

Oman in the Third Millennium BCE

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In 1973 the Harvard Archaeological Survey was first invited to visit Oman. Whatever success was achieved in that first season was in no small way due to the late Mr. Andrew Williamson, who took part as one of the original members of the Survey. As leader of both seasons of the Survey I would like to pay tribute to Andrew Williamson's archaeological skill and knowledge as well as his personal ability in the ordinary affairs of survey life. Without reference to personal sentiments his death is a very great loss to the archaeology of Oman and the Antiquities Department of the Sultanate.

On behalf of all the members of the Survey I would like to thank Sheikh Amor Ali Aneir, the Undersecretary to the Ministry of Information, for inviting us to work in Oman, and for all his support in Oman. I would also thank Hassan Said, the Secretary to the Minister of Information, for all his help, and to thank the Ministry itself for supporting our accommodation in Muscat. Outside of Muscat the Wali of Quryiat, the Wali of Ras al-Hadd, and the Naib Wali of Sur were most generous in their assistance to us. We are in the debt of Mrs. Anne Williams, Dr. and Mrs. R. Jackli, Mr. and Mrs. J. Jennings, Brigadier Colin Maxwell, and Mr. J. Townsend for a great deal of assistance and hospitality. Mr. C. C. Huston of Prospections Ltd. allowed us to ask him and his colleagues for information, Mr. Candish gave us hospitality at Izki more than once, as did Mr. and Mrs. Daly in Muscat. Mr. J. Carter guided us around south-west Oman and Dhofar in 1973 with great skill and good humour. We would like to thank all the many other Omanis and expatriates in odd corners of Oman who helped, pulled us out of sabkhas, guided us and gave us hospitality. Above all we wish to thank Mr. and Mrs. W. D. Peyton without whom none of this would have been possible at all. I personally would thank Professor Steven Williams, Director of the Peabody Museum for his support and permission, and Professor C. C. Lamberg-Karlovsky for advice and experience which I have come to appreciate and understand. In conclusion I wish to thank Mrs. L. A. Humphries for her material support and encouragement, and Mrs. A. Hastings, Dr. J. Pullar, Mr. R. Meadow, and Mr. D. Whitcomb, the members of the survey party, who did the work with humour and intelligence.

J. H. Humphries.

IN the course of two seasons of survey the Harvard Archaeological group has located seventeen settlements which, on the basis of associated ceramics, stone structures, lithic and copper remains, can best be attributed to the Third Millennium BCE.¹ From the accumulated evidence, a preliminary idea of the conditions of life in Bronze Age Oman can be gleaned.²

As a result of the 1973 survey in the Wadi Bahla it was tentatively concluded that a primary factor in the location of Third Millennium settlements was access to sufficient water for a simple form of irrigation to be carried on, as well as for the obvious needs of drinking and watering animals. In 1975

the territory covered was extended south and east over the drainages of the Wadis Halfayn, Qant, Andam, Samad, Ithli, Ibra, and Batha, a new area of some 5000 square kilometres. The hypothesis as to the dominating requirement of water and of associated arable land was completely confirmed. Towards the end of the survey an area on the Batinah coast side of the mountains was marked out between Rostaq and the sea, and between the Wadi Far and the Wadi Bani Kharus, to test whether the pattern predominating in the Interior would hold true across the mountains. The Third Millennium settlement named Wadi Far 1 about 5 kilometres north of Rostaq was located in a situation identical to settlements in the Interior. On the Batinah coast itself no early sites were located. However this may well be a consequence of sand dunes, alluviation, or palm gardens obscuring the evidence.^{3,4}

Although all the settlements have ready access to water and to low lying soil sufficient for at least a simple form of flood irrigated cultivation, this may or may not be evident at first sight. For instance, the settlements Wadi Andam 1 and Wadi Andam 28, are perhaps 20 feet above the present wadi bed on a stony plateau. In the case of the settlement Wadi Andam 1, a low terrace of alluvial soil, virtually level with the wadi bed, lies only 600 metres upstream. In front of Wadi Andam 28 lies a broad ancient alluvial flood plain of the Wadi Andam. It is interesting to note that today the Andam is said locally to be 'the mightiest wadi in Oman' and a glance at the extensive catchment area drained by this wadi

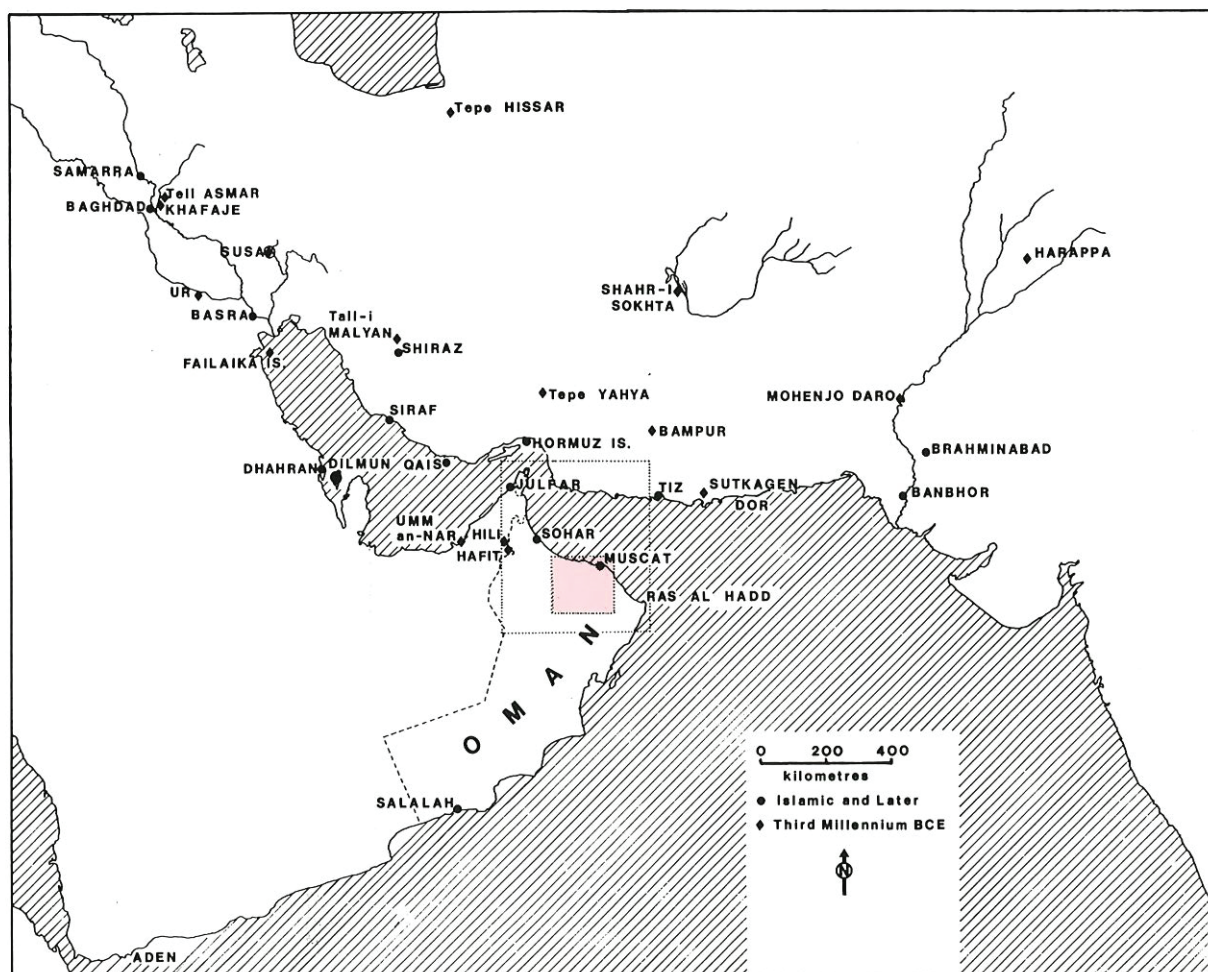


FIG. 1: Map of some archaeological sites relevant to Oman. (The coloured area is that of figure 2).

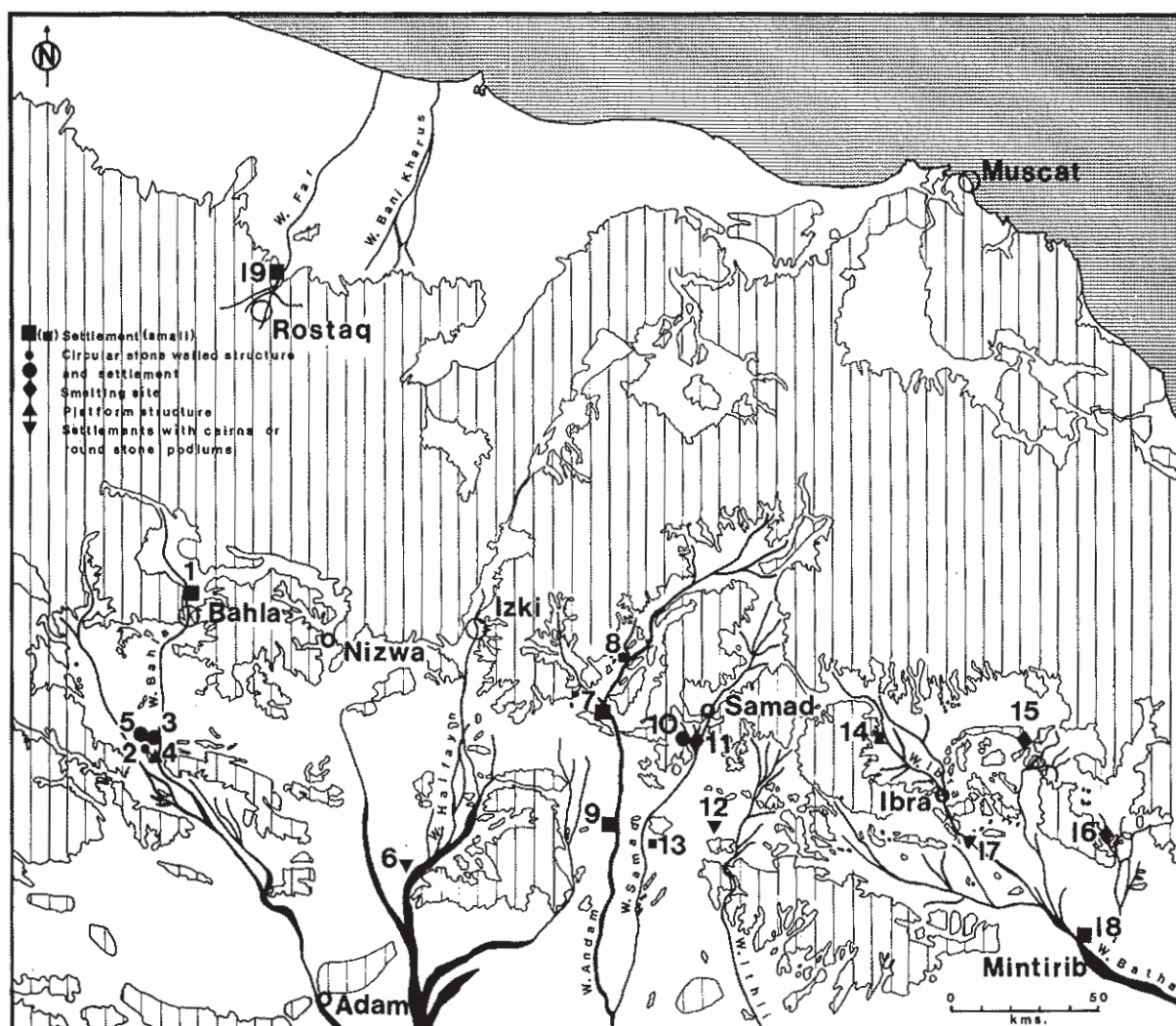


FIG. 2. Map showing the Third Millennium BCE settlements located by the Harvard Archaeological Survey in Oman.

1—BB-6	6—Wadi Halfayn 3	11—Wadi Samad 5	16—Zahir 2-3
2—BB-16	7—Wadi Andam 1	12—Wadi Ithli 4	17—Wadi Ibra 2
3—BB-19	8—Wadi Andam 16	13—Batha 1	18—Tawi Hulays 1
4—BB-21	9—Wadi Andam 28	14—Wadi Khafifah 1	19—Wadi Far 1
5—BB-22	10—Wadi Samad 4	15—Batin 1	

shows why. Modern Andam villages do not use 'aflaj'.⁵ Instead water is diverted from the wadi by simple open channel offtakes. This may also have been the case in the Third Millennium.

In the Wadi Samad drainage there is far less water available. As a result modern villages make use of 'aflaj'. It is probably no accident then that at both of the Wadi Samad Third Millennium settlements the remains of stone built gabarbands or barrages are visible expending across the drainages (Figs. 4, 5, Plate 36)⁶: Presumably these barrages would serve the double purpose of trapping silt, and holding back the run-off sufficiently to encourage it to sink into the ground and create a reserve of moisture. The site of Wadi Ibra 2 makes use of a natural barrage. This settlement lies just below a gorge at the place where the water spreads out over a flat plain. Dr. Tosi observed that the two small islands in the

wadi in front of the settlement form a natural barrage (*Fig. 6, Plate 3a*). Crops could have been planted directly into the wet silt backed up by the islands, as soon as the floor-water had receded.

The above conditions of water and suitably placed cultivable land embrace all the Third Millennium sites. Not until the First Millennium BCE is there a shift in this settlement pattern.

The prehistoric settlements in Oman are generally not marked by a pronounced mound or 'tell'. Furthermore, only two settlements, Wadi Far 1 and Batha 1, had any occupation later than the Third Millennium. It seems likely that the population tended to move up and down the wadi banks rather than continuing in one place. There is no evidence of any one direction in their moves, neither up nor down stream. These shifts may have been dictated by exhaustion of the fields forcing a move to nearby unused, and therefore, fertile soil. It may also have been the result of a delicately balanced climatic condition wherein a series of dry years would be enough to make flood irrigated agriculture impossible, and destroy a settlement's economy.⁷

Out of the seventeen sites certain groupings are evident. Settlements BB-19, BB-22, and Wadi Samad 4, all have a central elevated walled structure (*Figs. 4, 8, Plates 2a, b*). These structures are surrounded by lesser domestic buildings and by cairns.

Wadi Andam 1, Wadi Andam 28, BB-6, Tawi Hulays 1, and Wadi Khafifah 1, are settlements without massive walled structures or cairns.

Wadi Ibra 2, Wadi Ithli 4, and Wadi Far 1, are primarily settlements but have a number of associated cairns and stone circles akin to the plinths of Umm an-Nar graves.⁸

The settlements of Wadi Samad 5, Batin 1, and Zahir 2-3, have yielded evidence for the smelting of copper. In the case of the Wadi Samad 5 site, the entire settlement appears to have been concerned with the smelting process (*Fig. 5, Plate 4b*). This process involved the use of earthenware crucibles (*Plate 4a*). It is probable that alternate layers of oxide or carbonate ores and charcoal were packed into the crucible and fired with the aid of a bellows or blowpipe to provide an air blast. The resultant slag was broken into small pieces to extract the copper cake from the crucible. At a later period, the early Islamic Age, proper furnaces appear to have been used. At any rate, the slag comes in much larger pieces and sometimes shows a negative impression of the curve of the smelting chamber. There are no crucible sherds at the later smelting sites.

From the geological surveys carried out by Prospections Limited it is now known that there are many copper ore sources in Oman. Some of them are too small for modern mining but adequate for small scale early historic production.⁹ It is interesting that the three Third Millennium copper smelting sites found in 1975 were all located near water and arable land. At Wadi Samad 5 there is a gabarband running across the valley as well (*Fig. 5*). These settlements are not situated on top of the ore deposits as became true later on. The difference between the Third Millennium smelting village in its fertile surroundings compared with later Islamic smelting villages in places where cultivation would be very difficult, suggests that in early times copper production was an integrated part of community life while later on it became a specialized industry, possibly for export at the behest of foreign authorities.¹⁰

Construction techniques at all these settlements are simple but substantial. The fort-like structures are built of massive blocks split from the same outcrop and only roughly squared (*Plate 2b*).¹¹ Domestic buildings on the other hand are constructed with foundations composed of a double line of natural stones. A combination of natural stone and mud mortar was used for the upper walls. Stone construction in Oman was greatly favoured by the local stone which weathers and indeed splits easily into tabular slabs. So regular are these slabs that one is often led to believe that distant cairns are ashlar masonry when actually they are simply drywall construction of loose slabs. Even the large blocks at BB-22 are

split from an outcrop located within the walls. In Oman the only Third Millennium ashlar masonry known is the dressed white limestone facing-blocks revealed on the cairns at Bat and Amlah by Dr. Frifelt and Miss de Cardi. Due to the heavy erosion and to the organized collection of stone for modern building, few ancient remains are well preserved in Oman. Wadi Andam 28 and Wadi Samad 4 are perhaps the best preserved settlements but even here the destruction has been very heavy.

Despite their massive walls there must remain considerable doubt as to the true purpose of the circular enclosures at BB-19, BB-22, and Wadi Samad 4. It is very possible that they were the site of some ceremonial usage. Since the location of none of the other settlements suggests defence, it would be curious for these three alone to have been made defensible.

Even more interesting are the two structures BB-21, and 'Arja (*Figs. 7A, 7B, Plates 5a, 5b, 6a, 6b*). The BB-21 structure was built on a low platform. Despite the ruined state enough wall foundations remained to draw the plan of the former building with fair accuracy. There are no other remains in the neighbourhood except for a large cairn on a nearby hillside and an enigmatic small hill with a large wall around it. There were very few sherds on BB-21.

The structure at 'Arja is built of massive boulders from the neighbouring hillsides, only roughly squared if at all. As may be seen from the photograph (*Plates 5b, 6a, and 6b*) the edifice rises in two stages or platforms and is approached via a long ramp. The corners point to the cardinal directions of the compass, as in fact do the corners of the building at BB-21. A large corpus of pottery (large enough to clear the site) has been collected at 'Arja by private individuals and is not available for inspection. Thus it is not possible to date 'Arja. However it must be pointed out that there are several similarities to the Mesopotamian 'ziggurat' such as the plan, the orientation to the cardinal points, and the stepped up terracing. 'Arja is not included amongst the seventeen settlements under discussion but is described here as a matter of general interest.¹²

The seventeen settlements have been attributed to the Third Millennium primarily on the basis of the pottery assemblage and its parallels with other collections. The complete corpus is illustrated in Figures 9 to 22. Although there are parallels to foreign collections the primary feature of this Omani settlement pottery is its integrity as an Omani assemblage, homogenous within itself and distinct as opposed to south-east Iran, lower Mesopotamia, and other neighbouring areas at this time. This being so, and since the assemblage is purely a surface collection without benefit of stratigraphic controls and divisions, the following remarks are intended only to emphasize the highlights. A detailed analysis must await an excavated corpus.

The pottery is principally a tan to orange wheel made ware, often with a grey core.¹³ Sometimes the fabric is entirely grey with merely a tan surface. Generally the ware is fine with no visible inclusions or with only very fine inclusions which may be natural. Very occasionally a fine chaff-tempered ware occurs, which is quite distinct from the coarse chaff-and-grit-tempered software used to manufacture the smelting crucibles at Wadi Samad 5. There is a small percentage of sherds with larger inclusions. These are generally confined to the larger heavier vessels. Painted decoration consists of black painted exterior designs mainly horizontal lines and running curves with occasional diagonal cross-hatching patterns.

Shapes can be grouped into necked vessels, holemouth jars, and bowls. A peculiar feature of sherds from jars in this collection is that they are broken at the base of the neck. Further fragmentation often makes estimation of rim diameters difficult. On the other hand one may note the inordinately large rim diameters of the bowls in this collection. Bases are almost always simple and flat. The exceptions are illustrated.

