from 1.5 to 2.5 cm. In Mesopotamia, examples of bar-ingots may be noted at Tell Asmar (Powell 1978, pl. IIIb) and Larsa (Arnaud *et al.* 1979, 40, figs. 61 and 63). Closer in form to the Nush-i Jan ingots, and also in date, being just a couple of centuries later, are silver ingots reputedly found with a hoard from the Black Sea area (Kraay and Moorey 1981, pl. 5). Lastly, Bivar has recently published (1982) 38 bar-coins, dating from the 5th–4th centuries B.C., probably part of the hoard found at Mir Zakah in eastern Afghanistan. A number of these bars had been hammered straight in antiquity, but at least three (Bivar 1982, 57, pl. V: 1–2, 4) were manufactured thus and are therefore comparable with the Nush-i Jan ingots. Another of the pieces (*ibid.*, pl. VII: 19) has a 'dog's bone' profile similar to our no. 87, but is smaller.

The two incomplete ingots now in the British Museum (nos. 92–3) have been analysed, and while their silver content is quite similar (90.1% compared to 92.3%) there is considerable variation in the trace elements. Particularly striking is the difference in lead content (0.3% compared to 1.91%), showing clearly that these ingots do not derive from the same casting. It is impossible on the basis of two analyses to make any worthwhile comment about the standardization of silver quality, but the respective silver percentages are perhaps sufficiently close to suggest that a norm was being aimed at.

k. *Lumps of silver*

- | | | |
|------|-----------|--------------------------------------------------------------------------------------------------------------------------|
| 100. | NU 67/97B | (pl. VIII; Bivar 1971, no. B30) Cut lump, with traces of cuneiform inscription on one face, 1.85 x 0.71 cm., wt. 4.63 g. |
| 101. | NU 67/97C | (pl. VIII; Bivar 1971, no. B53) Cut lump, 1.2 x 0.6 cm., wt. 1.51 g. |
| 102. | NU 67/97D | (pl. VIII; Bivar 1971, no. B52) Cut (?) lump, 1.0 x 0.8 cm., wt. 1.54 g. |
| 103. | NU 67/98A | (Bivar 1971, no. B38) Cut lump, 1.4 x 1.1 cm., wt. 3.84 g. |
| 104. | NU 67/98B | (Bivar 1971, no. B8) Lump, wt. 11.14 g. |
| 105. | NU 67/99 | (pl. VIII; IBM; Bivar 1971, no. B14, pl. II) Cut lump, 1.85 x 1.5 cm., wt. 8.51 g. |

106.	NU 67/109	(pl. VIII; IBM; Bivar 1971, no. B1, pl. II) Cut (?) lump, 3.35 x 2.9 cm., wt. 51.43 g.
107.	NU 67/110D	(pl. VIII; Bivar 1971, no. B13, pl. II) Cut lump, 1.85 x 1.6 cm., wt. 9.02 g.
108.	NU 67/111B	(pl. VIII; Bivar 1971, no. B29) Cut lump, 2.0 x 1.0 cm., wt. 4.67 g.
109.	NU 67/112A	(pl. VIII; IBM; Bivar 1971, no. B5, pl. II) 2 cut lumps stuck together, 1.45 x 1.35 cm. and 0.95 x 0.55 cm., total wt. 16.5 g.
110.	NU 67/112B	(pl. VIII; IBM; Bivar 1971, no. B22, pl. II) Cut lump, 2.05 x 1.0 cm., wt. 5.6 g.
111.	NU 67/112C	(pl. VIII; IBM; Bivar 1971, no. B32) Cut lump, 1.0 x 1.0 cm., wt. 4.45 g.
112.	NU 67/112D	(pl. VIII; IBM; Bivar 1971, no. B12) Lump, 2.0 x 1.7 cm., wt. 9.54 g.
113.	NU 67/118A	(pl. VIII; IBM; Bivar 1971, no. B11) Cut (?) lump, 2.05 x 1.7 cm., wt. 9.55 g.
114.	NU 67/118B	(pl. VIII; IBM; Bivar 1971, no. B35) Cut lump, 1.5 x 0.95 cm., wt. 4.13 g.
115.	NU 67/120C	(IBM; Bivar 1971, no. B79) Lump, 0.7 x 0.5 cm., wt. 0.4 g.
116.	NU 67/120D	(IBM; Bivar 1971, no. B70) Cut (?) lump, 0.9 x 0.5 cm., wt. 0.67 g.
117.	NU 67/124A	(pl. VIII; IBM; Bivar 1971, no. B40) Cut lump, 1.5 x 1.1 cm., wt. 3.45 g.
118.	NU 67/124B	(pl. VIII; IBM; Bivar 1971, no. B34) Cut lump, 1.55 x 0.9 cm., wt. 4.17 g.
119.	NU 67/125D	(IBM; Bivar 1971, no. B41) Cut (?) lump, wt. 2.44 g.
120.	NU 67/125E	(IBM) A small pellet.
121.	NU 67/125F	(IBM; Bivar 1971, no. B43) Cut (?) lump, 1.35 x 0.95 cm., wt. 2.08 g.
122.	NU 67/127C	(pl. VIII; Bivar 1971, no. B49) Lump, 1.3 x 1.3 cm., wt. 1.73 g.
123.	NU 67/127D	(fig. 3; Bivar 1971, no. B44) Lump, 1.9 x 1.4 cm., wt. 2.06 g.
124.	NU 67/127E	(pl. VIII, fig. 3; Bivar 1971, no. B26) Lump, 1.8 x 1.25 cm., wt. 5.26 g.
125.	NU 67/127F	Small cut lump (?), wt. not recorded.
126.	NU 67/127G	(pl. VIII, fig. 3; Bivar 1971, no. B27) Lump, 2.0 x 1.55 cm., wt. 5.2 g.
127.	NU 67/127H	(pl. VIII, fig. 3; Bivar 1971, no. B57) Lump, 1.3 x 0.95 cm., wt. 1.35 g.
128.	NU 67/127I	(pl. VIII; Bivar 1971, no. B66) Lump, 0.95 x 0.6 cm., wt. 0.96 g.
129.	NU 67/127J	(pl. VIII; Bivar 1971, no. B56) Lump, 1.45 x 0.95 cm., wt. 1.37 g.
130.	NU 67/128D	(fig. 3; IBM; Bivar 1971, no. B36/C19) Lump, 1.5 x 1.25 cm., wt. 4.05 g.
131.	NU 67/133A	(fig. 3; BM 135074; Bivar 1971, no. B4, pl. II) Cut lump, 2.2 x 1.6 cm., wt. 20.08 g. For analysis see appendix I.
132.	NU 67/133B	(fig. 3; BM 135075; Bivar 1971, no. B10) Cut lump, 2.25 x 1.25 cm., wt. 9.8 g. For analysis see appendix I.
133.	NU 67/135A	(pl. VIII; IBM; Bivar 1971, no. B9, pl. II) Flat lump (?), 2.3 x 2.1 cm., wt. 10.87 g.
134.	NU 67/135C	(pl. VIII; IBM; Bivar 1971, no. B58) Cut lump, 0.8 x 0.8 cm., wt. 1.3 g.
135.	NU 67/140B	(pl. VIII; Bivar 1971, no. B7, pl. II) Cut lump, 1.8 x 1.45 cm., wt. 13.05 g.
136.	NU 67/140C	(pl. VIII; Bivar 1971, no. B20, pl. II) Cut lump, 1.55 x 0.8 cm., wt. 6.04 g.
137.	NU 67/140D	(pl. VIII; Bivar 1971, no. B24, pl. II) Cut lump, 0.95 x 0.7 cm., wt. 5.53 g.
138.	NU 67/140E	(pl. IX; Bivar 1971, no. B23) Cut lump, 1.8 x 1.25 cm., wt. 5.56 g.
139.	NU 67/142B	(pl. IX) A small pellet, 0.7 x 0.5 cm., wt. 0.8 g.
140.	NU 67/142C	(pl. IX) A small pellet, 0.65 x 0.55 cm., wt. 0.72 g.
141.	NU 67/143A	(pl. IX; IBM; Bivar 1971, no. B6, pl. II) Cut lump, 2.85 x 1.65 cm., wt. 13.71 g.
142.	NU 67/143B	(pl. IX; IBM; Bivar 1971, no. B3, pl. II) Cut lump, 3.25 x 1.75 cm., wt. 24.16 g.
143.	NU 67/143C	(pl. IX; IBM; Bivar 1971, no. B2, pl. II) Cut lump, 2.35 x 2.05 cm., wt. 24.85 g.
144.	NU 67/147A	(pl. IX, fig. 3; Bivar 1971, no. B28) Cut (?) lump, 2.0 x 1.7 cm., wt. 5.04 g.
145.	NU 67/154B	(pl. IX; Bivar 1971, no. B17, pl. II) Cut (?) lump, 1.8 x 1.4 cm., wt. 7.06 g.
146.	NU 67/154C	(pl. IX; Bivar 1971, no. B15, pl. II) Cut (?) lump, 2.4 x 1.65 cm., wt. 8.21 g.
147.	NU 67/156E	(Bivar 1971, no. B59) Cut (?) lump, wt. 1.27 g.
148.	NU 67/156F	(Bivar 1971, no. B51) Cut lump, wt. 1.64 g.
149.	NU 67/156H	(pl. IX; Bivar 1971, no. B21) Cut lump, 1.55 x 1.1 cm., wt. 5.86 g.
150.	NU 67/156I	(pl. IX; Bivar 1971, no. B7 bis) Cut (?) lump, 2.4 x 2.0 cm., wt. 11.56 g.
151.	NU 67/156K	(pl. IX; Bivar 1971, no. B62) Cut (?) lump, 1.45 x 1.05 cm., wt. 1.24 g.
152.	NU 67/156M	Lump, 0.75 x 0.65 cm., wt. not recorded.
153.	NU 67/157C	(pl. IX, fig. 3; IBM; Bivar 1971, no. B19, pl. II) Cut lump, 1.7 x 1.25 cm., wt. 6.25 g.
154.	NU 67/162A5	(fig. 3; Bivar 1971, no. B45) Cut lump, 1.0 x 0.7 cm., wt. 2.0 g.
155.	NU 67/162B2	(pl. IX; Bivar 1971, pl. IIIb) Lump 0.8 x 0.6 cm., wt. 1.42 g.
156.	NU 67/162C1	(pl. IX, fig. 3; Bivar 1971, no. B18, pl. II) Cut lump, 1.6 x 1.0 cm., wt. 6.3 g.
157.	NU 67/162C2	(pl. IX, fig. 3; Bivar 1971, no. B54) Cut lump, 0.9 x 0.65 cm., wt. 1.45 g.

158. NU 67/162C3 (pl. IX, Bivar 1971, no. B65) Cut lump, 1.0 x 0.8 cm., wt. 0.97 g.
 159. NU 67/162G1 (pl. IX; Bivar 1971, pl. IIIb) Flat lump, 1.6 x 0.9 cm., wt. 2.62 g.
 160. NU 67/162G2 (pl. IX; Bivar 1971, no. B48, pl. IIIa) Cut lump, 1.85 x 1.4 cm., wt. 1.8 g.
 161–88. NU 67/162H1–3, (pl. IX; Bivar 1971, pl. IIIb) A collection of 28 small lumps of silver, 19 of them
 II–19, J1–5, K clearly cut, varying in size 0.5 x 0.4 cm. – 1.7 x 0.7 cm. Wts. not recorded.

Included in this and the following sections of this chapter are pieces of silver cut or broken into small fragments (called in German ‘Hacksilber’) and other miscellaneous scraps. Powell (1978, 222–3) believes that there is a term in Akkadian for broken silver of this sort and he translates *šibirtu* as ‘scrap silver or fragments’, thinking the noun to derive from the verb *šebēru* meaning ‘to shatter’ or ‘to break to pieces’. It is only fair to mention, though, that some authorities (e.g. von Soden) do not agree with this interpretation. *Šibirtu* is a type of silver used in payment, and the word is attested from the Old Akkadian through to the Neo-Babylonian and Persian periods.⁸ In order to try and convey some impression of the nature of the ‘Hacksilber’ in the Nush-i Jan hoard I have divided it into sections. Such a division is bound to be rather arbitrary, but by and large the pieces do fall into groups. This section, then, comprises lumps of silver, many of which show signs of having been cut from larger pieces. Whenever possible, I have attempted to indicate whether a lump of silver has one or more cut faces to distinguish it from those pieces which are apparently amorphous. As my work has been done solely from photographs or drawings, however, some pieces not marked ‘cut’ may in fact be so. As Bivar has observed, many of the lumps have probably been cut from ‘bar-ingots’, although we should not necessarily assume that the presence of traces of cuneiform signs on one lump (no. 100) indicates that bar-ingots were sometimes inscribed. Large blocks of bronze with cuneiform inscriptions are known in the Ancient Near East, such as the cast bronze relief of Esarhaddon in the Louvre (Parrot and Nougayrol 1956) and the bronze ‘doorstep’ of Nebuchadnezzar II from Borsippa in the British Museum (1922 *Guide*, pl. XXIX), and undoubtedly they also existed in silver. Unfortunately the signs on our piece are so incomplete that nothing can be concluded about the inscription (Brinkman in Bivar 1971, 107). It would be quite wrong, though, to conclude from these fragmentary signs that the Medes were literate. Most probably this piece derives from some area where the writing of cuneiform was commonplace, such as Assyria, Babylonia or Elam. At least two fragments of silver inscribed in cuneiform have been found in near-contemporary hoards. Thus, amongst a hoard of silver objects, now in the Ashmolean Museum, thought to be from the periphery of the Black Sea and to have a terminal date in the second half of the 5th century B.C., is a square fragment of silver sheet, crudely cut on three edges, inscribed in Babylonian cuneiform reading ‘[Da]rius, king’ (Kraay and Moorey 1981, no. 137, pl. 8; Hulin 1972). The second piece comes from the Chaman-i Hazuri hoard from Kabul which was probably buried in the mid-4th century B.C. (MacDowall and Taddei 1978, 202). It is a square lump of silver, again roughly cut on three sides, inscribed with two cuneiform signs and the remains of a third (Curiel and Schlumberger 1953, 45, pl. V). The inscription has been discussed by various scholars in the *Numismatic Chronicle* (Figulla 1954; Hulin 1954; Henning 1956), with both Hulin and Henning believing the signs to be Elamite. Henning suggests that they form part of the formula ‘made at the palace’ which is known from Old Persian inscriptions indicating royal ownership. He suggests that the Elamite inscription might have been part of a larger trilingual one. Even if the inscription indicates, though, that this fragment comes from an inscribed ingot – which is by no means certain – there is no compelling reason to suppose that the Nush-i Jan fragment does so also.

1. Fragments of silver sheet

189. NU 67/101C (pl. IX; Bivar 1971, no. B68) Sheet, 1.2 x 1.0 cm., wt. 0.82 g.
 190. NU 67/106 (pl. IX; Bivar 1971, no. B16, pl. II) Sheet, 3.3 x 1.95 cm., wt. 7.34 g.
 191. NU 67/107C (pl. IX; Bivar 1971, no. B74) Sheet, 0.9 x 0.7 cm., wt. 0.6 g.

⁸ The word *nūḫḫutu* when applied to silver is sometimes thought to indicate ‘Hacksilber’, but this is uncertain. See *CAD* : *nūḫḫutu* and Powell 1978, 223–6.

192. NU 67/118B (pl. IX; IBM; Bivar 1971, no. B69) Sheet, 1.45 x 0.85 cm., wt. 0.77 g.
 193. NU 67/133C (fig. 3; BM 135076) Sheet, 2.8 x 0.54 cm., wt. 0.15 g. For analysis see appendix I.
194. NU 67/154A (pl. IX; Bivar 1971, no. B25, pl. II) Sheet, 2.9 x 1.75 cm., wt. 5.42 g.
 195. NU 67/156L (pl. IX) Sheet (?), 1.0 x 1.0 cm., wt. not recorded.
 196. NU 67/162D1 (pl. X; Bivar 1971, no. B60, pl. IIIa) Sheet, 1.75 x 0.95 cm., wt. 1.26 g.
 197. NU 67/162D2 (pl. X; Bivar 1971, no. B73, pl. IIIa) Sheet, 1.7 x 0.8 cm., wt. 0.61 g.
 198. NU 67/162D3 (pl. X; Bivar 1971, no. B80, pl. IIIa) Sheet, 1.4 x 0.8 cm., wt. 0.27 g.
 199. NU 67/162D4 (pl. X; Bivar 1971, no. B75, pl. IIIa) Sheet, 1.2 x 0.8 cm., wt. 0.57 g.
 200. NU 67/162D5 (pl. X; Bivar 1971, no. B72, pl. IIIa) Sheet, 1.05 x 0.8 cm., wt. 0.63 g.
 201. NU 67/162D6 (pl. X; Bivar 1971, pl. IIIb) Sheet, 1.0 x 0.6 cm., wt. 0.51 g.
 202. NU 67/162D7 (pl. X, fig. 3; Bivar 1971, no. B33, pl. IIIa) Sheet, 2.3 x 1.15 cm., wt. 4.42 g.
 203. NU 67/162F (Bivar 1971, no. B67, pl. IIIa) Sheet, 1.55 x 0.85 cm., wt. 0.92 g.
 204. NU 67/163A (pl. X; IBM; Bivar 1971, no. B31) Sheet, 2.6 x 1.8 cm., wt. 4.58 g.

These fragments of silver sheet, or foil, are all undecorated. Sometimes the fragments have been carefully cut, sometimes they have been roughly torn. Sometimes the pieces are folded.

m. Square-sectioned silver bars

205. NU 67/116 (pl. X; IBM no. 134; Bivar 1971, no. C4, pl. IV) Bar bent round to form a circle with abutting terminals. Diam. 3.6 cm., wt. 21.8 g.
 206. NU 67/107B (pl. X; MMA 1978.93.22; Bivar 1971, no. C6, pl. IV) As above, but with overlapping terminals. Diam. 3.0 cm., wt. 13.92 g.
 207. NU 67/121A (pl. X; Bivar 1971, no. C15) Bar bent into an elliptical shape, 2.7 x 1.3 cm., wt. 5.06 g.
 208. NU 67/121B (pl. X; Bivar 1971, no. B37) Short length of bar, curved, L. 2.0 cm., wt. 3.91 g.
 209. NU 67/128C (pl. X; IBM; Bivar 1971, no. B9) Another, L. 1.8 cm., wt. 3.72 g.

Gathered in this category are lengths of silver rod which share the characteristic of being square in section. Each of the pieces is roughly cut at either end, and in their present form three of the pieces are bent into more or less annular shapes while the two short lengths are both curved, suggesting they may have been cut from rings. Clearly these lengths of rod can have had no practical function – most probably they were a convenient form in which to keep silver, either for its intrinsic value or for manufacturing purposes.

n. Lengths of rod and wire

210. NU 67/120E (pl. X; IBM) Twisted silver wire with folded piece of silver sheet adhering, 1.45 x 1.25 cm.
 211. NU 67/124C (fig. 3; IBM; Bivar 1971, no. C24) Silver rod/wire, circular in section, bent into an elongated circle with overlapping terminals, 2.5 x 1.15 cm. One end terminates in a knob. Wt. 2.27 g.
 212. NU 67/125G (IBM) A short length of plaited silver wire, L. 1.75 cm.
 213. NU 67/127A (pl. X; Bivar 1971, no. B71) Length of silver rod with circular section varying in diam. 0.2–0.3 cm., bent into a U-shape, c. 1.6 x 1.15 cm., wt. 0.64 g.
 214. NU 67/127B (pl. X; Bivar 1971, no. B82) Short length of silver wire with circular section varying in diam. 0.1–0.19 cm., bent into a semicircular shape. w. c. 0.8 cm., wt. 0.24 g.
 215. NU 67/128B (fig. 2; IBM; Bivar 1971, no. C34) A short length of silver wire wrapped around the spiral ring no. 55, wt. 0.77 g.
 216. NU 67/156A (pl. X; Bivar 1971, no. 156A) Silver rod, curved, L. 2.6 cm., wt. 1.81 g.
 217–8. NU 67/156G+J (Bivar 1971, 111, no. 47) 2 short lengths of silver wire.
 219. NU 67/162A1 (pl. X; Bivar 1971, no. B78, pl. IIIa) Short length of silver wire, circular in section, L. 1.0 cm., wt. 0.42 g.
 220. NU 67/162A2 (pl. X; Bivar 1971, no. B76, pl. IIIa) Another, L. 1.1 cm., wt. 0.48 g.
 221. NU 67/162A3 (pl. X, fig. 3; Bivar 1971, no. B46, pl. IIIa) Length of silver wire/rod, circular in section, L. 2.3 cm., wt. 1.96 g.

222. NU 67/162A4 (pl. X; Bivar 1971, no. B77, pl. IIIa) Length of silver wire, circular in section, bent into a U-shape, flattened at one end, 1.45 x 0.8 cm., wt. 0.45 g.

These cut lengths of rod or wire merit little comment but two observations are worth making. First, it is possible that no. 214 is an earring with semicircular body, most of the wire holder having been broken away. Second, the fact that the length of wire no. 215 is wrapped around a spiral ring suggests that it was surely a make-weight.

o. Various rings

223. NU 67/102 (pl. X, fig. 3; IBM; Bivar 1971, no. C1, pl. IV) Thick strip of silver, 3.0 cm. wide, tapering towards ends, bent round to form a circle with external diameter of 4.0 cm. Vertical groove near one end. Wt. 220.0 g. Clearly, the internal diameter of this piece is too small for it to have been a bracelet, even for a small child.
224. NU 67/132a (pl. X) Small silver ring with overlapping terminals, circular in section, diam. 0.7 cm., wt. 0.2 g.
225. NU 67/132B (pl. X) Another, diam. 0.8 cm., wt. 0.37 g.
226. NU 67/142A Another, diam. 0.6 cm., wt. not recorded.

None of these rings can in themselves be regarded as personal ornaments, but the three small rings could originally have belonged to items of jewellery. On the other hand, they may have been treasured for their value as currency or raw material. This is presumably the case with the circular strip of silver no. 223, for it is difficult to conceive of any practical use for such an object.

p. Miscellanea

227. NU 67/100C (pl. X; IBM; Bivar 1971, no. B81) Strip of silver decorated with transversely incised lines. Folded-over edges. 1.55 x 0.7 cm., wt. 0.25 g.
228. NU 67/121C (pl. X; Bivar 1971, no. B61) Folded (?) strip of silver with embossed ribs at both sides and in centre. Those at sides bear incised decoration. 1.45 x 0.65 cm., wt. 1.24 g.
229. NU 67/135D (pl. X; IBM; Bivar 1971, no. B42) Strip of silver decorated with 2 longitudinally incised lines, 1.85 x 0.8 cm., wt. 2.3 g.
230. NU 67/135E (pl. X; IBM) Pear-shaped piece of silver with large transverse hole through bulbous part. 1.45 x 0.8 cm., wt. 0.5 g.
231. NU 67/162B1 (fig. 3) Hollow silver terminal (?), with ribbed sides, fractured at one end. Diam. c. 0.7 cm., wt. 1.46 g.
232. NU 67/162E (pl. X; Bivar 1971, no. B64, pl. IIIa) 2 short strips of silver much bent, corroded or sweated together. 1.6 cm. x 1.05 cm., wt. 1.07 g.

Gathered here are scraps of silver that were clearly not especially produced for the purposes of exchange or storage, although in their present form they may have been used as such. The three fragments of silver sheet all bear some form of decoration, and all are fragments of longer strips of unknown function. The purpose of the pear-shaped piece with transverse hole is obscure, as is that of the hollow terminal (?).

q. Conclusions

Having examined the hoard in its constituent parts, we must now ask what it represents as a whole. In view of the fact that the hoard comprises certain complete items of jewellery, namely the double and quadruple spiral pendants, the finger-rings, the bracelet, possibly the spiral rings, and some beads, in addition to complete and incomplete ingots and nearly 150 pieces of scrap silver, David Stronach concluded (1969, 16) that it was probably part of a silversmith's stock-in-trade. He supported this view by pointing out that 'any cache that was being stored for its intrinsic value would almost certainly have included other cherished materials, particularly gold if not also agate and carnelian'. We shall deal with this last point in due course, but in the meantime it may be pointed out that there are several objections to the identification of this hoard as a silversmith's

stock-in-trade. First, if we are right about the date of the double and quadruple spiral pendants – late 3rd to early 2nd millennium B.C. – they clearly cannot represent the products of a 7th century silversmith. If these are set aside, then we are left with the spiral rings and only a few miscellaneous pieces that could pass for recently finished items of jewellery. We have already seen that the spiral rings might have been treasured more for their value as bullion than for their possible use as hair-rings. Thus, there is little or nothing in the hoard that can positively be labelled as the finished products of a silversmith working at Nush-i Jan. Of course, it might be argued that he was busy turning all the scrap silver into spiral rings, but there is another telling objection to the hoard being regarded as the property of a silversmith. That is the absence of any metalworking tools with the hoard. It is important not to underestimate the value of tools themselves, which in their way would have been as important and valuable to the craftsman as his raw material. It is appropriate here to refer to some of the hoards hidden under the floors of Akkadian period houses at Tell Asmar in the Diyala (Frankfort 1933, 47–8; 1939, 5). One, probably belonging to a seal-cutter, comprised both finished and unfinished cylinder seals as well as tools for seal-cutting. Another contained tools for bronze- or copper-working in addition to the raw material. Similarly there is the hoard recently found in a jar in the temple of E. babbar at Larsa and dated by the excavators to the 18th century B.C. (Arnaud, Calvet and Huot 1979). It comprised, apart from copper ingots, ‘Hack-silber’, and various items of gold and silver jewellery, a small anvil (?), some tools and a collection of weights. The conclusion was that the hoard belonged to one Ilšu-ibnišu, the jeweller of E. babbar. Lastly, it must be pointed out that no evidence was found for any silver-smithing work having taken place at Nush-i Jan, although it is true that we should not necessarily expect to find this sort of evidence. Nevertheless, there are two additional questions we should pose. First, would we really expect a silversmith to be working at a place as small as Nush-i Jan? And secondly, is it likely that he would be working there after the fort (and presumably the temple as well) had been abandoned?

By contrast, Bivar argued strongly in favour of the contents of the bowl being a hoard of currency (1971), and indeed Stronach himself had recognized this possibility, saying: ‘But at the same time it is possible that the bars, cubes, and coils from the hoard were more than convenient lumps of raw material or simple forms of jewellery . . . many of these items may take their place as samples of local currency – each with a purchasing power equivalent to their own weight’ (Stronach 1969, 16). In fact, the argument that the Nush-i Jan hoard was first and foremost a hoard of currency finds a lot of support. To define currency, we can do no better than quote the words of Charles Seltman (1955, 1): ‘Metal when used to facilitate exchange of goods is currency; currency when used according to specific weight-standards is money; money stamped with a device is coin’. Now it is clear that there existed in the Near East prior to the invention of coinage a system of exchange based on the use of metal, particularly silver, as currency. There is extensive textual evidence, from the Old Akkadian period onwards, to show that payments, for goods and property, services rendered, taxes and fines and so on, were frequently made in metal. The amounts are specified by weight, and appropriate quantities of metal were presumably weighed out on a balance. At different periods the metal accepted as the standard medium of currency varied, but it was predominantly silver. For our purposes, naturally, the most appropriate texts are those which are closest in time to the Nush-i Jan hoard. Thus, the impression given by the Late Assyrian texts is that in the 8th century B.C. copper was the standard medium of currency, but by the 7th century this had changed to silver (Postgate 1973, 25). Similarly, Neo-Babylonian texts show that payments were generally made in silver, as illustrated by the legal and administrative texts in the Vorderasiatisches Museum in Berlin (San Nicolo and Ungnad 1935, *passim*). Again, in the Persepolis Treasury tablets dating from the first half of the 5th century B.C. payments are expressed in amounts of silver, and also at this period we have evidence of workmen sometimes being paid in silver rather than in kind (Cameron 1948, 1–5).

It is now recognized, thanks largely to the work of scholars such as Balmuth (1967; 1975; 1976; 1980), Kraay (1964) and indeed Bivar (1971), that archaeological evidence to corroborate the textual record exists in the form of silver hoards found in a number of excavations and often identified as jewellers’ hoards. Most are characterized by their contents of cut and broken pieces

of silver ('Hacksilber') together with complete or incomplete items of jewellery and other objects. Some contain ingots and curved sections of silver rod that look as if they might have been cut from spiral rings. Such hoards have often been discovered in jars buried beneath floors, and sometimes there is evidence that the silver fragments were packed into small bags. Some of the hoards from Syria–Palestine have been conveniently gathered together and illustrated by Balmuth, namely those from the Biblical site of Eshtemoa near Hebron (Balmuth 1975), and those from Megiddo, Beth-Shan,⁹ En-Gedi, Shechem and Zincirli (Balmuth 1973). That from En-Gedi (Tel Goren) on the western shore of the Dead Sea is close in date to the Nush-i Jan hoard, belonging to stratum V at that site which is dated to the late 7th–early 6th century B.C., but the contents are rather different comprising circular ingots (Mazar 1963a, 546, fig. 2; 1963b, 104). Other notable hoards found in the Syro–Palestinian area are from Gezer (Macalister 1912, 262, fig. 408) and Ras Shamra (Schaeffer 1939, 42, fig. 31). From Mesopotamia there are silver hoards ranging in date from the 3rd millennium B.C. onwards. Two found in the Diyala region, from Khafaje and Tell Agrab respectively, are ascribed to the Early Dynastic Period; both are said to contain 'coils' as well as scrap silver (Powell 1978, 231). Another, from Tell Asmar, found under the floor of an Akkadian-period house, included a silver ingot(s), roughly rectangular in outline (Frankfort 1933, 47, fig. 30; Powell 1978, pls. III A–B). Two hoards from Tell Taya, both of Akkadian date, contained ingots, 'Hacksilber' and spiral rings (although not of the same type as ours) as well as beads (Reade 1968, 248; 1973, 165, pl. LXVIIa). The recently discovered hoard from Larsa, which may be that of a silver-smith, we have referred to above; another hoard, found in the 1932–3 season, is as yet unpublished, but is described as weighing between 13 and 15 kg and is said to be composed of ingots and various items of jewellery (Parrot 1933, 179–80). From the Late Assyrian period are two notable silver hoards. The first, from Nippur, was found in a small pot beneath the floor of a private house in the scribal quarter. It contained 'Hacksilber' and beads (McCown and Haines 1967, 98, pl. 147:1). The second, the more interesting, was found in a pottery jar beneath the floor of private house no. 24 at Ashur (Andrae 1908, 22; Preusser 1954, 35). The pieces were originally wrapped in a cloth bag, and apart from 'Hacksilber' included ingots ('Rohgussplatten') and 'ringförmige Stücke' that may be comparable to the spiral rings from Nush-i Jan. Both Andrae and Preusser interpret the hoard as currency. Of comparable date is a silver hoard from Bahrain containing 'mainly rings, earrings, and broken bracelets' (Bibby 1970, pl. 17a). I do not know of early hoards from Iran other than the Nush-i Jan example, but doubtless they will come to light in the future.¹⁰ I do not mean to imply that *all* the hoards listed above were necessarily treasured for their exchange value. For instance, close to one of the Tell Taya hoards was found a 'chisel' and three other tools (Reade 1968, 248) suggesting that this hoard might indeed have been the stock-in-trade of a silver-smith. Nevertheless, it is likely that some, if not most, of these hoards represent currency. A powerful argument in favour of this proposition is that after the introduction of coinage similar hoards, containing ingots, 'Hacksilber' and so on, generally contain coins as well. Typical of such hoards are three 5th century hoards published by Kraay and Moorey (1969; 1981), two thought to derive from Syria and the third from the shore of the Black Sea or the interior of Asia Minor. Others are the Chaman-i Hazuri hoard from Kabul, probably buried in the mid-4th century B.C. (Curiel and Schlumberger 1953, pl. V; McDowall and Taddei 1978, 202–3), and the Tigris hoard¹¹ comprising silver ingots and coins probably ranging between the 5th and 3rd centuries B.C. (Jenkins 1964, 89–92). Then there is the early 4th century B.C. hoard from Babylon, part of which was published by Robinson (1950); in fact the items that reached the British Museum represent only a small part

⁹ The hoards found at Beth-Shan were recovered from a temple in a context suggesting they were votive foundation deposits, but this does not of course preclude the contents from having been currency.

¹⁰ A hoard of particular interest from Egypt is the so-called 'crock of gold' found at Tell el-Amarna, comprising gold and silver ingots, 'Hacksilber' and fragments of rings (Frankfort and Pendlebury 1933, 59–61, pl. XLIII). Of the share allocated to the Egypt Exploration Society part is now in the British Museum (EA 68503) while the remainder has been disposed of (see Chubb 1955, 134, 175).

¹¹ This was discovered in about 1816; most of the coins and associated material were melted down, but a few of the coins were obtained by C. J. Rich and subsequently passed into the British Museum collections.

of what was evidently a very large hoard. This is clear from Rassam's report to Sir Edward Bond, Principal Librarian of the British Museum, written at Abu Habba on the 13th July 1882¹² :-

'We are continually discovering inscribed objects in our researches at Babylon, at Ibrahim Alkhaleel, and here, and at the former place we have come upon what seems a silversmith's establishment and recovered from it some Babylonian ornaments, a few Roman¹³ coins, and about 500 ounces of silver bullion. Some of the coins are actually cut in two or three pieces for the purpose, I suppose, of smelting. The silver bullion I have made over to the Ottoman authorities with the exception of a small piece¹⁴ which I have reserved for the British Museum.'

The coins found with hoards such as these, then, were often mutilated or fragmented, showing they were never intended to be circulated as coined money. Rather, they were valued as bullion in much the same way as the scraps of silver with which they were found. The implication is that in the Near East the traditional way of making payments, that is by weighing out silver, continued during the Achaemenid period. In the words of Kraay (1964, 91), 'weighing can hardly have been widely dispensed with in major transactions before the age of extensive kingdoms or empires, throughout which royal or imperial coinages were legal tender'. This was certainly not the case in the Achaemenid period, and indeed there is even some evidence for weighing as late as Seleucid times. For example, Powell (1978, 217) has drawn attention to the fact that there are a number of textual references to payments which are expressed in weight but have to be made in staters (see *CAD: istatirru*).

We must now address ourselves to the difficult question of whether weight standards can be detected among the pieces comprising the Nush-i Jan hoard, or whether their weights are entirely random. To put this to the test, Bivar (1971) drew up a frequency table developed from a type frequently used by numismatists (reproduced here as fig. 22a). He excluded (for evident practical reasons) all those items weighing less than 1.75 g. and the large silver 'ring' (no. 223), weight 220.0 g., and was consequently left with 86 pieces¹⁵ divided into his categories of 'bar-ingots', 'cut-silver' and 'ring-money'. His conclusion is that the distribution pattern is not random, and he suggests a range of multiples of 6, 12, 24, 50 and 100 g. Also, he points to several seeming concentrations in the shekel range, and suggests they might represent different contemporary standards. These observations are certainly interesting, and potentially important, but can they be proven statistically? As a useful supplement to Bivar's conclusions, we take the opportunity to publish here a more recent examination of the data. Now, if all the pieces under consideration conform to a set or sets of standards, one or more fundamental units of mass (or quanta), of which all the other pieces are multiples, ought to be recognizable. In order to determine whether or not such a quantum or quanta exist, Dr. P. R. Freeman, now Professor of Statistics at the University of Leicester, at the request of Dr. Michael Roaf kindly applied Bayesian analysis¹⁶ to each of Bivar's three sets of data, likewise omitting all items weighing less than 1.75 g. (fig. 22b-d). In a letter to Dr. Roaf,¹⁷ he writes: 'Running these three sets through my quantum-finding program comes up with the very interesting result that the bar-ingots show quite clear evidence of a multiple of 2.95 g. (. . . fig. 22b has marked peaks at 2.95, 5.91 and 8.97 g.) and also some evidence of a multiple of 2.01 g. (peaks at 2.01 and 4.02 g.). If anything, 2.01 fits rather better than 2.95 but it is not possible to choose one value as being much more likely than the other. The apparent relationship between the two values, in that three times 2.01 is approximately two times 2.95, seems to be purely coincidental since the approximation is too inaccurate to be ascribed to intentional causes. The other two groups, however, show no sign of any quantum whatsoever' Lastly, Dr. Morven Leese of the British Museum Research Laboratory has kindly prepared on the computer histograms

¹² B. M. Central Archive, Original Papers, 1882, p. 3781. I am indebted to my colleague Dr. J. E. Reade for this reference.

¹³ Rassam is probably using the adjective 'Roman' in a fairly loose fashion, and it should not be regarded as a close description of the coins.

¹⁴ This is almost certainly the disc-shaped ingot pitted with air-holes on the underside listed by Robinson 1950, 48, no. 38 BM 83-1-18, 902.

¹⁵ Not 83 as stated by Bivar 1971, 105. These are the items in our sections 1g-h, 1j-p.

¹⁶ For a description of the method see Broadbent 1955, 1956, Kendall 1974, and Freeman 1976.

¹⁷ Dated 10 November 1976.

showing the frequency of items at different weights (fig. 23a–c). The purpose was to present, in diagrammatical form, another illustration, in addition to Bivar's frequency table, of the distribution of the weights. It must be admitted that the sample is not really large enough, and the concentration of weights at the lower end of the scale too great, for the histograms to be particularly meaningful, but if anything they tend to endorse Freeman's conclusions, namely that the ingots and pieces thereof *do* conform (in part) to a recognizable pattern whereas the other pieces do not.

A glance at the weight of the ingots does indeed show some striking correlations, clearly suggesting that they were made or cut to certain standards. Thus two of the complete pieces (nos. 87–8) weigh 100.7 g. and 100.33 g. respectively, while two of the fragments (nos. 90–1) are 24.0 g. and 23.5 g. respectively. But there are also in fact some interesting features about the weights of the spiral rings, namely that five of them (31.25% of the sample) weigh between 4.38 and 5.25 g., while another four (25% of the sample) fall between 9.99 and 11.3 g. On the whole, then, the results seem to indicate that complete pieces intended to be distributed or circulated as currency were made approximately to a recognized weight standard, but that the fragments of ingots and pieces of scrap silver represent nothing more than hastily cut or torn-off pieces of metal to be put on the scales to make up a required weight. A reflection of this practice can be seen in Herodotus:

'This tribute the king stores up in his treasury in the following manner:- he melts it down and pours it into jars of earthenware, and when he has filled the jars he takes off the earthenware jar from the metal; and when he wants money he cuts off so much as he needs on each occasion' (Book III, Ch. 96, translation by G. C. Macaulay, London 1890).

That some pieces were indeed made to predetermined weights is clearly implied by contemporary texts. Thus, there is the famous passage in Sennacherib's annals where he refers to colossal figures being cast in the same way as half-shekel pieces (Luckenbill 1924, 109). Late Babylonian texts talk of 'silver . . . cast in half-shekel pieces' (*CAD* : *nuḫḫutu*). It is unlikely, though, that such pieces reached the exact weight standard required. This seems to have been the case with the spiral rings ('*ḫar*') mentioned in Ur III texts that we referred to earlier. Powell has shown (1978, 214–15) that the '*ḫar*' were manufactured in standard sizes which were supposed to correspond to multiples of the shekel, but in fact rarely did so. This is clear from texts which give both the intended weight and the real weight. Archaeological evidence that silver pieces valued for their bullion content were manufactured to prescribed weight standards comes in the form of the three circular silver ingots from Zincirli each inscribed with the name of Bar-Rakib who is known to have been a vassal of Tiglath-Pileser III (von Luschan 1943, 119–21, 171, pl. 58 t–v; Balmuth 1971, pls. 2–3). It can hardly be coincidental that the only complete example weighs 497.37 g., which is very close to the generally accepted standard for a mina of 504 g. (Powell 1979).

We have sought to establish, then, that the Nush-i Jan hoard represents a miscellaneous collection of silver which would have had considerable value as currency. The main question that remains is to whom did it belong. For a consideration of this matter it would be helpful to try and get some idea of the value of the hoard. Its total weight, approximately, is a little over 1400 g. or 1.4 kg. What sort of purchasing power does this represent? Assuming a shekel of 8.4 g., the hoard would consist of about 168 shekels. If we refer to the evidence of Achaemenid tablets, even though they are at least a century later than the burial of the hoard, we find that according to Cameron (1948, 3) the Persepolis treasury tablets show that one sheep was worth about 3 shekels. The Nush-i Jan hoard, therefore, would have had a value equivalent to about 59 sheep. This is a modest fortune, but it seems to me unlikely that any individual living in the impoverished squatter settlement in the Columned Hall, for the hoard is thought to have been buried *after* the major buildings at Nush-i Jan had been abandoned, would have had such an accumulation of wealth.¹⁸ An alternative explanation, which seems rather more probable, is that the silver was the property of the temple. One

¹⁸It is interesting to note that at Hasanabad Patti Jo Watson estimated an average figure of around 13 sheep per family, but a few individuals were thought to own as many as 50 sheep and in one case the figure was as high as 70 (Watson 1979, 94–6).

can easily imagine the priest, or priests, staying on while the temple was being filled in and perhaps even after the operation was completed. Indeed they might have buried the treasure only when circumstances finally forced them to leave the site. We shall never know the truth of the matter, but there are of course numerous instances of temples accruing considerable treasures, and it is pertinent here to recall the Biblical story of Joash ordering the priests to collect silver for the upkeep of the temple:-

'Then Jehoiada the priest took a chest and bored a hole in the lid and put it beside the altar on the right side going into the house of the Lord, and the priests on duty at the entrance put in it all the money brought into the house of the Lord. And whenever they saw that the chest was well filled, the king's secretary and the high priest came and melted down the silver found in the house of the Lord and weighed it' (2 Kings XII, 9–10, *New English Bible*). Other instances that may be cited of treasures accumulated in shrines are the Mir Zakah hoard, in which case large numbers of coins, items of jewellery and so on are thought to have been deposited in two sacred tanks or basins (MacDowall and Taddei 1978, 204–5), and perhaps the Oxus Treasure. The find-spot of the Oxus Treasure is still disputed, but a likely candidate would seem to be Takht-i Sangin on the right-hand bank of the Oxus, where recent excavations have revealed a temple with magazines full of votive offerings (Litvinskiy and Pichikiyan 1981). In any event, Ghirshman is surely right when he says that the Oxus Treasure belonged to a temple and represents offerings made by the worshippers (Ghirshman 1963, 250). To return to Nush-i Jan, one possible objection to the theory that the hoard represents a temple treasure is that it consists *only* of silver, whereas one might expect it to include other precious metal, valuable stones, and so on. However, there is no reason why the silver hoard should not represent only a part of the treasure, with other groups of material having been hidden elsewhere or otherwise disposed of. Indeed, to minimize the risk of losing everything this would have been an obvious course for the priests to have followed.

