

MONUMENTS OF MERV

TRADITIONAL BUILDINGS OF THE KARAKUM



Georgina Herrmann

THE SOCIETY OF ANTIQUARIES OF LONDON

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Monuments of Merv: Traditional Buildings of the Karakum

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by
Georgina Herrmann

with contributions by
Hugh Kennedy

THE SOCIETY OF ANTIQUARIES OF LONDON

The British Institute of Persian Studies
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SYNOPSIS IN RUSSIAN

РЕЗЮМЕ (на русском языке)

Недавно ЮНЕСКО присвоило культурному наследию Мерва статус мирового исторического значения, а Международный фонд по охране памятников включил Мерв в число ста исторических памятников мира, находящихся под самой серьёзной угрозой. Необычная планировка расположенных бок о бок городищ, а также их замечательная сохранность, особенно учитывая то, что они не заселялись с момента запустения, придают этому памятнику исключительное значение. Мавзолеи и мечети, более доступные для обозрения, производят самое сильное впечатление на посетителя: материалы о них будут опубликованы в следующих двух томах серии *Памятники древнего Мерва*. Эти сооружения построены в соответствии с хорошо известной и широко распространённой традицией: для Мерва они не так самобытны, как постройки из сырцового кирпича, которые представляют собой богатое наследие местной строительной культуры, архитектурную традицию, характерную для Средней Азии. Многие из этих построек относятся к глубокой древности, что вызывает большую радость, так как в контексте исламского мира большинство традиционных нерелигиозных сооружений насчитывают не более чем столетие. В Мерве сооружения из сырцового кирпича составляют особую группу древнейших и уникальных архитектурных памятников. Городища и памятники «Древнего Мерва» сегодня находятся под охраной Министерства Культуры Туркменистана в специально организованном заповеднике под названием «Древний Мерв», где работает группа туркменских сотрудников под руководством директора. Однако, испытания временем, климатические условия и отсутствие должного внимания в прошлом привели к тому, что многие сооружения Древнего Мерва с течением времени постепенно исчезают с поля зрения. Поэтому так важно международное сотрудничество по описанию и изучению сохранности архитектурных памятников и по сбору исторических фотографий и других материалов из различных источников и архивов по программе Международного мервского проекта. По программе этого совместного Проекта работают туркменские и британские специалисты - представители Национального института истории Туркменистана при Кабинете министров, Лондонского университета и Британского музея. В связи с этим мне очень хотелось бы выразить глубокую благодарность Академии наук Туркменистана, с которой я и мои коллеги имели многолетнее плодотворное сотрудничество, Министерству культуры Туркменистана, Национальному институту истории Туркменистана и Др-у Курбансахатову К.К. (туркменскому директору Международного

мервского проекта) за то, что у нас была и есть возможность не только вести полевые работы, но также пользоваться материалами архива ЮТАКЭ. Я с большой теплотой хотела бы отметить свою глубокую благодарность Профессору Т. Ходжаниязову, Др-у М. Мамедову и Др-у А. Бердыеву за их поддержку и советы.

Что же в них замечательного, помимо исключительной сохранности, несмотря на все испытания временем? Это то поразительное искусство, которым владели мастера, творчески использовавшие пластичность материала, которым они возвели своды и купола. Эти своды и купола строились из сырцового кирпича и *пахсы*, материалов дешёвых, которые, казалось бы, использовались в целях экономии, или из-за отсутствия лучших материалов. Это действительно дешёвые материалы, так как глина, из которой изготовлены сырцовые кирпичи и пахса, легко доступна в Мервском оазисе. Однако сырцовый кирпич не только дешёвый и безвредный для окружающей среды материал: стены из него являются прекрасным изолятором, сохраняющим холод летом и тепло зимой. В суровом климате Средней Азии сырцовый кирпич применялся не только из-за лёгкой доступности: это материал, которому отдавали предпочтение.

Самые интересные традиционные сооружения Мервского оазиса, которыми он особенно знаменит, и которые действительно являются 'жемчужиной в его короне' – это уникальные *кёшки* и самый большой из них – Большая Кыз-Кала. Возвышаясь одиноко на плоской равнине, она производит впечатление уже своими чёткими очертаниями и массивными формами. Однако, несмотря на свой неприступный вид и трудно доступный вход, это здание не было крепостью: на нем нет башен и бойниц. Другой необычный тип постройки в оазисе – это *кептер хана*, здания, объединённые внутренним декором, состоящим из глубоких ниш. Различные гипотезы относительно их использования колеблются от голубен и сушилен для дынь до архивов и домов для гостей, но предпочтение отдаётся гипотезе, считающей, что это были сокровищницы. *Кёшки* являются известной особенностью Мервского оазиса и это также относится к удивительной группе сооружений с контурами усечённого конуса, которые могли служить льдохранилищами, т.е. средневековыми холодильниками. Даже сегодня, войдя в любой из них и несмотря на обвалившийся купол, можно почувствовать свойства изоляции сырцового кирпича. Поскольку не сохранилось никаких надписей, датировка построек весьма ориентировочная: она основывается на изменениях в технических приёмах в архитектуре. При сопоставлении зданий на цитадели средневекового городища и более позднего можно выделить две

фазы изменений, в то время как третья группа приёмов даёт другую датировку и несомненно более раннюю. Таким образом, были выделены рамки трёх технических горизонтов: раннего, среднего и позднего, которые соответствуют периодам процветания Мерва. Впервые Мерв стал столицей региона в 673 году и потерял свой статус в 830 году. Вероятно, что именно к этому периоду относятся ранние постройки, такие как Кыз-Кала. Отличительными особенностями этих *кёшков* являются высокие гофрированные стены, поставленные на пандусе с лёгким наклоном; простые тропы, служащие опорой для купола; отсутствие обожжённого кирпича и деревянных поперечных связей, а также сырцовые кирпичи очень крупных размеров. Гофрированные *кёшки* являются характерной чертой среднеазиатской архитектуры, которые фактически не имеют аналогий в других местах. Ничего подобного не сохранилось и не было отмечено в Иране, хотя аналогичные сооружения встречаются и в Хорезме, и в Бухаре и в Термезе. На протяжении VIII и IX веков Мерв занимал ключевую позицию и это позволяет считать, что гофрированные постройки первоначально возникли именно в этом оазисе, в особенности ещё и потому, что в свое время Мерв был не только региональным центром, но также и культурной столицей Средней Азии и восточно-иранского мира.

Не удивительно, что большинство сохранившихся зданий, описанных в этом издании, вероятно относятся ко времени Великих Сельджуков – времени наивысшего процветания Мервского оазиса (с 1037 по 1157 год, незадолго до смерти Санджара). Даже сейчас, когда почти все окружающие его здания разрушены, мавзолее Султана Санджара остался наиболее выдающимся архитектурным памятником своего времени. Предварительный план Шахрияр-Арка также указывает на своеобразный характер сельджукской архитектуры в Мерве. Внутри неправильного очертания стены цитадели виднеются пересечения её главных улиц. В планировке цитадели центральное место отводится сооружению с высокими помещениями и с четырьмя айванами вокруг внутреннего двора. С наружной стороны в местах, не занятых постройками, вероятно, располагались сады. Всё это позволяет нам сделать вывод о том, что это был дворец или зал аудиенций. Здание удобно расположено у первого пересечения главных магистралей. Рядом с ним находится *кептер хана*, в которой мог храниться царский архив.

В сельджукских постройках применялись различные приёмы, в частности, менее высокие гофрированные стены, заканчивающиеся декоративными арками с тропами из обожжённого кирпича,

обнаружены в Рабат-и Малик (1078 г.) и в *кептер хане* в Шахрияр-Арке. Также присутствуют приёмы, которых не было в постройках первой фазы, таких как применение обожжённого кирпича и деревянных поперечных связей. Там, где встречаются тропы, их конструкция более сложная и арки несут своды купола. Другие здания сельджукского Мерва – это элегантный павильон в Куртлы, загадочное длинное здание, известное как Хароба Кошук, а также остальные *кептер ханы* и *кёшки*. По-видимому нет оснований считать, что какие-либо *кёшки*, несмотря на различные варианты их планировки и декора, были построены после монгольского нашествия: например, постмонгольское поселение около замечательного высокого и изящного Порфой *кёшк* относится к более позднему периоду и поэтому раньше считали, что сам *кёшк* относился к этому же времени. Однако архитектурные параллели с дворцом на Шахрияр-арке отмечают такое предположение. Тот факт, что *кёшк* продолжал оставаться обитаемым вплоть до 19 века, указывает на позднюю датировку этого поселения. Постройки, относящиеся к периоду возрождения Мерва при Тимуридах, располагаются к югу от Султан-Калы, в новом городе Тимуридов или около него. Они представляют собой развалины Тимуридского дворца, Тимуридский павильон и льдохранилища. Однако это заблуждение: оно отклоняется случайно сохранившимися памятниками, такими как мавзолеи тимуридского времени, которые

можно встретить на севере и на юге Мервского оазиса. Отсутствие традиционных построек скорее говорит о том, что они не сохранились, а не о том, что они не существовали вообще.

Потребность в льде с ранних периодов повлекла за собой сооружение льдохранилищ, от которых в Мерве сохранились самые ранние образцы, которым не находятся параллелей, и значение которых, поэтому, возрастает. Тимуридская техника строительства характеризуется ещё более маленькими размерами кирпичей, и также применением обожжённого кирпича и деревянных поперечных связей, как в сельджукский период. Однако в жилых домах крыши, покоящиеся на деревянных балках, сменили своды и купола. Памятники Мерва являются незаменимыми и уникальными образцами почти утраченной архитектурной традиции. Речь идёт не о традиционных постройках вообще, а о постройках жилых помещений, разных по своим размерам и типам, а также о функциональных постройках, таких как *динги* и льдохранилище. То, что сооружения из сырцового кирпича сохранились до настоящего времени, это настоящее чудо: в исламской культуре такие постройки встречаются обычно не старше, чем 100-200 лет. Мы надеемся, что в ближайшем будущем обнаружится способ сохранения для этих хрупких и уникальных образцов традиционной национальной архитектуры средневековья, подверженных разрушению времени.

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Archaeology is very much a team effort, and although this book is about buildings rather than excavations, it too is the result of the labours, enthusiasm and support of many. First and foremost, there are the sponsors, without whom nothing could begin nor could this book have been published. The costs of the publication have been generously underwritten by Monument Oil and Gas and Mobil E & P Ventures Eurasia. This is munificent support, and I am deeply grateful to both Tony Craven Walker and Richard Beazley for their interest and enthusiasm, all the more remarkable since this is not an easy time for the oil industry. Here, I would like to thank His Excellency Neil Hook, Her Majesty's Ambassador to Turkmenistan from 1994 to 1998, who visited Merv many times, found the funds to publish a guide to Merv, and introduced Merv to the Ashgabat business community. The *Monuments of Merv* series is being published by the Society of Antiquaries of London and the British Institute of Persian Studies, to both of whom I am deeply grateful. I should like to thank the Society of Antiquaries for agreeing to accept the volume in its prestigious research series, and Kate Owen, its Publications Manager, for bringing order to an inchoate mass of material in an incredibly short space of time.

But publication is the end of a long trail. The Max van Berchem Foundation of Geneva has since 1996 provided invaluable support for the Islamic aspect of the International Merv Project (IMP), of which the Monuments Programme forms a part, and has underwritten most of the research costs of the Monuments Programme. Grants from the Iran Heritage Foundation have covered many of the costs of printing the large archive of our own photographs, as well as enabling us to purchase archive photographs. We were generously allowed access by the Corpus Inscriptionum Iranicarum to negatives of the Ernst Cohn-Wiener collection, now in the British Museum. Dr Kakamurad Kurbansakhatov made available negatives taken in the 1950s by the YuTAKE, the South Turkmenistan Multidisciplinary Archaeological Expedition. Alexander Nikitin of the Hermitage Museum, St Petersburg, kindly made copies of nineteenth- and early twentieth-century photographs belonging to the Photoarchive of the Institute for the History of Material Culture, St Petersburg, as well as lending us his own negatives of the 1980s. The Photoarchive has generously granted permission to publish its photographs without charge. The IMP's own archive began with a series taken by F B Flood in 1992, and photographs have since been taken by many members of the expedition, particularly by Mike Halliwell – in the spring and the autumn of 1997. Photographs were also taken by St John Simpson,

Pierre Brun and Georgina Herrmann. Mike has patiently printed and reprinted hundreds of photographs, some of which appear in this book; we hope others will be published in the next two of the series. This was made possible by Stuart Laidlaw of the Photographic Department of the Institute of Archaeology, who made available the cameras used by the expedition and an enlarger, as well as endless support and help, both for this project and throughout the years. I owe him a deep debt of gratitude.

The financial sponsors of the expedition are numerous, and we thank them all warmly. Support has generously been provided by the British Academy, the British Institute of Persian Studies, the British Museum, the Arts and Humanities Research Board, the Samuel H Kress Foundation, the Max van Berchem Foundation, the Metropolitan Museum of Art, the National Geographic Society, the Royal Society, the Rolex Awards for Enterprise, the Society of Antiquaries of London, the Stein Arnold Exploration Fund, the universities of Oxford and London, University College London (UCL) and the Wenner Gren Foundation for Anthropological Research, as well as some valued private donations.

The Max van Berchem Foundation is a scientific body established in Geneva, Switzerland, in memory of Max van Berchem (1863–1921), the founder of Arabic epigraphy. Its aim is to promote the study of Islamic and Arabic archaeology, history, geography, art, epigraphy, religion and literature. It has subsidized the International Merv Project since 1996.

There is one person at Merv who knows more about the monuments and cares more about them than anyone else in the world, AkMohammad Annaev. While many monuments are sited in and around the cities and present no problems of access, others are deep in the oasis, and we would have known nothing about them had we not been taken there and shown them by AkMohammad, who drove us – not without adventures – in his precious and battered old car, Big Boss. This is very much his book. His patience and courtesy is monumental: he has been taking round team members since 1992, with all too little hard result. And in 1997 and 1998 he set off once again to escort Kathy Judelson and me, initially identifying and captioning photographs and then checking entries on the ground with much discussion of each entry. The work was enlivened by pleasant picnics by small canals, with, of course, the incomparable melons of Merv.

It was AkMohammad who suggested that Rejeb Akhmedov joined us in 1998. Rejeb is an architect trained in Moscow and works for the Archaeological Park 'Ancient Merv', who generously seconded him to us as our Representative. He prepared the new plans of the buildings,

recording only what he could see. These have been superbly inked by Jane Russell of the Institute of Archaeology's Field Archaeology Unit, while the maps have been prepared by Nick Mann of the Drawing Office of UCL's Geography Department. I would like to thank them very much and for their patience with my frequent changes of mind.

The Archaeological Park 'Ancient Merv' was set up to protect the city-sites and monuments of the oasis. It is administered by the Ministry of Culture and has a Park Office at Merv. The Director since 1997 has been Rejeb Dzaparov, a former member of the Park staff and a trained architect, who is much interested in our work. I thank him for all his support and for the loan of some of his elegant drawings, one of which can be seen in this book.

Our Turkmen co-director is Dr Kakamurad Kurbansakhatov. For the first two collaborations (1992–4 and 1995–7) he was director of the YuTAKE of the Academy of Sciences. This has now been amalgamated into a dynamic new institute, the National Institute for the History of Turkmenistan of the Cabinet of Ministers, directed by Professor Dr Muhammad Aydogdiyev, our new partner for our third Turkmen–British collaboration (1997–2000). Dr Kurbansakhatov makes everything possible in Turkmenistan. The permits are in his name, he organizes the camp and all the logistics, freeing us to concentrate on the work. He has generously lent us dissertations, drawings and negatives of YuTAKE work, for us to draw on. He manages magnificently, overcoming every obstacle, some of which initially seem formidable. No one could wish for a better co-director, who is also an agreeable companion. I cannot thank him and his wife, Sonya, enough for their friendship and hospitality.

That we have a fine expedition house from which to work was the initiative of Professor V M Masson, Director of the Institute for the History of Material Culture, then of Leningrad, who persuaded the *Hakim* of the Mary Vilayet, Kurban Muradovich Orazov, to host a series of international conferences on Merv (1990–4) and to build an expedition house. *Hakim* Orazov and his excellent deputy, Muhammad Charievich, were both immensely supportive in the difficult early years. I am particularly grateful for being given a number of helicopter flights around the city and oasis and up the Murghab River. Some of the resulting aerial photographs can be seen in this volume.

Many team members have contributed to the Monuments Programme. I should like to thank Gabriele Puschnigg for writing the entry about Kharoba Koshuk, and Pierre Brun for many helpful discussions about his work on the walls, his contribution to our

understanding of the *dings* (or watch-towers) and his plans of the *dings*. I am also grateful to St John Simpson, co-founder of the IMP, Alexander Nikitin, Vladimir Zavyaiov and Faith Pewtress. However, one member has been outstanding, both at Merv and back at base. Kathy Judelson's effectiveness, cheerfulness, reliability, willingness to do anything at any time and incredible linguistic ability has formed the foundation of all our work. She is my voice and my constant prop and stay, always ready to solve a problem.

I am also grateful to many of my Russian and Turkmen colleagues, including Professor Litvinski, Edward Rtveldze, and of course, most of all, to Zamira Usmanova, who introduced me to Merv and invited me to join her there – I wish this had been possible – and to Terkesh Khodzaniyazov, the master of Seljuk Merv, whom alas we could only lure there for short periods. He has a deep knowledge of the site, its history and archaeology.

My academic debt to my colleagues is profound. I am not qualified to write this book, lacking the specialist architectural and linguistic knowledge, but there was no one else willing to take it on when the commissioned author fell by the wayside in 1997. Michael Rogers was persuaded to visit Merv in 1993, possibly against his better judgement, and has kindly acted as adviser since that time, but had no time to take on the book itself. His deep knowledge of the literature, architecture, and so on has been irreplaceable, and I have tried his patience sorely. He has provided much information, particularly on the buildings in Khwarazm, kindly read the text and made numerous corrections.

Hugh Kennedy came to Merv in 1997, bringing a wonderful Stilton cheese (never did cheese taste so good). He agreed to write an historical overview of Merv (Chapter 2) and to provide translations of some of the Arabic literature about Merv (Appendix). This is extraordinarily hard of access for the non-specialist, and I thank him warmly. I also profited greatly from the discussions that took place within the buildings, especially in the Greater Kyz Kala one pleasant evening. His enthusiasm is infectious.

I should also like to thank Professor Liu Yingsheng of Nanjing University for sending us the little-known text by Du Huan and Dr Oliver Moore of Leiden University for his translation.

And Robert Hillenbrand, at whose insistence the task was undertaken in the first place, probably saved my sanity in the summer of 1998, when he created time in his frenetically busy life to visit me. The monuments were initially to be published in one volume, and the photographs had been assembled in a series of fat files.

Robert immediately pointed out that there was far too much material for a single book, and agreed that, provided I took on the traditional buildings, he would write up the mosques and mausolea. Since that time he has read the typescript and made numerous invaluable contributions to it, drawing my attention to the wider picture. I am very grateful to him and look forward to his visit to Merv in the autumn of 1999.

Finally, as always, my deepest debt is to my husband Luke. His support, actual and emotional, through the trials of eight long years of the Merv project has never faltered. Every expedition needs a 'safe pair of hands' back at base, a thankless and unglamorous task, but one without which we could not operate. He is the best sight of the year as we come, dirty and dishevelled at the end of another season, through the customs at Heathrow. Thank you, Luke.

Georgina Herrmann
London, September 1999

INTRODUCTION

It is a common phenomenon that vernacular building is the least studied of all the facets of architecture.

(Warren and Fethi 1982, 20)

The great block of land controlled by the former Soviet Union was essentially closed to foreigners until *perestroika*. Travel was restricted, scholastic contacts were limited, books and journals were hard of access and not many Western scholars read Russian. Under Gorbachev much of this changed, leading to the independence of the Central Asian republics in 1992 and a warm welcome to foreigners by these new states. They were seeking new friends after nearly a century of isolation. However, Western awareness of this huge tract of land linking Europe with Asia has still not improved that much. Few know the names of the republics, and few have heard of its rich cultural heritage, other than the buildings of Bukhara, Samarkand and Khiva, colourful cities promoted on the Intourist and modern tourist circuit.

The buildings of Merv, on the other hand, are dilapidated, having been neglected during the Soviet era in favour of their showier eastern cousins. That they survive at all may be because of the Mongol conquests in the early thirteenth century, which returned much of the oasis to an arid, desert-type environment, not good for people but perfect for the preservation of mud brick. Prior to this Merv had been at the height of its prosperity, its city one of the largest in the medieval world and a capital of the Great Seljuk empire. Seljuk Merv had acted as a magnet to merchants and scholars from all over the civilized world and had been a pleasant place to live.

The most visually exciting monuments surviving in the Merv oasis are the mosques and mausolea, which will be published in the next two volumes of the *Monuments of Merv* series. They belong to a wider, better-known architectural tradition and are less original than the mud-brick buildings of the Merv oasis. These represent a rich heritage of traditional building, and one much more regional and Central Asian in style. Moreover, many of them are ancient – and that is cause for celebration in the context of the Islamic world where most surviving traditional architecture is rarely more than a century old. At Merv, some of these buildings date back more than a millennium, and thus form a cluster of immemorially old and, of course, irreplaceable buildings. These alone are enough to justify the nomination of Merv as a World Heritage Site.

What is remarkable about the buildings, in addition to their sheer survival against all the odds, is the vigour with which the architects

delighted in taking full advantage of the plasticity of the material they were using in constructing the vaults and domes. These are built of mud brick and *pakhsa*, or rammed earth, materials thought to be used for reasons of economy or when nothing better was available. Such materials are indeed cheap, for the clay of which they are formed is readily available in the Merv oasis. All that is needed is chopped straw, water, labour and, of course, sun. However, mud brick is much more than a cheap and environmentally friendly building material, for thick mud-brick walls are a wonderful insulator, cool in summer and warm in winter. In Central Asia's harsh climate mud brick is not a poor man's option but is the material of choice, whether for a humble *ding* or a palace.

Unfortunately, a new hazard has been added to that of neglect and the ravages of time – a rapidly rising water table and its associated salts. This is the result of an irrigation programme on a massive scale undertaken since the cutting of the Karakum canal in the 1950s. The monuments are at risk not only from rising damp, undercutting the walls and causing collapse, but also from the pressures of an increasing population. It is because of their danger and their possible disappearance that in 1992 a programme of 'rescue recording' was initiated by the International Merv Project (IMP).

The IMP is an archaeological collaboration currently operating between the National Institute for the History of Turkmenistan of the Cabinet of Ministers, University College London and the British Museum. This collaboration was one of the results of *perestroika*: it was initiated in 1991 at an international conference held at Merv, thanks to the energy and determination of Professor Vadim Mihailovich Masson, Director of the Institute for the History of Material Culture, Leningrad, and the enlightened *Hakim* of Mary (modern Merv), Kurban Muradovich Orazov. The IMP began as a Russian–British–Turkmen collaboration, between Masson's Institute, the Turkmen Academy of Sciences and University College London, and started work at the time of Turkmenistan's independence. We have now completed seven seasons at the ancient and medieval cities of Merv, with the aim of exploring the occupation history of the two cities, both by undertaking a number of excavations and by analysing earlier work. Preliminary reports on our work have appeared annually from 1993 in the journal of the British Institute of Persian Studies, *Iran*.

Also attending the 1991 conference were the two great ladies of Merv, Professor Galina Pugachenkova and Professor Zamira Usmanova, both of whom had spent many years working as part of the YuTAKE,

the South Turkmenistan Multidisciplinary Archaeological Expedition set up by Vadim Mihailovich's father in the 1940s. Professor Pugachenkova and Professor Robert Hillenbrand of Edinburgh University set off one afternoon to visit some of the buildings out in the oasis which Pugachenkova had surveyed and recorded in the 1950s. Some she found had deteriorated in the intervening years, but others had totally disappeared since she was last there. On the plane back to Britain, Robert Hillenbrand pointed out that although an archaeological expedition was obviously needed, we should not study only the urban sites and neglect the monuments.

Archaeology today is labour intensive and funds are strictly limited. Merv is an enormous site, one of the largest in Central Asia. To begin on a programme of recording the buildings properly in addition to our archaeological programme was beyond our resources, but to ignore the buildings, to let them fall down without at least photographic documentation, would have been culturally irresponsible. So, in a typical British manner, we compromised with 'rescue recording'. Full recording of each building with essential removal of loose debris and limited surface scraping to reveal problematic areas of the plan has not been attempted. Nor have we been able to set up spring seasons in which submerged features can be identified by scrutiny and surface scraping, for this is the time when the denser walls are darker than the surrounding mud-brick infill. Not only did we lack the finance and space for an architectural team, but there were no scholars with experience, time and knowledge of traditional architecture and the Russian literature available to undertake the work. This awaits another programme at another time, a programme dedicated to the monuments. In the meantime what we have prepared is, essentially, our own photographic record of the best-preserved standing buildings of the oasis, supplemented by archive photographs from the nineteenth and twentieth centuries. Old studies, principally by V I Pilyavsky and Pugachenkova, have been consulted and new plans of what is visible on the surface have been drawn by a young Turkmen architect.

Because of an absence of inscriptions, dating the buildings is speculative. It relies on changes in building techniques. One particular problem, not unique to Merv, is a traditional building practice. Mud bricks are made of available soil: often the most convenient source is a nearby collapsed mud-brick building, the soil of which is inevitably mixed with occupational debris, sherds, coins, seeds, etc. These residual artefacts are obviously older than the building for which the new brick is then used. So the mere finding of coins and ceramic

material in and around the building does not necessarily establish the date of construction, although it does establish a *post-quem* dating. What can be a help is finding residual material from a brick still in its original position.

The most remarkable traditional buildings, and the ones for which the Merv oasis is famous and which occur nowhere else – indeed they are the jewel in its crown – are the extraordinary *kōshks*, the best known of which is the Greater Kyz Kala. This monumental building still stands to a height of 15m. Set as it is, alone, in an entirely flat landscape, its sheer size makes a statement, emphasized by its massive form. However, despite its forbidding appearance and restricted entrance, this was not a fortress: there are no towers or arrow slots. Other unusual buildings include *kepter khanas*, buildings united by internal decoration with deep niches. Suggestions for their use range from pigeon houses, to melon-drying houses, archives, or guest houses. While the *kōshks* are one familiar feature, another is an extraordinary series of truncated cones, also built in mud brick, which may have served as ice-houses, or medieval refrigerators. Stepping inside them today, even though the tops of the domes have long fallen in, is to be made aware of the insulating qualities of mud brick. They are always cool, an excellent place for a pause and a picnic.

This book is divided into two principal parts, introductory chapters and a gazetteer of the buildings. There is also an Appendix, providing excerpts from a selection of the most relevant texts mentioning Merv, and a bibliography. The first chapter sets the scene and provides a general introduction to the area, its recent history, the urban centres and monuments, and the history of exploration. The second chapter, by Hugh Kennedy, is an historical overview of Merv in the Early Islamic period up to the sixteenth century, when Merv ceased to play a significant role in the history of the area. The third chapter is an introduction – not a detailed study – to the different ways in which the soil of the oasis was used as a building material, and some of the vaults and domes that were formed from it. The underlying aim of this chapter is to define changes in building technique through the centuries. Starting by comparing buildings from the citadels of the medieval and post-medieval cities (reasonably soundly dated to those times), it is possible to note changes in methods of building between the two. A third group of techniques characterizes buildings presumed

to date to a different time, in this case undoubtedly earlier. Thus a framework of early, middle and late techniques can be established, even though it is another matter to attach fixed dates to them. This core structure is then employed in an examination of the surviving traditional buildings of the oasis in Chapters 4 and 5. The majority are residential buildings, and Chapter 4 discusses seventeen *kōshks*, houses and *dings*, arranged in five groups, which essentially can be divided into two: a small group built before the Seljuk empire, and those probably belonging to the Seljuk period. There does not seem to be any evidence to prove post-Mongol construction. Chapter 5 is less coherent, for it covers the remaining monuments of the oasis, including some built in the unsettled times of the eighteenth and nineteenth centuries.

Chapter 6 tries to set the buildings in their chronological and regional context. This is, in my view, the least satisfactory part of the book because of two obvious problems. It is very difficult for any one person to have the necessarily wide field experience to see the buildings in their full context. I have had the opportunity to visit the monuments of the oasis a number of times, to climb over them, measure them, and return to them. I have some understanding of them. But the related buildings in Khwarazm near the Aral Sea, those near Termez, or in Iran, I have either never seen or have only a very limited knowledge of them. There are similar problems with much of the literature. The impressive publications of Russian scholars are hard of access in Britain and are written in Russian, which I do not read. I have had to depend heavily on the help of others, but however kind they have been, nothing makes up for being able to browse the library shelves, delving into this and that as a train of thought is followed up. I am also well aware that I am not a specialist in traditional buildings nor in Islamic architecture. This study will necessarily seem simplistic at times and at other times just plain wrong, despite the best endeavours of my friends and colleagues. It is, however, very much easier to knock down a building than to build one from scratch. I have found the courage to attempt this task by remembering my mentor, Max Mallowan. He said 'strive for perfection, but be aware that it is impossible to achieve. And remember – it is your errors that will inspire the next generation. If your work is without mistake, you will have killed the subject.' I am convinced I will not have done that.

Georgina Herrmann

CHAPTER ONE

CENTRAL ASIA AND MERV



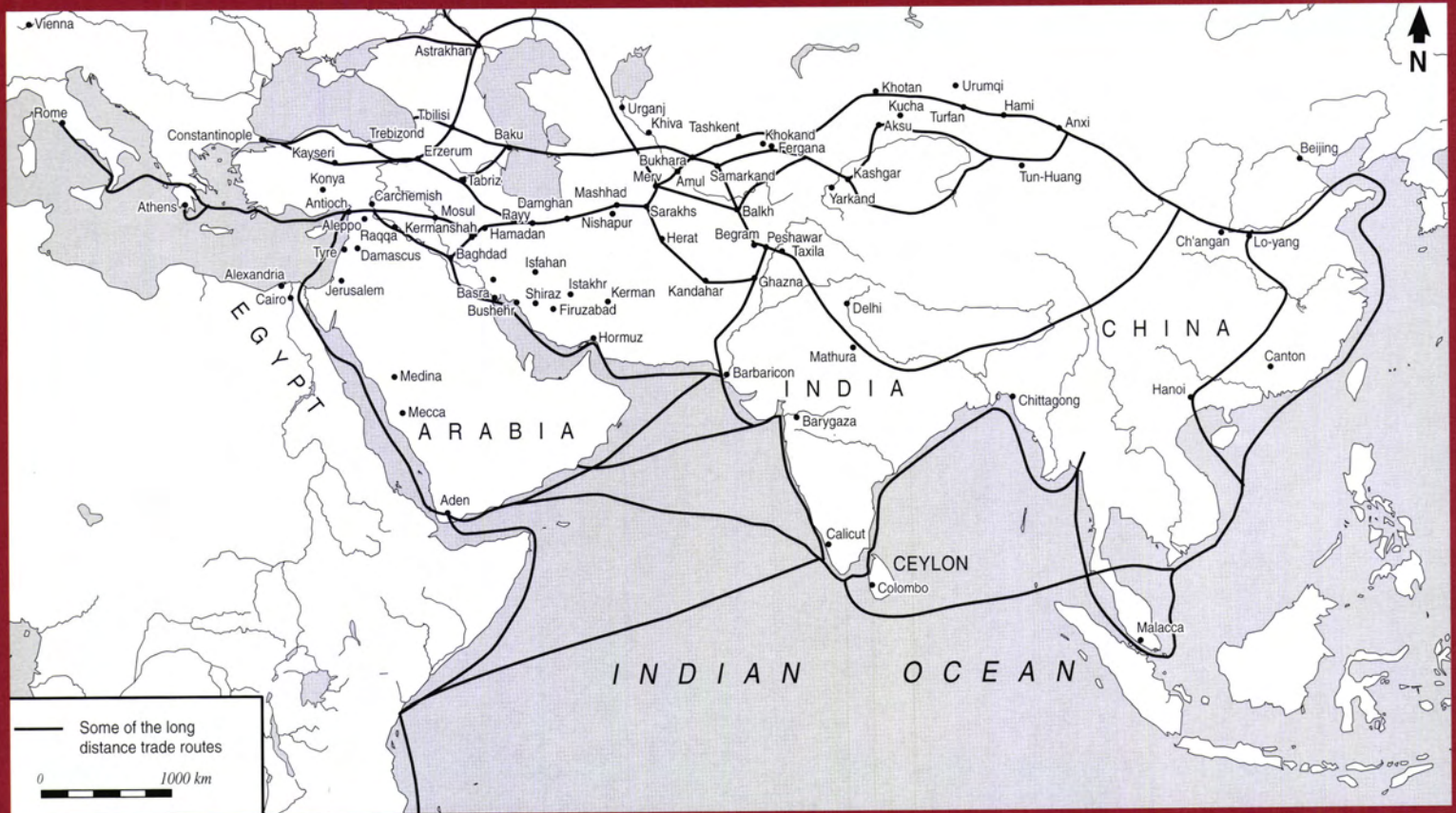


Figure 2
 Central Asia occupies a pivotal position between east and west. There were many routes between the two, which varied according to the political and economic factors of the day. Sea routes gradually replaced the great land routes.

CENTRAL ASIA AND MERV

The position of Merv is so important that it never will be long abandoned and might, with judicious care, rapidly rise from its dust into wealth and consequence.

(Abbott 1843)

The trade of Asia had for millennia been carried by the slow padding feet of camels across the land routes which linked the Middle East and Europe with India and China. It was the expansionist Chinese Han emperors in the second century BC who initiated trade with Parthian Iran. They wanted the famous 'blood-sweating' horses of the Ferghana valley: the Parthians and, later, their Roman customers wanted silks and spices among other oriental luxuries, but above all silk. The caravans travelled from well to well, from oasis to oasis, across the deserts and steppe lands that occupy much of the Asian heartlands. The distance was great and the costs prohibitive, with taxes and customs dues being levied at every staging post. The incentive to find alternative methods of transport was considerable, and a sea route was gradually developed. However, early maritime trade employed small ships, usually hugging the coasts: there was still plenty of rewards for overland trade by caravan, which continued despite the danger of raids by nomads and the disruption of the Mongol conquests. Indeed, it flourished once more in the Pax Mongolica (Figure 2).

A MARITIME ALTERNATIVE

From as early as the first millennium AD the merchants of Sasanian Iran and Rome had competed in the harbours of Sri Lanka to try to gain a monopoly on this lucrative trade, but it was not for another thousand years that the real death blow to the Central Asian land routes would fall with the development of an effective maritime route. European pilgrims had begun to travel to India as early as the twelfth century, visiting the tomb of the apostle St Thomas in south India, and the following century the Franciscan friar, John of Montecorvino, spent thirteen months in India before travelling on to China, accompanied by the merchant Peter of Lucalongo. The 'route was studded with settlements where the Latin friars found little Christian communities of the Nestorian rite' (Richard 1968, 46). But transport was in local ships; as Ibn Battuta wrote: 'One can only sail on the China sea in Chinese ships' (Richard 1968, 47, note 19). By the end of the thirteenth century the Genoese began to try to reach India by circumnavigating Africa. This did not become feasible until the development of large, ocean-going ships and the discovery of the route around the Cape of Good Hope by Vasco da Gama in 1497. The Portuguese seized the advantage and soon acquired control of maritime trade, first with India and then with China. Other European powers quickly joined the game, but this was a maritime struggle.

Figure 1 (title page)
A caravan of camels being loaded with saxaul wood: in the foreground, Pathan and Arab traders. Photographed in 1890 by the French photographer Paul Nadar.

THE RISE OF RUSSIAN INTEREST IN CENTRAL ASIA

The wealth of the caravans had not only underpinned the civilizations of the Central Asian powers but had also maintained their awareness of a wider world. With the decline of the caravans and the funds from taxes levied on their cargoes, some oases ceased to be viable, especially in Chinese Central Asia, where many were deserted as early as the eighth century. Their decline may have been accelerated by climatic changes, with periods of increasing aridity. However, while the mainstream of international trade began to bypass Central Asia, interest in trans-Asian routes continued, initially as a means of trying to circumvent the Portuguese monopoly. In 1557, a British expedition led by Anthony Jenkinson set out to explore a route from Archangel via Moscow to the Caspian Sea. The members of this expedition were the first Englishmen to visit fabled Bukhara. Although this did not lead to a new mercantile route to India, it had an unexpected result in that it increased Russian awareness of their Central Asian neighbours. The Russians had suffered cataclysmically from the Mongol invasions but, after Jenkinson's visit, they began to dispatch embassies to the khans initially ostensibly to try to negotiate the freedom of their citizens, who had been sold as slaves in the bazaars of Bukhara or Khiva. Selling slaves – Russian, Persian or luckless travellers – was a favoured additional source of income for the semi-nomadic Turkoman, living in TransCaspia, the area between the Caspian Sea and the Amu Darya, or Oxus River. Their lawlessness was a factor in steadily increasing Russian interest in their Asian neighbours. Early in the nineteenth century Russian troops began to fight in the Caucasus, and by the end of that century the Russian empire had not only absorbed the Caucasian states but also all the khanates of Central Asia.

ANGLO-RUSSIAN RIVALRY

The rise of Russia was of considerable concern to the British in India. The stage was set for a contest between the two powers for influence in the vast area between the Caspian Sea and the borders of Mongolia and China. To the Russians the riches of India were a prize to be dreamed of, while the British nightmare was of the Cossacks riding to seize India through the passes of the Hindu Kush, a route taken by many of the conquerors of India in earlier centuries, for instance the Mughals.

Another factor was trade. Both Russia and Britain wanted access to Central Asian markets for the large quantities of goods their factories

were producing. However, neither power knew anything in detail about the area, either geographically or politically. As for the khans, based in the great oases of Khiva and Bukhara or in the rich Ferghana valley, they were preoccupied with internecine rivalry and the harem. They knew nothing of the European powers, nor were they aware of recent military developments and of the deadly weapons used by European armies, which would render their massive fortifications virtually useless. With these twin aims of opening up new markets for their manufactured goods and assessing the feasibility of military campaigns in the area, the first essential for both Russia and Britain was information. Thus the scene was set for what has popularly become known as the 'Great Game'. The story of the adventurers from both sides who participated in this exciting but deadly contest is brilliantly told in Peter Hopkirk's book of that name (Hopkirk P, 1990) and need not be repeated here.

The focus was the area occupied by present-day Afghanistan, Tajikistan, Uzbekistan and Turkmenistan (Figure 6), because of its significance as a 'link-zone' between west and east, and north and south. In this context the oasis of Merv was seen as crucial, forming a 'gateway to India' from the north, as well as to Khurasan and north-east Iran (Figure 2). So well aware were the contemporary commentators and journalists of the importance of Merv that the term 'Mervousness' was coined. Located in the Karakum desert, Merv formed an essential staging post on one of the major, historic east-west routes, a road known as the 'Great Khurasan Road' or more popularly since the nineteenth century as the 'Great Silk Road'. The oasis was the last opportunity to rest and to replenish stocks of water and provisions after arriving from Nishapur and Sarakhs before setting out on the 180km-long, hard stage 'across the sorriest waste that ever met the human eye' (Curzon 1889, 140) to Chardzhou, ancient Amul, on the banks of the Amu Darya, and thence by easy stages to Bukhara. Amul was and remains a major crossing point of this great river (Figure 3).

The routes converging on Merv did not just link north-east Iran with Bukhara and points east. One route travelled up the Murghab River to Marv-ar-Rud, where it divided and led either to the great city of Balkh or to Herat, another key to India, while routes to the north led to Khiva and the cities of Khwarazm. Khwarazm, Khorezm, or Chorasmia as it was known to the Greeks, was a fertile country on the lower reaches of the Amu Darya and bordering the Aral Sea. It was conquered by the Arabs in 711 and later formed part of the Seljuk empire. Caravans

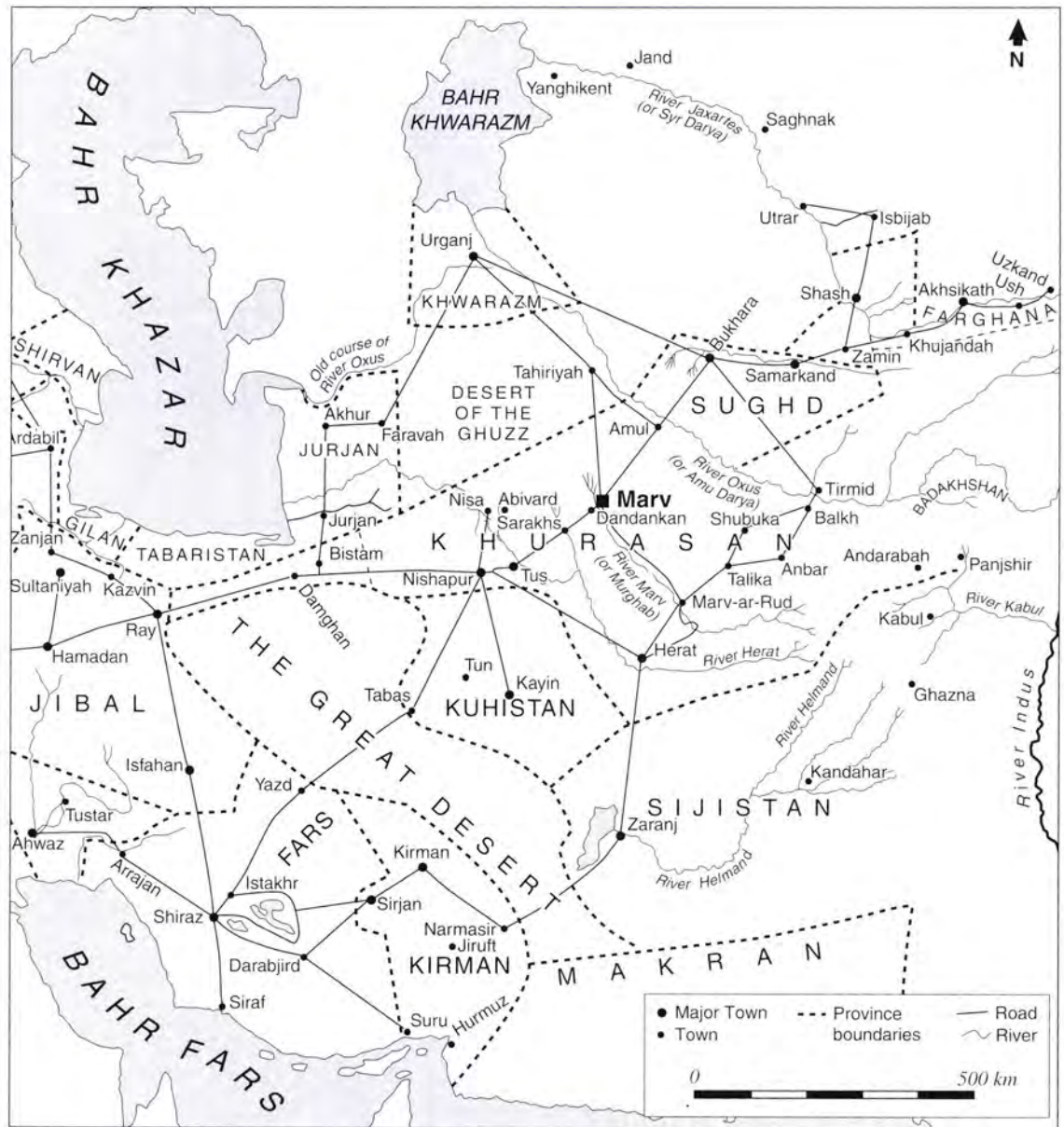


Figure 3
Some of the roads of the eastern Islamic world in the Abbasid period, compiled from le Strange 1905 (maps I, V and VIII-X).

MONUMENTS OF MERV

travelled from Khwarazm both to Bukhara and Samarkand and to Merv. And it should not be forgotten how relatively near these northern cities were to Europe, reached across or round the Caspian Sea and up the Volga River. Central Asia naturally links Europe and the east: there are no serious physical obstacles, other than desert and sheer distance, separating the two, as was shown by the Mongols' creation of one of the most extensive continuous land empires in the history of the world, stretching from the Sea of Japan to the Baltic, from Korea to east Germany.

THE RUSSIAN CONQUEST OF THE CAUCASUS AND CENTRAL ASIA

The Russian advance into, and annexation of, first the kingdoms of the Caucasus and then the Central Asian khanates was remorseless. The spur may have been an audacious plan suggested to Tsar Alexander by Napoleon that their forces should unite to conquer India, although this threat never materialized. In 1801 the Tsar annexed the kingdom of Georgia and in 1804 laid siege to Erivan, the capital of Armenia, which was actually part of Iran at that time. The immense confidence given to the Russians by their defeat of Napoleon led to their conquest of the rest of the Caucasus. In 1813, after they had defeated the Persians, the Treaty of Gulistan gave them all the territory north of the river Araxes, as well as naval rights on the Caspian, a gain confirmed by a further defeat of the Persians in 1828.

Russia's next move, in 1864, was to consolidate its southern frontier with Central Asia by seizing the towns of Chimkent and Turkestan in the north of the Khanate of Kokand. The following year the great walled city of Tashkent, the richest city in Central Asia, fell to the Russians. Its occupation drove a wedge between Kokand and Bukhara, and its new governor-general, General von Kaufman, proceeded to conquer the khanates. When the emir of Bukhara challenged the Russians in 1868, the latter first captured the legendary city of Samarkand – at a cost to themselves of only two lives – before forcing the emir to accept terms, reducing him to a Russian vassal. The next to fall, to a three-pronged attack in 1873, was the Khanate of Khiva, whose conquest had first been considered by Peter the Great. In 1875 Kokand was subdued, and the Ferghana valley added to the Russian empire. The Russian justification for absorbing the khanates was that they were bringing civilization to those suffering from barbarian rule, as well as freeing their own citizens from slavery. In just ten years the

Russians conquered an area stretching from the Caucasus to Kokand. The net was closing in on Merv.

