Iran 31 (1993)

THE INTERNATIONAL MERV PROJECT

PRELIMINARY REPORT ON THE FIRST SEASON (1992)

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INTRODUCTION

The first season of the International Merv Project took place from 3 September to 4 November, 1992. This Project is the result of a Collaboration made between University College London, YuTAKE (the South Turkmenistan Multi-Disciplinary Archaeological Expedition), the Academy of Sciences of Turkmenistan, and the Institute for the History of Material Culture, St. Petersburg. It operates under Permits granted by the Turkmenistan Academy of Sciences to Professor V. M. Masson, Scientific Coordinator of the Project and Director of the Institute for the History of Material Culture, and to Dr. S. Loginov of YuTAKE. The new programme of archaeological exploration at Merv was begun by a team of four from YuTAKE, joined by fourteen British and four Russian scholars, together with members of the Archaeological Park "Ancient Merv". It is planned to last for three years.

This programme was begun in response to the interest in their cultural heritage shown by the Turkmen Government. The Vilayat of Mary, under the direction of its energetic Hakim, Kurban Muradovich Orazov, has recently protected the ruins of three of the ancient cities of Merv by enclosing them within the Archaeological Park "Ancient Merv", has opened a Museum in Mary and is planning to build a second museum within the Archaeological Park. The Vilayat has hosted three International Conferences on Merv (Curtis, 1992: 158–60; Herrmann, 1991; Masson, 1990–2; Masson, 1991: 181–3) and plans to continue doing so. There will be a conference focused on Seljuk Merv in September 1993, and a major Jubilee commemorating 2,500 Years of the History of Merv is scheduled for 1995. As part of this cultural initiative, the Vilayat and the authorities of the Archaeological Park "Ancient Merv" are cooperating with YuTAKE in its new programme of archaeological exploration at Merv.

The aim of the International Merv Project is the mapping and archaeological reassessment of the earliest cities of Merv, namely Erk-Kala, dating from the Achaemenid period, and Gyaur-Kala, founded by Antiochus I (281–261 B.C), both continuing into the Early Islamic period. Techniques employed include the use of satellite imagery, aerial photographs and "Total Station" instrumental ground survey. These are integrated with an archaeological, environmental and sedimentological sampling programme, involving stratigraphic excavations, a systematic surface artefact survey and a geophysical survey of selected areas. A programme of recording the important but little known standing monuments, principally Islamic in date, is also underway. Concentrating as it does on the urban core of the oasis, the work of the Merv Project complements that of the Margiana programme, involved in mapping, surveying and excavation elsewhere in the oasis, undertaken since 1980 by the Moscow and Turkmen State Universities with the participation of IsMEO (Gaibov *et al.*, 1990; Gubaev *et al.*, 1990; Koshelenko *et al.*, 1991: 165–86; Nikitin and Sogomonov, 1986; see also Huntington, 1908).

ACKNOWLEDGEMENTS

We are grateful to the Hakim of the Vilayat of Mary, Kurban Muradovich Orazov, and to the Director, Nursakhad Mamedov, of the Archaeological Park "Ancient Merv", for their support in our work at Merv and for the use of the fine expedition house, built next to the Park Offices. We would also like to thank the Deputy Directors of the Park, Azim Akhmedov and Akmohammad Annaev, for their friendship and for the ready help they gave us.

Our expedition was only made possible by the enlightened support of a number of institutions. We would like to thank the British Academy, the British Institute of Persian Studies, the British Museum, the Society of Antiquaries of London, the Universities of Oxford (Craven Committee) and London (Central Research Fund), University College London, the Ancient India and Iran Trust, the Lukonin Foundation and Mrs. P. Drower (for a generous personal donation), for their support. Our ambitious plans for mapping the ancient cities were made feasible by two magnificent loans: Leica International lent us two "Total Stations", and "Optimal Solutions"

Archaeobotanical remains, by Mark Nesbitt[11]