Addenda

An illustration of the gold quadruple spiral bead found in a tumulus on Bahrain (p. 5) has recently been published by the Bahrain Ministry of Information in *The Temple Complex at Barbar, Bahrain* (1983), p. 45. Also, for the silver hoard from Bahrain (p. 18), see now Krauss, Lombard and Potts in D. T. Potts (ed.), *Dilmun: New Studies in the Archaeology and Early History of Bahrain* (Berlin 1983), pp. 161–6.

CHAPTER II. OTHER FINDS OF THE MEDIAN PERIOD

1. INTRODUCTION

The Median buildings at Nush-i Jan are founded on bedrock, so there is no pre-Median occupation. Altogether five major buildings have been identified: the Central Temple; the Old Western Building, which is probably another temple; the Fort, which is really a fortified storehouse; the Columned Hall; and another building to the north of it which was only partially excavated. These major structures were surrounded on at least two sides by a perimeter wall decorated with arches on its inner face. Other notable features of the Median building level are a rock-cut tunnel dug down from the floor of the Columned Hall, and a rock-cut cistern or well in the South Court.

Of the major buildings, the Central Temple and the Old Western Building were constructed first, followed by the Fort and then the Columned Hall (Stronach and Roaf 1978, 9). Building activity at Nush-i Jan is estimated to have started *c.* 750 B.C. (*ibid.*, p. 11). The only C14 date currently available – for a piece of wood found within the shale blocking of the Central Temple – is 723 ± 220 B.C. (Stronach 1969, 16). At some time, probably around 650 B.C., the Central Temple fell into disuse, and was filled with shale capped by mudbrick. The reasons for this extraordinary development are still unclear, but there may have been an intention – never realised – of building another temple on top. The Fort was abandoned at about the same time. Thereafter the site was inhabited by squatters, principally in the Columned Hall but also in rooms 4–8 to the south of the Central Temple (Roaf and Stronach 1973, 130, fig. 1). In the Columned Hall, where this late occupation is best attested, the squatters built flimsy partition walls between the columns, dug pits, constructed crude mudbrick bins against the walls, and built ovens. The build-up of deposit is quite substantial, and there is much evidence for alterations, repairs and rebuildings. So much is this the case that the squatter occupation can hardly have lasted for less than 75 years; it is unlikely to have continued for longer, though, as the low flimsy walls in the hall show that the squatters were dependent for shelter on the original roof which cannot be expected to have lasted for very long without major repairs. Probably, then, the Medes abandoned Nush-i Jan around 575 B.C.; a date fairly early in the 6th century is suggested by the fact that the ceramic repertoire is not comparable with that of Baba Jan I, 'a settlement which definitely overlaps with the early Achaemenian period' (Stronach and Roaf 1978, 11). The sequence of squatter deposits in various parts of the Columned Hall is very complicated, and the correlation of layers and floors in different parts of the hall is very difficult. To simplify matters here, therefore, we have attempted to indicate the provenance of particular objects by labelling them 'early', 'intermediate' or 'late' squatter level respectively. The number of objects that can be demonstrated to belong to the original occupation of the major buildings is naturally very small because, as was usually the case in the Ancient Near East, such buildings were swept clean until the end of their existence. If subsequently they were abandoned in an orderly fashion, as happened at Nush-i Jan, few objects were left behind. This applies to the Columned Hall as much as to the other monumental buildings at Nush-i Jan, and when objects were found on the original floor they have generally been ascribed to the early squatter level.

At one time it was thought that there had been some occupation in the Achaemenid period (Stronach 1969, 19), but the high level floors in question have now been attributed to the Median period (Stronach and Roaf 1978, 10, n. 29).

Apart from the silver hoard found in the Fort, the majority of the small finds from the Median levels at Nush-i Jan come from the Columned Hall. To a certain extent these are typical of the range of material usually associated with squatter occupations, comprising a few tools, some arrow-heads, a large number of fibulae, earrings, beads, spindle-whorls, loomweights, bone spatulae, 'tally-bones', bone toggles, astragals with numbers marked on the various surfaces, and so on. More noteworthy finds from the Columned Hall or its associated tunnel include a stamp seal with stylized boat (no. 234), a seal impression showing an archer shooting at a snake (no. 236), a naked lady figurine (no. 313), a terracotta macehead (no. 358), a decorative faience 'button' (no. 373), a bone pyxis and lid decorated with incised circles (no. 429), and an elaborate bronze kohl stick (no. 298).

Other areas that proved to be particularly productive were Room 40 at the west end of the mound (Roaf and Stronach 1973, 130, fig. 1), where an interesting collection of clay bullae (nos. 237–41) was found on an upper floor, the Northern Building where large numbers of clay sling-bullets (no. 361) were recovered from a couple of niches, and one of the magazines in the Fort known as Room 18. Here, associated with a fallen upper floor, was an important collection of pottery vessels plus an interesting assortment of small finds. These included a stamp-seal with design of cow and suckling calf (no. 233), an iron sickle blade (no. 246), three bronze ‘buttons’ or bosses (nos. 289, 291, 295), a glazed pottery spindle whorl (no. 322), and bone inlay panels decorated with incised concentric circles (no. 430).

Amongst the small finds from the Median levels metalwork is particularly well represented. The picture that emerges from an overall consideration of it is on the whole consistent with that noted for other collections of 1st millennium metalwork, such as those from Nimrud (Curtis 1979) and Deve Hüyük (Moorey 1980). By this time iron was generally being used for tools and weapons of most kinds, although it is interesting and rather unusual that at Nush-i Jan five out of the eleven tanged arrowheads found should have been bronze. As elsewhere, socketed arrowheads were of bronze owing to the difficulties of making such forms in iron. Decorate objects, such as pins, ‘buttons’ and earrings were made of bronze. The fibulae are also bronze except for a single example (no. 274) made of iron. Unfortunately it has not been possible to do any analysis or metallographic examination of the metal objects, but it is assumed in the catalogue that all the copper alloy objects are tin bronzes such as is usually the case at this date.

In connection with metalwork it is interesting to note that in the Columned Hall, in the latest squatter level, square H8, nine lumps of iron ore were found (NU 73/A25). The average size of these was about 5 cm. across. The ore was identified by Mr. M. Hakim, an Iranian geologist, as haematite and limonite. One of the lumps was analysed by Dr. T. R. Shelley who reported as follows:- Ca 9%, Al 1.52%, SiO₂ 8% and Fe 45%, i.e. 12.6% CaO, 3.0% Al₂O₃, 18.0% SiO₂, and 45% as FeO and Fe₂O₃. According to Dr. Shelley there are large deposits of iron ore at Ahangaran, just to the south of Malayer and 80 km. ESE of Hamadan, at Kajar Ab 90 km. E of Hamadan, and at Baba Gorgor, 100 km. NNW of Hamadan. The iron ore in question, though, need not necessarily have come from one of these places; small deposits of limonite are very widely distributed, and there could easily be some closer to Nush-i Jan than any of the places mentioned above. No evidence was found, though, for smelting in the Median period at Nush-i Jan, and it is possible that the lumps of iron ore were just valued as pebbles; alternatively, it may be that some of the shale used for the blocking at Nush-i Jan has a high iron content. Only a systematic examination of all the stones found at Nush-i Jan, plus careful inspection of the bedrock itself, would show whether the iron ore pebbles were exceptional or whether many of them were in use.

In one instance the small finds provide a clear insight into the activities of the squatter inhabitants of Nush-i Jan. Thus, the finding in the Columned Hall of more than 100 clay loomweights and nearly 20 spindle-whorls, plus more than 20 bone spatulae that I have identified as ‘beaters-in’, shows that textile—weaving was going on here, probably in the south central part of the hall.

No ivory objects were found in the Median levels at Nush-i Jan, nor for that matter in the Parthian levels, but it is interesting to note that two small fragments of unworked ivory were found in the South Court near the top of the partly-excavated cistern (Stronach and Roaf 1978, 195).

It is not my intention here to describe Median material culture or to assess the contribution made to our understanding of this subject by the Nush-i Jan finds. The whole question of what constitutes Median art is surrounded by controversy, and this is not the appropriate place to discuss it. Nevertheless, it is perhaps worth making one general observation. Many of the small finds from Nush-i Jan belong to types that are widely distributed over the Middle East and are not characteristic of any one particular area. However, it is notable that of the comparatively small number of diagnostic objects, both the stamp seal no. 233 showing the cow and suckling calf and the cylinder seal impression no. 236 showing an archer shooting at a snake seem to be local copies of Assyrian originals. The same is probably also true of the Pazuzu head no. 296.

2. SEALS AND SEALINGS

233. NU 73/78 (pl. XI, fig. 4; IBM; Stronach and Roaf 1978, 6, pl. IVe) Stamp seal in black stone with longitudinally-drilled hole. Part missing from one side. On one surface a cow and suckling calf, with an 8-pointed star and 4 dots above, and on the other a wheel-shaped device that is possibly supposed to be a rosette. 1.85 x 1.51 cm., thickness 0.78 cm.
09, Room 18, associated with fallen floor.

The motif of cow and suckling calf has been the subject of a very thorough study by Keel (1980, 54–141), and he has collected together most of the examples in the Ancient Near East. It was especially common in the 1st millennium B.C., notably in Phoenician contexts, reflecting its ultimate derivation from Egypt. There are a number of occurrences in Late Assyrian glyptic, both on cylinder seals (eg Keel 1980, 119, figs. 97–8 = impressions from Ashur; Porada 1948, pl. XCIV: 647) and stamp seals (eg Mallowan 1966, I, 199, 259, figs. 134–5, fig. 241 = an impression and a seal from Nimrud), and the motif occurs again on seals of the Achaemenid period (Moorey 1978a, 150). Stylistically, the Nush-i Jan seal is closely related to the Late Assyrian group.¹ The star and the globes above the cow and the pronounced ribs on the cow's flank can all be paralleled there (eg Porada 1948, pl. LXXIX: 618; Frankfort 1939, pl. XXXVg; Moortgat 1940, pl. 77: 647). It is surprising, though, to find only five globes on the Nush-i Jan seal, as opposed to the usual seven. This, and the crudity of the workmanship – witness the lack of detail on the cow's body and the clumsily-executed star – suggest that it is a local copy of an Assyrian original.

234. NU 74/132 (pl. XI, fig. 4; IBM; Stronach and Roaf 1978, 9, pl. IVc) Faience stamp seal of scaraboid shape with longitudinally-drilled hole. The design shows a boat, filled in with cross-hatching, with upturned prow and stern. At either end of the boat there is a stylized tree (?), and in the centre a table (?) or offering-stand (?) represented by two vertical lines capped by a horizontal line. Above this motif there is another floral (?) design comparable to the trees (?) at either side of it. In the sky there are two globes. 1.65 x 1.5 cm., thickness 0.75 cm.
H11, CH, on original floor (i.e. early squatter level).

The connections of this seal are clearly with a group of Syro-Phoenician seals collected together and discussed by Culican (1968, 56–7; 1970, 29–33) and Tushingham (1971).² They all show a 'god' in a boat, a scene which Culican believes to derive from Egyptian iconography, namely Isis in the solar barque. Particularly relevant for our purposes are two seals, the first inscribed 'Elishama, son of Gedalyahu' (Culican 1970, 29, fig. 1d). In the past this seal is often thought to have been a forgery, but both Culican and Tushingham are inclined to accept it as genuine. It shows a boat with ducks' heads (?) at prow and stern and in the middle a figure seated on a throne, flanked by two stands supporting what may be floral motifs. The second seal, acquired near Irbid in northern Jordan, has a similar composition but the boat is lacking the duck's head terminals (Tushingham 1971, 23, fig.). The Nush-i Jan seal is similar to both of these, but is different in one important respect. That is the absence of an enthroned figure in the centre and its replacement by another floral motif, a combination of elements which seems to be meaningless. Further, while the motifs on either side of the enthroned figure on the Elishama and Irbid seals are open to differing interpretations, being to Culican (1970, 33) clumsy copies of the 'Pharaonic fans which are often mounted on the solar boat' and to Tushingham (1971, 27) 'burning braziers or cressets', on the Nush-i Jan seal they are quite clearly meant to be trees. The two globes on the Nush-i Jan seal are possibly intended to be the star or disc-and-crescent motifs often found on Phoenician seals. All this suggests that we are dealing with the product of a local craftsman who

¹ A stamp seal in the Ashmolean Museum, no. 1859.91, has the same combination of cow and suckling calf plus star on one side and rosette on the back. It is referred to by Boardman (1963, 127) as an example of a type of Near Eastern stamp seal, disc-shaped and with rosette on the back, that was copied in Greece.

² An Achaemenid stamp seal in the Ashmolean Museum, obtained in the Lebanon, has a design on one face which Moorey (1978a, 149–50, fig. 4, right) interprets as a fire-altar possibly standing in a boat.

based his design on a group of seals represented by the two examples we have referred to. The significance of the motifs was probably unclear to him, and he misinterpreted them. The Nush-i Jan seal, though, does have important implications for the dating of other seals of this type. It can hardly be much later than 600 B.C., which suggests that seals bearing more comprehensible versions of this scene were current in the 7th century B.C.

235. NU 70/452 (fig. 4; IBM) Stone cylinder seal in poor condition. One end broken away and most of surface abraded. Design unclear. L. 1.95 cm., diam. 1.0 cm.
M10, Room 2A, floor deposit.
236. NU 77/20 (pl. XI, fig. 4; IBM; Stronach and Roaf 1978, 9, pl. IVd) A clay sealing, 4.8 x 3.6 cm., with a cylinder seal impression showing an archer, facing left, shooting at a rampant snake. Immediately beneath the bow are nine irregular dots. The sealing has a fabric impression on the reverse, and was probably fixed to a jar with a rim diam. of c. 9.0 cm.
H9/19, tunnel.

This impression is related to a group of Late Assyrian faience seals which show a figure with bow and arrow facing up to a rearing serpent with horned head and coiled body.³ There are examples from Ashur (Moortgat 1940, pl. 82, nos. 689–94; Frankfort 1939, pl. XXXIVg), Khorsabad (Loud and Altman 1938, pl. 57: 83, 86) and Tell Halaf (Hrouda 1962, pl. 25: 25–27; Moortgat 1940, pl. 82, no. 695), dating from the 9th to 7th centuries B.C. Generally there is a plant or small bush beneath the drawn bow, and it is likely that the blobs on the Nush-i Jan impression represent a misinterpretation of this motif as rain or a mountain. Alternatively, the seal-cutter might have been thinking of the seven globes, representing the Pleiades, that are commonly featured on Late Assyrian seals, but they are always placed in the sky. In any event, it seems clear that the seal is a crude provincial version of an Assyrian original.

237. NU 67/54 (fig. 4; IBM) A fragmentary lump of brown clay, c. 10.0 x 4.3 cm., with a single impression c. 1.6 x 1.2 cm., probably from a scarab or scaraboid. The design shows a scroll pattern, with the spirals all cleverly linked together. Finger impressions on the clay.
F10, Room 40, upper Median floor.

It is surprising to find a scroll pattern in such a late context, as such scarabs (in Egypt at least) do not generally occur after the 18th Dynasty (c. 1567–1320 B.C.) (Petrie 1925, 13–14, pl. VII; 1917, *passim*).

238. NU 67/53 (pl. XII, fig. 4; IBM) A large lump of finely-levigated buff-brown clay, c. 16.3 x 11.0 cm., thickness c. 9.0 cm., with 8 circular stamp-seal impressions on one side. String impressions on stamped face and on one side. All of the impressions are apparently identical, c. 1.5 cm. in diam. The design is very obscure, most of the impressions being blurred by cloth or finger impressions, but it perhaps consists of an animal's head in the centre framed by three semicircles. It must be stressed, though, that this interpretation is extremely tentative.
F10, Room 40, upper Median floor.
239. NU 67/82 (pl. XII) A large lump of unbaked clay, c. 19.0 x 12.0 cm., thickness c. 12.0 cm., with seven complete and three incomplete circular stamp seal impressions on one surface. The designs are all indistinct, but it seems that some at least may be similar to those on no. 238.
F10, Room 40, upper Median floor.
240. NU 67/85 A lump of unbaked clay, c. 8.5 x 4.2 cm., thickness c. 4.0 cm., with a single circular stamp seal impression on one surface. The design very indistinct, but possibly as no. 238.
F10, Room 40, upper Median floor.

³I am indebted to Dr. Dominique Collon for help in dealing with this impression.

241. NU 67/86 A lump of unbaked clay, c. 8.5 x 7.0 cm., thickness 3.5 cm., with a single circular stamp seal impression on one surface. The design obliterated.
F10, Room 40, upper Median floor.

3. METAL OBJECTS

a. Tools

242. NU 73/53 (fig. 5; IBM) Fragment of iron blade, perhaps part of a knife. Max. L. 7.2 cm., max. w. 1.85 cm., max. thickness 0.94 cm.
L11, intermediate squatter level.
243. NU 77/53 (fig. 5; IBM) Fragment of iron blade. L. 7.3 cm., max. w. 1.8 cm., max. thickness 0.7 cm.
H9/H10 baulk, CH, squatter levels (in deposit filling entrance to tunnel).
244. NU 74/51 (fig. 5; IBM) Small iron blade with tang, curved in outline. Cutting edge on inside. End of tang and end of blade both missing. L. 6.05 cm., max. w. 1.5 cm., max. thickness 0.5 cm.
J8/J9 baulk, CH, early squatter level.
245. NU 74/54 (IBM) Fragments of an iron blade with part of haft. 2 rivets survive. (Condition too poor for drawing to be made.) L. of longest piece 9.3 cm.
H11, CH, on original floor (i.e. early squatter level).
246. NU 73/51 (fig. 5; IBM) Iron sickle blade. Tip missing, otherwise mostly complete. Overall L. 10.7 cm., max. w. 3.4 cm.
P9, Room 18, associated with fallen floor.

Iron sickle blades of this type are common in 1st millennium B.C. contexts. In Iran examples may be noted from Necropolis B at Sialk (Ghirshman 1939, pl. LXVIII: S714, S723c), Bastam (Kroll 1979, figs. 10:1, 11:10, 16:3), Baba Jan (Goff 1978, fig. 15:17–18), Persepolis (Schmidt 1957, pl. 81:14) and Pasargadae (Stronach 1978, fig. 95:15, pl. 164e). They are still in use today (pl. XIVa).

247. NU 67/21 (fig. 5) Iron awl (?), point and tang both square in section. Remains of wood on tang. L. 8.2 cm., max. thickness 0.7 cm.
N11, in stone filling of arrow-slot.

b. Arrowheads/Lanceheads

248. NU 77/52 (fig. 6; IBM) Iron leaf-shaped arrowhead with short tang. L. 4.2 cm., max. w. 1.15 cm.
I9/I10 baulk, CH, early/intermediate squatter levels.
249. NU 77/54 (fig. 6; IBM) Iron arrowhead with tang, fragmentary. L. 3.2 cm., w. 1.1 cm.
J/K, 7/8 baulk, in niche, below mud-brick tumble.
250. NU 73/55 (fig. 6; IBM) Corroded fragment of iron, possibly bottom half of a tanged arrowhead. Max. L. 3.8 cm., max. w. 1.9 cm.
N13, in mudbrick blocking.
251. NU 70/402 (fig. 6) Corroded fragment of iron, possibly a fragmentary arrowhead. Max. L. 3.0 cm., max. w. 1.3 cm.
M10, Room 2A, floor deposit.
252. NU 74/52 (fig. 6; IBM) Iron leaf-shaped arrowhead in poor condition, with parts of blade and tang missing. L. 4.4 cm., max. w. 1.6 cm.
J11, CH, intermediate squatter level.
253. NU 67/176 (fig. 6) Iron object in poor condition, probably an arrowhead with poker-shaped blade. Parts of blade and tang missing. L. 3.3 cm., max. w. 0.85 cm.
Q10, Room 26, 50 cm. above floor.
254. NU 77/27 (fig. 6; IBM) Bronze arrowhead with triangular-shaped blade. Tang circular in section. Complete. L. 3.55 cm., max. w. 1.2 cm.
H9/I9 baulk, CH, squatter levels (in deposit filling entrance to tunnel).

255. NU 73/36 (fig. 6; IBM) Bronze arrowhead with triangular-shaped blade, apparently with flanged edges and a mid-rib. Most of tang broken away. L. 3.1 cm., max. w. 1.5 cm.
G8, CH, squatter levels.
256. NU 67/29 (fig. 6; IBM) Bronze arrowhead with short, triangular-shaped blade and long tang. Tang circular in section. Complete. L. 2.5 cm., max. w. 1.0 cm.
R8, Room 11, in fill.
257. NU 74/35 (fig. 6; IBM) Bottom half only (tang and base of blade) of leaf-shaped arrowhead. Tang square in section. Bronze. L. 2.8 cm., max. w. 1.05 cm.
H/I 8/9 baulk, CH, late squatter level.
258. NU 73/37 (fig. 6; IBM) Bronze lancehead with leaf-shaped blade and flat tang rectangular in section. Slightly pronounced shoulders. L. 11.3 cm., max. w. 1.9 cm.
T14, in mudbrick blocking.
259. NU 67/167 (fig. 6) Socketed bronze arrowhead, tripartite. Complete. L. 4.4 cm.
N10, in mudbrick blocking.
260. NU 70/351 (fig. 6; IBM) Another. Tip of blade missing. L. 3.2 cm.
E8, Room 38, in fill.
261. NU 74/26 (fig. 6; IBM) Another. Most of socket broken away. L. 2.3 cm.
I10, CH, in mudbrick tumble.
262. NU 70/183 (fig. 6) Another. In poor condition, with parts of blade and socket missing. L. 3.25 cm.
F8, CH, from mudbrick collapse.

In her study on the Iranian Iron Age, Medvedskaya (1982, 83–4) has shown that in Iran, as elsewhere in the Near East, tanged bronze arrowheads were the dominant form in the latter part of the 2nd millennium B.C. In fact, iron arrowheads have not so far been attested in Iron Age I contexts (*ibid.*; Piggot 1977). In the Iron Age II period (c. 1000–750 B.C.) bronze arrowheads continued in use, but only to a limited extent. They were generally replaced by tanged iron arrowheads, which in this and the succeeding Iron Age III period (c. 750–550 B.C.) became the most popular form. Such arrowheads are generally leaf-shaped, and have a tapering tang; there may or may not be a stop in the form of a pronounced thickening at the top of the tang. Five of the six iron arrowheads from Nush-i Jan (nos. 248–52) are fairly typical of the standard form. The sixth (no. 253), with a blade that is circular in section, is rather more unusual.

Tanged iron arrowheads have been found in Iron Age II or III contexts at a number of Iranian sites. These include Tepe Sialk (Ghirshman 1939, 49, pl. LVII: S. 793b), Tepe Giyan (Contenau and Ghirshman 1935, 18, pl. 8: tomb 3, 15), Baba Jan (Goff 1978, pl. IVa, fig. 15: 7, 9, 13), Haftavan Tepe (Burney 1972, pl. VIIIb) and Bastam (Kleiss 1970, 54–5, pl. 34; Kroll 1979, figs. 1:15, 9:5; 10:10; 11:6; 15:5; 16:1, 4, 6, 33). They are also known from a number of sites in Luristan excavated by Vanden Berghe, namely War Kabud (Vanden Berghe 1968a, pl. 27a, figs. 21:6, 23:5, 25:7, 30:5), Tattūlbān (Vanden Berghe 1968c, 125, fig. 46), Bard-i Bal (Vanden Berghe 1971, 35, fig. 11: 46–7), Darwand (Vanden Berghe 1973b, 69), Kutal-i Gulgul (Vanden Berghe 1973c, 21), Shālah Shūrī (Vanden Berghe 1978, fig. 27: 7–9, pl. XXXI:2) and Gul Khanan (Vanden Berghe 1978, fig. 8b: 3–8; 1980, fig. 20; 12–17). At Hasanlu, in period IV ‘the majority of arrowheads found are of simple narrow leaf shapes made of iron’ (Dyson 1964, 40), and from nearby Agrab Tepe there are a further 21 examples (Muscarella 1973, 67, fig. 27:8–13). Great numbers of these arrowheads have been found at Ziwiye during the recent Iranian excavations. Of Achaemenid or later date are more than 800 iron arrowheads from the treasury at Persepolis (Schmidt 1957, 99, pl. 76: 4–5) and a single example from Pasargadae (Stronach 1978, figs. 94:20). The evidence from Assyria shows very much the same picture as in Western Iran, with more than 600 tanged iron arrowheads having been found in Late Assyrian contexts. The vast majority are leaf-shaped, but some seven examples from Fort Shalmaneser at Nimrud (unpublished) have ‘poker-shaped’ blades and may thus be compared with the Nush-i Jan arrowhead no. 253.

As we have already said, iron began to replace bronze as the standard material for tanged arrowheads in the Iron Age II period, and even at that date tanged iron arrowheads vastly outnumber

their bronze counterparts. In the succeeding Iron Age III phase tanged bronze arrowheads became extremely scarce, so it is surprising to find four bronze examples (nos. 254–7) plus a bronze lance-head (no. 258) from Nush-i Jan. They account for nearly half of the tanged arrowheads found. Whatever the reasons for this remarkable situation, it certainly cannot be regarded as typical. At other Iron III sites only a handful of tanged bronze arrowheads have been found. They include one from Godin Tepe (Young and Levine 1974, fig. 50:5), one from Bastam (Kroll 1979, fig. 8:15),⁴ another from Agrab Tepe (Muscarella 1973, fig. 27:4), a couple of examples from Gul Khanan in Luristan (Vanden Berghe 1980, fig. 20:6–7) and perhaps some arrowheads from tomb 3 at Tepe Giyan (Contenau and Ghirshman 1935, 18, pl. 8: tomb 3, 15). In Cuyler Young's scheme this tomb belongs to phase I¹ which is largely Iron III (Young 1965, 66, fig. 14). In addition, a few bronze leaf-shaped arrowheads with tang have been found associated with great numbers of iron arrowheads during the recent Iranian excavations at Ziwiye.⁵ The position in Assyria is much the same, with only one tanged bronze arrowhead known from a Late Assyrian context. It comes from the provincial town of Tell al Rimah (unpublished). In the Achaemenid period such arrowheads were similarly scarce: there are just 25 examples from the treasury at Persepolis, compared with more than 800 iron arrowheads with tang (Schmidt 1957, 99, pl. 76: 6, 21–2). The Nush-i Jan find no. 258, with a length of 11.3 cm., is substantially larger than the other four tanged bronze arrowheads and is perhaps more likely to be a lancehead. Comparable bronze weapons may be noted from Necropolis B at Sialk (Ghirshman 1939, pl. XCII) and from level 1 at Tepe Giyan (Contenau and Ghirshman 1935, *passim*).

As yet we have made no mention of socketed bronze arrowheads, which play an important part in the history of archery during the 1st millennium B.C. From Nush-i Jan there are four such arrowheads (nos. 259–62), all of them tripartite, that is with three wings. In no case is there evidence of a barb or side-catch on the socket. Arrowheads of this type have been extensively discussed by various scholars, so we need do little more than refer to the results of their studies. Of primary importance is the article by Sulimirski (1954), but this must be supplemented by more recent works, particularly those of Cleuziou (1977), Moorey (1980, 65–6) and Medvedskaya (1982, 87–94). It emerges that socketed bronze arrowheads originated in the southern part of the U.S.S.R. in the 9th century B.C. and were carried into Western Asia by invading Cimmerian and Scythian tribes. From the late 8th or early 7th century onwards they were widely distributed. For example, large numbers of them have been found in the destruction levels at Assyrian sites, particularly Ashur where more than 150 were recovered from the south wall, mostly around tower C (Andrae 1913, 140, 143, fig. 254). Likewise they are attested at a large number of sites in Western Iran, references to which have been given by Cleuziou and Medvedskaya.⁶ In the Achaemenid period such arrowheads were standard issue for the Persian army, as shown by the occurrence of nearly 4,000 examples in the Treasury at Persepolis (Schmidt 1957, 9, table IX, pl. 76).

The Nush-i Jan arrowheads are typical of the tripartite type current in the 7th–6th centuries, that is with a long socket. Both Cleuziou and Medvedskaya have argued that the socketed arrowheads with three blades were originally associated with the Scythians, as opposed to the two-bladed variety which is linked with the Cimmerians, and that the Medes adopted the Scythian type. Their argument is based partly on Herodotus' statement that the Median king Cyaxares gave his sons to the Scythians to be instructed in archery. Further, it is assumed that the Medes formed the core of the Persian cavalry, and that the large numbers of tripartite arrowheads found at Persepolis belonged to them. The presence of such arrowheads at Nush-i Jan, then, is further proof of this theory, unless of course they were fired by marauding Scythians or other enemy

⁴ A bronze arrowhead from the tumulus at Bastam (Kleiss 1970, 54, pl. 34:1) is of uncertain date.

⁵ During a visit to Ziwiye in 1977 with other members of the Nush-i Jan team I was kindly shown the finds by Miss Helen Kordmahini of the Iranian Centre for Archaeological Research.

⁶ The following sites should be added to their lists: Tell Agrab (Muscarella 1973, fig. 27: 2–3); Pasargadae (Stronach 1978, 180–1, fig. 94, pl. 165); Bastam (Kroll 1979, figs. 3: 1–2; 10:8; 15:1; 16:30–2, pl. 51:1–4); and Sagzabad (Shahmirzadi 1979, 58, 61, fig. 6:8).

forces. None of the arrowheads, however, was found in a context to suggest that this was the case.

c. Fibulae

263. NU 73/27 (fig. 5; IBM) Bronze elbow fibula with ribbed and beaded mouldings. Most of spring and pin missing. Ht. 1.47 cm., w. 3.55 cm.
J9, CH, early/intermediate squatter levels.
264. NU 73/26 (fig. 5; IBM) Another of similar type. Spring and pin missing. Ht. 2.03 cm., w. 3.9 cm.
I9, CH, intermediate squatter level (20 cm. above floor).
265. NU 77/31 (fig. 5; IBM) Another of similar type. Part of clasp missing, otherwise complete but in part very corroded. Ht. 2.25 cm., w. 3.35 cm.
H8/I8 baulk, CH, early squatter level.
266. NU 70/354 (fig. 5) (Ashmolean: 1974.17) Another of similar type. Pin missing. Ht. 2.15 cm., w. 3.7 cm.
I9, CH, squatter levels.
267. NU 77/26 (fig. 5; IBM) Arm of fibula of similar type complete with spring and pin. Ht. 2.15 cm., overall w. 4.05 cm.
I9, CH, squatter levels (in deposit filling entrance to tunnel).
268. NU 74/33 (fig. 5; IBM) Arm of fibula of similar type with spring and part of pin. Ht. 2.23 cm., L. of pin (incl. spring) 1.5 cm.
I9/J9 baulk, intermediate squatter level.
269. NU 70/355 (fig. 5; IBM) Arm of fibula of similar type. L. 2.5 cm.
I9, CH, squatter levels.
270. NU 73/29 (fig. 5; IBM) Bronze elbow fibula, complete. Details of decoration obscure, but probably as nos. 263–9. Ht. 1.7 cm., w. 4.0 cm.
J9, CH, early/intermediate squatter levels.
271. NU 74/28 (fig. 5; IBM) Bronze elbow fibula with ribbed and beaded mouldings, the beaded mouldings decorated with vertically incised strokes. Complete. Ht. 1.95 cm., w. 3.55 cm.
I9, CH, intermediate squatter level.
272. NU 67/26 (fig. 5; MMA 69.24.12; Stronach 1968, 185, fig. 13; 1969, pl. Xb; Vanden Berghe 1978, 56, fig. 11:4) Bronze elbow fibula with block mouldings with cross-hatched incisions and beaded mouldings. Complete, except for small parts of spring and pin. Ht. 2.2 cm., w. 4.4 cm.
L11, Room 6, 25 cm. above lower floor.
273. NU 74/31 (fig. 5; IBM) Bronze elbow fibula, complete but join between bow and spring corroded and object now in two pieces. Details of decoration obscure. Ht. of bow 1.53 cm., w. 3.38 cm., L. of pin 3.25 cm.
H9, CH, late squatter level.
274. NU 77/51 (fig. 5; IBM) Iron elbow fibula with bronze spring and pin. Clasp and end of pin missing. Details of decoration (if any) obscure. Ht. 2.1 cm., w. 2.75 cm.
I11/J11 baulk, CH, early squatter level.
275. NU 74/40 (IBM) Arm of bronze fibula. Details of decoration obscure. L. 2.76 cm.
Embedded in mortar attached to a Median brick from Columned Hall.
276. NU 77/28 (fig. 5; IBM) Fibula pin and spring. Bronze. L. 3.3 cm.
G9/H9 baulk, CH, intermediate squatter level.
277. NU 74/36 (fig. 5; IBM) Fibula pin and spring. Bronze. L. 2.6 cm.
E9/F9 baulk, OWB, Room 44, in occupation debris.
278. NU 74/30 (fig. 5; IBM) Fibula pin and part of spring. Bronze. L. 3.25 cm.
I9, CH, early/intermediate squatter levels.
279. NU 74/29 (fig. 5; IBM) Fibula pin and spring. Bronze. L. 3.6 cm.
H9, CH, intermediate squatter level.

For fibulae we are in the happy position of being able to refer to a recent study by Vanden Berghe which collects together all the fibulae found in excavations in Western Iran up to 1978

(Vanden Berghe 1978).⁷ In addition there are a number of earlier and more general studies such as those by Blinkenberg (1926) and Stronach (1959). Although the latter study was published more than twenty years ago it is still a mine of information, and Vanden Berghe follows the typology suggested in Stronach's article.

From the Median levels at Nush-i Jan, found mostly in the Columned Hall, are eight bronze fibula bows (nos. 263–6, 270–3), four of them complete with spring and pin, and one iron fibula (no. 274). In addition there are the arms from four more bronze fibulae (nos. 267–9, 275), and four loose bronze pins (nos. 276–9). Altogether, then, at least 12 bronze fibulae are represented. Three of them are so corroded that nothing can be said about the decoration on their bows, but of the remaining nine all belong to Stronach's type III:7, that is they have triangular bows with ribbed and beaded mouldings on each arm. Two of the examples are more elaborate than the others in that they have additional decoration. In one (no. 271) this takes the form of vertical strokes on the beaded mouldings, and in the other (no. 272) there is additional incised work on the ribbed mouldings giving them a cross-hatched effect. On several of the fibulae the ribbing has a spiral appearance suggesting the use of coiled wire, but because of corrosion no conclusion could be reached on this point. It is known, however, that coiled wire was sometimes used to produce ribbing on fibulae: the technique is attested in Palestine (Stronach 1959, 196).

Bronze fibulae comparable to the Nush-i Jan examples, that is of Stronach's type III:7, have been found at a number of the sites excavated by Vanden Berghe in the Pusht-i Kuh, namely Sar Kabūd, Cham Sul, Dam Chaft, Bān Kulkān, Garachahgāh and perhaps War Kabūd (Vanden Berghe 1978, 50, fig. 9). All these fibulae come from tombs which Vanden Berghe dates to Iron Age IIIA, that is mid-8th century to late 7th century B.C. (Vanden Berghe 1978, 49). Other Iranian sites to have produced fibulae of this type are Godin Tepe, Hasanlu, Zendan-i Suleiman and Bisitun; another was obtained by Stein at Telyāb in the Pusht-i Kuh (Vanden Berghe 1978, 56, fig. 11). This type of fibulae, then, enjoyed a wide distribution in Western Iran as it did elsewhere in the Near East; indeed, it is by far the commonest sort of triangular fibulae (Stronach 1959, 197–200). Of nearly 70 triangular bronze fibulae found at Nimrud many are of this type. It remained popular down to the Achaemenid period, as evidenced by examples from Deve Hüyük (Moorey 1980, fig. 14) and Kamid el-Loz (Poppa 1978, *passim*). The type survived for a long time: at Dura Europos such fibulae were in use 'later than 300 B.C. and perhaps as late as the 1st century of the Christian era' (Frisch and Toll 1949, 37, pl. X: 1–3).

Triangular iron fibulae as no. 274 are much less common than their bronze counterparts, but they have been attested at a number of sites. These include Nimrud, where two were found in Fort Shalmaneser (unpublished), and Ashur, where two examples come from graves (Haller 1954, graves 263, 279). Another iron fibula from Nush-i Jan, found on the surface in square D9 (no. 490), has a large semicircular bow and is probably Parthian in date.

d. Pins

- | | | |
|------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 280. | NU 74/37 | (fig. 7; IBM) Bronze pin with rolled-over head, shank rectangular in section. Ht. 6.03 cm.
I9/J9 baulk, CH, intermediate squatter level. |
| 281. | NU 67/175 | (fig. 7) Bronze pin with head consisting of simple spherical moulding. Ht. 5.5 cm.
N8, Room 1, in mudbrick blocking above stone filling. |
| 282. | NU 73/35 | (fig. 7; IBM) Bronze pin with decorative head consisting of a cube with rounded top separated from the shank by a cushion. Top part of pin (including head) square in section, lower part circular. Ht. 6.18 cm.
Q13, Room 37, in mudbrick blocking. |

It is uncertain whether these objects are dress-pins or hair-pins. Moorey (1971, 172–3) has pointed out that the two types cannot be differentiated by length. It is often thought that with the wide-

⁷To Vanden Berghe's list add fibulae from Bastam, Kroll 1979, fig. 3:8 = pl. 48:4, fig. 10:9 = pl. 48:6, fig. 11:3. For the Ziwiye fibulae see now Ghirshman 1979, pls. III:5, IV:7, but note Muscarella's strictures on material from Ziwiye (Muscarella 1977).

spread use of fibulae from the 8th century onwards the dress-pin became more or less obsolete, but it is unlikely that it was altogether superseded.

Bronze roll-headed pins such as no. 280, produced by hammering flat the head of the pin and rolling it over, are widespread in the archaeological record. Jabobstal (1956, 122) notes that they originated in the Early Bronze Age and survived into the Iron Age. In Iran such pins range in date between the 3rd and 1st millennia B.C. Examples may be cited from Bani Surmah in Luristan (Vanden Berghe 1968b, 57), dating from the mid-3rd millennium B.C., and level IIIB at Tepe Hissar (Schmidt 1937, pl. LIII: H3141). In Iron Age contexts they occur at Dinkha Tepe (Muscarella 1974, fig. 48), Haftavan Tepe (Burney 1972, 135, pl. IIIb), Bard-i Bal in Luristan (Vanden Berghe 1971, fig. 36), Tepe Sialk (Ghirshman 1939, pl. XCIII: S.1440), Khurvin (Vanden Berghe 1964, pl. XLIII: 307), and the so-called Achaemenid village at Susa (Ghirshman 1954, pl. XLV: G.S. 2113, G.S. 2245). Late Assyrian examples, unpublished, are known from Nimrud and Khorsabad, and such pins are also found in the Achaemenid period cemetery at Deve Hüyük (Moorey 1980, fig. 14: 356–8).

Equally common are pins with heads comprising simple spherical mouldings as no. 281. Such pins are the simplest form of a type that often has incised decoration at the top of the shank or an elaborate head in the form of superimposed spherical mouldings. Examples of the simple variety, comparable with the Nush-i Jan pin, may be noted from Luristan, both provenanced (Vanden Berghe 1970, 72, bottom right) and unprovenanced (Moorey 1971, pl. 44:250), from Dinkha Tepe (Muscarella 1974, fig. 52: 385) and from Tepe Giyan (Contenau and Ghirshman 1935, pls. 18, 21). In Assyrian contexts, bronze pins of this type are known from both Nimrud and Kouyunjik.

The pin no. 282 is much more unusual, but finds an approximate parallel at Baba Jan (Goff 1978, fig. 14:11).

e. Earrings

283. NU 74/27 (fig. 7; IBM) Bronze earring with crescentic body and semicircular wire holder. Part of holder missing. W. c. 1.15 cm. I11, CH, late squatter level.
284. NU 77/30 (fig. 7; IBM) Another, with end of holder missing. Ht. 1.85 cm., w. 1.25 cm. H11/I11 baulk, CH, early/intermediate squatter levels.

Plain bronze earrings of crescentic form must have been very common in the Ancient Near East, but surprisingly few examples have been published. Much better known are their gold counterparts. At Nimrud thirteen crescentic bronze earrings were found, most of them from Fort Shalmaneser, and there are three examples from Khorsabad (Loud and Altman 1938, pl. 59: 133–5).

285. NU 77/29 (fig. 7; IBM) Annular bronze earring in poor condition terminating in an animal's head, perhaps that of a goat or snake. Band circular in section. 2.5 x 2.8 cm. H10/H11, G10/G11 baulk, CH, early squatter level.

Comparable bronze earrings, with one zoomorphic terminal, have perhaps been found at Pasargadae (Stronach 1978, fig. 97: 2–3); their form is not entirely clear. The form is definitely attested in the Late Assyrian period, however, with single examples from Nimrud and Kouyunjik.

f. Beads

286. NU 73/40 (fig. 7; IBM) Cylindrical bronze head. L. 0.33 cm., diam. 0.5 cm. M9, Room 2A, in floor deposit 60 cm. above bedrock.
287. NU 67/77 (fig. 7) Cylindrical bronze bead made from sheet metal, seam along one side. L. 0.5 cm., diam. 0.7 cm. M9, Room 1, in stone filling 4.30 m. above floor.
288. NU 73/41 (fig. 7; IBM) Long tubular bronze bead made from sheet metal overlapping along one side. L. 3.05 cm., max. diam. 0.54 cm., thickness of metal c. 0.1 cm. I9, CH, intermediate squatter level.