The necessity was recognized for better communications with European Russia before further eastward expansion, and a permanent fortress was founded in 1869 on the east shore of the Caspian Sea at a place to be called Krasnovodsk (now Turkmenbashi). This was seen as an essential forward base for military operations in TransCaspia. However, it was not until 1878 that the Russians were ready to move east and attack the great Turkoman fortress of Geok Tepe on the southern edge of the Karakum desert. Underestimating the courage of their warlike opponents, they suffered their worst defeat since 1717 and had to flee back to Krasnovodsk. Such a disaster had to be rapidly avenged if the khanates were to be held, and a powerful Russian force was assembled under the leadership of General Mikhail Skobelev.

In the winter of 1880, equipped with artillery, rockets and 7,000 troops, Skobelev was ready to advance on Geok Tepe. Despite heavy bombardment, the fortress only fell after sappers had placed a massive mine under the walls; this was detonated on 24 January 1881. The Russian forces poured through the resulting gap, and an appalling slaughter ensued, with more than 14,000 Turkoman – men, women and children – killed in a massacre lasting more than three days. Skobelev's justification was 'The harder you hit them the longer they remain quiet' (Hopkirk, P 1990, 407). Among those killed was one of the khans of Merv, Nurberdy Khan.

Once again St Petersburg assured Britain that Russia had no further ambitions in TransCaspia and no intention of occupying Merv. Indeed Tsar Alexander II sent a personal message to the British ambassador stating that he had called a permanent halt to Russian expansion in Central Asia. St Petersburg's assurances were designed at least in part to ensure that the British did not advance on Herat.

The fall of Geok Tepe had been witnessed by Edmund O'Donovan. Formerly an Irish agitator and member of the French Foreign Legion, he had become the special correspondent of the *Daily News*. He was determined to race the Russians to Merv and with considerable difficulty succeeded in reaching the oasis via Tehran and Sarakhs. He spent five months there, not altogether willingly, as the 'guest' of the Turkoman chiefs. His journey and his time among the Marvazis are graphically described in his *The Merv Oasis, Travels and Adventures East of the Caspian, 1879–80–81* (1882). Although he was confined to his yurt for much of the time, he was able to visit both the dam at Benti and the old cities of Merv.



Figure 4 The French photographer, Paul Nadar, at work. Nadar travelled to Central Asia in 1890.

Figure 5 The *Hakim*, or Governor, of Chardzhou, ancient Amul, by Paul Nadar. Turkoman carpets decorate the walls and floor.



Despite Russian denials, plans for the annexation of Merv continued. In case the slaughter of Geok Tepe had not been warning enough of the uselessness of resistance, the Turkoman khans were invited to the coronation of Alexander III (1881–94) in St Petersburg to make evident the power of Russia. Among them was the only woman Turkoman leader, the remarkable and redoubtable widow of Nurberdy Khan, Gyul Jamal-Khanum. The golden robe given to Gyul Jamal on that occasion can be seen in the excellent museum in Mary, the principal town of the oasis today. Her visit to St Petersburg achieved its purpose. Aware of the futility of opposition to the Russian forces, she was instrumental in the peaceful handover of the oasis.

Russian plans for the takeover of Merv did not rely on Turkoman acquiescence but were multi-pronged. Russian officers travelled to the oasis, disguised as traders. Their purpose was to learn about the defences of the oasis and to win over at least some elders to the Russian cause. Using a combination of stick and carrot, the Russian army advanced to the Tedzhen oasis in 1884, and after a great gathering, or *genesh*, the khans of Merv agreed to accept Russian sovereignty, realizing that there was no other option. On 14 February 1884 the governor of TransCaspia telegraphed to Alexander III 'I have the honour to inform Your Majesty that the khans of the four tribes of the Merv Turcomans, each representing 2,000 tents, have this day formally taken the oath of allegiance to Your Majesty' (Hopkirk, P 1990, 414). A day later the British ambassador in St Petersburg was informed of the fall of Merv.

The annexation of Merv was serious enough from a British point of view, but even worse was the Russian decision to build a permanent rail link from Krasnovodsk to Tashkent and eventually to Vladivostok. The railway was begun in 1880 as a temporary measure to help the attack on Geok Tepe, and plans were soon upgraded with standard-gauge track from European Russia being shipped across the Caspian. Initially the railway ran along the foot of the mountains close to the Persian frontier, before crossing the desert to Merv, which it reached by 1885. Three years later, George Nathaniel Curzon, the future viceroy of India, travelled along the railway to Chardzhou and over the vast expanse of the Amu Darya on a creaking wooden bridge, before reaching Bukhara and Samarkand. Another traveller was the famous French photographer, Paul Nadar (Figure 4). He had left the pleasures of portraiture in the comfort of his studio in Paris to travel in Turkestan. Although the ruins of Merv failed to inspire him, his local scenes are of interest (Figure 1), including his portrait of the *Hakim* of Chardzhou (Figure 5).

The presence of the railway had dramatically changed the military situation. Once again the British protested to St Petersburg, who agreed that the two governments must meet to form a permanent frontier between Afghanistan and Russia's new Central Asian territories. When the British commissioner, General Sir Peter Lumsden, arrived in the oasis of Sarakhs in October 1884 for the meeting of the Joint Afghan Boundary Commission, he found no Russian commissioner but considerable Russian military activity on the ground (Figure 7). Whatever St Petersburg claimed, the military was determined to extend their frontier as near to Herat as possible. At the end of March 1885 the Russian forces, led by General Komarov, seized the oasis of Panjdeh, half-way between Merv and Herat. Furious British and Afghan protests led to the Boundary Commission finally starting work. Although no agreement was reached until 1887, the Russians succeeded in holding on to Panjdeh, but they did not advance any further until 1979.

THE RUSSIAN REVOLUTION AND THE SOVIET EMPIRE

It was not until the closing years of the First World War that TransCaspia again played a role in international politics. The Russian revolution of March 1917 led to the collapse of Tsarist forces and an attempt by many areas, including the Caucasus and TransCaspia, to reassert their independence. This collapse caused the British some unease. It meant that there was nothing to stop a Turco-German force seizing Baku with its rich oil resources and advancing eastwards across the Caspian, thus once again raising the spectre of a threat to India. The British, therefore, set up military missions in Mashhad and Ashgabat and dispatched some troops. War with the Bolsheviks was conducted up and down the railway line, the key to the area. For a while in the winter of 1918 British forces even occupied the Merv oasis but were forbidden to advance further and in the following spring were ordered to withdraw. The Bolsheviks fought their way back along



Figure 6
Turkmenistan and its neighbours.

Figure 7
 A map of the Murghab valley prepared for General Sir Peter Lumsden, the British representative of the Joint Afghan Boundary Commission (1885).



MONUMENTS OF MERV

the line to Ashgabat, reconquered TransCaspia and imposed strong central controls. However, the unchanging importance of Merv was illustrated once again some sixty years later when, in December 1979, the oasis formed one of the forward bases for the ill-fated Soviet invasion of Afghanistan.

The seventy years of the Soviet empire markedly changed the political geography, the economic structure and the environment of the area. In addition to isolating the Central Asian states from many of their former connections, the major political barrier of the Soviet Union now separated western Europe from the Middle East. With the development of a centralized command economy, no area within the Soviet Union remained self-sufficient. Until Gorbachov initiated *perestroika* the area remained essentially closed to foreigners.

THE MERV OASIS

Without water existence is impossible, and thus in the wastes to the north of Akhal and Merv neither birds nor beasts are to be found ...

(Petrushevich in Hopkirk, K 1993, 154)

The Merv oasis is the child of the Murghab River, 'a beautiful river, flowing in deep beds of sand and alluvial deposit' (Lumsden 1885, 565). It rises in the Afghan mountains to the south and dries up in the desert to the north. There have been many changes through time in the Karakum, its rivers and oases, for life in this harsh terrain is dependent on human effort and organization. Originally the waters of the Murghab did not dry up but flowed into a lake, and the Amu Darya flowed via the Uzboy depression into the Caspian rather than the Aral Sea (Bartol'd 1965b). There are few natural barriers to such hydrological changes, and both rivers have changed their courses a number of times. Much of the Karakum would then have been savannah lands rather than desert.

There are many sorts of desert, not just rippling dunes of sand moving in the wind. In the Karakum there are areas of sand dune, known by the Turkoman as *chagah*, but more of it is formed of alluvial silts with intermittent sand cover, known as *chol*, a Persian word for desert, or *kum* in Uzbek (Lumsden 1885, 569). There are no firm boundaries between oasis and *chol*, and there are areas of *chol* within the oasis proper. What differentiates cultivated land from *chol* is water. With irrigation the *chol* becomes oasis, without water it supports a light vegetation, fed by the spring rains, of grass and scrub. Flocks of sheep

still browse in the *chol* in the summer when cotton fills the fields. They return in October.

Not only does the Murghab bring water, the lifeblood of Asia, to Merv but it also brings down silt from the mountains. This forms a great alluvial pan of fertile soil: all that is needed to make such a pan immensely fruitful is water. In the absence of much rainfall – annual precipitation in the Merv oasis is only 50–150mm – agriculture is reliant on irrigation. The extent of an irrigation network is dependent on political will and the economic situation of the day: to set up and maintain such a network is immensely labour intensive. Irrigation does, however, affect both the size of the Merv oasis and the condition of the area between Yolatan, at the current southern limit of the oasis, and Panjdeh (Figure 7). Lumsden noted that this area had once been cultivated: canals had been fed by a dam at Band-i Nadir, which had dried up. Today this tract of land is barren, with only narrow strips of scrub bordering the deeply cut channel of the river.

The Merv oasis was first inhabited in the Bronze Age, in the early second millennium BC. The inhabitants settled in the north, where the Murghab came to the surface, making simple irrigation easy. The Bronze Age world was a rich and complex one, already with a strong international flavour, and with links to Bactria, India and Iran. It was only in the Iron Age a thousand years later that the principal centres moved to the south and the east. Such a move presupposes the introduction of more sophisticated irrigation and the construction of the first of the many dams that have harnessed the river's waters since that time.

Even in the disturbed conditions of the late nineteenth century the Murghab was dammed. O'Donovan, and many of the earlier conquerors of the oasis, realized that 'the water system of Merv is the key to the entire territory. It has its origin at the great dam of Benti, some twenty-five miles [40km] to the south-eastward of Kouchid Khan Kala [modern Mary]. Without this dam the present cultivated area would be reduced to a condition as bleak and arid as that of the plains that surround it' (1882, 175). With an escort of fifty or sixty horsemen he visited the dam:

A broad stretch of calm waters, eighty yards [73m] wide, ... Along its banks were thickets and reeds, and right and left were sedgy plains. Just at the point at which the dam was placed the river expanse was suddenly constricted. For twenty yards [18m] on either side the river bank above the dam was revetted with stout fascines of giant reeds, solidly lashed to stakes planted in the bank to prevent the friction of the current, as it neared the dam, from washing away the earth surface. Huge masses of



Figure 8
A modern dam on the Murghab River near Yolatan in the south of the Merv oasis.

Figure 9
A Turkoman family in front of its felt tent, or yurt, in 1890, by Paul Nadar.



earthwork closed the narrow gorge by which the stream found exit to the lower level by a passage scarce ten feet [3m] wide. The waters rushed thunderingly through this narrow gap to a level eight feet [2.4m] below their upper surface. The passage was some fifty yards [46m] in length, and, like its approaches, was lined with reed fascines.

The object of this dam was to enable lateral canals to be thrown off, which would water the high lands above the level of the main stream northward of this point. The rush of the water was tremendous, and nothing but the most assiduous care could prevent the narrow outlet from being widened to an extent which would have brought the water level with the lower reaches. The administration of this point calls for the best executive ability on the part of the Turcomans. ... It is one of the chief duties of the Ichthyar Khan to see that this dam at Benti is kept in working order, for on it depends the sustenance of the entire Mervli nation.

(1882, 184–5)

The cultivated area of the oasis at this time would have been relatively small, for urban and agricultural life had been made almost impossible thanks to attacks from both Qajar Iran and the khans of Bukhara and Khiva, as well as by Turkoman warriors, who relied on *alaman*, or raids, to enrich themselves. The raids were for profit and for pleasure, as an old soldier, Kurban Ali Beg Marvazi, described:

Those were the days. ... I was then a poor man, but on one day twenty-three horses came to my share, and after twelve years of constant care, without a night in bed, by the blessing of Providence I acquired flocks of sheep and thirty Bokhara camels, and the means to maintain a bunch of horsemen at my back.

Now all that has changed; bad times have come, *alamans* have ceased; never again will I feel that excitement which no one can express, of listening to the tread of the Tekke horse as wearied and tired they pushed along in the valley below, and the certainty that these exhausted men and steeds would have to make a struggle for existence or remain captive in your hands; and when the strife was over and the Tekke fled or captured, to listen to the joyful exclamations of the released captives, and their asseverations that so long as life should remain you should ever be accepted as the most welcome of guests.

Sons of burnt fathers! had you occasion ever to return there, they would know you not, or take care not to be at home when you might have to seek their hospitality.

(Lumsden 1885, 577)

Most Turkoman at this time lived in *yurts* or felt tents (Figure 9), consisting of a lattice-work of poles supporting a central ring, covered



Figure 10
One of the few surviving watch-towers, keeps or *dings* in an area of derelict land near the great Electricity Station in Bairam Ali.



Figure 11
Picking cotton in the Merv oasis. Hand-picked cotton is higher quality than that picked by machine. Cotton had been grown in the oasis in ancient and medieval times, but production ceased in the disturbed conditions of the eighteenth and nineteenth centuries. The Russians reintroduced the cultivation of cotton, 'white gold', and imported improved American seed.



Figure 12
The vast expanse of the Amu Darya, a wide though relatively shallow river.

with thick and durable felt. They lived a semi-nomadic life with an economy based on flocks of sheep and herds of horses and camels, together with some agriculture. In order to escape enslavement, agriculturalists built *dings* (Figure 10) (watch-towers) in the fields, from which they could spot the dust of advancing raiders. Only a few *dings* still survive: they are a typical vernacular building, which once no longer required soon falls into disrepair or is demolished.

THE OASIS IN THE LATE TWENTIETH CENTURY

Today the oasis has probably returned to about its maximum size. Its roughly triangular form can be seen on the satellite image (Figure 13), as can the course of the Murghab entering the oasis in the south: the river is now exploited by no less than seven dams constructed by Russian engineers (Figure 8). A second watercourse, the Karakum canal, crossing the oasis from east to west, can also be seen in the satellite image. This canal was constructed by the Soviet authorities in the 1950s to enable more cotton, 'white gold', to be grown in the Merv oasis. It taps the waters of the Amu Darya (Figure 12) and traverses both the Merv and Tedzhen oases before continuing to Ashgabat. The oasis is criss-crossed with water channels drawn from the Murghab and the Karakum canal. The exploitation of water on this

scale has been made possible by the employment of diesel pumps. The use of heavy agricultural machinery has enabled the landscape to be reformed into large fields, necessary for its efficient use. Collectivization has grouped people into *kolkhoz* or collective farms. With such mechanization and the plentiful use of fertilizers and pesticides, two crops a year can be grown, wheat through the winter to be harvested in the spring, and then cotton.

Cotton (Figure 11) had been grown from at least medieval times, as we know both from historical and archaeobotanical evidence (*Iran XXXI* 1993, 57), but production ceased in the unstable conditions of the nineteenth century. However, its reintroduction and intensification this century has had a profound effect on the landscape: the huge fields interspersed by the occasional line of reeds or trees beside the canals look bleak under the harsh light of the blazing sun. In contrast, medieval accounts describe how pleasant the oasis was, and how fruitful its soils. One of our earliest descriptions was that of a Chinese who had been taken prisoner and lived at Merv in the late eighth century: 'The fences of settlements link without break; trees shade one another' (Appendix). The mere presence of trees softens the air.

Not only has the effect of the cotton crop on the landscape been unfortunate, but the archaeological record has also been seriously damaged. While the historic urban centre of the oasis, the cities of

Figure 13
The Merv and Tedzhen (on the left) oases from space. The Murghab can be seen entering the oasis at its southern tip, while the Karakum canal bisects the oasis, entering on the east and continuing to the Tedzhen oasis (a Landsat image, courtesy of Tokai University Research and Information Center).



ancient and medieval Merv, has fortunately been preserved in an 'Archaeological Park', many of the lesser sites and monuments have either been entirely swept away or left isolated in an agricultural wasteland. The hinterlands of the cities and of the monuments have been lost and buildings are being eaten away by rising damp and salts from the post-1958 high water table.

THE CITIES OF OLD MERV

The historic urban centre from the sixth century BC until the Russian annexation of TransCaspia was on the east of the oasis, where it was well sited for setting out on the 180km desert crossing to Amul and points east. The principal city today, Mary (Russian for Merv), is on the west side, 30km distant. This is the logical starting point for Ashgabat, which was made capital of TransCaspia (Turkmenistan) by the Russians. Paradoxically, it may have been this change which preserved the ancient cities from modern development. Modern Merv, the town and railway station of Bairam Ali, is located to the south of the post-medieval city of Merv. It is just another town in the oasis, the head of an *etrap* or district, not a *vilayet* or province.

To the archaeologist one of the attractions of Merv is that the old cities did not develop in the way usual in Western Asia, where they tend to be consistently built and rebuilt in the same location. Instead at Merv, the cities consist of a series of discrete walled units, built next or relatively close to each other on virgin sites. These were occupied for a

while and then abandoned, not subsequently to be rebuilt. This unusual pattern of development has resulted in many different periods being represented near the present-day surface, and these material remains are thus accessible for exploration, planning and excavation. Nearly everyone you ask will come up with a different number for the cities of Merv, the maximum being seven, the minimum three. The easiest way to think about them is as the ancient, the medieval and the post-medieval cities of Merv, each of which is readily recognizable on the ground and from the air. The ancient city consists of two parts or 'cities': the earliest, known today as Erk Kala, was founded in the sixth century BC and became the citadel of the Hellenistic metropolis, Gyaur Kala. Settlement overflowed the walls and resulted in the development of the medieval city, Sultan Kala, to the west. The post-medieval city is also often considered to consist of two cities rather than one, for there was an eighteenth-century extension to its Timurid foundation. Finally, yet another city, known as Shaim Kala, was probably Early Islamic in date but has essentially been lost to the bulldozer and the plough. Today the cities of Merv occupy in excess of 1200ha and form the largest archaeological site in Central Asia (Figure 15).

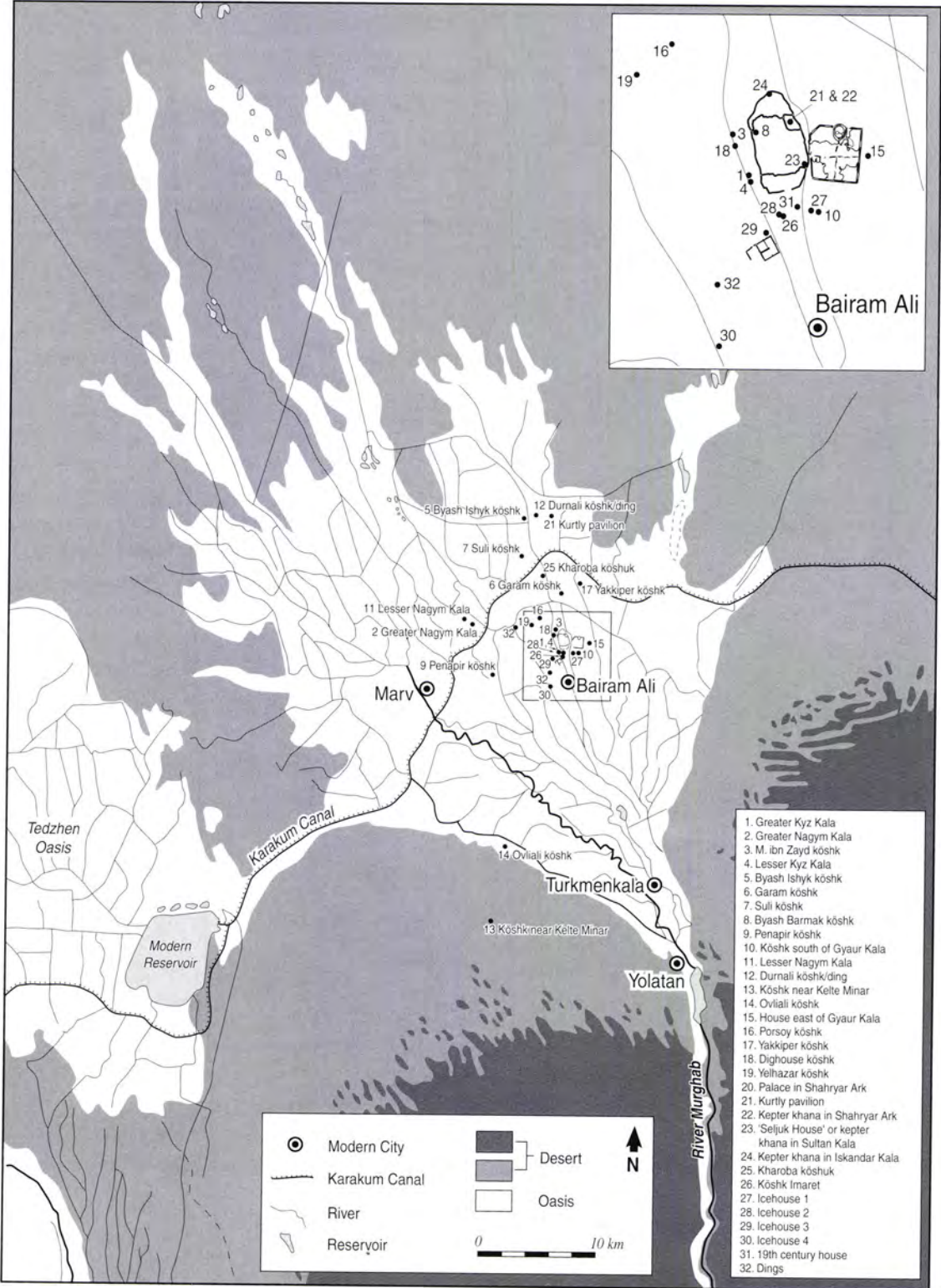
Ancient Merv, Erk Kala and Gyaur Kala

Erk Kala, or citadel castle, is in some ways the most imposing site of Merv (Figure 14). It is enclosed by massive walls, still some 30m high in places, which were continually reinforced until the Early Islamic period, when both Erk and Gyaur Kala were gradually abandoned. It is



Figure 14
An aerial view from the north east of the nearly square Hellenistic city, Gyaur Kala, with its polygonal citadel, Erk Kala. The walls of the Seljuk city, Sultan Kala, can be seen in the distance, together with the Mausoleum of Sultan Sanjar (near the top right).

Figure 15
 The oasis fluctuates in size, depending on the degree of irrigation. It was much smaller in the eighteenth and nineteenth centuries but with the greatly increased agricultural programme undertaken since the arrival of the Karakum canal in the 1950s, the oasis today is considerably larger than on this map, drawn from a map of Turkmenistan of 1993. The purpose of this map is to indicate the position of surviving monuments. The apparent absence of monuments in some areas, such as the southern and north-western sectors, probably reflects either their destruction or their collapse into mounds: numerous such mounds have been recorded in a recent archaeological survey.



polygonal in form, was probably entered via a drawbridge over the moat in the south, near its highest tower, which still dominates the landscape. The geographer al-İṣṭakhrī described Erk Kala after it had been abandoned as

like a city in size except that it is ruined. It is raised up and in spite of its elevation a *qanat* [underground canal] has been brought to it which is still flowing in the present day and melons, green vegetables and other things are grown within it. (Appendix)

His description helps to explain the form of many Central Asian cities with their built-up areas, formed of layers of collapsed mud-brick buildings, and low areas, usually located in the corners. In Erk Kala the low area or garden occupied the northern part of the walled area, while in Gyaur Kala the corners are low. Today they are obscured by dense vegetation, one of the results of the high water table (Figure 16).

With the arrival of the Greeks, the city of Merv was dramatically expanded into a metropolis. The Hellenistic city may have been founded by Alexander the Great but was refounded by Antiochus I (281–261 BC) and predictably called Antiochia Margiana – Margiana

was the name of the oasis. Alexander/Iskander is still remembered at Merv – the northern suburb of the medieval city is known as Iskander Kala. The Hellenistic city is approximately square, each wall measuring some 2km in length. It was laid out on a regular grid plan and occupied some 360ha. In the terminology of the planner, that is about the maximum size for a ‘walk to work’ city, ie one before the introduction of modern transport. This massive expansion not only underlines the increased significance of the city at this time, but also implies a corresponding increase in irrigation agriculture in the surrounding hinterland to enable the citizens to be fed and watered. Hellenistic Merv continued to be occupied for the next thousand years, through the Parthian and Sasanian periods and into the Early Islamic period. It was the longest living of the cities of Merv. After the Arab conquest, Merv became the capital of the province of Umayyad Khurasan, when it formed a political centre of major importance. The new rulers governed from the old city until the eighth century.

Medieval Merv, Sultan Kala

The medieval city began as an extra-mural suburb around the Majan canal, which flowed to the west of Gyaur Kala. Its status was radically



Figure 16
Aerial view: the Razik canal runs between the ancient city, Gyaur Kala, on the left, and Sultan Kala, on the right. The low areas in the north and south of Gyaur Kala can be seen on either side of the central occupation platform, occupied from Hellenistic to early Islamic times.

changed by Abu Muslim, who led the Abbasid revolution against the Umayyad caliphate and established the power of the new dynasty at Merv in February 748. He was not rewarded for his support: too powerful and potentially dangerous, he was murdered at the order of Caliph al-Mansur in 755. However, while at Merv he had 'moved both the centre of government, the Dar al-Imara, and the main *suqs* to new sites next to the canal' (al-Iṣṭakhrī, see Appendix).

The founding of a new centre was probably a deliberate political act to mark the change of power from the Umayyads to the Abbasids. The Abbasid caliphs were to found many new cities, including the famous round city of Baghdad. Merv flourished under the Abbasids and the succeeding Tahirids but declined when Nishapur and Bukhara became the new political centres. Merv's prosperity was very dependent on the political situation of the day. By the tenth century, the geographer al-Muqaddasi reported that much of the suburb was ruined (Appendix). But Merv's fortunes were to change again.

The arrival of the Seljuk Turks in the mid-eleventh century marked the time of Merv's recovery and its greatest glory. It was known as Marw al-Shahijan, which may be the Arabic form of old Persian *Shahgan*, 'kingly' or 'belonging to the king', although Yaqut and others

explain it as *Shah-i Jan*, meaning 'of the soul of the king' (Appendix). The city was walled at the end of the eleventh century, probably by Sultan Malik-Shāh (1072–92). Since the city was already densely inhabited, the walls had to allow for at least some standing structures, although excavation has shown that some buildings were destroyed to make way for the walls. The resulting outline is a rather irregular square, much the same size as the Hellenistic foundation.

The building of additional walled areas of suburbs to north and south (Figure 17) is attributed to Sultan Sanjar (1118–57) and gave the city its present oval form, as well as increasing its size to a massive 4 x 2km (Figure 21).

Sanjar is also credited with constructing a citadel in the north-east corner of the main city, the Shahryar Ark (Figure 17), or Royal Citadel. He moved his residences, the government offices and the mint to the citadel, which was spaciouly laid out with extensive garden areas. However, his great mausoleum, a landmark from the time of its construction, was built in the centre of the city, close to the main Friday mosque and the *suqs*.

The first walls (Figures 17, 18 and 31) of Merv were not walls constructed with serious defence in mind but, as has been established

Figure 17

An aerial view of the northern sector of the medieval Seljuk city of Merv, with its citadel, Shahryar Ark. The ruins of the palace [20] and the *kepter khana* [22] can be seen in the centre of the Ark. The oval walls of the northern suburb, Iskandar Kala, are also visible.

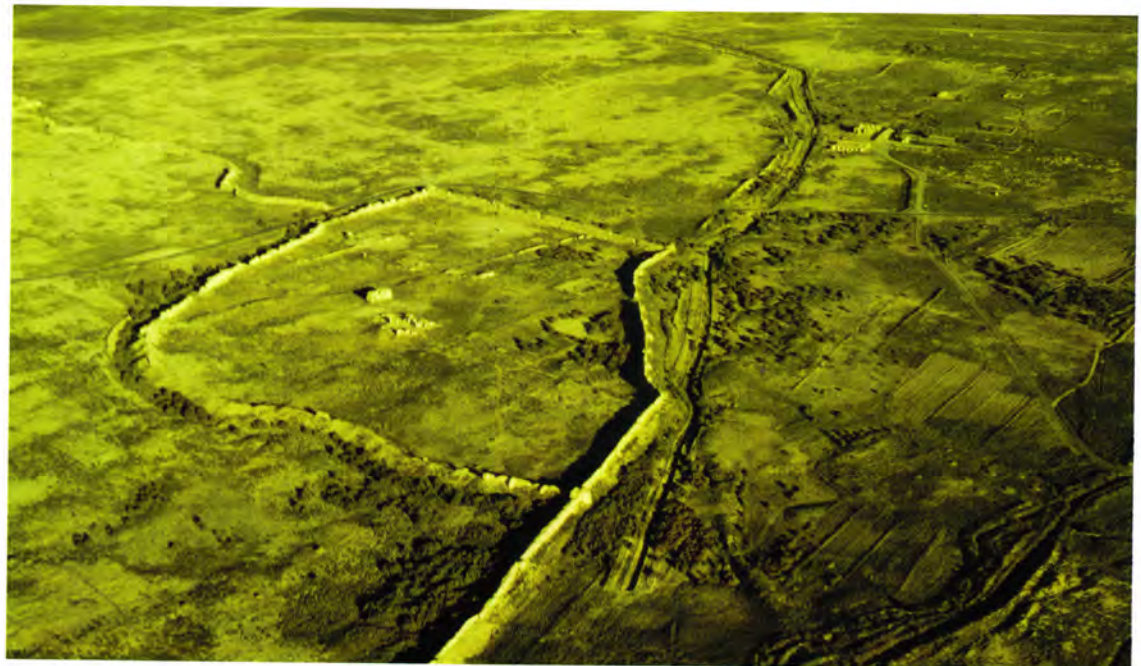




Figure 18

A great tower on the east wall of the medieval city, Sultan Kala. The walls still survive to a height of some eight metres. The remains of the walkway along the top can be seen, as well as numerous arrow slots.

in recent years by Pierre Brun and Akmohammad Annaev, were only 8m high and were hollow (*Iran XXXV* 1997, 20–2). This would have made them unsuitable to withstand attack by catapult. They were probably built more to deter marauders from the desert, always a risk in these oasis cities, than to fend off a serious attack. These walls were later massively reinforced: the internal rooms and galleries were blocked and a second skin of mud brick constructed against the exterior walls (Figure 31). This work not only served to strengthen the walls but also incidentally to preserve the earlier phases, with its galleries and crenellated parapets inside the later reinforcements (Figure 25). The date of this renovation is not yet certain, although preliminary analysis of ceramics recovered from excavation suggests that it was undertaken before the unwelcome arrival of the Mongols.

The dramatic encirclement and the repeated sackings of Merv by the Mongols are well known, thanks to the accounts in numerous written sources (Appendix). The once flourishing city was laid waste by three successive invasions in 1221–2, the population driven out and slaughtered, the wealth of the city plundered, the books of its libraries burnt, and, most disastrous of all, the dam on the Murghab River destroyed. Medieval writers such as Juvayni paint a grim picture: ‘The city which had been embellished by great men of the world, became the haunt of hyenas and beasts of prey.’

Post-Mongol Merv

These accounts suggest that Merv was abandoned and remained a place of desolation for almost two centuries until a new Merv was built a few kilometres to the south (Figure 21). However, archaeological investigations in Sultan Kala prove that life did continue after the Mongol pogroms, although at a reduced and apparently impoverished level (Figure 19). There was a Mongol governor, Arghūn Āqā, and mint, and Mongol reconstruction included public buildings, such as a small Buddhist temple (Pugachenkova 1958a, 351–5), as well as private dwellings. However, although life continued at Merv, the population of the oasis regained pre-Mongol levels only in the very recent past.

In the fourteenth century Merv was incorporated into the Timurid empire, and once again a new city of Merv was founded by Shāh-Rūkh (1405/6–47), who is also credited with rebuilding the all-important dam. The post-medieval walled city is known today as Abdullah Khan Kala (Figures 20 and 21), but this is a very different town from the earlier cities of Merv. It was a provincial centre, occupying less than a square kilometre: its small size reflected its diminished status. Bukhara, Samarkand and Herat were the favoured centres of the time. Nevertheless, according to contemporary historians, it was one of the strongest and best-defended fortresses of the day, with a moat and massive ramparts.

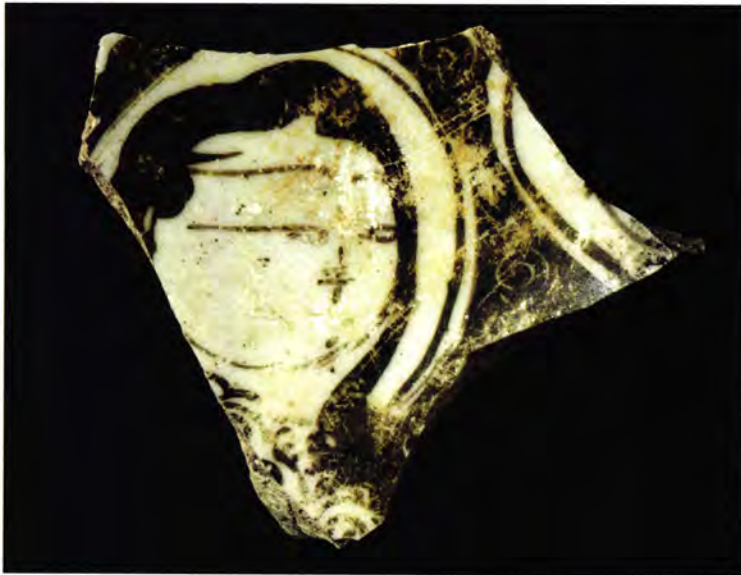


Figure 19

A fragment of Mongol period lustre ware painted with a face, found in excavations near the Kyz Bibi mausoleum to the west of Sultan Kala (A Annaev).

In the eighteenth century a rectangular extension, Bairam Ali Khan Kala, was built to the west of Abdullah Khan Kala and is often said to be another 'city of Merv'. Little survives today within these moated enclosures, although occupation probably continued into the early nineteenth century. They had been abandoned by the time the Russians acquired the oasis in 1885, even though many buildings were still standing above ground. The American archaeologist, Pumpelly, described the ruins of the cities in 1904 as follows:

In preservation, [they] ... reach from Bairam Ali's state of brick-robbed walls and still-standing battlements, with gates and inner streets that may yet be ridden through to the round-worn mounds of far more ancient cities ...

(1908, 333)

The current 'city of Merv' took its name from Bairam Ali Khan Kala and began life as a Russian garrison town. Since then Bairam Ali has grown into a large Soviet-style city, with areas of pleasant brick-built housing belonging to the early years of the century. Interesting buildings from

Figure 20

An aerial view of the much smaller, post-medieval or Timurid city known as Abdullah Khan Kala, looking west towards the modern town of Bairam Ali. The ruins of the citadel and its palace are in the bottom right corner of this square enclosure, less than a kilometre square.



MONUMENTS OF MERV

this time include the Russian church (Figure 130) and the 'Sanatorium' (Figure 131), built as a hunting lodge for Nicholas II, when much of the best of the oasis was incorporated in his Imperial Murghab Estate.

THE MONUMENTS

Relatively few of the traditional buildings of Merv have survived, and they are disappearing fast. Not surprisingly, not a single structure survives above the present ground surface within the walls of the ancient city, Gyaur Kala, although there are some around its perimeter. In Sultan Kala, parts of its magnificent medieval walls are preserved as is, of course, the great cube of the Mausoleum of Sultan Sanjar, but not the buildings of the surrounding mosque, *madrasah* and *hammam* (or bath-house), nor its minaret, demolished in the early twentieth century. The vast area of the medieval metropolis, like Gyaur Kala, consists mostly of mounds covering once-busy streets and housing. The best-preserved building is the little *kepter khana* within the citadel, and this relatively isolated area also preserves the walls of the 'palace' and

fragments of a few other buildings. Much of the plan of the citadel with its streets and large courtyard buildings can be reconstructed from aerial photographs and ground survey.

There are only four other buildings more or less above ground in Sultan Kala and its suburbs, and these are all in varying degrees of repair. However, their sheer survival within an otherwise mounded area raises questions as to why they stand above ground when everything else has collapsed. Some mausolea have been preserved because they were venerated and more or less kept in repair until the nineteenth century, and because they were often built of fired bricks. However, being venerated was not enough in itself. The small mausoleum outside the walls to the west, known as Kyz Bibi, is only a shell, although it was more or less complete in 1890, as shown by Zhukovsky's photograph (1894, 164).

Practically nothing survives within the post-medieval city of Abdullah Khan Kala but this was because of the removal of bricks for construction work. A few buildings outside the walls to the north escaped demolition, probably because they were made of mud bricks. These included some of the extraordinary cone-shaped structures which rise above the landscape and which may have preserved the ice made in winter into the blazing summer heat.

Survival of buildings in the oasis is even more a matter of chance and of the degree of agricultural development. A few *köshks* (castles) survive, but their associated settlements have usually been ploughed out. Their original names have long been forgotten: the names used locally, such as Suli/watery, Durnali/crane, or Garam/black, are recent. Often there is no name: however, when there is a name, it seems preferable to use it here rather than giving the building a number. Names are easier to remember than numbers.

ANCIENT AND MEDIEVAL REFERENCES

Merv has never been a 'lost city'. There are references to, and descriptions of, Merv from the Achaemenian period to the present day,

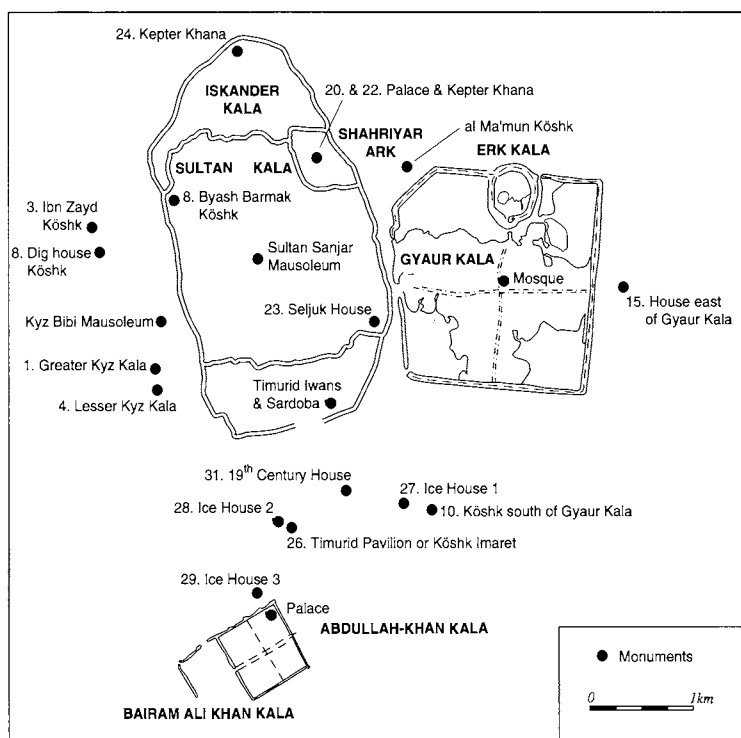


Figure 21
The cities of Merv and the monuments in and around the Archaeological Park 'Ancient Merv'.

although the medieval and later ones are more comprehensive (Appendix). The earliest mention of the oasis, which refers to it as Margush or Margiana, is in the Achaemenian period in the time of Darius I, the Great (522–486 BC), who had to put down a revolt on his accession. Margiana formed part both of the Achaemenian empire and that of Alexander the Great and his Seleucid successors, and it is usefully described by Pliny the Elder and Strabo, among others. However, the most informative early text is Chinese. Du Huan was an Abbasid prisoner of war and was detained at Merv for a while on his journey to Kufa and back to China by sea. He wrote a *Record* of his travels which no longer survives, although a member of his family, Du You, included some of it in his history of Chinese institutions, completed in 801. This describes the oasis and the ancient city, Gyaur Kala and seems to be remarkably accurate: there were indeed two Buddhist monasteries, one within the walls and one without, and salt marshes are very much a part of the lower areas of the city today. His reference to carved wood reminds one of medieval Damascus or Fez.

The city walls are square and run for 15*li* [7830 to 8370 metres]. [The inhabitants] made the city gates with iron. Within the walls there is a salt pool. There are also two Buddhist monasteries. [The state's] borders [span] from east to west 140*li* [73 to 78.1km] and from north to south 180*li* [93.9 to 100.4km]. The fences of settlements link without break; trees shade one another. [Merv] is enclosed from every direction, since all around is shifting sand. In the south there is a great river which flows across the border and divides into hundreds of channels [sufficient] to irrigate a prefecture. The land is fertile; its people are clean. Residences are tall and solid; market quarters are level and neat. Wherever wood is used it is carved and patterned, and plasterwork is painted with designs. (Appendix)

In the tenth century AD a number of scholars wrote geographies describing the lands of the Abbasid caliphate. One of the fullest descriptions of Merv and its all-important water system is provided by al-Iṣṭakhri:

Each district and street has a little river running from this river. In these little rivers there are wooden boards with holes bored in them so that the people can be fair in obtaining their shares of water. If it increases each one takes his share of the increase and the same if it diminishes. In charge of this water is a single Amir [262] who is more important than the governor [*wali al-ma'una*]. I have been told that he pays more than ten thousand men, each one of whom has work on the water supply. (Appendix)

He also commented on the fruits of Merv, which were, and are, famous for their flavour and quality: 'Among the best of its fruits are the melons which are cut into strips and dried and taken to Iraq and I do not know of any other place where this is possible.' Yaqut writing in the thirteenth century noted a saying of Caliph al-Ma'mun: 'The noble and humble in Marw enjoy three things equally; the water melons, the cold water because of the amount of ice there and the soft cotton.' Yaqut lived at Merv

for three years and found nothing to criticize except that they suffer from the Guinea worm very badly and very few people escape it each year. Were it not for the disaster which afflicted that town with the coming of the Tatars and its destruction, I would have stayed there for the rest of my life because of the kindness of the people, their good-nature, the excellence of the company and the number of books on the principles of law there.

(Appendix)

Merv never fully recovered from the Mongol devastation, which has been described in detail by a number of authors, including Ibn al-Athīr:

The Tatars then sent to the neighbouring areas to collect men for the siege of Merv. They invested the city with great ferocity and persevered in the fighting.

The people of the town were demoralised by ... the extent of the killing and taking of prisoners among them. On the fifth day of the siege, the Tatars sent a message to the Amir who was in charge saying, 'Do not destroy yourself and the people of the town. Come out to us and we will appoint you Amir of this place and leave you in peace.' So he sent to ask for a guarantee of safe-conduct for himself and the people of the town and he was given it. ... So they all came out and no one remained in it. He [Genghis Khan] sat on a golden throne and ordered that the troops who had been seized should be brought before him. When they were in front of him, they were executed and the people looked on and wept.

When it came to the common people, they separated men, women, children and possessions. It was a memorable day for shrieking and weeping and wailing. They took the wealthy people and beat them and tortured them with all sorts of cruelties in the search for wealth. Some of them died when there was no money left to pay their ransom. Then they set fire to the city and burned the tomb of Sultan Sanjar and dug up his grave looking for money. They said, 'These people have resisted us' so they killed them all. Then he [Genghis Khan] ordered that the dead should be counted and there were around 700,000

MONUMENTS OF MERV

corpses. We come from God and to Him we return with regard to what befell the Muslims that day [the standard Koranic formula in the face of catastrophe].

(Ibn al-Athir, Appendix)

TRAVELLERS AND SCHOLARS

One of the first Englishmen to visit the oasis was Major James Abbott in 1840. At that time Merv was in acute decline, much reduced in size, although still important because of its position. Abbott found the oasis 'more dreary than the desert itself' and the town itself 'an assemblage, upon the Murghab, of about one hundred mud huts, where a considerable Bazaar is held. ... The trade passing through is very considerable, Merv connecting Bukhara and Persia, Khiva and Afghanistan' (Abbott 1843). Abbott was unable to visit old Merv, only

glimpsing its ruins on the horizon. Other early travellers visiting the oasis included people like Burnes, Connolly and Wolfe, better known for their parts in the 'Great Game'. The first foreign account of life in the oasis was provided by O'Donovan, who did visit the cities (1882).

The Russian annexation of Merv in the spring of 1884 had a fundamental effect on conditions in the oasis. On the positive side, it brought to an end the period of lawlessness and inter-tribal warfare, and communications were transformed with the arrival of the Trans-Caspian railway (Figure 22). The first photographs of Merv were taken even before the arrival of the railway by Prince Dondukov-Korsakov, the civilian governor of the Caucasus and southern Turkmenia, while the first excavations were initiated by General Komarov in 1885.

Russian control led to a major influx of new peoples, Armenians, Kurds, Tatars and Kazakhs, as well as Russians, some of whom settled in what was to become the town of Bairam Ali. To speed construction,



Figure 22
A train travelling across the bridge over the Amu Darya in 1890, with a group of Turkoman and their baggage in the foreground. Photographed by Paul Nadar.