Twenty bulk soil samples were taken from the excavation. Small-scale water flotation, using buckets at the Expedition House, was carried out by Mr. P. Bover on seven samples, which ranged from 0.5 to 10 litres in volume. Preliminary analyses of the two seed-rich samples are given in Table 2. For the purposes of this initial study only the large (>1 mm.) fraction has been quantified; although a 0.5 mm. sieve was used in flotation, very few seeds were found in the small (< 1 mm.) fraction of these two samples. All the plant remains are charred; rainfall in the Merv area is sufficient to ensure decay of uncarbonised plant debris. Preservation of the carbonised seeds and charcoal is excellent, with even short hairs on charred cotton seeds surviving (Pl. XVd). Although the sampled deposits lie only 30 cm. or so below current ground level, they are sealed by stratigraphically reliable fills. Both samples come from small hearths that have clearly burnt in-situ and can be dated by coins and artefacts in associated contexts to the Late Sasanian period (sixth-early seventh centuries A.D.).

Taphonomy of the Samples: Given Merv's situation on a trade route, and historical evidence for the trade of wild fruits from the mountains to oasis cities such as Merv, the first question to be addressed is whether these carbonised plant remains are derived from local crop-husbandry, or whether they could have been imported. Plant foods that are to be traded are usually transported in a pure, fully-cleaned form. Nothing is to be gained by carrying bulky extraneous debris, such as crop-processing by-products. Both the Merv samples consist largely of the debris of crop-processing and therefore probably result from locally grown crops.

Context 39 contains large numbers of cereal

TABLE 2

Late Sasanian carbonised plant remains from Merv.

Trench	1	1	1	
Context	39	39	109	
Sample	4	4	12	
Volume floated (litres)	10	10	0.5	
TOTAL CONTENTS (g.)				
Charcoal	1.30	0.65	6.15	
Dung	10.26	0.06	—	
Dung ash	2.05	0	—	
Total seeds/chaff	1.68	0.10	2.08	
Fraction sorted	>2 mm	>1 mm	>1 mm	
% sorted	100	2	100	
SEEDS				
Crops				
Bread wheat—rachis	4	8	—	*Triticum aestivum*
Six-row hulled barley—grain	61	1	—	*Hordeum vulgare*
—rachis	—	32	—	
Cereal—culm node	98	—	—	
Cotton	13	—	94	*Gossypium arboreum/herbaceum*
Cucumber/Melon	1	—	—	*Cucumis melo/sativus*
cf. Almond	1	—	—	*Amygdalus*
Wild plants				
Bedstraw	21	7	—	*Galium*
Weed vetch	4	—	—	Small Vicieae
Goat-grass—spikelet base	1	—	—	*Aegilops*
Weed grass	—	1	—	Gramineae
Unidentified	5	—	—	

Note: seed fragments have been converted to whole seed equivalents for the purpose of scoring. 100% of the >2 mm. and >1 mm. fractions of sample 109 were sorted. All of the >2 mm. fraction of sample 39 was sorted, but only 2% of the very rich >1 mm. fraction was sorted. Numbers of seeds from this fraction have not been multiplied up to correct for this sub-sampling.

rachis fragments and straw nodes, in proportion to the relatively small number of cereal grains present. This sample seems to derive from the feeding of straw and chaff remains and weed seeds, with a little grain, to domestic animals. Their dung has then been used as fuel, charring the undigested plant remains in the process. The dung fragments can be seen to be made up of leaf and straw fragments (Pl. XVc), with one lump containing an embedded culm node. The fragment of almond nut shell and the cucumber/melon seed may have been spat into the fire or swept in during everyday cleaning activities.[12]

Context 109 also contains crop-processing debris, in this case cotton seeds (Pl. XVd).[13] Cotton has two valuable uses: the fibre is used for textiles, and the seeds are rich in edible oil.[14] In the case of trade of either of these commodities, negligible amounts of seed would be transported with them, unless the fibre was exported unprocessed. The abundance of seed in both Merv samples suggests local processing of this crop. A better case for local origin can be made from the context of the seeds: intact and in a hearth. These seeds are likely to have ended up on the hearth as a result of the use of cotton sticks as fuel, as recently observed in Syria by Delwen Samuel. Cotton twigs placed on the fire often bear poorly developed bolls of fibre, which are left on the plant during harvest. These contain seeds which burn off the twigs, fall into the ashes and become charred. Identification of cotton stems in the charcoal in these hearths would confirm local production.