About 250 tubular bronze beads as no. 288 have been found at Nimrud, many of them in association with items of horse harness. Similarly at Hasanlu bronze beads were found together with 'phalerae' and cheek ornaments (Dyson 1972, 3, fig. 11; de Schauensee and Dyson 1983, 66–7, figs. 9a–b). The evidence from Hasanlu, together with that from Scythian barrows, shows that such beads belonged with horses' headstalls and were probably threaded on strings stretched between the 'phalerae'. This is not to say, though, that the Nush-i Jan bead was necessarily used in the same way, for similar beads must often have been personal jewellery. Also, the Nimrud beads do not exceed 2.35 cm. in length as compared to the Nush-i Jan bead which is more than 3 cm. long. An odd example from Sagzabad near Qazvin is about the same length as the Nush-i Jan specimen (Shahmirzadi 1979, fig. 5:9).

g. 'Buttons' and bosses

289. NU 73/32 (fig. 7; IBM) Large bronze 'button' with convex top and thick semicircular shank. Part missing from one side of button. Diam. 4.55 cm., ht. 0.95 cm.
P 9, Room 18, associated with fallen floor.
290. NU 67/34 (fig. 7; IBM) Small bronze 'button', hemispherical with ring fastener on underside. Diam. 1.2 cm., ht. 0.5 cm.
R12, Room 22, in fill 1.60 m. above floor.
291. NU 73/33 (fig. 7; IBM) Another. Diam. 1.4 cm., ht. 0.63 cm.
O9, Room 18, associated with fallen floor.
292. NU 73/31 (IBM) Another. Diam. 1.32 cm., ht. 0.6 cm.
P 9, Room 18, associated with fallen floor.
293. NU 67/90 (fig. 7) Another, but with projecting lip on one side. Diam. c. 1.4 cm., ht. c. 0.65 cm.
Q10, Room 26, close to S. wall, upper fill.
294. NU 74/34 (fig. 7; IBM) Small bronze 'button', hemispherical, with loop fastener on underside. Diam. 1.12 cm., ht. 0.48 cm.
G9, CH, on earliest floor (i.e. early squatter level).
295. NU 73/34 (fig. 7; IBM) Bronze cap, approx. square in outline, with circular boss in centre. Cut from sheet metal. 0.9 x 0.85 cm., ht. 0.3 cm.
P 9, Room 18, associated with fallen floor.

Metal 'buttons' or bosses such as these have been found at a number of Iranian sites. They include Tepe Hissar (Schmidt 1937, pl. LV: H2631), Tepe Sialk (Ghirshman 1939, pls. LXXIX, LV–LVI), Djub-i Gauher and Bān Kulkān in Luristan (Vanden Berghe 1978, fig. 8c; 1980, fig. 7:5), Baba Jan (Goff 1978, fig. 14: 34–7, 44), Agrab Tepe (Muscarella 1973, fig. 27:17), Haftavan Tepe (Burney 1972, 135, pl. IVa), Sagzabad near Qazvin (Shahmirzadi 1979, 59, fig. 5: 10–15) and Persepolis (Schmidt 1957, pl. 45: 18–23, 26). Often, no doubt, these bosses were sewn on to clothing, but sometimes there is evidence for a different function. Thus, those from one of the graves in necropolis B at Sialk (no. 123) were, according to Ghirshman, 'fixées sur cuir (?) en bracelet', while those from Haftavan were originally sewn onto a headdress. The larger bosses such as no. 289 have often been found associated with horse harness. This is clearly the case at Baba Jan where bosses were found with the horse burial (Goff 1969, fig. 7:4), and at both Tepe Giyan (Contenau and Ghirshman 1935, pls. V, 8) and Tepe Sialk (tomb 15) where decorative bosses or 'phalerae' were found in the same tombs as various items of harness. At Hasanlu, bronze bosses were found with most of the horses' headstalls recovered (Dyson 1972, fig. 11; de Schauensee and Dyson 1983, 62–7, figs. 6–9). However, de Morgan had no doubt that the bronze bosses found in quantity in Caucasian graves, some of them quite large, were personal ornaments (de Morgan, J., 1889, I. 49–50, 126–7, figs. 9, 107–8). Small bronze caps with embossed centres and no obvious means of attachment such as no. 295 are well-known from Nimrud, where more than 1000 examples were found in Late Assyrian contexts. They come mostly from storerooms which seem to have been, partly at least, repositories of harness equipment, so their identification as harness studs seems assured. As they are lacking any means of attachment they must have been

glued to a backing, probably of leather. It is perhaps significant that the single example from Nush-i Jan is associated with the fallen upper floor in Room 18, for three of the 'buttons' have the same provenance. It is tempting to conclude that horse harness was once stored in the chamber above Room 18, and that these four small objects had accidentally become detached.⁸

h. *Pazuzu head*

296. NU 67/49 (pl. XIII; Stronach 1968, 185, fig. 14; 1969, pl. Xc) Bronze head of demon Pazuzu with loop for suspension on top. Ht. 3.3 cm.
N11, Room 4, top of stone filling.

Representations of Pazuzu⁹ are generally fairly uniform, and show the demon with bulging eyes and a hideous face, half-human and half-leonine. He usually has goats' horns around the top of his head. Inscriptions show that Pazuzu amulets had an apotropaic function and were intended to guard against the effects of the west wind and protect pregnant women against the evil demon Lamashtu. For the latter purpose they were probably worn suspended from a necklace. In origin Pazuzu seems to have been an Assyrian demon, and consequently Pazuzu heads and other representations of him are widely distributed over the whole area of Assyrian influence, with the bulk of examples coming from Mesopotamia. From Nimrud alone there are three bronze Pazuzu heads with loops for suspension on top (Layard 1853a, 181; Moorey 1976, pl. XXIX; one unpublished). Heads of Pazuzu were equally popular in the Late Babylonian period, as shown by finds from Babylon (eg. Koldewey 1914, 283, fig. 221; Klengel-Brandt 1970) and an example in white shell from a Late Babylonian grave at Ur (Woolley 1962, pl. 25: U. 16118).

The Nush-i Jan pendant is the only example of its kind to have been found to date in an archaeological context in Western Iran. However there are in the Foroughi collection 'plusieurs dizaines de têtes de Pazuzu, munies d'un trou de suspension pour être accrochées au cou' (Ghirshman 1977, 25). Many of these probably derive from Western Iran, but as they are all products of illegal excavations and totally without reliable documentation there can be no certainty on this point. Also in the Foroughi collection are some six bronze fibulae which incorporate in their design heads of Pazuzu. In two of them the arms of the bow have moulded decoration in the form of rams' heads and terminate in a female figure and a Pazuzu head respectively (Ghirshman 1964, pl. XXV: 15; 1970–71, figs. 2a–b; Calmeyer 1974, figs. 11a–c). Another, represented by only one arm, is similar but the Pazuzu head and ram's head are transposed (Calmeyer 1974, figs. 13a–c; Ghirshman 1977, pl. I: 1). Three further fibulae have ribbed and beaded decoration on the upper parts of their arms and a bird and a Pazuzu head respectively on the lower parts (Ghirshman 1964, pl. XXV: 13–14; 1970–71, pl. II: 3; 1977, pl. I: 2; Calmeyer 1974, figs. 12a–b). Yet another item in the Foroughi collection also features Pazuzu, namely a bronze cylinder seal surmounted by a head that is probably meant to be the demon; it was illustrated in the catalogue of the exhibition 'Sept Mille Ans d'Art en Iran' (no. 424). To some extent, discussion of all this material in the Foroughi collection together with the Nush-i Jan pendant obscures the issue; it must be borne in mind that the Foroughi material is unprovenanced – Calmeyer gives no explanation for his assertion (1974, 115) that the fibulae 'müssen aus der weiteren Umgebung von Kermanšah stammen' – and neither can any of the pieces be very closely dated. The presence of Pazuzu at Nush-i Jan can be explained in a number of ways. It could be an import from Mesopotamia, either in the Late Assyrian or Neo-Babylonian period. Alternatively, it might be a West Iranian, probably Median, copy. Any of these possibilities is equally likely, but the balance is tipped in favour of local production by the Foroughi fibulae. In spite of the strictures noted above, it is most likely that they were found in Western Iran, largely because such fibulae are quite unknown in Mesopotamia. We can discount Ghirshman's suggestion (1970–71, 125) that the fibulae were brought back from

⁸ It is interesting to note that at Hasanlu some of the more important items of equestrian equipment found – namely a piece of head armour and a collection of bells – are thought to have fallen from second-floor storerooms (de Schauensee and Dyson 1983, 62–7, figs. 6–9).

⁹ There is an extensive literature on Pazuzu. For references see Moorey 1965, to which should now be added Lambert 1970.

Mesopotamia by Luristan warriors serving as mercenaries in the Assyrian army. There is some evidence, then, albeit rather tenuous, that the Pazuzu motif was copied in Iran. In view of the close contacts between the Medes and the Assyrians, this is scarcely surprising. We can agree, then, with Calmeyer's conclusion that the Nush-i Jan pendant, and probably also the Foroughi fibulae, are rare examples of Median art (Calmeyer 1974, 114–16).

i. *Spatula*

297. NU 67/35 (fig. 7; MMA 1978.93.24) Bronze spatula, complete but with bent shank. Original L. 11.0 cm., max. w. 0.6 cm. O7, surface.

Such spatulae are quite common in 1st millennium B.C. contexts. Examples may be noted from Nimrud (Stronach 1958, pl. XXXVI: 12), Pasargadae (Stronach 1978, fig. 91:11) and the so-called Achaemenid village at Susa (Ghirshman 1954, pl. XVIII: 3 = XLV: G.S. 961).

j. *Kohl stick*

298. NU 70/184 (fig. 7; IBM) Bronze kohl stick with elaborate head, consisting of ribbed and beaded decoration surmounted by castellations. Ht. 10.0 cm. F8, just above top of wall of CH, in fill.

When it was found, there was some uncertainty about whether this kohl stick should be ascribed to the Median or Parthian levels. It was found just above the outer wall of the columned hall and therefore in a context that would normally have been Parthian. However, there was clear evidence of disturbance at this point, rendering a Median attribution equally likely.

Fortunately, comparable kohl sticks with the same very distinctive castellated terminals have been found in well-dated contexts elsewhere. Thus, four examples come from the cemetery at Kamid el-Loz (Poppa 1978, pls. 7: Grab 7, 13–14; 13: Grab 18, 19; 25:7), which Poppa estimates to have been in use from c. 450 B.C.–c. 360 B.C. Four more pieces from Deve Hüyük are presumed to derive from the Deve Hüyük II cemetery for which Moorey suggests a chronological range of c. 480–380 B.C. (Moorey 1978, 8, fig. 16: 397–8, 405–6). Another example from Al Mina was found in level 3, which Woolley dates to 430–375 B.C. (Woolley 1938, 24, fig. 25: MN 96). These parallels, then, indicate a date-range of c. 480–360 B.C. for kohl sticks of this type. The evidence from Nimrud, however, suggests that they also occur earlier. There three examples, at present unpublished, were found in PD5, an area in the outer town where part of a palace founded by Adad-Nirari III was excavated. This palace was destroyed by fire presumably in 614–612 B.C., and subsequently inhabited by squatters. Two of the kohl sticks (ND 3502, 3504) were effectively unprovenanced, both having been found in the topsoil. The third, however (ND 3392) was found in a grave dating from the squatter occupation. This grave was just 1 m. below the surface in Room 13. Apart from the kohl stick there was a large quantity of grave-goods including two triangular bronze fibulae (Mallowan 1954, 162) and two stamp-seals which are typical of the Late Babylonian period (Parker 1955, pl. XIX: 1,8). The presence of a Late Babylonian tablet in PD5 confirmed there was occupation during that period so it seems likely the grave was dug in Late Babylonian times, but whether towards the beginning or end of that period we cannot say. It seems unlikely though, that exactly the same sort of kohl sticks should have been in use for more than a couple of centuries, and it is hard to believe they can have appeared much before 550 B.C. This would give us outside limits of c. 550–350 B.C. for such kohl sticks. The Nush-i Jan example, then, must belong to the latest phase of squatter occupation in the columned hall, or might even be a stray find from the Achaemenid period. David Stronach suggested a castellated kohl stick from Pasargadae (Stronach 1978, 182, fig. 91:13) might be of Parthian date, but this is problematic. It was found on the Terraced Mound, on the south side of the upper terrace 5 cm. above the paved floor and 20 cm. beneath the surface. Stronach concluded that it must date from a period shortly after the Terraced Mound had fallen into disuse,¹⁰ and he therefore attributed it to the 2nd century

¹⁰ Pers. comm.

B.C. As it was found so close to the surface, however, it must be regarded as coming from an undated context. The same applies to a castellated kohl stick published by Boehmer (1972, 85, n. 671a, pl. XXIV: 585), which was found in a village north-east of Boğazköy.

Lastly, a word of justification is needed for describing these items as kohl sticks rather than pins. It is true that the Nush-i Jan example tapers to a point and looks much like a pin, but many of the other specimens, particularly those from Kamid el-Loz, Deve Hüyük and Al Mina have thickened ends and are clearly kohl sticks. It seems likely, then, that all objects of this class should be regarded as such.

k. *Miscellanea*

299. NU 67/168 (fig. 7) Open-ended bronze ring, circular in section, tapering towards terminals. Max. diam. 2.0 cm.
P 9, Room 18, from upper brick collapse.
300. NU 67/172 (fig. 7) Bronze ring with abutting terminals, circular in section, tapering slightly towards terminals. Max. diam. 2.5 cm.
R10, Room 20, on floor.
301. NU 73/30 (fig. 7; IBM) Open-ended ring, small part missing. Made of bronze wire circular in section. Max. diam. c. 2.4 cm., max. thickness of metal c. 0.37 cm.
J9, CH, early/intermediate squatter levels.
302. NU 74/38 (fig. 7; IBM) Bronze ring with overlapping terminals, circular in section throughout. Max. diam. 1.9 cm., thickness of wire c. 0.3 cm.
H9, early/intermediate squatter levels.
303. NU 73/39 (fig. 7; IBM) Length of bronze wire, circular in section, coiled round 1½ times. Max. diam. 1.34 cm., thickness of wire c. 0.24 cm.
K9, in mudbrick tumble.
304. NU 77/32 (fig. 7; IBM) Fragment of a bronze pin, L. 2.5 cm., max. diam. 0.15 cm.
H11, CH, early/intermediate squatter levels.
305. NU 77/33 (fig. 7; IBM) Another, L. 2.0 cm., max. diam. 0.1 cm.
H8/9, I8/9 baulk, CH, original occupation/early squatter level.
306. NU 73/42 (fig. 7; IBM) Bronze object cut from sheet metal. Function obscure, but possibly a fragmentary 'miniature symbol' representing a crescent on top of a shaft. Ht. 2.9 cm., max. w. 0.75 cm., thickness 0.1 cm.
I9, CH, intermediate squatter level.
307. NU 77/34 (fig. 7; IBM) Fragment of a bronze plaque with incised decoration in form of concentric circles. c. 3.5 x 2.5 cm.
H9/10, CH, upper fill of pit above tunnel and so probably late squatter level.
308. NU 73/56 (fig. 7; IBM) Iron ring, part missing, originally attached to a shank which now broken away. 3.55 x 2.2 cm.
J9, N. of CH, original floor.
309. NU 74/53 (fig. 7; IBM) Flat-headed iron nail, circular in section throughout. Complete, but bent in middle. Total L. c. 5.2 cm., diam. of head 0.9 cm.
G10, earliest squatter level.
310. NU 73/57 (fig. 7; IBM) Fragment of iron rod, pointed at one end. L. 2.96 cm., max. diam. 0.42 cm.
O9, Room 18, associated with fallen floor.
311. NU 70/401 (fig. 7) Rectangular fragment of iron with raised centre, much corroded. Possibly an armour scale of the type widespread at this period. Cf. examples from Persepolis (Schmidt 1957, pl. 77: 6–16) and Pasargadae (Stronach 1978, fig. 96). 6.3 x 1.5 cm.
E8, Room 38, lower squatter level.
312. NU 73/59 (IBM) Fragment of iron similar to last. 5.0 x 1.35 cm.
L12, mudbrick blocking.

4. CLAY OBJECTS

a. *Figurines*

313. NU 70/227 (fig. 8; IBM) Mould-made figurine in form of a naked lady holding her breasts. Bottom part missing. Baked clay, light grey in colour. Ht. 7.6 cm., w. 3.2 cm. H11, CH, late squatter level.

Terracotta plaques such as these, made from single-piece moulds and roughly smoothed at the back, were manufactured in the Ancient Near East from the Ur III period onwards. Plaques featuring a naked lady are particularly common and enjoy a wide distribution, both chronologically and geographically. The lady may adopt a number of different postures including, as here, with hands clutching the breasts which are presumably symbols of fertility. Sometimes the plaques are quite carefully modelled, as in a distinctive group represented at Susa (Loftus 1857, 379, fig.; Dales 1960, 84–6) and Choga Zanbil (Ghirshman 1968, 18, 23, figs. 4, 6, pls. XCII: G.T.-Z. 1041, XCV: G.T.-Z. 1057, LXXVI: G.T.-Z. 921, 937, 939, LXXX: G.T.-Z. 1031). These show clearly details of headdress, necklace, pendant and chest bands. More commonly, though, they are less finely finished and more or less plain as the Nush-i Jan example. Examples may be cited from Warka (Ziegler 1962, nos. 413–14, 424–5) and Babylon (Koldewey 1914, 279, fig. 209). There are comparable plaques of Achaemenid date from Deve Hüyük (Moorey 1980, nos. 435–6) and Moorey (1980, 103) also refers to examples of approximately similar date from Neirab, Til-Barsib and Al Mina. The purpose of these plaques has been much discussed but is still obscure (Holland 1974, 133 and refs.). This, plus their wide distribution, indicates that no particular inference, such as the existence of a ‘mother-goddess’ cult, should be drawn from the occurrence of an example at Nush-i Jan.

314. NU 77/21 (fig. 8; IBM) Figurine in form of a sheep (?) with legs, tail and ears broken away. Unbaked clay. Ht. 6.0 cm., L. 9.6 cm. F9, OWB, Room 44a.
315. NU 67/80 (fig. 8; IBM) Figurine in form of a quadruped. More precise identification impossible as head, tail and parts of legs missing. Unbaked clay. L. 5.2 cm., ht. 3.0 cm. F10, Room 40 (?), fill, 30 cm. below Parthian floor.
316. NU 77/7 (fig. 8; IBM) Small figurine in form of a dog with pricked ears. One rear leg missing. Baked clay. L. 3.6 cm., ht. 2.65 cm. L/M 10/11, in plaster of mudbrick enclosure, beneath mudbrick blocking.

Terracotta animals are often difficult to identify with any degree of confidence, but amongst the large numbers found many are certainly dogs. They occur from very early periods onwards, and are known from most parts of ancient Western Asia. In Iran, for example, examples may be noted from prehistoric levels at Susa and Tepe Djaffarabad (Le Breton 1947, figs. 7, 43, *passim*), from level III at Tepe Hissar (Schmidt 1937, pl. XLV: H3156), from the Middle Bronze Age level at Bastam (Kleiss 1979, pl. 48:1), from Choga Zanbil (Ghirshman 1966, pl. LXXIX: G.T.-Z. 517), and possibly from the Median period at Baba Jan (Goff 1978, fig. 13:4). In Mesopotamia such dogs often had an apotropaic function. Thus a text from Ashur (Gurney 1935, 64–75) describes how part of the ritual for protecting a house against evil spirits involves burying ten model dogs under the doorway. These dogs all bear appropriate inscriptions such as ‘biter of his foe’. Inscribed terracotta dogs of this kind have actually been found in excavations showing that the ritual was indeed carried out. There are examples from Nineveh (Barnett 1976, pls. I and XLV), Kish (Langdon 1924, 91, pl. XXVIII: 1) and Sippar (Scheil 1902, 90, fig. 13). The finding of uninscribed clay and bronze dogs buried beneath floors at Ur (Woolley 1965, 93–4) shows that they do not necessarily have to be inscribed to have an apotropaic purpose. Thus six bronze dogs recovered from well NN in the North-West Palace at Nimrud (Mallowan 1966, I, fig. 86) were probably intended, as Mallowan suggests, to be buried under thresholds. However, in view of the large numbers of dog figurines found in excavations and the wide time-range they cover it is scarcely likely that *all* had a ritual purpose. Some may simply have been toys, such as a bronze

dog (?) found in a level II grave at Kültepe (Özguç, T. and N., 1953, 148, pl. LVII: 575). Also, it must be remembered that on the Iranian plateau there is no evidence for a ritual involving model dogs such as that known to have been practised in Mesopotamia.

b. *Spindle-whorls*

Type 1 – Conical. Included here are all whorls approximating to a conical form; sometimes the sides are straight, sometimes a little rounded.

317. NU 67/25 Condition of clay not specified. Surface pinkish-buff in colour. Ht. 1.8 cm., max. diam. 3.5 cm.
R12, Room 22, S.W. corner, in fill.
318. NU 70/246 (fig. 9; IBM) Baked clay, light yellowish brown in colour. Ht. 1.5 cm., diam. 3.0 cm.
H9, CH, on original floor (i.e. early squatter level).
319. NU 70/254 Baked clay. Surface pink in colour. Ht. 1.4 cm., diam. 4.5 cm.
F10, CH, squatter levels.
320. NU 73/3 (fig. 9; IBM) Baked clay. Ht. 2.4 cm., max. diam. 4.25 cm.
I8, CH, late squatter level.
321. NU 73/7 (fig. 9; IBM) Baked clay. Ht. 2.3 cm., max. diam. 3.65 cm.
L11, early squatter level.
322. NU 73/8 (fig. 9; IBM) Baked clay, with traces of blue-green glaze on small part of one side and on most of underside. Ht. 1.83 cm., diam. 2.75 cm.
P9, Room 18, associated with fallen Median floor.
323. NU 73/14 (IBM) Baked clay, dark grey in colour with micaceous and calcareous inclusions. Ht. 1.53 cm., max. diam. 3.3 cm.
D10, Room 46, upper Median surface.
324. NU 74/1b (IBM) Baked clay. Ht. 2.25 cm., diam. 4.9 cm.
I11, CH, intermediate squatter level.
325. NU 74/1e (fig. 9; IBM) Baked clay. Ht. 1.85 cm., diam. 4.1 cm.
L/M/N12, in mudbrick blocking.
326. NU 74/1g (IBM) Baked clay. Ht. 1.6 cm., diam. 3.35 cm.
F8, CH, intermediate squatter level.
327. NU 74/1h (IBM) Baked clay. Ht. 1.55 cm., diam. 2.9 cm.
H11, CH, intermediate squatter level.
328. NU 77/8 (IBM) Baked clay, dark grey in colour with calcareous grits. Ht. 2.35 cm., diam. 4.35 cm.
H8/I8 baulk, CH, early squatter level.
329. NU 77/9 (fig. 9; IBM) Baked clay, orange-brown in colour. Ht. 1.8 cm., diam. 3.0 cm.
I10/I11 baulk, CH, intermediate squatter level.
330. NU 77/22 (IBM) Baked clay, dark grey in colour with micaceous grits. Ht. 1.6 cm., diam. 3.9 cm.
F9, OWB, Room 44a.

Type 2 – Biconical

331. NU 70/309 (IBM) Baked clay. Ht. c. 1.65 cm., diam. c. 3.2 cm.
O10, Room 25, on Median floor.
332. NU 73/15 (fig. 9; IBM) Baked clay, orange-brown in colour with large white inclusions. Ht. 2.5 cm., max. diam. 4.27 cm.
F10/11 baulk in mudbrick tumble.
333. NU 74/1a (IBM) Baked clay. Ht. 1.9 cm., diam. 5.8 cm.
H8, CH, intermediate squatter level.
334. NU 74/1c (IBM) Baked clay. Ht. 1.75 cm., diam. 5.1 cm.
J11, CH, intermediate squatter level.
335. NU 74/1d (fig. 9; IBM) Baked clay. Ht. 2.7 cm., diam. 4.25 cm.
I11, CH, in mudbrick tumble

336. NU 74/1i (IBM) Unbaked clay. Ht. 2.2 cm., diam. 2.7 cm.
H11, CH, early squatter level.
337. NU 77/10 (IBM) Baked clay, light red-brown in colour. Ht. 2.6 cm., diam. 4.7 cm.
I11/J11 baulk, CH, early squatter level.
- Type 3 – Drilled potsherds*
338. NU 70/226 Circular potsherd, roughly chipped around the outside. Baked clay, light brown in colour. Diam. 3.0 cm.
E8, Room 38, uppermost squatter floor.
339. NU 73/10 (fig. 9; IBM) Flat, circular disc with drilled hole in centre. Baked clay with large patches of yellow glaze on both sides. Originally perhaps base of a vessel. Max. diam. 6.9 cm., max. thickness 1.42 cm., diam. of central hole *c.* 1.35 cm.
H10, CH, mudbrick tumble.
340. NU 74/1f (fig. 9; IBM) Circular potsherd with hole drilled in centre. Baked clay. Diam. 6.4 cm., ht. 1.55 cm.
D10/E10, OWB, Room 46.
341. NU 77/11 (IBM) Potsherd, approximately circular in outline, drilled in centre. Baked clay, light red in colour with large silvery grits. Max. diam. 4.75 cm., thickness 1.15 cm.
I11/J11 baulk, CH, on original floor (i.e. early squatter level).

Spindle-whorls are commonly found in archaeological contexts and can generally be identified as such on the basis of modern ethnographic parallels (Watson 1979, 174–8; Wulff 1966, 185–8). They are mounted on a spindle, usually a wooden stick pointed at one end and with a notch or hook at the other end, and used for spinning wool. The whorl is positioned on the spindle towards its base, thus giving it balance and enabling it to be revolved at speed. Generally the raw wool is rolled into a ball and a fibre, or filament, is drawn out and its end fixed into the notch on the spindle. The top of the spindle is then twirled between the fingers, and when a length of wool has been spun it is wound around the spindle just above the whorl and the end of the finished length fixed into the notch. The process can then be repeated. The spinning of wool is still practised in most Iranian villages, and during the course of the 1974 season the opportunity was taken to photograph spinning at Nakilabad, one of the villages in the neighbourhood of Nush-i Jan (pl. XIVb–d). The whorls in use nowadays are generally of wood.

From the Median levels at Nush-i Jan there are 25 clay spindle whorls. Four of these are potsherds, trimmed roughly into a circular shape and centrally pierced. They vary in diameter from 3.0 to 6.9 cm. The use of potsherds in this way is widely attested (Watson 1979, 178). The remaining 21 spindle whorls can be roughly divided into two types, conical and biconical with the former type predominant. Only one instance was recorded of a spindle whorl in unbaked clay. There is a considerable variation in size among these whorls, with diameters of between 2.7 cm. and 5.8 cm., and heights of between 1.4 cm. and 2.7 cm. These figures may be compared with measurements obtained by Patty Jo Watson at Hasanabad near Kermanshah: she recorded whorls in current use varying in diameter between 5.0 and 6.0 cm. and in thickness between 2.0 and 3.5 cm. (Watson 1979, 178). Also from Median levels are three bone whorls, all conical (nos. 416–18) and five stone whorls, one conical and four disc-shaped (nos. 441–5). It is interesting that amongst the clay whorls from the Parthian levels at Nush-i Jan the same range of shapes is found as amongst the Median whorls. Thus of the three whorls (nos. 465–7) one is conical, one biconical and the third is a drilled potsherd. Also from Parthian levels are two bone whorls, both with incised decoration (nos. 482–3) and a glass whorl (no. 476). It is impossible to say whether the four whorls from unstratified contexts, three of clay and one of glass (nos. 500–2, 505), are of Median or Parthian date.

c. Loomweights

Type 1 – Flattened spherical

342. NU 67/73 (IBM) Loomweight of approximately flattened spherical shape with large centrally-positioned hole. Unbaked clay. Ht. 4.3 cm., diam. 8.0 cm.
F10, Room 40, upper Median floor (with clay bullae).

343. NU 70/308 Another. Ht. 4.3 cm., diam. 7.3 cm.
E8, Room 38, in squatter levels.
344. NU 74/4 (IBM) Collection of 98 similar examples. Hts. vary 2.8 cm.—5.7 cm., diams. 4.4 cm.—8.2 cm. Fragments of at least 39 more were noted but not kept.
H11, CH, on original floor (i.e. early squatter level).
345. NU 74/5 (IBM) Collection of 4 similar examples. Hts. vary 3.8 cm.—4.65 cm., diams. 6.9 cm.—7.38 cm. Fragments of 2 more were noted but not kept.
E10, OWB, Room 45A, in occupation debris.
346. NU 77/2 (fig. 10; IBM) Another. Ht. 3.85 cm., diam. 6.8 cm.
H11, CH, on platform, early squatter level.
347. NU 77/3 (IBM) Another. Ht. 4.85 cm., diam. 7.8 cm.
G9/G10 baulk, CH, early/intermediate squatter levels.
348. NU 77/4 (fig. 10; IBM) Another. Ht. 4.0 cm., diam. 6.8 cm.
I11/J11 baulk, CH, intermediate squatter level.
349. NU 77/5 (IBM) Another. Ht. 4.2 cm., diam. 6.5 cm.
H10/H11 baulk, CH, intermediate squatter level.
350. NU 77/6 (IBM) Another. Ht. 5.2 cm., diam. 6.2 cm.
G8/H8 baulk, CH, early squatter level.
351. NU 77/12 (IBM) Another. Ht. 3.95 cm., diam. 6.9 cm.
H11, CH, intermediate squatter level.
352. NU 77/13 (IBM) Another. Ht. 3.95 cm., diam. 6.0 cm.
H11, CH, intermediate squatter level.
353. NU 70/306 (fig. 10) An unbaked clay loomweight as above examples but with a short transverse hole on one side in addition to the central hole. Part missing from one side.
Ht. 4.5 cm., extant diam. 9.8 cm.
H11, CH, in mudbrick tumble.

Type 2 – Pyramidal

354. NU 67/169 Loomweight, pyramidal in form with flat base and transverse hole at top. Condition of clay not specified. Ht. 6.8 cm.
R10/11/S10/11, Room 20, on floor.
355. NU 70/304a (fig. 10) Another. 'Unbaked clay'. Ht. 7.0 cm., w. 4.4 cm.
F7, in mudbrick tumble (N. of CH).
356. NU 70/304b (fig. 10) Another similar but with the top missing. 'Unbaked clay'. Extant ht. 5.2 cm., w. 3.75 cm.
F7, in mudbrick tumble (N. of CH).
357. NU 73/4 (IBM) Another. Baked clay. Measurements not recorded.
F11, CH, niche in W. wall, in Median fill.

The vast majority of loomweights from the Median levels are of the flattened spherical type with a large hole in the middle. There are some small variations in shape, but these are neither considerable nor significant. All are made of unbaked clay. Altogether 112 complete examples were recovered, and fragments of at least 41 more were noted. They vary in diameter from 4.4 to 8.2 cm., and in height from 2.8 to 5.7 cm. 98 of these loomweights, with fragments of at least 39 more, were found together on the south side of the columned hall, suggesting that one or perhaps two looms had originally stood there. Two loomweights of this type were found in Parthian contexts (nos. 472–3), but of these one was recovered from a pit and is quite conceivably of Median origin. Four pyramidal loomweights with transverse holes at the top have been ascribed to the Median levels but the type is equally well represented in Parthian levels with another four examples (nos. 468–71). An unprovenanced example (no. 503) is more likely to be Parthian than Median.

Loomweights are used in connection with so-called warp-weighted vertical looms, their function being to keep the warp threads taut.¹¹ Each weight would have been tied to a bunch of warp threads

¹¹ In modern Iran weights are also used in the manufacture of reed screens, but these are unshaped limestone rocks that are tied to the goatshair strings used to bind the reeds together (Watson 1979, 189, pl. 5.9).

(Crowfoot 1954, 426–8, fig. 269 C). As the Nush-i Jan loomweights are so heavy, particularly the flattened spherical variety, the implication must be that the warp threads were thick and the ensuing fabric coarse. In a house belonging to phase IIg at Troy, Blegen found clear evidence of such a loom together with weights. One end of the loom was attached to a wall, and the other was supported by two stout wooden posts. On the floor beneath were three or four rows of clay loomweights, lying as they had fallen (Blegen 1963, 71–2). Similarly, in a 10th century B.C. context at Tell es-Sa'idiyeh in the Jordan valley Pritchard found a line of loomweights like our type I examples, 72 in all, which he conjectured were lying as 'they had fallen from the threads which had been attached to a horizontal beam' (Pritchard 1964, 6–7). A large number of clay loomweights of similar type, that is flattened spherical in form, were found at Tell Abu Su'ud in the Hamrin in a building dated by the excavator to the Achaemenid period (Mohammed Ali 1979, 545, fig. 3).

d. *Macehead*

358. NU 77/1 (fig. 11; IBM) Half of a macehead with central shaft-hole and protruberant fins. Baked clay, red-brown in colour with many calcareous inclusions. Ht. 6.55 cm., max. diam. 8.1 cm.
G9, tunnel.

This sort of macehead is a variant of the more common pear-shaped or spherical type. The addition of the knobs would have greatly increased its efficiency as a weapon, in much the same way as does the addition of nails to maceheads of wood or bitumen. In antiquity maceheads of stone or bronze are most common, but terracotta would have been equally serviceable. An early example of a macehead with projecting knobs in white stone, comes from a low level at Susa (de Morgan, J., 1912, 21, fig. 109). From Choga Zanbil there are examples of maceheads with projecting knobs in terracotta (Ghirshman 1968, pl. LXXXI: G.T.-Z. 1061) and also in glass (Ghirshman 1966, pl. LXXVIII: G.T.-Z. 448). There are three similar stone maceheads from amongst the collection found at the Tabira Gate in Ashur (Andrae 1913, fig. 33: 17–19), but the type is apparently not depicted on the Late Assyrian reliefs. Sometimes the number of knobs is multiplied so as to cover practically the whole surface of the macehead, as with an example in white stone from Pasargadae (Stronach 1978, fig. 100:2 = pl. 186b), and sometimes the knobs assume fanciful forms. Examples of this phenomenon are a stone macehead from Tell Agrab where the knobs are in the form of lions' heads (Moortgat 1969, pl. 38) and a stone macehead from Susa of around 2000 B.C. with projections resembling the heads of 'guard-dogs' (Amiet 1966, 245, fig. 180). In bronze there are a number of closely related forms to the type of macehead represented by the Nush-i Jan example, notably from Tepe Hissar (Schmidt 1937, pl. XXIX: H2021) and, more particularly, from Necropolis B at Sialk (Ghirshman 1939, pl. XXVI: 10). In conclusion, it is clear that the macehead with projecting knobs is a basic form widely distributed in the ancient Near East, and it is not diagnostic of any one particular area or culture.

e. *Sling-bullets*

359. NU 70/303 (fig. 11) Lump of clay ovoid in shape. Unbaked clay. L. 5.7 cm., diam. 4.0 cm.
H8, CH, in squatter levels.
360. NU 73/17 (fig. 11; IBM) Another. Unbaked clay. L. 5.3 cm., diam. 3.5 cm.
M9/M10 baulk, in occupation debris 20 cm. above floor.
361. NU 77/16 (IBM) Collection of c. 50 similar examples. Unbaked clay. Ls. c. 5.0 cm., diams. c. 3.3 cm.
J7/K7, in 2 niches in north-south wall of northern building, below mudbrick tumble, Median occupation.
362. NU 77/18 (IBM) Another. Unbaked clay. L. 4.2 cm., diam. 3.2 cm.
J7, in niche, below mudbrick tumble, Median occupation.

363. NU 70/302 Another similar, but with pointed end missing. Unbaked clay. L. 4.3 cm., diam. 3.6 cm.
G7, in mudbrick tumble.
364. NU 77/19 (IBM) Another similar, but with part of one side missing. Unbaked clay. L. 4.9 cm., estim. diam. 2.7 cm.
F9, OWB, Room 44a, Median occupation.

Until recently the importance of the sling as a weapon of war in antiquity was largely underestimated. That its true significance is now clear is largely thanks to the work of Manfred Korfmann, who in an important monograph (1972) has dealt exhaustively with sling-bullets from prehistoric contexts in Western Asia.¹² This is backed up by a more general survey in the *Scientific American* (1973). It emerges that the sling was extensively used in the Middle East from the 7th millennium B.C. right through to the classical period. In the hands of a competent operator a sling has a greater range than a bow, and the bullets can be fired with deadly accuracy. The bullets may be of stone, clay or, at least from the Greek period onwards, lead. The commonest shape is ovoid, like the Nush-i Jan examples. Our bullets are all of unbaked clay, in common with the vast majority of bullets from elsewhere. Korfmann (1973, 39) attributes this interesting phenomenon to a desire to obtain maximum weight in relation to size. That is, if the missile is made of pure clay without the inclusion of chaff or another form of temper it is at once denser but unsuitable for baking. Sling-bullets have been found in considerable quantities: Korfmann lists 16 sites in Iran alone where sling-bullets have been found in contexts earlier than c. 3000 B.C. In the 1st millennium B.C. the use of slingers by the Assyrian army is attested on a relief of Sennacherib (Smith 1938, pl. XXXVIII), and in the *Anabasis* (Book III, Ch. 3) Xenophon tells us that after the Ten Thousand left the battlefield at Cunaxa in 401 B.C. they were greatly harrassed in the early stages of their retreat by Persian slingers.

Altogether about 55 clay sling-bullets were found in the Median levels at Nush-i Jan, most of them deriving from two niches in the Northern Building. Lengths of between 4.2 cm. and 5.7 cm. were recorded, and diameters of between 2.7 cm. (estimated) and 4.0 cm. An unstratified sling-bullet (no. 504) may also be of Median date but owing to the ubiquity of the form it could equally well derive from the Parthian levels.

f. Beads

365. NU 67/173 (fig. 11) Disc-shaped cylindrical bead, circular in outline. Centrally pierced. Baked clay. Diam. 1.5 cm., thickness 0.5 cm.
M9, Room 1, in stone filling.
366. NU 77/17 (fig. 11; IBM) Flat, squarish bead, centrally pierced. Baked clay, perhaps made from a potsherd. Diam. 1.1 cm., thickness 0.35 cm.
I11, CH, between bricks of platform, early squatter level.

g. Mortar (?)

367. NU 77/14 (fig. 11; IBM) Crudely shaped mass of baked clay, approximately circular in outline, with a depression in the top centre. Perhaps a mortar. Max. diam. 5.7 cm., max. ht. 2.2 cm.
H/I 9/10, tunnel.

h. Discs

368. NU 67/14 (fig. 11; IBM) Flat, circular disc with top and bottom surfaces slightly concave. Baked clay. Diam. 2.6 cm., thickness 1.0 cm.
T10, floor of Room 30, secondary occupation.

¹²More recent discoveries include nearly 4000 sling-bullets from an 'Ubaid period house at Tell Madhkur in the Hamrin (Roaf 1982, 42), large numbers of them from Early Dynastic contexts at Tell Brak (Oates 1982, 67), and more than 60 sling-bullets from Tülintepe in the Keban (Arsebük and Korfmann 1976). See also Stout (1977) for the sling-bullets from Tell es-Sweyhat in Syria.

369. NU 70/292 Another similar of baked clay. Grey ware, tempered with shale and mica grits. Diam. 1.9 cm.
M9/10, Room 2A, floor deposit.
370. NU 73/16 (fig. 11; IBM) Another similar, but of unbaked clay. Diam. 3.1 cm., thickness 0.8 cm.
M9/10 baulk, Room 2A, on original floor.

There is no doubt that these three clay discs were deliberately fabricated, but their function is obscure. They were perhaps used as counters or gaming-pieces, but there are a number of other possibilities.

5. OBJECTS OF GLASS AND FAIENCE¹³

a. *Vessel*

371. NU 70/507 (IBM) Fragment of a blue core-formed glass vessel with white marverred stripes. 5.5 x 4.5 cm.
L9, N.E. corner of Room 3, in stone infill 30 cm. above floor.

b. *Pendant*

372. NU 74/126 (fig. 12; IBM) Bottle-shaped pendant decorated with triangular cut-outs on the bulbous part. Horizontal hole near top for suspension. Faience, with glazed surface preserved. Ht. 2.8 cm., diam. 1.0–2.4 cm. A faience pendant of similar shape, but lacking the triangular cut-outs, has been found at Ghalekuti (Fukai and Ikeda 1971, 13, pls. XXVII: 6, XLV: 1.)
I9/J9 baulk, in deposit associated with latest squatter occupation.

c. *Decorative boss*

373. NU 73/126 (pl. XIII, fig. 12; IBM) Conical boss with incised decoration on upper surface in form of a cross with two small concentric circles at its centre. Two thread-holes beneath. Faience. Diam. 3.64 cm., ht. 1.53 cm. Such bosses were presumably sewn on to cloth or leather and must have had a purely decorative function. They may be compared with the bronze bosses nos. 289–94.
I8, CH, early squatter level.

d. *Beads*

374. NU 74/129 (fig. 12; IBM) Spherical bead. Glass. Diam. 1.4 cm., ht. 1.2 cm.
G10, CH, intermediate squatter level.
375. NU 67/11 (fig. 12) Bead found in fragments but probably spherical. Glass. Diam. c. 1.4 cm.
S11, N.E. corner, surface; outside disturbed area of Room 20, and therefore could be Median.
376. NU 74/130 (IBM) Half of a spherical bead. Faience. Estimated diam. 0.85 cm., ht. 0.6 cm.
I9, CH, squatter levels in deposit filling entrance to tunnel.
377. NU 73/128 (fig. 12; IBM) Flattened spherical eye-bead. Blue glass, with two light yellow eyes (now much decayed) ringed with darker yellow. Diam. c. 1.65 cm., ht. 1.2 cm.
I9, CH, intermediate squatter level.

In ancient Western Asia glass eye-beads are widely distributed from about the 8th century B.C. onwards. Unfortunately, though, there has been no modern attempt to gather together and classify them, such as has been recently done for the glass beads from the British Isles (Guido 1978).¹⁴

¹³ Following common archaeological practice, the term 'faience' has been used throughout this catalogue to describe objects assumed to be made from a sintered quartz composition and to have had originally a surface glaze, although in some cases there is now no evidence of this glaze. It should be stressed, though, that no analyses have been done and the identification of the material must therefore remain provisional.

¹⁴ There is also a general study of beads from the north coast of the Black Sea (Alekseeva 1975) that deals with eye-beads in some depth.

For the technology of glass eye-beads, reference should be made to this publication. In Iran eye-beads have been found at a number of sites including Hasanlu (Hakemi and Rad 1950, fig. 52), Dinkha Tepe (Muscarella 1974, figs. 36: 994g, 45: 1049c), and Ghalekuti in the Dailaman area (Sono and Fukai 1968, pls. XLVI: 16–17, L: 3, 6, LXXIX: 8–9, LXXXV: 34–6; LXXXVII: 18–27; col. pls. 5–6). The majority of those from the latter site are probably of Achaemenid date. In fact, eye-beads are particularly common in the Achaemenid period and have been found at Persepolis (Schmidt 1957, pl. 43: 11–12) as well as at a number of sites to the west such as Deve Hüyük (Moorey 1980, 118, figs. 21–2) and Kamid el-Loz (Poppa 1978, pls. 10: 10, 1; 11: 13, 5–7; 15: 28, 7; 16: 34, 3; 19: 63, 49). A glass eye-bead from Shahpir in the Halimehjan district has been dated by the excavators to the 3rd century B.C. (Fukai and Matsutani 1980, 56, pl. 40: 12), but in a recent article Hori (1981) has argued that the Shahpir tombs should be dated to the period 1st century B.C.–1st century A.D. However it seems doubtful that the eye-bead is as late as this for eye-beads were becoming scarce at this late period. Thus, in the graves at Dura Europos eye-beads were uncommon (Toll 1946, 126). For this reason it is very probable that the glass eye-bead found in the Parthian level at Nush-i Jan (no. 477) is a survivor from the Median period.