Figure 23
The buildings in the citadel of the post-medieval city of Merv, known today as Abdullah Khan Kala, in 1890, photographed by Zhukovsky. These were subsequently demolished for building material.

building materials were collected from the abandoned cities of Abdullah Khan Kala and Bairam Ali Khan Kala. The buildings were not, unfortunately, recorded prior to demolition.

The first to express outrage at their demolition was Academician V A Zhukovsky. He was sent to Merv by the Imperial Archaeological Commission and spent three months there in 1890. Zhukovsky was a prominent Russian orientalist and medievalist, who can be considered the founder of the serious study of Merv. He undertook a topographic survey of the cities and recorded and photographed some of the most important standing monuments, then in a considerably better state of repair than today (Figures 23 and 24). A real pioneer, he did not just focus on the mausolea but included some of the *köshks* (Figure 28) and ice-houses (Figure 113) in his study. He was indeed the first person to suggest that the purpose of these unusual conical buildings might have been to store ice or snow. He was also the first to collect and translate

a number of Arabic and Persian writings about Merv, as well as assembling local traditions about the buildings, including the oft-quoted myth of Sultan Sanjar's marriage to a fairy. His *Drevnosti Zakaspiiskogo kraya. Razvaliny starogo Merva*, or *The Ruins of Old Merv*, was published in 1894 and remains a standard work on Merv. It was extensively commented on by W Barto'ld (1921). A less scholarly account of the Mausoleum of Sultan Sanjar had been published a year earlier by D I Evarnitsky.

Shortly after Zhukovsky had left, the President of the Imperial Russian Archaeological Society, Countess Uvarova, visited Merv on her way back from Samarkand and was dismayed. The protests of Russian scholars continued, although without much effect until in 1914 the Imperial Murghab Estate undertook repairs on the southern wall of Sanjar's mausoleum. In the meantime essential maintenance had been undertaken at the initiative of Gylul Jamal-Khanum and her son,



Figure 24
Part of the palace in the post-medieval citadel in 1890, photographed by Zhukovsky. Note the doorways, the beam-slots for the timber floors and the panels of plastered decoration.

Yusufkhan: their commemorative slab still lies in Sanjar's mausoleum. Other travellers, photographers and scholars visited Merv in the 1920s including A E Schmidt, A A Semyonov, A B Udalenkov, V L Vyatkin and B N Zasytkin, while A Y Yakubovsky and Ernst Cohn-Wiener photographed some of the monuments.

The first serious architectural study of two mausolea, Sultan Sanjar and Muhammad ibn Zayd, was undertaken by Zasytkin in 1927. By the 1930s repair work was being undertaken by the Turkmenian Research Institute for History, Language and Literature, which sent two architects to Merv, N M Bachinsky and V I Pilyavsky. In addition to studying the mausolea Pilyavsky recorded a number of major monuments around the cities and out in the oasis. The resulting articles appeared in the 1940s and are extremely important. Together with E Atagaryev, he published a useful survey of the monuments of Turkmenistan in 1974.

In 1945 the All-Union Archaeological Conference in Moscow initiated a major archaeological programme in southern Turkmenistan under the direction of Professor M E Masson of the History Faculty of the Central Asian State University at Tashkent, an Academician of the Turkmenian Academy of Sciences. Masson can be considered to be the 'father of Turkmen archaeology'. He founded the YuTAKE and trained the next generation of Central Asian archaeologists, including his son, Vadim Mihailovich. After successful seasons at the Parthian royal citadel of Nisa near Ashgabat, he transferred his team to Merv in 1946. His teams, known as 'detachments,' were involved both in excavation and in recording the standing monuments of the oasis.

The excavations initiated by General Komarov had been continued in 1904 by the American, Raphael Pumpelly, and in the 1930s by A A Maruschenko and B B Piotrovsky of the State Hermitage Museum

in Leningrad. Major excavation, however, only began with Masson's work in Erk Kala, Gyaur Kala, Sultan Kala and the suburbs outside the walls. Work continued in the various cities of Merv through the 1960s, 1970s and 1980s, with much attention being paid to the Islamic layers of Sultan Kala under the direction of Professor Terkesh Khodzhaniazov of Ashgabat University, who was also trained by Masson. In the late 1980s and early 1990s Alaguli Berdiev began excavations to establish the date of the foundation of Bairam Ali Khan Kala, a site now partially absorbed by the modern town, and he also worked in Abdullah Khan Kala.

Galina Pugachenkova, a member of the Seventh Detachment of YuTAKE and later Masson's wife, was charged by him with the task of recording the standing buildings of the oasis. It is thanks to her that there are records of the surviving monuments, which she visited in the years between 1950 and 1956. Preserved in a desert-type environment, the monuments were in a considerably better state than they are today, as were their associated settlements, now mostly lost. Following in Zhukovsky's footsteps, Pugachenkova did not confine herself to studying the mosques and mausolea but also recorded the traditional buildings. Her work is of fundamental importance, and in many cases was the first account of many buildings. It was published in a monograph, volume VI of the *Trudy YuTAKE* in 1958. Two further *köshks* were discovered later and published in *Trudy YuTAKE* XII. With Zhukovsky's book and Pilyavsky's articles, these are essential reference works for any studies of the Merv monuments. As with any pioneering work, there are errors, particularly with the accuracy of some of Pugachenkova's plans, but the benefits far outweigh the disadvantages. Useful studies have also been undertaken by A M Pribytkova (1973), and more recently by M Mamedov and R Muradov.

CHAPTER TWO

MEDIEVAL MERV: AN HISTORICAL OVERVIEW

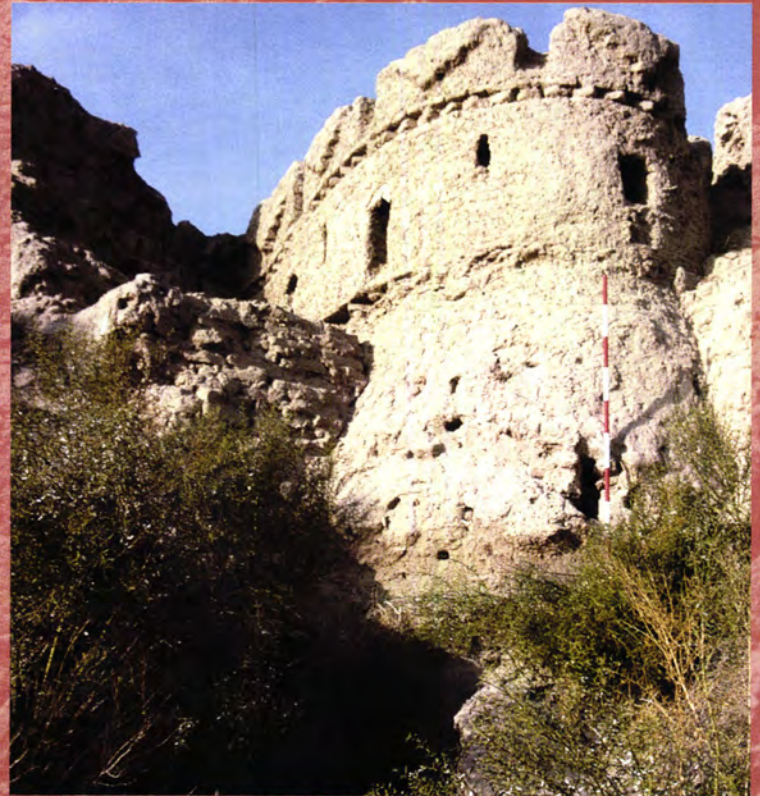




Figure 26
The religious complex containing the mausolea of two Askhab or 'Companions of the Prophet'. Behind the mausolea is a pair of iwans of the Timurid period, and in the foreground on the right the covered water cistern, or *sardoba* (photographed in 1890 by Paul Nadar). For another view, see Figure 125 on the right. It was entered through an arched portal and steps led down to the canal-fed cistern. It is still in use today.

MEDIEVAL MERV: AN HISTORICAL OVERVIEW

BY HUGH KENNEDY

FROM THE MUSLIM CONQUEST TO THE RISE OF THE TAHIRIDS

The first detailed references to Merv in the Arabic historical literature come from the years 650–1 when the last of the Sasanian kings, Yazdgard III, tried to take refuge in the city and use it as a base to resist the pursuing Arabs. The city at this time was governed by a *marzbān* (military governor of a frontier area), whose name is given as Māhawayh b. Māfanāh b. Fayd (Ṭabarī 1879, i, 2873–4, 2876–2881). Merv at this time seems to have consisted of the *quhandiz* (literally, old castle, ie Erk Kala) and the walled *madīna* (or city, Gyaur Kala) though the *marzbān* is said to have had a palace on the Asadī Khurasānī canal to the east of the city. Merv lay on the borders of the Turkish steppes and the *marzbān* and the local *asāwira*, or cavalry, were engaged in frequent conflict with them. The *marzbān* himself was almost certainly a Magian; at one point he is said to have had a *mawbadh*, or Magian priest, with him and a member of the Magian community in Merv came out to help the fleeing Yazdgard with the rituals. There was also a Christian community headed by a *maṭrān* (metropolitan or archbishop), who was called Īliyā (Ṭabarī 1879, i, 2883). There is no mention in the Arabic sources of either Buddhists or Jews in the city.

The *marzbān* viewed the arrival of the fleeing shah with some apprehension, fearing apparently that he would take over the city from him. According to one account, Māhawayh had put his son Barāz, described as the *dihqān* (noble) of Merv, in charge of the defences with orders not to let Yazdgard in. Yazdgard wished to transfer the governorate to one Farrūkhzād, or, in another account, to his brother's son Sanjān. Hearing of this, Māhawayh made contact with the Turkish leader, Nīzak Tarkhān, and asked for his support against Yazdgard. The shah was obliged to flee and took refuge in a mill in the village of Zarq, near where the waters of the Murghab were divided into canals to irrigate the oasis. Here he was recognized and murdered by the miller, no doubt hoping to ingratiate himself with the *marzbān*. His body was taken by the Christian community, because the shah's grandmother had been a Christian, and buried in a vault or chapel in a garden below the city.

As so often happens, in early Islamic conquest narratives, there is a good deal of confusion and contradiction between the different reports. However, we can be reasonably certain that Yazdgard approached Merv hoping for support, that this was refused and he was not allowed to enter the city. The Persian *marzbān* was prepared to ally

Figure 25 (title page)
The medieval walls of Sultan Kala. The walls were later strengthened by being infilled and encased: this has preserved the crenellated decoration and arrow slits of the earlier phase of this tower on the south wall.

with the Turks to resist him if necessary, and he was done to death and buried outside the city.

Surprisingly, the Muslim conquest of the city is only given a bare mention. It is said that Ḥātim b. al-Nu'mān al-Bāhilī made peace with the *marzbān* in exchange for the payment of around 2,000,000 dirhams per annum (Ṭabarī 1879, i, 2888). According to al-Balādhurī (Balādhurī 1866, 405–6), it was the *marzbān* who took the initiative, asking for a peace agreement, and this was granted in exchange for the tribute, 2000 *jarībs* of wheat and barley and an agreement that the people of Merv should make space for the Muslims in their houses. The collection of tribute was to be organized by the people of Merv themselves under the control of the *marzbān*, and the Arabs simply took the sum raised. There is no mention of any fighting, and it would appear that the city was taken *ṣulḥan* (by treaty) rather than *'anwatan* (by force). This would have allowed the inhabitants to retain their houses and possessions in exchange for tribute. Even on these easy terms there was opposition, and Māhawayh was obliged to go to Kufa during the reign of 'Alī (656–61) and ask him to write to the *dihqāns*, *asāwira* and *dihsalārs* (governors of villages), ordering them to pay the tribute (Balādhurī 1866, 408).

At this stage, there seems to have been very little Arab settlement in Merv, and the Arab garrisons were probably rotated, troops returning to Iraq as new ones were sent out. In the year 51/671, however, this changed when the governor of Iraq and the east, Ziyād b. Abīhi, sent 50,000 men from Basra and Kufa to settle permanently in Khurasan (Ṭabarī 1879, ii, 81; Balādhurī 1886, 410; Shaban 1970, 32–4). At this stage the settlement seems to have been confined to Merv and the villages of the Merv oasis. Among the settlers were Abū Barza 'Abd Allāh b. Naḍla al-Aslamī and Burayda b. al-Ḥuṣayb al-Aslamī. Burayda is said to have died in Merv in the caliphate of Yazid (661–4), and his tomb is still shown as one of the two *ashkhab* (Arabic *aṣḥāb* = companions of the Prophet), in the southern suburb of Sultan Kala (Figure 26). In 53/673 Khurasan became a separate governorate, rather than a dependency of Iraq, when the caliph appointed 'Ubayd Allāh b. Ziyād to the province.

For the next seventy-five years, Merv was the capital of Umayyad Khurasan and the seat of the governor. The province was vast, stretching from Rayy (south of Tehran) in the west to the furthest limits of Islamic conquest in the east and from Khwarazm in the north to the furthest edge of Sistan in the south. The fact that a large number of Arabs had settled there, certainly more than in any other area of Iran,

and that it was the base for military expeditions beyond the Amu Darya, or Oxus, meant that the governorate of Khurasan was one of the most important offices of the caliphate and Merv a political centre of major importance. All those, both Arabs and newly converted non-Arabs (*mawālī*), came to Merv to join the armies. It was probably in Merv, too, that much of the booty was distributed to the participants.

The establishment of the governor of Khurasan in Merv made the city a magnet for merchants and settlers. Early Islamic administration involved the collecting of taxes, bringing them to the provincial capital and paying salaries and allowances to those whose names appeared in the tax and payment registers (*dīwāns*). People, Arabs and non-Arabs alike, who wished to take part in military campaigns, lobby the governor for favours or sell goods and services to officials and soldiers, flocked to the city.

We can reconstruct little of the topography of Merv in this period. There is no evidence that the *quhandiz* was the centre of government, although it was used as a state prison on occasion. In 102/720–1, eight men who had been appointed as local governors in Khurasan by the disgraced Yazīd b. al-Muhallab were confined to the citadel, where some of them were tortured and killed (Ṭabarī 1879, ii, 419). In 126/744 the last Umayyad governor of Khurasan, Naṣr b. Sayyār, confined his opponent, Juday' al-Kirmānī in the *quhandiz* but he subsequently escaped through a water-channel (*majrā' al-mā'*). Apparently at this time there was a designated officer in charge of the *quhandiz*, Muqātil b. 'Alī al-Murrī (Ṭabarī 1879, ii, 1859, 1861). Later, in 128/745–6 when Naṣr b. Sayyār was threatened by the growing power of the supporters of the Abbasids, he moved the armoury and the *dīwāns* to the *quhandiz* for safe keeping (Ṭabarī 1879, ii, 1919–20). However, at no time in the confused struggles for power in Merv at the end of the Umayyad period, was the *quhandiz* defended or used for military purposes.

The centre of government in Umayyad times was not the *quhandiz* but the Dār al-'Imāra or government house. The first Dār al-'Imāra, 'where the governors of Khurasan had lived' was certainly inside the walled city (Ṭabarī 1879, ii, 1984) but we are not given any closer location. However, by analogy with other early Islamic political centres (Kufa, for example) we can be reasonably certain that it was close to the mosque. Now we know from the account of the Arab geographer al-Iṣṭakhrī, and from excavation that the first mosque was in the centre of the walled city below the site of the Seljuk mosque. The Dār al-'Imāra was probably in the area and may even have shared a common wall with the mosque.

Before the end of the Umayyad period, however, the centre of civic life was shifting westwards to the area of the Bāb al-Madīna, or City Gate, in the west wall of the great ramparts. Al-İřakhrī, explains that as Islam expanded in the city another mosque (confusingly known as the Old Mosque) was built at the Bāb al-Madīna. This was also where the main markets of the city were to be found. It is not clear from the Arabic text whether the 'Old Mosque' was inside or outside the city walls but given that the land slopes fairly abruptly to the Razik canal outside the gate, we should probably look for the mosque and *sūq* inside, possibly in the area now occupied by the small military camp. In 128/745–6 this area was the scene of heavy fighting between the Umayyad governor Nařr b. Sayyār and his enemies. The enemy attempted to enter the *madīna* but were opposed by Nařr's son Tamīm, who defended the bridge over the Razik canal while his father prevented them from taking the *sūq* (Ṭabarī 1879, ii, 1928).

Merv attracted settlers from elsewhere in Khurasan. Among these was the Bukhāra Khudā, or local Iranian ruler of Bukhara, who had retained much of his power and prestige after the Muslim conquest. He built a palace within the walled city, presumably so that he could stay there when he wished to visit the Muslim governor. It seems to have been available as a sort of official guest house: when al-Ḥārith b. Surayj came from Transoxania to Merv in 127/744–5, the people went out to meet him in Kushmayhan and Nařr, who hoped that he would prove to be an ally, arranged for him to stay at the Bukhāra Khudā's palace (Ṭabarī 1879, ii, 1888). Unfortunately, we are given no more information about its location.

Humbler folk also came to the city. We have reports of streets (*ṭarīq*) settled by the Ṭukhāriya (from Ṭukhāristān on the Upper Oxus), the people of Bukhara and the řughdis (from Soghdia, the area around Samarkand) (Ṭabarī 1879, ii, 1920–2). Many of the Arab settlers had dispersed in the villages of the oasis but some certainly lived in the *madīna* itself, such as Ḥamza b. Abī řālih al-Sulamī who had a walled enclosure (*ḥā'iṭ*) opposite the palace of the Bukhāra Khudā (Ṭabarī 1879, ii, 1918).

People were drawn to Merv by the commercial opportunities which resulted from its role as a provincial capital. Tradesmen, textile workers and metal-workers would have found the capital a very attractive place to work. The evidence of the geographers makes it clear that fine cotton manufacture was a major local industry, and archaeobotanical evidence supports the picture of widespread cotton growing (Boardman in *Iran* XXXIII 1995, 49–52). Recent archaeological evidence

also points to the development of high-quality steel making (*Iran* XXXIII 1995, 44–5).

There may also have been social reasons for the growth in population. In an important discussion of the cities of early Islamic Khurasan, Bulliet has pointed out that many cities in the area show an expansion from a small fortified enclosure to much larger informal settlements (Bulliet 1994, 67–79). The evidence from Merv indicates a similar development but, like everything else in Merv, on a larger scale and probably earlier than elsewhere. Given the city's position as a capital and as the site of the first large-scale Muslim settlement, this is to be expected. Bulliet suggests that the early Islamic period sees widespread migration from country to town and that this is connected with the process of conversion to Islam. Many early converts would seek to escape from a village environment, where they might be ostracized or persecuted, to a town, where they could associate with other Muslims. If this model is correct, Merv in the mid-eighth century may have been crowded with newly converted immigrants seeking a place in the new Muslim polity. It would not be surprising if there were tensions between them and the old-established Arab-Muslim élite. All the evidence suggests that such tensions were a major factor in the outbreak of the Abbasid revolution.

In Jumada II, 130/February, 748 Abū Muslim led the Abbasid supporters into the walled city at Merv and established the power of the new dynasty. From here he directed the Abbasid armies in the campaigns in Iran and Iraq that finally led to the establishment of the Abbasid Caliphate in 132/750. Abū Muslim continued to rule in the city as a semi-independent potentate until he was lured to Iraq and assassinated in 137/755 (Kennedy 1981, 51–2, 61–2). After Abū Muslim's departure, Merv still remained a major political centre. The Abbasid regime, though based in Iraq, and having its capital at Baghdad from 768, drew much of its support from the Khurasanis. The governor of Khurasan, based in Merv, was one of the most important figures in the caliphate and was almost always chosen from the leading Arab families of the Merv area.

Abū Muslim's rule also saw important changes in the city itself. Even before the Abbasid Revolution, settlement had been expanding along the Mājān canal to the west of the old *madīna*. Nařr b. Sayyār had had his palace on the Mājān canal where the Dār al-'Imāra later stood (Ṭabarī 1879, ii, 1767). Also on this canal was the house of Abū'l-Jahm, *mawlā* (freedman, in this context) of the family of Abū Mu'ayt, where, in a dome chamber which still existed in al-İřakhrī's time, it was said

that the first robes had been dyed with the black of the Abbasids at the time of the revolution.

Abū Muslim shifted the Dār al-'Imāra from the old *madīna* to the Mājān canal. Here he built a new and magnificent structure, a dome chamber with four iwans, in which he held court. It was, according to al-Iṣṭakhrī who saw it two centuries later, a huge building with a dome 55 cubits (probably about 33m; the Islamic cubit was approximately 0.6m) in height. (The exact position of this building is not clear though it was probably in the vicinity of the later Mausoleum of Sultan Sanjar and indeed it is not impossible that, as Yakubovsky hinted (Yakubovsky and Bosworth 1991), the mausoleum actually rests on the site of Abū Muslim's government house. A new mosque was established next to the Dār al-'Imāra, and this mosque was to remain the centre of religious life until the Mongol conquest. Abū Muslim also moved the main *suq*s from the Bāb al-Madīna to the Mājān canal. From 132/750 onwards, then, the Mājān canal suburb, the area later enclosed by the Sultan Kala walls, became the main centre of political and commercial life in the city. By the tenth century the *quhandiz* is described as *kharāb* (ruined), difficult of access and used for gardens.

There remains the intriguing possibility that Merv provided the inspiration for the planning of the Abbasid capital at Baghdad. In 145/768 al-Manṣūr began the foundation of his new city on the Tigris. Though no trace of it now remains, literary sources make it clear that the centre of this complex was a round administrative city with a mosque and government house in the middle. This design had always puzzled architectural historians for round cities are unusual and there was no obvious example in Iraq and no reason in Islamic tradition for choosing this shape. Creswell found a number of precedents in Sasanian cities in Iraq and western Iran, notably at Hatra, Firuzabad and Darabjird (Creswell 1940, 18–22¹) but there is no indication that anyone in the Abbasid court had even been to any of them, still less that they should have considered them as a suitable model for the new capital.

The great, almost circular *quhandiz* at Merv provides a much more likely point of origin. Already very old and immensely impressive, it symbolized ancient sovereignty. Furthermore, almost all the people involved in the planning of Baghdad hailed from Khurasan and would have known Merv. Al-Manṣūr himself would have seen the *quhandiz* when he visited Abū Muslim in Merv just after the Abbasid revolution (Ṭabarī 1879, iii, 58–61). Like Merv, Baghdad is built on a flat site where the main building material is mud brick. The possibility cannot

be dismissed that the *quhandiz* of Merv is indeed the elusive model for al-Manṣūr's great round city.

For most of the early Abbasid period, the history of Merv was uneventful, marked by the comings and goings of governors (Kennedy 1981, 177–87; Daniel 1979). Among these were al-Faḍl b. Yaḥyā the Barmakid, from the famous family of viziers, who was governor from 177 to 179 (793–6). He came from an aristocratic family from Balkh whose ancestors had been the guardians of the great Buddhist shrine there, the Nawbahar, at the time of the Muslim conquest. He tended to favour the *dihqans*, the local Persian aristocrats, over the Khurasanis of Arab descent. His departure was followed by a major change of policy with the appointment of 'Alī b. 'Īsā b. Māhān. He remained governor until 190/806 and pursued a policy hostile to the local aristocracy, attempting to arrest the Merv aristocrat, Hishām b. Farkhusraw. 'Alī was removed from office as a result of widespread protests in Khurasan, but tension still remained between the descendants of the Arab settlers and the local Persian nobility.

It was partly to try to reduce these tensions that the Caliph Hārūn al-Rashīd himself decided to visit Merv (Kennedy 1981, 125–48). He sent his son, al-Ma'mūn, with a large party of the army to Merv. He followed on but died in Tus, near Mashhad in 193/809. His death left the affairs of Khurasan in a critical position. Six years before he had arranged for the division of the caliphate: his son al-Amīn was to be caliph in Baghdad but another son, al-Ma'mūn was to be effectively viceroy of the eastern provinces based in Merv. After his father's death, although most of the army returned to Baghdad, al-Ma'mūn remained in Merv to claim his inheritance. He soon came under increasing pressure from his brother al-Amīn, supported by the Khurasanis in Baghdad, who disliked the idea of autonomy. Al-Ma'mūn, for his part, was supported by the local aristocracy, including 'Alī, son of Hishām b. Farkhusraw, the Bukhāra Khudā and Ṭāhir b. al-Ḥusayn from Bushang (modern Ghurian, west of Herat).

Al-Ma'mūn established himself in Merv. His house is said to have been by ('*alā*) the Dūr Mishkān gate of the old *madīna*. The gate was in the north wall close to where it joins the *quhandiz*. From the descriptions of the geographers, the palace cannot be identified with the building known locally as the palace of al-Ma'mūn on the Razik canal north of the city (Figure 27). Of course the geographers may be wrong or he may have lived on more than one site. At first glance it seems odd that al-Ma'mūn should have chosen to live in or near the old *madīna* when the centre of city life had moved to the Mājān canal

¹ For further discussion of Central Asian contexts for the design of Baghdad, see Beckwith 1984.



Figure 27

A small section of wall with corrugations from a *köshk*, little of which survives above ground to the north west of Gyaur Kala. It is known locally as the 'al-Ma'mūn *köshk*', but it is unlikely to represent that caliph's palace.

suburb, but his position was precarious and he may well have felt in need of the protection which could still be offered by the great walls of the nearby *quhandiz*.

In the event, he did not have to worry: in Sha'ban, 195/May, 811 al-Ma'mūn's army, led by Ṭahir b. al-Ḥusayn, scored a spectacular triumph over 'Alī b. 'Īsā b. Māhān, defeating al-Amīn's troops at Rayy, near modern Tehran. When the news reached Merv, three days later, al-Ma'mūn had himself formally proclaimed caliph in the city. In Muharram, 198/September, 813 Ṭahir's troops took Baghdad and al-Amīn was summarily executed.

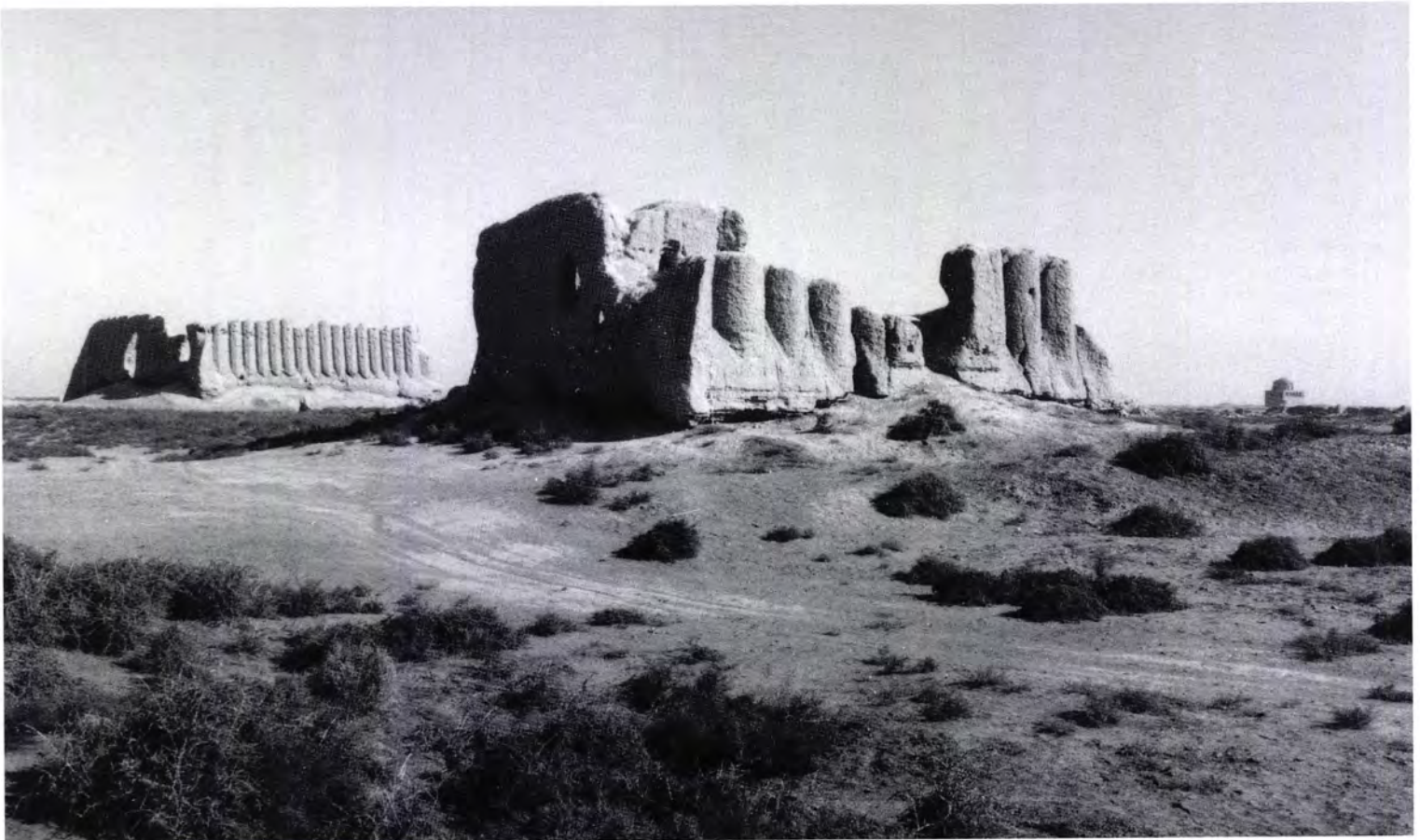
Al-Ma'mūn elected to remain in Merv and until his departure for the West in Jumada II, 202/January, 818, Merv was effectively capital of the

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Muslim world. These were uncertain times: much of Iraq including Baghdad and all the western provinces were beyond the caliph's control. He tried to attract support by adopting 'Alī b. Mūsā al-Riḍā, a direct descendant of the Prophet, as his heir apparent. By 202/818, however, it was clear that ruling the vast Islamic empire from Merv was simply not possible. The caliph left for Baghdad: *en route* the heir, 'Alī b. Mūsā, now something of an embarrassment, conveniently died near Tus, where his tomb became the nucleus of the great shrine at Mashhad.

The departure of al-Ma'mūn meant that Merv became once more a provincial capital with governors appointed from Baghdad. In 205/821 al-Ma'mūn appointed his old general Ṭāhir b. al-Ḥusayn as governor. Soon after his arrival in Merv, Ṭāhir took the radical step of omitting the caliph's name from the *khutba*, or sermon, at the Friday prayers. This

Figure 28
The Lesser and Greater Kyz Kalas from the south.
The Mausoleum of Sultan Sanjar can be seen in the distance, on the right.



may have been intended as a declaration of independence, making Ṭāhir the first of the Persian dynasts to assert their independence from the caliphs. It is difficult to gauge the truth of this, for he died shortly afterwards and his son Ṭalḥa, who succeeded him, took care to acknowledge the caliph's authority. However, the Tahirids were now established as hereditary governors of Khurasan.

According to al-Iṣṭakhri, Ṭāhir constructed a large number of buildings on the Hormuzfarra canal, to the west of the Mājān suburb. He wished to move the Dār al-'Imāra and the markets there and so, once again, shift the focus of the city to the west. It is possible that the Greater and Lesser Kyz Kalas are part of this activity (Figure 28). The evidence for this is entirely circumstantial. Ṭāhir built high-status buildings in the area of the Hormuzfarra canal that survived long enough to be seen by al-Iṣṭakhri, a century later. The Kyz Kalas are high-status buildings in the area, an early Islamic date for them is plausible and there is no record of anyone else constructing major buildings in this part of the city.

FROM THE TAHIRIDS TO THE SELJUKS, 205/821–428/1037

The Tahirids are sometimes regarded as the first of the independent Iranian dynasties which appeared in the third/ninth centuries. In practice they ruled in close partnership with the Abbasid caliphs, but in Khurasan and Transoxania, their rule was unchallenged. It seems that Merv was the Tahirid capital until the arrival of 'Abd Allāh b. Ṭāhir (213/828–230/844). In 215/830, for reasons which are not clear, he moved the capital to Nishapur, which now became the centre of government. This marked a change in the fortunes of Merv, which became a provincial city; it was no longer the centre of political events, nor was it the recipient of government patronage. However, it was still, probably, the second city of the province and was at times a base for those who wished to take power in the area. 'Abd Allāh was succeeded by his son Ṭāhir and until his death in 248/862 Khurasan seems to have been both peaceful and prosperous. Under Muḥammad b. Ṭāhir (228/862–259/873) Tahirid power was challenged by the Saffarids of Sistan to the south. In 259/873 the Saffarid leader Ya'qūb b. Layth took Nishapur and put an end to Tahirid rule, though one member of the family, al-Ḥusayn b. Ṭāhir managed to maintain himself in Merv until about 267/880–1.

Saffarid power was never securely established in Khurasan and the last quarter of the ninth century was a period of continuing

disturbances in the province. One of the contenders, the *ghulām* (slave-soldier), Abū Ṭalḥa Maṣṣūr b. Shirkub, tried to establish himself as an independent ruler in Merv, until in 271/885 he was reconciled with the Saffarid ruler 'Amr b. Layth. After that Merv was governed by 'Amr's grandson, confusingly called Ṭāhir, and his name, with that of his grandfather, appears on the coins minted in the city at this time.

This period of confusion came to an end in 287/900, when 'Amr was decisively defeated by Ismā'il the Samanid. The Samanids were a family of Iranian origin who had risen to power in Transoxania as protégés of the Tahirids. Like the Tahirids, they came from the class of *dihqāns*, or prosperous landowners. By the time of his victory over 'Amr, Ismā'il was the effective ruler of a state which included all of Muslim Transoxania with its capital at Bukhara. The historians tell us virtually nothing of Merv under the Samanids, perhaps a sign of a peaceful if undistinguished life. Its most famous citizen was the *dihqān* (Persian nobleman) Aḥmad b. Sahl, who claimed to be a descendant of the old Persian kings. He was in charge of the administration in Khurasan in 306/918–19 but later rebelled in Nishapur. He had to retreat to Merv, where he was captured by Samanid forces and taken to Bukhara, where he died (Anon 1937, 16–17). The Samanid period was the heyday of that Muslim Persian aristocratic society which gave rise to new Persian poetry and Firdawsī's *Shahname*. The *dihqāns* of Merv must have participated in this courtly culture. The end of the fourth/tenth century saw another period of disturbance as the Samanid regime in turn crumbled.

By 389/999 Khurasan was firmly in the hands of a new lord, the famous Maḥmūd of Ghazna, whose original power base lay in the area of modern Afghanistan. Under the rule of Maḥmūd (d. 421/1030) Khurasan was again peaceful. The capital remained in Nishapur and while we have a good deal of information about that city (Bosworth 1963, 163–202) we hear almost nothing about Merv, although it was clearly a place of some importance. In 428/1037 Anushtagīn Khāṣṣa, an old and respected slave soldier, died in the city, leaving extensive estates and many slave soldiers of his own. The Ghaznevid ruler of the time, Sultan Mas'ūd, ordered that the local financial administrator should continue to pay these slaves (Bosworth 1963, 106). It was only three years later, in 431/1039, that Merv was the base for the final attempt of the Ghaznevids to destroy the advancing Seljuks. They were decisively defeated at Dandanqan on the old road between Merv and Sarakhs (Bosworth 1963, 103).

While Merv hardly figures in the historical annals of this period, we have a number of accounts by the Arabic geographers which enable us to see something of the city in this period. The first of these is the account in Ya'qūbī's *Kitāb al-Buldān*, composed in 276/889–90 (Appendix). He says that the inhabitants are Persian nobles and some Arab tribesmen, that the water supply comes from springs and rivers and that it is a well-known textile-manufacturing centre.

The next major account is that of al-Iṣṭakhrī/Ibn Ḥawqal (Appendix). This account is our best source of information on the city in the ninth and tenth centuries. It was written by al-Iṣṭakhrī (from Iṣṭakhr, the old capital of Fars, north of the Shiraz) sometime before 340/951. It was subsequently reused, with only minor variations, by Ibn Ḥawqal c 378/988. The account therefore describes Merv under Samanid rule. As can be seen from the translated text, the author describes a recognizable urban geography, with the new city along the Mājān canal, still co-existing side by side with the old. The main buildings are, of course, the mosques and Abū Muslim's Dār al-Imāra, still apparently intact. Both industry and agriculture seem to have been thriving, with dried melons being exported to Iraq and silk and cotton textiles being manufactured. The account is a useful corrective to the chronicles: just because stirring events are not taking place in a city, it does not mean that it is dead.

Shortly after al-Iṣṭakhrī, we have the short Persian account in the anonymous *Hudūd al-'Alam*, in which Merv is said to have had many 'kushks', the only textual reference to these structures in the early Islamic sources, and, again, the agriculture and textiles are commented on (Appendix). Finally in this period, we have the account of the Palestinian geographer al-Muqaddasī, writing around 380/990 (Appendix). His account of Merv clearly describes the same city as al-Iṣṭakhrī, but he notes that there were many ruined houses and districts in his time (though not all al-Muqaddasī's negative rhetoric should be taken at face value). Al-Muqaddasī's account does point to a general problem in urban life in Khurasan during this period from which Merv was not immune. This was the emergence of factions within the cities, usually but not always, connected with different schools of Islamic law and their adherents and to different quarters in the towns. The most common conflicts were between older established Hanafis and the Shafi'īs. These conflicts sometimes gave rise to open civil war within the cities. In Merv, al-Muqaddasī says (al-Muqaddasī 1994, 336, trans 296–7), the main conflict was between the people of the *madina* and those of the 'old market' (*sūq al-'atīq*), though in this case he does not

give any religious affiliations. We know that there were both Hanafis and Shafi'īs in the city but the sources give no indication of open hostility between the two.

MERV UNDER THE SELJUKS, 1037–1157

The second great period of medieval Merv came under Seljuk domination when the city again became a regional capital with its own local rulers. At the same time, it was something of a frontier outpost. For much of this period, the Amu Darya (Oxus) remained the north-east frontier of Seljuk rule; beyond it lay the lands of the Qara-Khanids around Bukhara and Samarkand and to the north, across the Karakum sands, were the lands of the Khwarazmshahs. Unfortunately, the history of the city in this period is poorly documented. The chronicles of the Seljuk Sultanate, notably the *Tawārīkh Āl -Saljūq* of al-Bundārī, the *Rāḥat al-Sudūr* of Ibn al-Rāvandī and the *Kāmil* of Ibn al-Athīr, concentrate on battles and the doings of rulers. They are mostly annalistic and concise and give us none of the circumstantial detail about life in the city which we find in Ṭabarī's account of the Abbasid revolution. In addition, there is no contemporary, first-hand geographical account. In short, we know virtually nothing of the urban geography or the administration of the city in this second period of greatness.

The Seljuks were the leading family among the Ghuzz or Oghuzz Turks. These tribesmen lived a nomadic life and seem only to have been converted to Islam in the early years of the eleventh century. They thus had a very different lifestyle and language from the Iranian sedentary peoples of the city of Merv and the villages of the oasis. In 426/1035 the Seljuks and their Turkmen² followers, said to have numbered over 10,000, were expelled by the Khwarazmshah from their traditional camping grounds to the east of the Aral Sea and obliged to move across the Amu Darya, led by the two brothers Tughril Beg and Chaghri Beg. They were in a wretched condition, having lost much of their livestock, and they were reduced to begging the representative of the Ghaznevid Sultan Mas'ūd for pasture lands. Soon, however, they became aware that the sultan's government in Khurasan was both weak and unpopular. In 428/1037 they took over Merv, for the first time, with the agreement of the leading citizens. Chaghri Beg gave assurances that there would be no pillage and that the villages of the oases would be restored. Soon after they occupied Nishapur, the capital of Ghaznevid Khurasan and in 431/May 1040

² The word 'Turkmen' is used in the medieval sources to describe those Turks who maintained a nomad tribal lifestyle as opposed to those who settled or took service in the armies of local dynasts.

defeated the demoralized army of Sultan Mas'ūd at Dandanqan, on the road between Merv and Sarakhs.

After the victory at Dandanqan, the Seljuks divided their forces. Tughril Beg embarked on a career of conquest in the west, which eventually led to the fall of Baghdad in 1055 and his being granted the title of sultan by the Abbasid caliph. His brother Chaghri Beg, however, remained in Merv and made it his Dār al-Mulk, or capital (Ibn al-Rāvandī 1921, 104) and base of operations until his death in 452/1060. His position in Merv seems to have been inherited by his son Alp Arslān. When Tughril Beg died three years later (455/1063), Alp Arslān, aided by his ambitious vizier Niẓām al-Mulk, was able to take over the whole sultanate from the Mediterranean to the Amu Darya.

Merv was not in a real sense the capital of this empire, but it was rather one of the regional capitals along with Rayy, Isfahan and Baghdad between which the sultans progressed. We find Alp Arslān back in Merv in 457/1065, when he used it as a base for an invasion of Khwarazm (Ibn al-Athīr 1867, x, 49–50). Alp Arslān spent most of his reign on the move, including the campaign of 1071 that led to the decisive defeat of the Byzantines at Manzikert in eastern Anatolia, and it is doubtful if he spent much time in Merv. However, in 465/1072 he returned to Khurasan to lead an army across the Amu Darya to fight the Qara-Khanid, Shams al-Mulk Naṣr (460–72/1068–80), and it was here that he was assassinated. His body was brought back to Merv for burial. As the poet Ḥakīm Ṣanā'ī wrote in a lament for the dead sultan:

You saw Alp Arslān's head raised to the seventh heaven,
Come to Merv that you may see his body buried in the dust ...

(quoted in Juzjānī 1881, i, 133)

Gibbon, in the *Decline and Fall of the Roman Empire*, gives a slightly different version. 'Alp Arslan', he wrote,

possessed the virtue of a Turk and a Musulman; his voice and stature commanded the reverence of mankind; his face was shaded with long whiskers; and his ample turban was fashioned in the shape of a crown. The remains of the sultan were deposited in the tomb of the Seljukian dynasty; and the passenger might read and meditate on this useful inscription: 'O ye who have seen the glory of Alp Arslan exalted to the heavens, repair to Maru, and you will behold it buried in the dust.' The annihilation of the inscription, and the tomb itself, more forcibly proclaims the instability of human greatness.

(Gibbon 1896, chap lvii)

When Alp Arslān had appointed his son Malik-Shāh as heir apparent in 458/1066, he had also distributed *iqṭā'*s (fiefs) to other sons, and Merv fell to his youngest, Arslān-Shāh. Nothing more is known of Arslān-Shāh, and it is Malik-Shāh who is credited with the building of the walls around the city (Mustawfī 1919, 154). These walls, 12,300 paces in length, were probably the first fortifications built around the new city (Figures 18, 25, 31 and 32). The Seljuks invested heavily in city walls, as well as fortified caravanserais (Figures 29 and 30) on the main roads such as Akcha Kala, Daya Khatun (Figure 135) and Rabat-i Malik. The fortification of Merv was part of this policy, but it was given added urgency by the proximity to the frontier and the vulnerability of the site to raids from Khwarazm and Transoxania.

Meanwhile Merv seems to have enjoyed a mostly peaceful existence as a provincial capital. We have no more information about Arslān-Shāh and at the death of Malik-Shāh in 485/1092 the *shihna*, or military governor, of Merv was one of Malik-Shāh's *mamlūks*, or slave soldiers, called Qawdan (Ibn al-Athīr 1867, x, 262–4; Bundārī 1889, 256–8; Ibn al-Rāvandī 1921, 143). The death of a sultan was always a moment of crisis in the Seljuk empire, and, while Barkyāruq was establishing himself in Baghdad, one of the dead sultan's brothers, Arslān Arghūn, decided to go east and establish himself as *malik* (sub-king) of Khurasan. Qawdan welcomed him to Merv and handed the city over to him. When Arslān Arghūn had taken most of Khurasan, he wrote to Barkyāruq to try to regularize his position and assume the role his grandfather, Chaghri Beg, had played in Merv. The new sultan was preoccupied by rebellions elsewhere and did not respond immediately but in 488/1095 he sent Burbars, another of Malik-Shāh's brothers, to unseat him. At first Burbars was successful and Arslān Arghūn fled to Balkh. However, he soon recovered and headed for Merv. He besieged the city for some days and then took it by force, killing many of the people and destroying the gates. Burbars' army disintegrated and he himself was captured by his brother, imprisoned in Tirmidh (Termez) and eventually strangled. Arslān Arghūn then began something of a reign of terror in Khurasan, destroying the walls (*kharaba aswār*) of the cities including Merv and Sabzavar, the castle of Sarakhs and the *quhandiz* and *shahristān*, or town, of Nishapur, presumably to stop them becoming centres of opposition. His cruelty to his own *ghilmān* (page-soldiers) proved to be his downfall and in 490/1097 in Merv one of them stabbed him with a knife and killed him.

Meanwhile Barkyāruq, determined to re-establish control over Khurasan, dispatched his brother Sanjar with an army to regain the

province. When they reached Damghan, news arrived of Arslān Arghūn's assassination. Sanjar waited there for Barkyāruq to join him and in 490/1097 they entered the province peacefully. Arslān Arghūn's *askar* (army), said to have numbered 15,000 horsemen, joined the new regime while his 7-year-old son was taken into the sultan's mother's household.

Thus began the connection between Sanjar and the city of Merv. Apart possibly from Abū Muslim, there is no figure in the history of Merv who is more closely identified with the city. He reigned there, apart from short interruptions, for sixty years, it was there that he died in 552/1157 and it was, of course, in Merv that he was buried, in the great mausoleum that still dominates the site. His long period of residence provides the most plausible historical context for the late Seljuk palace³ (Figures 259–266) and other domestic architecture in the Shahryar Ark (Figures 161, 274–8). Both Ibn al-Athīr and Ibn al-Rāvandī repeatedly refer to Merv as the Dār al-Mulk, ie the capital, and even if other cities in the area, such as Nishapur, may have been more intellectually and economically thriving, Merv remained the centre of political power.