The relative quantities of plant species in each sample cannot be used to assess the relative importance of the crops grown at the site: only when a much wider range of samples has been processed will the full range of plants and their relative importance to each other become clear. Judging by the abundance of charcoal in six of the seven samples, woody plants were available for fuel. Nineteenth century travellers' accounts report orchards and areas of shrubs such as *Tamarix* in the oasis, and the current cotton monoculture agriculture gives a misleading image of the local landscape. From the point of view of fuel, this is clearly not such a poor landscape as it at first appears, and in fact there are reports from the deserts of Central Asia of yields of some 50,000 kg. of charcoal per hectare from desert shrubs (Zohary 1938/39: 415). Whether there is a spatial or functional difference between dung fires and wood fires at the site remains to be established.

Irrigation is essential for any sustained agricultural production within the Merv oasis. The taphonomic evidence demonstrates that barley, bread wheat and cotton were being grown near the site. We have evidence both for winter crops, such as wheat and barley, sown in winter or early spring and harvested in early summer, and summer crops such as cotton and cucumber/melon, which do not tolerate cold but are quick growing, which must be sown in early summer for harvest later that season. Given that a large-scale irrigation system must have been in operation, a whole range of crops could have been grown.

Sasanian Agriculture: Studies of Sasanian-Early Islamic agricultural economies hitherto have relied primarily on the archaeological evidence for large-scale irrigation systems in regions such as lowland Mesopotamia and southwest Iran (Adams, 1981; Wenke, 1987) or written sources. The latter suggest the appearance of new cultigens with widespread diffusion of certain exotic plant and animal species (Laufer, 1919; Potts, 1991; Schafer, 1963; Watson, 1983: 155 n. 11; 160 n. 12). Uncertainty over the reliability of the available historical sources—particularly for the Sasanian period—necessitates caution in their application to reconstructions of palaeoenvironment, agriculture and economy (Adams, 1981; Newman, 1932). Unfortunately corresponding studies of archaeobotanical and zooarchaeological data deriving from sites of this period are rare and frustratingly brief (Costantini, Tosi and Vigna Taglianti, 1975/77: 248; Gubaev, Koshelenko and Novikov, 1990: Hansman and Stronach, 1970: 148–51; Hopf and Willerding, 1988: 279; Jacobsen, 1982: 16, 23, 25; Takai, 1966; Venco Ricciardi, 1977: 14).

The most important documentary evidence relating to Merv is from T'ang dynasty China (A.D. 618–906). This describes the introduction or import to China of a large number of exotic goods and food plants from Iran and central Asia. These records are particularly useful in trying to trace the spread of those crops that were domesticated outside the Near East, and which are therefore poorly represented in the extensive archaeobotanical record from that area. Amongst such crops mentioned in T'ang documents are sesame, coriander, cucumber, alfalfa, walnut and pomegranate (Laufer, 1919; Newman, 1932; Schafer, 1963). There is also a group of fruits that is thought to have been domesticated in central Asia and whose history is still obscure, including peach, apricot and the cultivated pistachio nut.[15]

The presence of cotton and cucumber/melon in two samples from Merv suggests that the expectations of a wide range of food plants raised by the T'ang records are likely to be fulfilled. However, the presence of cotton also points to the pitfalls of relying only on literary evidence. Watson (1983: 33, 38–40) contrasts the fairly frequent records of cultivation of cotton in Sinkiang from the seventh century onwards with the lack of evidence further west

in central Asia, suggesting that it was not until new, cold-resistant forms developed that cotton could spread to colder areas. The cotton seeds from Merv, dating to the early seventh century at the latest, together with those recently identified by Simpson at the Late post-Sasanian site of Kerpichli (Dehistan),[16] demonstrate that cotton had a wider distribution in the pre-Islamic period than previously thought. Inevitably studies based on the literary record will be biased towards records from areas where there is good preservation of texts; for areas such as Merv the archaeological evidence must be the primary evidence.