378. NU 70/502 (fig. 12; MMA 1974.105.8) Flattened spherical bead. Pale green glass. Diam. 1.3 cm., ht. 1.06 cm.
H9, CH, on original floor (i.e. early squatter level).
379. NU 77/129 (fig. 12; IBM) Flattened spherical bead. White faience. Diam. 2.05 cm., ht. 1.1 cm.
J10/J11 baulk, late squatter level.
380. NU 77/127 (fig. 12; IBM) Flattened spherical bead. Green faience. Diam. 1.4 cm., ht. 0.7 cm.
G11, CH, from deposit overlaying original floor (early squatter level).
381. NU 77/130 (IBM) Fragments of a bead of flattened spherical shape. Faience. Diam. c. 1.0 cm., ht. 0.6 cm.
I11/J11 baulk, intermediate squatter level.
382. NU 77/131 (IBM) Fragments of a bead of flattened spherical shape. Glass.
H8/H9 baulk, CH, intermediate squatter level.
383. NU 77/128 (fig. 12; IBM) Barrel-shaped bead. White faience. L. 1.8 cm., max. diam. 0.6 cm.
G11, CH, from deposit overlaying original floor (i.e. early squatter level).
384. NU 74/131 (IBM) Barrel-shaped bead in poor condition, with part missing. Faience. Probably originally had surface decoration in the form of stripes but this now much decayed.
L. c. 1.5 cm., max. diam. c. 1.25 cm.
G8/G9 baulk, CH, debris associated with latest squatter level.
385. NU 73/129 (fig. 12; IBM) Flat circular bead, centrally pierced. Faience. Diam. 0.6 cm., thickness c. 0.18 cm.
M9, 2A, on original floor.
386. NU 74/127 (IBM) Another, but fragmentary. Faience. Diam. c. 0.5 cm., thickness c. 0.15 cm.
I8, CH, early/intermediate squatter levels.
387. NU 74/128 (fig. 12; IBM) Segmented cylindrical bead. Three grooves around body. Faience.
L. 1.15 cm., max. diam. 0.55 cm.
H11/I11 baulk, late squatter level.

6. BONE OBJECTS

a. Tools

388. NU 73/101 (fig. 12; IBM) Bone blade, probably a scraper or a knife. Fractured at one end. Surface slightly corrugated on one side. L. 12.5 cm., max. w. 2.8 cm., max. thickness 1.1 cm.
I9, CH, intermediate squatter level.
389. NU 73/104 (fig. 12; IBM) Bone awl (?), circular in section throughout. Pointed at one end, other end missing. L. 7.7 cm., max. diam. 0.72 cm.
J9, CH, on original floor (i.e. early squatter level).
390. NU 74/105 (fig. 12; IBM) Bone needle, elliptical in section, with part of head broken away. The bottom half of the eye still preserved. L. 7.2 cm., max. thickness 0.6 cm.
J9/J10 baulk, late squatter level.

391. NU 73/105 (fig. 12; IBM) Bone tool (?) consisting of part of a tibia (?) cut to a point at one end and fractured at the other. L. 4.2 cm., max. w. 3.0 cm., max. thickness 1.5 cm. O/P/Q9, Room 18, in mudbrick tumble.
392. NU 73/108 (fig. 12; IBM) Piece of solid bone shaved to a point. Knife-cuts clearly visible. Base flat, small part broken away near tip. L. 3.92 cm., max. diam. 2.32 cm. O9, Room 18, associated with fallen floor.

b. 'Spatulae'

393. NU 74/109 (fig. 13; IBM) Spatula in form of flat piece of bone, polished on both sides, pointed at one end and rounded at the other. Complete. L. 7.8 cm., max. w. 2.83 cm., max. thickness 0.17 cm.
H11, CH, intermediate squatter level.
394. NU 74/115 (fig. 13; IBM) Another, complete. L. 7.68 cm., max. w. 2.15 cm., max. thickness 0.2 cm.
H11, CH, early/intermediate squatter levels.
395. NU 74/104 (fig. 13; IBM) Another, complete. L. 5.95 cm., max. w. 2.4 cm., max. thickness 0.2 cm.
G10, CH, late squatter level.
396. NU 77/102 (fig. 13; IBM) Another, complete. L. 5.8 cm., max. w. 2.55 cm., max. thickness c. 0.23 cm.
H9, CH, squatter levels in deposit filling entrance to tunnel.
397. NU 77/101 (fig. 13; IBM) Another, complete. L. 7.45 cm., max. w. 2.75 cm., max. thickness c. 0.23 cm.
G11, CH, early squatter level.
398. NU 77/103 (IBM) Another, complete. L. 7.05 cm., max. w. 1.9 cm., max. thickness c. 0.22 cm.
I11/J11 baulk, CH, early squatter level.
399. NU 67/55 Another, complete. L. 10.5 cm., thickness 0.2 cm.
P/Q 11, Room 25, fill.
400. NU 74/101 (fig. 13; IBM) Another, but with part missing from pointed end. L. 6.55 cm., w. 2.55 cm., max. thickness 0.13 cm.
F8, CH, early squatter level.
401. NU 77/111 (IBM) Another, again with part missing from pointed end. L. 14.6 cm., max. w. 2.8 cm.
H9, tunnel.
402. NU 77/110 (IBM) Another, but with three shallow notches at rounded end. Small fragment missing from near pointed end. L. 9.1 cm., w. 2.9 cm.
H9/I9 baulk, CH, intermediate squatter level.
403. NU 74/116 (fig. 13; IBM) Another, but with part missing from middle. L. 9.33 cm., max. w. 2.5 cm., max. thickness 0.15 cm.
H11, CH + J10, CH, both original floor deposits.
404. NU 77/114 (IBM) Another, but with rounded end missing. Extant L. 7.9 cm., w. 2.6 cm.
H/I 9/10, CH, early squatter level.
405. NU 77/104 (IBM) Another, but with most of one side missing. L. 9.8 cm., max. w. as extant 1.3 cm.
G10/G11 baulk, CH, intermediate squatter level.
406. NU 74/118 (IBM) Another, but with one side missing. L. 7.75 cm., max. w. as extant 1.05 cm., max. thickness 0.15 cm.
H9, CH, squatter levels in deposit filling entrance to tunnel.
407. NU 77/118 (IBM) Another, again with one side missing. L. 6.9 cm., max. w. as extant 1.4 cm.
I9/I10 baulk, CH, intermediate squatter level.
408. NU 77/113 (IBM) Fragment from pointed end of another, 3.75 x 1.2 cm.
H/I 9/10, fill of tunnel entrance.
409. NU 77/112 (IBM) Fragment from pointed end of another, 3.5 x 1.45 cm.
H9/H10, fill of pit above tunnel.

410. NU 77/109 (IBM) Fragment from rounded end of another, 6.45 x 1.65 cm. H9/I9 baulk, squatter levels in deposit filling entrance to tunnel.
411. NU 77/108 (IBM) Fragment from rounded end of another, 3.35 x 1.25 cm. K12/L12 baulk, Room 51, in mudbrick tumble.
412. NU 74/102 (fig. 13; IBM) Bone spatula of similar type to nos. 393–9 but gently tapering to a point rather than having angled shoulders. Rounded end broken away. L. 6.2 cm., max. w. 2.05 cm., max. thickness 0.17 cm. F8, CH, early squatter level.
413. NU 74/120 (fig. 13; IBM) Bone spatula of similar type to nos. 393–9 but rather larger and cruder. Gently tapering to a point as 412. Part missing from pointed end. L. 15.7 cm., max. w. 3.5 cm., max. thickness 0.23 cm. I11, CH, early/intermediate squatter levels.
414. NU 77/116 (fig. 15; IBM) Bone spatula, different from above examples in that polished on only one side and much thicker in section. Top part missing. L. 6.7 cm., max. w. 2.2 cm. H9/I9 baulk, CH, squatter levels in deposit filling entrance to tunnel.
415. NU 77/115 (fig. 15; IBM) Another as no. 414 (again with top part missing), but with pointed end incomplete. L. 6.4 cm., max. w. 2.25 cm. J8, CH, intermediate squatter level.

Highly-polished bone implements of this distinctive shape, with one end pointed and the other rounded, are known from a large number of sites and have often been found in considerable quantities in 1st millennium B.C. contexts. Examples may be cited from Baba Jan (Goff 1978, fig. 15: 19), Godin Tepe (Young and Levine 1974, fig. 50: 8–9), Pasargadae (Stronach 1978, fig. 103: 6) and Agrab Tepe (Muscarella 1973, fig. 29: 1) in Iran, and in Mesopotamia from Nimrud (unpublished), Ashur and Babylon (von Luschan 1943, 122), and Kish (Langdon 1924, pl. XXIX: 1; Moorey 1978b, fiche 1: C02). At Sinjirli more than 100 such objects were found (von Luschan 1943, 122, pls. 59–60). They have been variously described as knives (Goff 1978, 40; Stronach 1978, 237), styli (Macalister 1912, 274), implements for dressing hair (von Luschan 1943, 122), and so on. The most likely explanation, however, is that they were used in weaving, more specifically for the process known as ‘beating-in’, that is straightening the weft thread and pressing it home into position at right-angles to the warp (Roth 1950, 2).¹⁵ Such implements are known as ‘beaters-in’, and there are a number of ethnographic parallels to show that the Nush-i Jan examples could have been used for the same purpose (Roth 1950, *passim*).

Altogether there are 23 complete and fragmentary pieces from Nush-i Jan, all from the Median levels. They vary in length from 5.8 to 15.7 cm., and in width from 1.9 to 3.5 cm. All but two of them come from the columned hall, suggesting that during the squatter occupation the hall was a centre of textile-weaving. This is also indicated by the finding in the hall of more than 100 clay loomweights and nearly 20 spindle-whorls of various materials. The weaving activities may have been centred around square H11 in the south central part of the hall, for it was here that the large cache of loomweights was found.

c. Spindle-whorls

416. NU 74/121 (fig. 15; IBM) Bone spindle-whorl of truncated conical shape. Diam. 3.3 cm., ht. 1.55 cm. H10, CH, intermediate squatter level.
417. NU 77/107 (IBM) Another. Diam. 4.1 cm., ht. 1.25 cm. I11, CH, early/intermediate squatter levels.
418. NU 77/117 (IBM) Another. Diam. 3.4 cm., ht. 1.8 cm. I10/I11 baulk, CH, in brickwork of earliest squatter period wall.

For a discussion of spindle-whorls, see commentary after nos. 317–41.

¹⁵ This identification was first suggested by Mrs. Shirley Shackleton of Melbourne, a professional weaver who visited Nush-i Jan in 1977.

d. 'Tally-bones'

419. NU 74/110 (fig. 14; IBM) Rib-bone, fractured at both ends, with a continuous series of notches along one side (producing a serrated edge) and two notches on the other side. L. 12.2 cm., max. w. 3.5 cm., max. thickness 0.95 cm.
H10, CH, intermediate squatter level.
420. NU 74/114 (fig. 14; IBM) Another, but in poor condition, with notches along both sides. L. 17.0 cm., max. w. 3.5 cm., max. thickness 0.5 cm.
I8, CH, early/intermediate squatter levels.
421. NU 74/113 (fig. 14; IBM) Another, but with notches along one side only. L. 19.7 cm., max. w. 3.2 cm., max. thickness 0.9 cm.
G9, CH, on early floor.
422. NU 73/102 (fig. 14; IBM) Another, again with notches along one side only. L. c. 18 cm., max. w. 2.25 cm., max. thickness 0.7 cm.
I8, CH, late squatter level.
423. NU 74/122 (fig. 14; IBM) Another, again with notches along one side only. L. 13.9 cm., max. w. 4.5 cm., max. thickness 0.4 cm.
F8, Room 38, deposit above earliest floor.
424. NU 73/109 (IBM) Another, again with notches along one side only. L. c. 14.1 cm., max. w. 3.2 cm., max. thickness 0.68 cm.
P8, Room 11, in fill above original floor.
425. NU 73/106 (fig. 14; IBM) Another, again with notches along one side only. Notches here irregularly spaced. L. 23.0 cm., max. w. 2.8 cm.
J9, CH, intermediate squatter level.

The identification of these objects as 'tally-bones' rather than tools of some sort is reinforced by the fact that in some cases the notches are irregularly spaced (eg. no. 425). Presumably, then, the intention was not to produce a serrated blade. Also, two of the blades (nos. 419–20) have notches on two sides.

e. *Toggles*

426. NU 74/107 (fig. 15; IBM) Hemispherical bone toggle with groove around circumference near base. Flattish base. Diam. 1.43 cm., ht. 0.93 cm.
H8/H9 baulk, late squatter level.
427. NU 74/108 (fig. 15; IBM) Another similar, but oval in outline and with a flatter top. 0.92 x 0.78 cm., ht. 0.38 cm.
I9, CH, squatter levels in deposit filling entrance to tunnel.
428. NU 74/106 (fig. 15; IBM) Half of a biconical bone toggle with groove in the middle. Extant L. 2.97 cm., max. diam. 0.7 cm.
I9, CH, squatter levels in deposit filling entrance to tunnel.

The commonest form of toggle is the biconical variety as no. 428. Examples may be noted in stone from the Inshushinak deposit at Susa (de Mecquenem 1905, 111, fig. 365), in stone and bronze from Tepe Sialk (Ghirshman 1939, pl. XXIX: 6–7), and in bone from Pasargadae (Stronach 1978, fig. 103: 4, pl. 169c–d) and Persepolis (Schmidt 1957, pl. 81: 8). Herzfeld (1941, 141–2, fig. 258) cites bronze toggles from Tepe Giyan and Persepolis, and there is another from Sagzabad, near Qazvin (Shahmirzadi 1979, 63, fig. 6: 14).

Herzfeld assumed that these toggles were 'for fastening the head-stall of a bridle gear' (1941, 142). The Assyrian reliefs show that they were sometimes used in connection with harness, but not in this way. Rather, they were used for securing the straps of horse-cloths (Barnett 1976, pl. LXVIII) or for fixing two sections of horse-cloth together (Barnett 1959, pl. 120). They can also be seen suspended from belts (Botta 1849–50, II, pls. 106–7) and holding together battering-ram covers (Layard 1853, pl. 21). In fact they must have had a wide range of uses: as with the hemispherical toggles, the principle is simple. A cord is tied around the groove, and the toggle itself is pushed through a hole in whatever material it is intended to hold fast.

A hemispherical ivory (?) toggle, similar to no. 426 was found in the so-called Achaemenid village at Susa (Ghirshman 1954, pl. LI: GS. 2205).

f. *Pyxis*

429. NU 74/111 (fig. 16; IBM; Saurat 1974, 51, top) Bone pyxis with lid. The pyxis itself has two lugs at the top, vertically pierced, for the attachment of the lid. It is open at the bottom, but four holes at the lower end, spaced at regular intervals, are presumably for the attachment of a base. Perhaps this was of leather or some other perishable material. The lid has two vertically pierced ears corresponding to the lugs on the pyxis, and a groove runs around its edge. Both pyxis and lid bear 'ring-and-dot' decoration; the incised circles on the pyxis itself are arranged in triangular patterns. Pyxis: Ht. 10.6 cm., 5.82 x 3.98 cm. at top, 4.5 x 3.95 cm. at base. Max. thickness of wall c. 0.43 cm. Lid: 5.7 x 4.35 cm., max. thickness 0.6 cm.
I11 (pyxis), J11 (lid), CH, intermediate squatter level.

A shallow bone pyxis and lid, both with ring-and-dot decoration, are known from the Neo-Elamite levels at Susa (Amiet 1966, fig. 374) and a similarly-decorated pyxis lid comes from Karmir Blur (Piotrovsky 1970, fig. 95). Comparable with these and the Nush-i Jan pyxis are the cylindrical bone containers known from several sites including Hasanlu (Stein 1940, pl. XXV: 6), Dinkha Tepe (Muscarella 1974, fig. 45: 1047 P) and Karmir Blur (Piotrovsky 1970, figs. 93–4). These containers, however, should be differentiated from a series of bone tubes with ring-and-dot decoration known from sites such as Kültepe (Özgüç 1950, pl. LXVI: 421–3) and Alishar Hüyük (Von der Osten 1937, figs. 273, 489).

The ring-and-dot was a popular decorative motif in Iran as elsewhere in the Middle East from an early period onwards. For example, it occurs on a lozenge-shaped shell bead from a level at Susa containing proto-Elamite tablets (Le Brun 1971, 201, pl. 70:5), on steatite vessels ascribed to the 3rd millennium B.C. (Miroschedji 1973, *passim*) and on an alabaster jar and 'bottle' from Hissar IIIc (Schmidt 1937, figs. 128, 130, pl. LX). At Hasanlu bone objects that were interpreted by the excavators as dagger hilts are similarly decorated (Rad and Hakemi 1950, fig. 47). During the Iron Age in Palestine the ring-and-dot motif was particularly popular, and is often found on bone pendants (Platt 1978).

g. *Inlay panels*

430. NU 73/107 (pl. XIII, fig. 15; IBM) Two rectangular bone panels, convex on one side and flat on the other. Both bear elaborate incised decoration in the form of incised concentric circles connected by linear patterns. Each piece has two notches cut in the sides which exactly correspond if they are placed back to back. L. 8.95–9.0 cm., max. w. 1.53–1.55 cm., thickness 0.58 cm.
O9, Room 18, associated with fallen floor.

These are reminiscent of the plates of bone or horn, flat on one side and convex on the other, that are known from Roman and post-Roman contexts in Europe and are thought to be splints to stiffen the tips of bows (Macdonald 1934, 282–5). However they are different from the Nush-i Jan examples in that each plate has only a single notch, this being for the attachment of the bow-string. Also these plates are rounded at one end and are usually tapering. It seems unlikely, therefore, that the Nush-i Jan plates served the same purpose and some other function must be sought for them. Perhaps they were pieces of inlay for a knife handle or something similar.

h. *Cheekpiece*

431. NU 77/105 (fig. 15; IBM) Fragment of bone cheekpiece in the form of a horse's foreleg and hoof. Fractured at point where large hole drilled through the bone. Flat on underside, semicircular on sculpted side. L. 6.3 cm., max. w. c. 1.65 cm., max. thickness 0.85 cm.
I8/I9 baulk, CH, intermediate squatter level.

This fragment may best be compared with a series of metal bits current in the Achaemenid period which have jointed mouth-pieces and canons cast in one piece with the cheekpieces and rein attachments.¹⁶ The cheekpieces sometimes have decorative terminals consisting of a phallus at one end and a horse's hoof at the other. Examples may be noted from Persepolis (Schmidt 1957, pls. 72:2, 79:7), Deve Hüyük (Moorey 1980, fig. 10: 227) and Athens (Potratz 1966, fig. 47c). A similar bit in the Louvre (Potratz 1966, fig. 47a) is unprovenanced. All these bits have cheekpieces with holes on either side of the rein-ring for the attachment of the cheekstraps, and the hole on our bone fragment presumably served the same purpose.

Assuming our identification of this fragment to be correct, it obviously would not have been strong enough to have been a cheekpiece in its own right. Its flat back side indicates that it must have been used in conjunction with some other material, possibly even bronze. It is known that bronze harness attachments were sometimes overlaid with other materials. Thus, in an interesting paper on bridle attachments in the form of boars' tusks, Ghirshman refers to the fact that a bronze example in his possession, supposedly from Luristan, was encrusted with wood or bone (Ghirshman 1977a, 27). The fashion of using cheekpieces that were totally or partly made of bone was probably inspired by the antler tine cheekpieces that became the most common type towards the end of the Late Assyrian period. This is clear from the reliefs of Sennacherib and Ashurbanipal (Littauer and Crouwel 1979, 122–3). It has sometimes been suggested that these antler tines were not really of horn but reproductions in metal, but this view is not supported by the evidence from Sialk where horn cheekpieces were associated with metal bits.

i. *Huckle-bones*

432. NU 77/119 (fig. 16; IBM) Astragal, probably bovine, with a total of 10 shallow drillholes (between 0.8 and 1.1 cm. deep) on the four sides. There are one, two, three and four holes respectively on the four surfaces. 5.8 x 3.6 x 3.1 cm.
H10/I10 baulk, CH, intermediate squatter level.
433. NU 77/120 (fig. 16; IBM) Another, with seven holes on two opposing surfaces (three and four respectively). 5.9 x 3.0 x 3.5 cm.
H9/I9 baulk, CH, squatter levels in deposit filling entrance to tunnel.
434. NU 70/500 (fig. 16; IBM) Fragment of another, one surface only preserved, drilled with three holes. 5.4 x 2.9 cm.
Q10, Room 26, fill.

Astragals are often found in archaeological contexts, as will be seen from the list compiled by Muscarella when discussing those from Dinkha Tepe and Hasanlu (Muscarella 1974, 80, n. 21).¹⁷ Their popularity as gaming-pieces has survived from antiquity to the present day. Thus, the practice of playing with astragals (*qāb bāzī*) is widespread in modern Persian villages. There are many variations on the rules of play, but probably the most commonplace custom is simply to throw the bone in the air and see how it falls on the ground. If the bone comes to rest on its end, that is upright, then the thrower is a king (*shāh*); if it lands on a narrow side he is a vizier (*vazīr*); and if it falls on a wide side he is a thief (*dozd*). Patty Jo Watson gives an interesting description of a more elaborate game as played at Hasanabad (1979, 199–200, pl. 5, 12).

The Nush-i Jan astragals are of particular interest because all three have shallow drill-holes on the different faces of the bones. The best-preserved example (no. 432) has one and two holes respectively on the opposing wide sides, and three and four holes on the narrow sides. Presumably the ends of the bone, those most difficult to throw, counted for five and six respectively. We have in these three astragals, then, rather rudimentary dice. A more sophisticated bone die (no. 486), cubical in form, was found in the Parthian levels at Nush-i Jan.

¹⁶ This type of bit certainly seems to be pre-Achaemenid in origin, but one of the examples cited by Littauer and Crouwel (1979, 121, 150) to prove this (BM 91187) comes from Warka, not Nimrud, and is probably not Late Assyrian.

¹⁷ Also of interest is a bronze knuckle-bone found at Susa that originally derived from the Temple of Apollo at Didyma (Boardman 1980, 108, fig. 125). It is, however, 23 cm. high and therefore not really comparable with the astragals under discussion.

j. *Miscellanea*

435. NU 77/106 (fig. 16; IBM) Thick bone disc with four regularly spaced holes near circumference. Purpose obscure, but perhaps a pyxis lid or less probably a heddle. Max. diam. 10.45 cm., max. thickness *c.* 1.85 cm.
I9, CH, squatter levels in deposit filling entrance to tunnel.
436. NU 74/103 (fig. 15; IBM) A horn core, cut off clearly at end, with inside hollowed out. At wide end a cut made at either side. Perhaps a handle for an implement of some sort or, less probably, a scabbard shape. L. 12.7 cm., max. w. 2.55 cm., max. thickness 1.35 cm.
I11, CH, late squatter level.
437. NU 74/112 (fig. 16; IBM) Bone 'spoon' with flat spatulate end and thick, crudely-carved stem. L. 10.68 cm., max. w. 2.95 cm., thickness varies 0.35–1.2 cm.
I9, CH, squatter levels in deposit filling entrance to tunnel.

7. STONE OBJECTS

a. *Blades*

438. NU 73/80 (fig. 17; IBM) Double-edged blade fractured at both ends. Grey flint. L. 4.45 cm., max. w. 1.61 cm., max. thickness 0.38 cm.
T13, mudbrick blocking.
439. NU 67/190 (fig. 17) Another. Flint. L. *c.* 3.35 cm., max. w. *c.* 1.85 cm., max. thickness *c.* 0.8 cm.
P 9, in Median mudbrick tumble.
440. NU 77/79 (fig. 17; IBM) Another. Chert. L. 3.4 cm., max. w. 1.3 cm., max. thickness 0.3 cm.
K11, in mudbrick tumble.

b. *Spindle-whorls*

441. NU 77/80 (IBM) Spindle-whorl of truncated conical shape. Incised lines around central hole. Grey stone. Diam. 5.7 cm., ht. 2.1 cm.
F9, OWB, Room 44a.
442. NU 77/78 (fig. 17; IBM) Spindle-whorl in form of a thick disc with hole in centre. Greenish-grey stone. Diam. 3.5 cm., ht. 0.9 cm.
M10/11, in mudbrick enclosure beneath blocking.
443. NU 67/170 Another. Stone. Diam. 3.5 cm., ht. 1.0 cm.
M11, Room 6, early squatter level.
444. NU 67/15 (fig. 17; IBM) Another disc-like spindle-whorl, but thinner than nos. 442–3. Greenish-black stone, polished and slightly chipped. Max. diam. 3.6 cm., max. thickness 0.5 cm.
N10, on bedrock.
445. NU 70/450 Half of a spindle-whorl as no. 444. Diam. *c.* 3.2 cm., max. thickness *c.* 0.7 cm.
F11, CH, late squatter level.

For a discussion of spindle-whorls, see commentary after nos. 317–41.

c. *Mortars*

446. NU 77/81 (fig. 17; IBM) Stone mortar, in form hemispherical with flattened base. Diam. 8.1 cm., ht. 3.4 cm.
M10, in occupation debris at bottom of mudbrick enclosure.
447. NU 73/79 (fig. 17; IBM) Mortar standing on pedestal-base. Small part missing at top. Mottled grey and white stone. Ht. 7.05 cm., max. diam. 6.3 cm.
J8/J9 baulk, late squatter level.

d. Beads

448. NU 70/506 (fig. 17) Onyx bead, barrel-shaped in outline, triangular in section. L. c. 1.1 cm., max. diam. c. 0.7 cm.
S11, N.E. corner of Room 22, in pit dug for pivot-stone.
449. NU 74/76 (fig. 17; IBM) Spherical bead of red stone, probably carnelian. Diam. 1.05 cm., ht. 0.8 cm.
H11, CH, early/intermediate squatter levels.

e. Pendants

450. NU 77/77 (fig. 17; IBM) Tablet in white stone with 'ring-and-dot' decoration. Decorated side convex, underside flat. Hole in centre. The tablet was probably originally square but is now fractured along one edge. A corner also missing. 3.35 x 2.9 cm., thickness 0.7 cm.
H9, CH, squatter levels in deposit filling entrance to tunnel.
451. NU 77/76 (fig. 17; IBM) Fragment of a similar tablet. Traces of drilled hole in centre just visible. 3.0 x 1.95 cm., thickness 0.6 cm.
J9/J10 baulk, CH, in deposit above original floor (i.e. early squatter level).
452. NU 70/193 (fig. 17) A similar tablet in white stone but lozenge-shaped rather than square. Complete. 4.9 x 3.4 cm., thickness 0.8 cm.
G9, CH, in fill.

These objects, which together constitute a very distinctive group, remain enigmatic. They are tentatively identified here as pendants but there are some difficulties with this interpretation. If they were meant to be suspended from a necklace, for example, one would either expect the hole to be positioned near the edge of the tablet as opposed to being in the centre, or for there to be a horizontally drilled hole through the tablet. Another possibility is that they were *appliqués* to be nailed to a surface of wood or leather. However no nails were preserved in any of the tablets and nor were there traces of their having once existed.

For a general discussion of the ring-and-dot motif see the commentary after no. 429.

f. Miscellanea

453. NU 73/77 (fig. 17; IBM) Hexagonally-cut piece of rock crystal (?), pointed at base. Top end fractured. Possibly an earring pendant. Ht. 1.63 cm., max. thickness 0.9 cm.
O9, Room 18, associated with fallen floor.
454. NU 70/453 (fig. 17; IBM) A phallus, made from mottled green and black stone. L. c. 10.8 cm., max. diam. c. 3.7 cm.
E8, Room 38, in mudbrick tumble.
455. NU 77/83 (fig. 17; IBM) A grey stone cylinder, not quite circular in section, rounded off at one end and fractured at the other. Probably a whetstone. L. 4.5 cm., max. diam. 1.7 cm.
F10/11 baulk, CH, on original floor (i.e. early squatter level).
456. NU 67/74 (fig. 17) A smooth, rectangular piece of black stone, probably a rubber. 5.6 x 2.9 cm., max. thickness 0.7 cm.
F10, Room 40, upper Median floor.
457. NU 77/82 (fig. 17; IBM) A tongue of black stone (shale?), circular at one end and flat at the other. Probably a rubber. L. 6.6 cm., max. diam. 1.9 cm.
J9, in doorway to CH, intermediate squatter level.
458. NU 73/76 (fig. 17; IBM) A block of dark grey stone (granite?), circular in plan with rounded sides and flat top and bottom. Probably either a pestle or a rubber. Max. diam. 6.8 cm., ht. 3.9 cm.
P9, Room 18, associated with fallen floor.

CHAPTER III. FINDS OF THE PARTHIAN PERIOD

a. *Introduction*

After a long break in occupation the mound was again settled for a short time in the Parthian period. The occupation at this date is attested by poorly preserved *tauf* walls over most of the site associated with beaten earth floors and numerous pits. There is little or no evidence for more than one building phase, and it is unlikely the settlement lasted for longer than a single generation. Stronach (1969, 19) estimates its life span to have been not more than 50 years. The date of the settlement is more difficult to establish, but fortunately a good selection of pottery is available, including several glazed bowls and some fine examples of 'cinammon' (clinky) ware (Stronach 1969, 19, pls. XIb, XIIc, fig. 6: 12–15). Largely on the basis of this pottery, Stronach assigned the settlement to the 1st century B.C. (Roaf and Stronach 1973, 129). Now more evidence has come to light in that Dr. M. J. Price of the British Museum has recently identified a bronze coin (no. 499) found during the 1974 season. The coin is unfortunately unstratified, having been found on a dump to the north of the Old Western Building, but it almost certainly derives from the Parthian settlement. Dr. Price has recognized it as a coin of Antiochus VII (138–29 B.C.), probably minted at Antioch in the year 138–7 B.C. On the basis of a single coin, especially an unstratified example, it would be rash to draw any conclusions; nevertheless, the coin may be cited in support of Stronach's comparatively early date of 1st century B.C. for the settlement, and it raises the possibility that it could be even earlier, and have started in the late 2nd century B.C.

The selection of finds from the Parthian level is very much what one might expect from a small village settlement: a few metal objects, assorted beads, a couple of bone implements, fragments of stone bowls and so on. The presence of spindle whorls and loom weights presumably indicates that the inhabitants were spinning and weaving. The most interesting find is undoubtedly the bone die no. 486.

On the whole little is known about the Parthian inhabitants of Nush-i Jan other than that they were growing emmer, breadwheat and barley (Kyllo and Hubbard 1981, 100) and that according to preliminary studies on the bones hunting apparently played a bigger role in the economy of the settlement than it had in Median times. Nevertheless, the bones of wild animals still only accounted for about 10% of the sample recovered during the 1970–74 seasons (Bökönyi 1978, 26). As we have just seen spinning and weaving were being done in the village, and there is also some indication that iron was being worked in the settlement.

On the Parthian floor in the H11/I11 baulk a large lump of iron slag, (NU 73/A23) *c.* 12 x 10 x 6 cm., was found. It was porous, glassy-black in appearance with entrained charcoal ash. It was kindly analysed by Dr. T. R. Shelley in Teheran with the following results: Ca 7.5%, Al 3.5%, SiO₂ 36% and Fe 31%, i.e. 10.5% CaO, 6.9% Al₂O₃, 36% SiO₂ and 31% Fe as FeO and Fe₂O₃. The calcium oxide (CaO) originates from both the ore and the charcoal whereas the silicon dioxide (SiO₂) and aluminium oxide (Al₂O₃) derive from the ore and the clay furnace lining. Most probably this slag is the product of smithing rather than primary smelting, which is what one would expect. Smelting is a dirty and dangerous operation and not generally undertaken either in or near settlements. It is usually carried out in proximity to the ore source or fuel source, or both.

The strip of lead no. 464, found in a Parthian pit, represents the only lead object found at Nush-i Jan. I am informed by Rosalind Caldecott (Howell) that there is a lead mine in the mountains about 20 km. south-east of Nush-i Jan, which she visited while surveying in 1978.¹ The mining is now open-cast, but formerly the ore was extracted from shafts. The ore is very rich, with some pieces containing 80% lead, that is almost pure galena.

b. *Metal objects*

459. NU 70/400 (fig. 18; IBM) Iron knife-blade, with tang broken away. L. 1.49 cm., max. w. 2.9 cm.
H11, in Parthian pit.

¹ The mine will be described in Rosalind Caldecott's forthcoming report on the Malayer survey.

460. NU 73/52 (fig. 18; IBM) Iron punch in form of a thick iron rod, circular in section, coming to a point at the bottom. Hammered-over at top. L. 19.5 cm., max. diam. 2.15 cm. G10/H10 baulk, on Parthian floor (on W. side of wall).
461. NU 67/187 (fig. 18) Bronze pin coiled at one end, probably broken off a fibula. L. 4.7 cm. F10, on Parthian floor.
462. NU 73/28 (fig. 18; IBM) Bronze strainer in form of a conical tube, closed at the bottom, with a series of perforations near the base. Made from sheet metal folded round. L. 9.9 cm., max. diam. 1.05 cm. H10, on Parthian floor, in room in S.W. corner.

Sheets of bronze folded into a conical shape and perforated with holes at the bottom are generally identified as strainers for use in drinking wine or beer. At Chagar Bazar such strainers were usually found at the bottom of large vases and inside most of them were the remains of a reed. Mallowan concludes that they were 'intended to prevent the lees of alcohol from passing into the reed siphon through which the liquid was imbibed' (Mallowan 1937, 99–100). Further examples of these strainers may be noted from Tepe Giyan (Contenau and Ghirshman 1935, pl. 35, centre), Nimrud (unpublished), Deve Hüyük (Moorey 1980, fig. 7: 130 and commentary p. 43), and from Tell Ibrahim Bayis in Iraq (Mallowan and el-Amin 1950, 56, 68, pl. XVI). Both the Nimrud and Ibrahim Bayis specimens are Late Assyrian in date.

463. NU 67/184 (fig. 18; IBM) Large iron nail with flat disc-shaped head. Tip of shank missing. Extant L. 6.8 cm., diam. of head 2.4 cm. P 9, in Parthian pit (1).
464. NU 67/79 (fig. 18) A strip of lead, L. c. 6.6 cm., w. c. 1.5 cm., thickness c. 0.15 cm., rolled into a coil. S10, in pit, associated with Parthian pottery.

c. Clay objects

465. NU 70/194 (fig. 18) Half of a conical spindle-whorl with concave base. Baked clay, grey in colour. Diam. 2.6 cm., ht. 1.6 cm. H8, in Parthian deposit.
466. NU 73/6 (fig. 18; IBM) Spindle whorl, biconical with vertical hole off-centre. Baked clay. Diam. 4.53 cm., ht. 2.33 cm. I10, from mudbrick bin, Parthian.
467. NU 67/183 (fig. 18) Half of a saucer-shaped disc with a hole drilled in the centre, probably manufactured from a potsherd. A spindle-whorl. Diam. c. 3.4 cm., ht. c. 0.8 cm. P 9, in Parthian deposit.

For spindle-whorls, cf. nos. 317–41 and commentary.

468. NU 73/1 (fig. 18; IBM) A pyramidal loom weight with flat base and transverse hole near top. Baked clay. Ht. 7.75 cm., max. w. at base 4.0 cm. J8, Parthian.
469. NU 73/9 (IBM) Another. Baked clay. Ht. 5.58 cm., max. w. at base 4.48 cm. J8/J9 baulk, Parthian deposit.
470. NU 73/18 (IBM) Another. Baked clay. Ht. 5.85 cm., max. w. at base 3.6 cm. K9, on Parthian floor (room in N.W. corner of trench).
471. NU 74/2 (IBM) Another. Unbaked clay. Ht. 6.7 cm., max. w. at base 4.4 cm. N10, in Parthian (?) deposit.
472. NU 70/305 (fig. 19) Loomweight of flattened spherical shape. Unbaked clay. Ht. c. 4.4 cm., max. diam. c. 6.85 cm. M10, in Parthian pit (1).
473. NU 73/19 (IBM) Another. Unbaked clay. Max. ht. 3.4 cm., max. diam. 4.7 cm. K9, on Parthian floor (room in N.W. corner of trench).

For loomweights, both of the pyramidal and flattened spherical variety, cf. nos. 342–57 and commentary.

474. NU 73/5 (fig. 19; IBM) A short cylindrical bead(?) with concave ends. Baked clay. Ht. 1.09 cm., max. diam. 1.76 cm.
FW1, in deposit above Parthian wall (B), 1.50 m. beneath surface.
475. NU 74/3 (IBM) Ovoid lump of clay, baked, similar to nos. 359–64. A sling-bolt. Ht. 5.05 cm., max. diam. 3.3 cm.
N10, in Parthian (?) deposit.

d. *Objects of glass and faience*²

476. NU 67/51 (fig. 19; IBM) Glass spindle-whorl in form of a conical disc. On upper side a concentric groove runs around the perforation. Diam. 3.2 cm., ht. 0.7 cm.
R11, pit in N.W. corner of trench.

Similarly-shaped glass discs from tombs in the Dailaman area are identified by the excavators as spindle-whorls. Some of these examples have elaborate spiral designs on the upper surface (e.g. Egami *et al.* 1966, pls. XIX: 18, XLIX: 39; Sono and Fukai 1968, pls. LXIV: 1–2, XXXV: 2, 5). Elsewhere, however, such items are often classified as beads. Either interpretation is plausible.

477. NU 73/127 (fig. 19; IBM) An oblate eye bead of green glass with three eyes of similar colour ringed with white. Ht. 1.08 cm., max. diam. 1.28 cm. Probably of Median date: cf. no. 377 and commentary.
M11, Parthian deposit.
478. NU 67/8 (fig. 19) A cylindrical disc-shaped bead in white faience. Fragmentary. Diam. 0.5 cm., ht. c. 0.15 cm.
S10, N.E. corner of Room 20, in disturbed fill (Parthian occupation).
479. NU 77/126 (fig. 19; IBM) A small oblate bead in blue faience. Diam. 0.65 cm., ht. 0.5 cm.
J7, upper Parthian deposit.

e. *Objects of bone and shell*

480. NU 74/117 (fig. 19; IBM) Pointed bone tool, flat in section. Fractured at one end and along part of one side. L. 9.34 cm., max. w. 1.98 cm., max. thickness 0.3 cm.
J7, on lower Parthian floor.
481. NU 74/119 (fig. 19; IBM) Another, but tapering more gradually to a point and thicker in section. L. 11.9 cm., max. w. 2.18 cm., max. thickness 0.6 cm.
J7, lower Parthian occupation debris.
482. NU 67/48 (fig. 19; MMA 69.24.18) Circular bone disc, centrally pierced with rounded upper surface and flat underside. Incised decoration in form of two concentric circles on upper surface. Probably an elaborate spindle-whorl. Diam. 2.8 cm., ht. 0.6 cm. A similar bone disc decorated with concentric rings was found in a post-Achaemenian context at Pasargadae (Stronach 1978, fig. 103:1).
s10, N.E. corner of Room 20, in fill disturbed by Parthian occupation.
483. NU 70/504 (fig. 19; IBM) Another such bone disc, again decorated with incised concentric circles. Diam. 2.0 cm.
Q9/10, Room 18, at top of mudbrick collapse, Median or Parthian.
484. NU 70/501 (fig. 19; IBM) Cylindrical shell(?) bead, diam. 0.45 cm.
M10, in Parthian pit (1).
485. NU 70/508 (fig. 19; IBM) A flat disc-shaped bead of shell, diam. c. 0.7 cm.
H11, Parthian deposit within niche.
486. NU 70/505 (fig. 19) A cubical bone die with numbers indicated by incised rings-and-dots. The numbers on the opposed faces are in the relationship 6:1, 5:3, 2:4. Measurements c. 1.3 × 1.3 × 1.3 cm.
S10, N.W. corner of Room 20, between varves and so probably from Parthian reoccupation.

²See footnote 13 on p. 42.

Dice are known in Western Asia from an early date. At Ur a cubical bone die was found in a 1st Dynasty context, *c.* 2650–2500 B.C. Another of terracotta was unstratified but is unlikely to be later than the 3rd Dynasty, *c.* 2100–2000 B.C. (Woolley 1955, 44, fig. 7). The examples at present known from Iran are rather later. A die from Susa, rectangular in shape, is presumed to be Achaemenid (Dieulafoy 1893, 363, 434, fig. 235), and a cubical bone die from Pasargadae comes from a Hellenistic context (Stronach 1978, 182–3, fig. 92: 8, pl. 169e–g). There are some interesting differences between this die from Pasargadae and the Nush-i Jan example. The first is the way in which the numbers two and three are represented on the sides of the dice. On the Nush-i Jan die the dots for both numbers are placed diagonally, whereas on the Pasargadae die the dots for two are in a line parallel with the sides of the die and the dots for three describe a triangle. Secondly, on the Pasargadae die the numbers on the opposed sides add up to seven, which is also the case with modern dice. By contrast, the opposed sides on the Nush-i Jan die total six, seven and eight respectively.

f. Stone objects

487. NU 70/451 (fig. 19; IBM) Two fragments from bottom of a shallow stone vessel with ring base. 9.5 x 9.0 cm. and 5.9 x 4.2 cm.
M10, in Parthian pit (1).
488. NU 67/27 Part of base plus associated fragments of a similar vessel in alabaster. Fragment of base 7.5 x 6.0 cm., thickness 2.2 cm.
L10, S.E. corner, on Parthian floor.
489. NU 74/77 (fig. 19; IBM) A short barrel-shaped bead, slightly concave at both top and bottom, in white stone. Diam. 0.8 cm., ht. 0.55 cm.
M10, in Parthian floor.