Despite the evident importance of the city in this period, references in the written sources are disappointingly sparse. Sanjar pursued, intermittently, a forward policy in Transoxania, and Merv became again, as it had been in Umayyad times, the base from which attacks were launched on the lands to the north and east. At times this caused problems for the city. In 533/1138 he invaded Khwarazm, defeated the armies of the Khwarazmshāh and executed his son. However, Sanjar was unable to hold this new conquest, and, when he was defeated by the Kara-Khitai of Transoxania in 535/1141, the Khwarazmshāh took his revenge. In 536/1141–2 he raided Khurasan, sacked Merv, seizing important religious leaders and taking Sanjar's treasury with him. However, the next year Sanjar re-established his power in Khurasan and invaded Khwarazm in 543/1148, recovering his treasury (Boyle 1968, 144–5).

In 539/1145 Abū'l-Ma'ālī al-Marwazī died in Merv. He is described as a great traveller and scholar of *hādīth* (traditions of the Prophet) as well as being renowned for his piety. He had founded a *ribāṭ* (in this context, probably more a convent or college than a fort) in Merv and endowed it with large numbers of books. Sadly the sources do not say exactly where this was sited, and this is the only mention of building activity in the city during Sanjar's reign (Ibn al-Athīr 1867, xi, 103). None the less, his reign seems to have been something of a golden age for both province and city.

³ For a discussion of twelfth-century palace architecture elsewhere in the Muslim world, see Tabbaa 1997, 81–96. Both in scale and in the use of a four-iwan plan, the buildings described by Tabbaa have many parallels with the Merv examples, though, of course, the building materials are stone not mud brick.

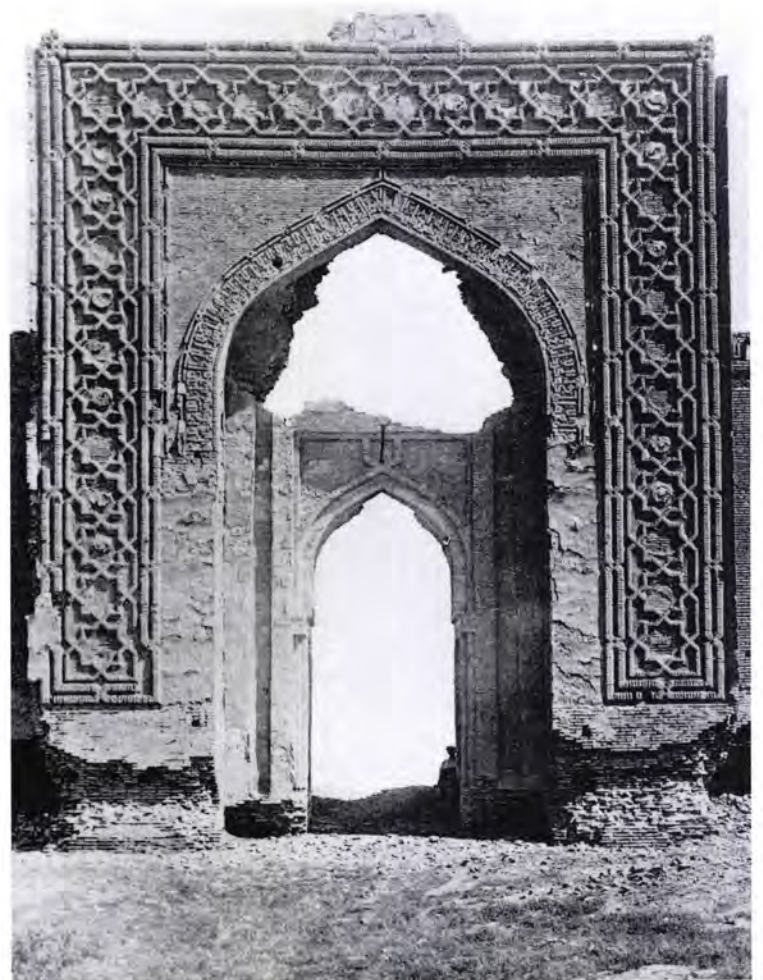


Figure 29
The elaborately decorated *pishtaq* or entrance portal of the Seljuk caravanserai at Rabat-i Malik, dated to 1078. The Seljuks built numerous caravanserais throughout their empire to serve as staging posts for the king and his court, as well as travellers, traders and soldiers.

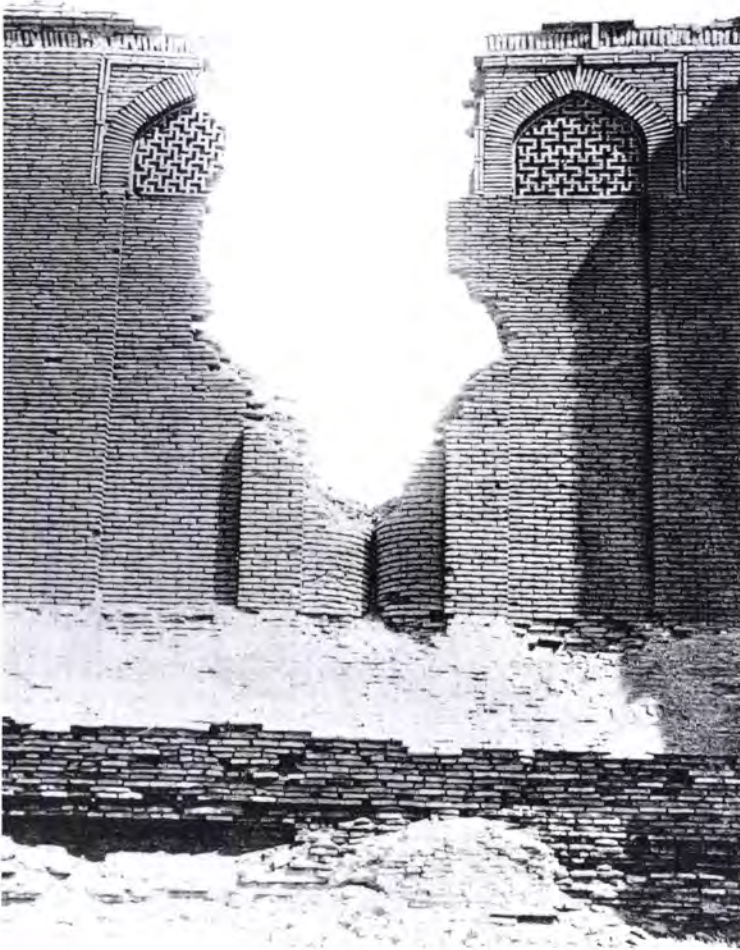


Figure 30
The decoration of the walls of the Rabat-i Malik caravanserai employed a variety of forms of decoration. In addition to the *pishtaq* (see Figure 29), the plain brick walls were relieved with recessed arched panels, themselves framed by half-corrugations, as well as by panels of 'short' corrugations (see Figure 80).

In his final years things began to go badly wrong. It seems that Sanjar's military expeditions led to his agents making increasing demands for taxes, but resistance came not from the citizens or the villagers but from Ghuzz Turkmen tribesmen. They seem to have been driven out of their traditional pasture lands on the eastern borders of Khwarazm and migrated into Khurasan, where they were obliged to pay an annual tribute of 24,000 sheep for the sultan's kitchen. They were ill-treated by the tax collectors of 'Imād al-Dīn Qumach, governor of Balkh. When they killed one of his agents, Qumach led a punitive but unsuccessful expedition against them. Far from being triumphant, the Ghuzz leaders were terrified of Sanjar's anger and attempted to make their peace with him. Sanjar, however, was determined to go to war and in 548/1153 he in turn was defeated and captured by the Ghuzz.

The Ghuzz treated their illustrious prisoner with some respect but the consequences for Merv and the other cities of the area were disastrous. The Seljuk army abandoned the city and fled. The Ghuzz pillaged it without restraint and killed the chief *qadi* (judge), al-Ḥasan b. Muḥammad al-Arsābandī and other senior religious figures. According to Ibn al-Rāvandī,

The Ghuzz pillaged Merv which had been the Dār al-Mulk since the time of Chaghri Beg and the place of the stores and treasuries of kings for three successive days. On the first day they took the gold, fine silks and brocades, on the second day they took the brass and tin and iron and on the third day they took the junk and rags and mattresses, jars and wine, doors and wood. They took most of the people prisoner and tortured them to reveal their hidden goods, allowing them nothing above or below ground.

(Ibn al-Rāvandī 1921, 180)

A striking feature of this account, and of other accounts of the attacks on the cities of Khurasan in this period, is the apparent inability of the civilian population to defend themselves. Despite the fact that the city was walled (although the walls may have been in poor repair) and the fact that the Ghuzz would have had little siege equipment or experience of siege warfare, the flight of the *askar* meant that the citizens felt they had no alternative but to surrender. This passive mentality, no doubt encouraged by sultans who did not wish their subjects to take up arms, was to prove catastrophic in the face of the Mongol invasions seventy years later.

Sanjar himself remained in captivity for three years, retiring to a *khangāh* (Sufi convent) in Merv (Ibn al-Athīr 1867, xi, 177). He

succeeded in escaping from Ghuzz surveillance and re-established himself in Merv, and it was here that he died in 551/1157 at the age of 71.

An aspect of life in Merv in the Seljuk period, which is neglected by the annalists, is the foundation of institutes of learning, notably *madrāsas*, or theological colleges, and their attached libraries. However, Yāqūt in his great geographical dictionary, the *Muʿjam al-Buldān*, written in the early seventh/thirteenth century, is very enthusiastic about the provision. He worked there in the years immediately preceding the Mongol conquest and gathered much of the material for his works there. The *madrāsas* he describes were all founded in the Seljuk period, the first by Niẓām al-Mulk, the great vizier of Malik-Shāh, who is often credited with inventing the institution. Others soon followed, founded by bureaucrats and in one case, Sultan Sanjar's mother, though the sultan himself does not seem to have contributed. Without Yāqūt's comments, the identities, indeed the very existence of these institutions would be unknown to us.

AFTER SANJAR

The years between the death of Sanjar and the Mongol invasions were a disturbed period in Khurasan in general. It was a time of almost incessant strife between Seljuk amirs, trying to establish kingdoms for themselves, the Ghuzz tribesmen looking for pasture and the Khwarazmshāhs, with interventions from the Ghurids in Afghanistan and the Kara-Khitai from beyond the Amu Darya.

In this confused situation, Merv lost its position as the Dār al-Mulk and was simply one of the prizes for which the different groups competed. After Sanjar's death it seems to have remained under the control of the Ghuzz tribal leaders. There is no evidence that they lived in the city itself, probably preferring their nomad camps. There was one brief attempt to make the city the centre of a kingdom.⁴ In 567/1172 the Khwarazmshāh ʿĪl-Arslān died and was succeeded by his son Tekesh. However, another son, Sulṭān-Shah, opposed him and fled to Khurasan. From here he sought the support of the Kara-Khitai of Transoxania. A joint expedition against Khwarazm ended in failure when Tekesh cut the dykes and flooded the land but Kara-Khitai support did allow Sulṭān-Shah to drive the Ghuzz leader Dīnār out and establish himself as ruler in Merv and Sarakhs in 576/1181.

Sulṭān-Shah's position remained unstable. He came into conflict with the Ghurid rulers of northern Afghanistan, which led to a defeat at Merv Rud and flight to Merv with just twenty followers. Tekesh tried to

take advantage of his weakness to expand his domains, but Sulṭān-Shah made an alliance with the Ghurids and was preparing to invade Khwarazm when he died of natural causes in 589/1193. His rule was precarious and transitory. There is no evidence that Merv became an important capital once again and his attempt to found a small kingdom died with him. After his death, his brother took over Merv and Sarakhs, seized his treasure and appointed his own son Nāṣir al-Dīn Malik-Shāh as his governor in the city (Ibn al-Athīr 1867, xii, 107; Juvaynī 1997, 301–2, 304). Nāṣir al-Dīn loved Merv for the hunting but was forced to abandon it soon after his appointment because the climate was bad for his health. By the time the Khwarazmshah Tekesh died in 596/1200, Merv had passed to Malik-Shāh's son, Hindū Khān, who had been with his grandfather on his death and had taken advantage of his position to acquire some of his treasure. This infuriated the new Khwarazmshah, 'Alā' al-Dīn Muḥammad, who sent forces to remove his nephew. Hindū Khān appealed to the Ghurids, who briefly took over much of Khurasan before Muḥammad restored Khwarazmian control in 597/1201 (Ibn al-Athīr 1876, xii, 164–7; Juvaynī 1997, 317; Boyle 1968, 192).

Merv continued to be fought over by the Ghurids and the Khwarazmshahs, at least until the death of the Ghurid ruler Mu'izz al-Dīn in 602/1206, and it seems to have lost its position as capital of Khurasan. From Sanjar's death onwards, Nishapur seems to have been the more usual centre of government. Even in the Merv area, Sarakhs, with its easily defended citadel on a tell, seems to have been preferred by the local representatives of the Khwarazmshahs (Ibn al-Athīr 1867, xii, 206). When the Khwarazmshah visited Merv in 600/1203–4, he chose to stay outside the city (*biḏāhiriha*) (Ibn al-Athīr 1867, xii, 186) and, when he reorganized the government of Khurasan in 604/1207–8, Merv and Sarakhs were not assigned to any of the senior amirs or members of the royal family but to an anonymous *nā'ib*, or deputy governor (Ibn al-Athīr 1867, xii, 260).

THE MONGOL CONQUEST OF MERV

The Mongol conquest of 217/1220 meant the catastrophic end to the old city as a major centre of political and economic life. We have two main independent accounts of events. Ibn al-Athīr, in the safety of distant Mosul, provides us with an almost contemporary account of the disaster, drawn from the reports of refugees who had escaped to the West. His Arabic narrative is a simple, even bald, account. Juvaynī's

⁴ The main sources for these complex events, of which I have only given a summary, are Juvaynī 1997, 293–301; Ibn al-Athīr 1867 xi, 377–85, xii, 57, 104: Ibn al-Athīr himself admits to being uncertain about some of the details. For a good summary in English, Boyle 1968, 188–95.

account was written a generation after the events, between 650/1252 and 658/1260. He was a Persian, and wrote in Persian, but he worked as a bureaucrat for the Mongol khans and had access to local traditions. Despite his employment, Juvaynī makes no effort to play down the violence and ruthlessness of the Mongol attacks (and there is no reason to think that the Mongols considered the slaughter anything to be ashamed of). Though the accounts agree on the general outlines, Juvaynī's is more detailed and reveals something of the political problems in the city at the time of the attack and of the various attempts to re-establish it in the years immediately following.

The main outlines are reasonably clear. After campaigning in Balkh and what is now north-west Afghanistan, Tolui, Genghis Khān's son, led the Mongol forces along the Murghab valley to the Merv oasis. The governor at the time, Mujīr al-Dīn, was minded to resist any Mongol attack but he was opposed by a pro-peace faction in the city, led by the *shaykh al-Islam*, or head of the Muslim community in the city,

Shams al-Dīn Harisī. Others, such as the chief *qadi*, remained neutral. The picture was further complicated by the fact that the people of Sarakhs had made peace with the Mongols, and there was open hostility between the two cities. Meanwhile, there were large numbers of Turkmen outside the city who had fled from Mongol attacks in other areas. To Ibn al-Athīr they appear as victims, but in Juvaynī's more detailed narrative, they tried to take over the city but were repulsed by Mujīr al-Din and retired to the bank of the Murghab River. Here they were surprised by a Mongol night attack and almost all were killed.

Tolui reached the city on the first day of 618 (25 February 1221), which was, as Juvaynī grimly remarks, 'the last day of the lives of most of the inhabitants of Merv'. For six days they surveyed the defences (Figures 20, 21, 25, 31 and 32). The inhabitants made two sorties, which were driven back. After a week Mujīr al-Din decided to ask for terms. These were granted, but immediately Tolui demanded that all the inhabitants be driven out of the city: it took four days for them to



Figure 31
The two phases of construction of a tower belonging to the medieval walls of Sultan Kala.

MONUMENTS OF MERV

leave. Then the order was given that they should all be killed, with the exception of a small number of artisans. Each Mongol soldier was allotted between 300 and 400 people to kill. The walls and gates were destroyed, and the mosque of the Hanafis and the Mausoleum of Sanjar set on fire. After the Mongol army moved on, some 5,000 survivors crawled out of the ruins, but they too were slaughtered by a passing detachment of Mongols. The number of dead is estimated by Ibn al-Athīr at 700,000 and by Juvaynī at 1,300,000.

This was not quite the end of the story. According to Juvaynī, the ruins attracted a new population of refugees and robbers. For a short while it came under the control of Ziyā al-Dīn, an amir of the Khwarazmshahs, who set about repairing the fortifications and restoring the irrigation works but he fled on the approach of another Mongol force. Once more the inhabitants, to the number of 100,000, were slaughtered. Even after this, a group of Turkmen came to the city and survived by brigandage until they were crushed by a Mongol army. Thereafter not a hundred people were left alive in the whole city.

The destructiveness of the Mongol conquests has been the subject of historical debate (Morgan 1986, 73–83). There can be no doubt, however, that for the cities and the agricultural infrastructure of Khurasan and Transoxania, the results were catastrophic. The numbers of slain may be exaggerated, though we should not dismiss them too glibly, but both the literary and the archaeological testimony leave no doubt that the urban civilization of the area was brutally destroyed. And no city was destroyed more completely than Merv.

MERV AFTER THE MONGOL CONQUEST

We hear little about Merv in the years after the Mongol conquest. In view of the devastation so graphically revealed in the historical accounts, this is hardly surprising. When there are reports of rulers visiting the area in the thirteenth and fourteenth centuries, it is the hunting, rather than any urban amenities, that attracts them. Above all, the largely nomadic courts of the Il-Khanid and later princes valued the



Figure 32
The interior of one of the tower rooms of the early phase of the walls on the east. Note the brick bench or *sufa* and the arrow slots.

Merv oasis as a *qishlāq*, that is a good place to spend the winter because of its (comparatively) mild climate and good grazing.

The first person said to have taken an interest in the area was Arghūn Āqā, who was appointed Mongol governor of Iran in 641/1243–4. He was to remain, first as governor and then, after 654/1256, as lieutenant of the first Īl-Khānid ruler Hulegu and his successors, until his death in 673/1275. Arghūn chose to base himself in Khurasan, especially at Tus and on the famous grasslands at Radkan, north west of Mashhad, a favourite resting place of the Mongols. Merv benefited from his patronage. Probably in the spring of 1247,

He sent messengers in advance to Khurasan and the adjacent countries to announce his return and the people of all these lands and places set out to welcome him back and gathered together in Merv. The Amir Arghūn, with the *maliks* [literally kings but here used to mean higher nobles], amirs and ministers alighted in Arzanqābād [identified by Yaqut as one of the

villages of Merv but without any more details] near Merv. For several days they feasted in the royal palace, and he caused the palace to be rebuilt and the park restored, and each of the ministers, at his instruction began to lay out a park and erect a mansion in Arzanqābād. From there he set out for Tus where he gave orders for the rebuilding of the Maṣūriya [Seljuk palace] and the palaces which had fallen into such complete ruin that all trace of any building had long since disappeared from the site.

(Juvaynī 1997, 510)

This engaging picture of urban renewal should be treated with some caution. Arghūn was an important patron of the Juvaynī family so the chronicler naturally wished to show him in the best light. There is no mention of construction in the city itself and, despite the building of the new palaces, the amir preferred to camp on the Radkan meadows. Arghūn held court in Merv again in 1251 (Juvaynī 1997, 514) and in 1256 wine from Merv was sent to his court in Tus (Juvaynī 1997, 616).

The pasture lands around Merv were also used by the young prince Ghāzān as a *qishlāq*, before he succeeded as Īl-Khān in 1295. He was so impressed by the Mausoleum of Sanjar that he later sought to emulate it in his capital at Tabriz (Rashīd al-Dīn 1940, 15, 24, 208).

We have almost no information about Merv in the fourteenth century. In contrast to the pre-Mongol period, there is little geographical literature. The most important account comes from the *Nuzhat al-Qulūb* of Ḥamdallāh Mustawfī dated to 740/1340. Unfortunately the section on Merv is almost entirely derived from earlier sources such as the accounts of al-Iṣṭakhrī and Yāqūt. He says little about urban life but concentrates on the fertility of the agricultural land and the excellence of the fruits, including the dried melons (Figure 33), which seem to have been a Mervi speciality after, as well as before, the Mongol conquests, and continue to be so to the present day. He notes the prevalence of guinea-worm and says that ‘the people here are much given to fighting and the city is now mostly in ruin’ (Mustawfī 1919, 153–4). Neither Ibn Battuta, who visited Khurasan and Transoxania in the 1330s, nor Clavijo, who passed through the area on his 1403–5 embassy to Samarkand, mention Merv at all: either they did not visit or there was nothing of interest to record. Timur used the oasis as a refuge during the difficult years of 768–9/1366–8 when he was trying to assert his power against his old ally Amīr Ḥusayn (Manz 1989, 52, 55).

At the beginning of the fifteenth century, the fortunes of the city began to improve. After the death of Timur in 1405, power eventually



Figure 33
The Sunday Market at modern Merv, Bairam Ali. The melons of Merv, famous through the centuries, are delectable. They are cut into strips and hung up to dry on washing lines, as described by al-Iṣṭakhrī: water melons are boiled to make melon jam, said to be good for the kidneys.



Figure 34
Post-medieval Merv: the towers and walls of the citadel in the foreground; centre left, arcades in the northern city wall. Photographed by Zhukovsky in 1890.



Figure 35
The towered gateway into the post-medieval city, photographed by Zhukovsky in 1890.

passed to his only surviving son, Shāh-Rūkh, who reigned in Khurasan until his death in 850/1447. Shāh-Rūkh made Herat his capital of the Khurasan area, but he also tried to re-establish urban life in Merv. In 808/1406, according to Ḥāfiẓ-i Abrū, he rebuilt the dam on the Murghab River and brought water to the oasis once more. There was not sufficient water to irrigate the Sultan-Kala area so he founded a new town (Figures 34 and 35), now known as Abd Allah Khan Kala (or Abdullah Khan Kala) (after the Shaybanid Uzbek ruler 'Abd Allāh b. Iskander (991–1006/1583–98) (Yakubovsky and Bosworth 1991). The new urban settlement, square in plan, was much smaller than the pre-Mongol urban agglomeration (Figure 21). It became the capital of a small apanage for various minor *mirzas* (princes, short for *amīrzade*, son of the *amīr*, ie Timur) of the Timurid house and seems to have had its own small royal court for much of the fifteenth century. It was in this context that the palace was built at some time in the century and its almost total loss in recent years is regrettable since we have no other surviving example of a Timurid palace building, apart from the vast fragment of Timur's palace at Shahrisabz.

We hear about Merv in connection with the last great Timurid ruler and patron, Ḥusayn-i Bayqara (1438–1506), one of the heroes of Khwāndamīr's *Ḥabīb al-siyār* (Jackson 1986, 121–5). Shortly after 858/1454, Ḥusayn came to Merv where the local prince, Mirza Sultan Sanjar, welcomed him and gave him his daughter, Bika Sultan Begim, as a bride:

Celebrations were held for several days, with cup bearers, singers and dancers. On the day the feast was held, Mirza Sultan Sanjar garbed the *qādīs*, amirs and *noyans* [a Mongol term for a noble] with robes of honour and the Victorious Khaqan [Ḥusayn] was wed to the damsel.

In 861/1457 relations between Sanjar and Ḥusayn broke down. Ḥusayn, with sixty-five supporters, seized the city in his father-in-law's absence and took the throne. The next day, however, while Ḥusayn went out hawking, supporters of Sanjar staged a *coup* and shut the gates of the city. There was some fierce fighting around 'the tower on the Kakinjan side', as Ḥusayn's men attempted to dislodge the defenders with showers of arrows. Ḥusayn was obliged to withdraw when Sanjar returned and for the next winter he stayed in the desert between Khiva and Merv 'waiting for an inspiration'. He attempted to re-establish himself at Merv but was, not surprisingly, given short shrift by his father-in-law and eventually moved to pastures new (Khwāndamīr 1994, 412–14).

In 875/1470 Ḥusayn finally established himself as ruler in Herat and was in a position to expand his authority. He heard that three *mirzas* had come to Merv 'and were disturbing the inhabitants' peace of mind'. He set out, took the city and spent the winter of 1470–1 there. An anecdote tells of Ḥusayn banqueting in Merv with the great poet and administrator, 'Alī Shīr Navā'ī, the leading literary figure of his age (Khwāndamīr 1994, 429).

In 904/1498 Merv was ruled by Ḥusayn's younger son, Abū'l-Muḥsin Mirza who, with his brother Muḥammad Muḥsin Mirza of Abiverd, rebelled against his father. Abū'l-Muḥsin prepared to defend himself:

he raised the defences of Merv and got ready for siege. When the imperial forces arrived outside Merv, they laid siege and began battle, resisted valiantly by Abū'l-Muḥsin's defending soldiers. The whistle of arrows began to draw blood from both sides and sometimes the stones hurled reduced a fortress tower to rubble, and sometimes the vials of fire thrown into the midst of imperial forces deprived many of life. For three or four months things continued thus, but in the end both father and son, weary of battle, arranged a ceasefire

(Khwāndamīr 1994, 472)

An agreement was made which left Abū'l-Muḥsin in possession of Merv in exchange for tribute paid to his father in Herat. Abū'l-Muḥsin was still ruling Merv at his father's death eight years later.

AFTER THE TIMURIDS

The death of Ḥusayn-i Bayqara in 911/1506 marked the end of the Timurids as a serious power in Khurasan and Transoxania. New powers were emerging: 906/1501 had seen the accession of Shāh Ismā'īl as first Safavid ruler of Iran and the final conquest of Samarkand by Muḥammad Shaybānī, the Uzbek chief. The surviving Timurid *mirzas*, including Abū'l-Muḥsin of Merv, met with Babur at Herat to try to organize resistance to the Uzbeks. Babur was full of praise for the parties they gave but commented that 'although the *mirzas* were outstanding in the social graces, they were strangers to the reality of military command and the rough and tumble of battle' (Babur 1996, 230–3).

Babur's judgement was essentially correct. The *mirzas* were squeezed out in the conflict between the Safavids of Iran and the Shaybanid Uzbeks of Transoxania, which was to dominate the politics of the area in the sixteenth and seventeenth centuries. In this conflict Merv was

MONUMENTS OF MERV

always a frontier town and sometimes lost in a sort of no-man's land. In these circumstances, the modest urban revival which had taken place under the Timurid *mirzas* was brought to an end.

Merv was the scene of a major encounter between the Safavids and the Uzbeks. On 1 Ramadan, 916/2 December, 1510 Shāh Ismā'īl decisively defeated Muḥammad Shaybānī. Muḥammad had fled from Herat and fortified himself in Merv. The Safavid army approached from Sarakhs and defeated Muḥammad's army in a battle at the village of Ṭāhirābād. Muḥammad made fast the city of Merv, stationing his amirs in the towers. The shah decided not to attempt to storm the ramparts but rode up to them every day, and there were skirmishes outside the

walls. After some days, the shah ordered a feigned retreat and lured the Uzbek forces out of the protection of the walls. At the village of Maḥmūdī, the Safavid forces turned on their pursuers and destroyed them in a hard-fought conflict, Muḥammad Shaybānī himself being killed in the stampede (Khwāndamīr 1994, 590–3; Dughlat 1996, 156–7). Thereafter Merv remained largely under Safavid rule, but continual exposure to Uzbek raids led to increasing impoverishment. In 1785 the city was further damaged when the first of the Mangit amirs of Bukhara sacked the city and destroyed the dam. Not until after the permanent Russian occupation in 1884 was there a sustained attempt to revive urban life and agriculture (Yakubovsky and Bosworth 1991).

CHAPTER THREE

BUILDING MATERIALS AND TECHNIQUES





Figure 37
Chequerboard brickwork set on a brick string course, presumably employed to decorate the upper back wall of Room 17 in the Ark palace [20], as well as continuing behind the vault.

BUILDING MATERIALS AND TECHNIQUES

None of the traditional buildings of Merv has an inscription, and their archaeological hinterlands have usually been ploughed out. Trying to establish the order in which they were built and their possible time of construction is rather like facing a gigantic jigsaw puzzle with many of the pieces missing. Even finding diagnostic sherds in and around the buildings is only one of a variety of criteria which need to be assembled to try to determine their date or at least their general chronological range. Problems include the longevity of use of mud-brick buildings, once assumed to have had a short lifetime, and the reuse of archaeological debris in the making of mud bricks and walls. Nevertheless, changes in building techniques, in plan and styles of decoration, as well as the historical events shaping the prosperity or otherwise of the oasis can refine their relative dating. In this chapter a diagnostic framework of changing techniques is established by studying the buildings which can be dated with reasonable certainty.

BUILDING MATERIALS

The only readily available building material in the Merv oasis is soil, formed from alluvial sediments, which ranges from clays to fine sands. It makes a versatile and flexible building material, which is also an excellent insulator. Central Asia has an 'extreme continental climate', scorchingly hot in summer and bitterly cold in winter, but not particularly wet. Rainy seasons are confined to the spring and autumn. In such areas mud brick is an outstanding medium with which to work, and one chosen for its specific advantages in mitigating climatic extremes. Because of these advantages it was chosen for functional and for elite buildings, not simply as a matter of necessity, speed, economy or availability, as has been so often suggested. It is THE environmentally friendly building material, which, when no longer required, simply melts back into the soil from which it was made, or forms a quarry for making the bricks of the next building.

The architect Elisabeth Beazley defined its virtues:

It is against such extremes of temperature that protection is most needed. It happens that mud is an excellent insulator provided it is dry. It is a relatively porous material so the minute air spaces within it make it a much better insulator than stronger, denser materials liked baked brick or stone. The mud wall retains the heat instead of allowing it to pass quickly through.

The thermal conductivity of a material, known as its K value, is a measure of heat transference through it (in terms of unit time,

Figure 36 (title page)
The collapsed stairway in the Lesser Kyz Kala [4]: this employed a variety of bricks and building techniques – curved bricks rising from an impost for the tunnel vaults as well as barrel and crown (collapsed) vaults.

thickness, area and temperature difference): the lower the K value the better the material is as an insulator. For instance:

Insulating fibre-boards have a K value of around	0.053
Mud brick	0.22–0.32
Stabilized soil blocks	0.5–0.7
Baked brick	0.71–1.45
Concrete (mix 1:2:4)	1.44
Limestone	1.53

These figures show mud brick to be a very much better insulator than, for example, concrete. Furthermore mud walls have the additional advantage in this respect of being thick. They could not remain standing otherwise but would lean, bend and collapse since mud and mud brick have no tensile strength. This generous thickness is not an extravagance since construction is cheap and the material in abundant supply. And so a material which happens to have a low K value is used lavishly thus giving exceptionally good thermal insulation.

The huge thickness of the normal mud wall or roof [Figure 37] has another important advantage. This material has an exceptional capacity for heat storage: the thicker the wall or roof the greater its storage capacity. In any desert climate, very hot in the day and very cold at night, the clear sky allows the earth (or the building on it) to receive a large amount of radiant heat from the sun which is radiated back into the cold, starry sky at night. Some of this heat is also radiated back into the rooms, the whole house being in effect, a storage heater. For much of the year, when any heat, particularly during the hours of darkness, is an asset, this is valuable. The temperature of indoor wall surfaces makes a great difference to comfort since when these surfaces radiate heat to the occupants of a room, they feel comfortable even though the actual air temperature of that room is below comfort level (10–15% less radiant heat than convected heat is said to be needed for comfort). During summer nights when the rooms of a mud-brick house are inevitably too hot, it is the custom to sleep on the flat roof – a fine place to be once the glare of the sun has gone.

(1977, 14)

Obviously the material has its disadvantages. It has a poor resistance to weather, to wind, rain and snow, and to earthquakes. Furthermore, mud walls and roofs require regular maintenance: flat roofs need repairs after rain or snow, and the footings of the buildings are damaged by rising damp and salts and by knocks or wear and tear. However, well-maintained mud-brick buildings are reasonably durable. And even when abandoned, in desert conditions some may last more

than a millennium. Ironically it may have been because the oasis failed to recover from the Mongol invasion that its mud-brick monuments have survived so long.

WAYS OF USING MUD

The soil of the oasis was employed as a mud mix for constructing walls by moulding or ramming, as well as for bricks, mortar and plaster. These different techniques are briefly described below, although it should be realized that this is a large and complex subject, on which major studies have been written, such as Grazhdankina (1958).

Moulding was the simplest method and was employed for non-loadbearing walls surrounding yards, gardens or orchards. A wall was built

of a mud mix of sufficient fluidity so that the lowest 'course' may be molded with the builder's hands, with a vertical face on either side, to a height of about 3 or 4 inches [100mm] without slumping. Having laid the first 'course', the builder simply waits a day or so for complete sun-drying before he adds the second 'course', after which he must wait again, and so on. The mud mix contains straw or grass to prevent cracking.

(Braidwood and Howe 1960, 40)

Much the same mix is used for 'rammed earth' (Figure 38), a distinctive technique which can be recognized in buildings in Asia, Africa, Europe and the Americas by the courses of 'blocks' from which the walls are formed. This results in an extremely strong wall, which is known by various names, in Turkmenistan as *pakhsa*, in Iran, *chineh*, in Iraq, *tauf*, in France, *terre pisé*. Figures 38 and 39 show a wall being constructed in the High Atlas mountains in Morocco. A short length of wooden shuttering, supported on bent poles, is set up, and the mud mix poured into the resulting 'form' or mould, which typically measures between 800 and 1000mm in length and 600–800mm in height. The mud mix is then rammed with a hand-held rammer to compact it. Once compacted, the shuttering is moved along the wall to form the next block. According to the builders, three such blocks can be completed in a day. Building continues steadily round the walls of the house or yard, the blocks being carefully offset (Figure 39). The 'courses' of blocks are sometimes separated by a levelling course or courses of mud bricks. This work, like that of making mud bricks, needs to be undertaken in the late spring or early summer, so that the walls can be fully dried out before the autumn rains.



Figure 38 The builders at work on a wall made of blocks of rammed earth. A short section of shuttering is set up, filled with the prepared mixture and rammed to compact the soil, after which the shuttering is moved along to form the next block: three such blocks can be built in a day.

Figure 39 A wall of rammed earth on stone foundations being constructed in the High Atlas mountains. Note the short section of shuttering at the far end of the wall. Damp is the enemy of a rammed-earth or mud-brick building, hence the stone foundations and the capping of a courtyard wall seen in the distance on the left.



Figure 40 The large mud bricks favoured by Moroccan builders laid out to dry. Such large bricks are heavy and cumbersome to use.

While *pakhsa* makes an excellent wall, or even a dome (Figure 105) at Suli Köshk [7], sun-dried mud bricks are more convenient. Brick sizes and shapes change, the variations reflecting regional traditions, the vagaries of fashion or sometimes a major cultural change. Moroccan mud bricks (Figure 40) are, for instance, exceptionally large, as were bricks in the Sasanian period. The traditional brick used at Merv in the Islamic period was a square mud brick. The size changed at different periods, which can be a useful guide to dating (see Table on page 138). However, the most obvious change was cultural with the arrival of the Russians in the late nineteenth century. They preferred a rectangular, fired brick of European type used in their church and hunting lodge (Figures 130 and 131).

Bricks were made by collecting either unused soil or that from collapsed walls or buildings, which included cultural debris. This, of

course, adds another level of complexity to the dating of buildings, for a brick or its mortar may contain coins and sherds several centuries earlier than the time of its mixing. The soil is mixed in a pit with water and chopped straw or chaff and thoroughly blended by treading with bare feet and mixing with a hoe, before being carried to the brickmaker. He

covers the ground with a thin layer of chaff, puts the molding frame flat on the ground, and throws a quantity of the mud-straw mix into the mold, beats it into the corners with his bare hands, and scrapes any surplus off with a small straight edge. He lifts the frame with a swift movement, leaving the fresh brick on the ground, and places the frame next to the brick just made. Molding row after row in this way, he makes about 250 bricks an hour. ... After the bricks have been left in the sun for three to five hours, depending on the weather, they are set on edge for further drying. Needless to say, this work is only done during the hot summer months, say between early May and late October. ... When the bricks have dried for a day or two they are used straightaway. ... The courses are laid along a string, and bonded with a mud-straw mortar, identical to the mix used for brickmaking. The bond is about $\frac{3}{4}$ inch [20mm] thick. The bricklayer spreads the mortar with a steel trowel and checks his level with a plumbline or a straight-edge containing a small pendulum. When the wall has reached a height beyond the reach of the builder a wooden scaffold is erected ... The hot climate of the country requires very thick outside walls, usually 2–3 feet [0.8–0.9m] thick. Inside walls are mainly single-brick ...
(Wulff 1966, 110)

A more refined version of the same mud mix was used to make fired bricks, which after drying were taken to a kiln, stacked and fired. This is an expensive process, requiring additional labour in preparing the finer clays and the moulded bricks. A large amount of material to heat the kiln, consisting of a variety of plant materials, such as cotton and vine stalks, straw, twigs of fruit and other trees and desert shrubs and bushes, as well as animal dung, needs to be collected before the kiln is carefully stacked and fired over a period of some three days. Then it has to be sealed and cooled (Wulff 1966, 116–17).

Fired bricks (Figures 41 and 42) were used to minimize water damage: courses in the foundations acted as damp-proofing, and fired bricks were also laid in areas susceptible to damage by excessive wear or exposure to water, such as the pavements of courtyards or floors. Fired-brick foundations were a major technical improvement, which was probably introduced in the Seljuk period. While a level of rammed



Figure 41 (top) The fired brick foundations of the *kepter khana* [22] in Shahryar Ark. At first glance, the foundations appear to have been made of broken bricks. Certainly many such bricks were employed, but the façade was carefully faced with complete bricks.

Figure 42 Fired bricks employed as decoration on the façade at Yakkiper Köshk [17], where courses mark the transition between the second and third storeys.

earth continued to be employed to provide a firm base, the courses of fired bricks acted as a barrier to stop the damp being sucked up the walls (Figure 41). Earlier foundations just of rammed earth lacked this mechanical barrier and were therefore more liable to deterioration at ground level. However, since fired bricks are expensive to make, they are often removed by brick robbers and reused. Indeed foundation courses are usually made of fragmentary, reused bricks, only being faced with complete bricks, and it is these that have subsequently often been removed, leaving the erroneous impression that only fragments were used.

Figure 43

From the Seljuk period walls were reinforced by the inclusion of timber beams. Most of these have long since decayed, leaving only the slots which they once occupied. Here, in the *kepter khana* [24] in Iskandar Kala, beams formed a 'tie' across a corner.



Fired bricks were also employed decoratively (Figure 42), as string courses between floors as at Yakkiper [17], while the hallmark of Seljuk architecture is its elegant cut-brick decoration (Figure 46) (Wulff 1966, 118). These adhere poorly to mud-brick walls and rarely survive *in situ* on our traditional buildings. A welcome exception is on one of the iwans at Kurtly pavilion [21] (Figure 269).

Many scholars have employed brick size to date buildings, agreeing that bricks used in earlier buildings were larger than those employed later. This is generally correct (although this kind of evidence should be used with caution); see Table on page 138. For instance, the bricks of the Greater Kyz Kala, probably one of the earliest surviving buildings, measure c 340² x 80mm, while those of the later Timurid palace are much smaller, only 240² x 50mm. However, bricks of the later 'solid' medieval wall of Sultan Kala are a couple of centimetres larger than those of the earlier 'hollow' phase – the solid wall was made of bricks varying between 310² and 320² x 70mm while the earlier 'hollow' phase used bricks only some 290² and 300² x 60mm. Nevertheless, brick size remains a useful indicator of date, in conjunction with other evidence, and is useful for identifying alterations, as at Suli Köshk [7], where the bricks of a later blocking of the entrance iwan are smaller than those of the walls.

TIMBER

The amount of timber and how it is used is another helpful indicator of changing building practices. The most obvious change occurred in the Timurid period when rooms were roofed with timber beams instead of the ubiquitous domes and vaults (see below) of the *köshks*. The roofs, obviously, do not survive, just the slots in the walls to carry the beams. Another innovation, probably starting in the Seljuk period, was an increasing use of timber as 'tie-beams' within the wooden walls (Pope 1981, 903). Again all that usually survives are the hollows once occupied by the poles (Figure 43). These tie-beams served to strengthen the walls, as steel girders do today, and also to help minimize earthquake damage.

Charcoal analyses of woods used in the steel furnaces of the industrial workshop in Gyaur Kala have identified a range of fruit and other trees, in addition to the locally abundant saxaul (*Haloxylon* sp.), which is too twisty for building work, although it makes excellent firewood. These include poplar, willow, elm and ash (Gale in *Iran* XXXIV 1996, 20), most of which would have been suitable: samples of wood surviving in beam-slots have still to be collected and analysed.

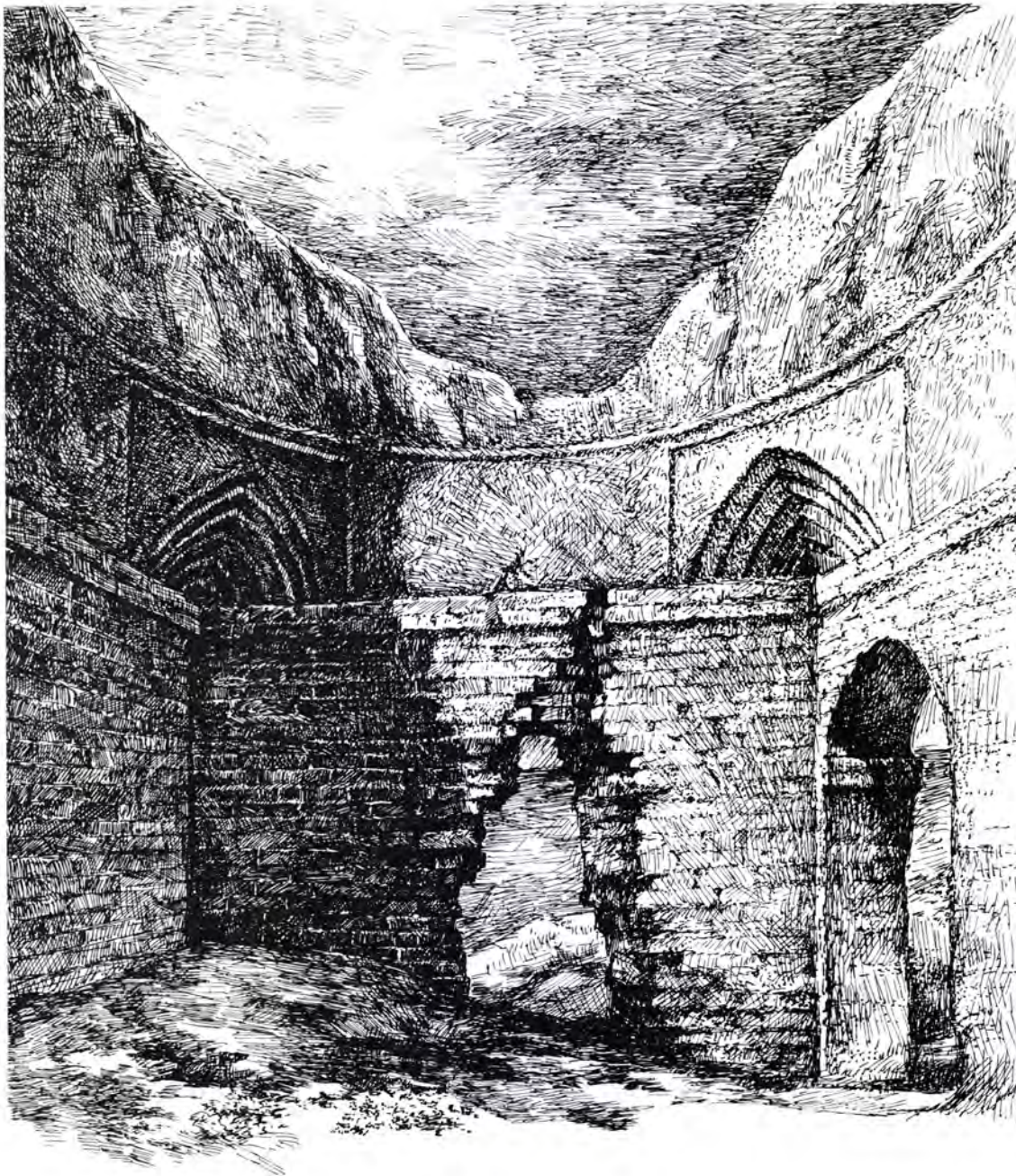


Figure 44
The domed room, 8, on the upper storey of the Lesser Kyz Kala [4], drawn by Olga Smirnova. Note the squinches formed of concentric arches, an early form, set in recessed panels on a string course. The base of the dome is also articulated.

DOMES AND VAULTS

It is often difficult to imagine how they were constructed, but this must depend on a combination of factors which the bricklayer takes for granted as a result of experience and custom. ... Much depends on the speed of work and this is comfortably achieved by men working in small teams using bricks and mortar of a kind which combine to produce a stable structure remarkably quickly.