The abundant, well-preserved plant remains from Merv have already shown that a wide range of both winter and summer-season crops were grown under irrigation in the Merv oasis in the Late Sasanian period. The discovery of numerous cotton seeds is particularly exciting in view of the mysterious history of this major textile plant, the significance of Sasanian textile cloth industries in the textual record, and its importance to the economy of Turkmenistan today. The Merv excavations offer, for the first time in Central Asia or the Near East, the possibility of recovering a reliable corpus of Sasanian plant remains. In addition to building up a full picture of diet and crop-husbandry in each period, through study of changing occurrences of crop and wood species, we will be able to address the question of agricultural and environmental change through time.

ISLAMIC BUILDINGS SURVEY[17]

By F. B. Flood

A total of twenty-six buildings in the Merv Archaeological Park and its environs were studied. The survey was directed towards the compilation of a gazetteer of the Islamic monuments remaining in the area of ancient Merv for publication in *Merv, A Forgotten City on the Silk Road* (ed. J. M. Rogers, in preparation). The aims for this season were to produce measured drawings and a photographic record of the monuments. Those buildings for which published drawings already exist were studied with a view to producing more detailed information on characteristic architectural features. In certain cases new architectural details had been revealed by the changes which had taken place in the fabric of the building since it was first recorded. Although architectural restoration programmes have been underway for several years in many areas of Turkmenistan, including Merv, the recent political changes have given a renewed impetus to the restoration of ancient buildings, especially those of religious significance. It is hoped that the photographs taken this season will form the basis of a photographic archive of the Merv monuments, some of which were photographed after, some during, and some before restoration.

Several types of standing structures were studied including mausolea and funerary monuments, palaces, domed ice-houses, and a number of buildings of unknown function known by the generic term "*keshk*". The buildings ranged in date from the tenth century, or earlier, to the sixteenth century. Mausolea formed the largest single category of surviving monument studied. Among these was a previously unpublished tomb (Pl. XVI), situated in a cemetery near the settlement of Talkhatan Baba, approximately 30 km. south of Sultan-Kala. The tomb, known locally as the Mausoleum of Imam Bakr, is a domed square faced with fired bricks and, although only a small portion of the external brick facing has survived (Pl. XVIb), the structural details and decoration of the interior are in a reasonable state of preservation. The building contains three tombs or cenotaphs, one of which bears the remains of *kufic* and *naskhi* inscriptions carved in stucco. The Mausoleum of Imam Bakr shows strong stylistic affinities with a group of medieval monuments in the environs of ancient Merv published by Professor Pugachenkova and others. These are the nearby mosque at Talkhatan Baba (Pl. XVIIa) (Pugachenkova, 1958: 248–56), the mausoleum known as Khuday Nazar Ovliya to the north-west of Merv (Pugachenkova, 1958: 310–15), and the Mausoleum of Muhammad ibn Zayd in Merv itself (Pugachenkova, 1958: 303–10). The affinities between these monuments and the unpublished tomb include the treatment of the zone of transition, the form of the squinches, the brick decoration in the squinches and the blind arched panels between, and the type of brick ornament employed on the façade of the building. Of these analogous structures only the Mausoleum of ibn Zayd carries an inscription (Pl. XVIIb), which dates the building to 1112–13 (Masson, 1969). On stylistic grounds the two remaining buildings of the group have been assigned a similar date. The Mausoleum of Imam Bakr may thus be dated to the Seljuk period, probably to the late eleventh or early twelfth century.