There are in Oman three wares exceptional to our collection. Two are grey wares: one, the incised grey, and the other, the black on grey so frequently mentioned in lower Gulf south-eastern Iranian archaeology. The third ware is a very fine light red or orange ware with a tendency to split or spall rather than to break. There are no incised grey ware sherds in our collection, and only two black on grey sherds were found. There is a small percentage of the fine light red ware sherds, sometimes with a fugitive black paint, principally from sites which have associated cairns; e.g. BB-19. This fine light red ware does occur on settlements without cairns but only very rarely.

These three wares have been found in quantity in Oman at Bat and at Amlah by Frifelt and de Cardi.¹⁴ However these collections are entirely from graves. Similarly the same three wares occur at Umm an-Nar and at Hili, also in much greater frequency from graves than from settlements.¹⁵ It seems evident that these three wares are grave wares, or, perhaps, 'special' wares which cannot always be expected to occur in domestic contexts. Presence or absence of these wares, however, is used indiscriminately as an important chronological marker throughout the lower Gulf and south-eastern Iran for both grave and domestic collections. Even at Umm an-Nar the settlement pottery has major differences from the grave wares.

The earliest material from the Harvard Survey appears to be sherds such as *Figs. 15: o, q, Fig. 21: v, x, y*, which are reminiscent of vessels from the Diyala¹⁶ and the early Hafit graves¹⁷ in late Jamdat Nasr or Early Dynastic I times. There are pierced ring bases *Fig. 11: bb*, which are also found in the Diyala,¹⁸ and pierced 'nose' lugs *Fig. 12: cc, Fig. 17: ff*, which can be compared with Diyala examples,¹⁹ and with one from Tepe Yahya IVC.²⁰

At the other end of the scale are sherds showing the typical shoulder carination of Bampur V-VI²¹ canisters *Fig. 10: k, n, o, p, Fig. 20: w*. It should be noted that sherd *Fig. 10: k* is in fine grey ware. There is also a suspension ridge vessel *Fig. 20: ee, ff*, which is paralleled at Hili²² and in the Diyala.²³ There are no examples of Dr. Frifelt's distinctive Wadi Suq painted ware assemblage. We understand that Dr. Frifelt dates the Wadi Suq assemblage to the early Second Millennium BCE.

It seems likely therefore that the collection covers most of the Third Millennium BCE, or from late Jamdat Nasr—Early Dynastic I to the Ur III period, in Mesopotamian terms.

Every settlement of the seventeen produced a few sea shells. It is likely that active communications were maintained between the coast and the Interior. Probably copper and grain from the Interior were exchanged for shellfish and fish from the coast.²⁴ Deep in the Interior at the Umm as-Samim, at Qarat al-Milh, and at Qarat Kabrit, the Bedu today mine salt, for their own use, and to trade with the towns along the mountains. It is possible that salt was mined there in the Third Millennium. However when the Harvard Survey visited Qarat al-Milh and Qarat Kabrit in 1973 no pottery was found and only a handful of flint chippings.

Figure 2 shows that all the known settlements lie relatively near to the mountain range. In 1973 the Harvard Survey made a long trip through the Dhofar province and south-west Oman. No ceramic sites were located although numerous aceramic stone tool sites were recorded.²⁵ It is likely that the latest of these stone age cultures coexisted with the Third Millennium settlements near the mountains. However it is not known where the line between the settled communities of the piedmont and the more mobile inhabitants of the desert lay. More important it is not known what the relationship between them was.^{25a}

At the moment there is good evidence for foreign trade in the Omani Bronze Age. There are indeed a few ceramic parallels with Mesopotamia and more with south-east Iran, but not of a sort that would lead one to postulate the existence of foreign traders nor even of active trading relations with any

area outside of Oman. The small collections of exotic sherds and the few pottery shape parallels to outside areas are barely sufficient to assign a date to Omani graves and settlements let alone create trading networks. Despite the relative proximity of such Harappan sites as Sutkagen-Dor and Sotka-Koh there is absolutely no trace of Harappan connections. However there is the cautionary example of the Assyrian 'karum' at Hattush in Anatolia where but for seals, sealings and tablets there was really nothing to distinguish the Assyrian trading 'quarter' from the rest of the Anatolian town.²⁶

Oman has always been a candidate for the location of the historical kingdom of Magan. The copper smelting settlements at Wadi Samad 5, Batin 1 and Zahir 2-3, show the existence of a Third Millennium copper smelting community. However as yet there is no firm evidence for the export of copper outside Oman. The ambiguous evidence of the sample discussed in Peake's article²⁷ is controverted by a recent analysis of Wadi Samad 5 slag which shows no nickel. In other words it is entirely possible that copper from Oman would have no nickel trace at all.

In the Third Millennium BCE Oman appears to be a land of prosperous villages whose economies are based on flood irrigation agricultural systems. There was local production of copper in several localities. The villages were on an average from one and a half to two and a half hectares in area. No one settlement seems markedly more substantial than another. There is nothing to suggest a political hierarchy, or, if there was a king he was first among equals. It is a scene of quiet well being untouched by the maelstrom of Mesopotamia or Iran. As in so many other cases, the evidence of excavation may well be different from that of survey.

¹ The Survey has concerned itself primarily with the location and recording of settlements. Oman, as is well known, is an area which abounds in ancient graves and cairns. These have been very ably dealt with by other investigators. The Harvard Survey has in most cases not concerned itself with the cairns and graves except in so far as they are, first, a guide to the location of settlements, and second, an indivisible part of a settlement.

² Over 180 archaeological sites of all periods were located during the survey. While not many by Iranian or Mesopotamian standards, analysis of the contents and distribution of these sites permits a few preliminary conclusions to be drawn concerning the changes in settlement pattern over time.

³ In addition to the above areas an examination was made of the south coast of Oman from Ashkharah to As-Suwayh. The survey then moved inland and carried its inspection through to Rad al-Hadd and the Khawr Jaramah. A brief visit was paid to the ancient smelting sites of Lasayl, 'Arja, and Beidha in the hills behind Sohar.

⁴ Furthermore in order to save time, it was decided not to undertake any investigations within present day towns and villages. It is possible, even likely, that important earlier settlements lie within the precincts of such strategically located modern towns as Bahla, Nizwa, and Izki.

⁵ A 'falaj' (pl. Aflaj, Farsi: Qanat) is an underground channel which taps the water table at the base of the mountains and which eventually reaches the surface, often far out into the plain after a nearly level course of flow. The water is then distributed by means of open channels. Thought to have originated in Achaemenian Persia, a most characteristic and visible feature of an underground 'falaj' is a line of shafts sunk from the ground surface to the channel for construction and maintenance purposes.

⁶ As Raikes has pointed out the presence of gabarbands or barrages in an area which today has scanty seasonal rainfall suggests very strongly that the climate and rainfall were little different prehistorically. R. Raikes *Water Weather and Prehistory* (London, 1967), p. 158.

⁷ The most recent dry period in the Interior has been between 1973 and 1975. A "Hundred year drought" precipitated the abandonment of settlements in the Sharqiya during the last two centuries.

⁸ At the moment no firm relationships of cairns to settlements can be established. There are a few observations which may supplement other work.

Settlements BB-6, Andam 1, Tawi Hulays 1, have no cairns near them or even on a nearby ridge. Conversely the survey located a cairnfield of some 900 large cairns near Beni Bu Ali and there are no known settlements from this locality. As will be discussed later, they appear to be types of pottery which usually occur only in cairns, and when found on settlements they are usually settlements with cairns.

There are frequent occurrences of a high ridge with a line of cairns running along the crest. Well known examples exist at Zukayt near Izki, and on the ridges along the south-east side of the Wadi Bahla near Bisayah. D. Whitcomb has noted that in many cases a 'display' of cairns on the skyline occurs above a settlement (Plate IIIA). If the cairns were graves it is possible the people wished to remain within sight of their ancestors. D. Whitcomb has also observed that similar structures in use in Iran today are granaries, not so much for food grains, but as M. Tosi suggests, for seed grain to keep it high and away from the damp, insects, and moulds of the valley floors. It is quite possible however that this coincidence of cairns and settlements is accidental.

⁹ The numerous sources of copper found by Prospections Ltd. contradict Hansman's argument that the Jebel Ma'adin deposit is the only source of copper in south-eastern Arabia and therefore that Oman could not possibly be Magan. J. Hansman, *A Periplus of Magan and Meluhha Bulletin of the School of Oriental and African Studies* vol. 36 pt. 3 (1970), p. 561.

¹⁰ See D. S. Whitcomb *The Archaeology of Oman; A Preliminary Discussion of the Islamic Periods Journal of Oman Studies* (1975).

¹¹ Another site in the Wadi Bahla, BB-16, is built of the same massive slabs although only one course of blocks remains. Again the structure is in the shape of a circle. See J. Humphries *Some Later Prehistoric Sites in the Sultanate of Oman, Seminar for Arabian Studies* vol. 4 (1974) fig. 2.

¹² 'Arja was first observed by the staff of Prospections Ltd. and has also been visited by Dr. E. Keall, Mr. P. Farries, and the late Mr. A. Williamson.

¹³ The terms used to describe the hues of the pottery correspond roughly to the following "Munsell Soil Colour Charts" notations: Tan: 5YR 7/4; Orange-tan; 5YR 6/4; Brown tan; 7.5YR 5/2; Reddish-tan: 2.5YR 6/4; Buff: 7.5YR 6/2; 7.5YR 7/2; 7.5YR 7/4; Red; 10R 4/4, 10R 5/6, 10R 6/4, 10R 6/6; Red-orange; 10R 5/4 and 2.5YR 6/4; Grey: 7.5YR 6/0; Grey cores: 7.5YR 6/0, 7.5YR 5/0, and 7.5YR 4/0.

¹⁴ We wish to thank Miss de Cardi and Dr. Frifelt for allowing us to inspect their collections in the field in 1973 and 1975.

¹⁵ K. Frifelt private communication 25 September 1975.

¹⁶ P. Delougaz *Pottery from the Diyala Region* (Chicago 1952) plate 182: C.534.240 and C.535.240.

¹⁷ K. Frifelt *Jamdat Nasr Fund Fra Oman KUML 1970* figs: 13a, 17, 18a, 19d, 21abc, 22ab.

¹⁸ P. Delougaz op. cit. plate 189: C.754.440.

¹⁹ *ibid*: plate:191:D.504.353a, D.504.353b, C.603.253b.

²⁰ C. C. Lamberg-Karlovsky *Tepe Yahya 1971: Mesopotamia and the Indo-Iranian Borderlands IRAN 1972* fig:2:H.

²¹ B. de Cardi *Excavations at Bampur, A Third Millennium Settlement in Persian Baluchistan, 1966. Anthropological Papers of the American Museum of Natural History* (New York, 1970) vol. 51 pt. 3. Fig: 38 No. 361; fig:39 No. 388a and b; 389; fig: 43 No. 477, 481.

²² K. Frifelt op. cit. fig:4b.

²³ P. Delougaz op. cit. plate 189: C.754.440.

²⁴ Mr. W. Donaldson of the Durham University Oman Project has informed us that the interior of Oman is today the better farming area and that the Batinalh coastal area is in fact a net importer of dates and grain. This may be a very old pattern.

²⁵ J. Pullar *Flint Sites in Oman Proceedings of the Seminar for Arabian Studies* vol. 4 (1974).

^{25a} Chipped stone is present on most Third Millennium sites, the density varying from a few pieces to several hundreds. Chert is the most commonly used material with red predominating. Most of the pieces are waste flakes and a few waste blades. Tools are generally small and consist mainly of fairly crude points, end scrapers, side scrapers, and rounded scrapers. Some bulbar retouch is not uncommon on such pieces. Rarely, bifacially flaked foliates, pressure flaked tools and arrow heads occur, for example, at Tawi Hulays. I. J. Pullar.

²⁶ K. Bittel *Hattusha the Capital of the Hittites* (New York, 1970), p. 41-44.

²⁷ H. Peake *The Copper Mountain of Magan Antiquity* vol. 2 (1928), p. 452.

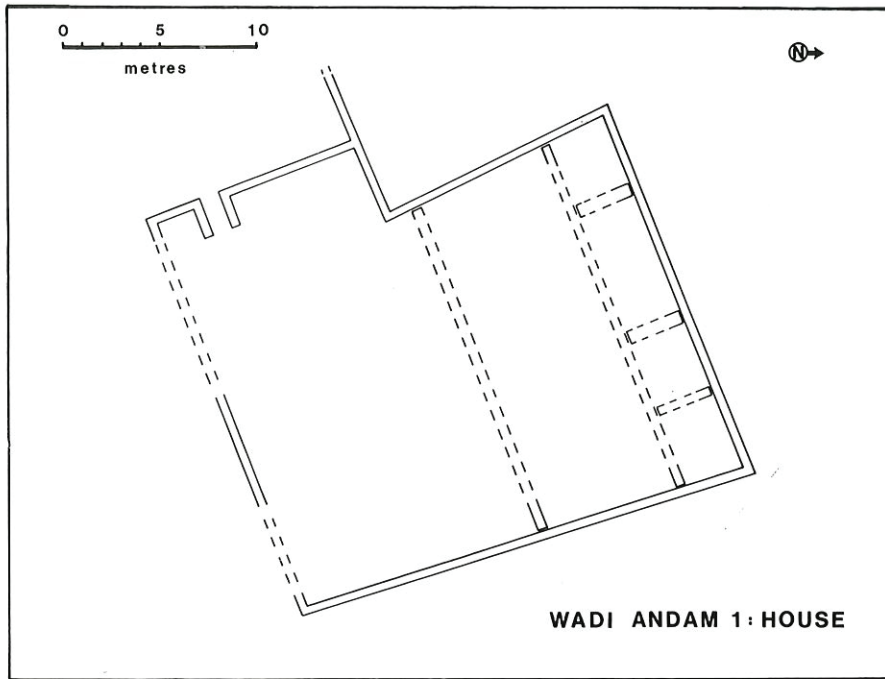
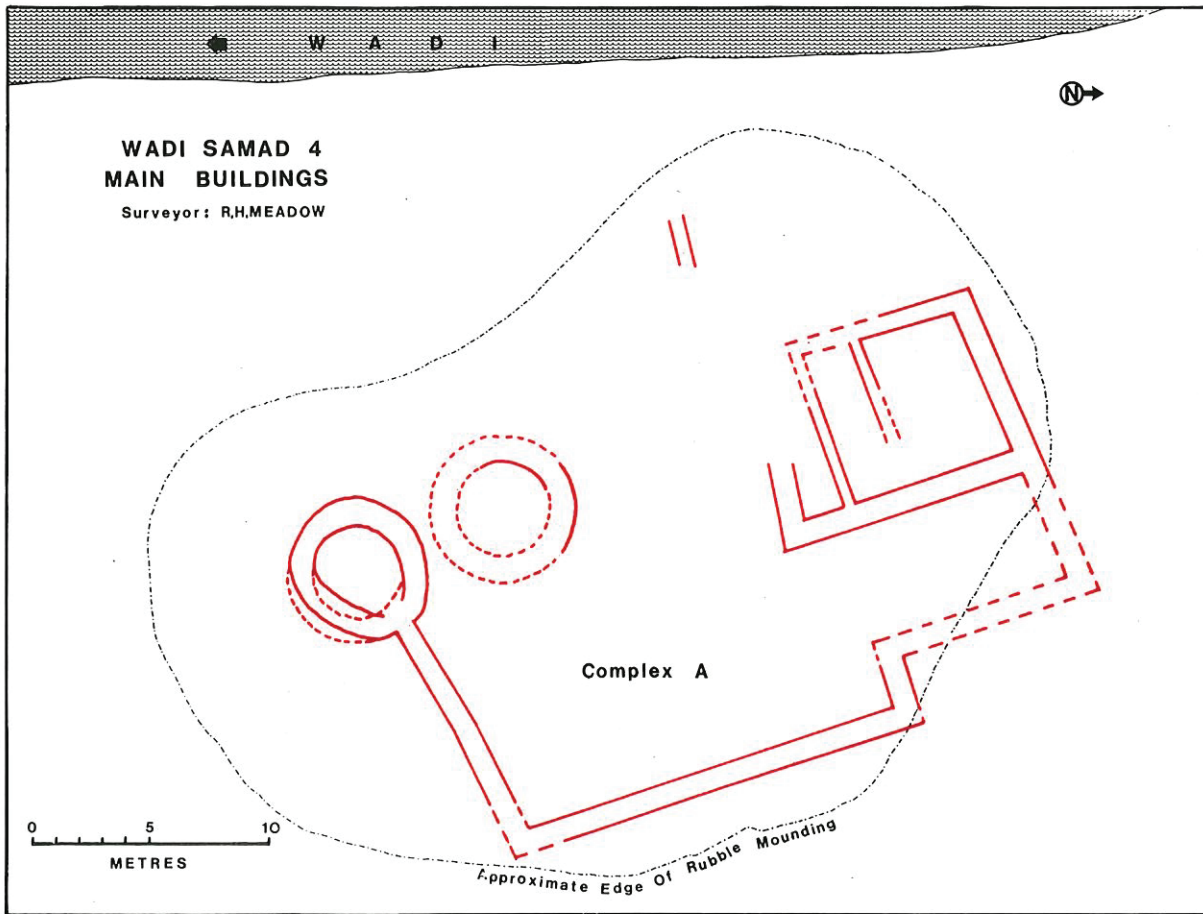


FIG. 3 (above). Plan of house foundation at Wadi Andam 1. (Below). Plan of main building foundation at Wadi Samad 4.



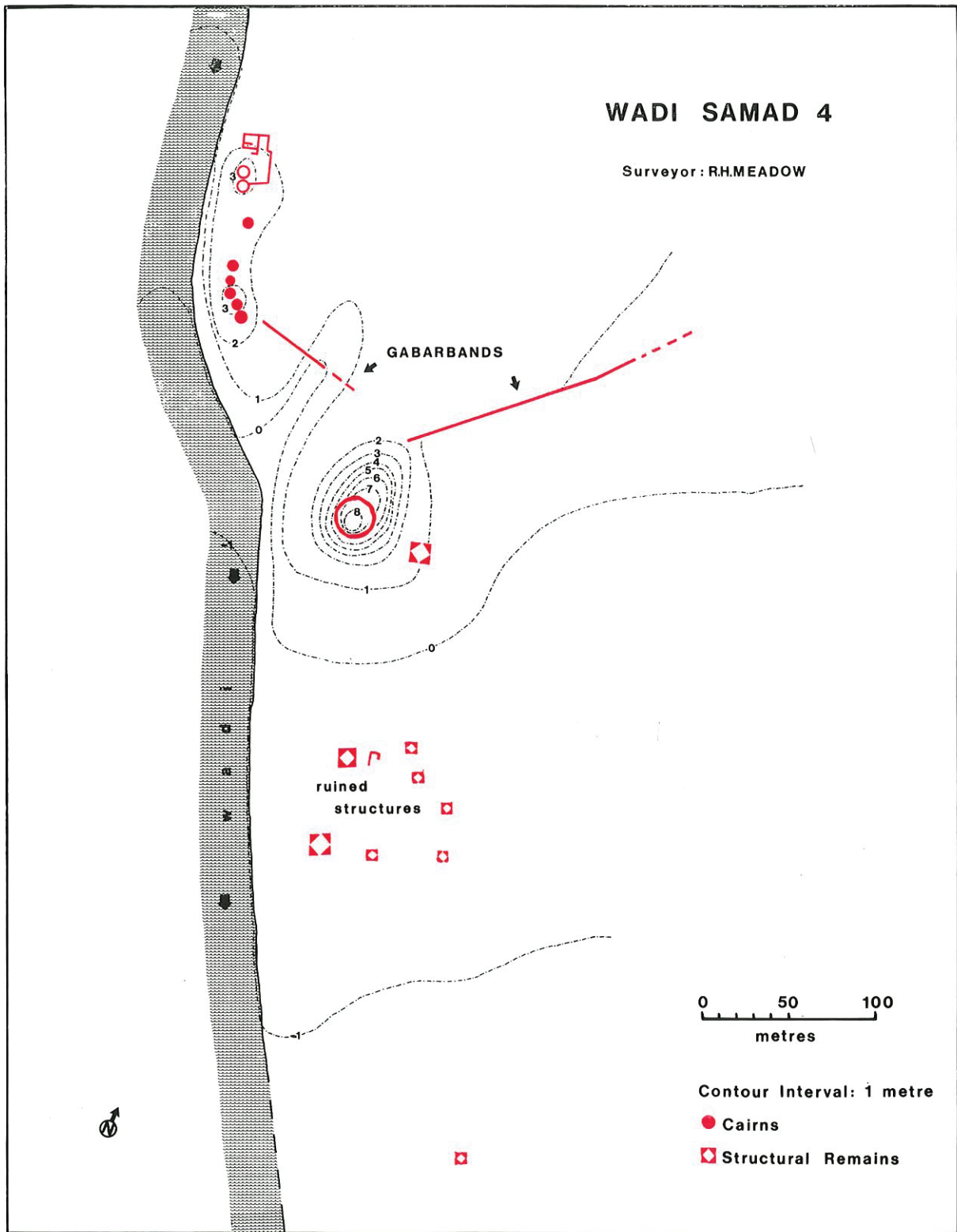


FIG. 4. Plan of settlement Wadi Samad 4.