CHAPTER IV. UNSTRATIFIED AND SURFACE FINDS

a. *Introduction*

As with any excavation, there is inevitably from Nush-i Jan a small number of objects that were found either in surface deposits or in unstratified contexts. Assuming they are not modern the probability is that these objects are either of Median or Parthian date, but this is not necessarily so. Where I have thought it is possible to assign an object to one of these periods, however, I have suggested this in the catalogue entry.

b. *Metal objects*

490. NU 73/54 (fig. 20; IBM) A corroded iron fibula(?), with semicircular bow, hand-catch at one end and spring at the other. Ht. 2.55 cm., L. 6.8 cm. A fragment which is associated but does not join may be part of the spring and pin. L. 1.84 cm., w. 0.8 cm.
An iron fibula of similar shape from Bastam was found in a late grave (Kleiss 1970, pl. 33: 1), and comparable bronze fibulae from Dura Europos are dated to the 1st–2nd centuries A.D. (Frisch and Toll 1949, pl. X: 6–19). This example, then, is probably Parthian; it may be contrasted with an iron fibulae found in the Median levels at Nush-i Jan which has a triangular bow.
D9, surface.
491. NU 67/19 (fig. 20; MMA 1978.93.25) Bronze pin and spring, probably from a fibula. L. 4.5 cm., max. diam. 0.3 cm. Probably of Median date. Cf. nos. 276–9.
Unstratified.
492. NU 74/32 (fig. 20; IBM) Circular bronze boss with semicircular loop fastener beneath. Now in poor condition and badly distorted but original shape probably with a small boss top centre and a narrow ledge halfway down. 1.35 x 2.0 cm., ht. (excluding fastener) 1.15 cm. Probably of Median date. Cf. nos. 289–94.
H11, surface.
493. NU 73/38 (fig. 20; IBM) Part of bronze bracelet, fractured at both ends. Oval in section and apparently undecorated. Max. diam. as extant 7.64 cm., max. thickness 0.6 cm.
S8, surface.
494. NU 67/56 (fig. 20; IBM) An open-ended bronze ring, circular in section, with tapered terminals. Max. diam. 2.3 cm., max. diam. of band 0.4 cm.
P 9, surface.
495. NU 67/189 (fig. 20) Another similar, but in fragmentary condition. Max. diam. 2.5 cm., max. diam. of band 0.4 cm.
P10, surface.
496. NU 67/186 (fig. 20) A bronze ring, circular in section, with overlapping terminals. Max. diam. 2.15 cm., max. diam. of band c. 0.2 cm.
Q10, surface.
497. NU 70/350 (fig. 20) An open-ended(?) bronze ring in poor condition, with irregular section. Max. diam. 2.7 cm.
Surface.
498. NU 67/57 (fig. 20; IBM) Bronze bar, rectangular in section. L. 16.4 cm., max. thickness 1.4 x 0.5 cm.
N12, surface.
499. NU 74/39 (pl. XIII; IBM) Bronze coin in very corroded state. Obverse bust of Eros right, reverse Isis crown. Diam. 1.9 cm., wt. 7.12 g. Dr. M. J. Price of the Dept. of Coins and Medals, British Museum, has kindly examined the photographs and identified it as a coin of Antiochus VII (138–29 B.C.), almost certainly minted at Antioch, probably in the year 138–7 B.C.
Unstratified, probably from area of OWB.

c. *Clay objects*

500. NU 73/11 (fig. 20; IBM) Spindle-whorl, truncated conical. Part missing from one side and fractured at top. Upper surface decorated with ring-and-dot decoration apparently made with a punch. Baked clay, dark grey in colour with micaceous grits. Diam. 3.62 cm., ht. 1.77 cm.
H10, surface.
501. NU 67/28 (fig. 20; IBM) Spindle-whorl, truncated conical. Baked clay, grey in colour with shiny grits. Diam. c. 3.7 cm., ht. c. 1.45 cm.
T12, surface.
502. NU 77/15 (fig. 20; IBM) Spindle-whorl, biconical. Baked clay. Diam. 3.8 cm., ht. 1.75 cm.
Unstratified.

For a discussion of spindle-whorls, see commentary after nos. 317–41. The practice of decorating spindle-whorls with a ring-and-dot design as no. 500 is quite well attested over a long period of time. Examples may be noted at Susa both from an early level, in bone (Le Brun 1971, 195, fig. 70: 6, 8), and from the so-called Achaemenid village, in stone (Ghirshman 1954, pl. LII: G.S. 1016). Such decorated spindle whorls have also been found in stone at Tepe Hissar (Schmidt 1937, pl. LXX: H2788) and Godin Tepe (Young 1969, fig. 44: 4), in bone at Hasanlu (Hakemi and Rad 1950, fig. 49), and in faience at Ghalekuti (Egami *et al.* 1965, pls. XXXIII: 4, LXXVII: 104).

503. NU 73/2 (fig. 21; IBM) Loomweight, pyramidal in form with flat base and transverse hole at the top. Baked clay. Ht. 7.1 cm., max. w. at base 4.6 cm. Cf. nos. 354–7 and commentary and nos. 468–71.
J8, surface.
504. NU 67/18 (fig. 21; IBM) Sling-bullet, ovoid in shape. Unbaked clay. L. 4.5 cm., diam. 2.8 cm. Cf. nos. 359–64 and commentary.
Unstratified.

d. *Objects of glass and faience*¹

505. NU 67/182 (fig. 20) White glass conical spindle-whorl. Diam. 1.9 cm., ht. 0.8 cm. Cf. no. 476 and commentary on spindle-whorls after nos. 317–41.
R10, surface.
506. NU 67/2 (fig. 21) Long barrel-shaped bead of white faience. L. 1.5 cm., max. diam. 0.7 cm.
O9, surface.

e. *Objects of bone and shell*

507. NU 73/103 (fig. 21; IBM) Bone tool, slightly curved and pointed at both ends. Probably made from a long-bone. L. c. 17.75 cm., max. w. 2.08 cm.
J10, surface.
508. NU 67/188 (fig. 21; IBM) A circular, convex bead made from white shell. Large hole in centre plus finer, transverse holes at either side. Ht. 0.5 cm., max. diam. 2.4 cm.
M11, surface.

f. *Stone objects*

509. NU 77/84 (fig. 21; IBM) Oblate bead roughly made from rock crystal. Ht. 0.75 cm., diam. 1.1 cm.
Unstratified.
510. NU 67/72 (fig. 21) Part of a mould in black stone with leaf-shaped matrix, pouring-hole and two dowel-holes. 6.0 x 4.0 cm., thickness 2.0 cm.
Dr. Michael Roaf has made to me the interesting suggestion that this mould might

¹ See footnote 13 on p. 42.

have been for making bridle attachments in the form of boars' tusks, of the type familiar from the Persepolis reliefs. It is known that such attachments were sometimes made of bronze (Ghirshman 1977a). They are of approximately the right size, but the example published by Ghirshman (*ibid.*, figs. 1–2) is square at the end and pierced by four holes for attachment.

P11, surface.

511. NU 70/191

(fig. 21) Cylinder in dark red stone, fractured at both ends and with a single groove running around it towards one end. L. 4.0 cm., diam. 1.5 cm.

G9, surface.

APPENDIX I

ANALYSES OF SILVER OBJECTS IN THE BRITISH MUSEUM
by M. J. Hughes

To complement other aspects of the study of the Nush-i Jan silver hoard, quantitative chemical analyses were obtained on those items now in the British Museum. The results are given in Table 1. Some of the analyses listed were obtained using energy dispersive X-ray fluorescence (the technique used has been described elsewhere – see Hughes and Hall 1979), while the remainder, and some comparative analyses of later silver from the Near East listed in Table 2, were obtained by atomic absorption spectrometry on drilled or scraped filings of metal using the usual British Museum Research Laboratory technique (described in Hughes, Cowell and Craddock 1976). There is no reason why the results from the two techniques cannot be used together.

Table 1. *Analyses of silver objects from Nush-i Jan in the British Museum.*

Object and catalogue no.	BM no.	Method of analysis	% silver	% copper	% zinc	% gold	% lead	% tin
Double spiral pendant no. 3	135077	XRF	96.2	3.2	0.12	0.29	0.11	n.a.
Quadruple spiral bead no. 8	135072	XRF	97.4	2.1	0.16	0.20	0.06	n.a.
Quadruple spiral bead no. 20	135079	XRF	97.3	2.2	0.09	0.29	0.08	n.a.
Quadruple spiral bead no. 33	135078	XRF	89.4	9.2	0.41	0.68	0.22	n.a.
Finger-ring no. 38	135085	XRF	91.3	7.7	0.29	0.16	0.51	n.a.
Spiral ring no. 54	135073	XRF	95.0	4.4	0.15	0.25	0.13	n.a.
Spiral ring no. 63	135084	XRF	97.9	1.6	0.07	0.28	0.10	n.a.
Ingot no. 92	135083	AA	90.1	9.5	<0.05	n.a.	0.3	n.d.
Ingot no. 93	135082	AA	92.3	5.3	<0.03	n.a.	1.91	0.4
Lump no. 131	135074	AA	93.7	4.6	<0.04	n.a.	1.05	0.6
Lump no. 132	135075	AA	97.3	1.2	<0.07	n.a.	0.88	0.6
Sheet fragment no. 193	135076	XRF	95.7	3.8	0.09	0.20	0.21	n.a.

AA – atomic absorption

XRF – X-ray fluorescence

n.a. – not analysed

n.d. – not detected (detection limit for tin is about 0.1%)

The results obtained for the Nush-i Jan silver show a somewhat variable silver percentage (fineness) for both the ingots and the pieces of silver jewellery. All are of relatively pure silver, being in excess of 90% silver except for the corroded quadruple spiral bead, but in any case this result needs to be treated with caution and is only an approximate indication of the original uncorroded composition of the bead. The ingots and cut silver are not of a consistent composition, and their range of silver percentage (90–97%) is the same as that of the silver jewellery (91–97%). There is no suggestion, then, that the ingots represent any different metal than that being used for silver objects generally. When the objects of later date are considered (Table 2), the same range of silver percentages is found. In all cases, the principal alloying metal in the silver is copper; the minor elements – gold, zinc, lead and tin are present in small but somewhat variable amounts, lower

amounts of the latter three indicating in general better purification of the silver during its production.

Published analyses of pre-Sassanian silver metalwork seem very few; Gettens and Waring (1957) analysed just one such item by semi-quantitative spectrographic analysis, a Bactrian heavy bowl or boss with high relief decoration which contained 1–10% copper and lead, 0.1–1.0% gold and a range of trace elements below 0.1%. It seems useful, therefore, to include here analyses of Achaemenid period silver objects done at various times in the British Museum Research Laboratory and hitherto unpublished (Table 2).¹

Table 2. *Analyses of Achaemenid silver objects in the British Museum*

Object	BM no.	Method of analysis*	% silver	% copper	% zinc	% gold	% lead	% tin
Animal's head terminal from the Oxus Treasure, Dalton 1964, no. 14	123915	AA	94.7	4.6	<0.06	n.a.	0.46	0.2
Bowl reputedly from Erzincan area, Dalton 1964, no. 184	123256	XRF	97.5	1.8	trace	0.6	0.2	n.a.
Another, Dalton 1964, no. 181	123259	XRF	98.2	1.2	trace	0.4	0.2	n.a.
Another, Dalton 1964, no. 180	124082	AA	94.5	4.7	<0.02	n.a.	0.64	0.1
Scoop, reputedly from Erzincan area, Dalton 1964, no. 185	123263	AA	96.6	3.0	<0.02	n.a.	0.14	0.2
Another, Dalton 1964, no. 186	123264	XRF	97.4	2.2	trace	0.5	0.04	n.a.
Cylindrical box, reputedly from Erzincan area, Dalton 1964, no. 179	123265	XRF	98.7	1.0	trace	0.2	0.1	n.a.
Lid of above	123265	XRF	96.5	3.0	trace	0.4	0.1	n.a.
Vase handle from hoard found at Babylon, Robinson 1950, pl. XXIII.	120450	AA	98.3	1.1	0.02	n.a.	0.49	0.1
Vase handle from hoard found at Babylon, Robinson 1950, pl. XXIII.	120450	XRF	98.1	1.1	trace	0.3	0.6	n.a.
Sheet fragment from above hoard, Robinson 1950, pl. XXIV : 27.	82-12-20,27	XRF	99.0	0.7	<0.1	0.3	0.05	n.a.
Another, Robinson 1950, p. 48, no. 28	82-12-20,28	XRF	95.9	3.4	<0.1	0.4	0.3	n.a.
Bowl purchased by C. L. Woolley in Beirut	117839	AA	92.8	6.3	<0.03	n.a.	0.53	0.3

AA – atomic absorption

XRF – X-ray fluorescence

n.a. – not analysed

* – all the X-ray fluorescence analyses were done by Mrs. Susan La Niece of the British Museum Research Laboratory.

¹ Published analyses of Achaemenid period silver include some items from a hoard found in the Hauran area and now in the Ashmolean Museum (Kraay and Moorey 1969, 229), the jewellery associated with a hoard from the Black Sea region, again now in the Ashmolean Museum (Kraay and Moorey 1981, 13–16), and the rhyton bought by Woolley in Aleppo and now in the British Museum (Woolley 1923, 69).

Of Roman silver, numerous examples overlap with the range of silver percentages quoted for the Nush-i Jan objects (Hughes and Hall, 1979) and the compositions are quite similar, indicating little change in the traditional alloys used for making silver objects over many centuries. The use of silver with copper contents ranging from 1–10% for the Nush-i Jan hoard is consistent with the hard but workable properties of such low-copper silver alloys. A much more debased silver would betray the presence of significantly large amounts of alloyed copper by its departure from a silver colour, while a much purer silver (over 99% by weight) would be too soft for forming into vessels capable of retaining their shape in the rigours of use, although this would be less of a difficulty with some smaller pieces of jewellery.

APPENDIX II

SILVER WIRE JEWELLERY FROM TEPE NUSH-I JAN

by W. A. Oddy

Three items of jewellery now in the British Museum – the double spiral pendant no. 3 (BM 135077) and the quadruple spiral beads nos. 8 and 20 (BM 135072, 135079–81) were examined under the microscope in 1978 as part of an investigation into wire-making techniques.

The wire is generally *c.* 1–1.5 mm. in diameter, but tapers towards the ends. It exhibits four characteristics which are relevant to the determination of the technique by which it was made:

- (i) The wire is not round in cross-section, but exhibits slight faceting.
- (ii) Clearly visible 'creases' are present, running longitudinally along the wire.
- (iii) Finer scratches or striations are also present. These appear to be parallel and to run for much longer distances than the creases.
- (iv) The wire tapers and the surface features described in (i)–(iii) are also present on the thinner parts of the wire.

(i) and (ii) are characteristic of wire which has been made by hammering, while (iii) is characteristic of wire made by drawing. However, drawing is incompatible with a changing cross-section, which is clearly present in the jewellery from Tepe Nush-i Jan. Hence it must be concluded that the wire was made by hammering, but that it was then smoothed by either pulling backwards and forwards through a small hole in a bead or a piece of metal or, perhaps more likely, that it was pulled through a handful of sand.

There is a lack of agreement at the moment about the origins of drawing. It has been variously claimed as a Roman or a Celtic invention, but I believe that it is early medieval (see W. A. Oddy, in C. Johns and T. Potter, *The Thetford Treasure*, London 1983, pp. 62–4).

CONCORDANCE OF EXCAVATION AND CATALOGUE NUMBERS

NU 67/2	506	NU 67/107C	191	NU 67/127D	123	NU 67/143A	141
67/8	478	67/108A	6	67/127E	124	67/143B	142
67/11	375	67/108B	7	67/127F	125	67/143C	143
67/14	368	67/108C	8	67/127G	126	67/144A	60
67/15	444	67/109	106	67/127H	127	67/144B	61
67/18	504	67/110A	46	67/127I	128	67/145	38
67/19	491	67/110B	47	67/127J	129	67/146	87
67/21	247	67/110C	48	67/128A	55	67/147A	144
67/25	317	67/110D	107	67/128B	215	67/147B	94
67/26	272	67/111A	49	67/128C	209	67/148	62
67/27	488	67/111B	108	67/128D	130	67/149A	19
67/28	501	67/112A	109	67/129A	2	67/149B	20
67/29	256	67/112B	110	67/129B	18	67/149C	21
67/34	290	67/112C	111	67/130	56	67/150A	93
67/35	297	67/112D	112	67/131	57	67/150B	92
67/48	482	67/113A	9	67/132A	224	67/151A	4
67/49	296	67/113B	10	67/132B	225	67/151B	26
67/51	476	67/113C	11	67/132C1	66	67/152	63
67/53	238	67/113D	12	67/132C2	67	67/153A	83
67/54	237	67/113E	13	67/132C3	68	67/153B	84
67/55	399	67/114	50	67/132C4	69	67/153C	76
67/56	494	67/115	14	67/132C5	70	67/154A	194
67/57	498	67/116	205	67/132C6	71	67/154B	145
67/72	510	67/117	89	67/132C7	72	67/154C	146
67/73	342	67/118A	113	67/132D	73	67/155	88
67/74	456	67/118B	192	67/132E	74	67/156A	216
67/77	287	67/119	15	67/132F	78	67/156B	22
67/79	464	67/120A	51	67/133A	131	67/156C	85
67/80	315	67/120B	114	67/133B	132	67/156D	24
67/82	239	67/120C	115	67/133C	193	67/156E	147
67/85	240	67/120D	116	67/134	58	67/156F	148
67/86	241	67/120E	210	67/135A	133	67/156G	217
67/90	293	67/120F	77	67/135B	99	67/156H	149
67/96	28	67/121A	207	67/135C	134	67/156I	150
67/97A	40	67/121B	208	67/135D	229	67/156J	218
67/97B	100	67/121C	228	67/135E	230	67/156K	151
67/97C	101	67/122A	16	67/136A	3	67/156L	195
67/97D	102	67/122B	31	67/136B	33	67/156M	152
67/98A	103	67/122C	32	67/137	59	67/157A	95
67/98B	104	67/123	52	67/138A	75	67/157B	91
67/99	105	67/124A	117	67/138B1	79	67/157C	153
67/100A	41	67/124B	118	67/138B2	80	67/158	39
67/100B	42	67/124C	211	67/138B3	81	67/159	5
67/100C	227	67/125A	17	67/139	36	67/160	23
67/101A	43	67/125B	53	67/140A	97	67/161	90
67/101B	29	67/125C	96	67/140B	135	67/162A1	219
67/101C	189	67/125D	119	67/140C	136	67/162A2	220
67/102	223	67/125E	120	67/140D	137	67/162A3	221
67/103	25	67/125F	121	67/140E	138	67/162A4	222
67/104	30	67/125G	212	67/141	37	67/162A5	154
67/105	44	67/126	54	67/142A	226	67/162B1	231
67/106	190	67/127A	213	67/142B	139	67/162B2	155
67/107A	45	67/127B	214	67/142C	140	67/162C1	156
67/107B	206	67/127C	122	67/142D	82	67/162C2	157

NU 67/162C3	158	NU 67/182	505	NU 73/15	332	NU 74/2	471
67/162D1	196	67/183	467	73/16	370	74/3	475
67/162D2	197	67/184	463	73/17	360	74/4	344
67/162D3	198	67/186	496	73/18	470	74/5	345
67/162D4	199	67/187	461	73/19	473	74/26	261
67/162D5	200	67/188	508	73/26	264	73/27	283
67/162D6	201	67/189	495	73/27	263	74/28	271
67/162D7	202	67/190	439	73/28	462	74/29	279
67/162E	232	70/183	262	73/29	270	74/30	278
67/162F	203	70/184	298	73/30	301	74/31	273
67/162G1	159	70/191	511	73/31	292	74/32	492
67/162G2	160	70/193	452	73/32	289	74/33	268
67/162H1	161	70/194	465	73/33	291	74/34	294
67/162H2	162	70/226	338	73/34	295	74/35	257
67/162H3	163	70/227	313	73/35	282	74/36	277
67/162I1	164	70/246	318	73/36	255	74/37	280
67/162I2	165	70/254	319	73/37	258	74/38	302
67/162I3	166	70/292	369	73/38	493	74/39	499
67/162I4	167	70/302	363	73/39	303	74/40	275
67/162I5	168	70/303	359	73/40	286	74/51	244
67/162I6	169	70/304A	355	73/41	288	74/52	252
67/162I7	170	70/304B	356	73/42	306	74/53	309
67/162I8	171	70/305	472	73/51	246	74/54	245
67/162I9	172	70/306	353	73/52	460	74/76	449
67/162I10	173	70/208	343	73/53	242	74/77	489
67/162I11	174	70/309	331	73/54	490	74/101	400
67/162I12	175	70/350	497	73/55	250	74/102	412
67/162I13	176	70/351	260	73/56	308	74/103	436
67/162I14	177	70/354	266	73/57	310	74/104	395
67/162I15	178	70/355	269	73/59	312	74/105	390
67/162I16	179	70/400	459	73/76	458	74/106	428
67/162I17	180	70/401	311	73/77	453	74/107	426
67/162I18	181	70/402	251	73/78	233	74/108	427
67/162I19	182	70/450	445	73/79	447	74/109	393
67/162J1	183	70/451	487	73/80	438	74/110	419
67/162J2	184	70/452	235	73/101	388	74/111	429
67/162J3	185	70/453	454	73/102	422	74/112	437
67/162J4	186	70/500	434	73/103	507	74/113	421
67/162J5	187	70/501	484	73/104	389	74/114	420
67/162K	188	70/502	378	73/105	391	74/115	394
67/163A	204	70/504	483	73/106	425	74/116	403
67/163B	98	70/505	486	73/107	430	74/117	480
67/164	64	70/506	448	73/108	392	74/118	406
67/165A	34	70/507	371	73/109	424	74/119	481
67/165B	86	70/508	485	73/126	373	74/120	413
67/165C	65	73/1	468	73/127	477	74/121	416
67/165D	27	73/2	503	73/128	377	74/122	423
67/165E	35	73/3	320	73/129	385	74/126	372
67/166	1	73/4	357	74/1A	333	74/127	386
67/167	259	73/5	474	74/1B	324	74/128	387
67/168	299	73/6	466	74/1C	334	74/129	374
67/169	354	73/7	321	74/1D	335	74/130	376
67/170	443	73/8	322	74/1E	325	74/131	384
67/172	300	73/9	469	74/1F	340	74/132	234
67/173	365	73/10	339	74/1G	326	77/1	358
67/175	281	73/11	500	74/1H	327	77/2	346
67/176	253	73/14	323	74/1I	336	77/3	347

NU 77/4	348	NU 77/21	314	NU 77/78	442	NU 77/111	401
77/5	349	77/22	330	77/79	440	77/112	409
77/6	350	77/26	267	77/80	441	77/113	408
77/7	316	77/27	254	77/81	446	77/114	404
77/8	328	77/28	276	77/82	457	77/115	415
77/9	329	77/29	285	77/83	455	77/116	414
77/10	337	77/30	284	77/84	509	77/117	418
77/11	341	77/31	265	77/101	397	77/118	407
77/12	351	77/32	304	77/102	396	77/119	432
77/13	352	77/33	305	77/103	398	77/120	433
77/14	367	77/34	307	77/104	405	77/126	479
77/15	502	77/51	274	77/105	431	77/127	380
77/16	361	77/52	248	77/106	435	77/128	383
77/17	366	77/53	243	77/107	417	77/129	379
77/18	362	77/54	249	77/108	411	77/130	381
77/19	364	77/76	451	77/109	410	77/131	382
77/20	236	77/77	450	77/110	402		

BIBLIOGRAPHY

- Alekseeva, E. M., 1975, *Antičnye Buse Severnogo Pričernomorya*, Moscow.
- Amiet, P., 1966, *Elam*, Auvers-sur-Oise.
- Andrae, W., 1908, 'Berichten . . . aus Assur von Mai 1907 bis Januar 1908', *MDO-G XXXVI*, 16–38.
- , 1913, *Die Festungswerke von Assur*, text and plates, *WVDO-G 23*, Leipzig.
- Arik, R. O., 1937, *Alaca Hüyük Hafriyatı 1935*, Ankara.
- Arsebuk, G., and Korfmann, M., 1976, 'An assemblage of sling-pellets from Tüllintepe, 1972', *Keban Project: 1972 Activities*, Ankara, 163–72.
- Balmuth, M. S., 1967, 'The monetary forerunners of coinage in Phoenicia and Palestine', in Kindler, A. (ed.), *The Patterns of Monetary Development in Phoenicia and Palestine in Antiquity = Proceedings of the International Numismatic Convention, Jerusalem 1963*, Tel Aviv, 25–32.
- , 1971, 'Remarks on the appearance of the earliest coins', in Mitten, D. G., Pedley, J. G. and Scott, J. A. (eds.), *Studies presented to George M. A. Hanfmann*, Mainz, 1–7.
- , 1975, 'The critical moment: the transition from currency to coinage in the eastern Mediterranean', *World Archaeology VI*, 293–8.
- , 1976, 'Jewellers' Hoards and the development of early coinage', in Cahn, A. H., and Le Rider, G. (eds.), *Proceedings of the 8th International Congress of Numismatics, New York – Washington, September 1973*, Paris, 27–30.
- , 1980, 'Money before coinage', in Price M. J. (ed.), *Coins: an Illustrated Survey 650 B.C. to the Present Day*, London, 20–5.
- Barnett, R. D., 1959, *Assyrian Palace Reliefs and their Influence on the Sculptures of Babylonia and Persia*, London.
- , 1976, *Sculptures from the North Palace of Ashurbanipal at Nineveh (668–627 B.C.)*, London.
- Beckwith, C., and Saitoti, T. O., 1980, *Massai*, London.
- Bibby, G., 1970, *Looking for Dilmun*, London.
- Bivar, A. D. H., 1971, 'A hoard of ingot-currency of the Median period from Nūsh-i Jān, near Malayir', *Iran IX*, 97–111.
- , 1982, 'Bent bars and straight bars: an appendix to the Mir Zakah hoard', *Studia Iranica XI*, 49–60.
- Blegen, C. W., 1963, *Troy and the Trojans*, London.
- Blinkenberg, Chr., 1926, *Fibules grecques et orientales*, Copenhagen.
- Boardman, J., 1963, *Island Gems*, London.
- , 1980, *The Greeks Overseas*, 2nd ed., London.
- Boehmer, R. M., 1972, *Die Kleinfunde von Boğazköy*, *WVDO-G 87*, Berlin.
- Bökönyi, S., 1978, 'The animal remains from Nush-i Jan, a preliminary report, 1973 and 1974', *Iran XVI*, 24–8.
- Botta, P. E., 1849–50, *Monument de Ninive*, 5 vols, Paris.
- Bovington, C. H., Dyson, R. H. Jr., Mahdavi, A., and Masoumi, R., 1974, 'The radiocarbon evidence for the terminal date of the Hissar IIIc culture', *Iran XII*, 195–9.
- Brea, L. B., 1957, 'A gold treasure comparable with the "great treasure" of Troy: a remarkable discovery from a 4500-year-old site on the Isle of Lemnos', *ILN 3 Aug*, 197–9.
- Broadbent, S. R., 1955, 'Quantum hypotheses', *Biometrika XLII*, 45–57.
- , 1956, 'Examination of a quantum hypothesis based on a single set of data', *Biometrika XLIII*, 32–44.
- Burney, C. A., 1972, 'Excavations at Haftavan Tepe 1969: second preliminary report', *Iran X*, 127–42.
- Calmeyer, P., 1974, 'Zu einigen vernachlässigten Aspekten medischer Kunst', *Proceedings of the IIInd Annual Symposium on Archaeological Research in Iran*, Tehran, 112–27.
- , 1977, 'Das Grab eines altassyrischen Kaufmanns', *Iraq XXXIX*, 87–97.
- Cameron, G. C., 1948, *Persepolis Treasury Tablets*, *OIP LXV*, Chicago.
- , 1965, 'New tablets from the Persepolis Treasury', *JNES XXIV*, 167–92.
- Carter, E., 1980, 'Excavations in Ville Royale I at Susa: the third millennium B.C. occupation', *CDAFI XI*, 11–134.
- Chantre, E., 1885–7, *Recherches anthropologiques dans le Caucase*, 4 vols, Paris.
- Chubb, M., 1954, *Nefertiti lived here*, London.
- Cleuziou, S., 1977, 'Les pointes de flèches "scythiques" au Proche et Moyen Orient', *Le Plateau iranien et l'Asie centrale des origines à la conquête islamique*, Paris, 187–99.
- Contenau, G., and Ghirshman, R., 1935, *Fouilles du Tépé-Giyan*, Paris.
- Crowfoot, G. M., 1954, 'Textiles, basketry, and mats' in Singer, C., Holmyard, E. J., and Hall, A. R. (eds.), *A History of Technology*, I, 413–55.
- Culican, W., 1964, 'Spiral-end beads in Western Asia', *Iraq XXVI*, 36–43.

- Culican, W., 1968, 'The iconography of some Phoenician seals and seal impressions', *AJBA* I:1, 50–103.
- , 1970, 'Problems of Phoenicio-Punic iconography – a contribution', *AJBA* I:3, 28–57.
- Curjel, R., and Schlumberger, D., 1953, *Trésors monétaires d'Afghanistan*, *MDAFA* XIV, Paris.
- Curtis, J. E., and Maxwell-Hyslop, K. R., 1971, 'The gold jewellery from Nimrud', *Iraq* XXXIV, 101–12.
- Curtis, J. E., 1979, *An Examination of Late Assyrian Metalwork*, Ph.D. thesis, Univ. of London.
- Dales, G. F., 1960, *Mesopotamian and Related Female Figurines: their Chronology, Diffusion and Cultural Functions*, Ph.D. thesis, Univ. of Pennsylvania.
- Dalton, O. M., 1964, *The Treasure of the Oxus with Other Examples of Early Oriental Metal-Work*, 3rd ed., London.
- Davies, N. M., 1936, *Ancient Egyptian Paintings*, II, Chicago.
- Dayton, J., 1974, 'Money in the Near East before coinage', *Berytus* XXIII, 41–52.
- de Macquenem, R., 1905, 'Offrandes de fondation du temple de Chouchinak', *MDP* VIII, 61–130, Paris.
- de Miroschedji, P., 1973, 'Vases et objets en stéatite susiens du Musée du Louvre', *CDAFI* III, 9–79.
- de Morgan, H., 1905, 'Recherches au Talyche persan en 1901: nécropoles des âges du bronze et du fer', *MDP* VIII, 251–342.
- de Morgan, J., 1889, *Mission scientifique au Caucase*, 2 vols, Paris.
- , 1896, *Mission scientifique en Perse*, IV, Paris.
- , 1912, 'Observations sur les couches profondes de l'acropole à Suse', *MDP* XIII, 1–25.
- de Schauensee, M., and Dyson, R. H., Jr, 1983, 'Hasanlu horse trappings and Assyrian reliefs', *Essays on Near Eastern Art and Archaeology in Honour of Charles Kyrle Wilkinson*, New York, 59–77.
- Deshayes, J., 1966, 'Rapport préliminaire sur la sixième campagne de fouille à Tureng Tepe (1965)', *Iranica Antiqua* VI, 1–5.
- Dever, W. G., and Tadmor, M., 1976, 'A copper hoard of the Middle Bronze Age I', *IEJ* XXVI, 163–9.
- Dieulafoy, M., 1893, *l'Acropole de Suse*, Paris.
- Durrani, F. A., 1962, *Selected Archaeological Materials from Harappan Sites and their Mesopotamian Correlations*, MA thesis, Univ. of London.
- Dyson, R. H., 1964, 'Notes on weapons and chronology in Northern Iran around 1000 B.C.', in Mellink, M. J. (ed.), *Dark Ages and Nomads*, Istanbul, 32–45.
- , 1965, 'Problems of protohistoric Iran as seen from Hasanlu', *JNES* XXIV, 193–217.
- , 1972, 'Hasanlu 1972', *Proceedings of the 1st Annual Symposium of Archaeological Research in Iran*, Tehran.
- Easton, D. F., 1976, 'Towards a chronology for the Anatolian Early Bronze Age', *AS* XXVI, 145–73.
- Egami, N., Fukai, S., and Masuda, S., 1965, *Dailaman I: The Excavations at Ghalekuti and Lusulkan 1960*, Tokyo.
- , 1966, *Dailaman II: The Excavations at Noruzmahale and Khoramrud 1960*, Tokyo.
- Frankfort, H., 1933, 'Tell Asmar, Khafaje and Khorsabad', *OIC* XVI, Chicago.
- , 1939, *Cylinder Seals*, London.
- , 1944, 'A note on the lady of birth', *JNES* III, 198–200.
- Frankfort, H., and Pendlebury, J. D. S., 1933, *The City of Akhenaten*, II, London.
- Figulla, H. H., 1954, 'A "coin" of Cyrus', *Numismatic Chronicle* XIV (6th series), 173.
- Freeman, P. R., 1976, 'A Bayesian analysis of the megalithic yard', *Journal of the Royal Statistical Society*, A139, 20–35.
- Frisch, T. G. and Toll, N. P., 1949, *The Excavations at Dura-Europos*, Final Report IV, Part IV:1, *The Bronze Objects*, New Haven.
- Fukai, S., and Ikeda, J., 1971, *Dailaman IV: The Excavations at Ghalekuti II and I 1964*, Tokyo.
- Fukai, S., and Matsutani, T., 1980, *Halimehjan I: The Excavation at Shahpir, 1976*, Tokyo.
- Garbini, G., 1960, 'The Phoenician "goddess" in the Louvre', *Orientalia* XXIX, 323–8.
- Gettens, R. J., and Waring, C. L., 1957, 'The composition of some ancient Persian and other Near Eastern silver objects', *Ars Orientalis* II, 83–90.
- Ghirshman, R., 1939, *Fouilles de Sialk*, II, Paris.
- , 1954, *Village Perse-Achéménide*, *MDP* XXXVI, Paris.
- , 1963, *Persia: from the Origins to Alexander the Great*, London.
- , 1964, 'Fibule en Iran: Collection de M. Foroughi', *Iranica Antiqua* IV, 90–107.
- , 1966, *Tchoga Zanbil I*, *MDP* XXXIX, Paris.
- , 1968, *Tchoga Zanbil II*, *MDP* XL, Paris.
- , 1970–71, 'Le Pazuzu et les fibules du Luristan', *Mélanges de l'Université Saint-Joseph* XLVI, 121–7.
- , 1977a, 'Le passe-ride en défense de sanglier chez les peuples iraniens', *Acta Antiqua Academiae Scientiarum Hungaricae* XXV, 27–38.

- Ghirshman, R., 1977b, 'La Fibule en Iran II: Collection de M. Foroughi', *Iranica Antiqua* XII, 21–31.
- , 1979, *Tombe princière de Ziwiye et le début de l'art animalier scythe*, Paris.
- Gjerstad, E., et al., 1937, *The Swedish Cyprus Expedition* III, text and plates, Stockholm.
- Goff, C., 1969, Excavations at Bābā Jān, 1967', *Iran* VII, 115–30.
- , 1978, 'Excavations at Baba Jan: the Pottery and Metal from Levels III and II', *Iran* XVI, 29–65.
- Guido, M., 1978, *The Glass Beads of the Prehistoric and Roman periods in Britain and Ireland*, London.
- Gurney, O. R., 1935, 'Babylonian prophylactic figurines and their rituals', *LAAA* XXII, 31–96.
- Hakemi, A., and Rad, M., 1950, 'Description and result(s) of the excavations at Hasanlu', *Gūzarišhāyi Bāstan-Šināsi* I, 1–103 (in Persian).
- Haller, A., 1954, *Die Gräber und Gräfte von Assur*, WVDO-G 65, Berlin.
- Helm, P. R., 1981, 'Herodotus' *Medikos Logos* and Median history', *Iran* XIX, 85–90.
- Henning, W. B., 1956, 'The "coin" with cuneiform inscription', *Numismatic Chronicle* XVI (6th series), 327–8.
- Herzfeld, E. E., 1941, *Iran in the Ancient East*, London.
- Higgins, R. A., 1961, *Greek and Roman Jewellery*, London.
- Holland, T. A., 1974, 'A figurine plaque from Gezer', in Dever, W. G. (ed.), *Gezer* II, Jerusalem, 133–4.
- Hori, A., 1981, Dailaman and Shahpir: re-examinations of their chronology', *Bulletin of the Ancient Orient Museum* III, 43–61.
- Hrouda, B., 1962, *Tell Halaf IV: Die Kleinfunde aus historischer Zeit*, Berlin.
- Hughes, M. J., Cowell, M. R., and Craddock, P. T. C., 1976, 'Atomic absorption techniques in archaeology', *Archaeometry* XVIII, 19–37.
- Hughes, M. J. and Hall, J. A., 1979, 'X-ray fluorescence analysis of Late Roman and Sassanian silver plate', *Journal of Archaeological Science* VI, 321–44.
- Hulin, P., 1954, 'The signs on the Kabul silver piece', *Numismatic Chronicle* XIV (6th series), 174–6.
- , 1972, 'An inscribed silver piece of Darius', *Orientalia Lovaniensia Periodica* III, 121–4.
- Huot, J.-L., et al., 1978, 'Septième campagne à Larsa', *Syria* LV, 183–223.
- Huot, J.-L., Pardo, V., and Rougeulle, A., 1980, 'A propos de la perle L. 76.5 de Larsa: les perles à quatre spirales', *Iraq* XLII, 121–9.
- Jacobsthal, P., 1956, *Greek Pins*, Oxford.
- Jakob-Rost, L., 1962, 'Zum Ohrschmuck der Assyrer', *Staatliche Museen zu Berlin: Forschungen und Berichte* V, 34–9.
- Jenkins, G. K., 1964, 'Coins from the collection of C. J. Rich', *British Museum Quarterly* XXVII, 88–95.
- Johns, C. N., 1933, 'Excavations at 'Atlīt (1930–1)', *Quarterly of the Department of Antiquities in Palestine* II, 41–104.
- Keel, O., 1980, *Das Böcklein in der Milch seiner Mutter und Verwandtes im Lichte eines altorientalischen Bild-motivs*, Freiburg/Schweiz and Göttingen.
- Kendall, D. G., 1974, 'Hunting quanta', *Phil. Trans. R. Soc. Lond.*, A276, 231–66.
- Kleiss, W., 1970, 'Ausgrabungen in der urartäischen Festung Bastam (Rusahinili) 1969', *AMI* III, 7–65.
- , 1979, *Bastam* I, Berlin.
- Klengel-Brandt, E., 1970, 'Pazuzu-Köpfe aus Babylon', *Forschungen und Berichte* XII, 37–40.
- Koldewey, R., 1914, *The Excavations at Babylon*, London.
- Korfmann, M., 1972, *Schleuder und Bogen in Südwestasien*, Bonn.
- , 1973, 'The sling as a weapon', *Scientific American* CCXXIX:4, 35–42.
- Koşay, H. Z., 1944, 'Ausgrabungen von Alaca Hüyük – ein Vorbericht über die . . . in Sommer 1936 durchgeführten Forschungen und Entdeckungen', Ankara.
- , 1951, *Alaca Höyük Kazisi 1937–1939*, Ankara.
- Kozenkova, V. I., 1977, *Kobanskaya Kultura: vostočnyi Variant (SVOD Arkheologičeskikh Istočnikov)*, Moscow.
- Kraay, C. M., 1964, 'Hoards, small change and the origin of coinage', *JHS* LXXXIV, 76–91.
- Kraay, C. M., and Moorey, P. R. S., 1969, 'Two fifth century hoards from the Near East', *Revue Numismatique* X (6th series), 181–235.
- , 1981, 'A Black Sea hoard of the late fifth century B.C.', *Numismatic Chronicle* CXLI, 1–19.
- Kroll, S., 1979, 'Die Kleinfunde' in W. Kleiss, *Bastam* I: *Ausgrabungen in den urartäischen Anlagen 1972–1975*, Berlin, 151–82.
- Kyllo, M. A., and Hubbard, R. N. L. B., 1981, 'Median and Parthian plant remains from Tepe Nush-i Jan', *Iran* XIX, 91–100.
- Lambert, W. G., 1970, 'Inscribed Pazuzu heads from Babylon', *Staatliche Museen zu Berlin: Forschungen und Berichte* XII, 41–7.