While many of the domes in the Seljuk mausolea of Turkmenistan have been reconstructed or entirely rebuilt in the recent past, this has not been the case with the dome of the Mausoleum of Imam Bakr, which may be original. The dome has a small oculus at its centre, similar to that found in the Mausoleum of Sultan Sanjar at Merv. It may therefore be the case that, despite their present appearance, many of the domes in the Seljuk mausolea of the Merv oasis were originally provided

Numerous similarities exist between characteristic architectural features found both in the monuments of Merv dated between the tenth and twelfth centuries and the *keshks*. These include the internal division of space, the forms of vaulting employed, the treatment of transitional zones, the construction of squinches and domes, and the use of sophisticated vaulted staircases (Pl. XVIIIc). The latter are found in many of the *keshks* as well as a building of four-*iwan* plan, perhaps a palace, in the Ark of Sultan-Kala (Pugachenkova, 1958: 203–6). One may also find analogies between the architecture of the *keshks* and other Central Asian buildings of the eleventh and twelfth centuries. For example, the main façade of the Ribat-i Malik caravanserai near Bukhara, constructed in the second half of the eleventh century, is treated in a manner not dissimilar to the exterior of some of the Merv *keshks*. This may represent the influence of a long-standing architectural tradition in the region, or may alternatively suggest that the use of such exterior corrugations reflects the emergence of an innovative aesthetic in the architecture of Central Asia during the eleventh and twelfth centuries, for reasons which have yet to be explored. For the moment the date of these spectacular structures remains an open question.

In addition to studying the standing monuments in the Merv Archaeological Park, the architectural survey team was also able to visit and photograph important architectural sites to the west of Merv, including the Mausoleum of Abu Said at Meana (Pugachenkova, 1958: 277–84, 358–66), the Mausoleum of Abu Fazl at Serakhs (Pugachenkova, 1958: 275–6), and the nearby mausoleum known as Yarti Gumbez (Pugachenkova, 1958: 284–6). On a brief visit to sites in the south of the oasis it was ascertained that the Mausoleum of Gamber Baba and the Mausoleum of Imam Baba are no longer extant, having been replaced by modern structures.

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Abbreviations

IASCCA—International Association for the Study of the Cultures of Central Asia, Information Bulletin (Moscow)

NABU—Nouvelles Assyriologiques Breves et Utilitaires (Paris)

ANRW—Aufstieg und Niedergang der Römischen Welt (Berlin/New York)

[1] References may be found in the useful annotated bibliography by Frumkin 1990. Detailed excavation diaries, end of season field reports and diploma works at the University of Tashkent are available for some seasons. Copies of most of these are held within the YuTAKE archives.

[2] The three teams contributing to the Mapping Programme were the Topographic team, Assistant Director and Field Director Glynn Barratt (English Heritage), Peter Boyer and David Mackie (Leicester Archaeological Field Unit), and Christopher Barratt Phillips (U.C.L.); the Geoarchaeological team, Field Director, A. J. Barham, and Simeon Mellalieu (both from the Institute of Archaeology, U.C.L.); and the Surface Survey Team, Field Director David Tucker (Institute of Archaeology, U.C.L.), and Bettina Stoll-Tucker (University of Erlangen).

[3] C. Barratt Phillips.

[4] Private collectors have focused on coins, ceramic figurines, other attractive small finds, decorated potsherds and certain architectural fittings. As archaeological systematic surface surveys rely primarily on diagnostic pottery, and the surfaces of these deeply stratified sites are constantly subject to weathering that brings new material to the surface, the effects of casual collections on systematic survey are less than feared.

[5] The presence of dense thorny vegetation prohibited coverage

of the lower West Wall slopes; with the exception of limited areas in the vicinity of the East and South Gates, the exterior slopes of all Walls were not searched.

[6] The excavation team consisted of Sergei Loginov (YuTAKE), St John Simpson (Institute of Archaeology, U.C.L.), David Jennings (Field Officer, Oxford Archaeological Unit), Vladimir Zavyalov (Institute for the History of Material Culture, St. Petersburg), A. B. Nikitin (State Hermitage Museum, St. Petersburg), N. Savvonidi (Institute for the History of Material Culture, St. Petersburg) and N. Smirnova (Pushkin Museum, Moscow). Kate Morton (English Heritage) was the finds draughtsperson.