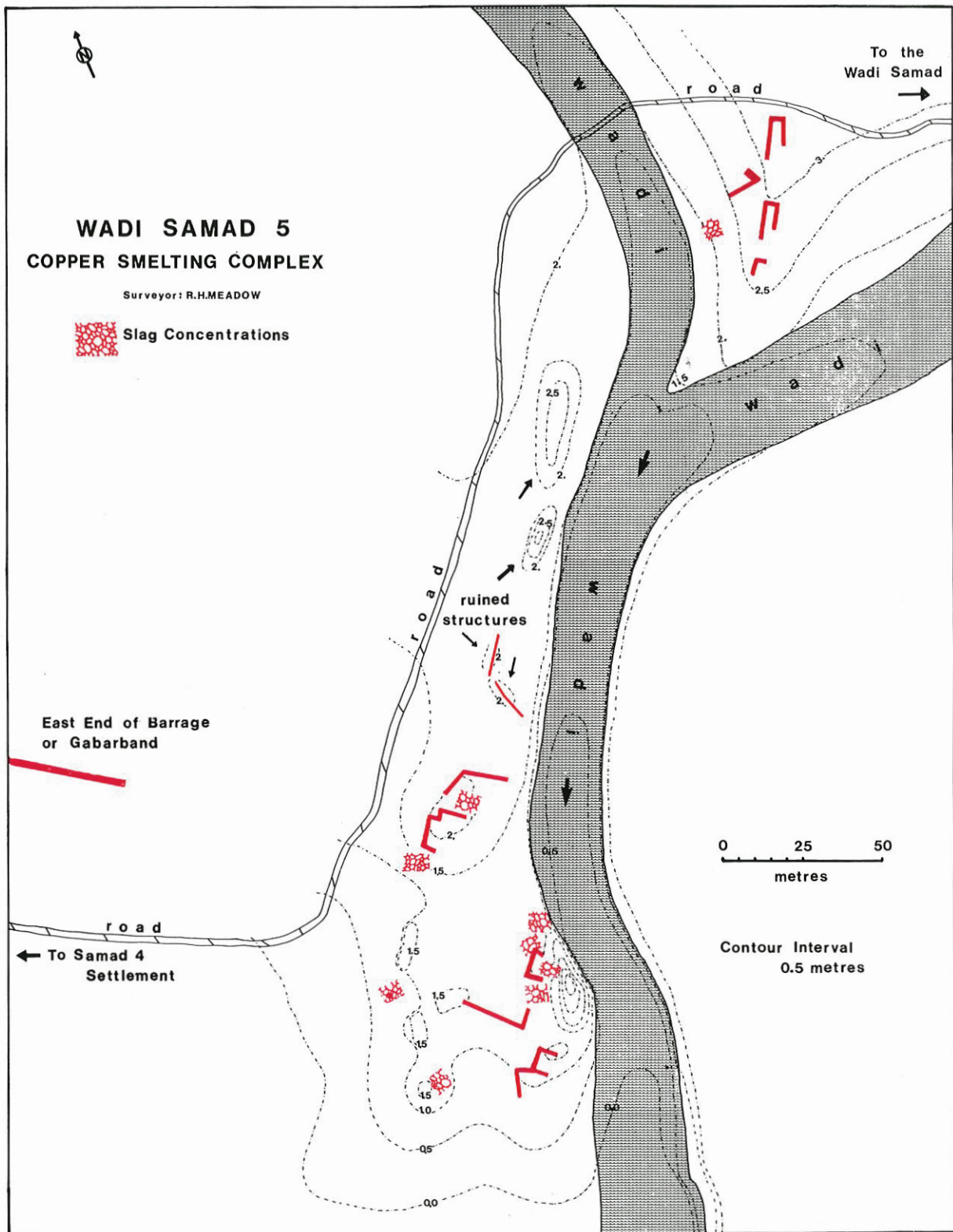


FIG. 5. Plan of copper smelting settlement Wadi Samad 5.

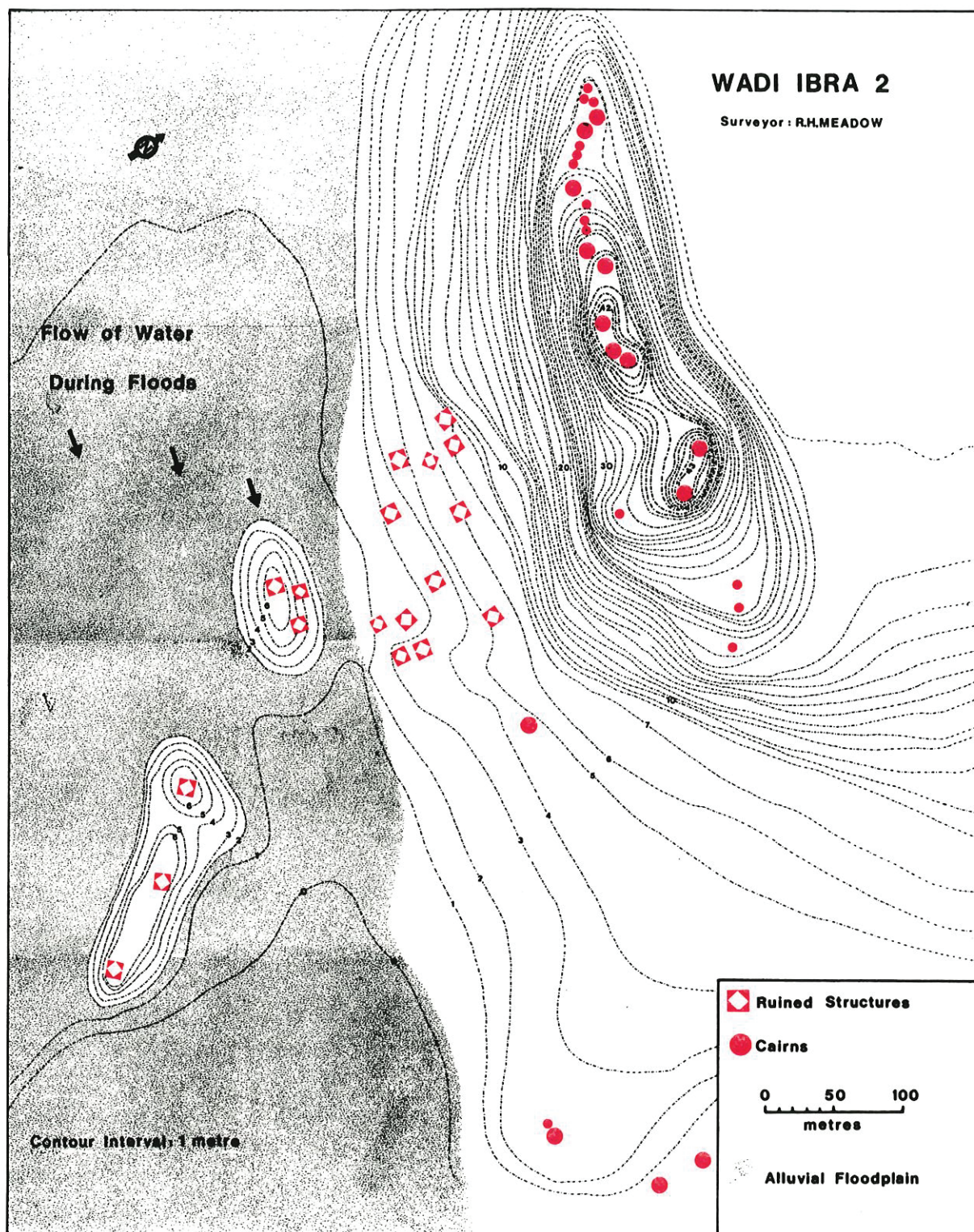


FIG. 6. Plan of settlement Wadi Ibra 2.

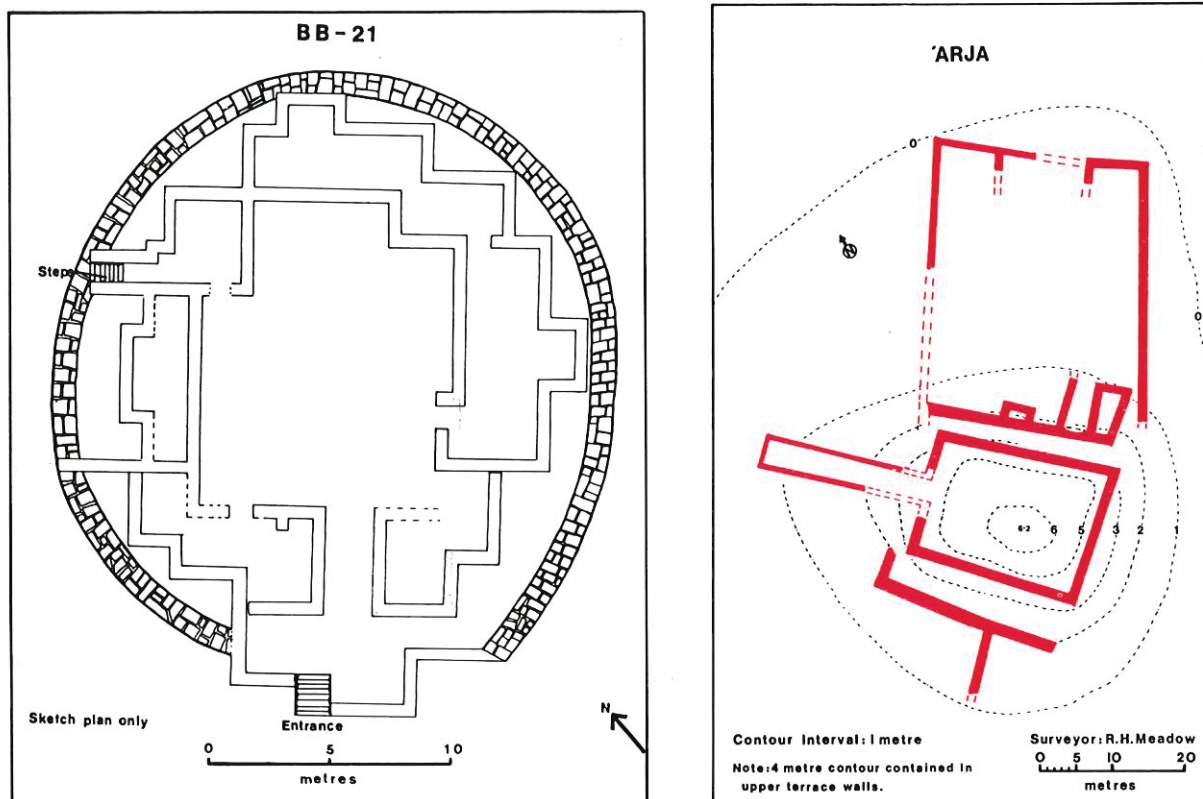


FIG. 7 (left). Sketch plan of structure BB-21. (Right) Plan of structure at 'Arja.

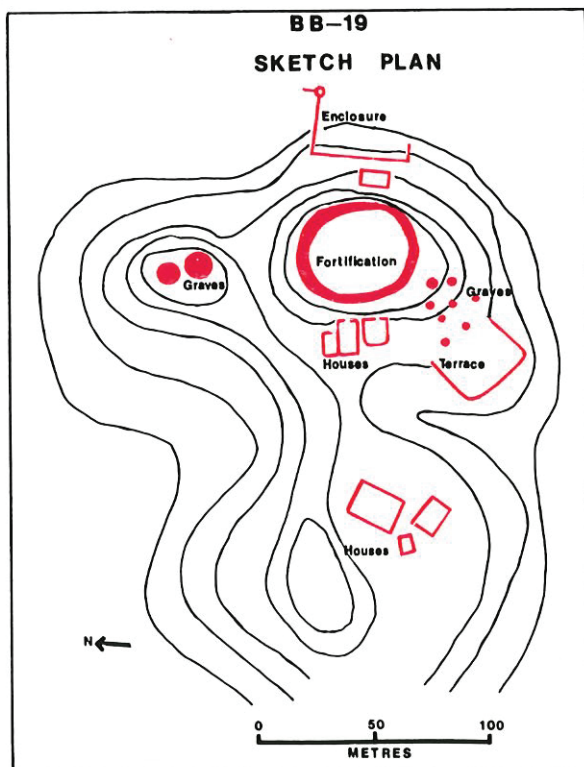


FIG. 8. Sketch plan of settlement at BB-19.