- Langdon, S., 1924, *Excavations at Kish*, I, Paris.
- Larsen, M. T., 1976, *The Old Assyrian City-State and its Colonies = Mesopotamia 4*, Copenhagen.
- Layard, A. H., 1853a, *Discoveries in the Ruins of Nineveh and Babylon*, London.
- , 1853b, *The Monuments of Nineveh: Second Series*, London.
- Le Breton, L., 1947, 'Note sur la ceramique peinte aux environs de Suse et à Suse', *MDP XXX*, 120–9.
- Le Brun, A., 1971, 'Recherches stratigraphiques à l'acropole de Suse, 1969–1971', *CDAFI I*, 163–216.
- Littauer, M. A., and Crowell, J. H., 1979, *Wheeled vehicles and Ridden Animals in the Ancient Near East*, Leiden.
- Litvinskiy, V. A., and Pichikiyan, I. R., 1981, 'The Temple of the Oxus', *JRAS*, 133–67.
- Loftus, W. K., 1857, *Travels and Researches in Chaldaeia and Susiana*, London.
- Loud, G., and Altman, C. B., 1938, *Khorsabad II*, *OIP XL*, Chicago.
- Luckenbill, D. D., 1924, *The Annals of Sennacherib*, *OIP II*, Chicago.
- Macalister, R. A. S., 1912, *The Excavation of Gezer II*, London.
- Macdonald, G., 1934, *The Roman Wall in Scotland*, Oxford.
- MacDowall, D. W., and Taddei, M., 1978, 'The early historic period: Achaemenids and Greeks', in Allchin, F. R., and Hammond N., *The Archaeology of Afghanistan*, London, 187–232.
- Mallowan, M. E. L., 1937, 'The excavations at Tall Chagar Bazar . . . second campaign, 1936', *Iraq IV*, 91–154.
- , 1947, 'Excavations at Brak and Chagar Bazar', *Iraq IX*.
- , 1954, 'The excavations at Nimrud (Kalhu), 1953', *Iraq XVI*, 59–163.
- , 1966, *Nimrud and its Remains*, 2 vols., London.
- Mallowan, M. E. L., and al-Amin, M., 1950, 'Soundings in the Makhmur Plain, part 2', *Sumer VI*, 55–68.
- Martirosyan, A. A., 1964, *Armeniya v Epokhi Bronzy i Rannego Železa*, Erevan.
- Maxwell-Hyslop, K. R., 1953, 'Bronze lugged axe- or adze blades from Asia', *Iraq XV*, 69–87.
- , 1971, *Western Asiatic Jewellery, c. 3000–612 B.C.*, London.
- , 1978, 'A silver earring from Tell-el Farah (south)', in Moorey, R. and Parr, P. (eds.), *Archaeology in the Levant: Essays for Kathleen Kenyon*, Warminster, 180–2.
- Mazar, B., 1963a, 'Recent discoveries at Engedi, by the Dead Sea', *ILN* 13 April, 546–7.
- , 1963b, 'Excavations at the oasis of Engedi', *Archaeology XVI*, 99–107.
- McCown, D., and Haines, R. C., 1967, *Nippur I*, *OIP LXXXVIII*, Chicago.
- Medvedskaya, I. N., 1972, *Iran: Iron Age I*, BAR-S126, Oxford.
- Michalowski, P., 1978, 'The Neo-Sumerian Silver Ring Texts', *Syro-Mesopotamian Studies II:3*.
- Mnatsakanyan, A. O., 1957, 'Raskopki Kurganov na Pobereže Oz. Sevan v. 1956 g', *Sovetskaya Arkheologiya*, 146–53.
- Mohammed Ali, A. R., 1979, 'Tell Abu al-Su'ud: first season (1978)', *Sumer XXXV*, 545–8.
- Moorey, P. R. S., 1965, 'A bronze "Pazuzu" statuette from Egypt', *Iraq XXVII*, 33–41.
- , 1971, *Catalogue of the Ancient Persian Bronzes in the Ashmolean Museum*, Oxford.
- , 1976, *Ancient Iraq*, Oxford.
- , 1978a, 'The iconography of an Achaemenid stamp-seal acquired in the Lebanon', *Iran XVI*, 143–54.
- , 1978b, *Kish Excavations 1923–1933*, Oxford.
- , 1980, *Cemeteries of the First Millenium B.C. at Deve Hüyük, near Carchemish, salvaged by T. E. Lawrence and C. L. Woolley in 1913*, BAR-S87, Oxford.
- Moortgat, A., 1940, *Vorderasiatische Rollsiegel*, Berlin.
- , 1969, *The Art of Ancient Mesopotamia*, London.
- Muscarella, O. W., 1973, 'Excavations at Agrab Tepe, Iran', *MMJ VIII*, 47–76.
- , 1974, 'The Iron Age at Dinkha Tepe, Iran', *MMJ IX*, 35–90.
- , 1977, '"Ziwiye" and Ziwiye: the forgery of a provenience', *Journal of Field Archaeology IV*, 197–219.
- Negahban, E. O., 1964, *A preliminary report on Marlik Excavation*, Tehran.
- Negbi, O., 1976, *Canaanite gods in metal*, Tel Aviv.
- Oates, D., 1982, 'Tell Brak', in Curtis, J. E. (ed.), *Fifty Years of Mesopotamian Discovery*, London, 62–71.
- Özgüç, T., 1950, *Kultepe Kazısı Raporu 1948*, Ankara.
- Özgüç, T., and Özgüç, N., 1953, *Kultepe Kazısı Raporu 1949*, Ankara.
- Özgüç, T., and Akok, M., 1958, *Horoztepe*, Ankara.
- Painter, K. S., 1972, 'A Late-Roman silver ingot from Kent', *AJ LII*, 84–92.
- Palmieri, A., 1981, 'Excavations at Arslantepe (Malatya)', *AS XXXI*, 101–19.
- Parker, B., 1955, 'Excavations at Nimrud, 1949–1953; seals and seal impressions', *Iraq XVII*, 93–125.
- Parrot, A., 1933, 'Les fouilles de Tello et de Senkereh-Larsa: campagne 1932–1933', *RA XXX*, 169–82.
- , 1937, 'Les fouilles de Mari: troisième campagne (hiver 1935–36)', *Syria XVIII*, 54–84.'

- Petrie, W. M. F., 1917, *Scarabs and Cylinders with Names*, London.
- , 1925, *Buttons and Design Scarabs*, London.
- , 1932, *Beth-Pelet I*, London.
- Piggot, V., 1977, 'The question of the presence of iron in the Iron I period in Western Iran', *Bibliotheca Mesopotamica* VII, 209–34.
- Piotrovsky, B., 1970, *Karmir Blur*, Leningrad.
- Platt, E. E., 1978, 'Bone Pendants', *Biblical Archaeologist* XLI, 23–8.
- Poppa, R., 1978, *Kamid el-Loz II: Der eisenzeitliche Friedhof: Befunde und Funde*, Bonn.
- Porada, E., 1948, *Corpus of Ancient Near Eastern Seals in North American Collections*, I, Washington.
- , 1981, 'The cylinder seals found at Thebes in Boeotia', *AfO* XXVIII, 1–78.
- Postgate, J. N., 1973, *The Governor's Palace Archive (Cuneiform Texts from Nimrud II)*, London.
- Potratz, J. A. H., 1966, *Die Pferdetrensen des alten Orient*, Rome.
- Powell, M. A., 1978, 'A contribution to the history of money in Mesopotamia prior to the invention of coinage', in Hruška, B. and Komoróczy, G. (eds.), *Festschrift Lubor Matouš II*, Budapest, 211–43.
- , 1979, 'Ancient Mesopotamian weight metrology: methods, problems and perspectives', in Powell, M. A., and Sack, R. H. (eds.), *Studies in Honor of Tom B. Jones, AOAT 203*, Neukirchen-Vluyn, 71–109.
- Preusser, C., 1954, *Die Wohnhäuser in Assur, WVDO-G 64*, Berlin.
- Pritchard, J. B., 1964, 'Two tombs and a tunnel in the Jordan valley', *Expedition* VI:2, 3–9.
- Reade, J. E., 1968, 'Tell Taya (1967): summary report', *Iraq* XXX, 234–64.
- , 1973, 'Tell Taya (1972–73): summary report', *Iraq* XXXV, 155–87.
- Reuther, O., 1926, *Die Innenstadt von Babylon (Merkes)*, 2 vols, *WVDO-G 47*, Leipzig.
- Roaf, M., and Stronach, D., 1973, 'Tepe Nush-i Jan, 1970: second interim report', *Iran* XI, 129–40.
- Roaf, M., 1982, 'The Hamrin Sites', in Curtis, J. E. (ed.), *Fifty Years of Mesopotamian Discovery*, London, 40–7.
- Robinson, E. S. G., 1950, 'A silversmith's hoard from Mesopotamia', *Iraq* XII, 44–51.
- Roth, H. L., 1950, *Studies in Primitive Looms*, 3rd edition, Halifax.
- San Nicolò, M., and Ungnad, A., 1935, *Neubabylonische Rechts- und Verwaltungsurkunden*, I, Leipzig.
- Saurat, A., 1974, *Catalogue de l'exposition des dernières découvertes archéologiques 1973–1974, Musée Iran Bastan, du 3 au 21 novembre 1974*, Teheran.
- Schaeffer, C. F. A., 1939a, *Ugaritica I*, Paris.
- , 1939b, 'Une trouvaille de monnaies archaïques grecques à Ras Shamra', *Mélanges syriens offerts à M. René Dussaud*, I, Paris, 461–87.
- , 1948, *Stratigraphie Comparée et Chronologie de l'Asie Occidentale*, Oxford.
- Scheil, V., 1902, *Une saison de fouilles à Sippar*, Cairo.
- Schliemann, H., 1880, *Ilios: the city and country of the Trojans*, London.
- Schmidt, E. F., 1937, *Excavations at Tepe Hissar, Damghan*, Philadelphia.
- , 1957, *Persepolis II: Contents of the Treasury and other Discoveries, OIP LXIX*, Chicago.
- Seltman, C., 1955, *Greek Coins*, 2nd ed., London.
- Shahmirzadi, S. M., 1979, 'Copper, bronze, and their implementation by metalsmiths of Sagzabad, Qazvin Plain, Iran', *AMI* XII, 49–66.
- Shea, M., and Maxwell-Hyslop, K. R., 1979, 'A gold earring from the Great Shaft at Tell ed-Duweir (Lachish)', *Levant* XI, 171–3.
- Smith, S., 1938, *Assyrian sculptures in the British Museum from Shalmaneser III to Sennacherib*, London.
- Sollberger, E., 1956, 'Selected texts from American collections', *JCS* X, 11–31.
- Sono, T., and Fukai, S., 1968, *Dailaman III: The Excavations at Hassani Mahale and Ghalekuti 1964*, Tokyo.
- Stein, A., 1940, *Old Routes of Western Iran*, London.
- Stout, M. E., 1977, 'Clay sling-bullets from Tell Sweyhat', *Levant* IX, 63–5.
- Stronach, D., 1958, 'Metal objects from the 1957 excavations at Nimrud', *Iraq* XX, 169–81.
- , 1959, 'The development of the fibula in the Near East', *Iraq* XXI, 181–206.
- , 1968, 'Tepe Nush-i Jan: a mound in Media', *MMAB* XXVII, 177–86.
- , 1969, 'Excavations at Tepe Nūsh-i Jān, 1967', *Iran* VIII, 1–20.
- , 1977, 'La découverte du premier temple mède dans la région d'Écbatane (Hamadan, Iran)', *Comptes Rendus de l'Académie des Inscriptions et Belles-Lettres*, 688–700.
- , 1978, *Pasargadae*, Oxford.
- , 1979, 'Excavations at Tepe Nush-i Jan', *Akten des VII. Internationalen Kongresses für Iranische Kunst und Archäologie, München 7.–10. September 1976*, Berlin, 157–9.
- , 1981, 'Notes on Median and early Achaemenian religious monuments', in Biran, A. (ed.), *Temples and High Places in Biblical Times*, Jerusalem, 123–30.

- Stronach, D., forthcoming, 'Notes on Iranian religion in the 7th and 6th centuries B.C.', in *Volume d'hommages pour Jacques Duchesne-Guillemin*, Liège.
- Stronach, D., and Roaf, M., 1978, 'Excavations at Tepe Nush-i Jan: Part I, A third interim report', *Iran*, XVI, 1–11.
- Sulimirski, T., 1954, 'Scythian antiquities in Western Asia', *Artibus Asiae* XI, 282–318.
- Tait, H., 1976, *Jewellery through 7,000 Years: Catalogue of Exhibition in British Museum*, London.
- Tekhov, B. V., 1977, *Tsentralny Kavkaz v. XVI–X vv. do N.E.*, Moscow.
- Tobler, A. J., 1950, *Excavations at Tepe Gawra*, II, Philadelphia.
- Toll, N. P., 1946, *The Excavations at Dura-Europos: Preliminary Report of the ninth season of work 1935–1936*, II, New Haven.
- Tufnell, O., 1953, *Lachish III: The Iron Age*, text and plates, London.
- Tushingham, A. D., 1971, 'God in a boat', *AJBA* I:4, 23–8.
- Uvarov, P. S., 1900, *Mogilniki Svernogo Kavkaza* (Materialy po Arkheologiya Kavkaza VIII), Moscow.
- Vanden Berghe, L., 1964, *La Nécropole de Khūrvīn*, Leiden.
- , 1968a, *Het Archeologisch Onderzoek naar de Bronscultuur van Luristan, Opgraven in Pusht-i Kuh I: Kalwali en War Kabud (1965 en 1966)*, Brussels.
- , 1968b, 'La nécropole de Bani Surmah', *Archéologia* XXIV, 53–63.
- , 1968c, 'Belgische Opgraven en Navorsingen in de Pusht-i Kuh, Luristan', *Phoenix* XIV, 109–27.
- , 1970, 'La nécropole de Kalleh Nisar', *Archéologia* XXXII, 64–73.
- , 1971, 'Recherches archéologiques dans le Pusht-i Kuh, Luristan', *Bastan Chenassi va Honar-e Iran* VI, 14–43.
- , 1973a, 'Le Luristan à l'âge du bronze: prospections archéologiques dans le Pusht-i Kuh central', *Archéologia* LXIII, 25–36.
- , 1973b, 'Recherches archéologiques dans le Luristan: sixième campagne 1970', *Iranica Antiqua* X, 1–79.
- , 1973c, 'Le Luristan à l'âge du fer: la nécropole de Katal-i-Gulgul', *Archéologia* LXV, 16–29.
- , 1978, 'Les fibules provenant des fouilles au Pusht-i Kūh, Luristan', *Iranica Antiqua* XIII, 35–74.
- , 1979, 'La nécropole de Mīr Khair au Pusht-i Kūh, Luristan', *Iranica Antiqua* XIV, 1–37.
- , 1980, 'Des tombes de l'âge du fer au Luristan', *Archéologia* CXXXVIII, 32–47.
- Van Loon, M., 1977–78, 'First results of the 1974 and 1975 excavations at Selenkahiye near Meskene, Syria', *AAAS* XXVII–XXVIII, 165–85.
- Von der Osten, H. H., 1937, *The Alishar Hüyük, Seasons of 1930–32*, II, *OIP* XXIX, Chicago.
- Von Luschan, 1943, *Ausgrabungen in Sendschirli V: Die Kleinfunde*, Berlin.
- Watson, P. J., 1979, *Archaeological Ethnography in Western Iran*, Tucson.
- Woolley, C. L., 1914–16, 'A North Syrian cemetery of the Persian period', *LAAA* VII, 115–29.
- , 1923, 'A drinking-horn from Asia Minor', *LAAA* X, 69–72.
- , 1934, *Ur Excavations II: The Royal Cemetery*, text and plates, London.
- , 1938, 'The excavations at Al Mina, Sueidia', *JHS* LVIII, 1–30, 133–70.
- , 1955, *Ur Excavations IV: The Early Periods*, London.
- , 1926, *Ur Excavations IX: The Neo-Babylonian and Persian periods*, London.
- , 1965, *Ur Excavations VIII: The Kassite Period and the Period of the Assyrian Kings*, London.
- Wulff, H. E., 1966, *The Traditional Crafts of Persia*, Cambridge, Mass.
- Young, T. C., 1965, 'A comparative ceramic chronology for Western Iran, 1500–500 B.C.', *Iran* III, 53–85.
- , 1969, *Excavations at Godin Tepe: First Progress Report*, Toronto.
- Young, T. C. and Levine, L. D., 1974, *Excavations of the Godin Project: Second Progress Report*, Toronto.
- Ziegler, C., 1962, *Die Terrakotten von Warka*, Berlin.

LIST OF ABBREVIATIONS

<i>AAAS</i>	<i>Annales archéologiques arabes syriennes</i>
<i>AfO</i>	<i>Archiv für Orientforschung</i>
<i>AJ</i>	<i>Antiquaries Journal</i>
<i>AJBA</i>	<i>Australian Journal of Biblical Archaeology</i>
<i>AMI</i>	<i>Archäologische Mitteilungen aus Iran</i>
<i>AOAT</i>	<i>Alter Orient und Altes Testament</i>
<i>AS</i>	<i>Anatolian Studies</i>
<i>BAR</i>	<i>British Archaeological Reports</i>
<i>BM</i>	British Museum, London
<i>CAD</i>	<i>Chicago Assyrian Dictionary</i>
<i>CDAFI</i>	<i>Cahiers de la Délégation archéologique française en Iran</i>
<i>CH</i>	Columned Hall
<i>IBM</i>	Iran Bastan Museum, Teheran
<i>IEJ</i>	<i>Israel Exploration Journal</i>
<i>ILN</i>	<i>Illustrated London News</i>
<i>JCS</i>	<i>Journal of Cuneiform Studies</i>
<i>JHS</i>	<i>Journal of Hellenic Studies</i>
<i>JNES</i>	<i>Journal of Near Eastern Studies</i>
<i>JRAS</i>	<i>Journal of the Royal Asiatic Society</i>
<i>LAAA</i>	<i>Liverpool Annals of Archaeology and Anthropology</i>
<i>MDAFA</i>	<i>Memoires de la Délégation archéologique française en Afghanistan</i>
<i>MDO-G</i>	<i>Mitteilungen der Deutschen Orient-Gesellschaft</i>
<i>MDP</i>	<i>Memoires de la Délégation en Perse</i>
<i>MMA</i>	Metropolitan Museum of Art, New York
<i>MMAB</i>	<i>Metropolitan Museum of Art Bulletin</i>
<i>MMJ</i>	<i>Metropolitan Museum Journal</i>
<i>OIC</i>	<i>Oriental Institute Communications</i>
<i>OIP</i>	<i>Oriental Institute Publications</i>
<i>OWB</i>	Old Western Building
<i>RA</i>	<i>Revue d'Assyriologie</i>
<i>WVDO-G</i>	<i>Wissenschaftliche Veröffentlichungen der Deutschen Orient-Gesellschaft</i>

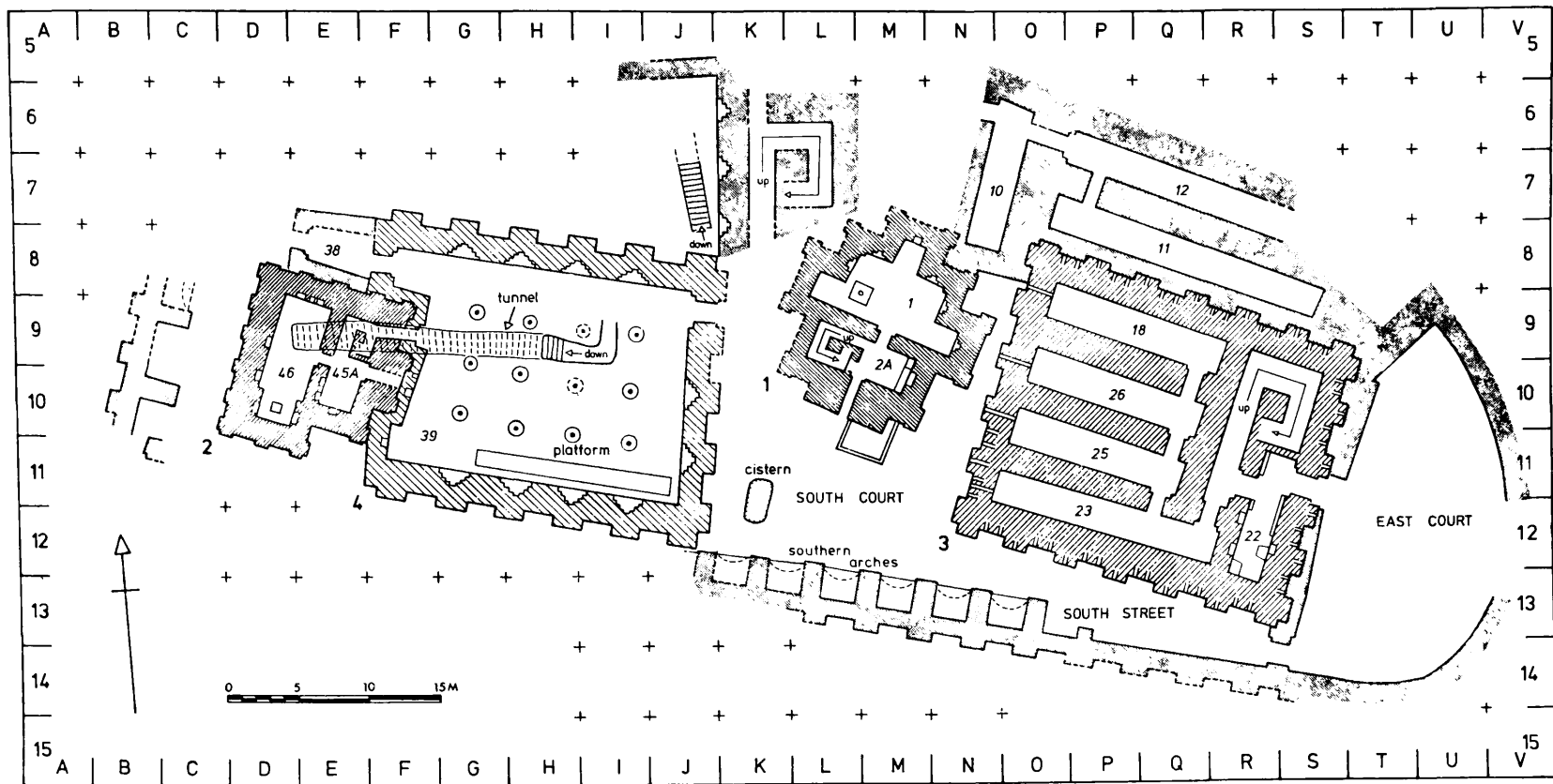


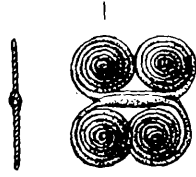
FIG. 1

Tepe Nush-i Jan, Plan of the site before the blocking and squatter occupation. 1. Central Temple. 2. Old Western Building (Western Temple). 3. Fort. 4. Columned Hall. Scale 1:500. (N.B. Rooms below ramps and air vents are not shown).

FIG. 2



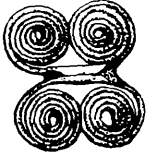
3



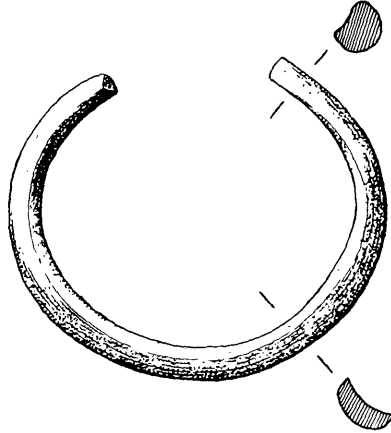
8



23



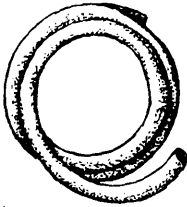
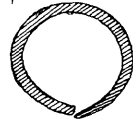
25



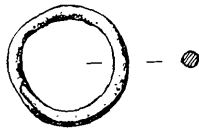
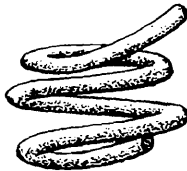
39



38



45



54



55 + 215



75



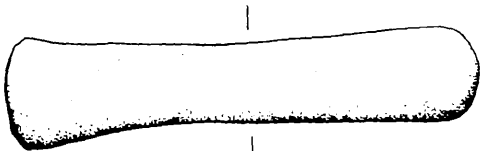
79



80



81



87

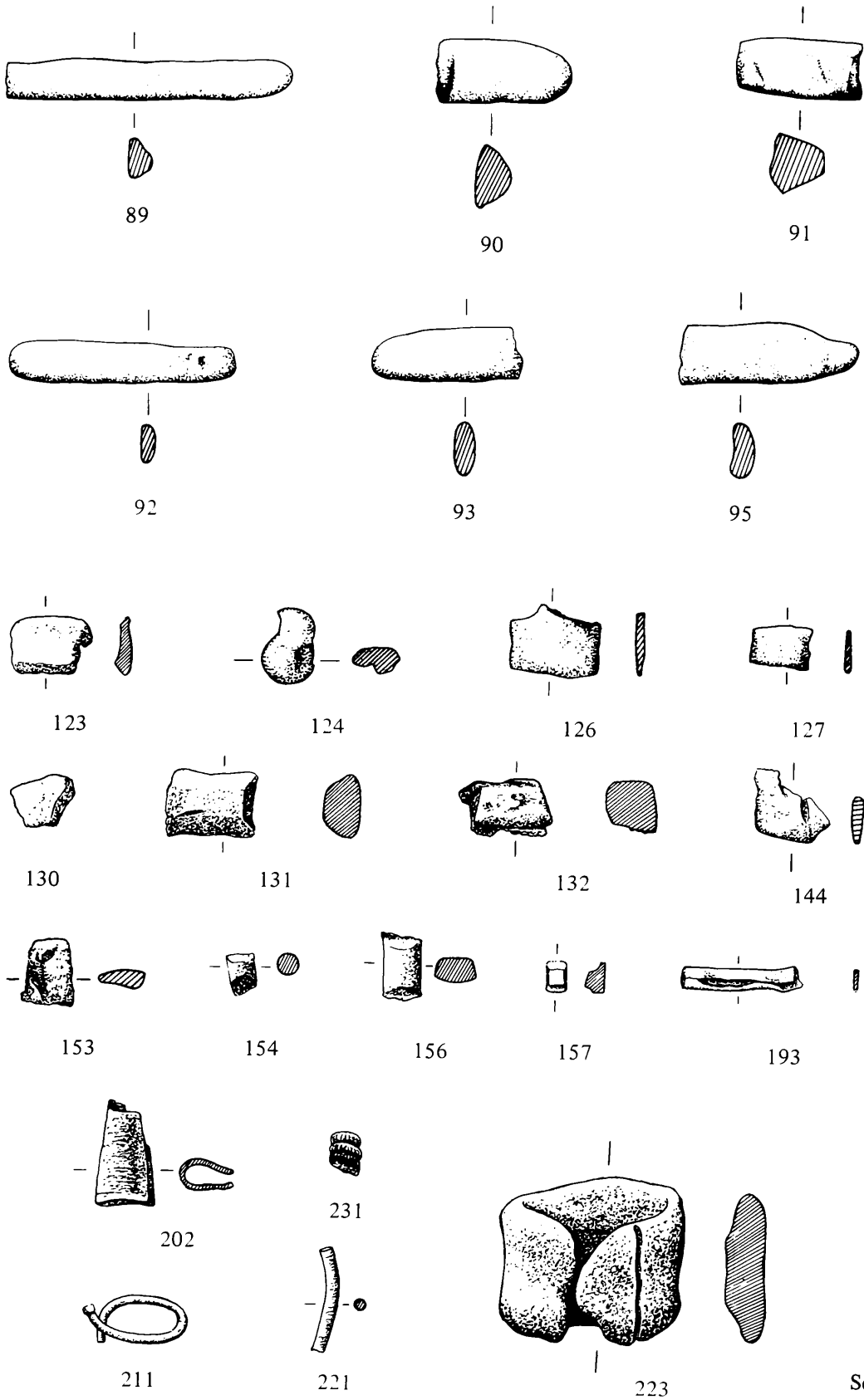


88



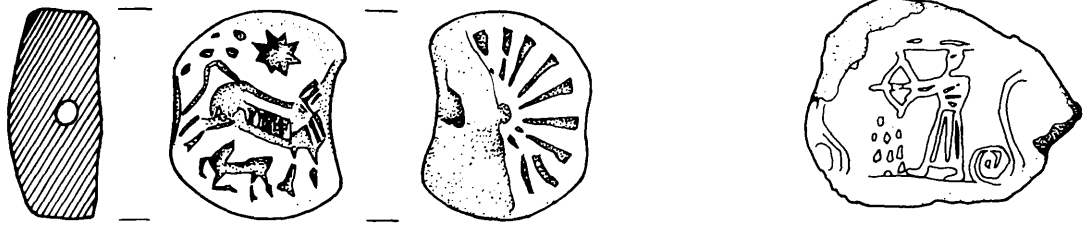
Scale 2:3

FIG. 3



Scale 2:3

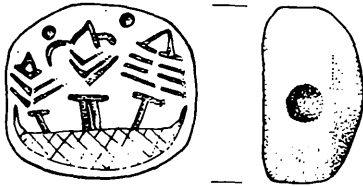
FIG. 4



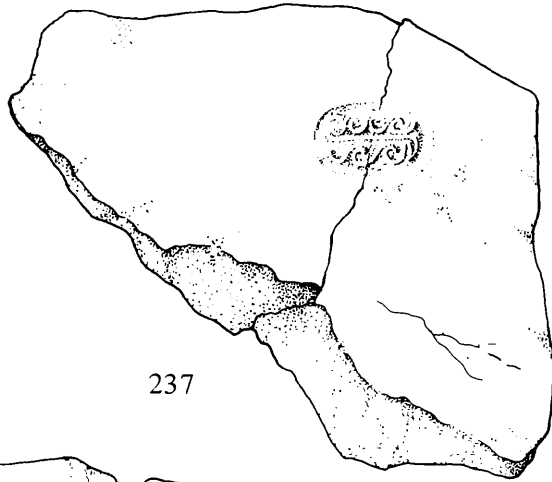
233



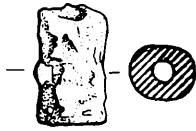
236



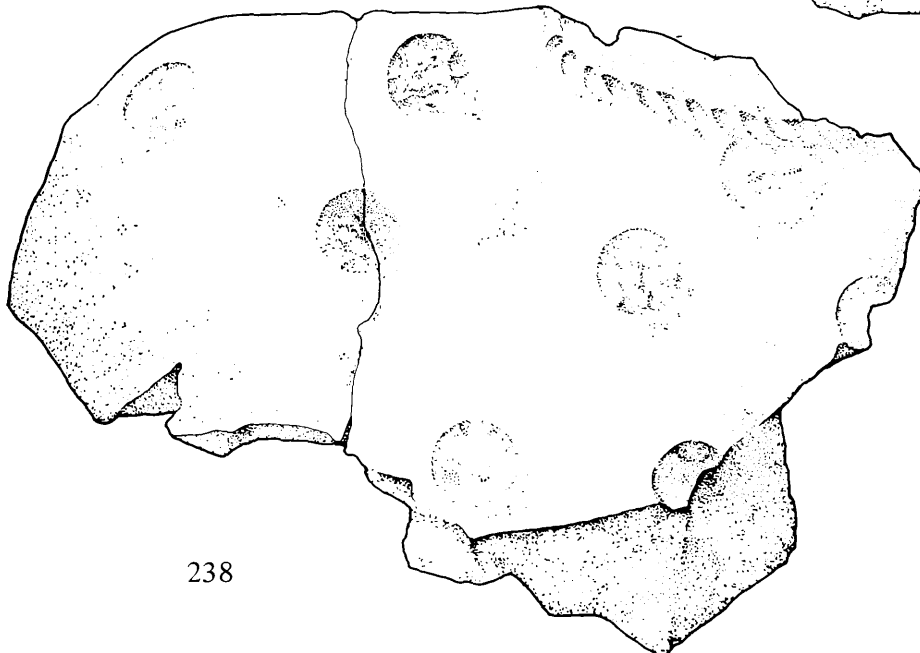
234



237



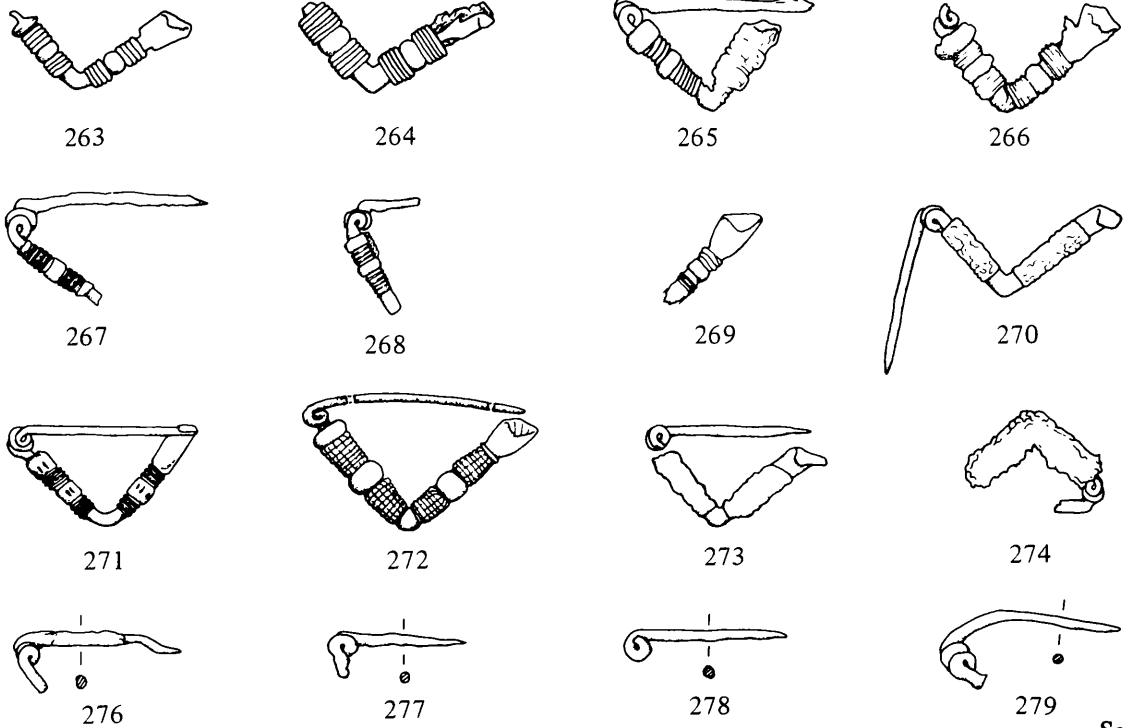
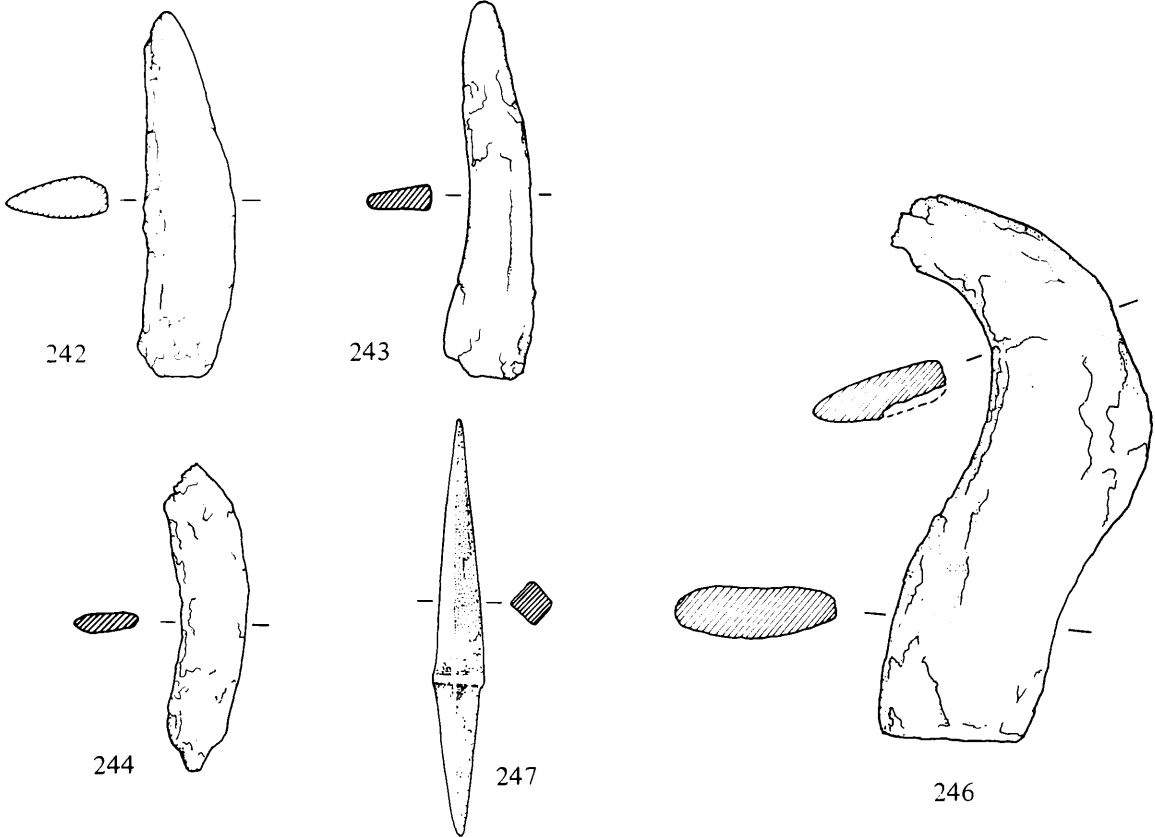
235



238

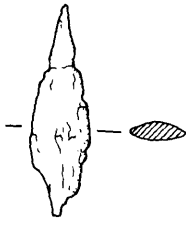
Scale of nos. 233-4 3:2, nos. 235-8 3:4

FIG. 5

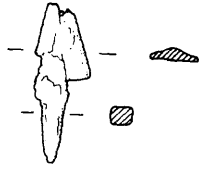


Scale 2:3

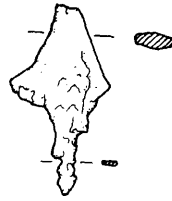
FIG. 6



248



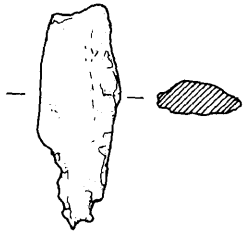
249



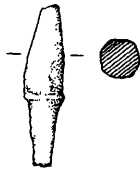
250



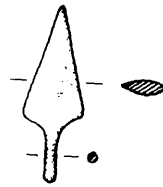
251



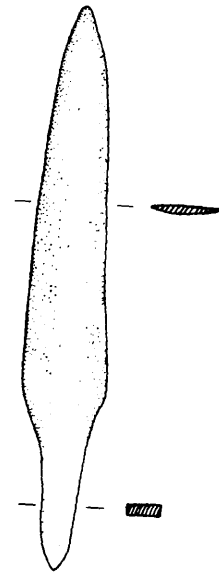
252



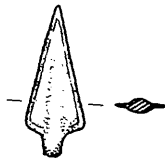
253



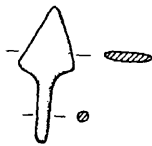
254



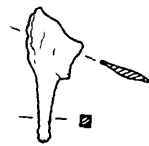
258



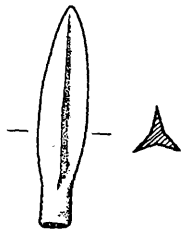
255



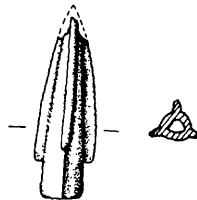
256



257



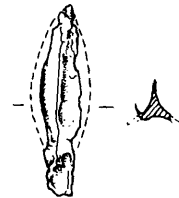
259



260



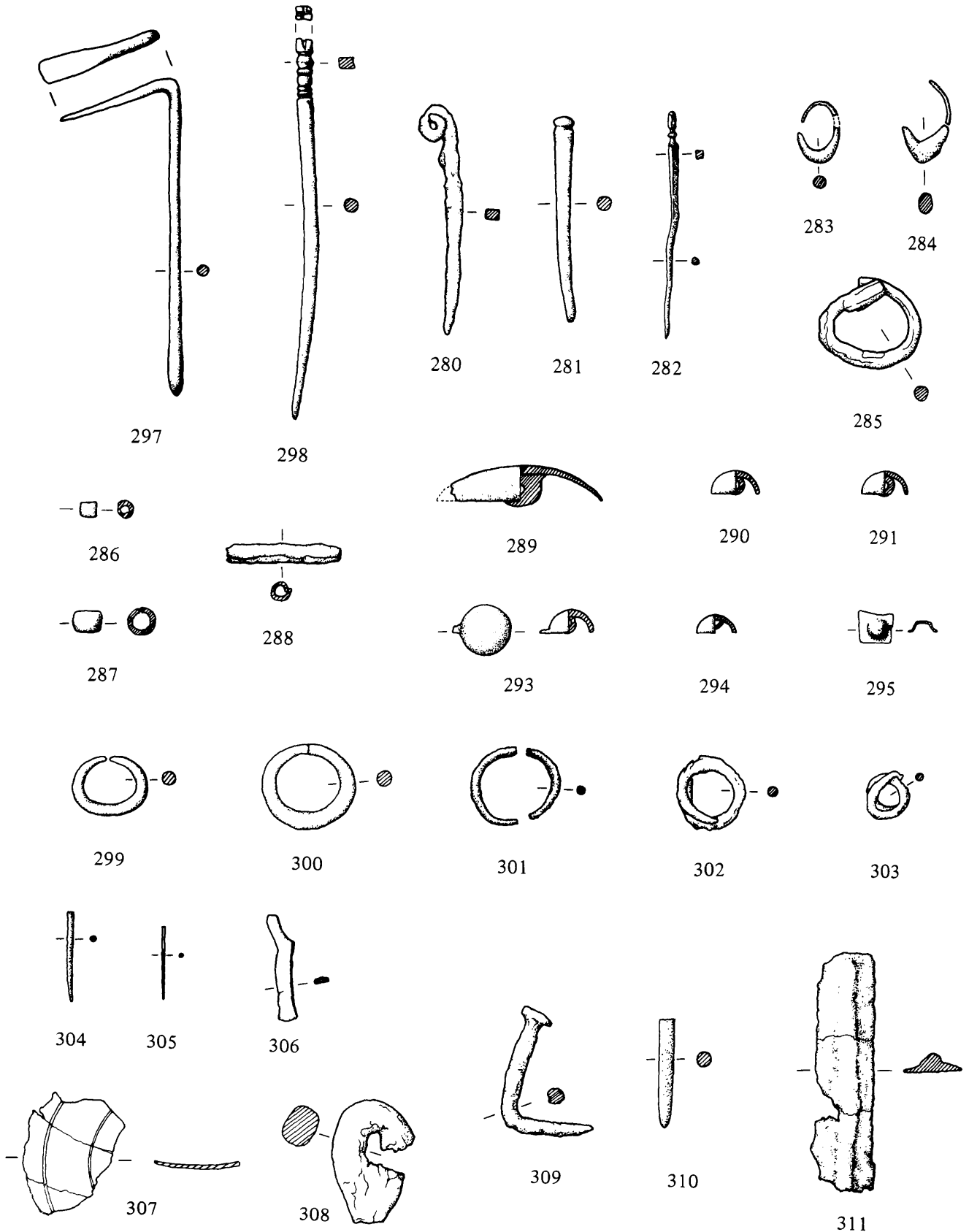
261



262

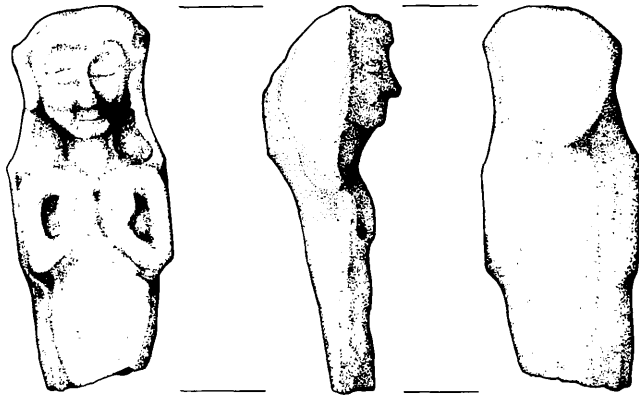
Scale 2:3

FIG. 7

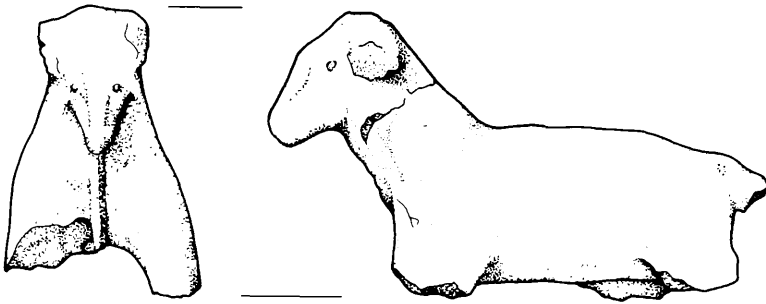
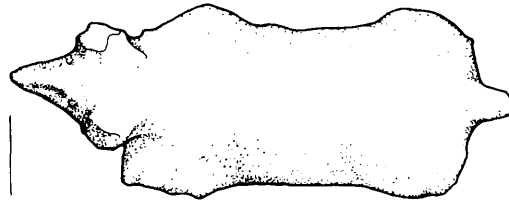