[7] Bucket flotation was carried out on a number of soil samples. The preliminary archaeobotanical report is given below. Dry-sieving, using a large, hand-held sieve with 5 mm. size wire mesh, was conducted on site. The majority of sieved deposits corresponding with room and pit fills produced varying quantities of diagnostic animal bone, bone splinters, charcoal fragments, potsherds and occasional small finds. Some difficulty was experienced—as to be expected—in sieving material derived from compacted mudbrick or heavily laminated deposits. These deposits also proved less productive in terms of data recovered. Elsewhere, slightly higher recovery rates of cooking ware potsherds were noted (these fabrics being more brittle) but it was concluded that, in general, sieving did not contribute significantly towards the study of material culture remains. Its value as a technique hence lies primarily in its potential for recovering archaeozoological evidence, as noted elsewhere (Cherry, 1975; Payne, 1972).

A sample of the *c.* 35 kg. total of excavated animal bone was exported for preliminary evaluation. The state of preservation is good. Sheep/goat and cattle-sized species are present—some with butchery marks—plus a small quantity of bird bones (Dr. S. Hillson, Institute of Archaeology, U.C.L., pers. comm. December 1992). Detailed analysis of the bone is planned during the third field season (1994).

[8] The excavation techniques are essentially based on the recognition in plan as well as section of all "natural layers" or archaeological deposits. As such they are distinct from the use of artificial horizontal "spits".

[9] Kate Morton was responsible for virtually all ceramic and small find drawing, assisted at the end of the season by Nikolai Savvonidi and Vladimir Zavyalov, to each of whom we are very grateful. Kate Morton also prepared all the inked drawings.

[10] We are extremely grateful to Peter Dorrell and Stuart Laidlaw of the Photographic Department of the Institute of Archaeology, U.C.L. Not only are they a constant source of wisdom and rescue, but also they generously agreed to take on the chore of developing and printing the Merv films, in addition to all their other many labours.

[11] I thank Delwen Samuel (Cambridge University) for helpful discussions and for arranging SEM photographs, and St John Simpson for bibliographical references.

[12] Almond was identified from Late Sasanian Shahr-i Qumis (Site VI: Room 23), together with pomegranate, Chenopodiaceae, Cruciferae and *Atraphaxis spinosa* (Hansman and Stronach, 1970: 148–51).

[13] The ovoid seed of cotton is easily identified by the beak at the apex, from which a slight ridge runs to the base of the seed. Remains of fibres adhere to the surface of the upper part of the seed. The Merv seeds compare well to domesticated cotton seeds from medieval Syria and Turkey; wild cotton seeds are much smaller. There are no clear criteria for separating seeds of the two domesticated cotton species found in the pre-Columbian Old World, *Gossypium herbaceum* and *G. arboreum* (Chowdhury and Buth, 1971), and no identification can be made to species at present.

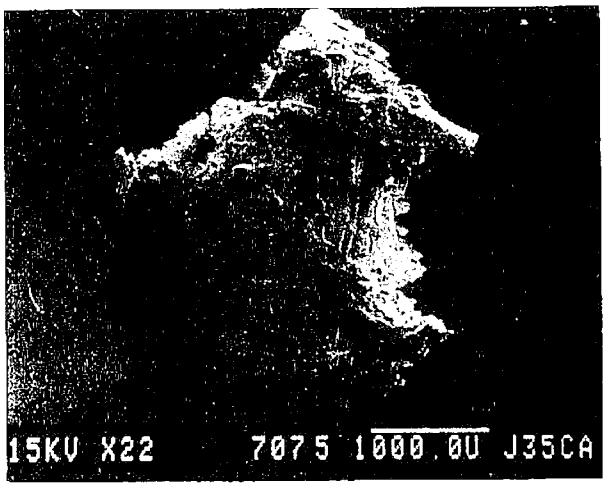
[14] The extensive literature on Sasanian textiles has focused on artistic evidence and surviving fragments of dubious provenance or date (Shepherd, 1986: 1107–12). Less widely known is the excavated occurrence of plain, checked, striped and other decorated Partho-Sasanian and Late Sasanian cloths, thought to be made of cotton, at Al-Tar and Shahr-i Qumis. Thin cotton cord was also found at the latter site (Hansman and Stronach, 1970: 148, 152, 155, fig. 7.5, pls. II, IV; Ogawi and Naruse, 1976: 136, 175, No. 101). Finally, Newman (1932: 103) cites one mention of a Hebrew term which may refer to the use of cotton-seed oil in Babylonia during this period.