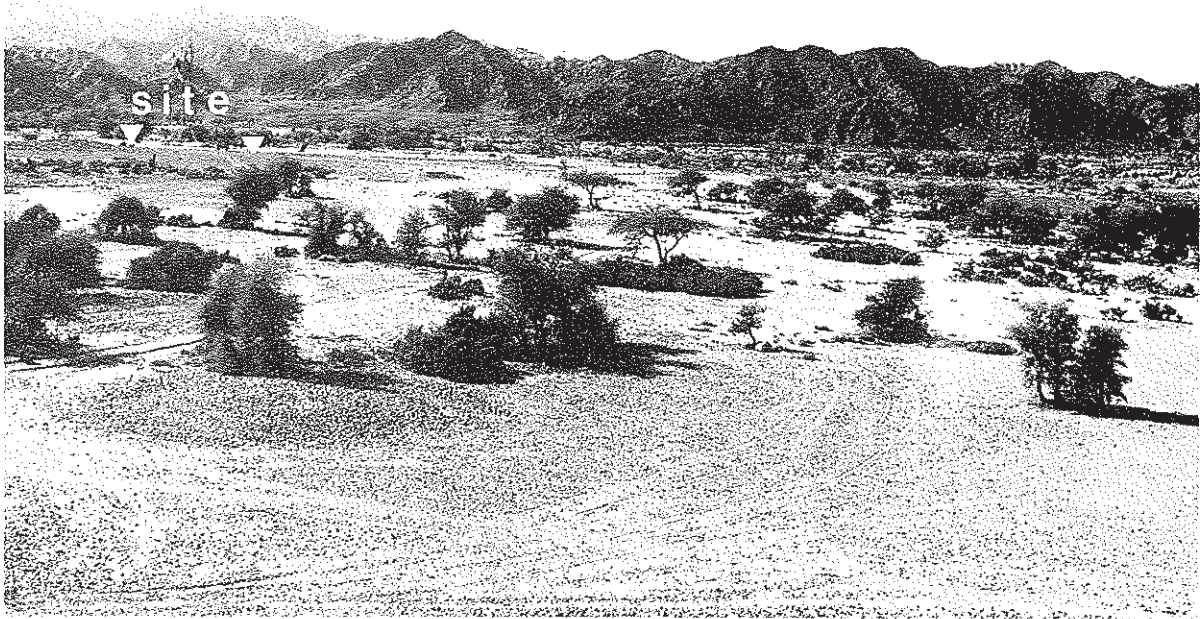


PLATE IA. *Settlement BB-6.*

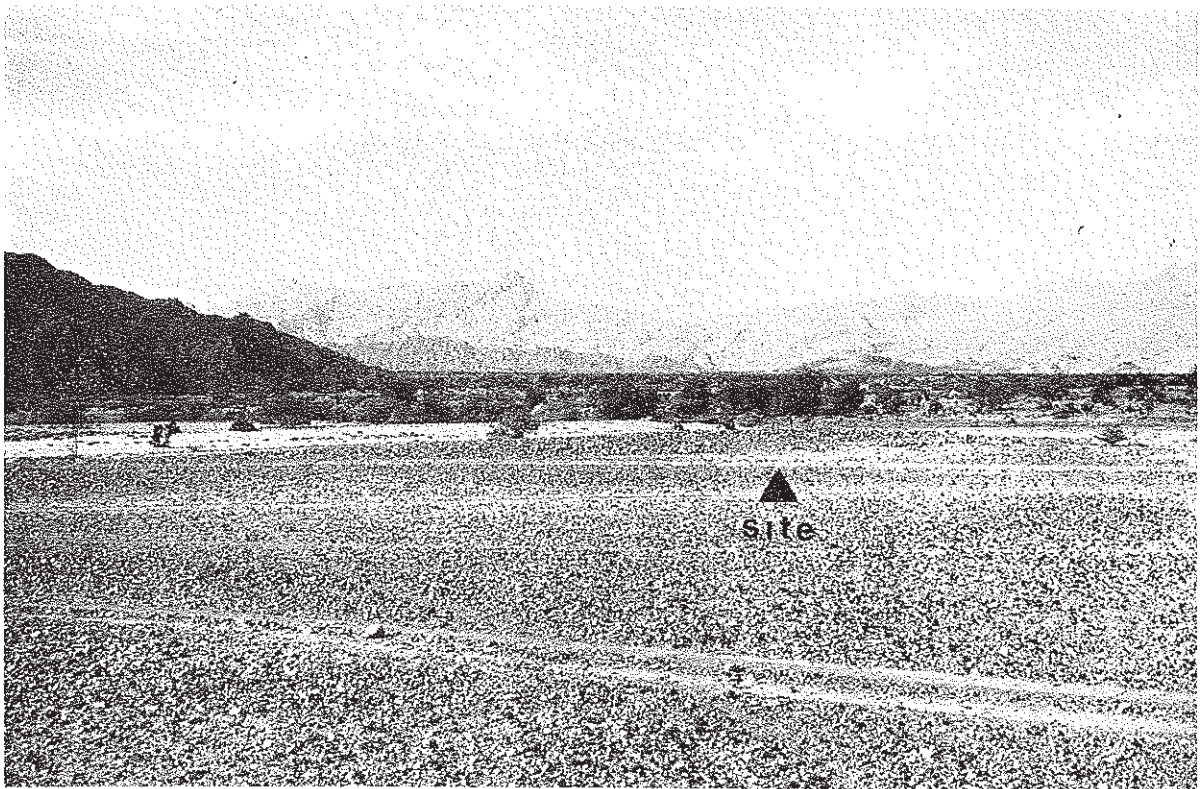


PLATE IB. *Settlement BB-6.*

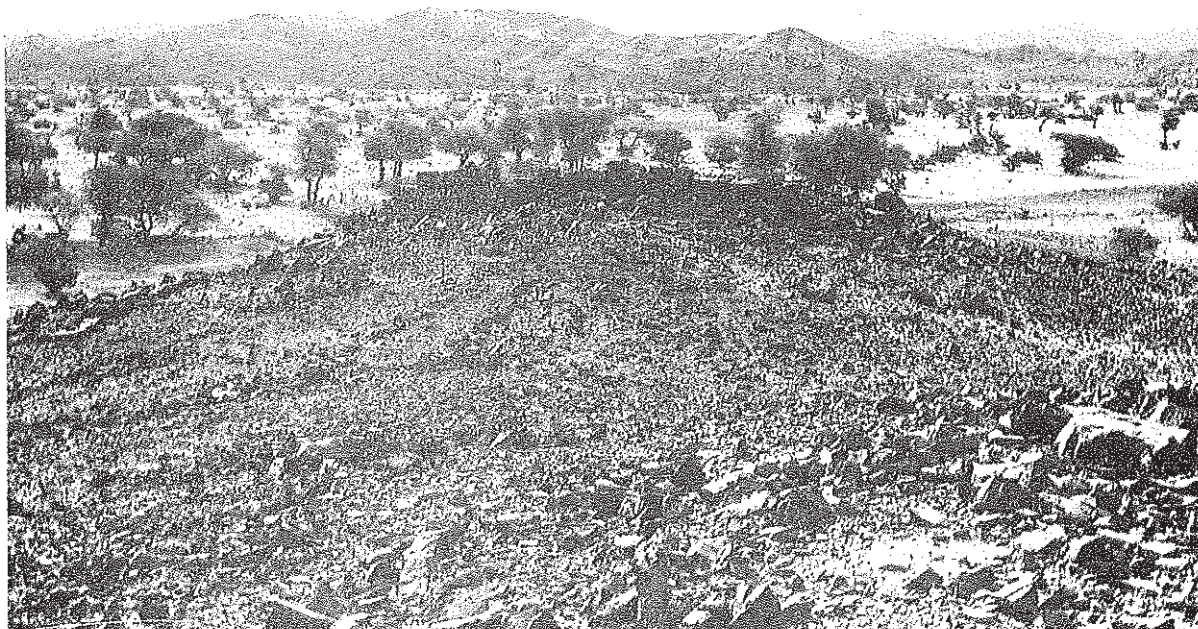


PLATE 2A. *Settlement BB-22.*

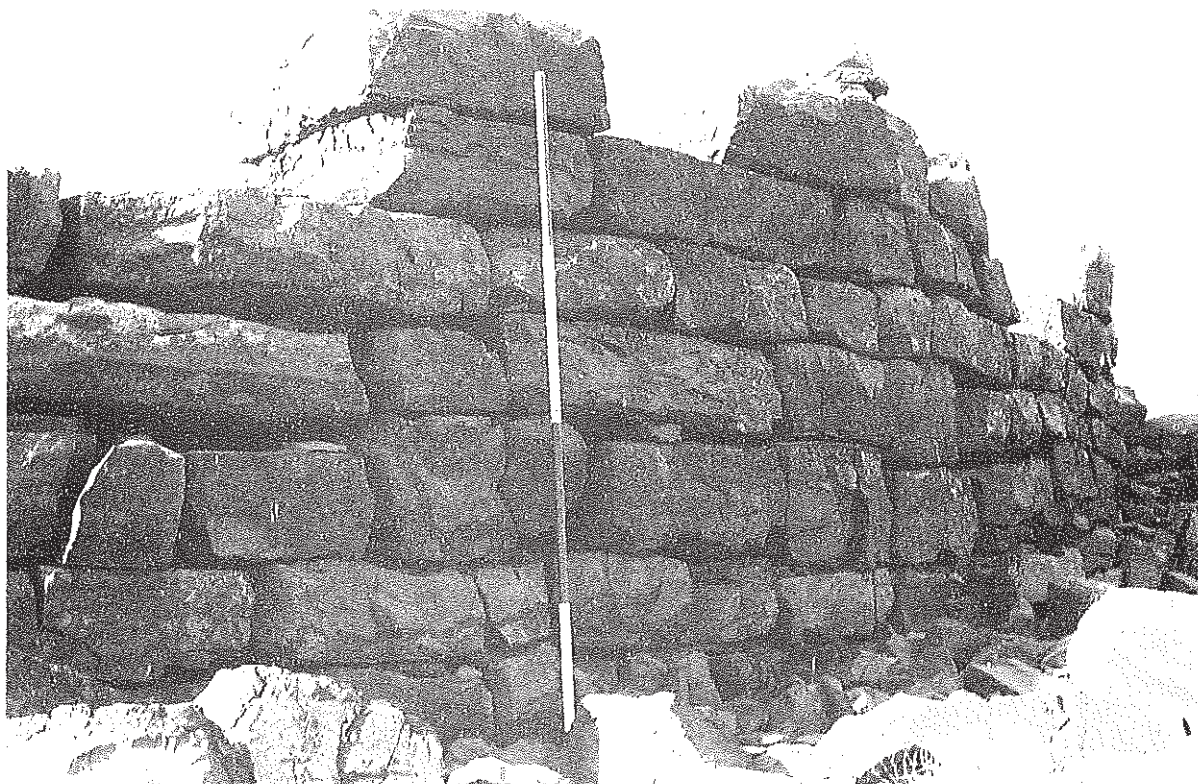


PLATE 2B. *Wall of central structure of settlement BB-22.*



PLATE 3A. *Settlement Wadi Ibra 2. Arrow marks site. Note cairns on ridge above.*

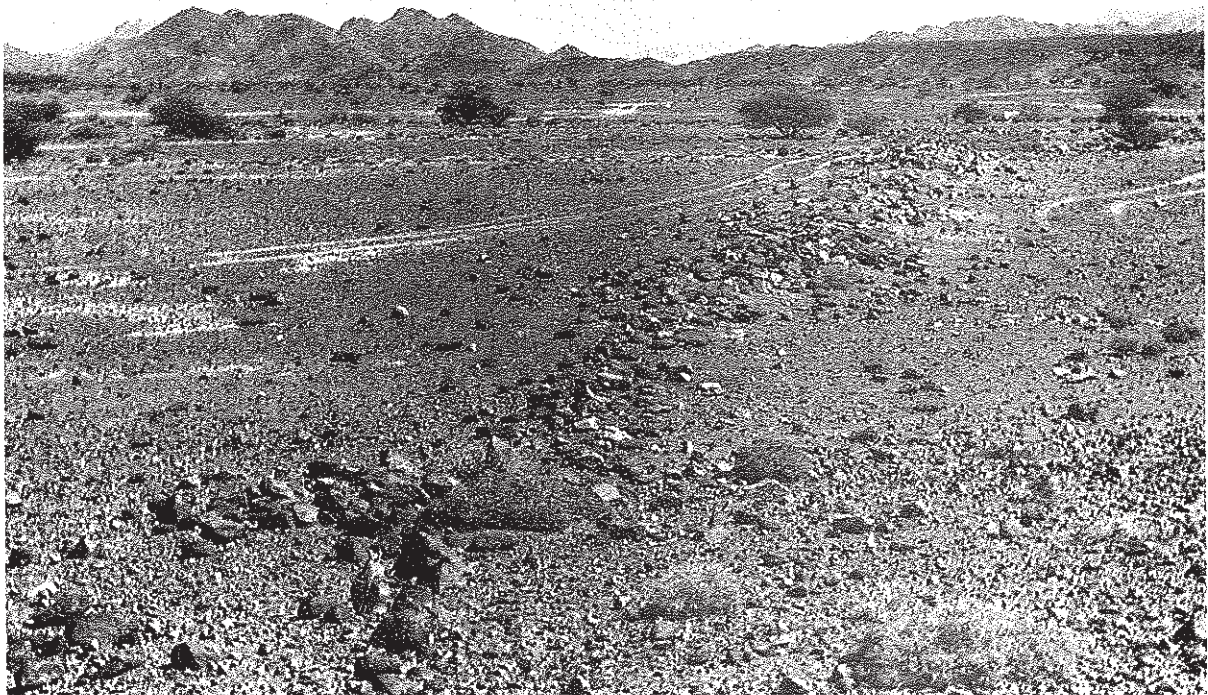


PLATE 3B. *Gabarband at settlement Wadi Samad 4.*



PLATE 4A. *Wadi Samad 5*: left and right: crucible with slag adhering; centre: slag.



PLATE 4B. *Wadi Samad 5*: concentration of slag and crucible sherds on the ground.

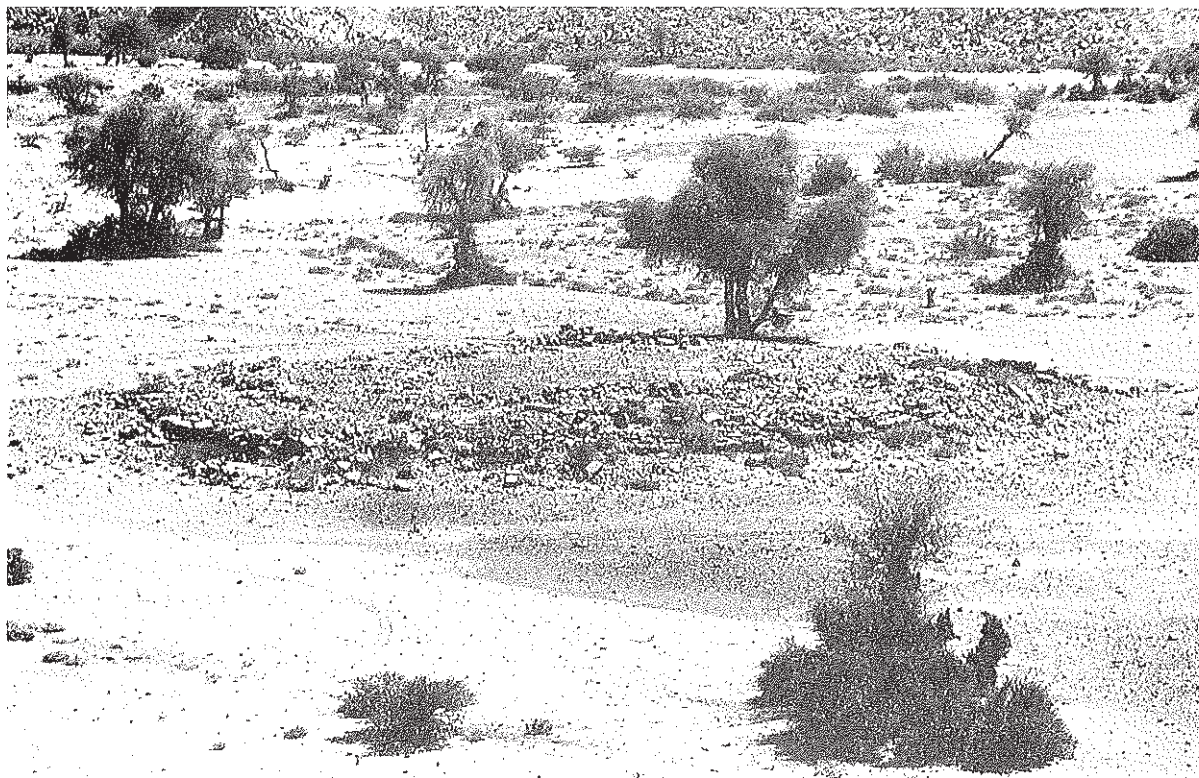


PLATE 5A. *Structure BB-21.*

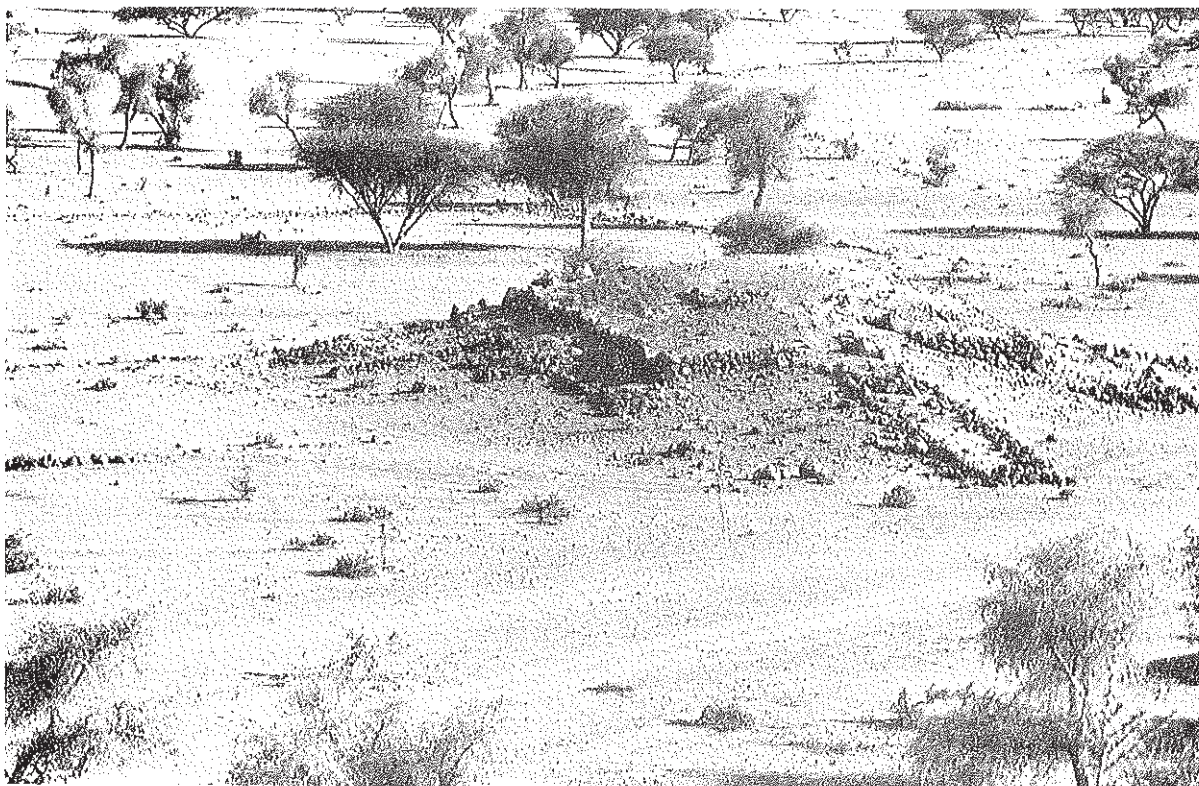


PLATE 5B. *Structure 'Arja.*



PLATE 6A. *Corner of terrace wall of structure at 'Arja.*



PLATE 6B. *View looking up ramp at 'Arja.*

Site: BB 6

Key	Description
A	Very fine orange paste, grey core, two incised lines on the inside of the rim, D. = 32cm.
B	Buff on the outside, orange-buff on the inside, fine orange-buff paste, D. = 32cm.
C	Orange surfaces, fine grey paste, D. = 28cm.
D	Orange surfaces, fine grey paste, D. = 12cm.
E	Black painted bands, possibly red paint on top of the rim, fine red paste, D. = 28cm.
F	Fine reddish-buff paste, D. = 18cm.
G	Fine red paste, D. = 20cm.
H	Fine orange-tan paste, D. = ?.
I	Traces of black paint on the rim, very fine orange-tan paste, D. = 18cm.
J	Fine red paste, D. = ?.
K	Fine tan paste, D. = 14cm.
L	Very fine red paste, thin grey core, D. = 9cm.
M	Orange wash on the outside, red on the inside, very fine tan paste, D. = 14cm.
N	Tan surfaces, fine grey paste, D. = 12cm.
O	Very fine red paste, grey core, two incised lines on the edge of the rim, D. = 18cm.
P	Dark tan on the outside, fine red-orange paste, D. = ?.
Q	Fine red paste, grey core, D. = 30cm.
R	Fine tan paste, grey core, D. = 17.5cm.
S	Black bands painted on fine tan paste, D. = 16cm.
T	Very fine red paste, grey core, D. = 26cm.
U	Red-brown paint on the exterior of the rim, fine brownish-tan paste, D. = 17.5cm.
V	Fine tan paste, D. = 27cm.
W	Black paint or wash on fine red paste, D. = 22cm.
Y	Black bands painted on very fine red paste, possibly red wash on the interior, D. = 24cm.
Z	Fine brown-tan paste, grey core, D. = 20cm.
aa	Orange-tan on the outside, very fine red paste, D. = 24cm.

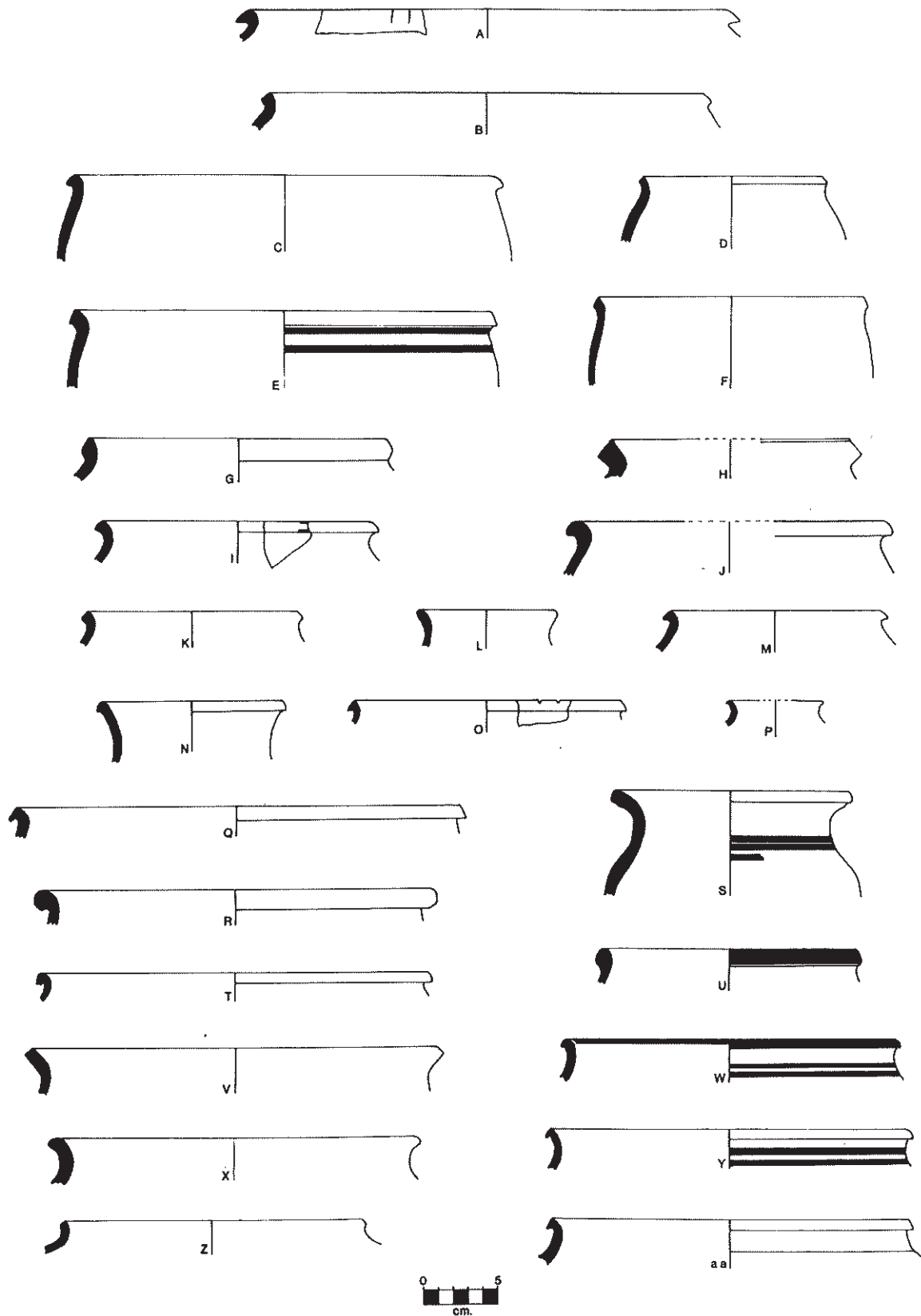


FIG. 9. Pottery from Settlement BB-6.