Scale 2:3

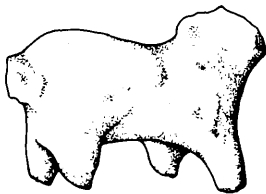
FIG. 8



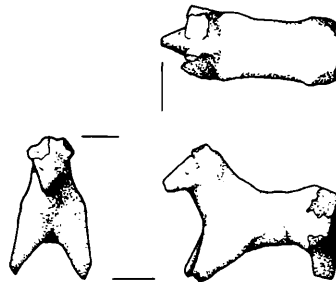
313



314

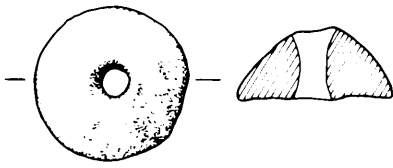


315

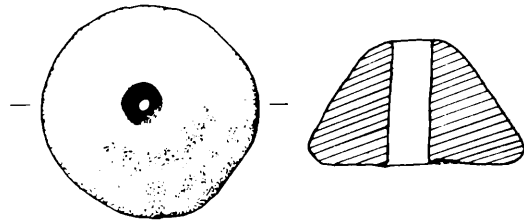


316

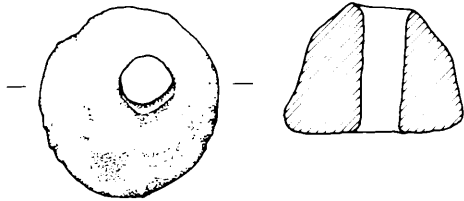
FIG. 9



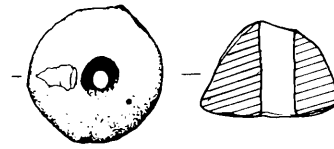
318



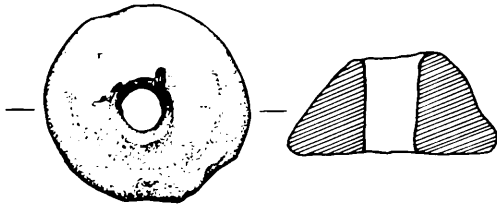
320



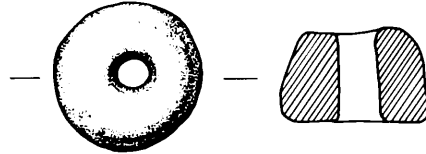
321



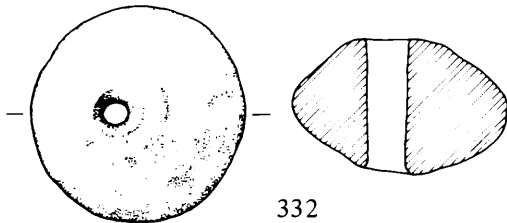
322



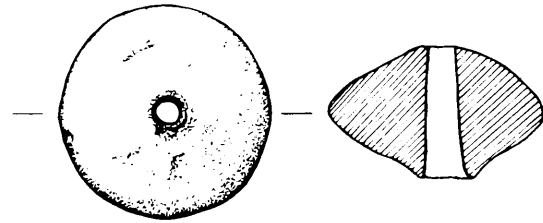
325



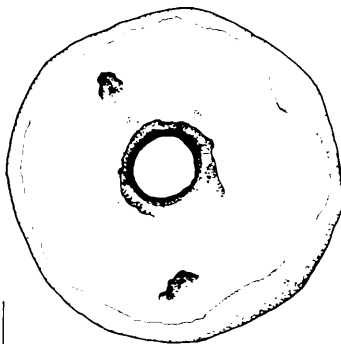
329



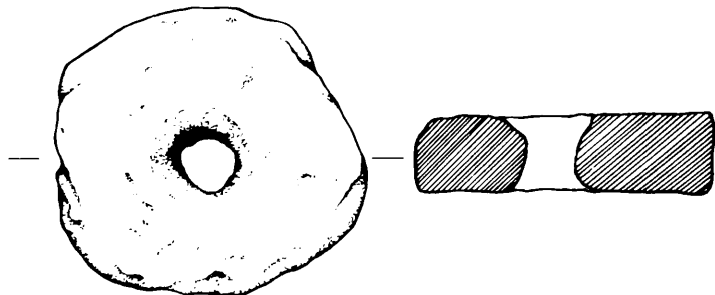
332



335



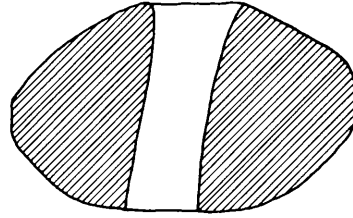
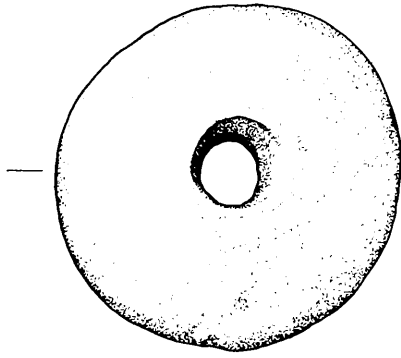
339



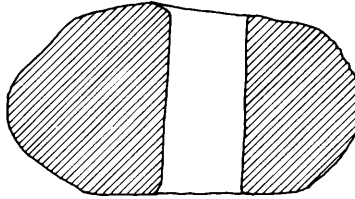
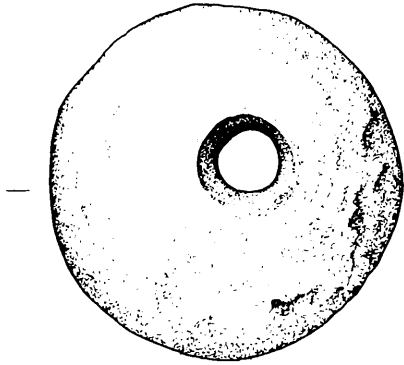
340

Scale 2:3

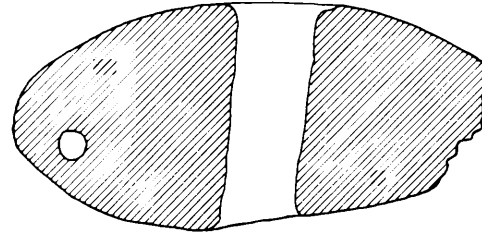
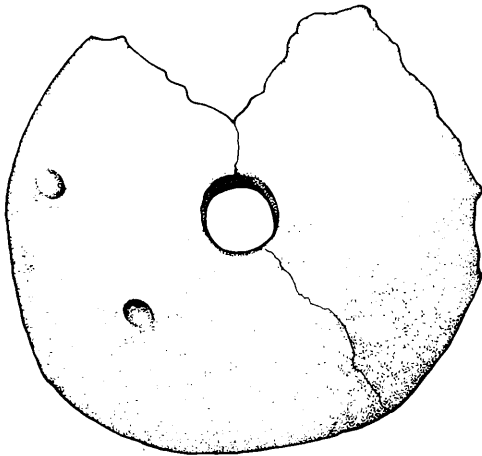
FIG. 10



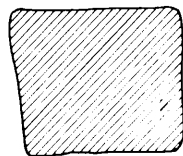
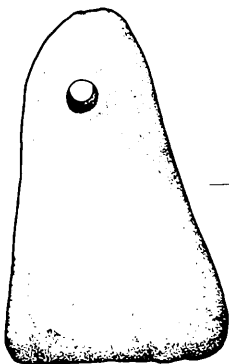
346



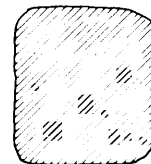
348



353



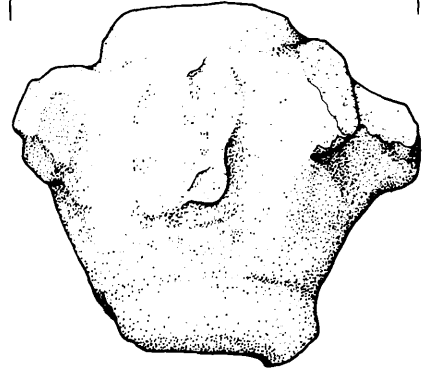
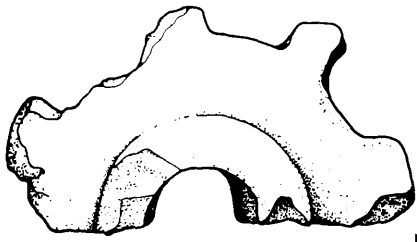
355



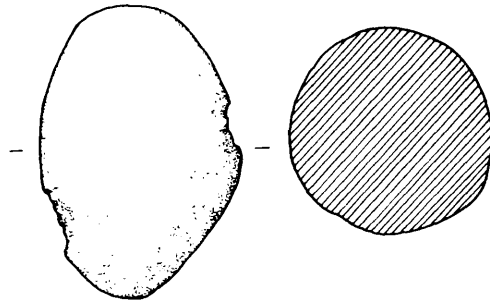
356

Scale 2:3

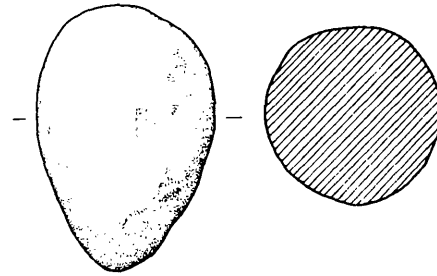
FIG. 11



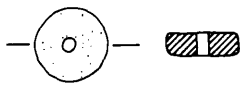
358



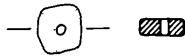
359



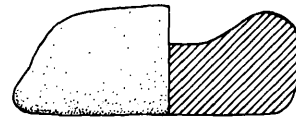
360



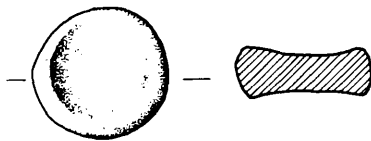
365



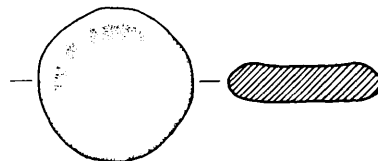
366



367



368



370

Scale 2:3

FIG. 12

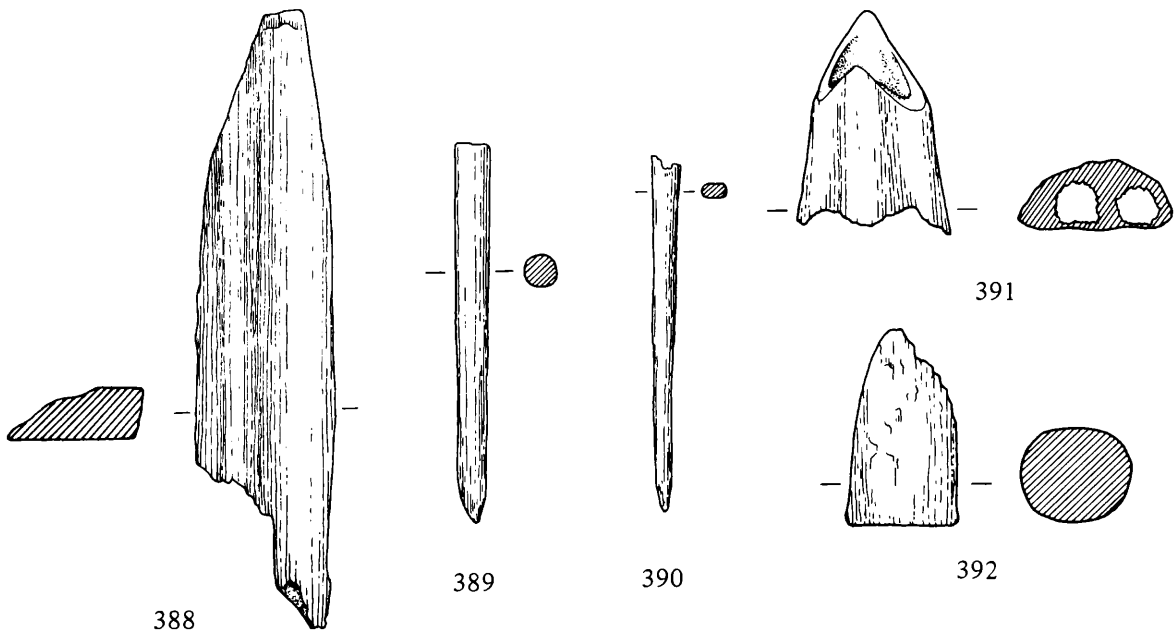
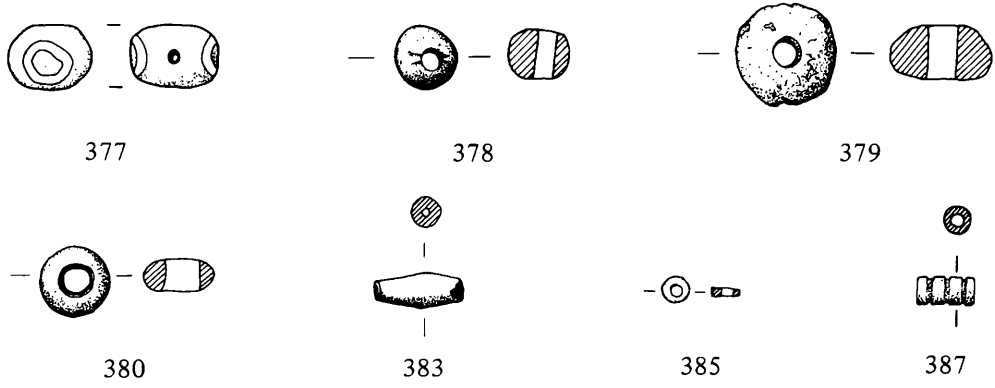
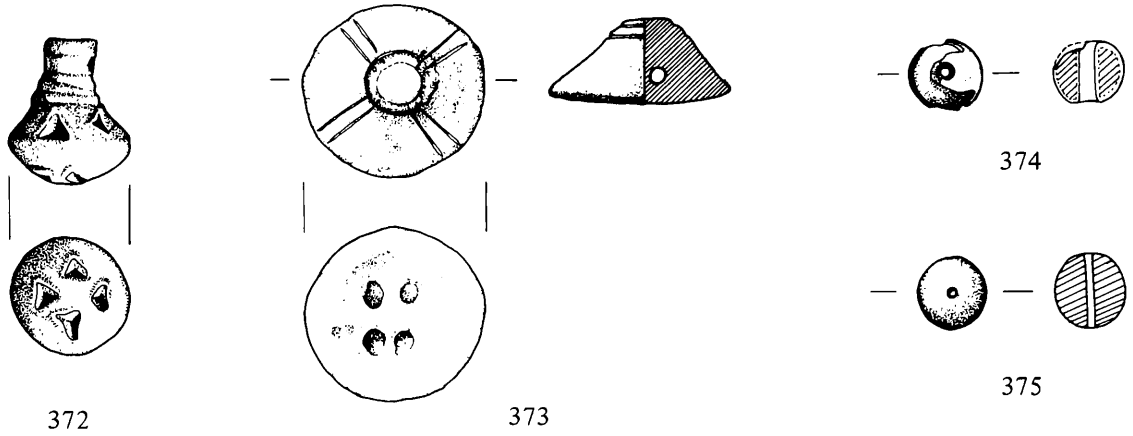
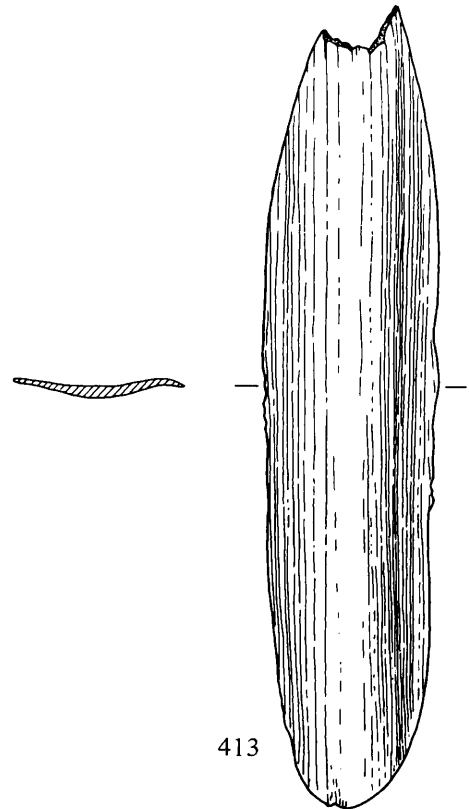
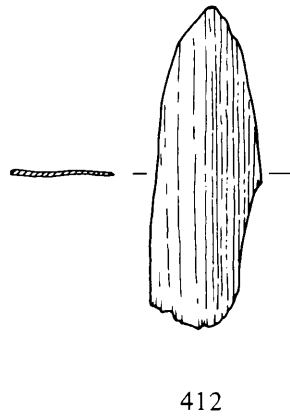
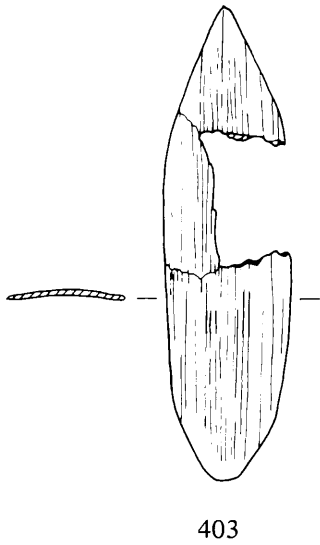
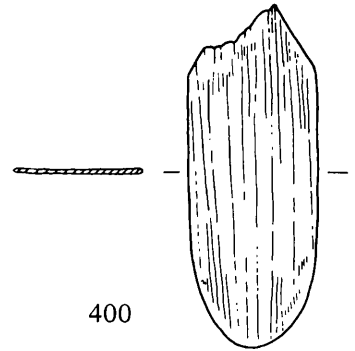
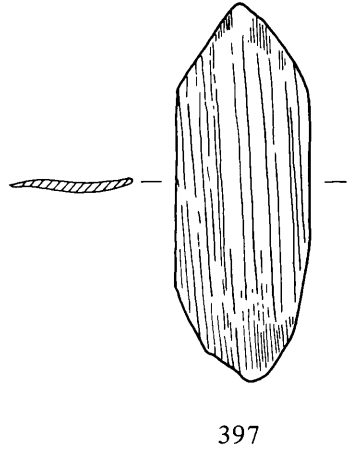
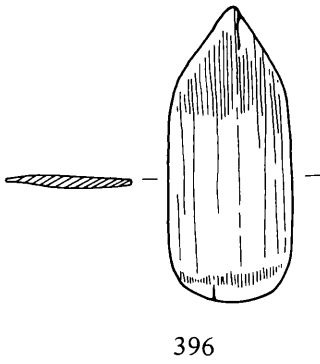
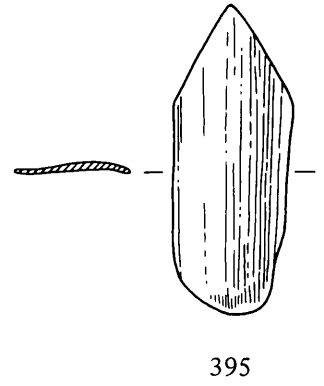
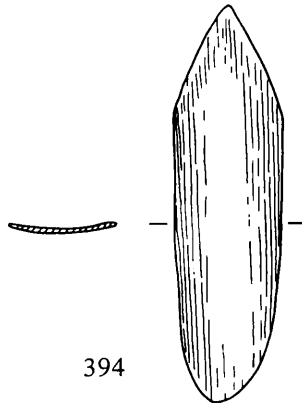
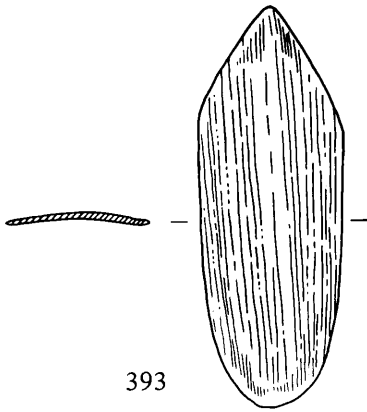


FIG. 13



Scale 2:3

FIG. 14

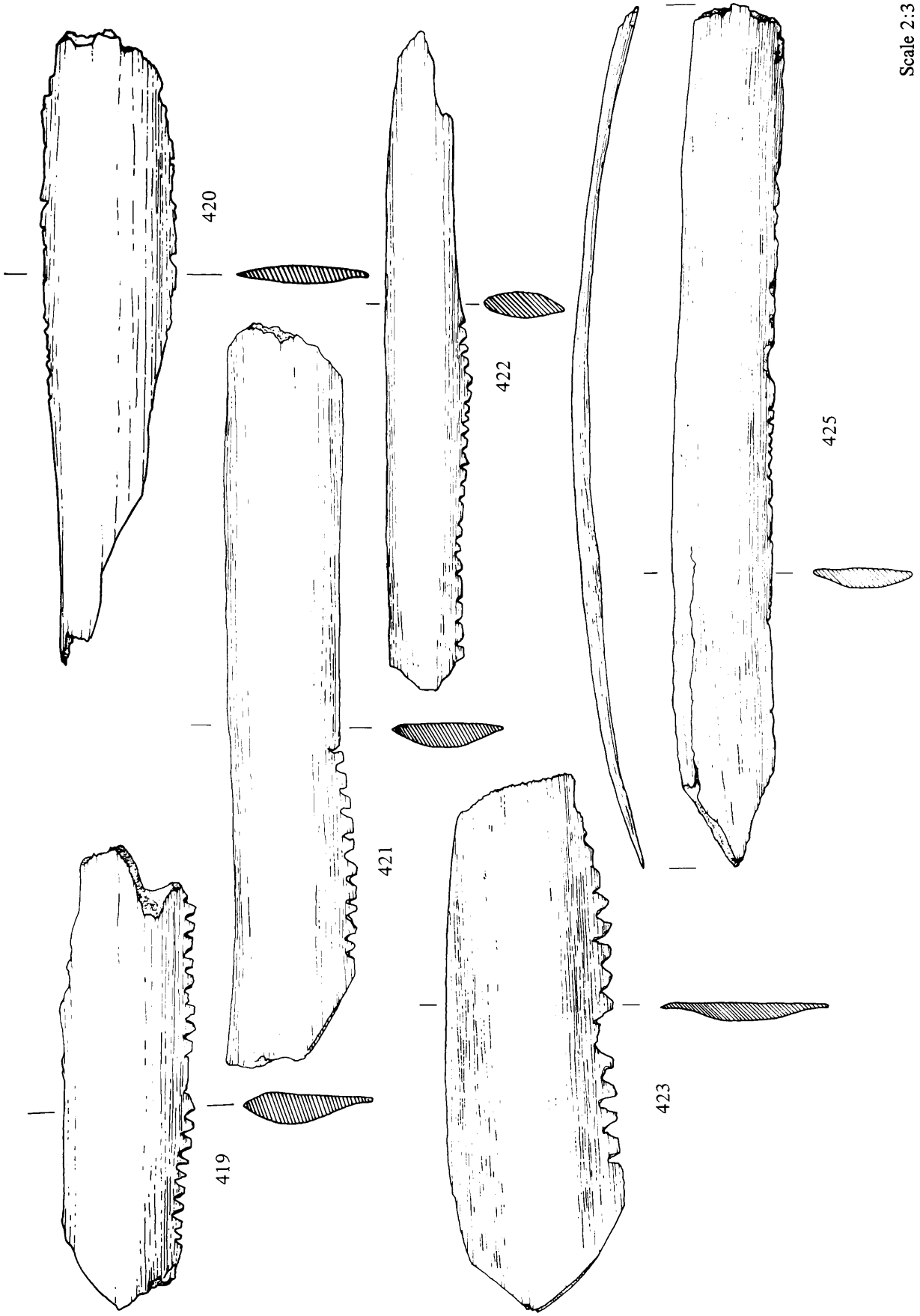
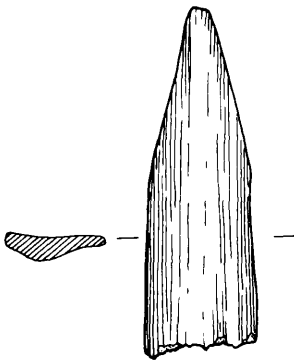
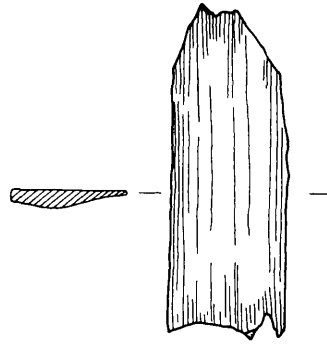


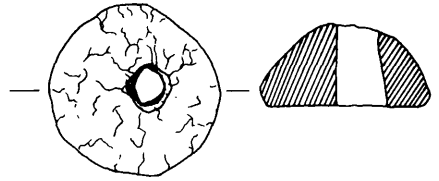
FIG. 15



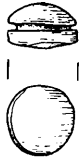
414



415



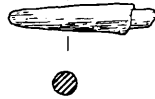
416



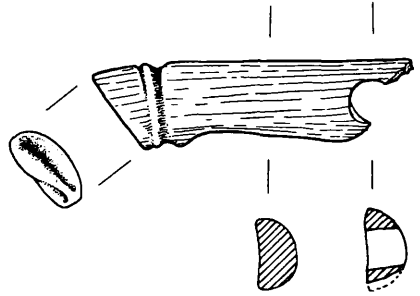
426



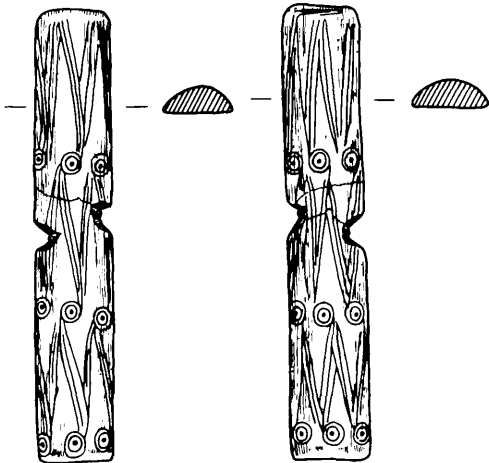
427



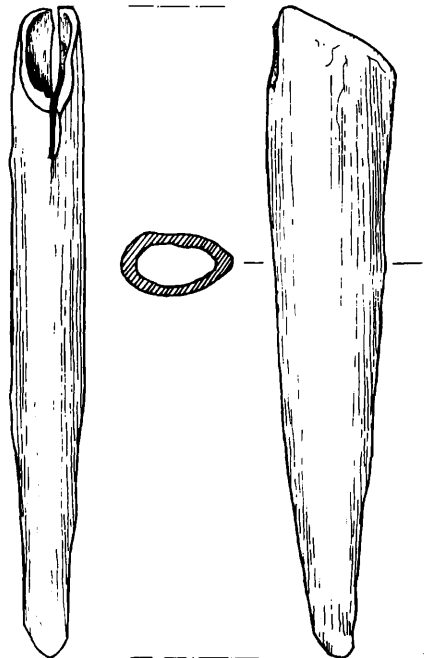
428



431

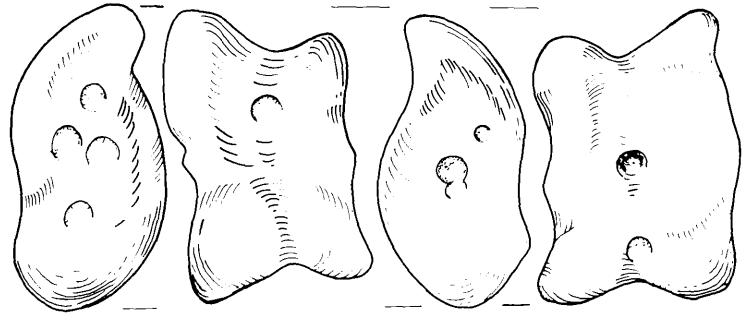
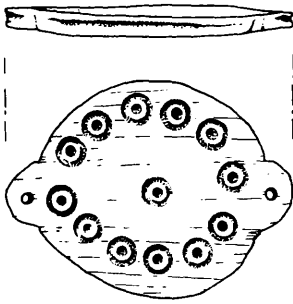


430

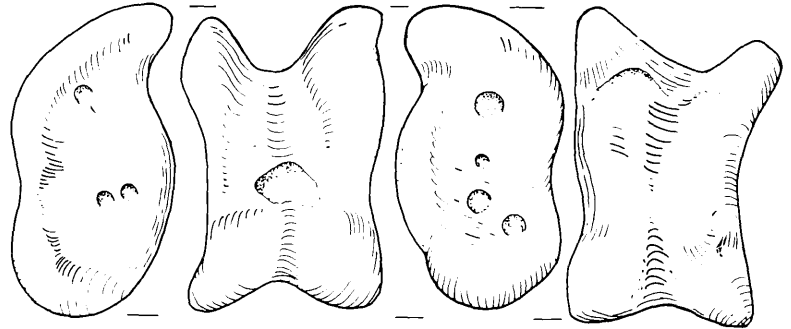
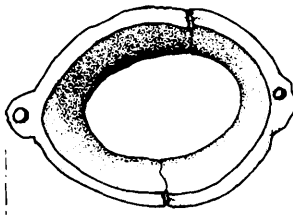


436

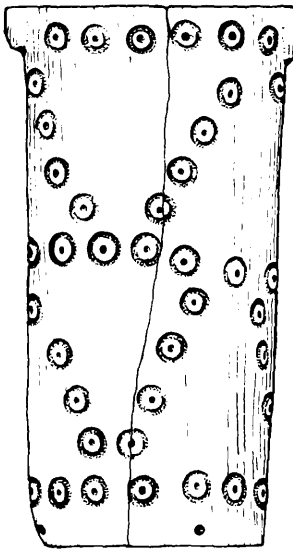
FIG. 16



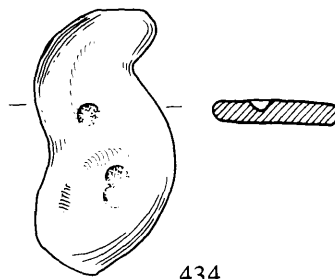
432



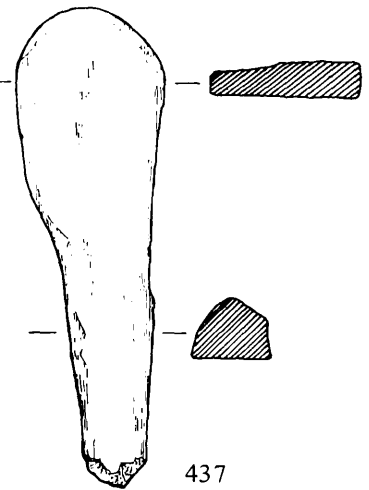
433



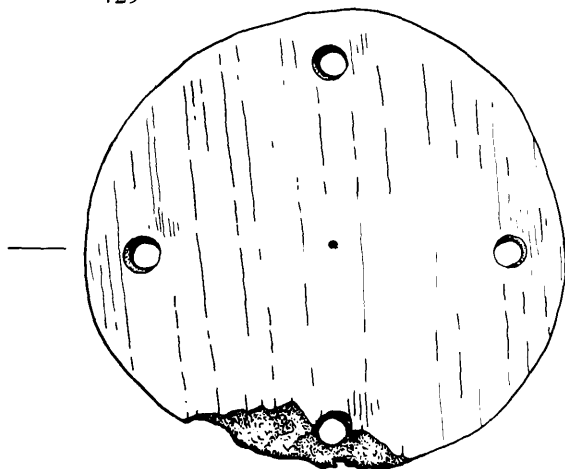
429



434



437



435

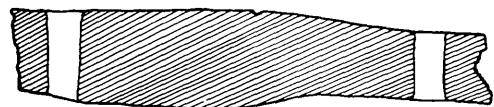
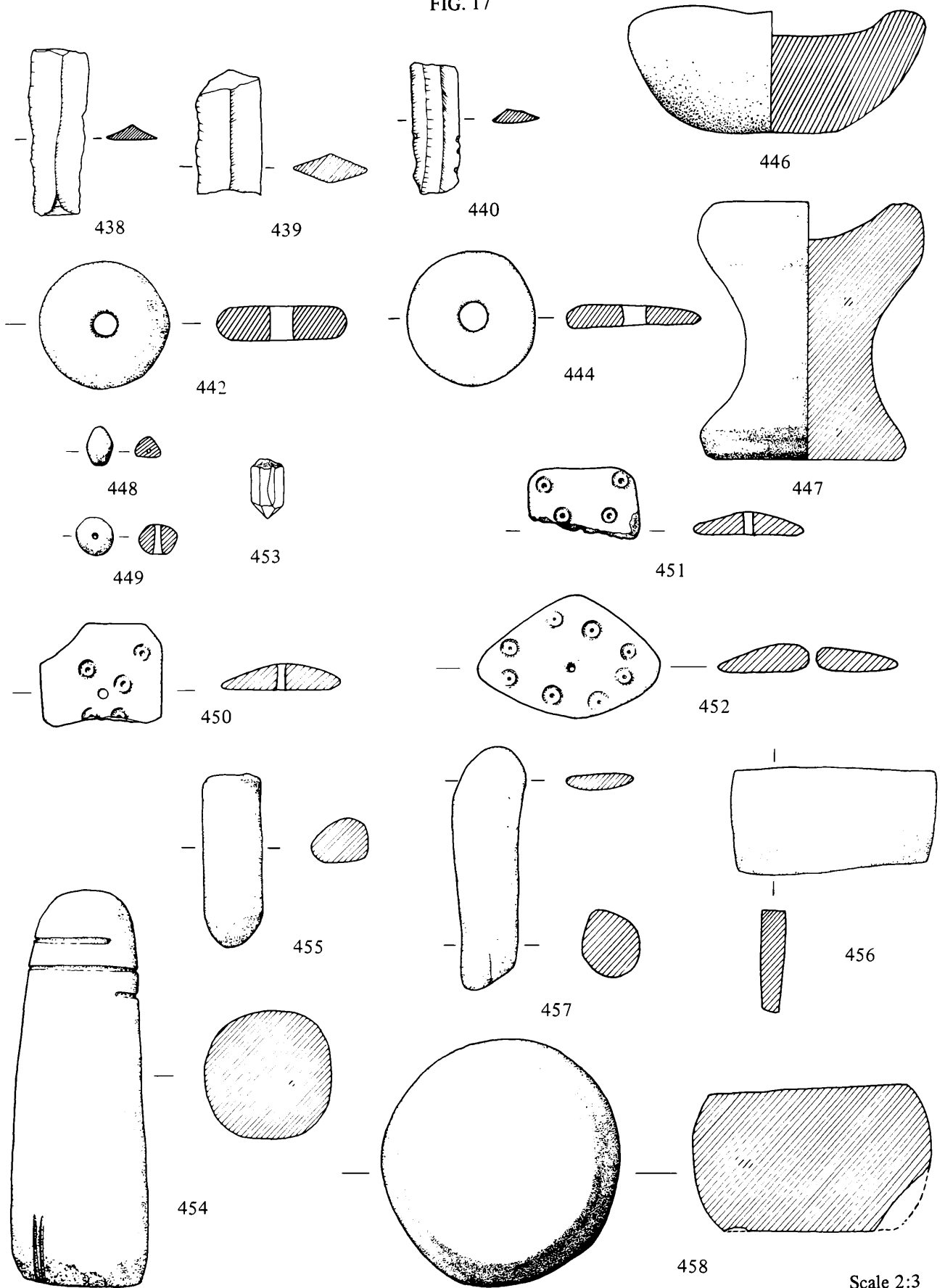
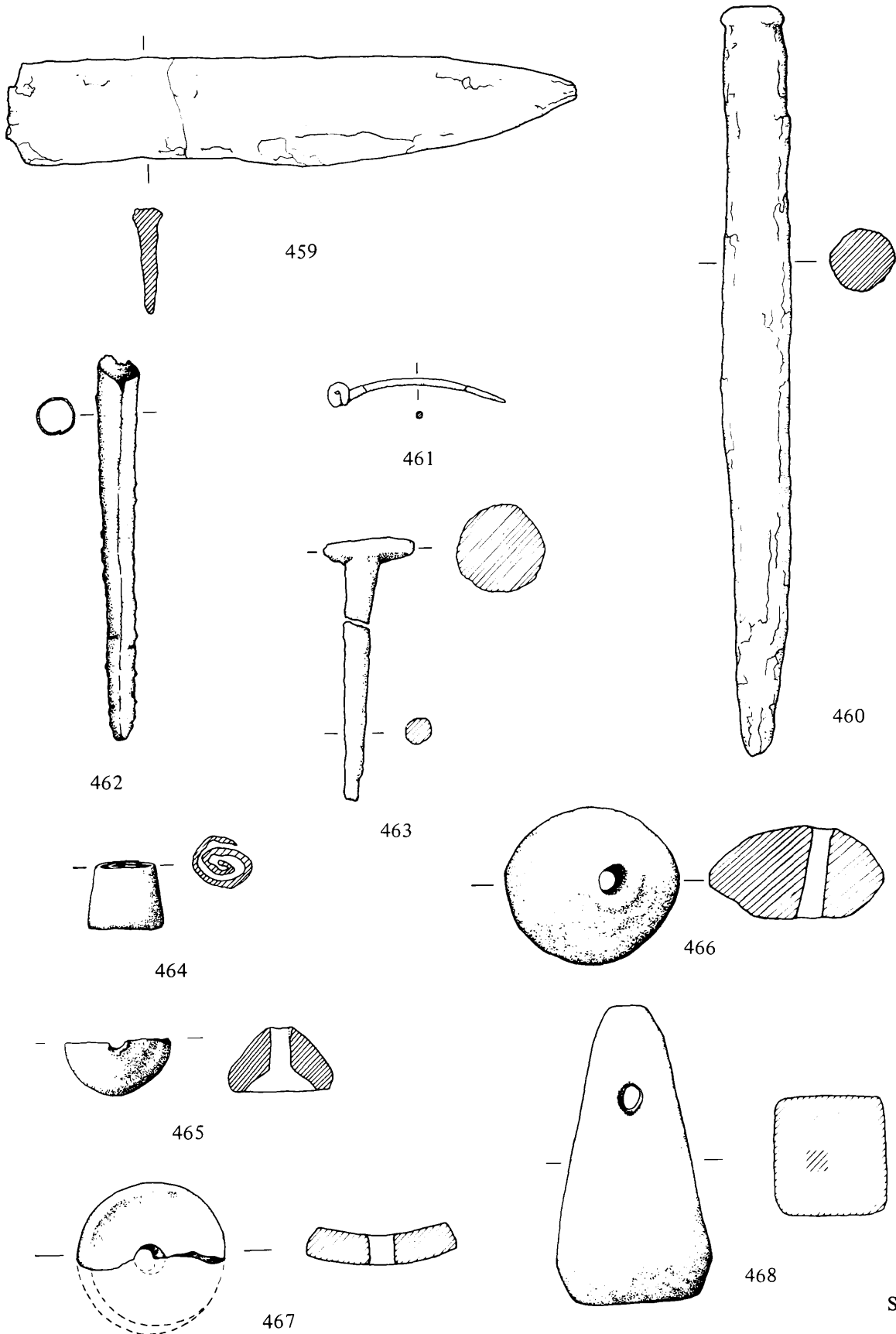


FIG. 17



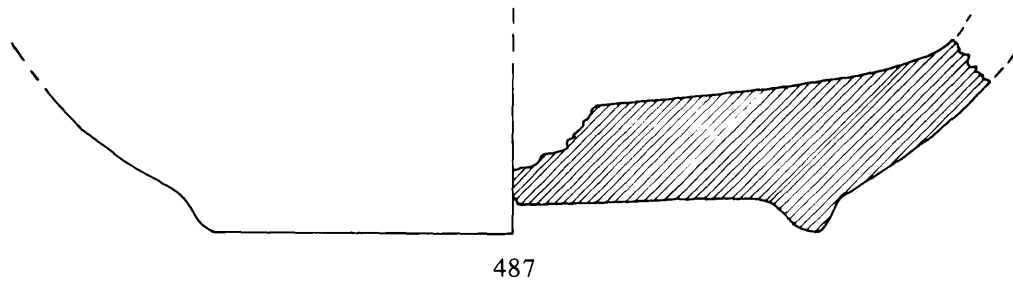
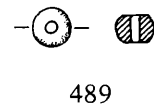
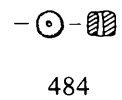
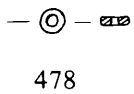
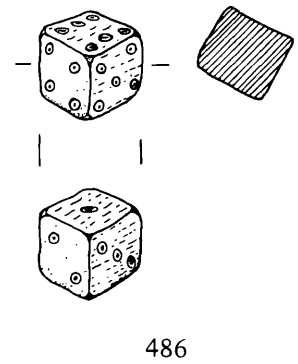
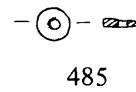
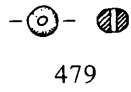
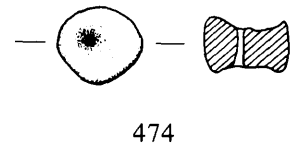
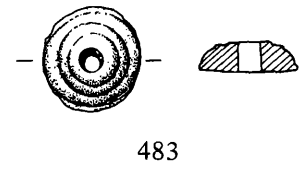
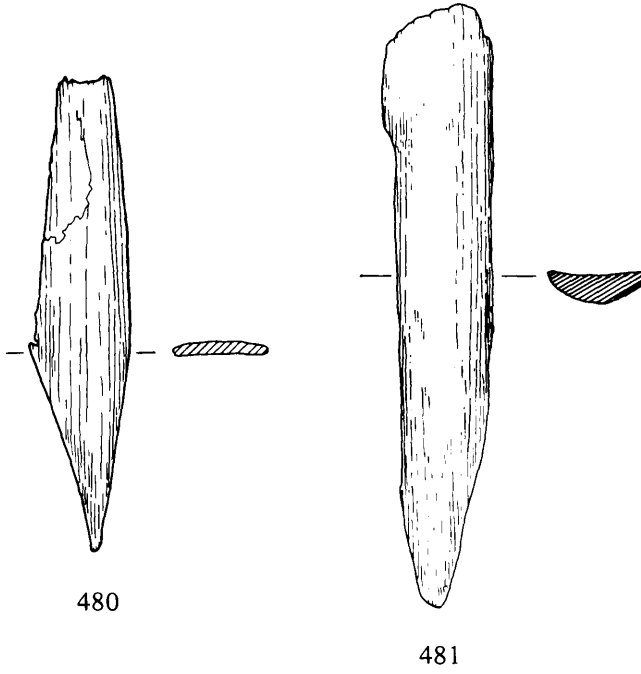
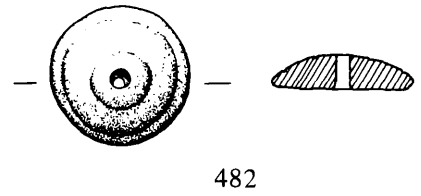
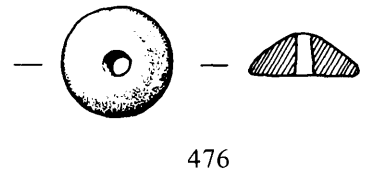
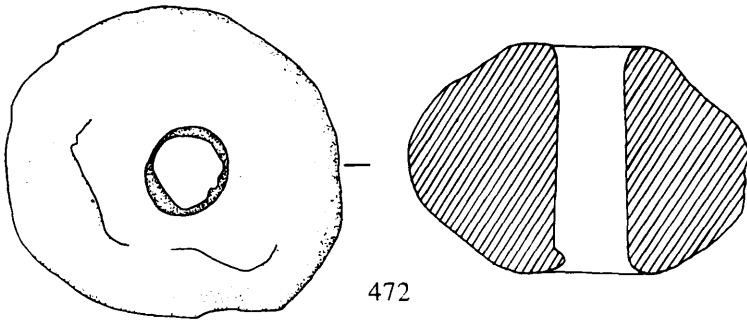
Scale 2:3