(Beazley and Harverson 1982, 24)

The builders of Merv were versatile and employed their flexible material to construct numerous different types of vaults and domes in a single building (see, for instance, the interior of the Greater Kyz Kala [1], Figures 97 and 181). Both methods of roofing have a long history. Preserved in desert conditions near Damghan in northern Iran is a superb range of vaults in buildings of the early Parthian period, that is the third and second centuries BC (Herrmann 1977, 36–8). These still stand to some 6 to 7m above the plain, and fragments of a third storey



can be seen. The varied forms of vaulting survive in a near perfect state and include a simple barrel vault, a more wedge-shaped or triangular-headed vault and a stepped tunnel vault. These vaults were built using a special mud brick, a curved strut, the history of which can be taken back to the Achaemenian period, being employed at Persepolis. Such struts were not employed at Merv: whether they continued to be used on the Iranian plateau is a question awaiting definition.

Struts are large and heavy, and so also are the mud bricks used in early Islamic and Seljuk Merv. This must have caused problems for the builders, for they are too heavy to be thrown up to the bricklayer by an apprentice in the normal way. Even picking up one of these large bricks is challenging, let alone throwing it up quickly during the rapid construction of a vault or dome. In one remarkable building, Suli Köshk [7], the dome is built of *pakhsa* (Figures 105 and 216). *Pakhsa* is an even less user-friendly material than mud brick for building domes or vaults and must have needed a form. However, such is the weight of the blocks that the normal form used in buildings made of fired brick, namely river-bed reeds bent to the desired shape and set in plaster, would not do. A form robust enough to bear the weight of *pakhsa* and the impact of the rammer would have been expensive in terrain where strong wood was in short supply.

Changing types of vaults and domes are a useful guide to their time of construction. Roofing rooms with domes was an innovation attributed to the Sasanians: they made the transition from square walls to a round dome by using cone-shaped squinches across the corners (Reuther 1981). Domes on squinches were used at Merv (Figures 45 to 48), although, as far as we can tell from accessible and adequately preserved rooms, they were relatively rare – vaulting seems to have been preferred. They were employed when a high room was required.

Figure 45
The surviving squinch from Room 3 of the Greater Kyz Kala [1]. It is set within a recessed rectangular panel on a string course. The walls on either side

of the squinch are slightly curved to form the drum of the dome. This form of squinch also occurs in the Lesser Kyz Kala [4] and the nearby Mausoleum of Kyz Bibi.

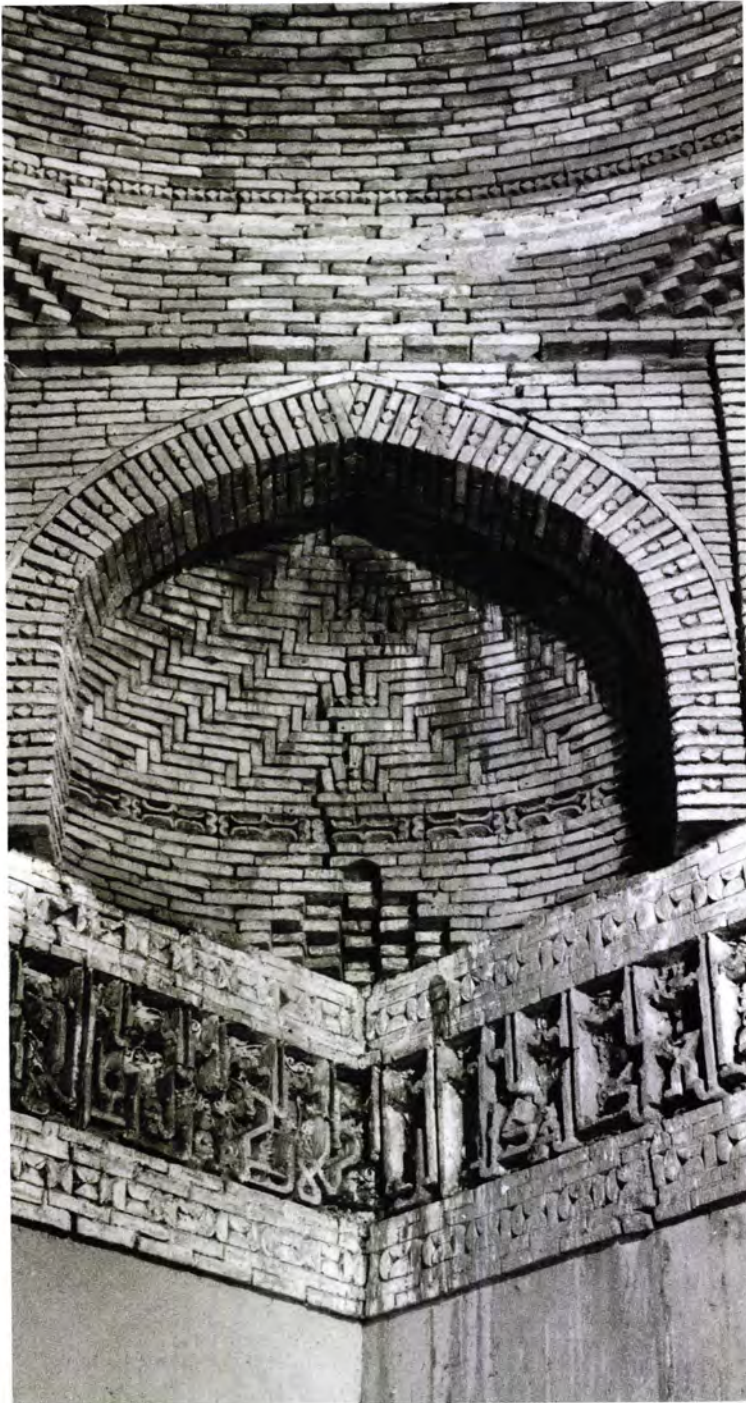


Figure 46

A squinch in the Seljuk mausoleum of Muhammad ibn Zayd. The arch of the squinch carries the weight of the dome, leaving the hood free for decoration with the cut-brickwork enjoyed by the Seljuks.



Figure 47

The central feature of a poorly preserved squinch on a fired brick string course from the pavilion at Kurtly [21]. The trilobed decoration in the centre is unusual in Merv.

Squinches

There are two main types of squinch employed at Merv, cone-shaped squinches and arched squinches, where the weight of the dome was essentially carried by the arch, leaving a range of options for the decoration of the hood.

Simple cone-shaped squinches are formed of a series of concentric arches. These are set on brick string courses, and in some examples are placed within recessed panels, with the aim of articulating the different zones. This form of squinch is obviously derived from Sasanian squinches, and this was presumably the reason why Pugachenkova suggested a late Sasanian date for the Kyz Kalas. Squinches set on string courses but lacking the refinement of the recessed panels can be seen in *köshks* out in the oasis, at the Byash Ishyk [5] and Garam [6] *köshks* (Figures 206 and 209). It is in the urban centre that we see the

most elegant form of these squinches, with their slightly pointed arches, set in recessed panels, with further articulation not only of the string courses but defining the zone of transition to the dome (Figures 44 and 45). These can be seen in the Greater and Lesser Kyz Kalas [1] and [4], particularly in the relatively complete Room 8 of the Lesser Kyz Kala. This urban form of squinch was also employed in the nearby Kyz Bibi Mausoleum.

A more developed type of squinch was employed in the Seljuk period, for instance in the Mausoleum of Muhammad ibn Zayd (dated by inscription to AH 506/AD 1112–13). These squinches were formed of pointed arches, which projected over the string course and carried the weight of the dome. The hood could then be elegantly decorated with brick patterns, as in that Mausoleum (Figure 46). While these squinches, being built of fired brick, are well preserved, only traces

Figure 48

The remains of an arched squinch in Room 26 of the palace in Shahryar Ark [20]. The hood has a groin running from the corner to the crown.





Figure 49
The great corbelled dome of Ice-house 2 [28], relieved by bands of decorative brickwork. The entrance was in the north; there were also two deep niches.

Figure 51
At Yakkiper [17], the quadripartite lanceolate vault of Room 6 was reinforced or decorated with armatures or raised ribs of brickwork.



Figure 50
The squinch or *balkhi* vault was employed at Merv when a low domed room was required, as in

Room 13 of the palace in Shahryar Ark [20], where two storeys of low rooms helped support the central iwan.





Figure 52
Another form of vault was the quadripartite lanceolate vault, seen here in Room 5 of the Greater Kyz Kala [1], where all walls curve inwards.

survive of the mud-brick squinch in the palace in Shahryar Ark [20] (Figure 48). However, enough survives to determine that it was of the same type, with a projecting arch and a hood with a sharp groin rising from the corner to the crown. The surviving squinch in the pavilion at Kurtly [21] (Figure 47) also probably had a projecting arch, but instead of a groin, the corner was lobed, a type of squinch which develops into a scalloped form, an example of which occurs in the mihrab at the Mausoleum of Muhammad ibn Zayd (1112–13).

Squinch vaults

While domes of high rooms were set on squinches, squinch vaults were used to cover a low room (Figure 50). Such low rooms seem to have been employed to support adjacent high rooms. For instance, the great iwan on the north wall of the palace in Shahryar Ark [20], was flanked by pairs of low rooms, as were the tall central sections of both Suli [7], and Yakkiper [17]. Squinch vaults are known locally as *balkhi* vaults: *balkhi* is a traditional form of vaulting still employed at Merv in the eighteenth- and nineteenth-century *dings*. Beazley watched one being built in Iran:

Work proceeds across all four corners until the hole in the centre decreases so that there is only room for one man to work. Construction goes rapidly, the bricklayers being fed with bricks tossed up from below, each ring of bricks exerting a thrust on its neighbour as it is completed.

(Beazley and Harverson 1982, 25)

In Beazley's example, the dome was built without scaffolding. However, the presence of putlog holes in many of the domed and vaulted rooms at Merv suggests that scaffolding was sometimes, but not invariably, employed. String courses to articulate the transition occurred in some rooms but not in others.

Corbelled domes

In a corbelled dome, each course of bricks is laid horizontally and projects further inward than the preceding course until the dome is completed. This form of dome is used on the 'ice-houses' (Figure 49), which, being circular, required no transition from the square to the circle.

Quadripartite lanceolate vaults

Some high rooms, which were rectangular rather than square, were roofed with quadripartite lanceolate vaults (Figure 52), for instance in

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Rooms 4 and 5 of the Greater Kyz Kala. In this case the vaults curved inwards equally on all four walls. A development of this form can be seen at Yakkiper [17], when flat 'raised ribs' or armatures (Figure 51) were added to the domical vaults, most likely to emphasize the form rather than to strengthen them. Because of a superficial resemblance to cross-vaults (French *arcs du cloître*) Pugachenkova incorrectly called these 'monastery' vaults, a term still used locally.

Barrel vaults

Undoubtedly the most popular form of roofing at Merv was the vault. The barrel vault had been developed and widely used as early as the Parthian period (c 200 BC to AD 224), both for rooms and corridors and for roofing iwans. It was equally popular in the following Sasanian period and has continued in use to the present day. Perhaps the most famous barrel or parabolic vault is the great Sasanian iwan in the palace at Ctesiphon in Iraq (Figure 54). Parthian and Sasanian vaults were built without scaffolding: the side and back walls were built first, and the bricks were laid vertically in half-circles, beginning at the back wall and working forwards (Reuther 1981). Vaults were also constructed with bricks 'lying diagonally instead of standing vertically so that each line of bricks can rest against the "arch" just constructed' (Beazley and Harverson 1982, 25).



Figure 53
Much more modest barrel-vaulted rooms, 9 and 10, from the Greater Kyz Kala [1].

Figure 54
The most famous Sasanian barrel vault was that of the great iwan at Ctesiphon near Baghdad.

Figure 55
This vault at Greater Nagym Kala [2] is slightly pointed.



Figure 57 (below)

While most of the windows lighting the lower storeys are narrow slots, this unique example from Greater Nagym Kala [2] is wider and built in an unusual way, with stepped corbelling at the top.

**Figure 56 (above)**

Numerous narrow corbelled windows in the northern end of the east façade of the Greater Kyz Kala [1] lit the rooms of the lower storey.

Figure 58

This narrow, corridor-like room at Garam Köshk [6] is roofed in a similar but more sophisticated form to that of the Greater Nagym Kala window (see Figure 57) and decorated with rows of diagonally set bricks.

At Merv, different forms of vault are used in the same building: some are true barrel vaults (Figure 53), while others are slightly pointed (Figure 55) rather than the earlier parabolic arch. Some rise from a slight impost or a brick string course, some directly from the wall. Beazley noted that in some cases instead of building the vault from the back wall, the end was 'completed by vaulting at right angles to the main vault, making a semi-dome' (Beazley and Harverson 1982, 25, fig 27), as at Kurtly [21]. The tops of most vaults and domes would have been concealed by floors or flat roofs. 'To save weight the roof is supported on a series of small arches which rest on the vault' (Beazley and Harverson 1982, 26).

Transverse or cross vaults

An alternative form of roofing employed on some rectangular spaces was transverse or cross vaults, an example of which can be seen in the *kepter khana* [22] in Shahryar Ark. The long walls of this narrow rectangular room had four pairs of engaged pilasters, two against the end walls and two in the centre (Figures 161 and 277). Traces of the vault can still be seen on the pilasters at the north end, curving in towards the centre. The vault was slightly narrower than the pilaster

and rose from a course of fired bricks. Traces of a similar cross vault can be seen rising from pilasters on the west iwan (Figures 259 and 262) of the nearby palace [20] and would presumably have been used on all the palace iwans, as well probably on the iwans of Porsoy Kōshk [16]. This system of vaulting was already known in the Sasanian period. There is a fine example at Iwan-i Karkha in Khuzistan (Reuther 1981, 507, fig 135). At Merv, its use seems to be confined to the Seljuk period.

WINDOWS AND AN UNUSUAL CORRIDOR

Narrow vertical windows can be seen in the exterior walls of the lower storey of *kōshks* (Figure 56), obviously serving to light these rooms, and they occur higher up in the walls, lighting stairways (Figure 183). The virtual absence of windows on the external walls of the upper storeys except for the stairways suggests that rooms were lit from a central courtyard, through the doorways and windows, one of which survives in Room 8 of the Lesser Kyz Kala [4] (Figure 199). Most window slots were corbelled, although an unusual window at the Greater Nagym Kala [2] (Figure 57) was roofed with a corbelled vault with bricks set diagonally on the roof. A more elaborate version was used in a narrow corridor room at Garam Kōshk [6] (Figure 58), where alternate courses of the corbelled brickwork projected diagonally.

STAIRWAYS

Stairways were roofed with stepped tunnel vaults, and as far as can be established from surviving examples, there are again differences between those employed on the Kyz Kalas and those from presumably later monuments elsewhere. The best-preserved and most accessible example is still that in the Lesser Kyz Kala [4] (Figures 59 and 61). This survived virtually complete and could be walked through until the

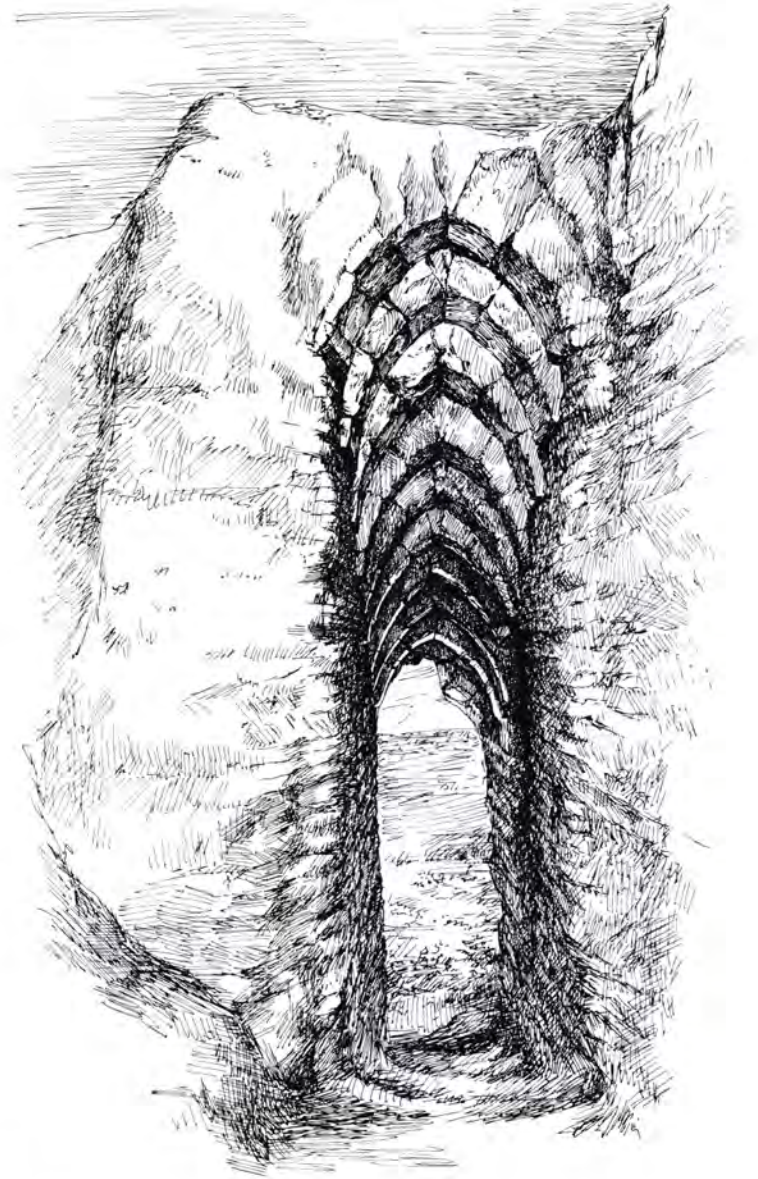


Figure 59
The stairway at the Lesser Kyz Kala [4], built of a series of stepped tunnel vaults, springing from a single brick impost. Drawn by Olga Smirnova.

Figure 60

The stairway at Yakkiper Köshk [17]. The vaults of this later stairway are much rounder and less steep than those of the Lesser Kyz Kala.

**Figure 61**

The vaulting on the roof at the turn of the stairway of the Lesser Kyz Kala [4] in 1961, prior to the collapse of the east wall (photographed by S Chmel'nizkij).



winter of 1990, when the east wall of the *köshk* collapsed (Figures 191 and 192). Fortunately a detailed plan had been drawn by Pilyavsky in 1937 (Figure 143). Three flights, set at right angles, led to landings with access to subsidiary rooms. The stairway (Figures 195, 197 and 198) was roofed with a series of stepped tunnel vaults of pointed profile, with elaborate cross vaults at the intersections (Figure 61). The vaulting is still complete on two flights, while the springing can be seen on the central flight, and clearly illustrates how the curved mud bricks of the vault were set on a brick impost: there was a small triangular 'keystone' at the apex of each vault. The use of curved mud bricks suggests that – as was later to be the case with baked brick – the increasing technical complexity of these structures was beginning to call for a wider range of shapes in the modular unit of construction. Each of the 'steps' of the tunnel vault of the Lesser Kyz Kala was only a single brick wide, while the surviving sections of a stairway visible in the Greater Kyz Kala [1] sprang from a four-brick impost (Figure 183). They also have a pointed profile.

Stairways can be glimpsed at Yakkiper [17] (Figure 60), in the palace of Shahryar Ark [20] and in both the hollow and solid phases of the walls of Sultan Kala, while an area of collapse at Kelte Minar [13] has

revealed part of the vault of a stairway. At Yakkiper, only one right-angle turn can be seen, covered with a slightly pointed vault and a low rounded arch. Similar low arches occur in the palace of Shahryar Ark (Figure 264), while there is a range of types in the walls of Sultan Kala, with both low rounded arches and pointed ones, according to the space available and the steepness of the turn. The vault of the stairway at Kelte Minar is embellished with 'raised ribs' or armatures. It remains an open question whether such ribs were functional or merely decorative.

ENTRANCES AND DOORWAYS

Nothing survives of the grand entrances to the 'great *köshks*', the Greater Kyz [1] and Nagym [2] Kalas, although Zhukovsky's photograph of the Greater Kyz Kala (Figure 63) prior to the collapse of part of the east façade (Figure 179) shows an oval opening in the centre, which presumably served as the entrance at first-floor level. At Garam Köshk [6], on the other hand, there are iwan entrances at ground level in the centres of both the short sides of the building. The crowns of the doorways (Figure 62) leading into the *köshk* are visible and were constructed of bricks arranged radially with a triangular 'keystone', formed of horizontal courses of brick. A more developed version of such 'keystones' can be seen, for instance, at Ice-house 2 [28] (Figure 127).



Figure 62 The iwan entrance and doorway in the north façade of Garam Köshk [6]. This ground-level iwan is only one storey high rather than the two as occurs later at, for instance, Suli [7] or Yakkiper Köshks [17] (see Figure 64).



Figure 63 The principal, east façade of the Greater Kyz Kala [1], photographed by Zhukovsky in 1890 (1894, 165, fig 25) before the collapse of the central section. The arched opening in the centre of the upper storey would have been accessed by a ramp. The pointed form of the corrugations, forming a parapet around the flat roof, are well preserved.



Figure 64

The principal entrance at Yakkiper Köshk [17], an iwan two storeys in height leading into the principal reception room also two storeys high. The iwan is still partially standing. A fragment of a later blocking is *in situ* at the front.

Figure 65

Most of the external walls of Porsoy Köshk were still standing when Pugachenkova took this photograph in the 1950s (1958, 210). The arch of the one-storey iwan was slightly inset, with a wide shallow doorway at the

back. Above was a remarkable wide arched opening or belvedere. The upper storey of the building is no longer decorated with corrugations but with ribbed pilasters and niches. The narrow windows on the left lit the stairway.



A focus on the entrance becomes a major feature. In both Suli [7] and Yakkiper [17] Köshks (Figures 211 and 64) iwan entrances were two storeys high and flanked by low rooms. At Ovliali Köshk [14], the iwan entrance projected and the doorway at the back was emphasized by a decorative rectangular panel above. This contained a niche with a stepped head (Figure 81). The entrance in the House east of Gyaur Kala [15] (Figure 238) was inset but again the doorway had a recessed rectangular panel above, while at Porsoy [16], interior doorways in the central cruciform area were dramatized with similar features (Figure 244). Nevertheless, such entrances were indeed modest compared with their equivalents in medieval public buildings of the area.

Nearly all the exterior walls have fallen away from Porsoy Köshk, although many of them were standing when it was visited by Pilyavsky in 1937 and 1971 and by Pugachenkova in the 1950s. At that time, one of the iwan entrances survived: a wide door covered with a segmental arch led into the *köshk*, while above was a large window or belvedere, also with a segmental arch (Figure 65). The doorway in the north iwan of the palace in Shahryar Ark [20] (Figure 68) is also a segmental arch with bricks arranged radially, as are the doorways of Ice-house 3 [29] (Figure 303). The presence of a segmental arch – a feature not, it seems, encountered in the early Islamic architecture of the Iranian world but popular from the Seljuk period onwards – is a useful dating control. An internal arched door in the palace between

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Rooms 22 and 26 has bricks arranged radially with a course of bricks set tile-wise below (Figure 266). Internal doorways at Porsoy Köshk are tall, narrow and arched, their height emphasized by a rectangular recess above (Figure 246).

A fine example leading into the courtyard of the Lesser Kyz Kala [4] (Figure 67) has an arched head with two courses of bricks laid tile-wise on a two-brick impost. At the Greater Nagym Kala [2], a door in the exterior has bricks set radially and a triangular brick 'keystone': another vault or doorway of pointed form is crudely constructed with large bricks laid flat like tiles – it may be a later alteration (Figure 188). There was a similar doorway at Kharoba Koshuk [25] (Figure 287).

Both the four-centred arches and doorways with re-entrants of the elegant pavilion at Kurtly [21] (Figure 66) belong to a well-known Islamic tradition. Four-centred arches are a feature of Ice-house 1 [27] (Figure 296) and the little Timurid pavilion known as the Köshk Imaret [26] (Figures 290 and 292). The bricks are set radially.

THE LIFE OF MUD-BRICK BUILDINGS

Although mud-brick buildings are assumed to have had a short lifespan in Asia, perhaps as little as 50 years, there is evidence that the buildings of Merv remained in use for a considerable period. The survival of a



Figure 66
A four-centred doorway with re-entrants, a typical Islamic form, but only surviving at Merv in the elegant pavilion at Kurtly [21].

Figure 67
The north-east corner of the domed Room 8 of the Lesser Kyz Kala [4], showing the cone-shaped squinch, the doorway and the window on to the central space, almost certainly a courtyard.



Figure 68
The wide doorway with a segmental arch in the north iwan of the palace in Shahryar Ark [20]. Note the raised panels above.



mud-brick building depends on good maintenance, particularly after rain. Public buildings such as mosques or caravanserais were designed to last and were endowed with *awqaf*, the funds essential for regular repairs and renovations. However, for buildings lacking endowments, once they fell out of use, their lifespan could be short. Studying the remarkable pigeon towers, wind-catchers and ice-houses of Iran, Beazley despaired:

In another ten years' time, unless positive action is taken, most will have crumbled. Their rapid disappearance derives from a variety of good reasons. A redundant building, constructed of stone in a temperate climate, may survive many years as a ruin. But these Iranian buildings are chiefly built of unbaked mud brick. Any mud-brick building quickly deteriorates without constant maintenance; this inevitably ceases once a building is no longer useful. The fierce climate of the Plateau accelerates this process. (1977, 89)

Another aspect may be cultural. Hillenbrand wrote about the fate of Islamic palaces:

The idea that a palace should be the royal seat of a dynasty for the indefinite future – an idea that in the West produced the Louvre or Buckingham Palace – seems never to have caught on in the Islamic world. As a result, the norm was for a ruler quickly to erect his own palace in the early part of his reign on a site of his own choosing. It was the exception rather than the rule for the monarch to inhabit the palace of one of his predecessors. Sometimes these palaces were so jerry-built that they scarcely endured for the lifetime of their patrons. (1994, 377–8)

Here it is perhaps worth remembering that the European fashion for continuity is itself not that old. Indeed, conservation versus replacement is very much a matter of cultural and local traditions and conditions. In Baghdad regular replacement of housing is the norm, because of termite infestation or flood (Warren and Fethi 1982, 21–2).

Nevertheless there is evidence at Merv that some buildings survived for centuries and probably remained in use considerably longer than just the 'lifetime of their patrons'. Even when abandoned, they had a secondary life when they were used by squatters or as animal shelters. Porsoy Köshk, for instance, which was probably built during the Seljuk period, was still being lived in as late as 1841, when a Turkmen khan, Alla-kuli-khan, visited Niyaz Muhammad-bai there (Obelchenko 1963, 349, note 121). Then it became a shelter for sheep. The pavilion at Kurtly/Bashan was built in the Seljuk period, while areas of replastering

are said to be Timurid in style. The walls of the pavilion are still being used: they are roofed as a shelter during the cotton harvest. Thus the fact that a building ceased to perform its original function did not exclude a later and very different use – a use, moreover, that made some degree of maintenance worthwhile.

Such longevity increases the difficulties of establishing the date of construction of buildings, and indeed these have often been little more than 'guesstimates'. Pugachenkova initially dated a group of *köshks* to the eleventh–twelfth centuries before redating them half a millennium earlier to the sixth–seventh centuries. In political terms, this meant changing their date of construction from the Seljuk period to the Late Sasanian.

CONSTRUCTING A CHRONOLOGICAL FRAMEWORK

There are standing buildings surviving in the citadels of the medieval and post-medieval cities, which we can be reasonably certain were not constructed before those periods. Thus the palace in Abdullah Khan Kala would not have been built before the Timurid city in the early fifteenth century, and the palace and *kepter khana* in the Seljuk citadel, Shahryar Ark, [20] and [22], together with the residence being excavated by the IMP, date to the Seljuk period and more specifically to the reign of Sultan Sanjar in the twelfth century. Seljuk construction also includes the two building phases of the medieval walls, the earlier 'hollow' phase and the later reconstruction when the galleries were infilled and the walls reinforced, the 'solid' phase.

SOME SELJUK BUILDING TECHNIQUES

None of the external walls of the palace in the Ark survives, although some were standing in the 1950s. In a small sondage, or excavation, in the north-east corner, Pugachenkova discovered Seljuk cut bricks used to decorate external walls, but how extensively these were employed on the palace is unknown. Traces of cut-brick decoration at the Kurtly pavilion [21] (Figure 269) suggest that at the very least the arches of iwans would have been decorated. The walls and corners of the palace courtyard (Figure 261) were decorated with grooved pilasters alternating with recessed niches as on the upper storey at Porsoy Köshk [16] (Figure 242). The raised panels on the upper parts of the courtyard iwans probably carried transverse vaults and were separated by recessed niches (Figure 116). Some internal walls were

decorated with a chequerboard pattern of bricks laid vertically: similar chequerboard decoration with niches (Figures 71 and 74) rather than a flat design occurs in the adjacent *kepter khana* [22]. These niches are often assumed to be functional. However, the Seljuk preference for naked brick decoration as opposed to plaster should be borne in mind (Figure 69). Inspiration for such decoration could have been provided by the exterior and interior of the famous Samanid mausoleum in Bukhara (Figure 70), built between 914 and 943, which is richly decorated with variations on the chequerboard theme worked in relief (Ettinghausen and Grabar 1987, fig 221).

A considerable variety of domes and vaults were employed in the Seljuk period. Low rooms were covered with squinch vaults, while high rooms were either vaulted or roofed with domes carried on squinches with projecting arches. Iwans or long rooms were roofed with cross vaults. Doorways and stairways employed segmental arches. The palace and the *kepter khana* were built of larger mud bricks (280² x 70mm and 300² x 60mm) than those in Timurid buildings, and fired bricks were extensively used for foundations, some floors, the tops of pilasters and within the walls. The roof of the *kepter khana* was carried on transverse vaults rising from a course of fired bricks on the pilasters, which themselves were separated by panels of brick niches. The corrugations of the *kepter khana* were short with a raised central rib and started from and terminated in a course of fired bricks, the upper course of which formed the base of a series of linking squinch-like arches. Thus fired bricks clearly had a role to play as articulating devices, securing an important visual and structural effect at minimum cost. Timber was not used for roofing or flooring but was employed as reinforcing tie-beams running deep into the walls (Figure 43).

The residence being excavated by the IMP in the north west of the Ark (see Figure 117) can be dated to the Late Seljuk period (*Iran* XXXIV 1996, 17–19; XXXV 1997, 22–6; XXXVI 1998, 71–4 and XXXVII 1999, 16–17, 19). This rectangular building is mostly sub-surface, although a few walls survive above ground. The building is typically Seljuk in plan and consists of two parts, a residential section on the east, with a small courtyard and four iwans, and a domestic area, also probably arranged around a courtyard (Figure 72). Of interest are both the occupation history and building techniques. The date of construction was established in 1998 when a stucco dado (Figure 73) decorating the walls of the south iwan, (a), was revealed. This can be paralleled in the Mausoleum of Sultan Sanjar and thus helps date the building to his reign. However, the residence soon fell upon hard times, with squatter

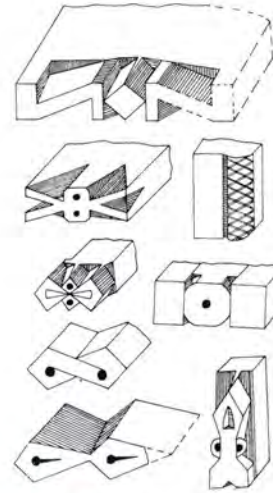


Figure 69 Seljuk buildings are often embellished with elegant cut-brickwork. These examples were found in the Seljuk mosque in Gyaur Kala: excavated and drawn by Professor T Khodzaniyasov.



Figure 70 The fashion for decorative brickwork reached its height at the earlier Samanid mausoleum in Bukhara.

Figure 71 The bricklay of many of the walls of the palace in Shahryar Ark [20] is constructed in an unusual chequerboard pattern, with bricks set vertically,

alternately a face or three ends. These rows are separated by courses of the traditional horizontal lay and presumably served as decoration; see Figure 37.



Figure 72

The palatial residence currently being excavated by the IMP is a four-iwan courtyard building. The iwan revealed to date, (a), was richly decorated, with

stucco carved with a geometric design (see Figures 117 and 73) similar to some on the galleries of the Mausoleum of Sultan Sanjar, and thus helps to date the building.

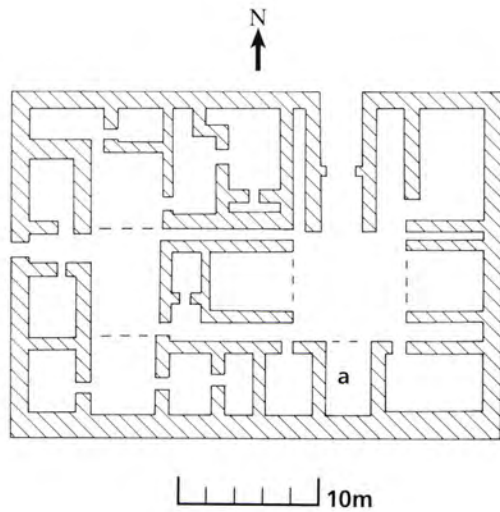


Figure 73 The stucco from the southern iwan, (a), of the Ark residence (see Figure 72).

reoccupation and much reuse of earlier material: stone bowls were patched together with rivets. There is no indication of how the external walls were decorated, although a few cut bricks have been found. The walls were built on foundations of fired bricks.

TIMURID BUILDING TECHNIQUES

Unfortunately, little of the Timurid palace in the citadel of Abdullah Khan Kala is still standing, although it was better preserved in Zhukovsky's day (1894, 141, and see Pugachenkova 1958a, 388–9) (Figures 24 and 25, 34 and 35). Pugachenkova described a rectangular building (c 45 x 40m) with a spacious internal courtyard (30 x 25m) and walls standing to a height of 15m. The rooms were



Figure 74 The deep brick niches in the *keptar khana* [22] in Shahryar Ark, arranged in panels between pilasters carrying the transverse vaults. Many

purposes have been suggested, such as pigeon roosts, niches for objects and an archival store. They may, however, have been purely decorative.

arranged on two storeys, and the floors between the storeys together with the flat roof were carried on wooden beams. Although only a few sections of wall still survive, enough remains to confirm Zhukovsky's descriptions including numerous sockets for the floor and roof beams, as well as wooden tie-beams within the brickwork. Beam-slots for a flat wooden roof also occur in the little summer pavilion to the north of Abdullah Khan Kala, the Köshk Imaret or Timurid House [26] (Figure 77). This charming structure, with its iwan entrance flanked by smaller arched niches with *muqarnas* (honeycomb or stalactite vaulting) hoods, also shares decorative features with the Timurid palace (Figures 75 to 78). The walls, both internally and externally, are divided into two registers of rectangular panels with painted plaster decoration displaying chamfered or scalloped corners (Figure 78) and half-columns in relief (Figure 77).

Another diagnostic feature is the size of the bricks, which are relatively small: in the palace these measure 240² x 50mm, while in the pavilion they are 250² x 50mm. Both buildings were constructed on



Figure 75
Timurid decoration of traditional buildings at Merv was restricted, consisting of registers of panels. The panels on the walls of the palace in Abdullah Khan Kala, here photographed by Cohn-

Wiener, were alternately wide and narrow, with a curved or scalloped decoration in the upper corners (see also Figures 23, 24 and 76, and compare 77 and 78).



Figure 76
The frames of some panels in the Abdullah Khan Kala palace were formed of small, engaged columns (see also Figure 24).

Figure 77
The Köshk Imaret [26] from the south east, in 1961, showing the external decoration similar to that of the Abdullah Khan Kala palace (see Figures 23, 24, 75 and 76), which thus helps to date the pavilion to the Timurid period.





Figure 78 One of the narrow plastered panels with scalloped corners from the interior of the Kōshk Imaret [26], almost identical to that of the Abdullah Khan Kala palace (Figure 75): the plaster still retains traces of pink paint.

Figure 79 The corrugations of the Greater Kyz Kala [1] are 'tall' corrugations, which continue to the top of the building to form the parapet. While today they are pointed, originally they were probably crenellated. Note the narrow slot of the window lighting the ground floor.



fired-brick foundations. These two very different structures, a ruler's palace and a gazebo, provide a useful illustration of early fifteenth-century building techniques, panelled and plastered decoration, flat wooden roofs and floors, timber tie-beams, small mud bricks and fired bricks. The use of flat roofs for such structures persisted in Central Asia into the nineteenth century, as examples from Khiva show.

THE KYZ KALAS

There are such significant differences in construction and building techniques between the Timurid and Seljuk buildings, on the one hand, and the Kyz Kalas, on the other, that earlier assumptions that the latter were the earliest surviving traditional buildings seem to be justified. The Kyz Kalas are built of considerably larger mud bricks ($340^2 \times 80$ and $350^2 \times 75$ mm), and no fired bricks can be recognized. Other differences include the absence of tie-beams; wood was apparently used only for scaffolding. This suggests that at the time of their construction wood was a scarce resource, or at least substantially more expensive than mud brick. The implications of this finding for the ecology of early Islamic Merv bear further examination. Was the oasis really as richly wooded as Du Huan describes?

Typical of the Kyz Kalas was a wide range of types of domes and vaulting, including a cone-shaped squinch formed of concentric arches, set within a recessed rectangular panel (Figures 44 and 45). Another significant difference between the Greater Kyz Kala and Seljuk buildings is the corrugations (Figures 79 and 80). Those of the Greater Kyz Kala are 'tall' corrugations, not the 'short' ones of the *kepter khana*. They rise smoothly from the sloping platform forming the base of the *kōshk* to the full height of the building. They serve to emphasize the importance of the rooms of the upper storey, or *piano nobile*, and continue upwards to form the crenellations of the parapet.

THE HISTORY OF CORRUGATIONS

'Short' corrugations, arranged in panels rather than encasing the building and thus employed at this later stage as a decorative device, can be seen on the caravanserai at Rabat-i Malik in the Zerafshan valley (Figure 80), which is dated by inscription to c AD 1078 (Figure 29: Hillenbrand 1994, 343–4 and see 3d drawing on 343). This is a crucial building documenting the decline of the corrugation and its replacement by panelling. Not only are the corrugations used in panels,

but the principal feature of the caravanserai, the *pishtaq* (a lofty arch framing an iwan), is flanked not by corrugations but by recessed rectangular panels (Figures 29 and 30).

Ovliali Köshk [14] (Figure 81) is partially similar since the *pishtaq* is also flanked by recessed panels, but there were corrugations on either side of the *pishtaq*, which may originally have encased the building. The corrugations of both Ovliali (Pugachenkova 1963a, fig 2) and Kelte Minar [13] (Figure 82) start nearer the ground than the *köshks* of Groups I–III and no longer emphasize the upper storey. Important entrances are at ground level and lead into ground-floor rooms. This increasing emphasis on access at ground level, already begun at Garam Köshk [6], and seen at Suli [7], and the *köshk* south of Gyaur Kala [10], presupposes a change of use: lower-storey rooms were presumably being used at a primary level instead of for storage and as *serdabs* (living spaces) as in the Group I *köshks*. If one of the purposes of corrugations was to emphasize the importance of the principal storey of the building, corrugations starting nearer the ground would reinforce the new emphasis on ground-level rooms.

Corrugated buildings have been recorded at Akcha Kala, a caravanserai on the route between Merv and Amul, and the oases of Khwarazm. The Khwarazm examples include those at Kunya Kala, Kavat Kala, Teshik Kala, Yakke-Parsan and Adamly Kala (Zasyupkin 1948;



Figure 80
The corrugations of the Seljuk caravanserai at Rabat-i Malik (1078) are used in panels instead of encasing the building and are ‘short’, rising abruptly from the plain skirt of the building and

ending in a row of linked squinch arches. These corrugations are purely decorative. The precise dating of this building is of considerable importance in establishing the history of the corrugation.

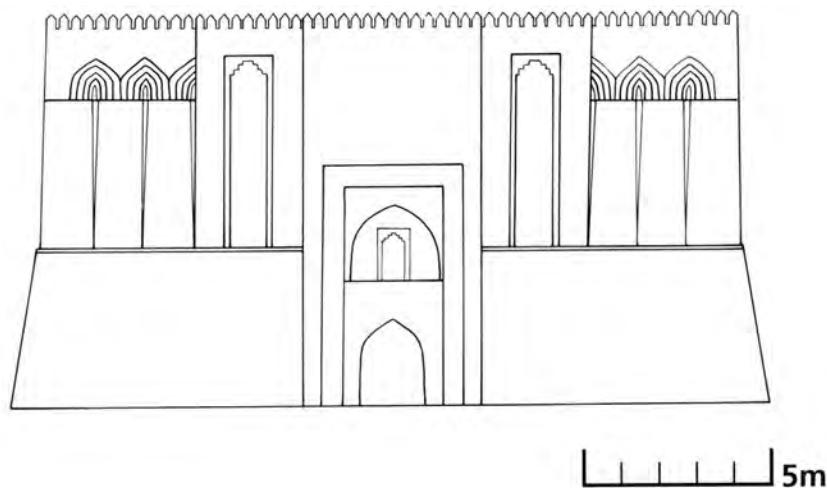


Figure 81
The façade of Ovliali Köshk [14], after Pugachenkova (1963, 230, fig 4).



Figure 82
The *köshk* near Kelte Minar [13] in 1956, before the arched entrance collapsed (from Pugachenkova 1963, fig 5). In this *köshk* the corrugations encase the building but start nearer the ground than in the Group I–III *köshks*: this change probably reflects the increasing importance of rooms on the ground floor. There are flattened pilasters in the centres of the sides, flanking the entrance and either a very narrow entrance or a window.

Nerazik 1963; Orlov 1952), while Toprak Kala is the most important site of ancient Khwarazm. Built on a high platform with a slight batter, the façades have been restored with pilasters separated by grooves but with corrugations on the exterior (Orlov 1952).

Kunya Kala or Chash Kala is a *pakhsa* caravanserai located to the south of the medieval fortress of Sadvar, with a large open courtyard fronting a smaller covered section. It is built on a high platform with steeply sloping sides. The façades have rectangular corner towers with regularly broken sequences of hemicylindrical corrugations surmounted by arches. The closest analogy is the mud-brick caravanserai, Akcha Kala, where the corrugations on the façade are continuous.

The photograph of Teshik Kala in the Berkut-Kala oasis, dated by Zasytkin to the sixth to seventh centuries, shows corrugations, although these are not indicated on the plan. It is on a platform with steeply sloping sides, 8m high. An inner room contained fragments of a moulded frieze of alternating rosettes and palmettes. Such a frieze appears on the castle shown on the Anikov silver dish in the Hermitage Museum in St Petersburg, dated to the ninth to tenth centuries (Figure 86: Zasytkin 1948, 24–5).

Yakke-Parsan was a small country residence in a rectangular walled courtyard, 74 x 54m, on the former Il'yich kolkhoz in the Turtkul' region of the former Karakalpak Autonomous Republic. The central keep, 24m square, set on a high platform, had corrugations crowned by squinch arches. Nerazik compares it to two other sites in Khwarazm, Teshik Kala and Adamly Kala (1963, 3–40).

Corrugated decoration was also occasionally applied to tomb towers and minarets. Zhukovsky noted corrugations with squinch arches on a tomb tower at Radkan East in northern Iran (illustrated in Diez 1918; Pugachenkova 1958b, 163; Schroeder in *SPA* 1981, VIII, 347; Hillenbrand 1994, 277, 527), while they are also employed on a free-standing minaret at Dzhar-kurgan in the Surkhan Darya valley near Termez (Figure 83), dated to 1108–9 (Schroeder 1981, 1027).

Thanks to Rabat-i Malik (AD 1078) and the twelfth-century *kepter khana* in Shahryar Ark the 'short' corrugation can be dated with reasonable certainty to the Seljuk period. The 'tall' corrugation, on the other hand, must be earlier, occurring as it does on buildings with the half-cone squinch, larger mud bricks and lacking fired bricks and timber tie-beams. There seems, therefore, to be a reasonably coherent pattern of development: in the Greater Kyz Kala [1] the upper storey of the monument had 'tall' corrugations rising from the skirt to the top of the parapet. By the Seljuk period corrugations were 'short', had

lost any functional role they may have had and were sometimes employed in panels.

Nearly all reconstructions of the exteriors of corrugated buildings have been based on the evidence from Rabat-i Malik (Pugachenkova 1958b, 133, 136, 152; Atagaryev and Pilyavsky 1974, 115) and a well-known illustration of a corrugated building on the Anikov dish (Marschak 1986, 209–11; Reuther 1981, 531) (Figure 86).

While it is possible to trace the decline of the corrugation, no convincing case for its origin has yet been made. Pugachenkova suggested that the inspiration may have been the engaged columns on the towers of the fortress at Chilburj (Figure 87). She dated the foundation of Chilburj to the Parthian period, with occupation continuing into the fourth century and Islamic reoccupation (1958a, 50–6). Recent excavations have revised her dating (Gubaev, Koshelenko and Novikov 1990; Gaibov, Koshelenko and Novikov 1990). The settlement was probably founded in the late Parthian period, when the fortifications were made of *pakhsa*. Chilburj enjoyed its heyday in the fifth century, when the fortifications were rebuilt on the Parthian foundations, and they were then repaired in the eleventh to thirteenth centuries. To which phase the corrugations belong is unclear, but it is certainly not to the Parthian period. All that survives are the lower sections of engaged columns separated by wide channels and pierced by arrow slots (Gaibov, Koshelenko and Novikov 1990, 25–6, figs 7–9, especially 9). Pugachenkova's restoration of the walls (1958a, 56) is conjectural and, as usual, based on the Rabat-i Malik caravanserai and the Anikov dish.