Sites: BB 6 and Wadi Far 1

Key	Description
BB 6	
A	Fine tan paste, D. = 36cm.
B	Fine gritty orange-tan paste, ?traces of red paint or slip inside and outside, D. = 20cm.
C	Fine tan paste, greyish core, D. = 24cm.
D	Orange exterior, black paint on buff rim surface, fine red paste, grey core, D. = 22cm.
E	Fine tan paste.
F	Fine tan paste, D. = 12cm.
G	Fine tan paste, possibly red paint on top of the raised design.
H	Black painted design on fine buff paste.
I	Spout, fine tan paste.
J	Black painted design on very fine red paste; same ware as Fig. 2 Q.
K	Very fine "grey ware".
L	Dark brown painted design on brown outside surface, reddish-buff inside surface, very fine reddish-buff paste.
M	Very fine red paste, traces of red paint on the inside and outside, D. = 5cm.
N	Fine tan paste, D. = 9cm.
O	Black design painted on reddish-tan surface, fine tan paste.
P	Black design painted on fine tan paste.
Q	Very fine red paste, D. = 13cm.; same ware as No. J.
Wadi Far 1	
aa	Fine orange-tan paste, D. = ?.
bb	Fine red paste, D. = ?.
cc	Fine red paste, thin grey core, D. = ?.
dd	Fine red paste, thin grey core, D. = ?.
ee	Fine buff paste, D. = ?.
ff	Fine red paste, D. = 24cm.
gg	Fine red paste, D. = 18cm.
hh	Fine red paste, D. = ?.
ii	Black band below the rim and traces of black paint on the underside and top part of the rim, fine red paste, D. = 18cm
jj	Fine orange-tan paste, D. = ?.
kk	Fine orange-tan paste, D. = ?.
ll	Fine red paste, D. = ?.
mm	Very fine orange-tan paste, thin grey core, D. = ?.
nn	Black painted design over red paint on the outside, fine red paste, thin sherd.
oo	Fine buff paste, D. = 20cm.
pp	Fine orange-tan paste, D. = 22cm.
qq	Black painted design on fine red paste.
rr	Fine red paste, D. = 16cm.
ss	Fine red-orange paste, D. = 5cm.
tt	Black paint on red paint or slip on the exterior, fine red paste.
uu	Very fine orange-tan paste, grey core, D. = 12cm.; occurs also with D. = 4cm.
vv	Black painted design on fine red paste, grey core.
ww	Gritty orange paste, grey core, D. = ?.

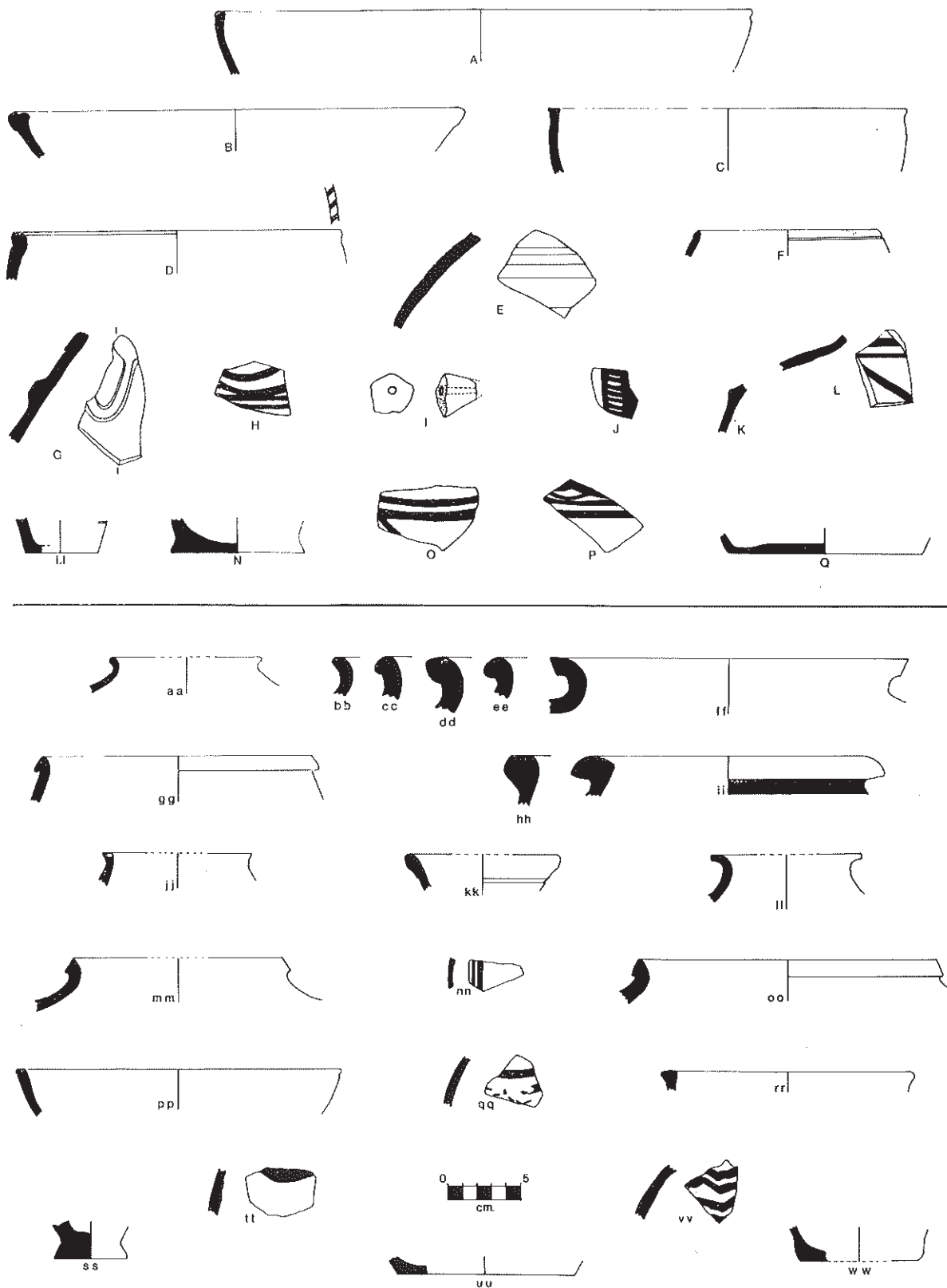


FIG. 10. Pottery from settlement BB-6 (above) and settlement Wadi Far 1 (below).

Site: BB 19

Key	Description
A	Black painted band, traces of red paint on the rim and on the inside, medium fine red-buff paste, D. = 34cm.
B	Red slip on the outside, medium fine red paste, D. = 22cm.
C	Medium fine buff paste, greyish core, D. = 24cm.
D	Tan surfaces, medium fine reddish-buff paste, D. = 15cm.
E	Medium fine reddish-buff paste, saw cuts on the rim, black paint lower down, D. = 24cm.
F	Medium fine buff-brown paste, some fine chaff and grit temper, D. = 20cm.
G	Medium fine reddish-buff paste, D. = 26cm.
H	Medium fine tan paste, D. = 24cm.
I	Fine red paste, D. = 18cm.
J	Yellow-buff ?slip all over, medium fine orange-buff paste, D. = 23cm.
K	Medium fine red paste, D. = 26cm.
L	Buff exterior, medium fine reddish-buff paste, D. = 22cm.
M	Yellow-buff ?slip on the exterior, medium fine reddish-buff paste, D. = 24cm.
N	Medium fine reddish-buff paste, D. = 26cm.
O	Medium buff paste, D. = 24cm.
P	Black design painted on buff ?slip, medium fine tan paste, D. = ?.
Q	Light red slip on the exterior, medium fine reddish-buff paste, D. = ?.
R	Very fine light red paste, lightly burnished, D. = 8cm.; from a cairn.
S	Medium fine tan paste, D. = 16cm.
T	Grey-black painted bands on the inside and outside of the rim, fine red paste, D. = ?.
U	Black design painted on reddish-buff ?slip, medium fine red paste, fine white speckle temper.
V	Fine reddish-buff paste, D. = 16cm.
W	Medium fine tan paste, D. = 5,5cm.
X	Black painted design on buff ?slip, medium fine reddish-brown paste.
Y	Design painted in black fugitive paint on red surface, very fine light red paste; from a cairn.
Z	Black design painted on buff slip, medium fine buff paste.
aa	Fine reddish-buff paste, D. = 10cm.
bb	Reddish-buff exterior ?thick slip, medium fine grey-brown paste, suspension holes through the ring base, D. = 6cm.

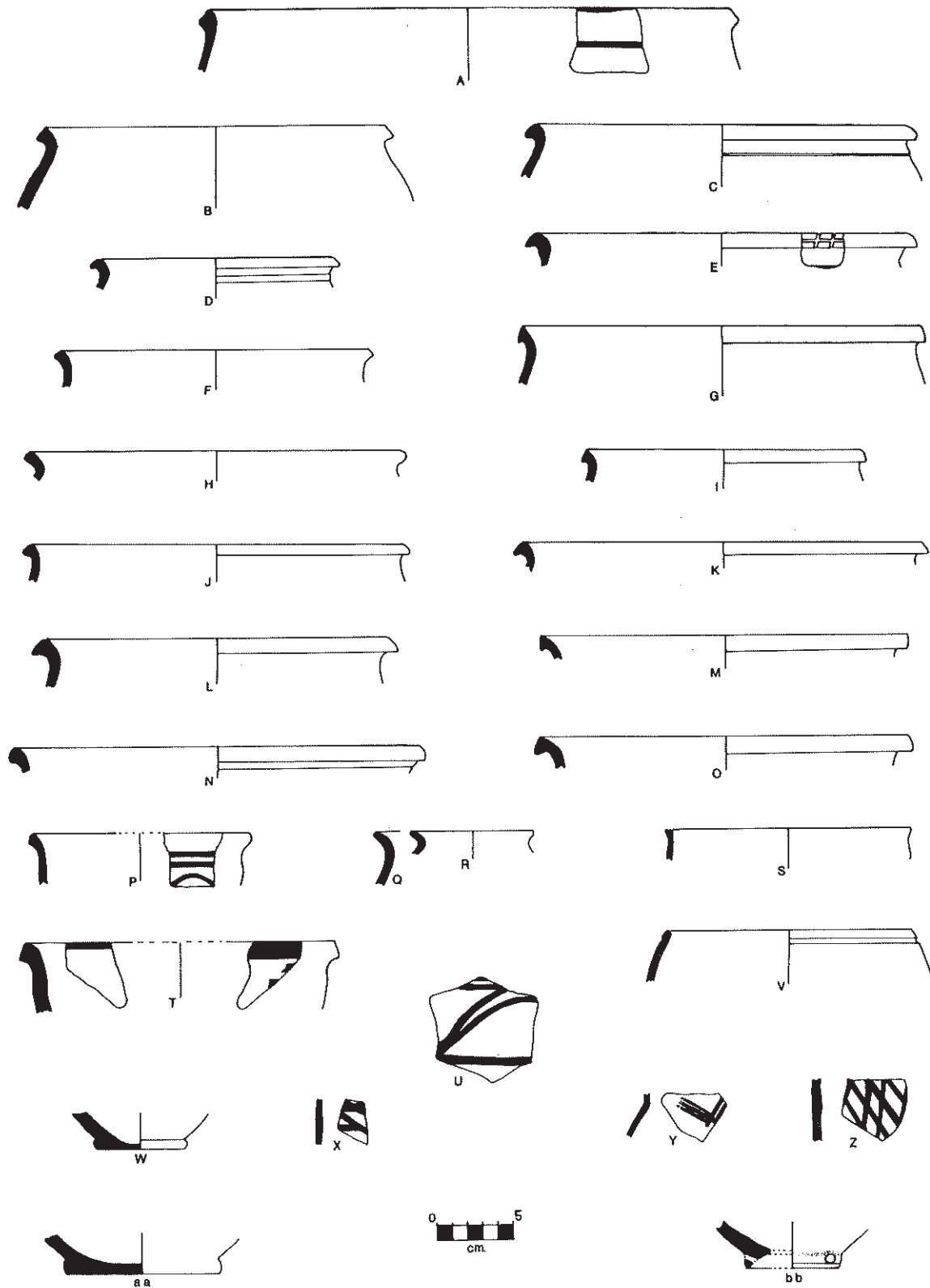


FIG. 11. Pottery from settlement BB-19.

Sites: BB 22 and Samad 5

Key	Description
BB 22	
A	Medium buff paste, grit temper heavier and a little coarser than ordinary, also larger vessel, D. = 32cm.
B	Medium buff paste, heavier and rather coarser ware than similar vessels of the Third Millennium B.C., D. = 26cm.
C	Paste not recorded, D. = 30cm.
D	Light brown exterior, medium fine brown paste, D. = 35cm.
E	Black band painted on buff slip, medium fine light red paste, D. = ?.
F	Traces of black bands on the outside, paste not recorded, D. = 21cm.
G	Buff slip, medium fine red paste, D. = 18cm.
H	Paste not recorded, D. = 18cm.
I	Medium fine grey-red paste, D. = 28cm.
J	Medium fine red-buff paste, D. = 24cm.
K	Medium fine red paste, D. = 28cm.
L	Medium fine red-buff paste, raised undulating band "snake motif".
M	Paste not recorded, D. = 36cm.
N	Red paint on interior and exterior, black bands on the exterior, very fine red paste.
O	Medium fine red paste, D. = 8cm.
P	Medium buff paste, chaff and grit temper, D. = 18cm.
Q	Black painted design, paste not recorded.
Samad 5	
aa	Fine gritty orange-tan paste, D. = 28cm.
bb	Fine red paste, traces of brown wash or paint on the exterior and interior surfaces, D. = 24cm.
cc	Lug, fine buff paste, traces of red paint or slip on the outside.
dd	Very fine red paste, D. = 18cm.
ee	Black design painted on orange-tan surface, very fine grey paste, orange-tan inside surface, D. = 16cm.
ff	Black design painted on fine orange-tan paste.

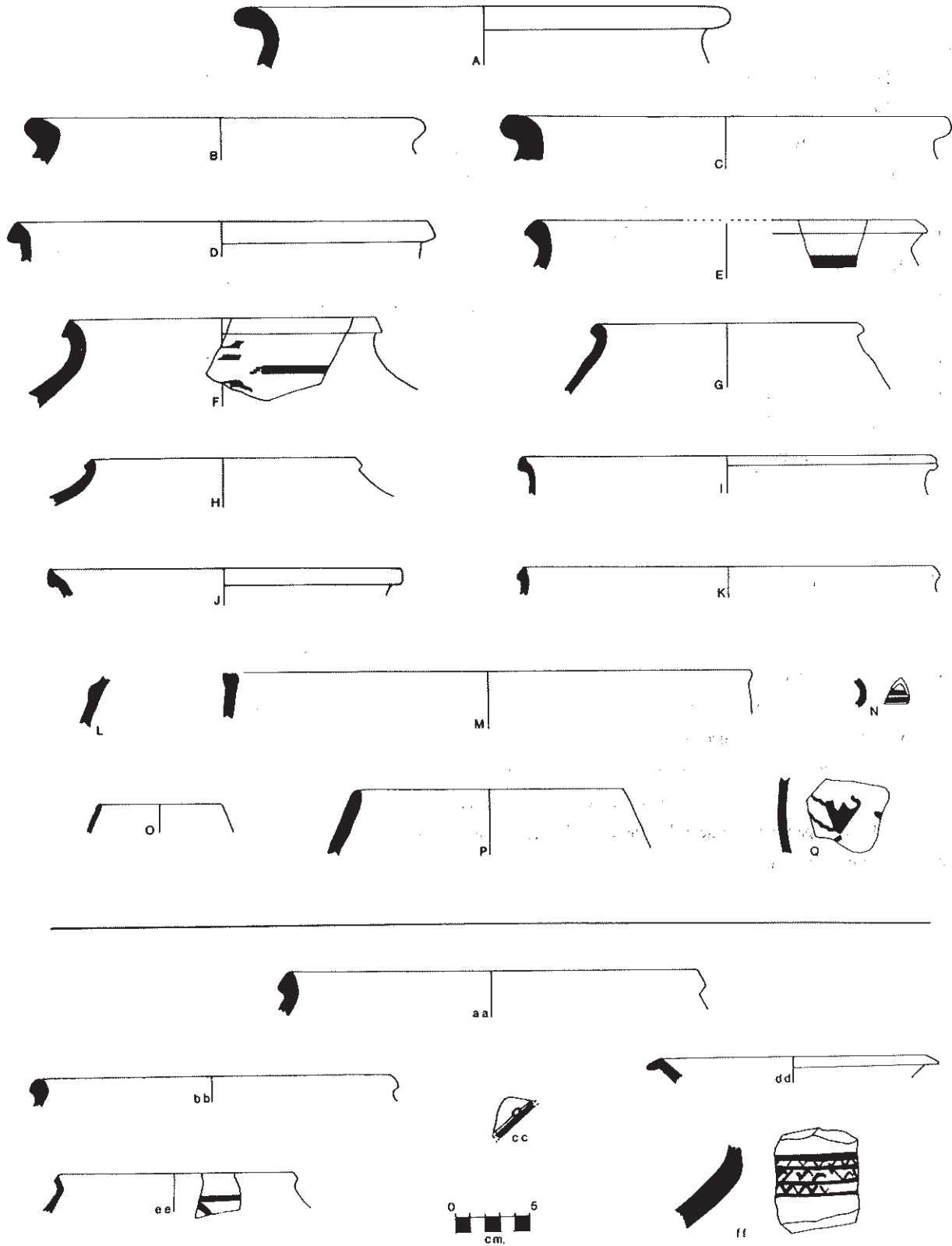


FIG. 12. Pottery from settlement BB-22 (above), and Wadi Samad 5 (below).

Site: Samad 5

Key	Description
A	Medium fine reddish-buff paste, fine chaff and grit temper, D. = 28cm.
B	Black design painted on buff exterior, medium fine reddish-buff paste, D. = 22cm.
C	Light tan paste, grey core, thumb impressed decoration, D. = 26cm.
D	Black bands painted on whitish-buff exterior, fine buff paste, D. = 22cm.
E	Red-brown wash all over, black painted bands, fine tan paste, D. = 26cm.
F	Buff exterior, fine reddish-buff paste, D. = 26cm.
G	Buff exterior, light tan paste, D. = 28cm.
H	Black bands painted on grey-buff exterior, light reddish-grey paste, D. = 26cm.
I	Medium fine tan paste, grey core, D. = 28cm.
J	Red exterior, fine reddish-buff paste, D. = 25cm.
K	Black bands painted on red-brown surface, very fine grey paste, D. = 26cm.
L	Paste not recorded, D. = 24cm.
M	Fine red paste, grey core, D. = 32cm.
N	Medium buff paste, D. = 30cm.
O	Medium fine buff paste, grey core, D. = 30cm.
P	Black bands painted on buff exterior, fine reddish-buff paste, D. = 14cm.
Q	Black band painted on buff exterior, fine red paste, D. = 16cm.
R	Very fine grey paste, D. = 14cm.
S	Very fine red paste, D. = 7cm.
T	Reddish-buff exterior, fine red paste, grey core, D. = 12cm.
U	Reddish-buff exterior, medium fine reddish-grey paste, grey core, incision on top part of the rim, D. = ?.
V	Medium fine red paste, grey core, D. = ?.
W	Very fine light red paste, flaky, grey core, D. = 4cm.
X	Black design painted on red-brown exterior, fine tan paste.
Y	Black bands painted on fine red paste, curved "snake" raised band.
Z	Paste not recorded.