FIG. 18



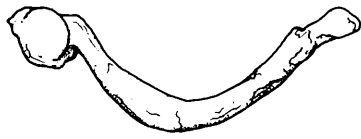
Scale 2:3

FIG. 19

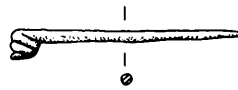


Scale 2:3

FIG. 20



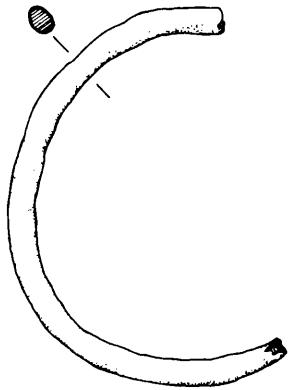
490



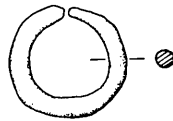
491



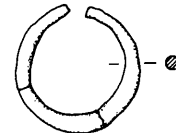
492



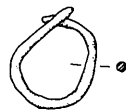
493



494



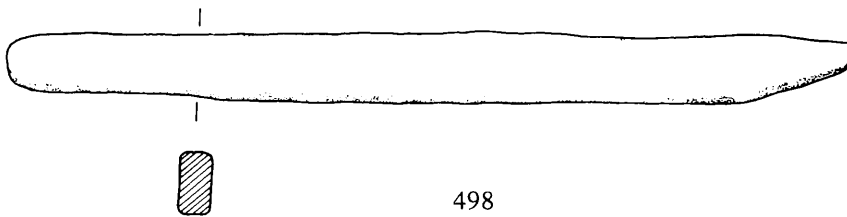
495



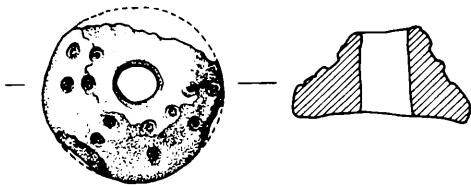
496



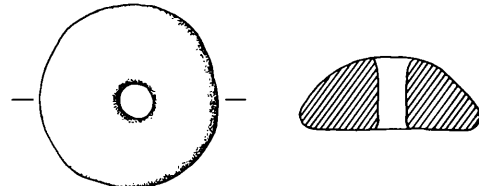
497



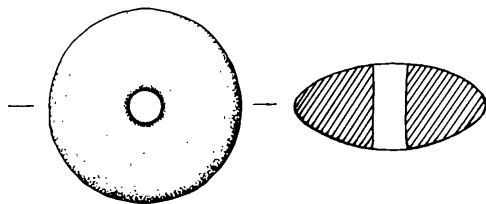
498



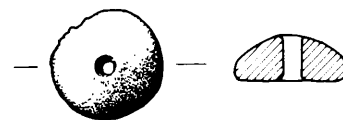
500



501



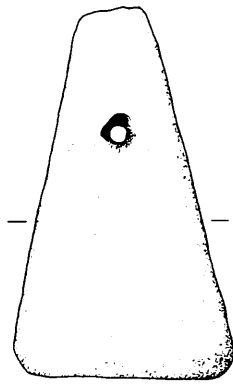
502



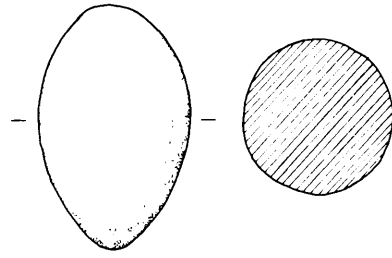
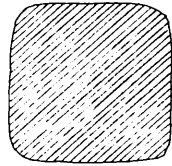
505

Scale 2:3

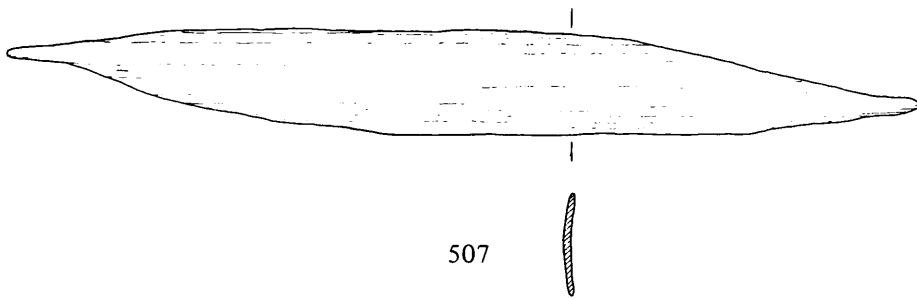
FIG. 21



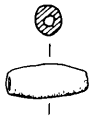
503



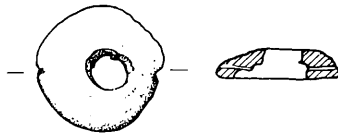
504



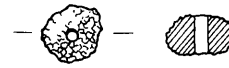
507



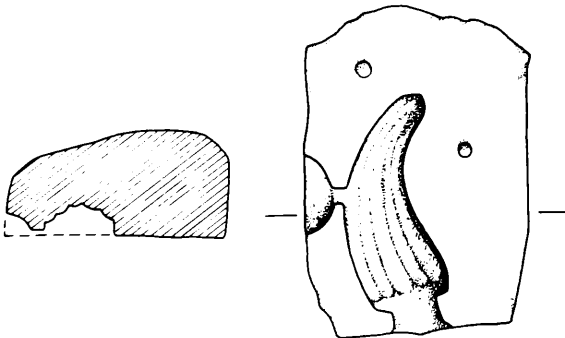
506



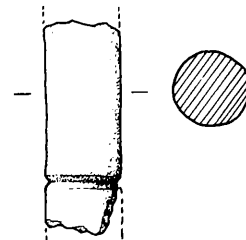
508



509

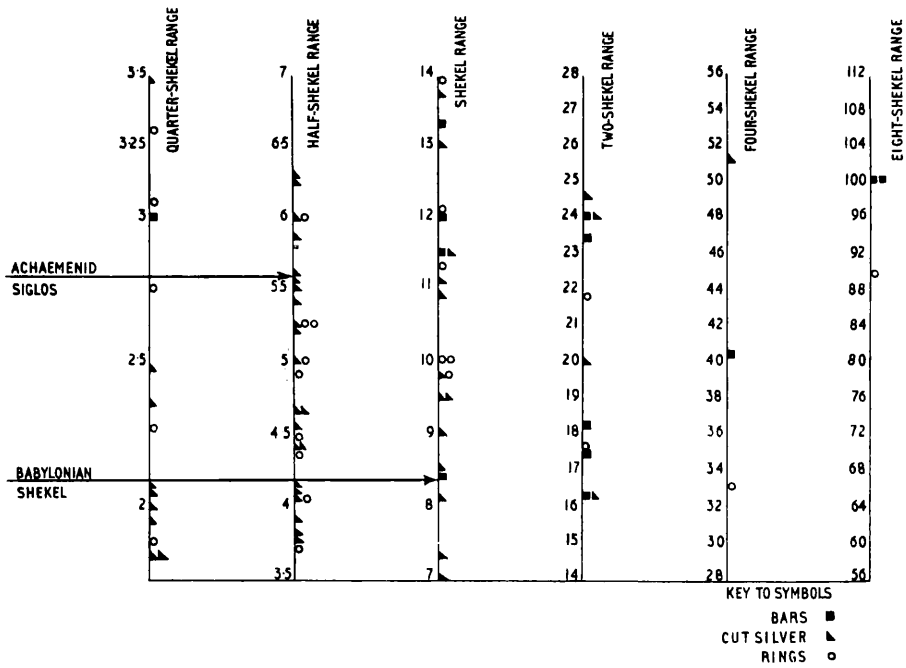


510

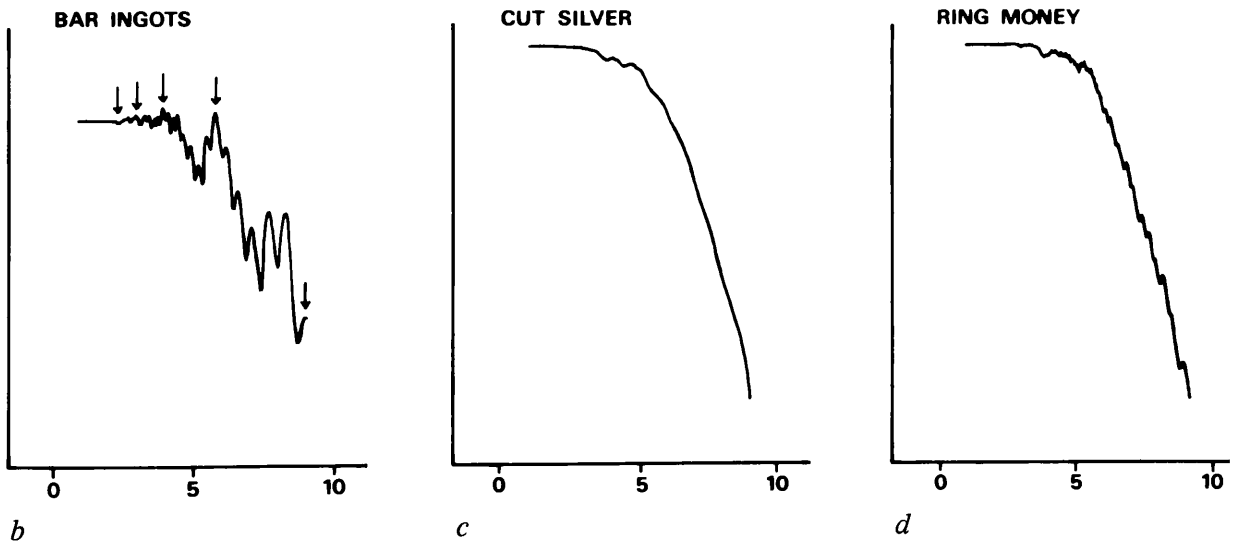


511

FIG. 22

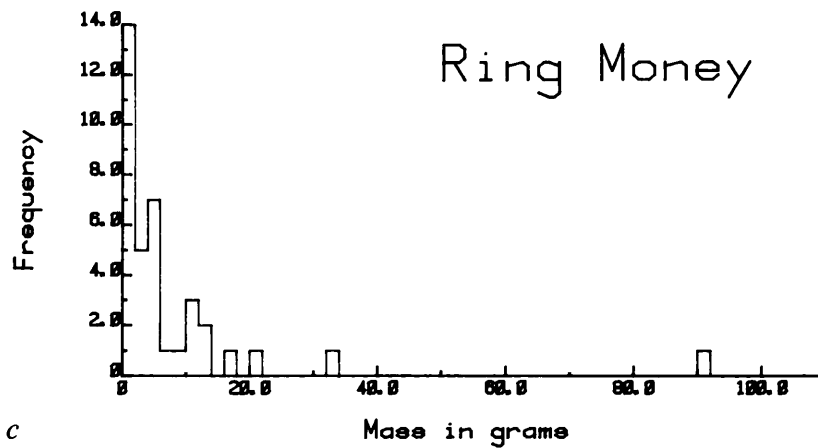
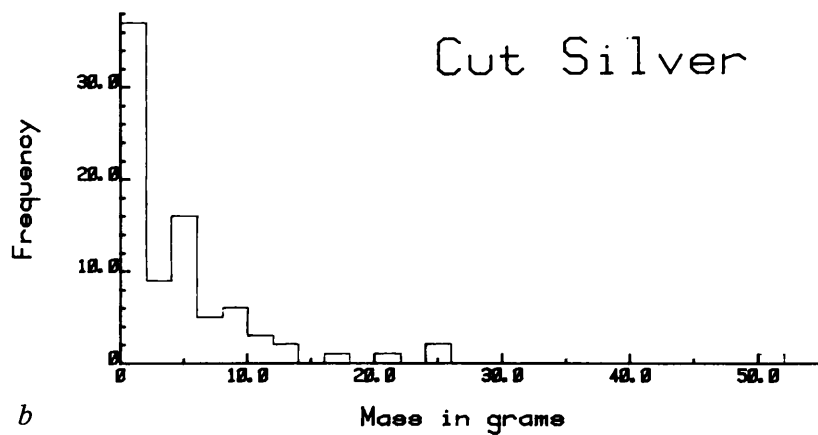
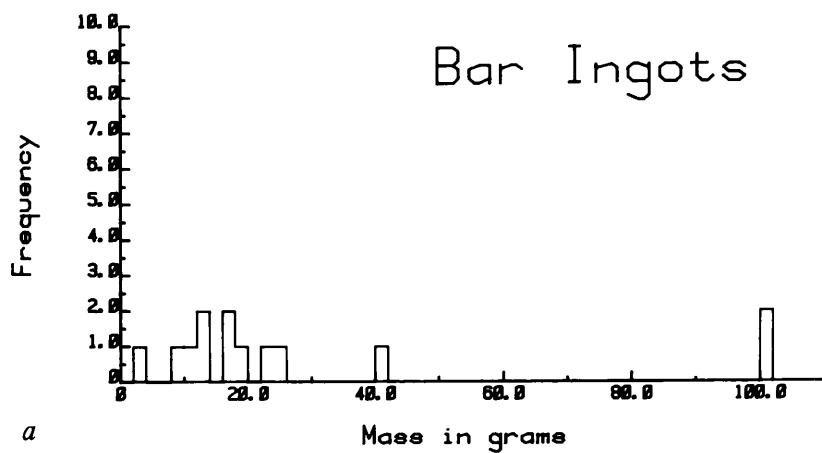


22a. Frequency table of weights in the silver hoard between 1.75 g and 112 g. Reproduced from Bivar 1971, with kind permission of the author.



22 b-d. Diagrams illustrating Bayesian analysis of weights in the silver hoard. The arrows in fig. 22b indicate the peaks at 2.01 g, 2.95 g, 4.02 g, 5.91 g and 8.97 g.

FIG. 23



23 a-c. Histograms showing frequency of items in silver hoard at different weights.

PLATE I

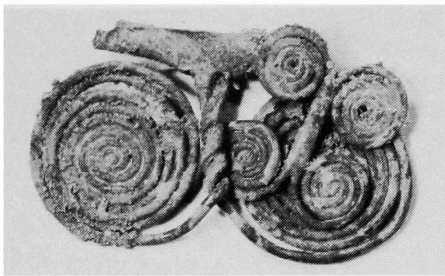


The bronze bowl containing the silver hoard *in situ*.

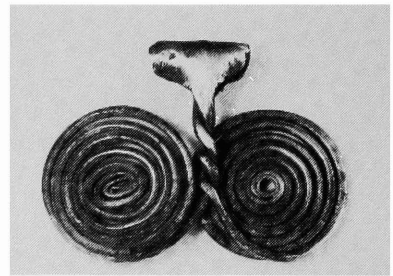
PLATE II



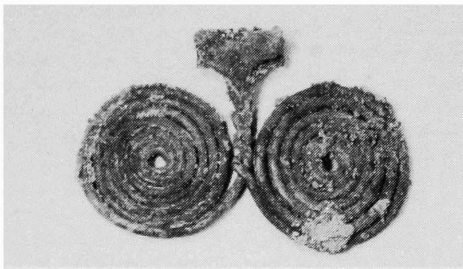
1



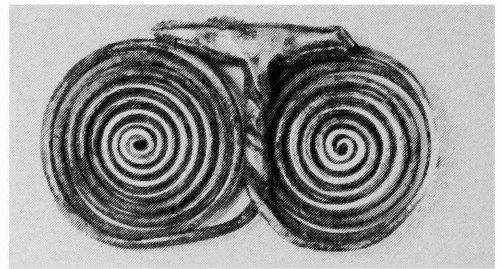
2 and 18



3

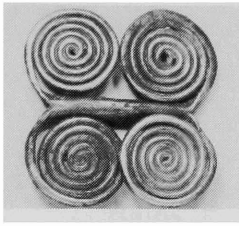


4

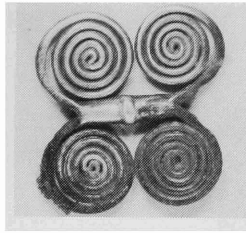


5

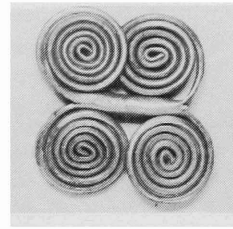
PLATE III



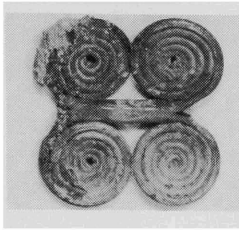
6



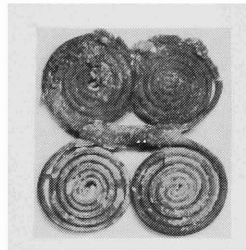
7



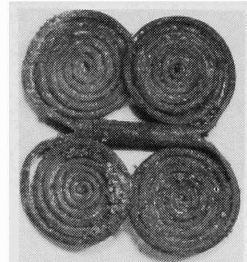
8



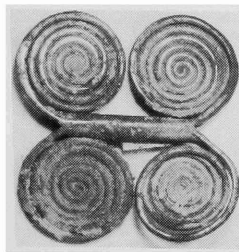
9



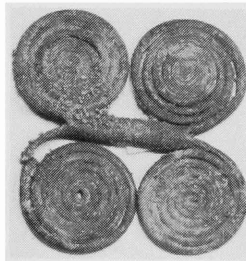
10



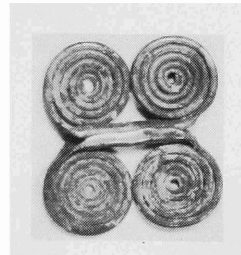
11



12



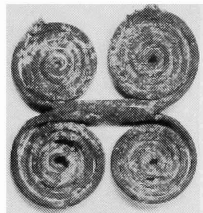
13



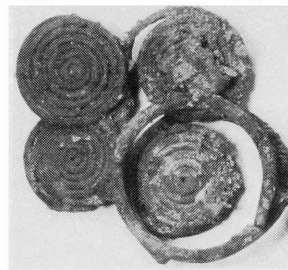
14



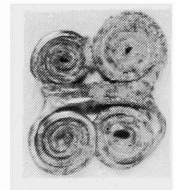
15



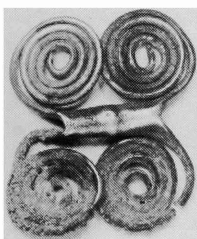
16



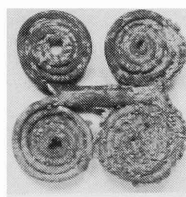
17



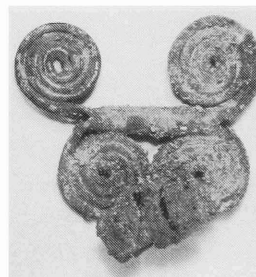
19



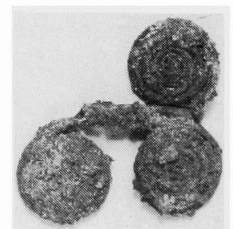
20



21



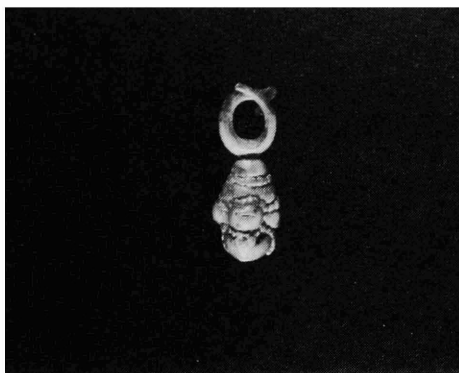
22



24

Scale 1:1

PLATE IV



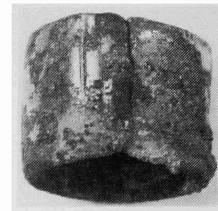
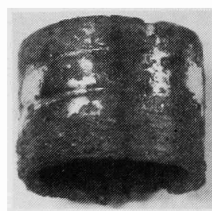
36 Scale 1:1



36 Scale 2:1



37 Scale 1:1

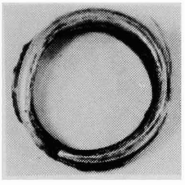


38 Scale 1:1

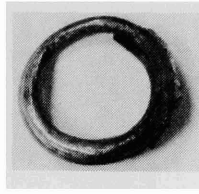


39 Scale 1:1

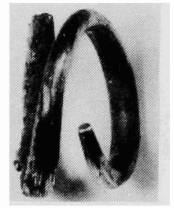
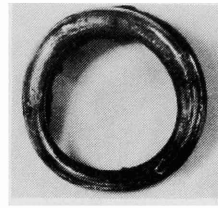
PLATE V



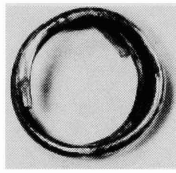
40



41



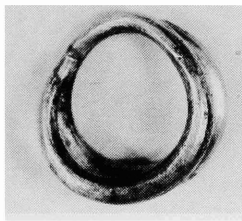
43



44



45



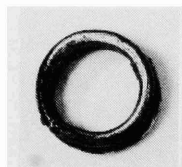
46



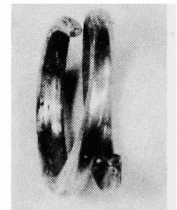
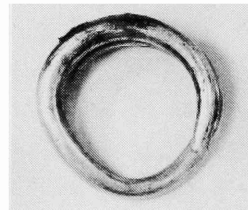
47



48

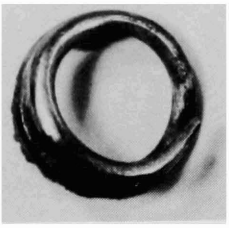


49

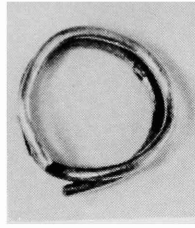


54

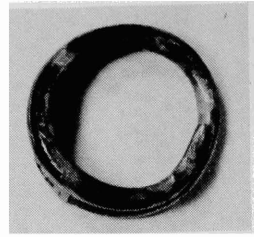
PLATE VI



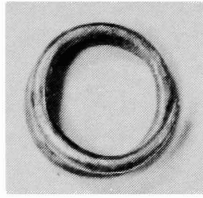
55



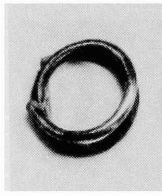
57



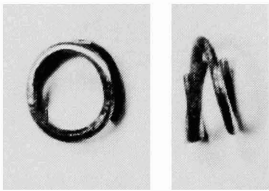
58



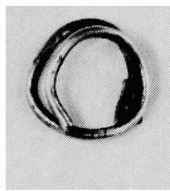
59



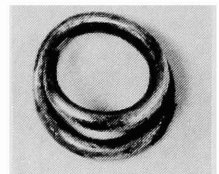
60



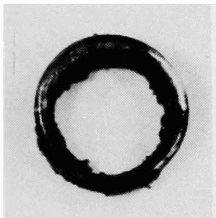
61



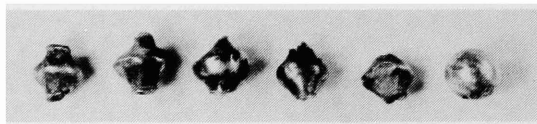
62



63



64



66-70, 73



75



76



77



78

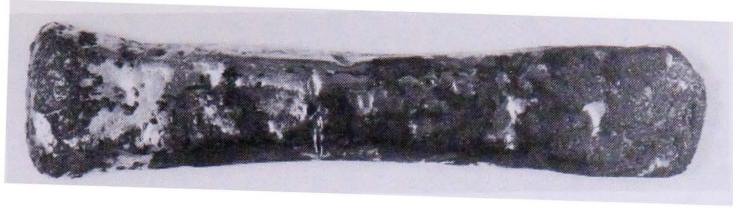


79-81



82

PLATE VII



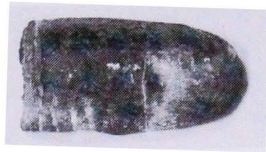
87



88



89



90



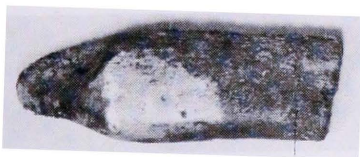
91



97



93



95



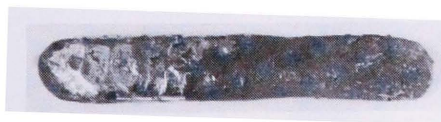
94



96



99



92



98

PLATE VIII



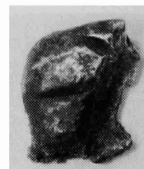
100

Scale c. 5:1

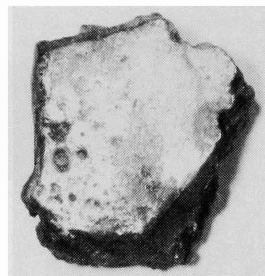


101

102



105



106



107



108



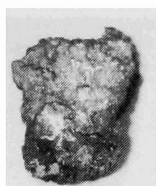
109



110



111



112



113



114



117



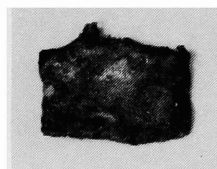
118



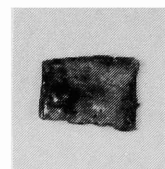
122



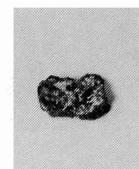
124



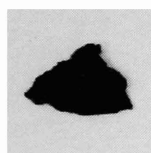
126



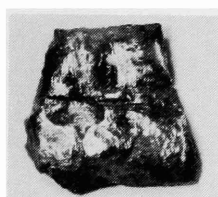
127



128



129



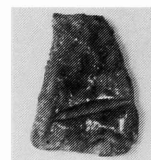
133



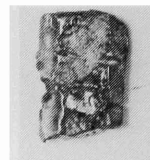
134



135



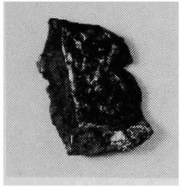
136



137

Scale (except no. 100) 1:1

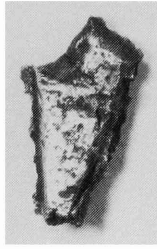
PLATE IX



138



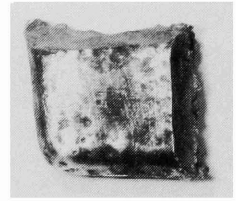
139 140



141



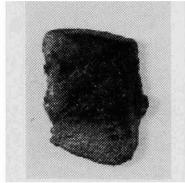
142



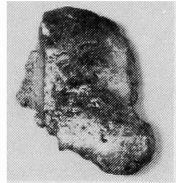
143



144



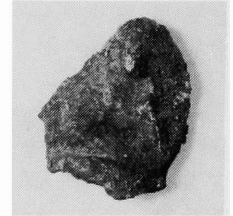
145



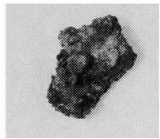
146



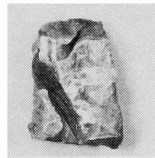
149



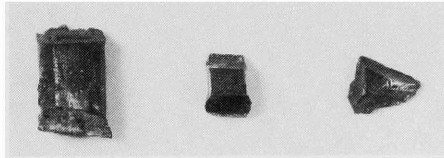
150



151



153



156

157

158



160



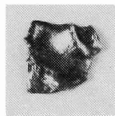
155, 201, 159, 161-88



189



190



191



192



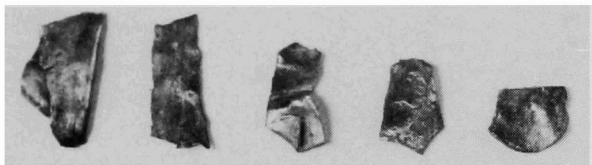
194



195

Scale 1:1

PLATE X



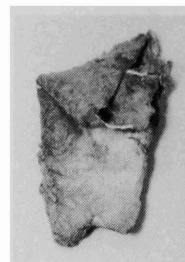
196 197 198 199 200



201



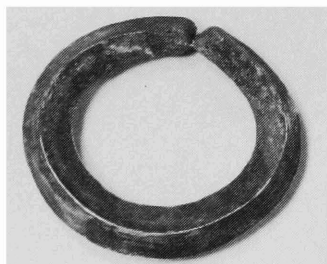
202



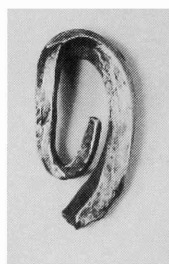
204



206



205



207



208



209



210



213



214



216



219 220



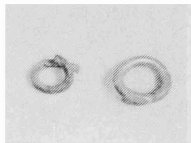
221



222



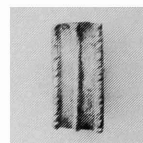
223



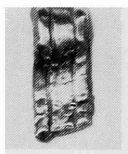
224 225



227



228



229

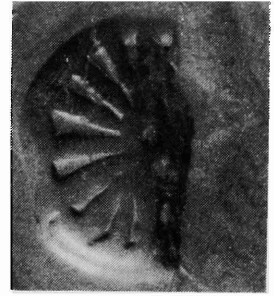
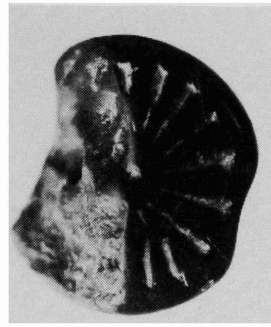


230



232

PLATE XI

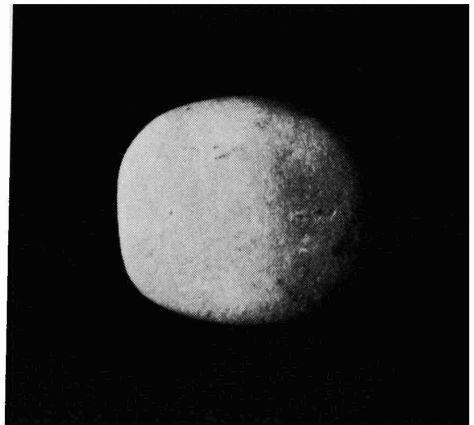
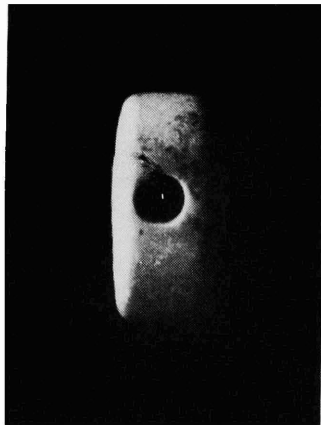


Front and back sides of seal no. 233 with impressions. Scale 2:1



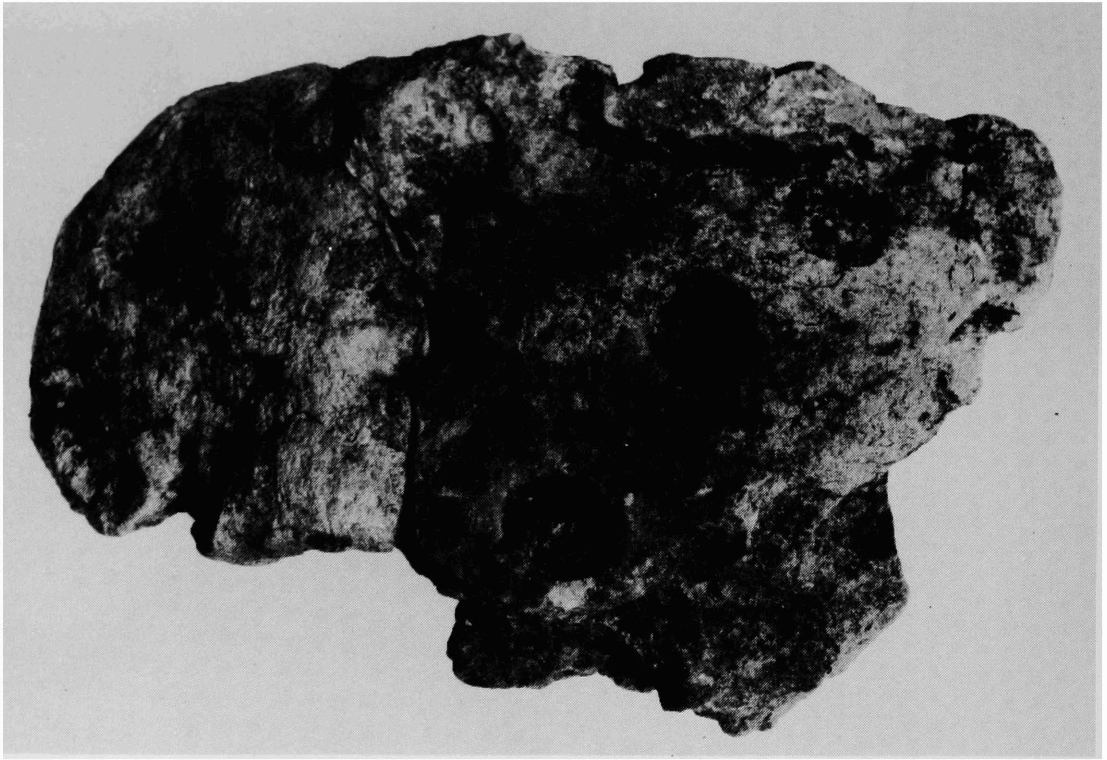
236

Scale c. 7:4



Front, side and top of seal no. 234. Scale 2:1

PLATE XII



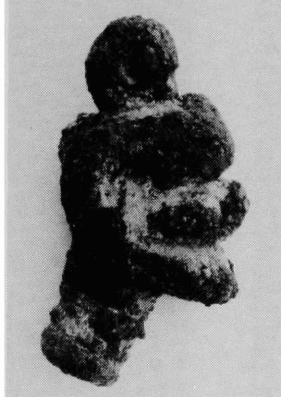
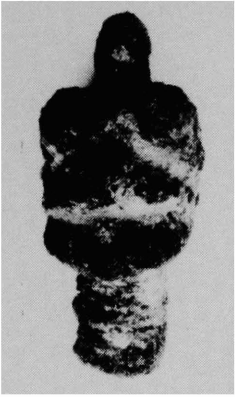
238



239

Scale c. 7:8

PLATE XIII



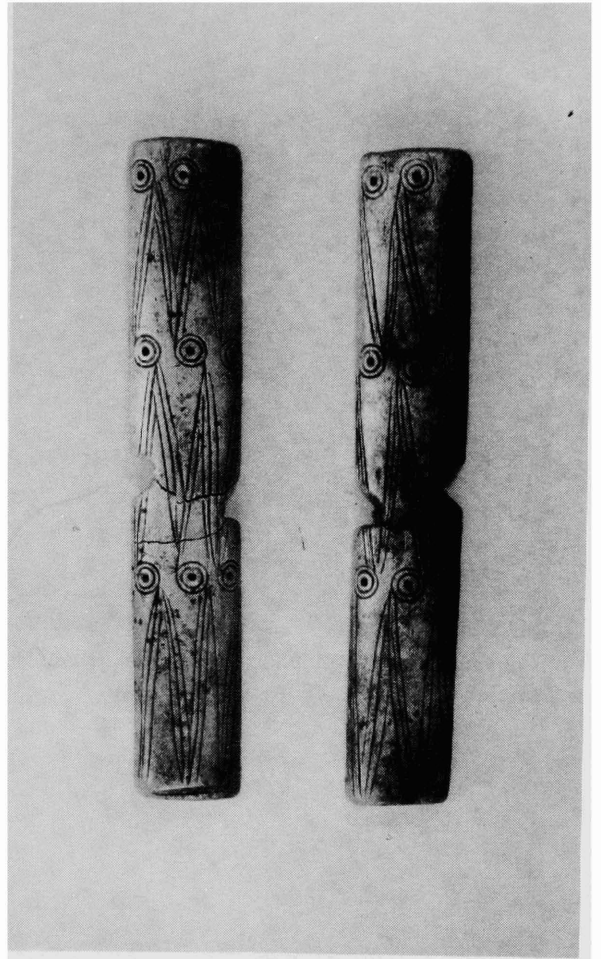
296

Scale c. 3:2



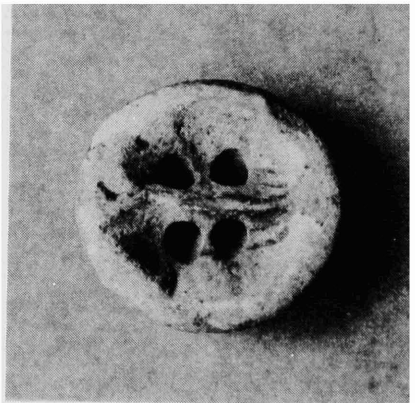
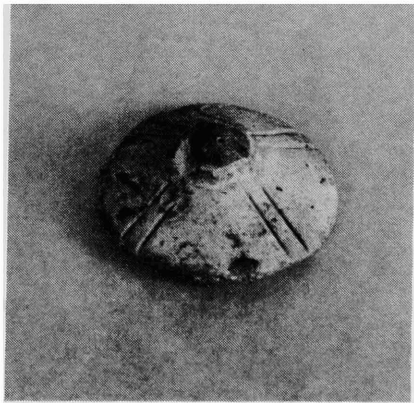
499

Scale c. 2:1



430

Scale 1:1



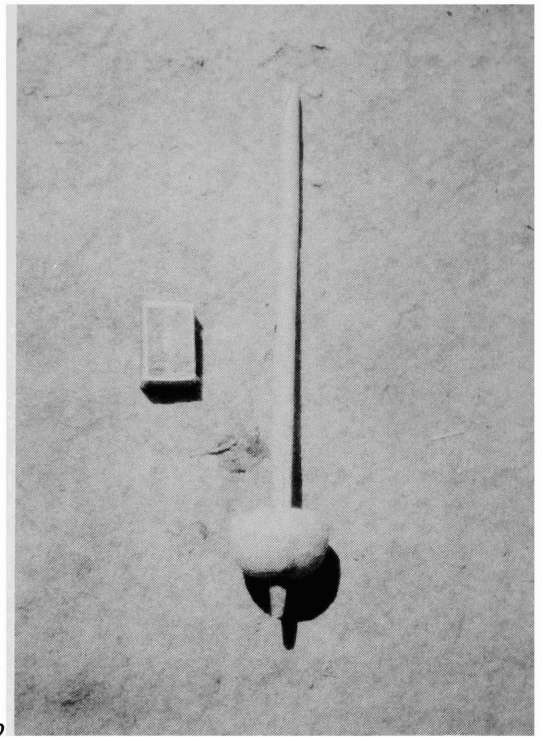
373

Scale 1:1

PLATE XIV



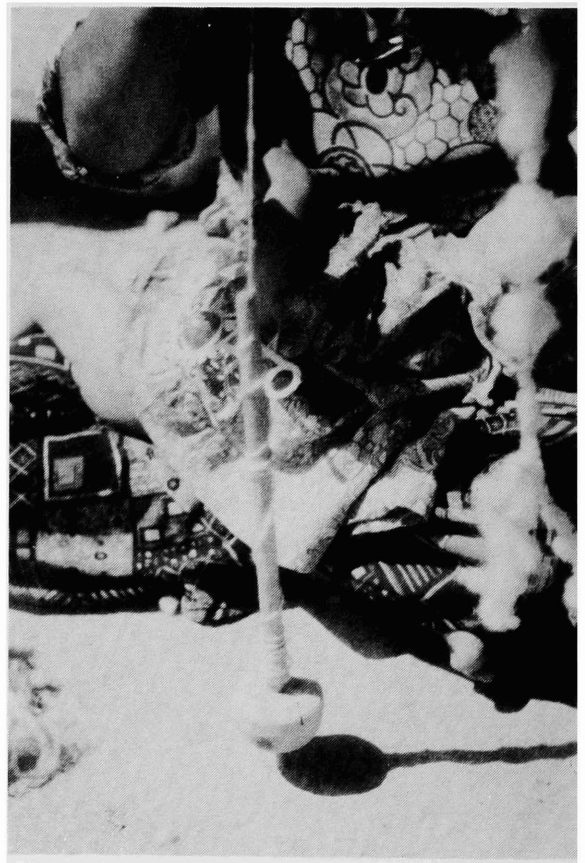
a Iron sickle used in 1973 harvest near Nakilabad. Note match-box for scale. Photo by J. E. Curtis.



b



c



d

XIV *b-d*. Spinning wool at Nakilabad in 1974. Note match-box for scale. Photos by J. E. Curtis.

EXCAVATIONS AT NUSH-I JAN: LIST OF FASCICULES

- I. The Median Settlement
- II. The Median Pottery
- III. The Small Finds
- IV. The Parthian Settlement

7