Many of the corrugated buildings of Khwarazm have been dated to the sixth to eighth centuries, and as such would precede the date suggested for the Greater Kyz Kala of the late eighth or ninth centuries (see Chapter 6). However, the Khwarazm datings may also need to be revised. Perhaps all that can be said at present is that corrugations are a Central Asian feature with a Central Asian distribution, presumably starting towards the end of the first millennium AD and continuing in use through the Seljuk period, although with considerable modification. In the Merv oasis the Greater Kyz Kala is probably the earliest and certainly the best example of the 'tall' corrugation (Figure 84), while the Ark *kepter khana* [22] illustrates the Seljuk version (Figure 85).

As to function, there is little information. Plain surfaces of mud-brick walls have been broken up since the earliest times with buttresses and reveals, or engaged columns, to enliven them with changing patterns



Figure 83 The minaret at Dzhar-kurgan in the Surkhan Darya valley near Termez, dated to 1108–9, is decorated with corrugations terminating in a row of squinch arches.

Corrugations and squinch arches were also employed on a tomb tower at Radkan East in northern Iran, where the brickwork was exceptionally elaborate.

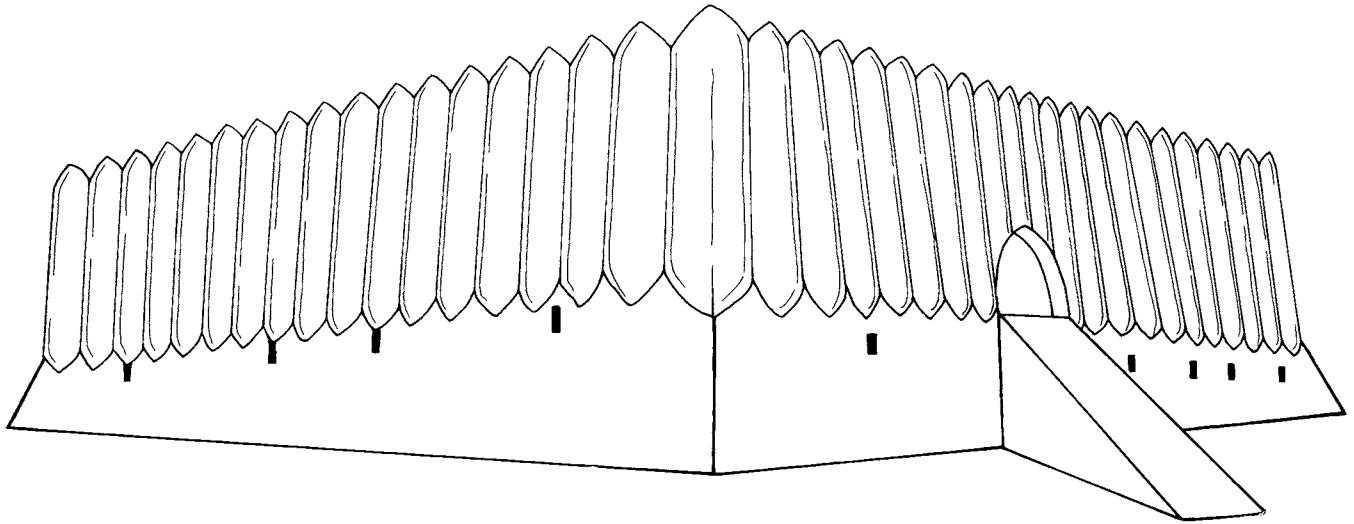


Figure 84
The corrugations of the Greater Kyz Kala [1] are tall rather than short, as in the *kepter khana* in Shahryar Ark. In this reconstruction they are shown rising from the skirt of the building to form the parapet.

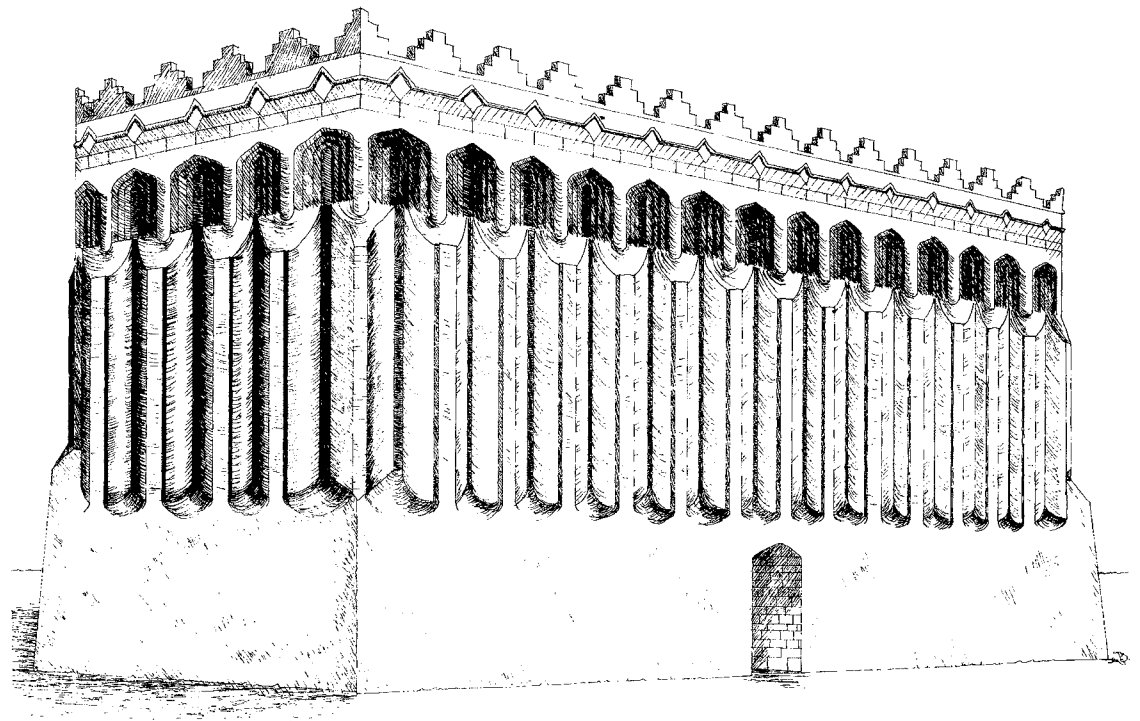


Figure 85
The corrugations of the *kepter khana* in Shahryar Ark [22] are short and end in a course of fired bricks, which formed the base for a row of linking squinch arches. There were further bands of decoration above the squinch arches on caravanserai at Rabat-i Malik and presumably also on the *kepter khana*. By this time, corrugations were being employed for decoration.



Figure 87
Pugachenkova suggested that it was the towers and walls of the fortress of Chilburj in the Merv oasis that inspired the development of corrugated decoration.

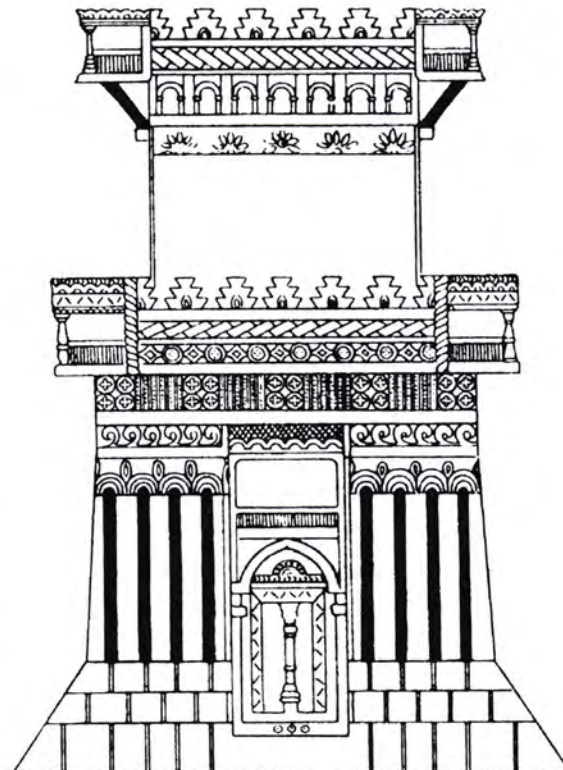
of light and shadow. Corrugations or engaged columns certainly formed a variation on a familiar theme and may also have served a practical purpose by aiding the swift run-off of rainwater, the principal danger to mud brick.

PANELLED DECORATION

Panelling was used in addition to corrugations at both Rabat-i Malik (Figure 30) and Ovliali Kōshk [14] (Figure 81). At Porsoy Kōshk [16] (Figures 88 and 240–3) corrugations were replaced by grooved pilasters and recessed niches, where, like the corrugations of Groups I to III, the

Figure 86
Reconstructions of the corrugated *kōshks* of Merv have been based on the evidence of the Rabat-i Malik caravanserai (Figure 80) and of a remarkable silver bowl, known as the Anikov bowl, found in Perm and now in the State Hermitage Museum, St Petersburg. It is said

to show the siege of Jericho and is dated to the ninth to tenth centuries. It clearly shows a corrugated building on a sloping skirt with an arched *pishtaq*. The corrugations are ‘short’ with squinch arches above and further zones of decoration before the parapet.



pilasters were confined to the *piano nobile* or upper storey, thereby emphasizing its importance. The pilasters were similar to those on the courtyard walls of the palace in Shahryar Ark, where they again served to highlight the most important level, this time on the ground (Figure 261). Rectangular panels containing arches with stepped heads decorated the walls of the 'Seljuk House' [23] (Figure 89). Panelling also enlivened the walls of both the Timurid palace in Abdullah Khan Kala and the Timurid pavilion [26] (Figures 75 to 77). Thus there was a change from corrugations to panelling under the Seljuks, which continued into the Timurid period.

THE CENTRAL SPACE: DOME OR OPEN COURTYARD?

Like most oriental buildings, the palaces, *köshks* and houses of Merv are inward-looking rather than outward-looking. Life was focused on the central space of the building, which was probably open, forming the traditional courtyard. The pre-eminent importance of such a



Figure 88

While much of the iwan and the belvedere of the south-east façade of Porsoy Köshk were complete when photographed by Pugachenkova in the 1950s (see Figure 65), both arches had collapsed by 1971 (Atagaryev and Pilyavsky 1974, 126).



Figure 89

The surviving façade of the *kepter khana* in the south of Sultan Kala known as the 'Seljuk House' [23]. The decoration consists of recessed panels with arched stepped heads, also employed above doorways at Ovliali Köshk [14], the House east of Gyaur Kala [15] and Porsoy Köshk [16].

courtyard was summed up by the architect John Warren, in his *Traditional Houses in Baghdad*: 'The courtyard was the fundamental space of the house. It provided light and ventilation. It was the temperature regulator and the circulation space, and it was the zone where the several stratifications of the house came together' (Warren and Fethi 1982, 50). An eighteenth-century description by the Danish scholar and traveller, Carsten Niebuhr, provides another illustration of these interior spaces: 'From inside there is usually a small square court on to which look all the beautiful rooms, sheltered to counteract the heat of summer. Usually there is a vaulted underground room with ventilators facing north' (Niebuhr 1776).

Pugachenkova, however, was convinced that this space was domed. Writing of the Greater Kyz Kala she stated that

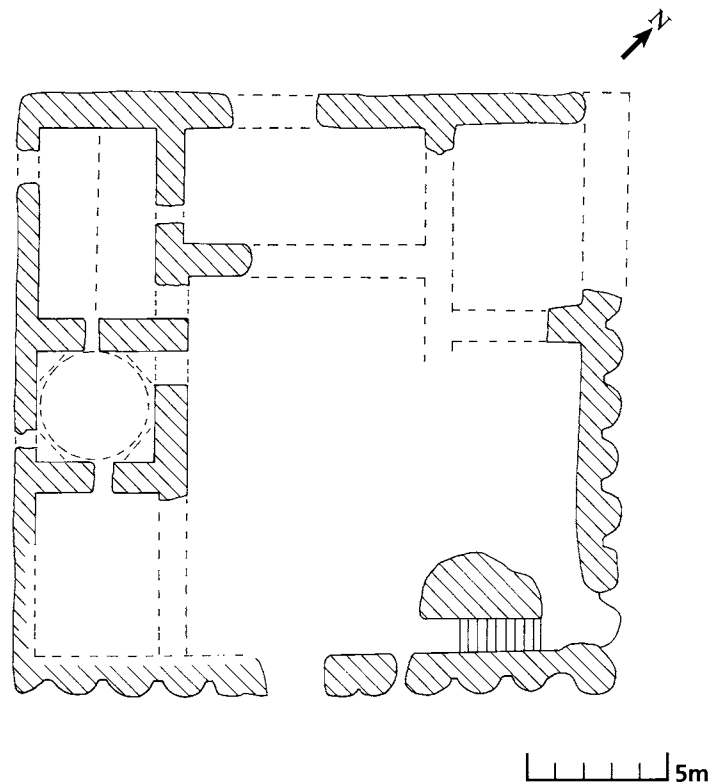
the suggestion put forward to the effect that in the middle there had been a rectangular courtyard (V.A. Lavrov, 87) is unacceptable, since a courtyard of that kind would have had well-like proportions, where rainwater and snow would have collected. Probably there would have been a central domed hall, around which were arranged rooms and corridors lacking any direct light, which was quite a common feature of the architecture of that period. (1958a, 137)

She ignored the problems of lighting, ventilation, circulation and coolness. It is unlikely that the problem of the roofing or otherwise of the central space can be definitively solved, because no single solution need apply. It is almost certain that the *köshks* of Groups I and II had

courtyards at least at upper-storey level, because narrow windows in the exterior walls only light the rooms of the lower storey and the stairways. There are no windows to the upper storey, for which light, air and circulation must have been provided from a central courtyard, as can be seen in the little window on to the central space of the Lesser Kyz Kala [4] (Figure 199). The *köshks* of Group III are more problematic, as they have very different plans. There was no central space in Suli Köshk [7] and the *köshk* south of Gyaur Kala [10], nor in the *köshk/dings* [11] and [12]. The cruciform buildings of Groups IV and V again are in the main poorly preserved, although three have a reasonably complete plan. Kelte Minar [13], Porsoy [16] and Yakkiper [17] each have a plan with a central space opening on to iwans, which may have been roofed or left open to the skies. Further study of each building is required.

Figure 90
There are many different traditions of planning, as can be seen by comparing that of the upper storey of the Lesser Kyz Kala [4], drawn by Pilyavsky in the 1930s (right), by Pugachenkova in the 1950s (Figure 91a) and by the IMP in

1998 (Figure 91b). Both Pilyavsky and the IMP recorded extant remains, while Pugachenkova restored fallen sections of the building. The differences between the Pilyavsky and IMP plans indicate the degree of collapse in the intervening sixty years.



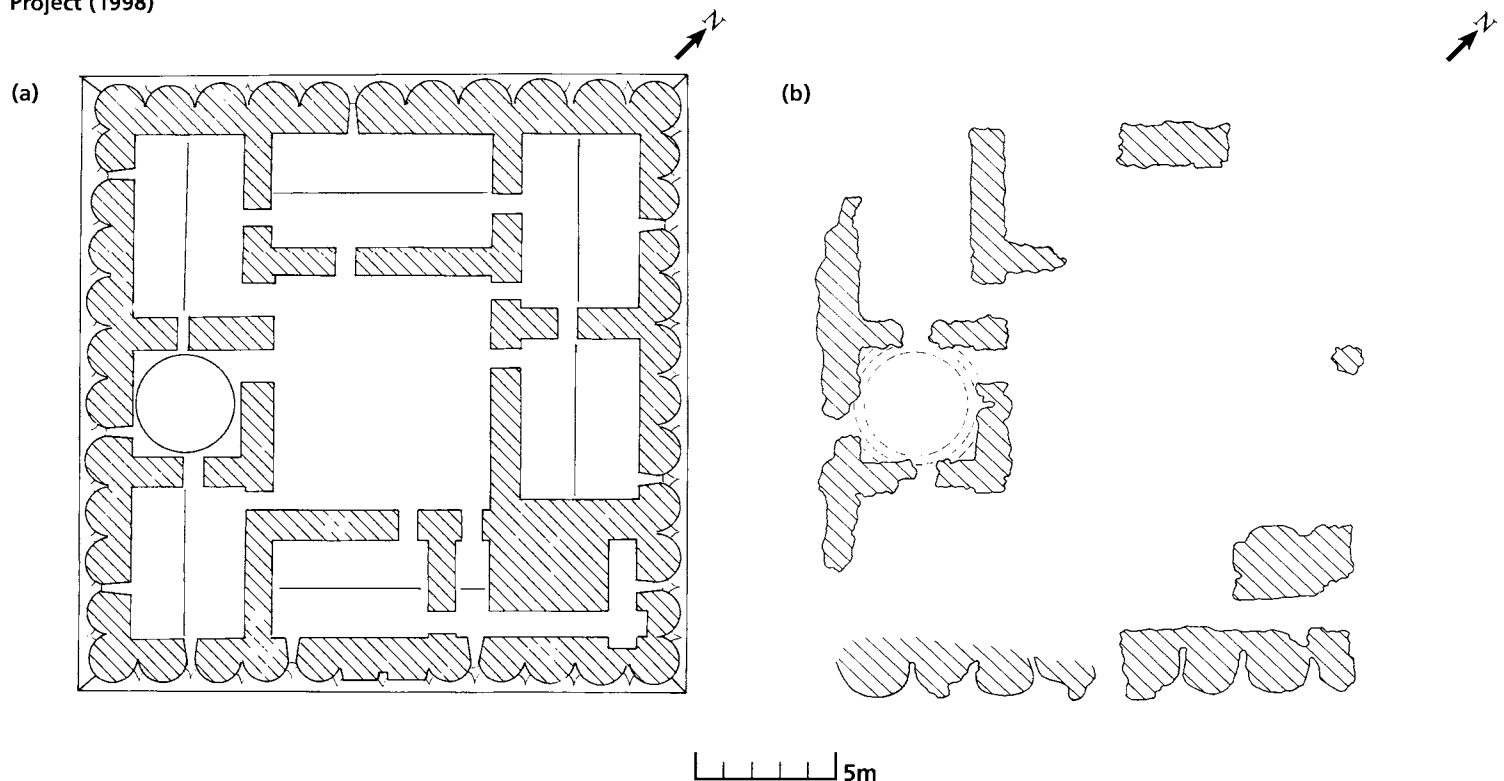
PLANNING

It is difficult to plan a decaying building, parts of which have collapsed and much of which is inaccessible. Outlines are 'soft', obscured by fallen mud brick, with the inevitable result that there are discrepancies in measurements: these are often noted in the Gazetteer. There are also different traditions in planning. The Lesser Kyz Kala [4] was first planned in 1937 by Pilyavsky (Figure 90), who recorded the state of the building at that time, with corrugations surviving on the south and east walls. Pugachenkova's plan (Figure 91a) was made fifteen years later, but she drew the building as if the external walls were complete with corrugations existing on all four façades. Because of this over-restoration, some of Pugachenkova's plans contain serious errors, both in planning and in orientation, as for instance in the Byash Ishyk Köshk [5] (see the Gazetteer). Despite these caveats, her pioneering work remains of fundamental importance. Many of her plans are reproduced in the Gazetteer, together with new plans recording the surviving walls

Figure 91 Plans of the upper storey of the Lesser Kyz Kala [4].

(a) after Pugachenkova (1958)

(b) by the International Merv Project (1998)



of the monuments. In some cases considerable variations will be noted between the two, for instance at the Kurtly pavilion [21] (Figure 160a and b). The orientations of her plans are also often erratic: these have been corrected but no other changes made.

PROBLEMS OF EXCAVATION AND CONSERVATION

Mud brick suffers from damp: either rising damp, eating away the base of the walls, or rain penetrating the brickwork. The east wall of the Little Kyz Kala fell in in the winter of 1990 to 1991 from a combination of the two (Figures 191 and 192). Undercut walls are not only a problem in standing buildings but also in excavation, for it is difficult to isolate the damaged 'face' of the wall from the surrounding mud-brick tumble. Buildings continuing in use for a considerable time are difficult to interpret both in excavation and recording. Walls are cut down or rebuilt, doors opened or closed.

Floors become uneven and are raised by a new layer of rammed earth. Storage pits are cut. Trying to identify these different events, to separate an original wall, although damaged, from mud-brick tumble and from 'make-up' is a complex operation.

Conservation of the monuments is not easy, either. The greatest danger is the recent high water table, with rising damp and salts eating away the base of the walls. These are often deeply undercut. To support them is an essential first step, but this requires raking out all the loose material from these nearly 'freestanding' walls, and then trying to pack the gap with new earth – a dangerous venture, both for the building and for those working on it. This essential first step does not solve the difficulty, for the new earth is as liable as the old to erosion by rising damp. The effect of water penetration from the top and sides also needs to be addressed. Many experts have worked and are continuing to work on this problem. Let us hope they find a way of slowing the probably inevitable decay of these remarkable buildings.

CHAPTER FOUR

THE KÖSHKS,
HOUSES
AND DINGS
OF MERV





Figure 93
The Lesser Kyz Kala [4] from
the north west after the
collapse of the north wall
(Robert Harding Picture Library;
© Christopher Rennie).

THE *KÖSHKS*, HOUSES AND *DINGS* OF MERV

Köshks are the most characteristic and distinctive buildings of the oasis. They are uniquely Central Asian, and the best examples survive in the Merv oasis. There are monumental *köshks* such as the Greater Kyz Kala [1], as well as many smaller buildings, which can perhaps be better described as 'houses', such as the House east of Gyaur Kala [15]. They served as the residences of the wealthy and powerful and, predictably, were varied in form and scale, their variety reflecting the different commissions, desires and tastes of the élite of the oasis. They were probably built from the late eighth or early ninth century up to the arrival of the Mongols in the early thirteenth century, and some continued to be inhabited into the nineteenth century.

As in many a European *palazzo*, *castello*, *schloss* or *château*, the upper storey was often, but not invariably, the main level of use or *piano nobile*. The lower storey of a number of *köshks*, such as the Kyz Kalas, contained a range of vaulted and domed rooms, lit by narrow windows, used either for storage or as a *serdab* in the hot summer months. The dim light and the cooler air provided by the insulation of the thick mud-brick walls would have provided a welcome relief from the heat and glare of the Central Asian summer. Modern concepts of lighting make it difficult to realize the pleasure and advantage of lower light levels. Roofs would have been flat and surrounded by a parapet: they would have offered agreeable summer sleeping under the brilliant canopy of the stars, as well as an excellent vantage point from which to survey the surrounding landscape or adjacent settlement.

Today the word '*köshk*', '*kushk*' or '*keshk*' is applied to isolated, mud-brick buildings. '*Dings*' were smaller versions of *köshks*, usually consisting of only one or two rooms, although built on several storeys. These multi-storey towers served as refuges and as look-outs over the flat landscape, a necessary protection against marauders. In this chapter only two *köshk/dings* are discussed, both of which are medieval in date. The more numerous eighteenth- and nineteenth-century *dings* are described at the end of Chapter 5.

Although their immediate hinterlands have mostly been destroyed, *köshks* and *dings* would originally have formed the focal point of an enclosed range of buildings and gardens, one of which Pugachenkova recorded at Munon Tepe (Pugachenkova 1958a, 159) (Figure 94). Despite their defensive and fortress-like appearance, *köshks* and *dings* lacked many of the features one would expect to find in fortresses, such as corner towers or arrow slits, and their walls were weakened by window slots. Although not built to withstand military assaults, they would, nevertheless, have offered protection against casual raids.

Figure 92 (title page)
The Greater Kyz Kala [1] is unique in having faceted rather than semicircular corrugations: detail of the well-preserved south façade.

MONUMENTS OF MERV

The earliest-known reference to the *kōshks* of Merv is in an anonymous geography, the *Hudud al-'Alam* dated to AH 372/AD 982. This was a time when the status of Merv had declined. It was no longer a capital city, as it had been under the Abbasids and Tahirids and as it would be again under the Great Seljuks.

MARV, a large town. In the days of old the residence of the *mir* of Khorasan was there but now he lives in Bukhara. It is a pleasant and flourishing place with a citadel built by Tahmurath; in it there are numerous castles [*kushk*]. It was the abode of the [Sasanian] kings [*khusravan*]. In all Khorasan there is no town [better] situated. Its market is good. (Appendix)

DISTRIBUTION OF KÖSHKS AND DINGS

Only about twenty *kōshks* survive as more than mounds in the oasis today, nineteen of which are described in the Gazetteer. Most cluster around the ancient and medieval city-sites of Merv, Gyaur Kala and Sultan Kala, usually within the Archaeological Park, where they have been less exposed to large-scale agriculture. They were always built close to a canal to provide the household with water. Al-İṣṭakhrī commented on some near the Hormuzfarra canal, to the west of Sultan Kala:

Among them is the river Hormuzfarra which has many buildings of the town on it. It is on the Sarakhs side among the first things the traveller from Sarakhs reaches. There are many buildings constructed on it by Ṭāhir b. al-Ḥusayn (Appendix).

Three of the four *kōshks* built beside the canal – the two Kyz Kalas [1] and [4], and the *kōshk* [3] near the Mausoleum of Muhammad ibn Zayd, more to the north – may be the ruins of these buildings. The Razik canal flows between Gyaur Kala and Sultan Kala and provided water to a group of four to six *kōshks*, now mostly mounds, to the north east of Sultan Kala and to another *kōshk* [10] south of Gyaur Kala. Along the line of the Asadi Khurasani canal to the east of Gyaur Kala were two more buildings, a *kōshk* and a small house [15], both poorly preserved. Only one *kōshk*, the Byash Barmak *Kōshk* [8], survives inside Sultan Kala, in the north-west quarter. These *kōshks* were not 'great houses' or *châteaux*, the focal point of large estates, for they were built relatively close together and adjacent to the regional capital. They served as the mansions of important nobles, who needed to live near the centre of power.

The survival of *kōshks* in the oasis has been very much a matter of chance. Only two have survived in the south west, while those in the north are clustered in two or three areas. There were once many more, for instance at Munon Tepe, Epti-murat Kala, Kurtly, Kishman Tepe, etc, which now exist only as mounds. Pugachenkova noted that outlying *kōshks*, such as Suli [7] or Ovliali [14], were built on the edges of villages and served as the 'manors' of the local *dihqans* (1958a, 153; 1963a, 228).

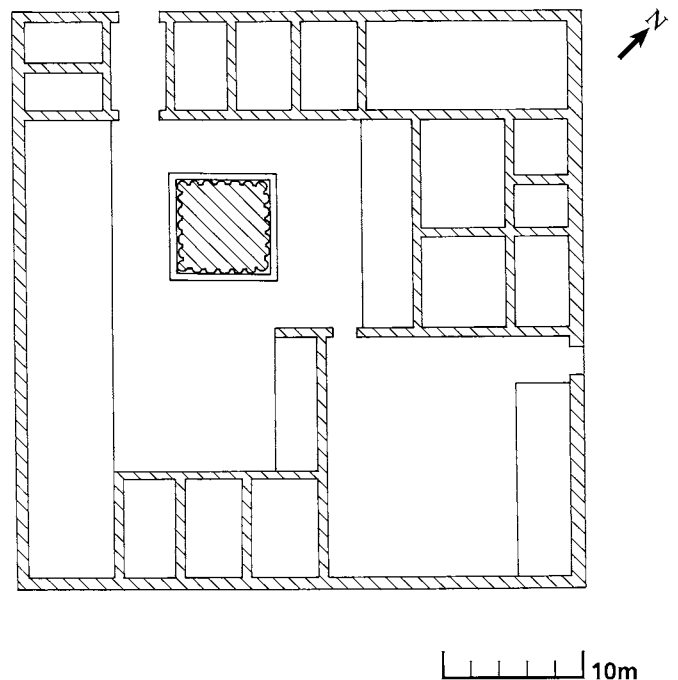


Figure 94
Plan of Munon Tepe by
Pugachenkova (1958a, 159),
showing a range of buildings
within a courtyard surrounding
the *ding*.

GROUPS OF KÖSHKS AND DINGS

Pugachenkova was the first to study these buildings, which she arranged into three main groups. Her early, sixth- to seventh-century group contained three *köshks* and one *köshk/ding*: the Greater and Lesser Kyz Kalas [1] and [4], and the Greater and Lesser Nagym Kalas [2] and [11], (1958a, 132–42). She dated her main group to the ninth to tenth centuries (1958a, 149–60), while her late group of six *köshks* were assigned to the eleventh to twelfth centuries. These were the *köshks* near Kelte Minar and Ovliali, the House east of Gyaur Kala, Porsoy, Yakkiper and the ‘Dig House’ or ‘Potter’s Köshk’ [13] to [18] (1963a, 227–34; 1958a, 206–14).

The buildings are divided here into five rather than three groups according to changes in building techniques. Groups I and II are built of larger mud bricks, do not use fired bricks or reinforcing timber beams, and were probably decorated on the upper storeys with ‘tall’ corrugations. The *köshks* of the ‘middle’ group, Group III, employ slightly smaller mud bricks, but more significant was the introduction of fired bricks, timber reinforcing beams and ‘short’ corrugations. With Groups IV and V there are changes in the external decoration, as corrugations are replaced by panels or external walls are undecorated. Plans are more standardized, with an increased emphasis on entrances.

Figure 95
The south and east façades of Greater Kyz Kala [1] photographed in 1971 (Atagaryev and Pilyavsky 1974, 117) before the arch of the entrance on the east collapsed.



THE MONUMENTAL KÖSHKS:

The Greater Kyz and Nagym Kalas and the *köshk* near the Mausoleum of Muhammad ibn Zayd (Group I, Numbers 1–3)

The most obvious factor uniting these *köshks*, the Greater Kyz Kala [1] (Figures 95 and 97), the Greater Nagym Kala [2] (Figure 96) and the poorly preserved *köshk* [3] near the Mausoleum of Muhammad ibn Zayd (Figure 98), is their size. The Greater Kyz Kala and the Greater Nagym Kala are the most impressive *köshks* in the oasis; they are characterized by massive construction and are about twice the size of any other. They are nearly square in plan with the lower storey contained within a monumental sloping platform, skirt or glacis. This is pierced by narrow, wedge-shaped windows with corbelled arches, sloping downwards to light the vaulted rooms of the lower storey. The walls of the upper storey rise with a distinct incline or batter and are broken up into corrugations or tall engaged columns. The corrugations of the Greater Nagym Kala are relatively worn and survive to a lower height than those of the Greater Kyz Kala. These magnificent corrugations still survive to nearly their original height and end in a

series of triangular points, representing the eroded remains of crenellations (Figure 92). The corrugations are semi-octagonal in form, are separated by narrow channels and rise smoothly from the platform.

The division of the exterior into two zones reflects the internal arrangement into two storeys. Entrance was via ramps on the east side to the upper storey. Archive photographs show an arched entrance in the centre of the east side of the Greater Kyz Kala (Figures 63 and 95), while traces of a major entrance at upper-storey level can also be seen at the Greater Nagym Kala, together with the remains of the mud-brick ramp (Figures 184 and 186). Little survives of the interior of the upper storey of either Kala. On the Greater Kyz Kala, the stubs of some walls provide an idea of the layout and structure. The first impression is the variety of domes and vaults which the architect or builder employed. It is along the west wall that his virtuosity is best displayed (Figures 97 and 180 to 183). Moving from the south to the north, the first surviving room, Room 1, was roofed with a simple barrel vault. The next two were domed: the squinches rose from string courses and were formed of a series of concentric arches, framed within a recessed rectangular panel that followed the curve of the drum (Figure 45). This type of squinch is unique to the *köshks* of Groups I and II and to the



Figure 96
The south and east façades of Greater Nagym Kala [2], photographed in the 1950s (Pugachenkova 1958, 132) when much of the east façade was still standing. The entrance was in the centre of the east façade at upper-storey level, accessed by a ramp.

Mausoleum of Kyz Bibi. Rooms 4 and 5 were roofed with tall quadripartite lanceolate vaults, rising from brick string courses; the vaults of Room 4 were also decorated with tri-lobed blind niches. Even less survives of the interior plan of the Greater Nagym Kala (Figure 141), either at the level of the upper or the lower storey. The size of the rooms of both Kalas suggests there must have been at least two rows of rooms arranged around the central courtyard.

The stairs on the north wall of the Greater Kyz Kala (Figure 183) were covered with a rising series of stepped tunnel vaults, with complex cross-vaults where stairs intersected at right angles, a style of roofing repeated on a smaller scale in the Lesser Kyz Kala. There is no access today to the lower storey of either *köshk*. However, variations in the height of the floors of the upper-storey rooms of the Greater Kyz Kala suggest that these lower rooms were of varying heights and presumably of varying importance.

A building not discussed by Pugachenkova, although she must have noticed its bulk, is the *köshk* adjacent to the Mausoleum of Muhammad ibn Zayd (Figure 98), now essentially just a large rounded mound. However, even in its current wretched state, this still measures some 33.8 x 33m and survives to a height of 9m. A few features are

preserved on the western side, having been sheltered from the winds by the mausoleum. Like the other two it was built of large mud bricks and shares many of their characteristics, such as a fortress-like appearance, a sloping platform with narrow, wedge-shaped windows and the remains of a corrugated wall above.

The date of the Group I *köshks*

The three *köshks* need to be considered together. Zhukovsky, the first scholar to study the Greater Kyz Kala, did not suggest a date for its construction, although he pointed out the similarity of the corrugations to the exterior of the Seljuk tomb tower at Radkan (Zhukovsky 1894, 165–7; cf also Pugachenkova 1958b, 135). Pilyavsky (1947 and 1950) initially suggested that the building belonged to the eleventh to twelfth centuries but subsequently revised this to the eighth or ninth centuries, the date proposed in this book. Pugachenkova dated the Greater Nagym Kala to the sixth to seventh centuries on the basis of structural details, layout, size and archaeological material found within the walls. Unfortunately she does not state what the latter was. Constructional details included the use of alternating layers of *pakhsa* and mud brick, the size of the bricks and the slightly pointed arches. The animated

Figure 97

The north-west corner of the interior of the Greater Kyz Kala [1] at upper-storey level in 1890, photographed by Zhukovsky (1894, 116). The line of the floor of the flat roof is clearly visible along the west wall. More survived of the stairway on the north and of the central domed rooms on the west.



controversy about the dating of the earliest pointed arches in Western Asia suggests that her dating is too early by at least two centuries.

During emergency conservation work in 1998 in the Greater Kyz Kala new archaeological materials came to light, namely a fragment of glass and some ceramic sherds, and these cast further doubt on Pugachenkova's early dating. A glass sherd of Early Islamic date – not earlier than the eighth century – was found embedded in a brick on a crenellation of the Greater Kyz Kala. This was obviously residual and strongly suggests that the *kōshk* cannot have been built before the eighth century, unless this crenellation was itself a rebuilding of indeterminate date. Equally, the range and sophistication of the vaulting of the Greater Kyz Kala makes it unlikely that it could be early. Sherds recovered from cleaning preparatory to conservation included some belonging to the so-called Nishapur Buff Ware tradition (known locally as *ishkhor* ware), a black and yellow slip-painted glazed ware, a common ceramic at Merv also found in our excavations in the furnace area on Gyaur Kala (*Iran XXXV* 1997, 14–15). It is dated to the ninth to tenth centuries. The large mud bricks and the absence of fired bricks and tie-beams, typical of eleventh- to twelfth-century buildings, suggest a date before the Seljuk period. Finally, the location of the

ibn Zayd *kōshk*, so close to the mausoleum, indicates that it must have been built before the mausoleum, which is dated to AH 506/ AD 1112–13, while the location of the *kōshks* on the Hormuzfarra canal about a kilometre from the walls of Sultan Kala suggests that they were built before the city was walled.

Using the evidence of al-Iṣṭakhrī, Hugh Kennedy has proposed that the Kyz Kalas were built by Ṭāhir b. al-Ḥusayn in the ninth century, a date reinforced by the new archaeological material. Furthermore, an eighth- or ninth-century date for the monumental *kōshks* agrees with that suggested by Pilyavsky.

**SMALLER KÖSHKS WITH CORRUGATIONS:
Lesser Kyz Kala, Byash Ishyk and Garam Kōshks
(Group II, Numbers 4–6)**

The principal difference between the *kōshks* of Groups I and II is size: the Group II *kōshks* are considerably smaller. Perhaps because of this, the exterior walls below the corrugations are steeper, a battered wall rather than a sloping platform, making it feasible to cut entrances at ground level rather than having to build a ramp over the glacis. Iwans



Figure 98
The Mausoleum of Muhammad ibn Zayd from the north west, in the 1950s. Behind can be seen part of the single surviving wall and the great mound of the *kōshk* [3] (YuTAKE archive).



Figure 99
The south-east façade of Garam Köshk [6] in the 1980s with access at ground level via a central iwan. The side openings are enlarged window slots.

at ground level lead into Garam Köshk (Figure 99), unlike the modest doorway of Byash Ishyk. Like the *köshks* of Group I, the lower-storey rooms are lit by narrow, wedge-shaped windows with corbelled arches, while the rooms of the upper storeys were probably arranged around a courtyard (Figure 199). Semicircular corrugations rise smoothly from the lower wall, presumably without interruption to the top of the parapet. All three *köshks* contain a dome or domes set on cone-shaped squinches (Figure 201). Many of the building techniques distinctive of the Group I *köshks*, such as the use of relatively large mud bricks and the absence of fired bricks and reinforcing tie-beams, also occur on the three small *köshks* of Group II. These similarities suggest that the two groups were contemporary.

The best-known example is the Lesser Kyz Kala [4] (Figure 100), although, unfortunately, its condition is precarious: two of its external walls, the northern and eastern, collapsed in 1991 (Figures 191 to 194) and the surviving external walls are undercut. It is difficult to know how the *köshk* was entered: the out-of-focus Cohn-Wiener photograph (Figure 193) shows what appears to be an arched opening in the centre of the north wall, but this is recorded by Pilyavsky in the 1930s as a break. It is, however, reminiscent of the iwans of Garam Köshk. Equally, the centre of the south façade is occupied by a flat projecting rectangular panel. Central features framed by half-corrugations also occur at Greater Nagym Kala [2] and Garam Köshk [6]. Unfortunately



Figure 100
The south façade of the Lesser Kyz Kala [4]. The centre of the façade is occupied by a raised rectangular panel, framed by half-corrugations.

the centre of the panel has not survived and whether it contained an entrance to the upper storey or was decorative cannot be determined. There was certainly no entrance at ground level on this side because a vaulted room runs along behind the wall (Figure 196).

Much of the plan of both storeys can be recovered, with smaller rooms in the centres of the east and west sides and longer rooms in the corners (Figure 143). The rooms are mostly roofed with barrel vaults with a pointed profile, except for Room 8 on the upper storey, which is domed. Until the 1991 collapse the stairway was virtually complete; it was lit by windows in the east and south façades and covered with stepped tunnel vaults (Figure 195).

Many of the rooms of the lower storey of the Byash Ishyk Köshk [5] (Figure 205) can be entered and the plan recovered (Figure 144). This consists of two rows of five rooms, separated by a central corridor. Only the crown of an arched doorway leading into the corridor from the exterior can still be seen. The location of the stairway is uncertain but was probably in one of the three rooms that cannot be reached without a ladder (Rooms 3–5). Only fragments survive of the upper storey. Part of a squinch formed of concentric arches can be seen in a formerly domed room in the north east (Figure 206). The builders of Byash Ishyk used blocks of *pakhsa* for the walls of the lower storey, and mud bricks for the vaults and the upper storey. These were the same size as those used at Garam Köshk. The implied hierarchy of materials is often replicated in the medieval architecture of the Iranian world in combinations of mud brick and fired brick.



Figure 101 The obverse (top) and reverse (bottom) of an early Abbasid silver coin of the Merv mint dated to 155 AH/AD 771. Picked up in 1998 from the debris of the collapsed north corner of Garam Köshk [6].

With Garam Köshk we perhaps see the first of a series of *köshks* placing an emphasis on entrances at ground level. Iwan entrances dominate the shorter south-east and north-west façades (Figures 62, 99, 207 and 208). The principal entrance is probably the north-west iwan with its higher doorway leading into the *köshk*. The bricks of the arches of the doorways, and probably of the iwan arches, are laid radially except for a 'keystone' of horizontal bricks. Although the centre is inaccessible and the plan of the upper storey not recoverable, some of the plan of the lower storey can be established (Figure 145). Two domed rooms flank the south-east iwan: the rooms adjacent to the north-west entrance are two tall, barrel-vaulted rooms, matching the iwan in height. That on the northern corner cannot be entered, although the vault has been revealed by a recent collapse. A fine early Abbasid silver coin (Figure 101), dated to AH 155/AD 771, was found in the debris. The vaulted room in the west corner (Figure 102) provides welcome shelter today. A doorway in its south-west corner leads into a corridor with an elaborate corbelled vault (Figure 58).

Suli Köshk, Byash Barmak Köshk, köshk near Penapir, köshk south of Gaur Kala, Lesser Nagym Kala and Durnali Ding (Group III, Numbers 7–12)

The *köshks* of Group III superficially appear to be much the same as those of Group II with corrugations decorating the walls of the upper storey above a tall steep 'skirt'. However, there are important



Figure 102 The high vaulted room, 3, in the exposed west corner of Garam Köshk [6].



Figure 103
The south and east façades of Suli Köshk [7] in the 1950s (Pugachenkova, 1958, 156). Note how the corrugations start much more abruptly than those of the preceding Group I and II köshks.

Figure 104
The builders of Merv's traditional houses used a variety of techniques in the same building. In this vaulted room at Suli Köshk [7], the end wall is formed of rammed earth or *pakhsa* blocks, while the vault is constructed of mud bricks.



constructional differences, including the introduction of fired bricks and corrugations that do not rise gradually from the skirt but abruptly from a course of fired bricks, as on the *kepter khana* in Shahryar Ark [22] (Figure 275). These corrugations were presumably 'short' with squinch arches above, like those of [22]. There is more use of fired bricks within the buildings for foundations and sometimes for a paved floor, as at Byash Barmak. Another constructional change in these köshks is the introduction of timber tie-beams. Brick sizes are, on the whole, smaller than those of the Group I and II buildings: see Table on page 138.

Unfortunately, none of the köshks is well preserved. The most complete is Suli [7], to the north west of Sultan Kala, although it is deteriorating rapidly. Compare Pugachenkova's photograph (1958a, 156) (Figure 103), when it was preserved in a desert-type environment with its associated medieval settlement, with more recent ones (Figure 211). Suli is quite small and has an unusual plan (Figure 146). The centre is occupied by a tall entrance iwan, Room 1, leading to a tall domed room, 2, at the back. They were flanked by tiers of low rooms, roofed with barrel vaults with pointed profiles (Figure 104) and lit by the usual narrow windows. Access to the upper storey was via a stairway, 4, in the north-west corner, while contact at upper-storey level from one side of the köshk to the other was presumably by a corridor over a low antechamber between the iwan and Room 2. Surviving sections of wall between Rooms 5 and 6 contain deep slots, probably for ventilation (Figures 217 and 218). A stairway led to the roof, with a *suffa*, or low bench, in front of it.

Building materials are a combination of *pakhsa*, mud bricks of a range of sizes, unusually large as well as much smaller, and fired bricks. The lower walls are made of *pakhsa* separated by courses of smaller mud bricks, and *pakhsa* was also used for the dome (Figures 104 and 105, and 216). There were fired bricks at the base of the corrugations. The iwan was built of large mud bricks, with slightly smaller ones used for the later blocking (Figure 212). This combination of *pakhsa*, large and small mud bricks and fired bricks also occurs on the enigmatic ruined building, Kharoba Koshuk [25], discussed in Chapter 5.

The köshks at Byash Barmak [8], Penapir [9] and south of Gyaur Kala [10] are all poorly preserved buildings with the usual steep skirts, corrugations rising from fired bricks and timber tie-beams. Only one corner survives of that at Byash Barmak (Figure 219), once a large köshk perhaps measuring as much as 26.5 x 18m, and only the lower storey can be traced at Penapir. This consisted of two domed rooms probably flanking a large iwan entrance, with long barrel-vaulted rooms

behind (Figure 148). The plan of number 10, south of Gyaur Kala (Figure 149), is unique: it is a long, narrow rectangle, measuring c 26 x 9m. Unfortunately the *köshk* is heavily damaged in the centre, but traces of springing just visible on the west wall (Figure 225) suggest that this central area may have been occupied by a monumental iwan, flanked by tiers of small rooms.

The last two of this group, Lesser Nagym Kala [11] (Figure 226) and Durnali [12], are *dings* rather than *köshks*, for they are very small, with only one or two rooms. The poorly preserved Lesser Nagym Kala lies about a kilometre from Greater Nagym Kala [2], across agricultural land on which can be seen *sgraffito* and other medieval sherds. This little *köshk* or *ding* measures only 10.9 x 6.5m and consists of a small

antechamber leading into a square room (Figure 150). It is built of large mud bricks, 340² x 70mm, with curved bricks for the corrugations (Figure 106).

The tower of Durnali (Figures 107, and 229 and 230) contains a single domed room at lower-storey level. Only the north-east and south-east sides, those best protected from erosion by the prevailing winds, are well preserved. The centre of each side was occupied by a flattened pair of corrugations, separated by a slightly wider channel than the other corrugations. Similar flattened corrugations occur at Kelte Minar [13] (Figure 233), and are a development from the half-corrugations used at Lesser Kyz Kala [4] and Garam Köshk [6]. Durnali was built of *pakhsa* blocks and mud bricks.



Figure 107
The *köshk/ding* at Durnali [12] in the 1980s, photographed by Nikitin. These watch-towers formed the focal point of a series of buildings within a courtyard.



Figure 105
The builders of Suli Köshk [7] used rammed earth or *pakhsa* to construct the dome of the high two-storeyed reception chamber, Room 2. This is unusual and it must have been difficult to construct a 'form' sufficiently strong to withstand the impact of the rammer.