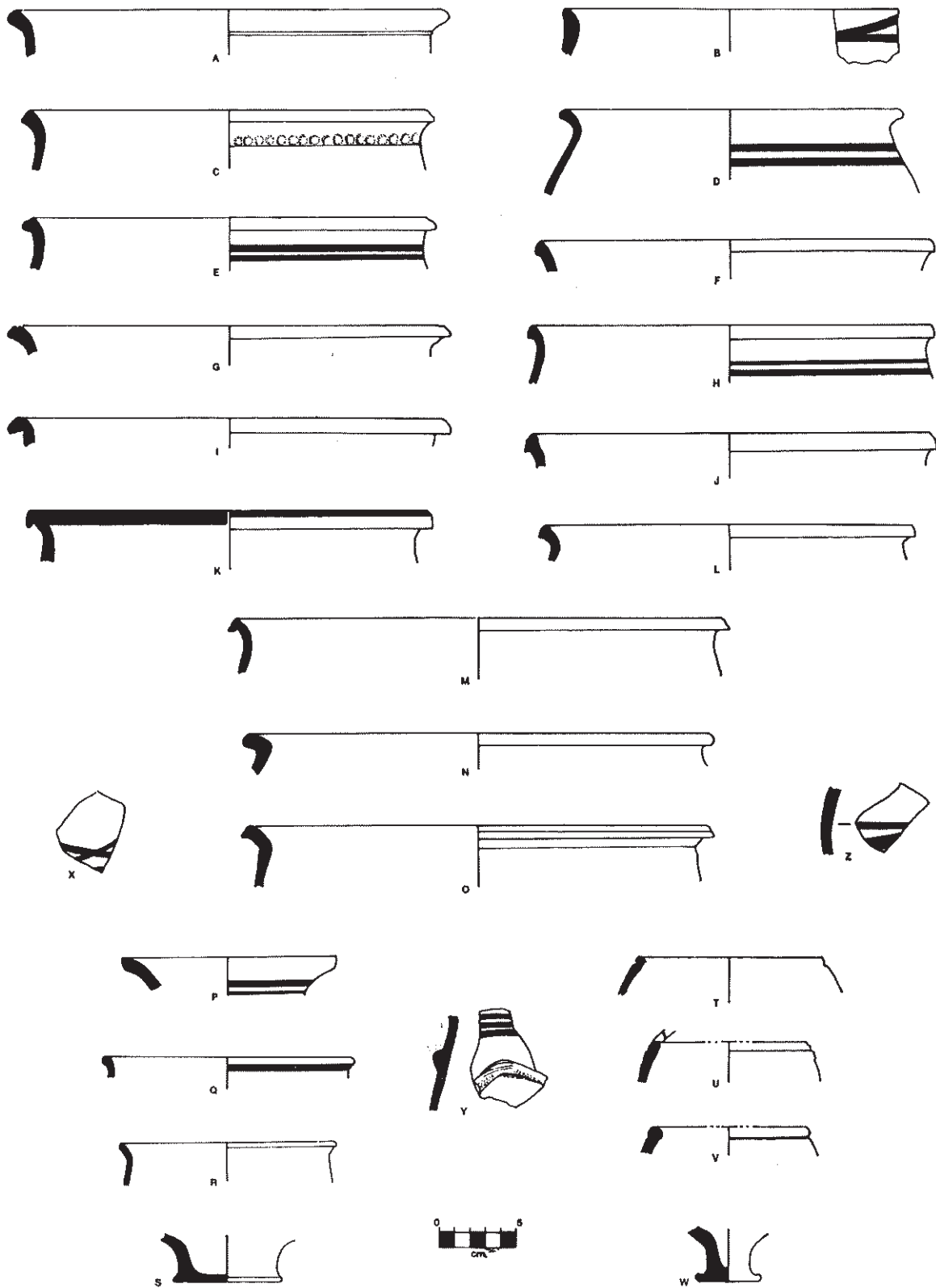


FIG. 13. Pottery from settlement Wadi Samad 5.

Site: Samad 4

Key	Description
A	Medium fine red paste, D. = 36cm.
B	Medium fine red paste, D. = 24cm.; also occurs in coarse red paste with large red inclusions, D. = 20cm.; same ware Key J.
C	Medium fine red paste, D. = 32cm.; also occurs with D. = 24cm.
D	Gritty red paste, D. = 26cm.; also occurs in fine red paste.
E	Traces of brown band painted on red exterior, medium fine red paste, D. = 22cm.
F	Fine red paste, D. = 24cm.
G	Medium fine red paste, D. = 20cm.
H	Brown band painted on medium fine buff paste, D. = 22cm.; also occurs at Ithli 4 in medium fine red paste, without painted bands.
I	Medium fine red paste, D. = 24cm.
J	Coarse red paste, large red inclusions, D. = 20cm.
K	Fine red paste.
L	Medium fine red paste, D. = 22cm.
M	Black bands painted on fine red paste, D. = 21cm.; also occurs with a D. = 24cm. and at Ithli 4 without the painted bands.
N	Red paste with large black inclusions.
O	Medium fine red paste, traces of brown paint above the ridge.
P	Medium fine red paste with small black inclusions.
Q	Coarse buff paste, D. = 20cm.
R	Medium fine red paste, D. = 22cm.
S	Medium fine reddish-brown paste, D. = 16cm.
T	Medium fine red paste, D. = 16cm.
U	Medium fine red paste, D. = 18cm.
V	Paste not recorded, D. = ?.
W	Traces of brown bands painted on medium fine red paste, D. = ?.
X	Gritty red paste, D. = 18 cm.; occurs also in fine red paste.
Y	Coarse red paste, D. = 18cm.
Z	Brown bands painted on fine red paste, thickness = 7cm.
aa	Medium fine red paste, D. = ?.
bb	Medium fine reddish-buff paste, D. = 18cm.
cc	Fine red paste, D. = 6cm.
dd	Medium fine red paste, D. = 24cm.
ee	Fine red paste, D. = 4cm.
ff	Very fine red paste, D. = 6cm.
gg	Very fine red paste, traces of red paint on the outside, D. = 6cm.; occurs also in same paste same diameter without the red paint.

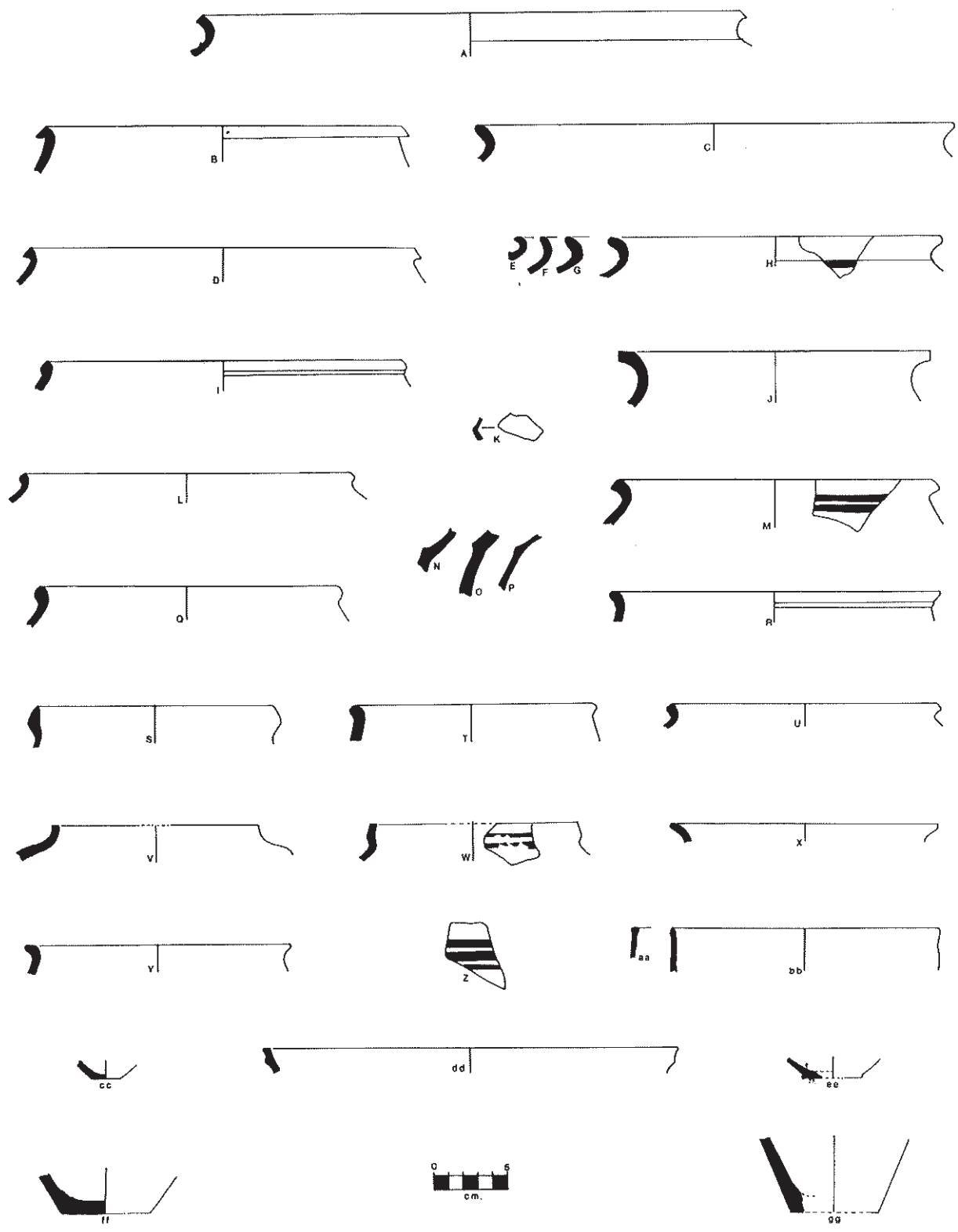


FIG. 14. Pottery from Wadi Samad 4.

Site: Andam 1

Key	Description
A	Paste not recorded, D. = 30cm.
B	Medium fine red paste, D. = 26 cm.; occurs also with D. = 22cm., and at Ithli 4.
C	Very fine red paste, D. = 26cm.
D	Brown bands painted on buff ?slip, very fine red paste, D. = 14 cm.
E	Black-brown band painted on buff ?slip, very fine red paste, D. = ?.
F	Trace of brown band painted on very fine red paste, D. = 18cm.
G	Medium fine red paste, D. = ?.
H	Medium fine red paste, D. = 16 cm.
I	Fine red paste, D. = ?.
J	Medium fine red paste, D. = 18cm.
K	Fine red paste, D. = 22cm.; occurs also at Ithli 4.
L	Fine red paste, D. = ?; occurs also at Ithli 4.
M	Fine red paste, D. = 18cm.
N	Orange-tan surfaces, fine grey paste, D. = 28cm.
O	Medium fine red paste, D. = 24cm.; occurs also in finer red paste and the same diameter, and at Ithli 4.
P	Traces of brown paint on the outside, very fine red paste, D. = ?.
Q	Fine red paste, D. = 18cm.; occurs also with D. = 20cm., D. = 24cm., D. = 26cm. and at Ithli 4.
R	Medium fine red-orange paste, D. = 24cm.; occurs also at Ithli 4.
S	Medium fine red paste, D. = 26cm.
T	Medium fine red paste, D. = 22cm.; occurs also at Ithli 4.
U	Very fine red paste, D. = 20cm.
V	Fine red paste, thin black core, D. = 26 cm.
W	Medium fine red paste, D. = ?.
X	Medium fine red paste, D. = 24cm.
Y	Fine red paste, grey core, D. = ?.
Z	Rather coarse red paste, D. = 22cm.
aa	Medium fine red paste, D. = 26cm.; occurs also in fine red paste, same diameter, thinner walls, and occurs at Ithli 4.
bb	Gritty buff paste, D. = 24cm.
cc	Medium fine red paste, D. = 26cm.; occurs also at Ithli 4 in buff paste.
dd	Medium fine buff paste, D. = ?.
ce	Medium fine red paste, D. = 20cm.; occurs also at Ithli 4.
ff	Fine red paste, D. = ?.
gg	Fine red paste, D. = ?.
hh	Slightly coarse red paste, D. = 14cm.; occurs also with thicker walls and D. = 18cm. and at Ithli 4.
ii	Fine red paste, D. = 10cm.; occurs also at Ithli 4 and at Andam 28 in fine orange-tan paste and the same diameter.
jj	Fine red paste, D. = 14cm.
kk	Medium fine red paste, small uneven and shallow depressions on the ridge.
ll	Medium fine red paste, incisions on the ridge.
mm	Medium fine red paste, deep incisions on the ridge.
nn	Brown design painted on medium fine buff paste.
oo	Medium fine red paste, D. = 6cm.
pp	Fine red paste, D. = 8cm.
qq	Medium fine red paste, D. = 16cm.; occurs also with D. = 10cm. and D. = 14cm.

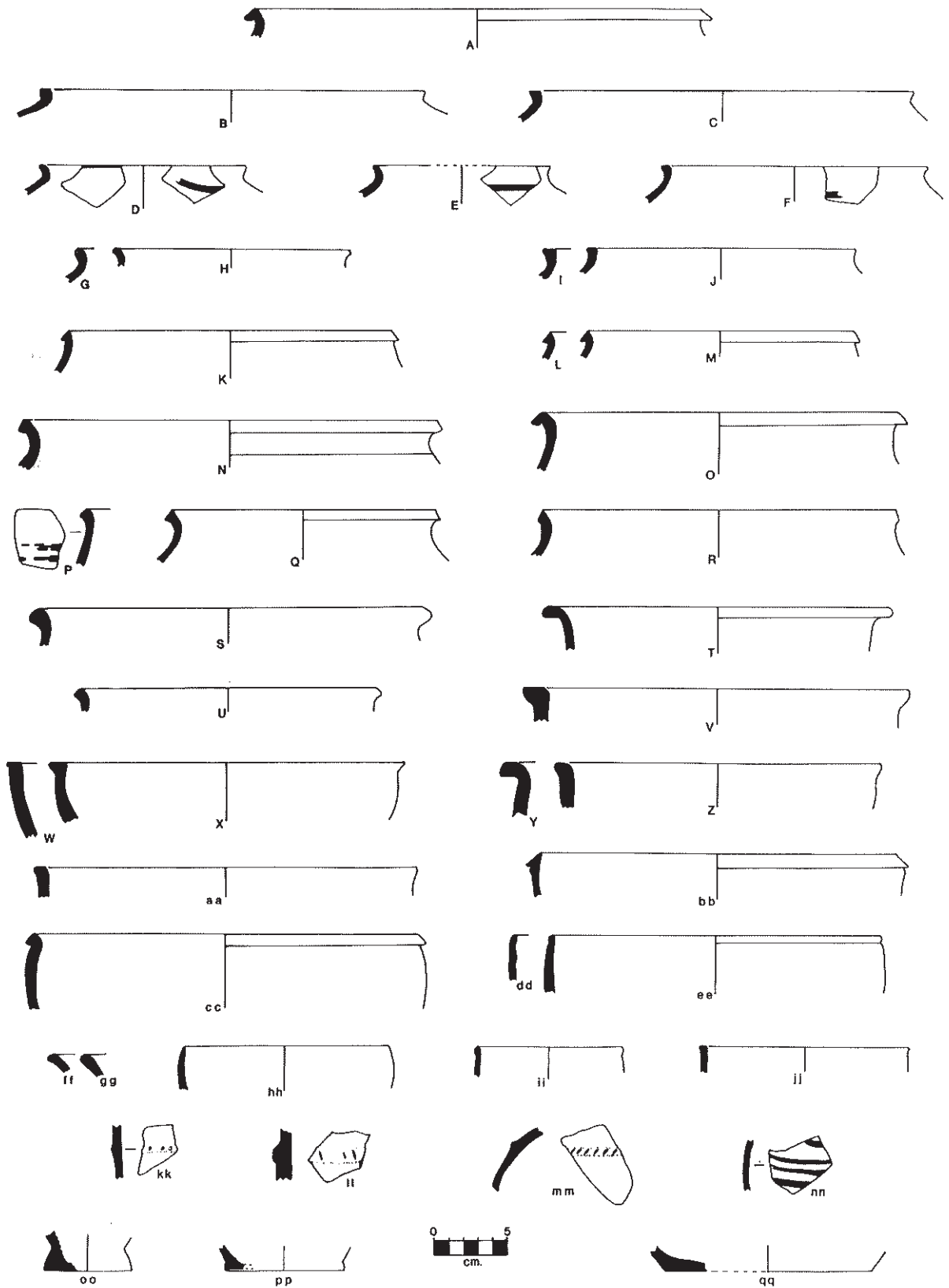


FIG. 15. Pottery from settlement Wadi Andam 1.

Site: Batin 1 and Andam 28

Key	Description
Batin 1	
A	Fine red-orange paste, D. = 30cm.
B	Fine red paste, D. = 18cm.
C	Fine gritty orange-tan paste, D. = 16cm.
D	Very fine red-orange paste, grey core, D. = 10cm.
E	Very fine orange-red paste, D. = 16cm.; occurs also with D. = 20cm.
F	Traces of brown-black band painted on fine red paste, D. = 10cm.
G	Red surfaces, fine grey core, D. = 8cm.
H	Fine red paste, D. = 16cm.
I	Gritty orange-tan paste, D. 14cm.; occurs also with D. = 18cm. and D. = 12cm.
J	Medium fine red paste, D. = 14cm.
K	Red-orange surfaces, fine grey paste, uneven dents on the ridge.
L	Medium fine red paste, D. = 16cm.
M	Black design painted on fine red paste.
N	Fine red-orange paste, D. = 26 cm.
O	Red surfaces, fine grey paste, fine grooves on the outside.
P	Red surfaces, black bands painted on the outside, fine grey paste.
Q	Fine orange-tan paste, D. = 18cm.
R	Brown bands painted on buff ?slip, red inside surface, very fine grey paste.
S	Fine gritty red paste, grey core, traces of red paint or slip on the inside surface, D. = 4cm.
T	Very fine red paste, grey core, base and walls are of uneven thickness, D. = 5cm.
U	Fine yellowish-buff paste, D. = 6cm.
Andam 28	
aa	Paste unrecorded, D. = 34cm.
bb	Paste unrecorded, D. = 35cm.
cc	Paste unrecorded, D. = 28cm.
dd	Fine buff-orange paste, D. = ?.
ee	Black design painted on outside, paste unrecorded, D. = 32cm.