[15] Apricot has been tentatively identified (along with grape and wheat) in late Parthian contexts at the fort of Gobekly, in the Merv Oasis (Gubaev, Koshelenko and Novikov, 1990: 57, 59).

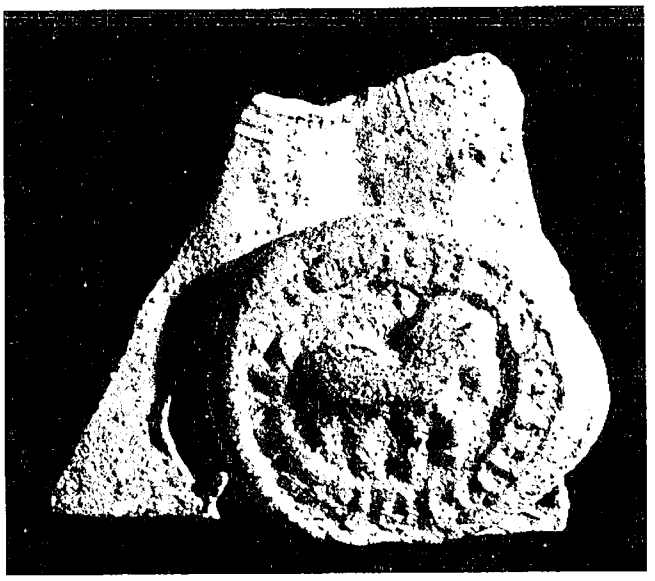
[16] Unpublished remains on display, Ashgabat Historical Museum (1992).

[17] The team working on the survey of the Standing Buildings were Field Director, F. B. Flood (Dept. of Fine Art, Edinburgh University); H. Mahdy (Macintosh School of Architecture, Glasgow); T. Khodjaniazov (YuTAKE and Ashgabat University), A. Berdiev (YuTAKE), Akmohammad Annaev (Archaeological Park "Ancient Merv"), O. Smirnova (Institute for the History of Material Culture, St. Petersburg), and K. Agajanov (Bairam Ali School).

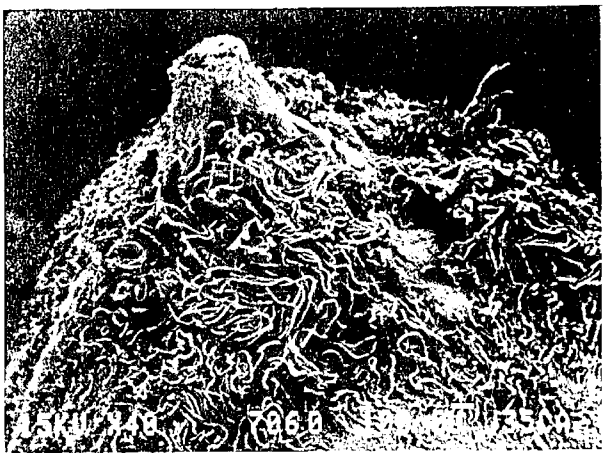
Pl. XVa. Merv Erk-Kala, Trench 1, SF. 46: see also Fig. 11. 1.
The chest of a finely moulded figurine, head and lower body broken off. Ht. 3.6 cm. The female figure was dressed in a flowing robe with a plain collar and long cuffed sleeves.
The right hand, held on the chest, holds up a mirror.



Pl. XVc. Merv Erk-Kala, Trench 1, Context 39.
Fragment of dung (SEM photograph).



Pl. XVb. Merv Erk-Kala, Trench 1, SF. 150: see also Fig. 9, 3.
A clay pellet applied to the shoulder of a medium plainware jar. The pellet was exceptionally impressed with a stamp seal, showing a horse with a schematic border.



Pl. XVd. Merv Erk-Kala, Trench 1, Context 109. Upper part of cotton seed; note beak with remains of fibres (SEM photograph).