Figure 106
Note the curved bricks of the corrugations of Lesser Nagym Kala [11], and the deep slots left by the timber tie-beams.



Figure 108
The *koshk* near Kelte Minar [13] from the south. The arched entrance, surviving in the 1950s (see Figure 82), has collapsed, although the flat pilasters framing it are partially preserved.

Figure 109

The corrugations starting near ground level and the flattened pilaster presumably framing an entrance on the remains of an anonymous *koshk* to the north west of Gyaur Kala are similar to those at Kelte Minar [13].



THE TRANSITION FROM CORRUGATED BUILDINGS TO 'HOUSES':

Kelte Minar and Ovliali Köshks and the House east of Gyaur Kala
(Group IV, Numbers 13–15)

Fundamental changes in external decoration and the adoption of a standardized cruciform plan mark these *koshks*. Fired bricks and timber tie-beams were standard, as was the employment of a slightly smaller brick (see Table on page 138). Unfortunately only one of the three is reasonably well preserved, Kelte Minar [13] (Figure 108). The corrugations rise from a short sloping skirt near ground level rather than at the intersection between the storeys. The central corrugations are replaced by pilasters framing arched entrances or windows. The plan is symmetrical and shows eight rooms arranged round a central room or courtyard (Figure 152). The stairway, which can just be glimpsed thanks to recent collapse, is in the north-west corner and was covered with a quadripartite vault with 'ribs' or armatures.

Even in Pugachenkova's day, not much survived of Ovliali Köshk [14], and by 1998 only a little of the south-east façade was standing (Figure 236). It is, nevertheless, an important monument, for it documents the transition in Merv between buildings decorated with corrugations and those with panelled or plain walls. The principal feature is the



Figure 110 House east of Gyaur Kala [15]: the surviving section of the south façade. The central entrance consisted of an iwan with a doorway and 'overdoor' consisting of a rectangular panel and niche with stepped head. The walls were probably plain rather than corrugated or panelled.

projecting entrance iwan, flanked by rectangular panels (Figure 81). Over the doorway is a recessed rectangular panel with a blind niche with a stepped head. Corrugations rise from a short skirt (Figure 236), as at Kelte Minar. According to Pugachenkova the side wall of Ovliali was also decorated with a combination of corrugations and recessed panels, but this is no longer extant.

Decoration with corrugations and flattened pilasters rising from a short skirt was not confined to the two *kōshks* [13] and [14], but would have been more widely distributed. Another example can be seen on a fragment of wall rising from a mound, formerly a *kōshk* (Figure 109) north east of Sultan Kala: all that survives is one pilaster and a few corrugations. A recessed iwan (Figures 110 and 238), rather than a projecting one, with a similar rectangular panel over the doorway as at Ovliali, occurs at the small House east of Gyaur Kala [15]. In this building the walls were probably plain: no trace survives of corrugation or panelling.

TALL KÖSHKS:

Porsoy and Yakkiper
(Group V, Numbers 16–17)

Both Porsoy (Figures 111 and 240) and Yakkiper Köshks (Figures 42 and 248) are unusually tall. Porsoy Köshk survives to some 11m in height with an upper storey, clearly the most important, still at least 7m high. Although only surviving to about 10m, Yakkiper almost certainly consisted of three storeys, with a string course of fired bricks marking the transition between the second and third storeys. Porsoy may have had three storeys as well, since Pilyavsky thought there was a range of cellar rooms below current ground level (1947, 58). Both *köshks* lack corrugations. The walls of Yakkiper were plain, except for the string course, while the pilasters and panels of the upper storey at Porsoy Köshk emphasize the importance of the upper storey.

Figure 111
Reconstruction drawing of
Porsoy Köshk, after Pilyavsky
(1950, 98).

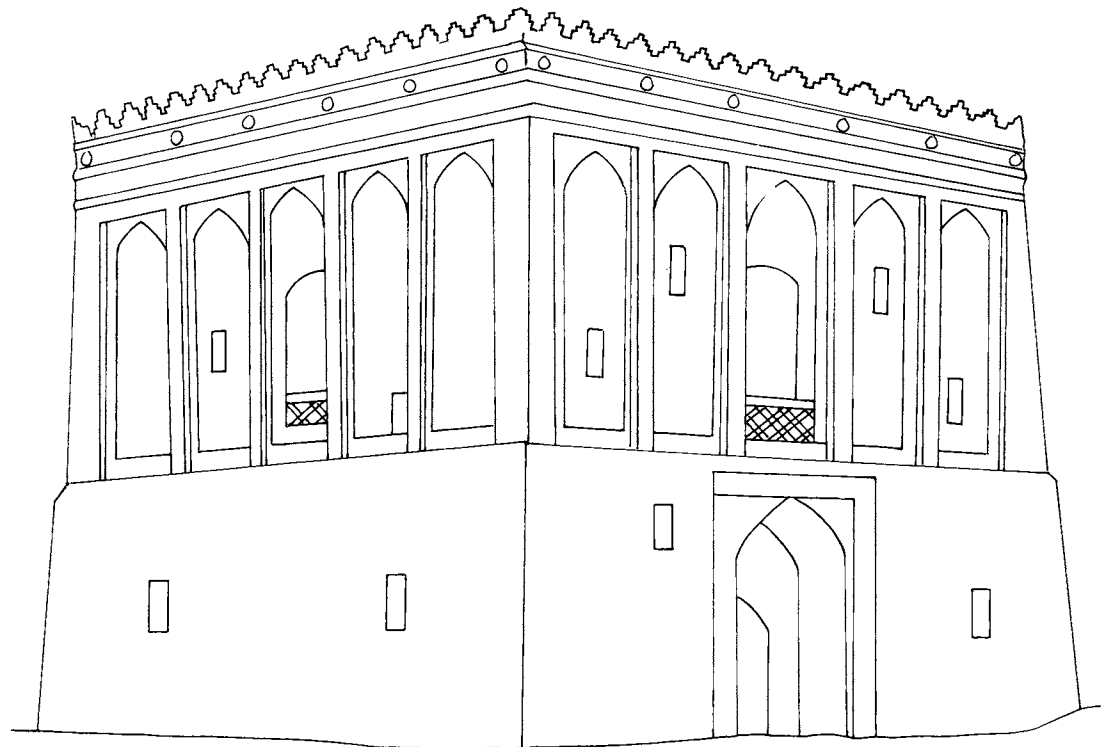




Figure 112
An unusual form of vaulting was employed on both tall rooms and low ones at Yakkiper Köshk [17]. The quadripartite lanceolate vault of Room 5 was reinforced or decorated with raised ribs or armatures.

The plans of the two buildings are different. Porsoy employs a cruciform plan (Figure 155), with entrance iwans on the axis and the central space occupying the full height of the building. At Yakkiper the iwan leads into a tall central space (Figure 156). The rear of the building is occupied by three tall rooms, vaulted with quadripartite lanceolate vaults with ribs or armatures, known locally as ‘monastery’ vaults (Figure 112). Stability is provided by low rooms at the sides, one of which is also vaulted with a ‘monastery’ vault (Figure 51). The Porsoy iwans are supported by narrow, corridor-like rooms (Figure 246). Fired bricks and timber tie-beams continue in use, with brick sizes decreasing in size and becoming more standardized.

The date of the Group III–V *köshks*

While the *köshks* of Groups I and II were probably contemporary (see above), it is more questionable whether Groups III, IV and V were built at the same time, since there initially appear to be significant differences, such as the transition from corrugations to panelled or plain walls. However, common building techniques, such as the introduction of fired bricks, timber tie-beams and a smaller mud brick, occur in all groups. The caravanserai at Rabat-i Malik (AD 1078) provides crucial evidence to help dating because both corrugations and panelling are employed on the same walls (Figures 29, 30 and 80). At Porsoy, corrugations are replaced by pilasters and recessed panels (Figures 242 and 243), and similar decoration occurs in the palace in the Ark (Figure 261), assumed to be twelfth century, as is the Ark *kepter khana*. This has short corrugations topped with squinch arches (Figure 119), similar to those shown at Rabat-i Malik (Figure 30). There seem, therefore, to be sufficient structural similarities across the groups to suggest that the *köshks* were built during the eleventh and twelfth centuries, that is in the Seljuk period, a time of real prosperity in the Merv oasis. Furthermore, the majority are located out in the oasis, where settlement was heavily disrupted by the Mongol invasions and their destruction of the dam.

CHAPTER FIVE

PALACES, PAVILIONS, *KEPTER*
KHANAS, KHAROBA KOSHUK,
ICE-HOUSES AND BUILDINGS
OF THE MODERN ERA

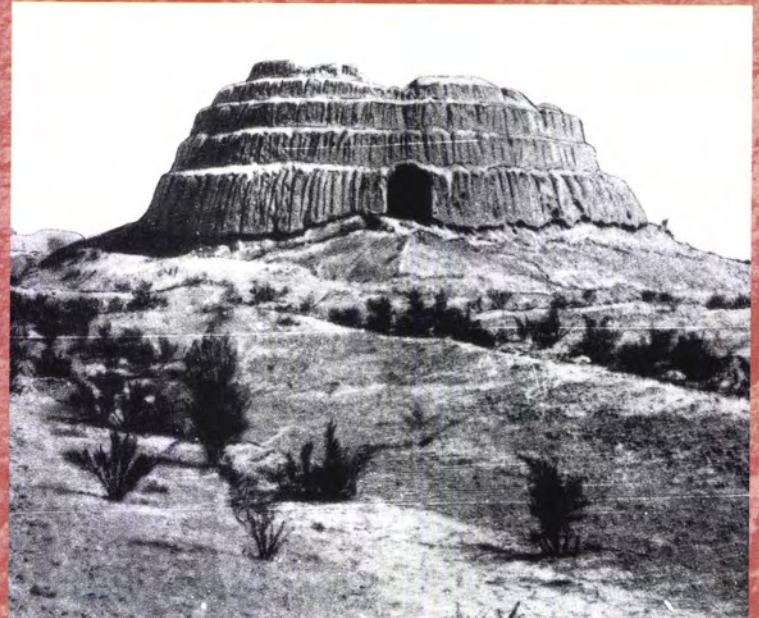




Figure 114
The interior of the great cone of
Ice-house 2 [28] with its rows of
diagonally set bricks.

PALACES, PAVILIONS, KEPTER KHANAS, KHAROBA KOSHUK, ICE-HOUSES AND BUILDINGS OF THE MODERN ERA

THE 'PALACE OF SULTAN SANJAR' IN SHAHRYAR ARK



Figure 115
Aerial view (from the east) of Sultan Kala's Shahryar Ark citadel. In the foreground is the palace [20], with its iwan entrance in the centre, and in the background is the kepter khana [22].

Figure 113 (title page)
Ice-house 3 [29] from the north in 1890 photographed by Zhukovsky (1894, 150). Its height above ground level, stepped conical profile and narrow doorway are visible in this early photograph. Considerably less survives today.

Although ruined, and already ruinous when visited by Zhukovsky – it can be seen in the foreground of his photograph (1894, 120) – the 'palace' [20] in the medieval citadel was a highly significant building, and one of the few to have retained some of its original context (Figure 117). The citadel would have been designed to meet the official and private requirements of the sultan and his court. In addition to buildings for the administrative heart of the empire, such as an audience hall or *diwan al-amm*, the Dar al-Imara and the Mint, there would have been a mosque, residences, a bath-house and barracks for the imperial guard. Equally importantly, the area would have been enhanced with gardens, pools, fountains and lakes.

The citadel was protected by its own walls and moat and was criss-crossed by streets, running north–south and east–west (*Iran XXXV* 1997, 20–2). The principal entrance was the South Gate: a bridge over the moat led to a bent-axis gate and a street running north. This passed to the east of the 'palace', an area probably occupied by an outer wall and forecourt for the reception and screening of visitors. To the north and south are large, rectangular low areas, currently covered with vegetation (Figure 260), which presumably once formed the gardens. To the west there is an extensive area of mounding, as well as the best-preserved structure in the citadel, the *kepter khana* [22] (Figure 115). This lies adjacent to another of the north–south streets. There are large residential buildings to the north west, one of which is being excavated, and other structures to the north east, while a flat area near the northern wall is said to be the remains of a *musalla* or open-air mosque, where the prayers at the end of Ramadan and on the Feast of Sacrifices were traditionally said.

The palace is only partially above ground and is deteriorating rapidly. It was built on a low platform and measures some 45 x 39m, that is just a little larger than the Greater Kyz Kala. It was entered via an arched portal on the east, the walls of which were still standing when the building was planned by Pugachenkova (1958a, 203), although in 1998 only the stump of one wall survived (Figure 115). The central feature is a commodious courtyard, dominated by the great arches of the four axial iwans (Figures 116 and 259). The iwans occupied the full height of the surviving walls, as did many of the rooms of the palace. Indeed it seems probable that most of the building consisted of tall, single-storey rooms.

In its ruined state, it is hard to imagine the building's original splendour. A few indications remain: the courtyard walls are decorated

Figure 116

The palace [20] courtyard, looking north. The side walls of the north iwan frame the shallow doorway leading to the range of rooms along the north: they are supported by low rooms. The surviving section of the west iwan is on the left; see also Figure 262.

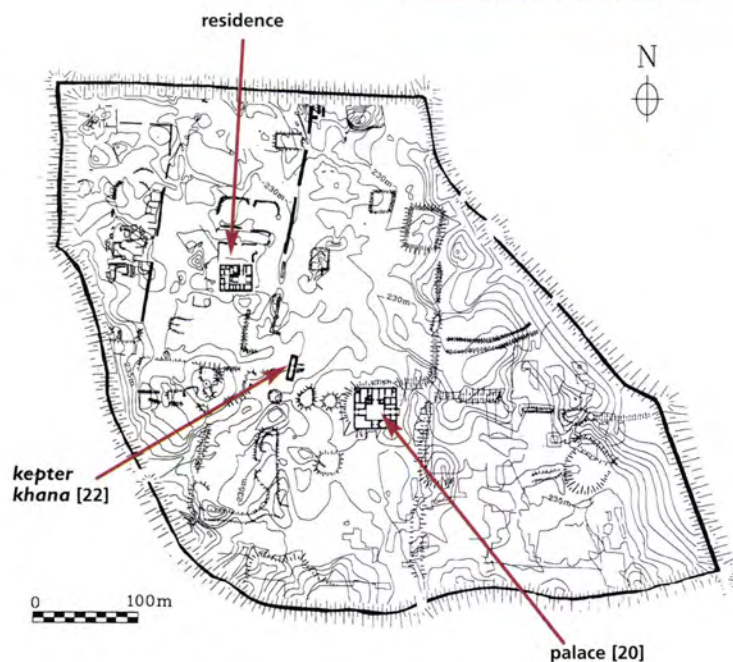


Figure 117

A preliminary plan of Shahryar Ark [20], the Seljuk citadel. Traces of the grid of streets can be made out, together with the plans of some of the buildings. The principal entrance to the citadel was in the south, with a street running north to the east of the palace. An entrance from the street presumably led into a reception courtyard and then into the palace itself. Low areas to the north and south probably represent the location of gardens – such a royal enclosure would have been well equipped with running water, lakes and

trees, the essential ingredients of a Central Asian garden. The *kepter khana* is near by to the north west, located on another street, while the north west of the citadel seems to be occupied with mounds of palatial residences, one of which is being excavated by the expedition. The plans of the palace [20], the *kepter khana* [22] and the residence have been dropped in. The central location of the palace emphasizes its importance: it may well have served as the Sultan's audience hall.

with grooved pilasters and recesses (Figure 261). The lower walls of the north and west iwans are plain mud brick but would presumably once have been covered with carved and painted stucco to the string course. Above the string course, the walls are divided into raised pilasters carrying the cross vaults (Figures 116 and 262). The north or summer iwan is the most complete and led, via a doorway with a segmental arch, into a series of halls and presumably into the gardens. The north iwan is flanked by the only surviving low rooms, roofed with squinch (*balkhi*) vaults (Figures 50 and 116). They were in two tiers, and were presumably required to support the side walls of the iwan. Many walls were decorated with a chequerboard pattern of bricks laid vertically (Figures 263 and 265).

Walls of two tall domed rooms, probably about 5m square, occupy the south-east corner. The surviving squinch is typically Seljuk in form, with the arch projecting over the string course and a groin rising from the corner to the apex (Figure 48). The palace was built of small mud bricks. Fired bricks were extensively used, as were timber tie-beams running deep into the walls.

THE PAVILION AT KURTLY, MEDIEVAL BASHAN

Pilyavsky was the first to record the ruins at Kurtly [21] in 1937 (1947, 68–70). YuTAKE established that Kurtly represented medieval Bashan, described by Idrisi in the first half of the twelfth century as a ‘beautiful city with ... bazaars, a large mosque, caravanserais and bath-houses’. There are few archive photographs of Kurtly, and it has suffered considerably in recent decades from the high water table. All that is known of the important early mosque is Pilyavsky’s plan and photographs, taken in 1937 (Atagaryev and Pilyavsky 1974, 127–8). Pugachenkova describes the principal surviving building as a ‘caravanserai’, although she admits that it is a caravanserai with an unusual plan. The inaccuracies of her plan have affected its interpretation: she drew it as a single, contemporary structure (Figure 160a), although there are at least two building phases, with the status of the building steadily declining through the years.

The main building is an elite structure with an elegant, four-iwan cruciform plan probably built on a platform (Figure 160b). It is tall,



Figure 118
A view through the doorways of the northern range of rooms of the elegant and airy pavilion at Kurtly [21].

light and airy with access from all four sides and was presumably surrounded by gardens. A section of decorative, Seljuk cut-bricks survives on the south-east portal (Figure 269), and similar brickwork would probably originally have decorated all the iwans. The internal doorways are formed of four-centred arches with re-entrants (Figures 66, 118 and 272), wider ones leading into the centre and the corner rooms, while narrower ones led out of the corner rooms on the north façade. The three entrances on this façade are reminiscent of the façade at Damghan and of earlier Parthian versions (Kimball 1981, 581). Fired-brick string courses ran round both the exterior and the interior walls of the pavilion (Figures 271 and 273). The east iwan, the best preserved, was vaulted, ending in a semi-dome supported on lobed squinches (Figures 271 and 47). Only shadows of the other squinches survive. The corner rooms were vaulted. The general impression is of a well-constructed, beautifully decorated and important building, presumably serving as a summer pavilion, a gazebo set within its own gardens and providing a cool retreat from the heat of summer.

Other versions of this delightful type of building can perhaps be seen in Azerbaijan: a twelfth-century example in a mountain-top eyrie at Qal'a-yi Dukhtar near Abarghlu (Hillenbrand 1994, 412, fig 7.109, 415 and 580, fig 7.108), and a fifteenth-century pavilion in the palace of the Shirvanshahs at Nardaran near Baku. The square domed pavilion of Nardaran was set in gardens with a pool and fountains, as the Kurtly example may well have been. As Hillenbrand writes, 'Such a structure is simply a lesser but more permanent version of the stately pleasure domes which grace contemporary miniature paintings' (Hillenbrand 1994, 427–8, fig 7.132).

The rooms on the eastern edge of the platform are on a different alignment, and are much more mundane and varied in size (Figure 160b). They stand on a level with the pavilion, quite high above the current ground surface. The range probably consisted of two storeys: the crown of a single vault belonging to a lower storey can be seen in one room. However, there is no sign of any window in this outer wall, so these rooms must have been dark. The courtyard is entered from the north. Additional structures to the south were probably added later.



Figure 119
The *kepter khana* in Shahryar Ark [22] from the north east, photographed by Zhukovsky in the 1890s (1894, 121). Note the well-preserved corrugations with a central rib, the remains of the row of squinch arches above the corrugations, the small entrance at ground level and the beam-slots in the plain skirt.



Figure 120
The interior of the *kepter khana* in Shahryar Ark [22]. This long, narrow room was roofed with transverse vaults carried on pilasters, the vault rising from a course of fired bricks at the top. Panels of deep niches arranged in a chequerboard pattern occupied the end walls and the spaces between the pilasters.

THE KEPTER KHANAS

Two of the more puzzling buildings in Sultan Kala, in Shahryar Ark [22] and the northern suburb of Iskander Kala [24], are called *kepter khanas*. Both are long narrow structures, with multiple tiers of niches on the interior. Number 23, the 'Seljuk House' in the south-east of Sultan Kala, also belongs to this category, because it, too, is long and narrow and has the characteristic tiers of niches on the interior. This is little known, and the building has not generally been recognized as a *kepter khana*.

Number 22, the *kepter khana* in Shahryar Ark (Figure 119), is one of the best-preserved monuments in the oasis. It was clearly a high-status building, as shown by its location close to the palace and its elaborate decoration. It is a narrow, rectangular building, still surviving to a height of more than 7.5m. In appearance it is reminiscent of our Group III *köshks*, with a steep 'skirt' and 'short' corrugations above. These are exceptionally fine, semicircular in form with a raised central rib. There is a single, narrow doorway, at ground-floor level, in the centre of the east side, but no sign of windows. The interior is half-filled with debris from the collapse of the roof (Figures 120 and 277). This had been carried on cross vaults, rising from pilasters. Panels between the pilasters were filled with a chequerboard of deep brick niches from the floor to the string course. Pugachenkova claimed that the niches were a later addition (1958a, 218), but careful examination reveals that the centre brick of each niche was bonded to the wall and that the niches formed part of the original building.

Number 23, the *kepter khana* known as the 'Seljuk House' (Figure 279), is a long narrow building on a low mound in the south-east corner. The two square rooms were probably entered from the north, although this area has been destroyed. As in the Ark *kepter khana*, there is no sign of a window. The most remarkable feature about the building is the decoration of its external walls. Flat raised pilasters divide the walls into shallow recessed panels with stepped heads. Both the pilasters and the recessed panels contain deep brick niches, one on each pilaster and three in the centres of the panels. YuTAKE excavations in 1957 revealed five rows of the distinctive chequerboard niches along the cleared east wall of the interior (Figure 281), suggesting that this building served the same purpose as the Ark *kepter khana* (Krikis 1958, 32).

The *kepter khana* in Iskander Kala is constructed of *pakhsa* separated by courses of mud brick (Figure 282). It consists of two long rooms,

built at a slight angle and joined by a central vestibule. Unlike the preceding examples, there is no sign of any decoration on the exterior walls, but these are heavily eroded. It is the decoration of the interior walls that links it with the Ark and Sultan Kala *kepter khanas*. The walls of the long rooms are filled with small niches with arched hoods (Figure 121), formed in the *pakhsa* itself. The niches are arranged in a honeycomb pattern and cover the walls; they are not arranged in panels and were not all finished to the same standard.

The function of the *kepter khanas*

Kepter khana means pigeon house and is derived from the Persian *kabtar*, pigeon, and *khana*, house. The buildings have been identified as pigeon houses because the niches were thought to be roosts. As Beazley wrote, pigeons were, and are, highly valued for their dung. 'Today as in the past, the only function of the tower is the collection of this manure. ... The great effort required to build the towers must be matched against the demand for dung to provide enough melons, "a fruit that is indispensable to the existence of the natives during the great heats of Summer" (Morier 1818, 141)' (Beazley and Harverson 1982, 114). If the melons of Isfahan are famous, those of Khurasan and especially of Merv are even more so. However, the Merv *kepter khanas* cannot have been dovecotes because there are no perches: perches were regularly supplied in front of the niches on Iranian examples (Wulff 1966, 270). Furthermore, there are no signs of entrances for the birds, as for instance at a rectangular tower near Gulpaygan (Beazley and Harverson 1982, 111).

To try to establish their function Asilov excavated in and around the Iskander Kala and Ark *kepter khanas*. As usual, he found that the reuse

of standing buildings caused problems, both in interpretation and dating. He thought that the Iskander Kala *kepter khana* was used from the eleventh to thirteenth centuries, after which the whole suburb was abandoned. He decided that much of the earliest level, the one which might have provided information about the original function, had been dug out to form a 'cellar'. In a third phase, many strange jars pierced with holes but lacking bases were found against the walls, as well as the remains of beams placed in niches opposite each other. These filled the room in the higher levels but left a central corridor lower down, ie forming shelving. He suggested that in this phase the rooms were used for storing fruit, and he found many fruit stones, pips and seeds. He failed to solve the original purpose of the structure and also found no trace of dung or bird-splashes on the walls.

Elsewhere in Central Asia, buildings with niches were relatively common and have been recorded in Khwarazm and Termez. Tolstov described some in Khwarazm:

Around the castles [at Kavat Kala, Zmukhshir and other places] there stretch numerous estates of minor land-owners and peasants enclosed by low *pakhsa* walls. Near one of the walls of the property would be a house consisting of a number of rooms, and each estate would include an unusual building, either constructed up against the house or standing separately: these would be long, narrow, high buildings ... in which the interior walls would be covered with countless arched niches.

(1948b, 280–2)

A peasant's land-holding at that period [twelfth century] takes up a large area ... one side of which is usually occupied by a large house of many rooms: a prominent place in this complex is assigned to the so-called '*kepter khana*'. That is the name given by the population to extremely unusual buildings, which appear



Figure 121

The hooded niches on the north wall of the *kepter khana* in Iskandar Kala [24]. Unlike the other *kepter khanas*, [22] and [23], this is built of *pakhsa*, and the niches are formed in it, presumably at the time of construction.

to be long and corridor-shaped: they can vary in length from 6–8 to 25–30 metres. (1948a, 159–60)

The interior of a building in Termez was also covered with a regular sequence of small deep niches arranged in a chessboard pattern (Shishkin 1941, 142–3), while a photograph of the interior of a *kepter khana* near Kawat Kala (Tolstov 1953, Abb. 93) showed the surface of the walls covered with rows of deep arched niches, similar to those of the Iskander Kala *kepter khana*.

There is no consensus on the function of these unusual buildings. Tolstov considered that the niches were ‘an excessively ornate version of the ordinary small niches found in any medieval house’ and were used for displaying small objects. He thought that the buildings were a *mikhmankhana*, or guest house (1948a, 162), an idea followed by Pilyavsky (1947, 50), who later changed his mind and suggested that they would have served as a library or store for codices (1950, 102). Pugachenkova believed that the niches in the Ark *kepter khana* were added later, when the building became a fruit store (1958a, 217), with which hypothesis Masson agreed (in Asilov 1962, 22–5). Its original function, based on its position near the palace, its scale and plan, was, Pugachenkova considered, that of a *diwan* or hall for an important state council (1958a, 218).

There are two options: either the three *kepter khanas* served a common purpose or they were built to serve different purposes. They are all narrow, single-storey buildings with an internal width of between 3.5 and 4m, with an entrance through a single door, no windows and niched internal walls. Differences are that the Ark and Sultan Kala *kepter khanas* were elite buildings, elaborately decorated on the exterior and interior, and with the niches arranged in panels. The Iskander Kala *kepter khana* and its niches were more functional.

The location of the Ark *kepter khana* close to the palace or audience hall must indicate that the building had an official role. Its single low entrance and absence of windows suggests that it served as a strongroom. It could have served as the official archive or a treasury. If, on the other hand, the niches were decorative, then it might have been a council chamber, as suggested by Pugachenkova, although it would have been remarkably dark and airless. Its use would, of course, have changed with Merv’s loss of status after the death of Sanjar. The Sultan Kala *kepter khana* is sufficiently similar in character to the Ark *kepter khana* to assume that both served the same purpose. However, it is difficult to believe that the Iskander Kala *kepter khana* was anything

other than utilitarian. In other words, the same form may have been built to serve different purposes.

KHAROBA KOSHUK: AN EARLY CHURCH?

BY GABRIELE PUSCHNIGG

This structure [25] is disintegrating so rapidly that it cannot be considered to be a ‘standing building’. It is, however, a monument of peculiar architectural design, unparalleled in the oasis, and has repeatedly attracted the attention of archaeologists. It therefore merits inclusion, even though the information has been assembled only from published literature.

From the beginning Kharoba Koshuk has been associated with Christianity, even though all publications agree that no material evidence for a religious function has been found. This idea arose from the elevated and public character of the building, its plan and its presumed Sasanian date of construction. Pugachenkova related the plan to early ecclesiastical architecture in Asia Minor, especially in Ephesus (1958a, 129). While agreeing with the overall interpretation, Dresvyanskaya considered that the monument had a genuinely local character. She tried to link archaeological evidence, such as traces of soot on the wall plaster and a thick ashy layer (remains of candle-snuff) found in the eastern niche, to ritual practices (1968, 28). More recently, Vysotsky returned to the comparative argument and related Kharoba Koshuk to royal Sasanian architecture on the one hand and to Christian monuments in Iran, Iraq, Syria, the Caucasus and Asia Minor on the other (1990). These comparisons either focus on the general structure of the complex or single out particular architectural elements that are considered out of context.

Ecclesiastical architecture generally shows a close correlation to its specific liturgical demands and needs to be assessed in accordance with these. From the Synod of Seleucia in AD 410 Christians within the Sasanian empire formed their own independent church, and a substantial Christian community is documented for Merv from the fifth century. The development of a canonical liturgy would certainly have influenced the plan of churches. If Kharoba Koshuk (Figures 122 and 123, and 283 to 287) is to be regarded as a church, a comparative study should be restricted to ecclesiastical buildings of the Eastern Syrian/Nestorian community. Relatively little is known about Early Christian architecture in the Sasanian empire. Recent excavations in Iraq

have shown that the plans of early churches have a strongly regional character (Okada 1991, 80f), which makes comparisons over large geographical distances difficult and unreliable. A common feature of Early Christian architecture, however, seems to be the tripartite structure of the choir, the single parts of which are clearly separated (Curtis 1997, 373; Reuther 1981, 562, fig 162). This feature is not reflected in the plan of Kharoba Koshuk. A Christian interpretation of the monument appears untenable, particularly as the Sasanian date for the initial construction of the building suggested by Pugachenkova and Dresvyanskaya is unlikely to be correct.

The few published finds consist only of the ceramics and coins mentioned for dating purposes and represent two different chronological periods, surface material dated to the eleventh to twelfth centuries and Sasanian pottery and coins from Kavad I (AD 498–531) and Khusro II (AD 590–628) from excavations in the east end of the building (Pugachenkova 1958a, 127; Dresvyanskaya 1968, 28). This led to the assumption that the structure was built in the Sasanian period, an argument based on the shape of the arches, brick size and the date of the surrounding settlement and apparently confirmed by excavated Sasanian material.

However, not only does the plan of the building fail to show any traces of refurbishment but also neither the assumed Sasanian nor the Islamic phases have been clearly defined architecturally. If the structure and design of this mud-brick building had been conceived and constructed in Sasanian times, it could hardly have survived unmodified into the Islamic period, particularly with a change in function (Pugachenkova 1958a, 129). Pugachenkova's argument that

the use of smaller bricks reflected refurbishment (1958a, 127) is also inconclusive. They are not confined to specific parts of the building and a similar combination of larger and smaller bricks is employed at nearby Suli Köshk [7], which probably dates to the Seljuk period. Furthermore, the relationship between Kharoba Koshuk and the surrounding settlement has not been established, and, judging from the accounts given by Pugachenkova and Dresvyanskaya, the Sasanian ceramics and coins appear to be residual. They testify to the reuse of material from the settlement for the making of bricks, a procedure well documented for the city-sites of Merv and elsewhere (*Iran XXXVI* 1998, 55). Neither the plan of the building, nor its techniques of



Figure 122
The arched niche at the east end of Kharoba Koshuk [25] in 1966 (YuTAKE archive).



Figure 123
The south façade of Kharoba Koshuk [25] in 1966 (YuTAKE archive).

construction nor the associated archaeological material support the interpretation as a fifth-century Christian church. Its function remains an enigma.

THE TIMURID GARDEN PAVILION, THE KÖSHK IMARET, NEAR ABDULLAH KHAN KALA

The *darvaza*, or entrance portal, to the Köshk Imaret [26] was still standing in 1950 (1958a, 389). Today, there is no trace of it, either on the ground or even as a form of crop-mark from the air (Figure 124). A path some 28m in length would have led through gardens with trees and channels of flowing water to the pavilion (Figures 288 to 292). This consists of a single-storey room, probably initially open on all four sides. Both the exterior and the interior are decorated with painted plaster. The flat timber roof was reached by a stairway on the south and had a high parapet, still partially visible in Pugachenkova's photograph. At some stage the arches on the side and back walls were filled in and decorated with stucco *muqarnas*, as were the niches on the façade.

The only known example of a Timurid garden, revealed by aerial photography, was recorded by Orlov at Dev Kesken, medieval Vazir in Khwarazm (1952, 158–66). This was laid out as a series of roughly

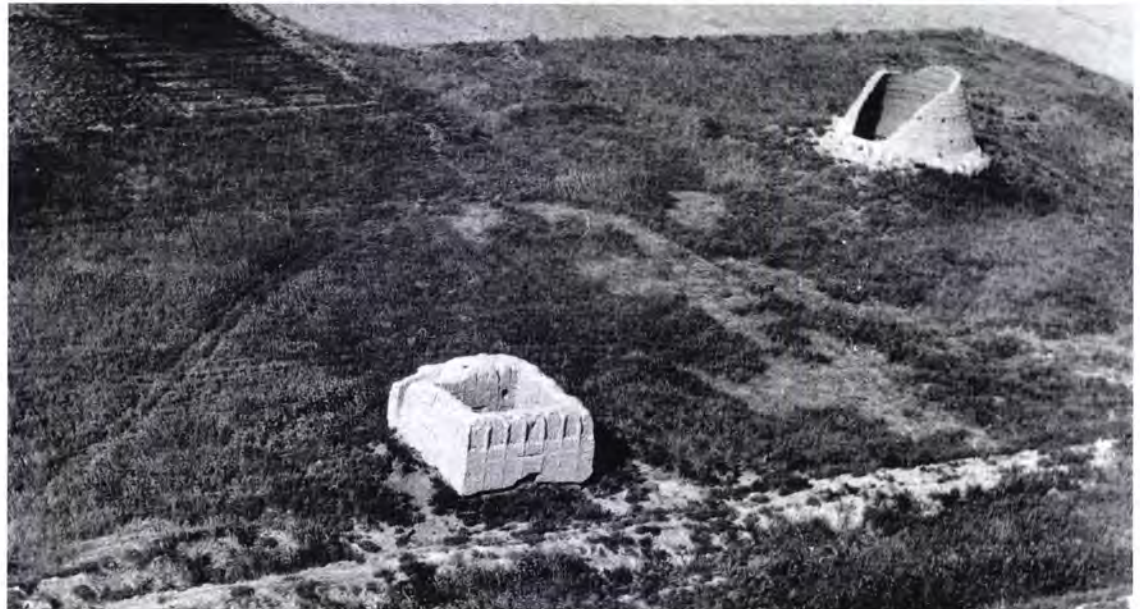
square grids, four by four, divided by pathways and irrigation channels with a pavilion at the centre. Vazir was restored in the late fifteenth century by the Timurid sultan, Husayn-i Bayqara, though it had been largely abandoned when Anthony Jenkinson passed through: it is crucial evidence for Timurid gardens laid out near Samarkand and Herat, otherwise known only from contemporary accounts such as the *Irshad al-Zira'a* by Qasim b. Yusuf, written in Herat in 1515 (Jakobi 1992). For ninth-century gardens at Samarra, see Stronach 1990, 178.

WATER AND ICE

Scholars disagree on whether the four tall, conical buildings that still dominate the local landscape were *sardobas* (water cisterns) or ice-houses. Zhukovsky, the first to describe them, thought that they were 'a type of public ice-house still customary in Persia (Khorasan), in which ice can be stored for several years' (1894, 150). However, Bachinsky (1939, 12) and Pilyavsky (1947, 71) described them as mud-brick *sardobas*. Pugachenkova (1958a, 392–4) returned to Zhukovsky's identification of an ice-house, or preferably a snow-store, suggesting that it was not ice that was stored in them but snow, tightly packed down and covered with a compressed layer of camel-thorn.

Figure 124

Aerial view of the Köshk Imaret [26] and Ice-house 2 [28] from the south east. The ice-house obviously rises much higher above ground level than the *sardoba* (Figure 125): there is no sign of the original entrance 28m in front of the Köshk Imaret (see plan, Figure 165a).



Covered cisterns or *sardobas*

Sardobas do not really form part of this volume since the three known examples, in the Beni Makhan mosque in Gyaur Kala, and near the mausolea of Muhammad ibn Zayd and the Askhab or Timurid iwans (Figures 26 and 125), all form essential parts of these religious complexes. They therefore belong more properly to the volume on the mausolea. However, no meaningful discussion of the disputed function of the conical buildings can be undertaken without first briefly describing the Merv *sardobas* to make evident the differences between the two types of building.

Sardobas are a standard type of vernacular building, widely distributed in arid zones. They have been described by Siroux as subterranean cisterns covered with low domes, reached by stairs (1949, 125–6). They are circular, with a diameter varying between 6 and 7m, and were fed with water piped from canals. The walls and floors were built of fired bricks, coated with layers of waterproof mortar that were polished until they shone, and the dome too was waterproofed. Vaulted entrances led down flights of stairs into the cistern. Similar *sardobas*, sometimes with wind towers, were common in Iran (see Beazley 1977; Beazley and Harverson 1982, 39–45).

The *sardoba* in the Beni Makhan mosque in Gyaur Kala was built under the floor of the administrative and storage rooms: there were two entrances, one from inside and the other from outside the mosque. The *sardoba* near the Mausoleum of Muhammad ibn Zayd was built across the courtyard. The entrance portal and covering dome had collapsed by 1991 but have since been rebuilt. The old water channels are still extant but are dry. The third *sardoba*, near the Mausoleum of the Askhab, is in regular use. It has the typical low dome with a vaulted entrance and steps leading down into the reservoir.

There are immediate and obvious differences between the conical buildings and the *sardobas*. First, the ‘ice-houses’ stand between 1 and 3m above current ground level and rise to a height of up to 15m, as opposed to being semi-subterranean. They are also considerably larger than *sardobas*, with diameters ranging between 11 and 17m. The floors of these great domed structures are filled with debris. Only excavation might reveal the depth of the ice-pit or reservoir in the centre, which would almost certainly have been equipped with a drain or soakaway. The need for such a drain might explain the construction of these buildings above ground level.

The largest and most unusual of these structures is Ice-house 1 [27] (Figure 293), located in what is today agricultural land to the south of

Gyaur Kala. The exterior is eroded but still presents a strongly banded appearance. The lower walls are constructed of *pakhsa* and mud brick, above which the bricks form a steep corbelled dome. The function of the six rows of timber beams (Figures 294 and 295), set at angles, around the upper sections of the dome, is uncertain: perhaps it was to aid construction and maintenance. The entrance is from the north, so as to minimize the entry of heat, through a doorway with a four-centred arch: four similar arches (not all preserved) framed niches with tall chimneys or ventilation shafts (Figures 296 and 297). These shafts are unique to this ‘ice-house’ and are one of the reasons why some scholars, including Beazley and Rogers (personal communications), find it impossible to agree that the buildings could be ice-houses. They claim that such chimneys would have let in warm air, thus raising the internal temperature of the dome, exactly the reverse effect to the one required.



Figure 125
The *sardoba* forming part of the complex around the Timurid iwans or Askhab in the 1950s: this *sardoba* is still in use (YuTAKE archive). See also Figure 26.



Figure 126
Ice-house 2 [28] in 1954: the western niche has been opened to allow access and part of the dome has collapsed (YuTAKE archive).

Figure 127
The north doorway of Ice-house 2 [28] from the interior. The 'keystone' is formed of horizontal courses of brickwork.



The second, well-preserved ice-house, Ice-house 2 [28] (Figures 124 and 126), is near the Timurid summer pavilion, or *Köshk Imaret*, north of Abdullah Khan Kala. It stands more than 2m above present ground level and consists of a conical structure within an octagonal base, itself at least 3m high, the whole constructed of mud bricks. The exterior profile of the dome is slightly stepped and the remains of the steps providing access for maintenance still survive (Figure 298). The interior curves in sharply from about two-thirds up, from which point there is a series of five concentric bands of bricks set diagonally (Figures 114, and 299 and 300). There is a single row of beams above the second band of diagonal bricks. The 'ice-house' is entered through a wide arched doorway (Figure 127), facing north. The bricks are set radially except for the 'keystone' at the crown, where they are laid horizontally. Two slightly narrower arches formed niches on the east and the west. These were originally blocked by the brickwork of the platform (Figure 301), although one has now been opened.

The third building, Ice-house 3 [29] (Figure 113), is only some 500m from the north wall of Abdullah Khan Kala and has deteriorated since being photographed by Zhukovsky (1894, 150, fig 19). It shares many features with Ice-house 2, standing on a mound about 3m above present ground level, and having a stepped conical profile and an internal diameter of 13.3m. Today there are two entrances, one to the north west and the other to the south; both are covered with segmental arches, reduced in size by mud-brick pillars (Figure 303). The southern doorway may originally have been a niche, as in Ice-house 2.

Ice-house 4 [30], the smallest (Figure 304), is near the old Christian cemetery of Bairam Ali, in an urban area under development. The walls rise vertically for the first 4m before forming a series of steps: this point is marked on the interior by a band of bricks set diagonally. Originally there may have been more such bands, for Pugachenkova's photograph (1958a, 393) is probably of this structure. There are entrances in the north and east, the latter blocked with mud-brick rubble and probably forming another of the niches that occur on all examples.

Ice-houses in Iran and China

Ice-houses, or *yakhchals*, were still in use in the 1970s in Iran and were recorded by Beazley and Harverson (1982, 49–56). They discussed not only the buildings themselves, but how the ice was made in different areas (1982, 50). Most of their ice-houses were in south-west Iran and consisted of a tall, conical, stepped dome, set over a pit to store the ice. This was prepared in nearby shallow basins,

filled with fresh water on suitably cold nights and protected from the early morning sun and wind by tall shade walls, attached to the north side of the ice-house.

Predictably, there was no single plan for ice-houses, for such vernacular structures are strongly regional. Although Beazley considered that shade walls were essential for making the ice, not all ice-houses, or more correctly the basins for making the ice, had them. Siroux described ice-houses without shade walls at Kashan and Varamin, where ice was prepared in unprotected ice-pools spread over several hectares (Siroux 1949, 131–2). An ice-house near Sabzevar to the west of Nishapur also appears to have belonged to this north Iranian tradition and lacked a shade wall (Beazley and Harverson 1982, 49, fig 52), although Beazley recently suggested she might have seen the remains of a shade wall (pers comm, 1999). An entirely different method of making ice was used by the East India Company in the eighteenth and nineteenth centuries: shallow pans were set in pits filled with straw to aid evaporation (1982, 54–5).

The use of ice has a long history and was known in China from the eighth century BC. There is

abundant evidence of the use of ice for cooling foods in summer in T'ang times; indeed the practice goes back to the Chou dynasty. ... melons were certainly kept in ice in T'ang times: they were kept primarily in ice-houses or ice pits, which were of ancient origin, and secondarily in ice pots or ice urns. ... As for ice-houses and ice pits, probably none could compare with those of the imperial palace. They were in charge of the 'Office of His Highness's Forest', that is the office in charge of the imperial parks, gardens, and orchards: here each winter the authorities stored a thousand blocks of ice, each three feet [0.9m] square and a foot and a half [0.5m] thick, cut in cold mountain valleys and sent to the capital by the local magistrates.

(Schafer 1985, 120)

Ice was not a luxury, it was an essential. The earliest reference to ice at Merv is by Yaqut in the thirteenth century (Appendix). Iranian ice-houses and references to them by Western travellers are relatively late in date, not earlier than the sixteenth century.

They mightily covet cool things to the Palat wherefore they mix snow or dissolve ice in their Water, Wine or Sherbets ...

The Poor, have they but a Penny in the World, the one half will go for Bread and dried Grapes, or Buttermilk, and the other for Snow and Tobacco ...

(Fryer III 1915, 135 and II 1912, 48)

The cold is dry and penetrating more than it is in any part of France or England, yet the greatest part of the People drink with Ice as well in Winter as in Summer.

(Chardin 1927, 239 in Beazley and Harverson 1982, 49)

Beazley and Harverson suggest that the practice of storing ice may have been introduced to the area by the Mongols who 'brought China and Persia into closer relationship' (1982, 50). However, ice technology had already been known for centuries. Perhaps of greater interest is the development of the stepped conical dome to preserve ice through the long hot Central Asian summers. In China thatched pits were the norm. However, timber was a rare and precious resource in the desert oases, while the excellent insulation provided by high, mud-brick domes was well known and a traditional response to the problem of keeping cool.

The closest parallel, both externally and geographically, to the Merv ice-houses is the example at Sabzevar, still being used when visited by Beazley and Harverson. Their similarity reinforces Zhukovsky's identification of the buildings as ice-houses. However, it is unlikely that the argument will be definitively solved without clearing one of the interiors and establishing whether the pit was equipped with a drain pipe or was filled by pipes. Whatever their function, the Merv ice-houses are probably among the earliest surviving examples of this type of building. The two to the north of Abdullah Khan Kala, [28] and [29], are probably Timurid in date, while Ice-house 1 [27], with its chimneys, pointed rather than rounded niches and doorways, and slightly larger brick sizes, may be even earlier.

BUILDINGS OF THE EIGHTEENTH AND NINETEENTH CENTURIES

Few traditional buildings have survived from the unsettled conditions of the eighteenth and nineteenth centuries, only a 'house' and a few *dings*. The Russian traveller, Markov, described a rich farm belonging to a Turkmen, which was somewhat similar to the Merchant's House [31]. 'A one-storeyed brick house with semi-circular windows and with something resembling crenellations along the cornice and roof ... The house is surrounded by a wall and the entrance to it is from the courtyard' (Levina, Ovezov and Pugachenkova 1953, 25). This rectangular building occupies one end of a large *howli*, or courtyard (Figure 128), which was multi-purpose, serving as a garden, a site for *yurts* as well as pens for animals. The house contains two long narrow rooms, each with three doorways leading into the courtyard

(Figures 305 and 306), and a central vestibule with kitchen and stairway to the roof.