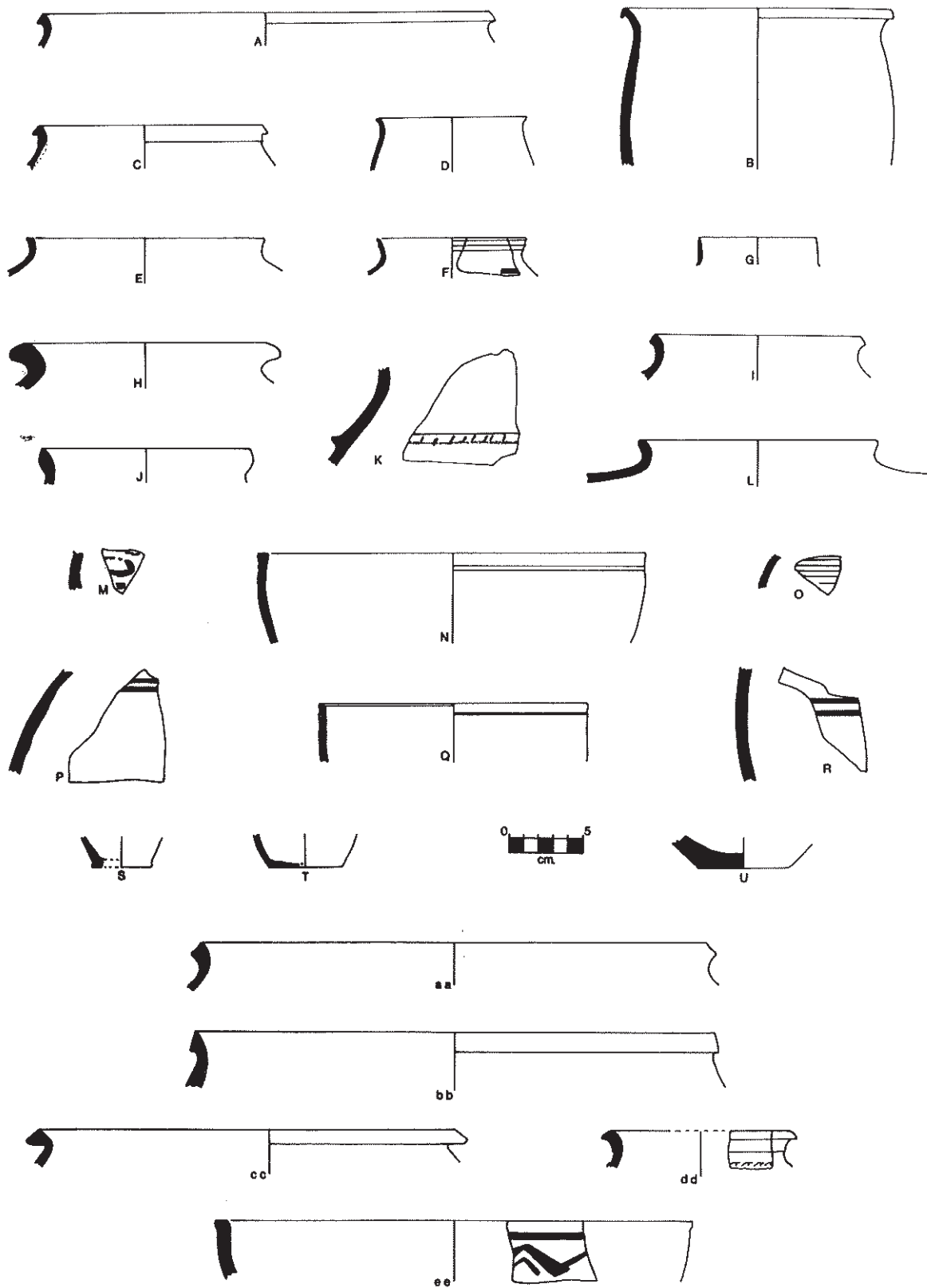


FIG. 16. Pottery from settlements Batin 1 (A to U) and Wadi Andam 28 (aa to ee).

Site: Andam 28

Key	Description
A	Tan paste, light grey core, D. = 48cm.
B	Dark tan surfaces, thick grey core, possibly black band on rim, D. = 19cm.
C	Tan paste, grey core, brown band painted inside the rim, D. = 30cm.
D	Tan surfaces, tan-brown paste, traces of black band painted inside the rim, D. = 29cm.
E	Black design painted on tan exterior, tan-red paste, greyish core, D. = 29cm.
F	Brownish wash or slip on the outside, gritty orange-tan paste, grey core D. = 18cm.
G	Dark tan surfaces, black band on the inside of the rim, tan paste, D. = 32cm.
H	Spouted vessel: dark tan exterior, tan-grey paste, spout applied with fingers and smoothed on to the formed vessel, D. = 27cm.; same shape as Key I.
I	Exterior surface covered with black wash, interior surface light tan, dark tan paste, D. = 32cm.
J	Fine red paste, D. = 18cm.
K	Fine buff paste, D. = ?.
L	Fine orange paste, D. = ?.
M	Fine orange-tan paste, D. = ?.
N	Fine orange-tan paste, D. = 24cm.
O	Fine tan paste, slightly grey core, D. = 19cm.
P	Gritty buff paste, D. = ?.
Q	Gritty buff paste, D. = ?.
R	Gritty orange-tan paste, D. = ?.
S	Gritty orange-tan paste, D. = 24cm.
T	Tan paste, greyish core, D. = 30cm.; occurs also in a finer paste, thinner walls and a D. = 40 cm.
U	Black design painted on grey-buff wash on the exterior, tan interior surface, dark tan paste, D. = 29cm.; occurs also in the same paste with light tan surfaces, D. = 38cm.
V	Brown-black band painted on light tan surface, fine tan-brown paste, light grey core, D. = 25cm.
W	Tan surfaces, brown-red paste, grey core, traces of black band on inside of the rim, D. = 46cm.
Y	Fine tan paste, ridge with diagonal cuts.
Z	Tan paste, unevenly made base, D. = 4cm.
aa	Tan exterior, red-tan paste, greyish core, D. = 8cm.
bb	Fine red-tan paste, grey core, possibly traces of black design on the exterior, D. = 5,5cm.
cc	Black design painted on tan surface, fine grey core and grey interior surface, thickness = 3cm.
dd	Tan surfaces, black painted design on outside, tan-red paste, slight grey core, thickness = 8cm.
ee	Black design painted on light tan surface, fine light tan paste, thickness = 4cm.
ff	Lug, tan paste.
gg	Black design painted on light tan, fine paste.
hh	Black design painted on light tan ?wash, fine tan paste.

NOTE: Sec Pottery Fig. 7, Andam 1 Key ii and Pottery Fig. 13, Ibra 2 Key B.

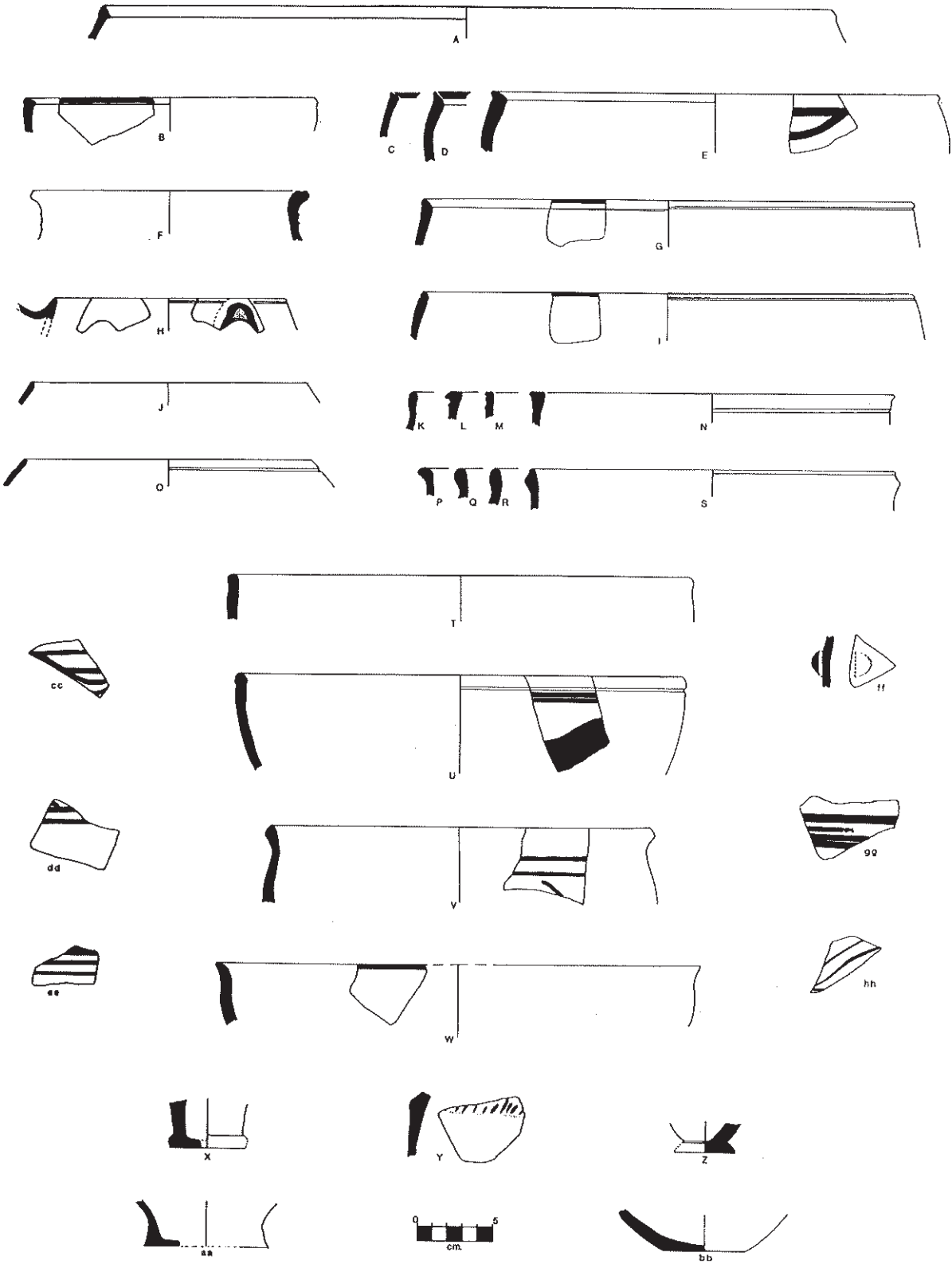


FIG. 17. Pottery from settlement Wadi Andam 28.

Site: Andam 28

Key	Description
A	Tan paste, grey core, smoothing marks on the outside and the inside, D. = 25cm.
B	Fine buff paste, D. = ?.
C	Brown bands painted on fine buff paste, grey core, orange-tan on the inside, D. = 28cm.; occurs also in very fine red paste with thin grey core.
D	Brown band painted on orange-tan outside surface, grey core, red inside surface, D. = 20cm.
E	Fine orange-tan paste, D. = 24cm.
F	Fine orange-tan paste, D. = 26cm.
G	Tan exterior, brick-red paste, grey core, four incisions across the top of the rim, brown band painted on the inside, D. = 24cm.
H	Fine buff paste, D. = 20cm.
I	Fine orange-tan paste, D. = 20cm.
J	Fine buff paste, grey core, D. = 28cm.
K	Black-brown band painted on fine orange-tan paste, D. = ?.
L	Fine orange-tan paste, D. = 14cm.
M	Buff-orange paste, D. = 20cm.
N	Fine red paste, D. = 14cm.
O	Black design painted on tan paste, light grey core.
P	Brown design painted on tan-buff surface, fine grey paste, interior surface grey and poorly smoothed, D. = 18cm.
Q	Black band painted on tan surfaces, fine tan paste, grey core, D. = 24cm.
R	Black band painted on tan-brown paste, D. = 30cm.
S	Fine orange-tan paste, D. = 24cm.
T	Gritty orange-tan paste, brownish ?slip on the outside, grey core, D. = 18cm.
U	Fine red paste, D. = ?.
V	Dark orange-tan paste, grey core, D. = 16cm.
W	Very fine red paste, D. = ?; occurs also with brown ?slip on outside of rim.
Y	Dark brown surfaces, orange-tan paste, D. = 16cm.
Z	Fine red paste, slight grey core, D. = 12 cm.
aa	Black design painted on tan outside surface, greyish interior surface, fine tan paste.
bb	Black design painted on brown outside surface, brown paste, grey core and interior surface.
cc	Black design painted on tan outside surface, tan-brown interior surface, fine grey paste.
dd	Black design painted on fine tan-red paste, grey interior surface.
ee	Black design painted on fine tan-red paste.

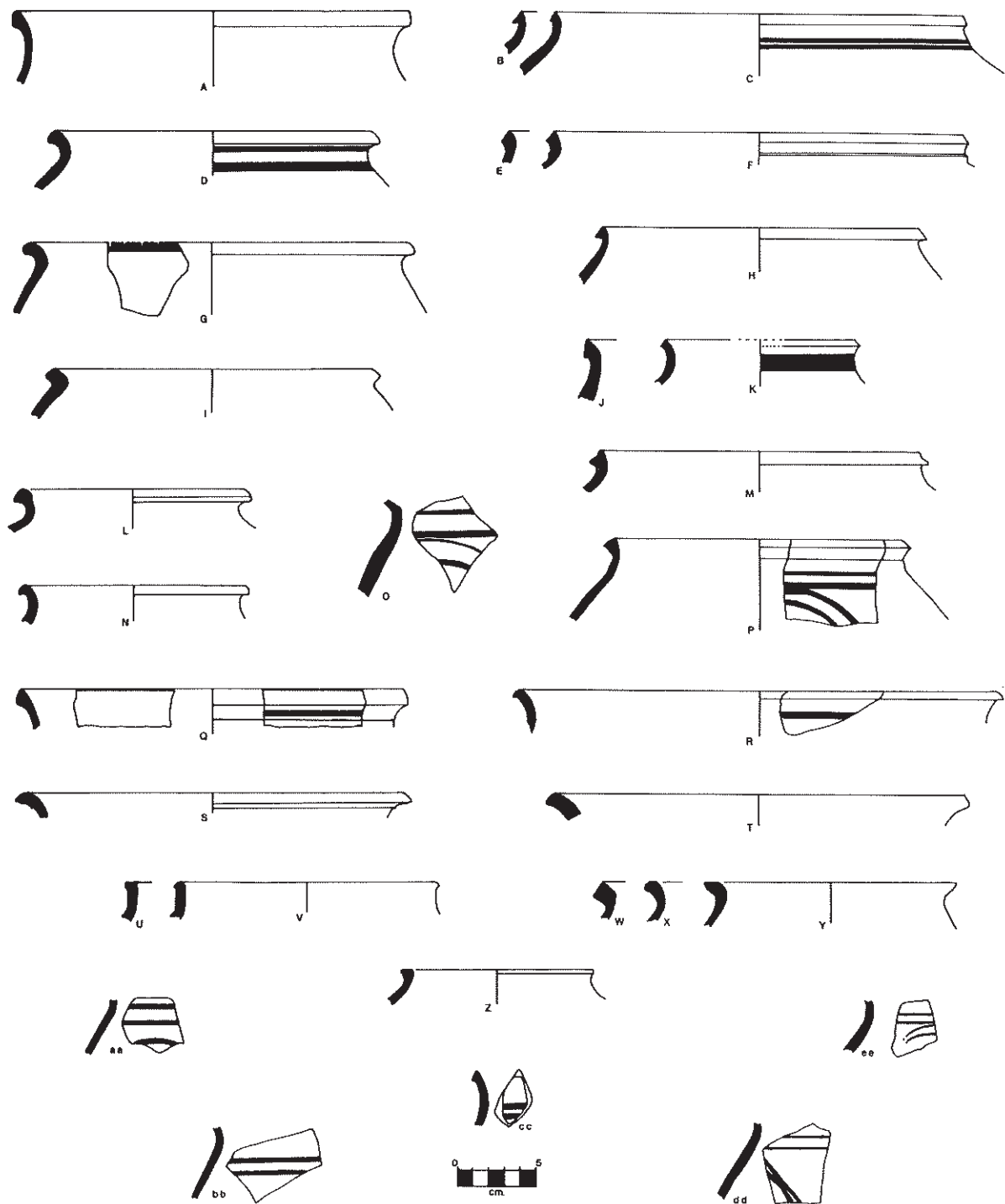


FIG. 18. Pottery from settlement Wadi Andam 28.

Sites: Tawi Hulays I and Andam 16

Key

Description

Tawi Hulays

- A Orange-tan paste, rather grittier than ordinary for Third Millennium pottery, D. = 30cm.
- B Orange-tan paste, same as Key A, D. = 20cm.
- C Fine red paste, D. = 10cm.
- D Very gritty dark brown paste, D. = 10cm.
- E Very fine red-orange paste, black core, D. = 16cm.
- F Medium fine orange-tan paste, D. = 18cm.
- G Traces of brown-orange ?slip on inside and outside surfaces, grey paste, D. = 10cm.
- H Gritty orange paste, thin grey core, D. = 16cm.
- I Fine orange-tan paste, D. = 18cm.
- J Reddish-brown design painted on gritty red paste, D. = 7cm.
- K Orange-tan surfaces, fine grey paste, D. = 16cm.
- L Fine red paste, grey core, D. = 10cm.
- M Orange-tan paste, D. = 12cm.
- N Black band on fine orange-tan paste, D. = 8cm.
- O Traces of brown ?slip on the outside, dark red ?paint on the inside, medium fine red paste, D. = 10cm.
- P Gritty orange-tan paste, D. = 22cm.
- Q Dark brown bands painted on very fine red paste, grey core, D. = 6cm.
- R Grey-orange surfaces, black design painted on the outside, grey-orange paste.
- S Orange ?slip on the inside and the outside, black-brown paint on the outside, red paste.
- T Traces of red ?slip on the outside and the inside, dark brown paint on the outside, orange-tan paste.
- U Brown-black design painted on buff ?slip on the outside, fine red paste.
- V Black design painted on buff ?slip on the outside, red inside surface and paste.
- W Black design painted on buff ?slip on the outside, buff paste.
- X Fine reddish-orange paste, grey core, D. = 6cm.
- Y Gritty medium fine orange-tan paste, incisions on the top of the ridge.
- Z Fine orange-tan paste, D. = 8cm.

Andam 16

- aa Paste not recorded, D. = 24cm.
- bb Fine orange-tan paste, D. = 21cm.
- cc Very fine orange-tan paste, D. = 24cm.
- dd Very fine orange-tan paste, D. = 20cm.
- ce Orange-tan surfaces, very fine grey paste, D. = ?.
- ff Very fine orange-tan paste, D. = 20cm.
- gg Fine orange-tan paste, D. = 16cm.
- hh Very fine orange-tan paste, D. = 10cm.
- ii Fine orange-tan paste, D. = 14cm.

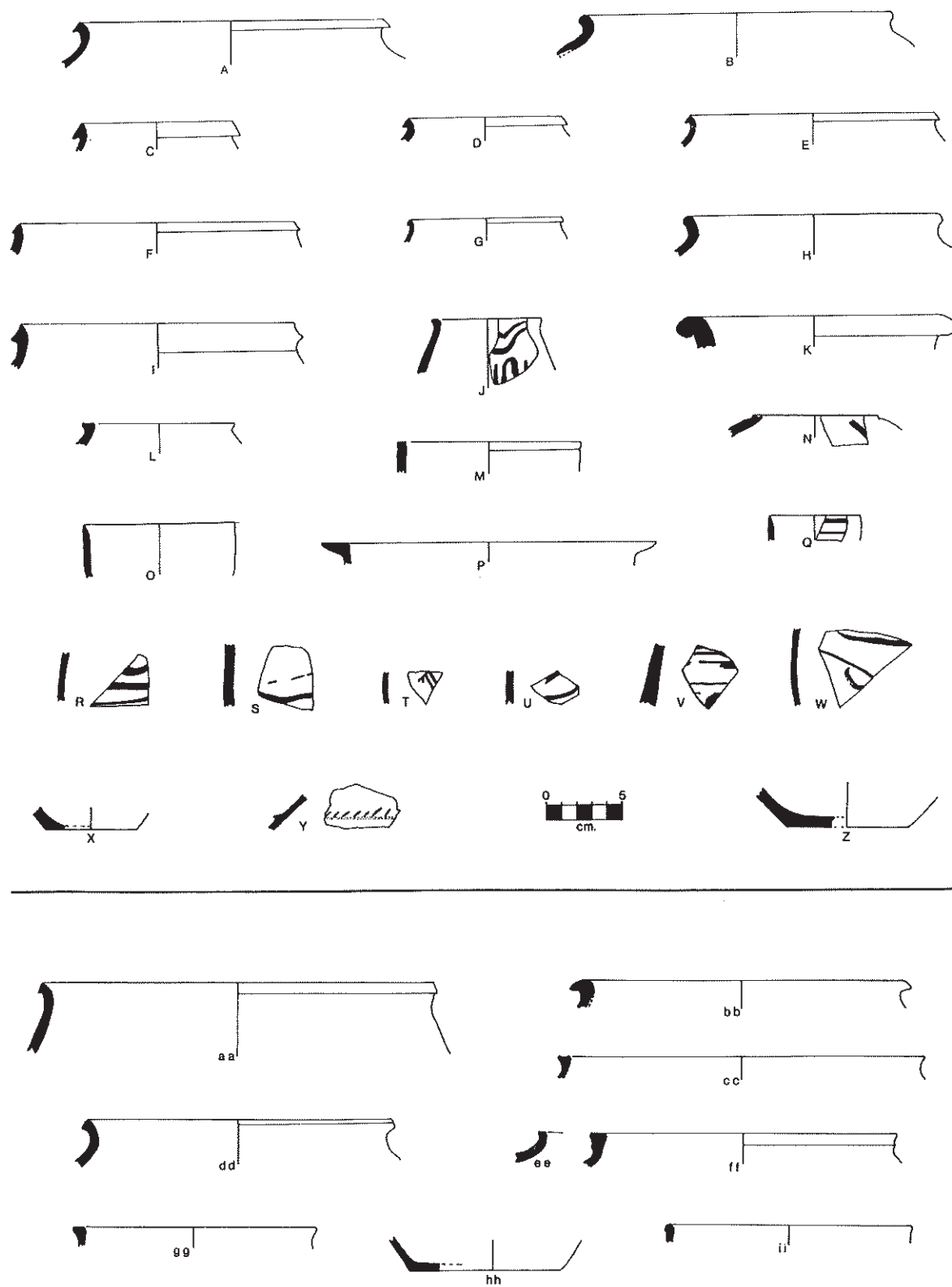


FIG. 19. Pottery from settlement Tawi Hulays 1 (above), and from settlement Wadi Andam 16 (below).

Site: Ithli 4

Key	Description
A	Fine red paste, thin grey core, D. = 24cm.
B	Orange-tan surfaces, fine grey paste, D. = ?.
C	Fine red paste, D. = 20cm.; occurs also in gritty red paste.
D	Very fine red paste, D. = 22 cm.
E	Fine red paste, D. = 18cm.
F	Fine red paste, medium size inclusions, D. = 22cm.
G	Very fine red paste, D. = ?.
H	Very fine orange-tan paste, D. = 12cm.
I	Fine red paste, D. = 18cm.
J	Fine red paste, D. = 26cm.
K	Gritty red-orange paste, D. = 22cm.
L	Orange-tan surfaces, reddish-tan paste, D. = 16cm.
M	Medium fine red paste, D. = ?.
N	Fine buff paste, D. = 20cm.
O	Orange-tan surfaces, gritty greyish paste, D. = 10cm.
P	Very fine red paste, D. = ?.
Q	Gritty buff paste, D. = 10cm.
R	Medium fine red paste, incisions on the inside of the rim, D. = 19cm.
S	Fine red paste, traces of black paint on the flat part of the rim and on the interior surface, D. = 12cm.
T	Very fine red paste, D. = 10cm.
U	Very fine red paste, D. = 18cm.
V	Gritty orange-tan paste, D. = 10cm.
W	Very fine red paste, flaky on the inside, traces of red paint on the outside, possibly "grave ware"; also four other thin sherds of the same paste.
X	Very fine red paste, D. = ?.
Y	Orange-tan surfaces, fine grey paste, D. = ?.
Z	Fine red paste, D. = 8cm.; occurs also with D. = 12cm.
aa	Very fine orange-tan paste, D. = 8cm.
bb	Gritty red paste, D. = 12cm.
cc	Fine red paste, D. = 2cm.
dd	Fine red paste, D. = 10cm.; occurs also in gritty orange-tan paste and in fine red paste with a grey core.
ee	Orange-tan outside, light tan inside, fine grey paste.
ff	Gritty red paste, suspension hole in footed base, D. = 8cm.
gg	Brown paint on fine red paste.
hh	Very fine red paste, D. = 6cm.

NOTE: See Pottery Fig. 7, Andam 1, Key B, K, L, Q, R, T, aa, cc, ee, hh, ii. See Pottery Fig. 6 Samad 4, Key H and M.

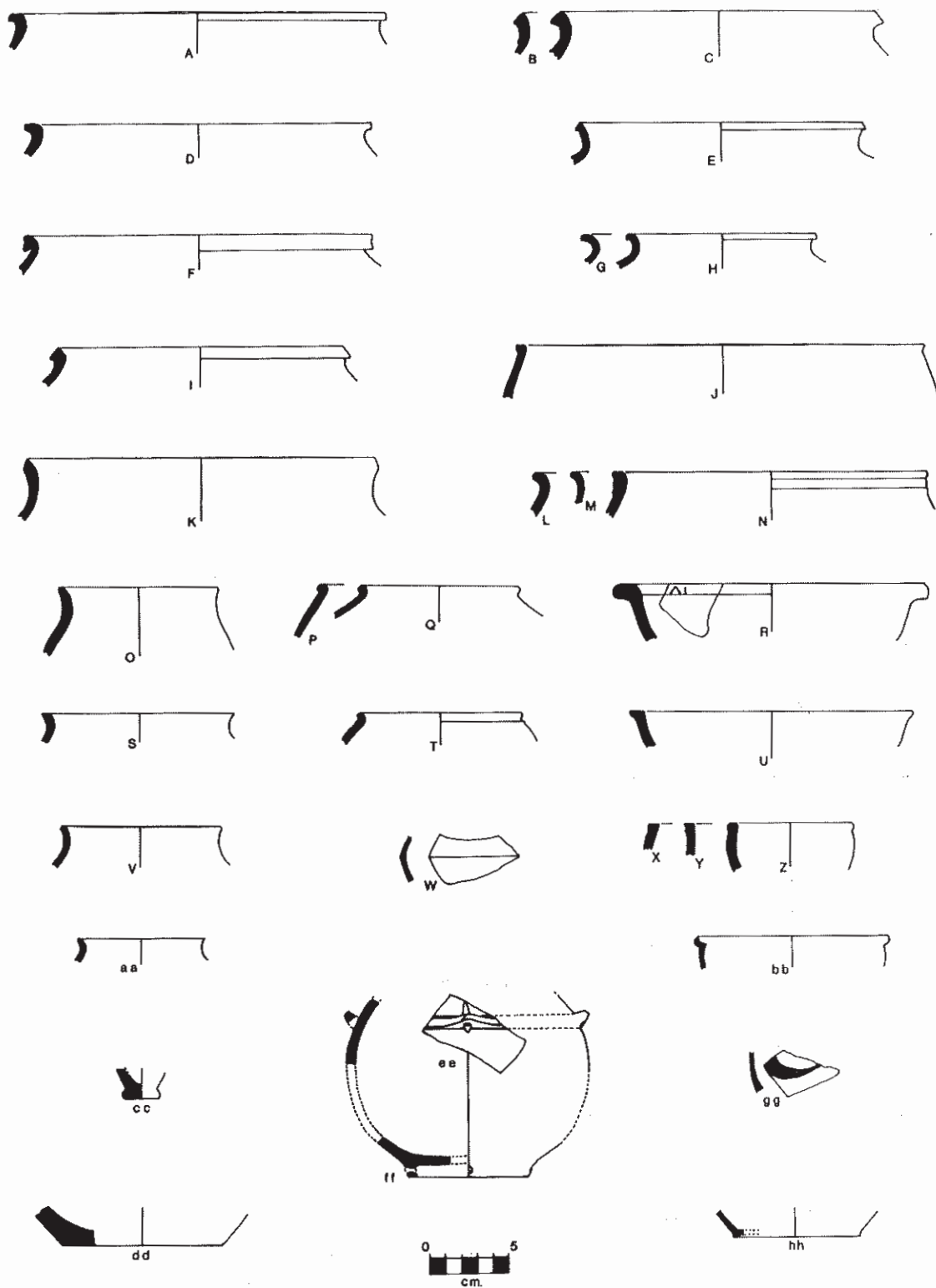


FIG. 20. Pottery from settlement Wadi Ithli 4.

Site: Ibra 2

Key	Description
A	Fine orange-tan paste, D. = 28cm.
B	Fine orange-red paste, ?traces of dark brown slip or paint on inside and outer edge of the rim, D. = 21cm; occurs also at Andam 28.
C	Fine reddish-orange paste, D. = 26cm.
D	Very fine orange-tan paste, D. = ?.
E	Very fine orange-tan paste, D. = 18cm.; occurs also with D. = 24cm.
F	Brownish-tan outside, fine grey paste, D. = 16cm.
G	Black paint on fine orange-tan paste, D. = ?.
H	Fine gritty orange paste, traces of red paint or slip on the outside, D. = ?.
I	Very fine grey paste, traces of orange ?slip on inside and outside surfaces, D. = 10cm.
J	Fine red paste, D. = ?.
K	Medium fine red paste, D. = ?.
L	Very fine orange-tan paste, D. = 14cm.
M	Black band painted on very fine orange-tan paste, thin grey core, thin walls, D. = ?.
N	Very fine orange-red paste, D. = 16cm.
O	Fine red paste, D. = 14cm.
P	Gritty dark red paste, D. = 14cm.
Q	Paste not recorded, D. = 14cm.
R	Very fine red-orange paste, thin greyish core, incisions on the inside of the rim, D. = 26cm.
S	Orange-tan surfaces, very fine grey paste, D. = ?.
T	Very fine orange-tan paste, traces of red ?slip on the outside, D. = 14cm.
U	Very fine orange-tan paste D. = 24cm.; occurs also with D. = 16 cm.
V	Very fine orange-tan paste, D. = 16 cm.
W	Slightly gritty fine orange-tan paste, D. = 26cm.
X	Fine orange-tan paste, grey core, D. = ?.
Y	Very fine orange-tan paste, grey core, D. = 19cm.
Z	Red paste, traces of orange ?slip on inside and outside surfaces, D. = 22cm.
aa	Fine orange-tan paste, D. = ?; occurs also in coarser red paste, D. = 10cm.
bb	Very fine red paste, grey core, D. = ?.
cc	Fine red-orange paste, D. = 3cm.
dd	Black paint on fine red paste, greyish-buff inside surface.
ee	Black-brown design painted on fine red paste, thin grey core.
ff	Black-brown design painted on buff ?slip on outside, fine orange-tan paste.
gg	Dark brown band painted on light buff paste.
hh	Orange-tan surfaces, fine grey paste, D. = 6cm.
ii	Very fine orange-tan paste, D. = 10cm.; occurs also in very fine red paste.

NOTE: Not drawn; eroded base with suspension holes, see Pottery Fig. 12 Key ff.

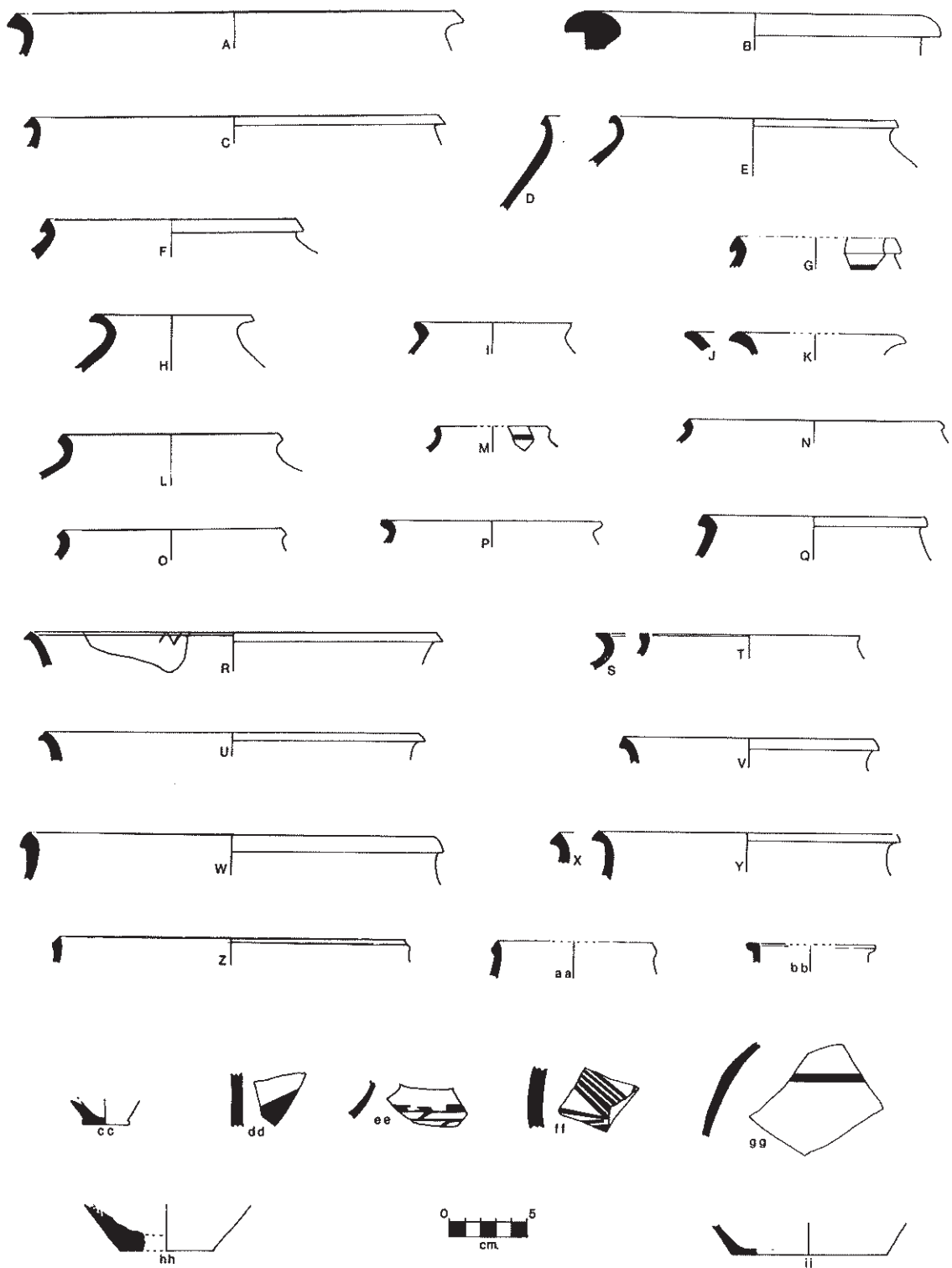


FIG. 21. Pottery from settlement Wadi Ibra 2.

Site: Batha I

Key	Description
A	Medium fine gritty buff paste, grey core, D. = 38cm.
B	Grey-buff exterior, medium buff paste, D. = 30cm.
C	Fine tan paste, D. = 22cm.
D	Light reddish-brown fine paste, D. = 26cm.
E	Fine tan paste, D. = 26cm.
F	Grey exterior, reddish interior, very fine reddish-grey paste, red core, D. = 28 cm.
G	Fine tan gritty paste, grey core, D. = 26cm.
H	Grey surfaces, grey paste, "grey ware", D. = 28cm.
I	Medium fine reddish-buff gritty paste, grey core, D. = 18cm.
J	Reddish exterior, medium reddish-buff gritty paste, grey core, D. = 26cm.
K	Medium red paste, large crushed inclusions, D. = 12cm.; possibly First Millennium B.C.
L	Rough gritty surface, medium coarse grey-black paste, D. = 18cm.; possibly not Third Millennium B.C.
M	Fine red paste, D. = 14cm.
N	Fine tan paste, grey core, D. = 12cm.
O	Medium fine reddish-buff paste, grey core.
P	Medium reddish-buff paste, grey core, B = ?.
Q	Fine red gritty paste, grey core, D. = ?.
R	Very fine orange-red paste, D. = 12cm.
S	Medium fine red gritty paste, D. = 14cm.; possibly not Third Millennium B.C.
T	Medium red paste, possible handmade, D. = 16cm.; possibly not Third Millennium B.C.
U	Black design painted on fine tan paste.
V	Black design painted on grey-buff paste, D. = 14cm.
W	Buff exterior, fine reddish paste, D. = 26cm.
X	Very fine red paste, grey core, D. = 6cm.
Y	Light purple paint all over, very fine dark orange-red paste, very thin walls, D. = 7cm.; possibly not Third Millennium B.C.

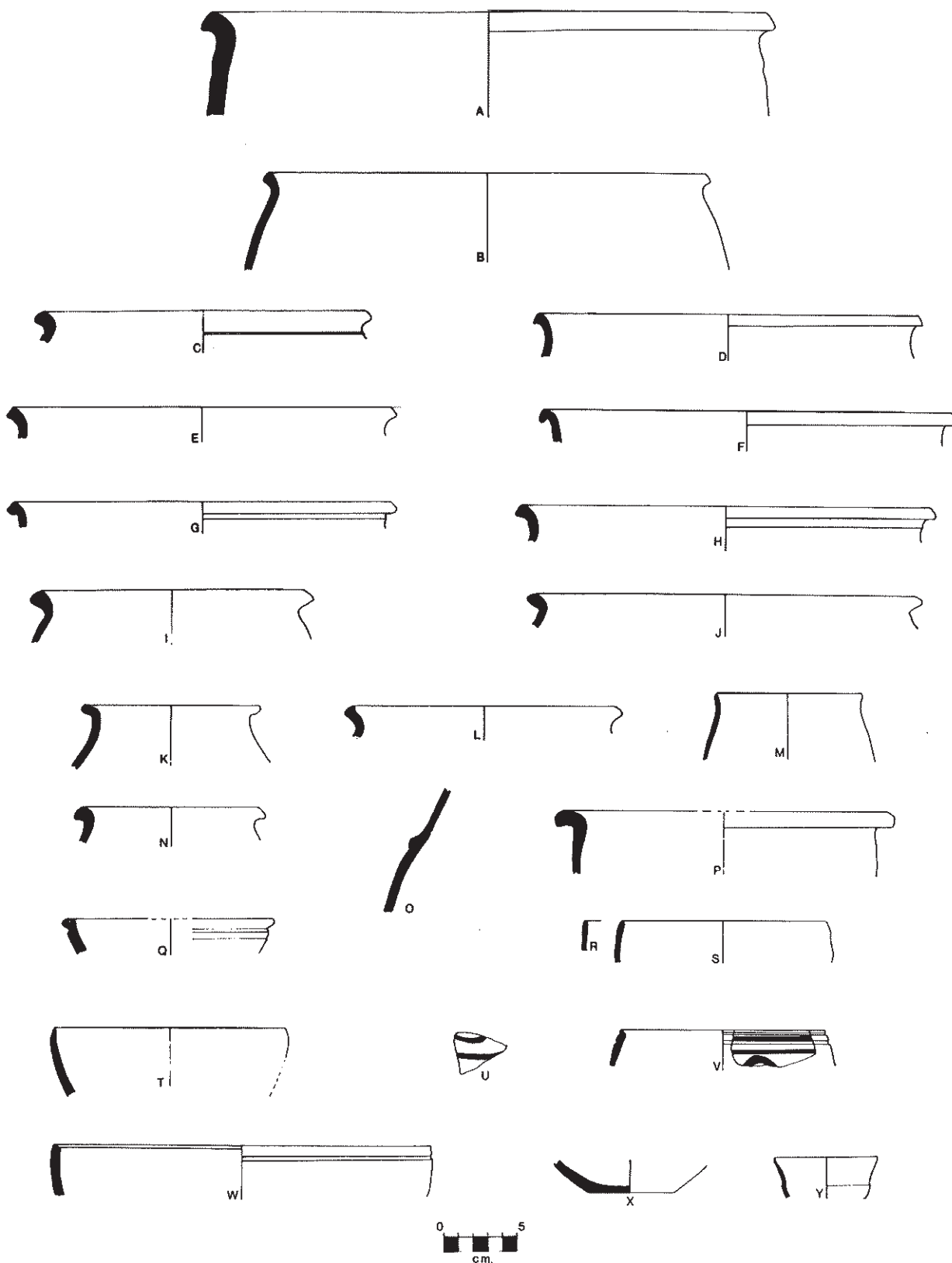


FIG. 22. Pottery from settlement Batha 1.