DINGS

Dings served an essential function in lawless times. In a lecture to the Royal Geographical Society in 1811 a British Army intelligence officer described some *dings*, or 'refuge towers' (Figure 129), which he had seen in north-west Iran. They were

very close together, every square of 150 yards [137m] of the fields having one. The whole country here is so thickly dotted with them as to look like a chessboard covered with chessmen. The towers are small, round buildings, built of unbaked clay, about 12 feet [3.7m] high. ... The defence towers are higher and larger, and have a parapet at the top, with loopholes to fire through, and a ladder for ascending to the top. Each vineyard or orchard has its one or more towers.

(Stewart 1911, 397, in Beazley and Harverson 1982, 9)

The *dings* of north-east Iran have disappeared, as have those sketched by Pugachenkova in the Anau district (1958a, 449–50). Only a few of the *dings* of Merv have survived, and these are disappearing fast. Those at Durnali [12], Nagym Kala [11] and Kurtly are all medieval and



Figure 128 The nineteenth-century merchant's house [31], a rare late residential building with a large walled courtyard, or *howli*, and a long building at one end.

illustrate the long history of this type of building in the area, while those in the Bairam Ali district were probably built as refuges in the disturbed conditions of the eighteenth and nineteenth centuries. The Bairam Ali *dings* are under serious threat: in 1998 only four survived in derelict land near the massive electricity station on the outskirts of Bairam Ali, although a young man walking by remembered playing on ten in 1980.

Most Merv *dings* are square or rectangular rather than round as in north-east Iran, and one handsome example, [32a], is octagonal (Figure 129) (Levina, Ovezov and Pugachenkova 1953, 63, fig 24). They consisted of two or three storeys with a flat roof and parapet, and they could have been as high as 10 to 12m (Levina, Ovezov and Pugachenkova 1953, 63, fig 26), although today they rarely survive above the lower storey. Entrance to the single room at ground level would have been through an arched doorway, large enough for bringing in stores or livestock (Figure 310). This room usually had small openings for lighting and ventilation. Other features, such as the niches and chimney of *Ding* 32c (Figure 311), might suggest that that *ding* was lived in.

The upper floors and the flat roof were designed to be cut off from the rest of the house, and no direct access was possible from the ground floor. The entrance was a small door on the upper storey



Figure 129 The only octagonal *ding* surviving in the Merv oasis [32a]. It is located in an area of waste ground near the Electricity Station.

MONUMENTS OF MERV

reached by a ladder. This door could be blocked, transforming the *ding* into a keep. A photograph taken by Zhukovsky shows small windows, which could have been used as firing slots (1894, 151), as could loopholes in the parapet wall.

The *dings* might either have served as refuges in the fields or, like the medieval example at Munon Tepe (Figure 94), have formed part of a residential unit within a courtyard enclosure. These mud-brick buildings were built of small bricks and were either vaulted or roofed with squinch vaults. The continuing skills of the builders working in mud brick and employing a wide variety of vaulting techniques is of interest.

RUSSIAN BUILDINGS OF THE EARLY TWENTIETH CENTURY

Two fine Russian structures are worth mentioning in this chapter, even if they are not included in the Gazetteer itself. One long rectangular building was built to serve as the Tsar's hunting lodge (Figure 131) for the Imperial Murghab Estate. It is now used as a sanatorium, the climate of Bairam Ali being considered to be particularly healthy for kidney patients. The other is the Russian Orthodox church (Figure 130), much dilapidated until recent renovation work by its congregation. Both were built of typical Russian rectangular bricks: they belong to a European, not a Central Asian tradition.



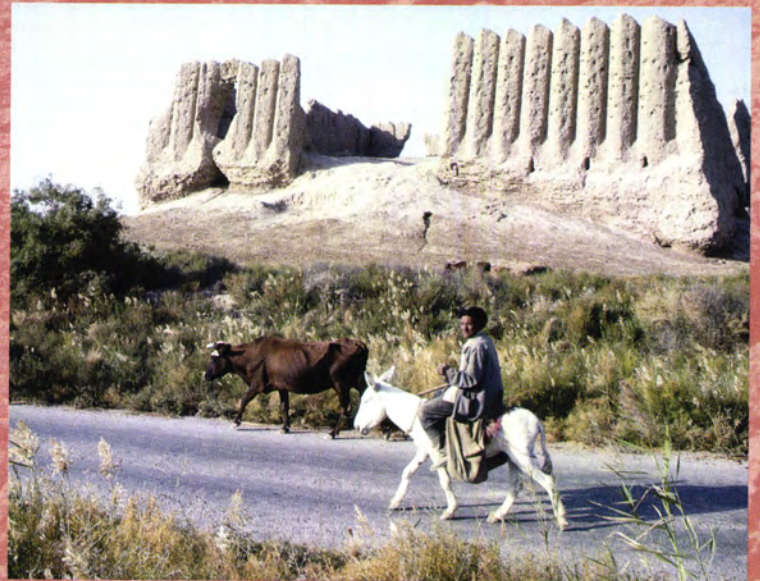
Figure 130
The Russian Orthodox church in Bairam Ali.

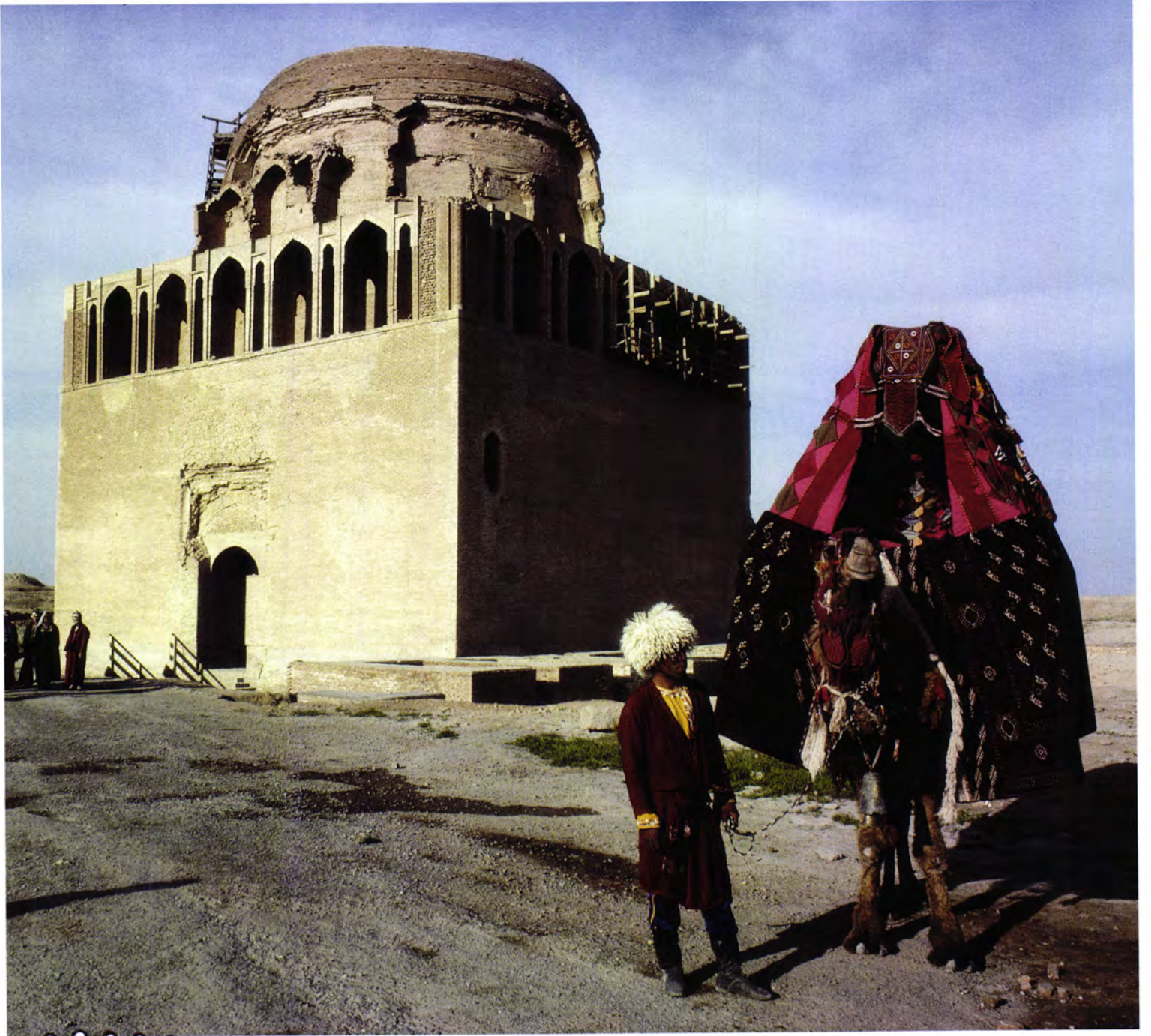


Figure 131
The 'hunting lodge of Tsar Nicholas II', now the sanatorium in Bairam Ali, early twentieth century.

CHAPTER SIX

THE BUILDINGS IN CONTEXT





THE BUILDINGS IN CONTEXT

Figure 133
The Mausoleum of Sultan Sanjar,
the most famous monument of
Turkmenistan. It is located in the
centre of the Seljuk city.

The aim of this chapter is to set the monuments as a whole in their historical and regional contexts. Since these are major buildings, sufficiently strongly constructed to survive the vicissitudes of Merv's turbulent history, it seems reasonable to suppose that they were built during periods when the oasis played an important political role in the Islamic world, when there was a good reason for families to make an economic and political statement by their construction and it was expedient to live at Merv. Such times are relatively simple to define, and the different groups of buildings seem to divide naturally into these different phases. The regional context is, however, much more problematic because of the very rarity of survival of such traditional, mud-brick structures.

What then are the major periods in the history of medieval Merv? Merv served as a regional capital from the arrival of the Arabs until the fall of the local dynasty, the Tahirids, that is for two centuries from c AD 640 to AD 830. In 673 Khurasan, the 'eastern lands', became a separate governorate, of which Merv served as the capital and as the all-important seat of the governor. It was thus the source of patronage. This was precisely the time that eastern Iran was heavily settled by Arab immigrants. Naturally they clustered around the major seats of power, such as Merv and Nishapur. Local residents, too, profited from the dynamism of the new rulers.

In 748 Abū Muslim led the supporters of the Abbasids into the city of Merv to establish the new dynasty. He moved the government house out of the old city, Gyaur Kala, and established a new one to the west, around the Majan canal, Sultan Kala. This structure, the Dar al-'Imāra, probably built around 750, was an ambitious foundation, which according to the geographer al-Iṣṭakhrī comprised a domed chamber (his audience hall), four iwans and a courtyard, in other words the components of the medieval Islamic palace and mosque alike. It welded the Sasanian architectural symbols of dome and iwan into a new synthesis and was an apt metaphor. Despite Abū Muslim's murder in 755 Merv continued as a major political centre throughout the Abbasid caliphate, even becoming the *de facto* capital of the Islamic world for a while during the reign of al-Mā'mūn. However, Merv was poorly sited for such a role, and it soon returned to being a major provincial governorate, and al-Mā'mūn appointed his general, Ṭāhir b. al-Ḥusayn as governor. According to al-Iṣṭakhrī, Ṭāhir wanted to shift the focus of the city even further to the west than Abū Muslim and constructed a number of buildings along the course of the Hormuzfarra canal.

Figure 132 (title page)
The monuments and cities of
Merv still form part of local life
with villagers travelling by to
work, or harvesting camel-thorn
bushes for winter feed.

Merv remained the capital of Khurasan until 830 when the Tahirid ruler, 'Abd Allāh b. Ṭāhir, moved to Nishapur. Nishapur survived as the seat of the governor until 873, when the Saffarids of Sistan ended Tahirid rule. The last quarter of the ninth century was one of confusion in Khurasan until the conquests of the Samanids. Their capital was Bukhara, and the seat of the governor of Khurasan, naturally, moved to that city. This political shift can be traced in the pattern of building operations in the Bukhara area, as recorded by Narshakhi (1954). Samanid power lasted for about a century, but by 999 Khurasan had fallen to the Ghaznevids, whose base was in Afghanistan, and the capital was returned to Nishapur.

Even with the loss of its pre-eminent status, Merv remained an important centre. The Merv described by al-Iṣṭakhrī in 951 is a city with its mosques and Dar al-Imara intact, and industry and agriculture thriving. A very different picture is recorded in about 990 by al-Muqaddasī: Merv 'has gone to ruin ... Houses have decayed and the roofs have tumbled down' (Appendix). This may record a period of more serious decline, and would correspond to a shift in the political centre of gravity from Central Asia to Afghanistan, a shift that coincided with Samanid decline.

The second and greatest phase of development in Merv was from 1037 to 1157 under the Seljuks, when the city again became a regional capital. The Seljuks were a leading family of the Ghuzz Turks and were living a nomadic life to the east of the Aral Sea. After what may have been a brief flirtation with Judaism their leaders converted to Sunni Islam, although for the rank-and-file nomads this was a very long-drawn-out process. In 1035 the Khwarazmshah evicted the Seljuks and their followers from their traditional camping grounds. They were in a desperate state, but realizing the weakness of the Ghaznevids took over Merv in 1037, occupied Nishapur and in 1040 defeated the Ghaznevid army at Dandanqan in the south east of the oasis. They divided their forces, Tughril Beg continuing to the west, conquering Baghdad in 1055, while Chaghri Beg remained in Merv and made it his capital. His son, Alp Arslān, helped by his vizier, Niẓām al-Mulk, and other members of the Seljuk clan, ruled the whole sultanate from well beyond the Amu Darya to the Mediterranean.

Alp Arslān spent most of his reign on the move. The pattern of power is reminiscent of that established much earlier by the Achaemenian Persians in the sixth to fourth centuries BC, who were similarly nomadic in origin. The sultan progressed between various capitals, of which Merv was one, along with Rayy, Isfahan, Hamadan

and Baghdad. He did not spend much time at Merv but was buried there. His successor, Malik-Shāh, is credited with building the walls of medieval Merv, which articulate the city of his time. By now the oasis was once again supporting a regional capital of much the same size as ancient Merv, some 2sq km. The new walls were damaged during the upheavals on his death in 1092, but peace was soon restored by Sanjar.

For sixty years Merv was the capital of the eastern Seljuk empire ruled by Sultan Sanjar (1097–1157), who for most of his reign was the senior member of the ruling family. Despite the upheaval of his later years, when he was captured by the rebellious Ghuzz, his reign marked a period of unusual stability in the region, especially in Merv itself. It is no wonder that so many surviving buildings in the oasis date from these decades. These structures include a fine series of mausolea, superbly decorated with the distinctive Seljuk cut-brickwork, at Merv itself and at Talkhatan and Khuday Nazar. It is particularly important that – unlike the case of the other Seljuk capitals, which are virtually unexplored archaeologically and inaccessible – Merv yields solid evidence for urban expansion on a large scale. Sanjar is credited with enclosing suburban extensions to the north and south, giving the city a total size of some 4 by 2km. It was one of the greatest cities of its time, with many mosques and *madrasas*, and their libraries. Yaqut noted that Merv produced 'more distinguished and learned people than any other city like it'. Because of the remarkable fact that the Timurid city was built on a virgin site to the south, the medieval city remains totally available for exploration: the only problem is its sheer size.

Not much of medieval Merv has yet been investigated archaeologically, but in the areas where this has been done there is clear evidence of prosperity. It was predictable that the walls of a residence in Sanjar's citadel would be richly decorated with carved and painted stucco (Figure 73), but less predictable that a house in the northern sector of the city, excavated by YuTAKE, should also have had walls covered with stucco with vigorous curvilinear and geometric designs (Figure 134). This prosperity was fuelled by a network of caravanserais which serviced long-distance trade, of which Akcha Kala and Daya Khatun (Figure 135) in modern Turkmenistan, Rabat-i Malik near Bukhara and the associated buildings of Ribat-i Sharaf and Ribat-i Mahi in Iranian territory bear witness.

But Merv's *floruit* was to end even before the death of Sanjar. In 1153 Ghuzz tribesmen, who had been protesting about the brutality of his tax collectors, actually captured Sanjar when he led a punitive expedition against them, and they sacked Merv for three days.



Figure 134
This elaborate carved stucco from a 'rich man's house' in the northern part of Sultan Kala was excavated by Professor Lunina for the YuTAKE in the 1950s.

Figure 135
Looking into the central courtyard of the Seljuk caravanserai, Daya Khatun.



According to Yaqut, Merv recovered from the Ghuzz despoliation, for when he left it in 1219 to avoid the Mongols, Merv was 'in the best possible condition'. However, political conditions were confused even before the Mongol sackings in 1221–2, with Ghuzz tribal leaders, the Khwarazmshah and the Ghurids all striving for power.

To judge by the literary accounts the treatment of Merv was of a savagery unusual even for the Mongols. The very dogs and cats were killed. After the first major massacre the Mongols allowed some days to elapse before sending a muezzin to the top of one of the town's minarets to call the faithful to prayer – the survivors were massacred as they crept out of hiding. Orchards were felled, fields sown with salt, canals and dams destroyed. It was as if the Mongols were determined to snuff out any prospect of recovery. It has been calculated that it is only in the later twentieth century that Khurasan regained the population it had had before the Mongol invasion.

It is not possible yet to achieve an accurate picture of life in the oasis in the years after the Mongol devastation. As occurred elsewhere, after the first orgy of destruction, the Mongols began tentatively to put down roots. But Merv seems to have been preferred for its hunting rather than for its former urban amenities. Life in the residence in the citadel, for instance, was clearly a desperate affair, with a patching of old artefacts. Occupation also continued in the centre of the city around Sanjar's mausoleum and further to the south, but its extent has not yet been determined, nor the conditions of life at the time. However, in the southern suburb, YuTAKE excavations uncovered a little Buddhist temple with remarkable wall and ridge tiles of Chinese inspiration (Pugachenkova 1958a, 351–4) (Figure 136). This find need cause no surprise, since several of the Mongol ilkhans adopted the Buddhist faith.

It is at about this time (the fourteenth century) that the River Murghab changed its course from the east of the oasis to the west. This may well have been brought about by the Mongol destruction of the dam, but, whatever the cause, it would undoubtedly have affected the pattern of settlement in the oasis, particularly at a time when there was little government interest in re-establishing the complex irrigation network on which the prosperity of the area depended. Taking advantage of the changed course of the river, a new city, near three Timurid mausolea known as Geok Gumbaz (Blue Dome), was founded on the north-western limits of the oasis, where once again, as in the Bronze Age, the river waters would have come to surface and been easy to utilize. The number and location of new settlements

in the oasis may never be determined, however, because of recent agricultural developments.

A new urban centre was finally founded at Merv in the early fifteenth century, when the dam was rebuilt. This was obviously connected with the major shift in the centre of political gravity from north-western Iran, the centre of Ilkhanid power in the early fourteenth century, to north-eastern Iran and Transoxania, which coincided with the rise of Timur. However, Merv had been demoted to the status of a provincial town rather than a regional capital, as is graphically shown by the size of Timurid Merv, less than a kilometre square. It was, instead, Samarkand, Bukhara, Shahr-i Sabz and Herat that profited from the ambition of Timurid patrons of architecture.

The relative prosperity brought by the Timurids lasted for only a hundred years before being followed by further centuries of insecurity and conflict. From the early sixteenth century onwards Merv was fought over by the Uzbeks and the Iranians, a conflict which was finally ended only by the Russian conquest. By the nineteenth century life in the oasis was fairly anarchic with agricultural Turkmen, such as the Saryk, struggling to survive against the raids of their fellows who preferred a more freebooting lifestyle. Indeed, the whole area, whether in the oasis or in the Turkoman plain, presented a dramatically different aspect in the nineteenth century from its present appearance. It was studded with watch-towers as a form of early warning system against Turkoman raids. These towers, or *dings*, now almost all gone, must have stood as a powerful metaphor of terror and sudden disaster.

ARCHITECTURE

The first phase

Merv first became a regional capital in 673, losing this status in 830. The Greater Kyz Kala is one of the largest surviving buildings in the oasis, and it would seem appropriate to place its construction during this period of Merv's pre-eminence. In Chapter 2 Hugh Kennedy not only suggests that the two Kyz Kalas belonged to the first phase of Merv's prosperity under Islam but further defines their probable time of construction by suggesting that they may have been commissioned by Tāhīr, a native of Merv appointed governor of Khurasan in 821. Although this cannot be proved, equally there is no archaeological or architectural evidence to disagree with an eighth- to ninth-century dating, and much to support it, such as the tall corrugations, the cone-



Figure 136
One of the ceramic masks which decorated the walls of a small Buddhist temple of the Mongol period, excavated in the southern suburb of Sultan Kala (Pugachenkova 1958, 351–8). The masks are in the Archaeological Museum in Ashgabat.

shaped and thus primitive squinch forms, the absence of fired brick and of wooden tie-beams, the exceptionally large brick sizes, which would have made the building process difficult and cumbersome, and, finally – the clinching element – the residual rim-sherd of Early Islamic glass embedded in a mud brick still *in situ* on the Greater Kyz Kala. By association, the *kōshks* of Groups I and II were also probably constructed within this time-frame.

The corrugated *kōshk* is a distinctively Central Asian type of building with a surprising dearth of parallels elsewhere. None have survived – or been recorded – in Iran, although they do occur in Khwarazm and in the Bukhara and Termez areas. Merv's key position during the eighth and ninth centuries may suggest that corrugated buildings originated in the oasis, particularly since it was not only the regional but also the cultural capital of Central Asia and indeed of the eastern Iranian world of its day.

The second phase

Not surprisingly most of the surviving buildings described in the Gazetteer probably belong to the time of the Great Seljuks, the time of greatest prosperity in the oasis, from 1037 to shortly before the death of Sanjar in 1157. Even in its current denuded state, with nearly all the surrounding buildings sub-surface, the Mausoleum of Sultan Sanjar is one of the outstanding architectural achievements of its day, while the preliminary plan of Shahryar Ark is also full of pointers to the nature of Seljuk architecture in Merv. Within the irregular circuit of its walls may be seen intersecting main streets – notably a north–south avenue beginning at the South Gate and a grid of supplementary roads. Hollow areas, presumably representing gardens, frame a central square building which, to judge by its high rooms and four-iwan courtyard, was some kind of palace, perhaps an audience hall. It is located

conveniently near the first intersection of the major arterial streets. A strongroom near by, the *kepter khana*, with a small door and no windows, may well have served to store the imperial archive, or may have been a treasury. In the north-west area of the citadel are at least two large residences, again with four-iwan courtyards.

The other buildings of Seljuk Merv include the elegant pavilion at Kurtly, the enigmatic long building known as Kharoba Koshuk, the remaining *kepter khanas* and the *köshks* of Groups III to V. There seems little reason to believe that any of the *köshks* were built after the arrival of the Mongols, despite their variation of plan and decoration. There is, for instance, a post-medieval settlement near the remarkably tall and airy Porsoy Köshk, which initially suggested that it could have been built at a later date. However, architectural parallels with the Ark palace make this extremely unlikely. The late settlement reflects the fact that the *köshk* continued to be inhabited until the nineteenth century.

Seljuk buildings employed distinctive techniques, notably in the shorter corrugations topped by decorative squinch arches, found in baked-brick form at Rabat-i Malik (dated 1078) and in the Ark *kepter khana*, and in the use of fired bricks and wooden tie-beams, features that were conspicuously absent in the first phase. Where squinches occur, their form is significantly more evolved. It is only the arch that carries the weight of the dome, not the squinch as a whole, thus making it possible to exploit different decorative schemes for the hood, with for example the tri-lobed form making its first appearance. The elegant compactness of the Kurtly pavilion finds striking analogies in Azerbaijan in the twelfth-century kiosk near Abarghlu and the fifteenth-century pavilion at Nardaran, both of which are similarly located on high ground.

A related structure is the *köshk* at Kelte Minar, with its cruciform plan, although this is inward-looking and residential. The plans of these later *köshks* are densely designed, with an interesting interplay of iwan and tall rooms (two storeys in height), supported by adjoining low-vaulted chambers. Three very different examples can be seen at Suli Köshk, with its central unit of an iwan and dome, Yakkiper, with a T-shape of tall rooms and Porsoy, with its remarkable tall, galleried central space entered by iwans. The delight in curvilinear space, multiple levels and the interpenetration of volumes again finds Iranian parallels such as Zindan-i Harun, a twelfth-century Seljuk outpost on the road to Rayy from the east (Hillenbrand 1994, 334, 338, 550). As for Kharoba Koshuk, its oblong plan, punctuated by regular openings, is hard to match in contemporary Islamic architecture.

The third phase

Buildings identified as belonging to Merv's revival under the Timurids are located south of Sultan Kala, in or near the new Timurid city, and consist only of the ruins of the Timurid palace, the Köshk Imaret, or Timurid pavilion, and some of the ice-houses. However, this impression is undoubtedly erroneous, heavily tilted as it is by accidental survival, since mausolea of the Timurid period can be found to both the north and the south of the oasis. The absence of traditional buildings has to be a result of their non-survival rather than of their non-existence. Could it be that traditional buildings of this period were less sturdily built than their predecessors? That is certainly the case in the public architecture of the time, where the emphasis lay on the refinement and attenuation of traditional forms.

Architectural styles

An oasis is in some ways like an island. It is not adjacent to another land or country with a readily crossable border but is surrounded by desert, desert which has to be crossed with due preparation and by suitable methods of transport. Thus, while famous architects, such as Muhammad Ibn Atsiz of Sarakhs, might be – and were – commissioned to build major monuments such as the Mausoleum of Sultan Sanjar, traditional buildings are more likely to have been constructed by local craftsmen, and to be more regional or localized in style. They are also likely to be much more individualistic, particularly the residential buildings, such as the *köshks*.

Not only can the traditional architecture of the oasis be considered to be regional in character but, since the oasis is relatively large, there might also be different local traditions within the oasis itself – in the eighth century it probably occupied some 90km from south to north to judge by the account of the Chinese traveller, Du Huan. Again this applies to traditional buildings, rather than to more ambitious public buildings such as the mosques and mausolea, which would reflect a widespread formal public style. The cut-brick decoration employed at Talkhatan in the south of the oasis, Merv on the eastern side and Khuday Nazar further north is thus essentially identical, and finds close parallels in contemporary buildings in Iran, Afghanistan and elsewhere in Central Asia itself. However, the unusual building techniques evident at Suli Köshk and the nearby Kharoba Koshuk suggest that the same local builders were at work in that part of the oasis, but were not employed elsewhere.

MONUMENTS OF MERV

Merv's monuments are an irreplaceable and unique record of an almost lost tradition of building – not major public buildings but residences of varying sizes and types, as well as pleasure pavilions and even ice-houses. That mud-brick buildings have survived for so many centuries is little short of a miracle: we must hope that some way will be found of preserving these fragile structures. They are, moreover, a unique record of medieval traditional and vernacular architecture – for in the Islamic world as a whole, such architecture is very rarely more than a century or two old. So little that is comparable survives outside the oasis that it is hard to determine just how regional a tradition the *kōshks* were. Certainly the concept of corrugation probably originated in the oasis, and corrugated buildings seem to be a purely Central Asian tradition. These were, however, élite residential buildings.

Since there was considerable demand for ice from early times, ice-houses are likely to have been built across the area, although again there would probably have been regional variations. Beazley, for instance, commented on the shade walls attached to every twentieth-century ice-house in the Yazd area, and this is equally

true of ice-houses in Bam in the extreme south east of Iran. But they seem to be lacking on examples in northern Iran, such as Sabzevar. From Beazley's photograph (Beazley and Harverson 1982, 49, fig 52) the Sabzevar example appears to parallel the Merv ice-houses, ice-houses perhaps without shade walls. However that may be, what is particularly important about the Merv ice-houses is that they represent the earliest surviving examples of a long-lived vernacular building and as such are of unparalleled importance. True vernacular buildings, those with a specific function, such as ice-houses and *dings*, are likely to have been widely distributed, although they showed regional variations, but their chances of survival were always poor.

The monuments of Merv still tower over the flat landscape and provide a witness of Merv's past glories, as well as an inspiration for the future. Building in mud brick is a much better solution to the problem of living in the harsh Central Asian climate than concrete housing, even though this is sometimes equipped with air-conditioning. May the old traditions return – and flourish.

APPENDIX



SOME ANCIENT AND MEDIEVAL TEXTS ABOUT MERV

WITH TRANSLATIONS BY
OLIVER MOORE AND HUGH KENNEDY

Although not many of the writings collected here are directly relevant to the topic of this book, they are included, both because they offer different contemporary insights into the history of Merv, and because many are hard of access. Some have been translated for this book by Oliver Moore and Hugh Kennedy, others have been copied from standard works.

THE ACHAEMENIAN INSCRIPTION AT BISITUN

The earliest-known reference to Merv, ancient Margush or Margiana, was made by the Achaemenian king Darius I (522–486 BC) in a great trilingual inscription carved on the cliff at Bisitun near Kermanshah in south-west Iran. Not being in the direct line of succession he had to contend with a series of major revolts across his empire, including one at Merv.

II. 21. 2.5–8: While I was in Babylon, these are the provinces which became rebellious from me: Persia, Elam, Media, Assyria, Egypt, Parthia, Margiana, Sattagydia, Scythia.

III. 38. 3.10–19: Saith Darius the King: A province by name Margiana – it became rebellious to me. One man, by name Frada, a Margian – him they made chief. Thereupon I sent forth against him a Persian, by name Dadarshi, my subject, satrap in Bactria. Thus I said to him: ‘Go forth, smite that army which does not call itself mine!’ After that, Dadarshi marched out with the army; he joined battle with the Margians. Ahuramazda bore me aid; by the favour of Ahuramazda my army smote that rebellious army exceedingly; of the month Aciyadiya XXIII days were past – then the battle was fought by them.

III. 39. 3.19–21: Saith Darius the King: After that the province became mine. This is what was done by me in Bactria.

IV. 52. 4.2–31: Saith Darius the King: This is what I did by the favour of Ahuramazda in one and the same year after that I became king. XIX battles I fought; by the favour of Ahuramazda I smote them and took prisoner IX kings. One was Gaumata by name, a Magian; he lied; thus he said ‘I am Smerdis, the son of Cyrus’, he made Persia rebellious. ... One Frada by name, a Margian; he lied; thus he said: ‘I am king in Margiana’; he made Margiana rebellious.

(Kent 1953)

ROMAN AUTHORS

Although Merv was undoubtedly included in the area conquered by Alexander the Great, it is generally considered unlikely that he himself visited Merv, although one of his generals would almost certainly have done so. Margiana is mentioned by a number of Hellenistic and Roman authors. The two included here are Pliny the Elder and Strabo. Pliny the Elder was born in Verona and died observing the eruption of Vesuvius, when he was 56 years old, in AD 78. Of his many books, the only one to survive is his *Natural History*, comprised of thirty-seven books covering a wide range of subjects – the heavens, wind, rain and hail, minerals, trees, flowers and plants, birds, animals and fishes – as well as a geographical description of every place on the globe. Strabo, a Sicilian and a celebrated geographer, died in about AD 25. Only his geography survives, which was formed of seventeen books and was written in Greek. This describes the most celebrated places of the world. Strabo travelled extensively to gather his material, as well as consulting libraries.

Pliny the Elder, *Natural History* VI, 47

Alexander founded Alexandria in it [Margiana], which was later destroyed by Barbarians, but Antiochus, son of Seleucus, restored the Syrian city in the very same place, through which passes the River Marg, which flows into the Lake of Zotkha. He preferred the city to bear his own name.

The Geography of Strabo XI, 10, 1–2

Aria [the area around Herat] and Margiana are the most powerful districts in this part of Asia, these districts in part being enclosed by the mountains and in part having their habitations in the plains. Now the mountains are occupied by tent-dwellers, and the plains are intersected by rivers that irrigate them, partly by the Arius and partly by the Margus. ... Margiana is ... surrounded by deserts. Admiring its fertility, Antiochus Soter enclosed a circuit of fifteen hundred stadia with a wall and founded a city Antiochia. The soil of the country is well suited to the vine; at any rate, they say that a stock of the vine is often found which would require two men to girth it, and the bunches of grapes are two cubits.

DU HUAN'S RECORD

Professor Liu Ying-Sheng at Nanjing University generously sent a little-known Chinese text, Du Huan's *Record of Experiences and Travels*

(*Jingxing ji*) to the International Merv Project. We are grateful to Dr Oliver Moore at Leiden University for the introduction to this text and this translation.

Du Huan wrote his *Record* as a travelogue to describe a number of Central Asian states which he visited in the mid-eighth century. Only a few facts are known about him. He served as a high-ranking army officer during the Tang dynasty (AD 618–907). Following his capture by Abbasid forces after the battle of the Talas River (751), fought near the modern site of Dzhambul, Du Huan was led on a westward journey via Merv to Kufa. Precise dates for stops along this journey are unknown, but what Du Huan has to say about Merv suggests a stay there lasting several months at least. From Kufa he travelled on merchant ships back to China's great southern port of Guangzhou – a distant destination well known to sailors and businessmen in the Persian Gulf. No more is known of Du Huan's life following his return to China in 762.

Du Huan's *Record* became an authoritative work in its day, but a complete and independently transmitted text no longer exists. That even a fragmentary text has survived is thanks to Du Huan's distant family relationship to the famous institutional historian and statesman Du You (735–812). In the late 760s Du You began drafting his huge *Comprehensive Compendium*, a history of China's state institutions from ancient antiquity to contemporary times. The work was completed in 801. Since it included a section on administrative geography covering Central Asia, Du You cited several passages of his clansman's experiences to bring his entries on a number of foreign states up to date.¹ In fact, during the years that Du You gradually expanded the *Compendium*, the Tang government's involvement in Central Asian politics had collapsed and Chinese direct acquaintance with western regions was gravely diminished. Du You rated Du Huan's *Record* highly, particularly since its objective reports improved much on what Du You dismissed as the general run of 'fabulous marvels' contained in Buddhist accounts of Western travel (*Tongdian* 191.5199).

The following passage concerning Merv is located in the *Comprehensive Compendium* under the heading for Dashi (Tajik):

The state of Molu [Merv] is located over 700 *li* [365.4 to 390.6km]² to the south west of the state of Ya-mei.³ Any Hu⁴ who bear the family name Mo⁵ are people from this region.

The city walls are square and run for 15 *li* [7830 to 8370m]. [The inhabitants] made the city gates with iron. Within the walls there is a salt pool.⁶ There are also two Buddhist monasteries.⁷ [The state's] borders [span] from east to west 140 *li* [73 to 78.1km] and from north to south 180 *li* [93.9 to 100.4km]. The fences of settlements link without break; trees shade one another. [Merv] is enclosed from every direction, since all around is shifting sand.

In the south there is a great river which flows across the border and divides into hundreds of channels [sufficient] to irrigate a prefecture.⁸ The land is fertile; its people are clean.

Residences are tall and solid; market quarters are level and neat. Wherever wood is used it is carved and patterned, and plasterwork is painted with designs. Furthermore, [people] possess delicate, soft-folding cloth as well as lambskin garments. Rates for the best quality are set at several hundred silver coins.⁹

Fruits include red peaches, apples, *ebai*¹⁰ and yellow plums. The larger of the melons is called a *xunzhi*. One is always enough even for ten people or more to eat. *Yue* cucumbers¹¹ grow to over four *chi* [116 to 124cm]. Vegetables include turnips, radishes, spring onions, onions, rape, Hu celery, *gelan*,¹² *junda*,¹³ fennel, shallots, gourds and – particularly abundantly – grapes. There are also brown cattle, wild horses,¹⁴ ducks and pheasants.

It is the custom to designate the fifth [lunar] month as the beginning of the year, and each [new] year [people] offer each other painted jars. There is a festival for hitting the ball¹⁵ and a festival of swings.

The Commander of the Dashi [Tajik] Eastern Circuit is garrisoned here. Onwards from here and around the Western Sea,¹⁶ Dashi and Posi [Persian] settlements have intermingled. It is their custom to worship heaven. They will eat neither the flesh of deceased animals nor the previous day's [slaughtered] meat ... They apply scented oil to their hair.

A radically abbreviated version of Du Huan's remarks were included – without citation – in a section concerning Dashi contained in the revised version of the official Tang history, the so-called *New Tang History*, which was completed in 1060. This brief passage is less informative than the long citation in the *Tongdian* above, but it does provide an intriguing variant in the description of Merv's walls. The whole passage says:

To the East lies Molu [Merv], a small state. It maintains city walls and [outer] ramparts. Many there have the family name Mu [sic]. It designates the fifth month as the start of the year when [people] present each other with painted jars. There are *xunzhi* melons, the largest of which suffice for ten people to eat. Vegetables include onions, *gelan*, *junda* and shallots.¹⁷

The combination of walls and ramparts is standard in the ideal Chinese urban layout, but the existence of a similar double defence at Merv is attested both in the literature and by material evidence still visible today.

ISLAMIC GEOGRAPHERS

In the ninth and tenth centuries AD a number of geographies were written, describing the extent of the Islamic world and the principal

routes. Excerpts from five of these are given below. The second, the *Hudud al-'Alam*, is anonymous. It is the first to use the word *kūshk*, which is still used in the oasis today to describe the freestanding mansions and houses.

Al-Ya'qūbī, *Kitāb al-Buldān*, edited by de Goeje, Leiden, 1892, 279–80, translated by H Kennedy

In 276/889–90 Aḥmad b. Abī Ya'qūb, known as al-Ya'qūbī, described the route from Sarakhs to Merv in his *Kitāb al-Buldān*.

From Sarakhs to Merv on the main road there are six stages, the first is Ushturmaghāk, then Talsatāna, then Dandānqān and then Kanūkird where the estates of 'Alī b. Hishām b. Farrakhusraw [a Persian aristocrat and one of al-Ma'mūn's earliest supporters, died 217/832] are. All these stages are in the middle of the desert and each of these stages has a fort (*ḥiṣn*) so that the people can take refuge and defend themselves from the Turks, who sometimes attack these outposts. Finally you reach Merv, the most important district (*kūra*) in Khurasan.

This district was conquered by Ḥātim b. al-Nu'mān al-Bāhili sent by 'Abd Allāh b. 'Āmir [governor of Basra 29–35/649–55] during the caliphate of 'Uthmān. Some people say al-Aḥnaf b. Qays [leader of the first Muslim expeditions to Khurasan] participated in this conquest, which took place in 31 [651–2]. Its inhabitants are nobles from the Persian *dihqāns* and there are also Arabs from the tribes of Azd, Tamīm and others.

Merv is the residence of the governors of Khurasan. The first one who made it his capital was al-Ma'mūn [al-Ya'qūbī seems to be mistaken here: Merv was the capital of the Muslim governors of Khurasan from the time of the conquest], after which all the governors resided there until 'Abd Allāh b. Ṭāhir [governor of Khurasan 213–30/828–45], who settled in Nishapur.

The inhabitants drink from flowing springs and rivers. Its tax (*kharāj*) is incorporated into the tax of Khurasan. The most famous 'Khurasani' garments are made at Merv. The district of Merv includes the districts of Zarq, Aram-Kaylabaq, Sawsaqān and Jarāra.

Hudud al-'Alam, The Regions of the World, A Persian Geography, AH 372/AD 982, translated into Russian by V V Barthold, into English by V Minorsky, Oxford, 1937

MARV, a large town. In the days of old the residence of the *mīr* of Khurasan was there but now he lives in Bukhara. It is a pleasant and flourishing place with a citadel built by Tahmūrath; in it there are numerous castles (*kūshk*). It was the

abode of the (Sasanian) kings (*khusravan*). In all Khurasan there is no town [better] situated. Its market is good. Their land taxes are levied on the extent of irrigation (*bar ābast*). Marv produces good cotton, root of asafoetida (*ushturghāz*), *filāta*-sweets, vinegar, condiments (*ābkāma*), textiles of raw silk (*qazzīn*) and of *mulḥam* silk.

(105, para 23. 42)

45. KUSHMĪHAN, MUSFARĪ, MĀSHĀN, SŪSANAQĀN, SHĀBIRINĪ, ZARQ – these boroughs, small and big, belong to the province (*'amal*) of Marv, and the agriculture of all these districts depends on irrigation from the Marv River.

Al-Iṣṭakhri, *Masālik al-Mamālik*, edited by de Goeje, Leiden, 1927, 258–63, translated by H Kennedy

As for Marv, it is known as Marv al-Shāhijān. It was built in ancient times and it is said that its citadel [*quhandiz* from Persian *kuhan diz* = old fortress] was built by Ṭahmūrath and that the old city [*madīna*] was constructed by Alexander the Great. It is in a flat plain, far from the mountains: you cannot see any mountains from it and there are no mountains within its borders. Its territory is a salt marsh [*sabkha*] with lots of sand. Its buildings are made of clay.

There are three Friday mosques at Marv. The first mosque for Friday prayers was established within the city in the early days of Islam. When Islam spread, the mosque known as the Old Mosque was built at the gate of the city (or at the Bāb al-Madīna). The traditionists prayed in it and the Friday prayers were held in the first mosque known as the mosque of the Banū Māhān. After that the mosque was built at Mājān and it is reported that mosque and market and Government House [*dār al-'imāra*] were constructed by Abū Muslim. The Government House¹⁸ was back to back with the mosque. In this house there is a dome chamber [*qubba*] which Abū Muslim built and in which he used to sit and down to the present day the governors of Marv sit in this dome chamber. This dome chamber is built of fired brick [*ājurr*] and its diameter is 55 cubits [c 33m]. You enter it from within the supports of the roof.¹⁹ The dome chamber had four doors, each door having an *iwān* and the ceiling of each *iwān*. ... In front of each *iwān* there was a square courtyard.

The citadel is like a city in size except that it is ruined [*kharāb*]. It is raised up and in spite of its elevation a *qanāt* has been brought to it which is still flowing in the present day and melons, green vegetables and other things are grown with it.

As for the markets, in the old days they were by the gate of the city by the Old Mosque. In the time of Abū Muslim they were moved to Mājān. Its markets are among the cleanest of

the markets of the major cities [*amṣār*]. The *muṣallā* [praying place] for the 'īd [at the end of Ramadan] is at the head of the *maydān* [public square] in the quarter of Abū'l Jahm. This *muṣallā* is surrounded on all sides by buildings and inhabited areas and it is between the Hormuzfarra and Mājān rivers.

The quarters of the town have well-known boundaries and the quarters are known by the names of the rivers. Among them is the river Hormuzfarra which has many buildings of the town on it. It is on the Sarakhs side among the first things the traveller from Sarakhs reaches. There are many buildings constructed in it by Ṭāhir b. al-Ḥusayn. He wanted to move the markets and the Government House there. This river supplies drinking water to the Ra's [260] al-Shābāi area where the houses of the great shaykh Abū'l-Faql Muḥammad b. 'Ubayd Allāh²⁰ are found.

There is also the River Mājān on which are found the Government House, the new Friday mosque and the prison. Also on this river is the house of the family of Abū'l-Najm, freedman [*mawla*] of the family of Abū Mu'ayṭ. This is the house in which there is the dome chamber in which the black of the Banū'l-'Abbās was dyed and the dome chamber survives to the present day.

There is also the River al-Razīk which flows by the city gate. This provides water for the people of the city via a canal [?] from this river to pools in it. The Old Mosque is on this river and on its lower reaches are the palaces of the family of Khālid b. Aḥmad b. Ḥammād who was in charge of the governorate of Bukhara.²¹

There is also the River known as the Asadī Khurasānī. It supplies water to the district of the Bāb Sanjān and the Banū Māhān and others. The house of the Marzban of Marw was on this river.

These are the rivers of Marw on which are found the districts of the town and its buildings. These buildings are surrounded by a wall which encloses them and these four rivers. This city and its outlying areas [*rasāṭiq*] are surrounded by another wall which surrounds all its outlying areas and is known as the al-Raī. The remains of this wall have survived to the present day.

The inner city has four gates. These are the Bāb al-Madīna on the side of the Friday mosque, the gate called the Bāb Sanjān, the gate called [261] Bāb al-Layn and Bāb Dūr Mishkān. From this gate one sets out for Transoxania. By [*alā*] it is the house of al-Ma'mūn and his tent in the days when he stayed in Marw before the caliphate passed to him.

In Marw there is a huge river from which all these rivers and the rivers of the outlying districts split off. Its source is beyond Bamiyan and this river is known as the Murghāb or the Water of Marw. Some people claim that this river is named after the place the water springs from which is called Murghāb but others say that the meaning of *murgh* is a thicket. This river

flows by Marwrūd and its agricultural lands are on it. The first place on this river belonging to the district of Marw is Kūkīn, between Khūzān and Al-Qarīnayn, Khūzān belonging to Marwrūd and Al-Qarīnayn belonging to Marw. The place of the dividing of the waters is Zīrq, a village in which the water of Marw is divided. Each district and street has a little river running from this river. In these little rivers there are wooden boards with holes bored in them so that the people can be fair in obtaining their shares of water. If it increases each one takes his share of the increase and the same if it diminishes. In charge of this water is a single Amir [262] who is more important than the governor [*wālī al-ma'ūna*]. I have been told that he pays more than ten thousand men, each one of whom has work on the water supply.

Marw was the Muslim camp in the early days of Islam and it was here that the kingdom of the Persians submitted to the Muslims because Yazdagird, king of the Persians, was killed here at the mill of Zīrq. From it also appeared the Abbasid movement and in the house of the family of Abū'l-Najm al-Mu'ayṭī the first black robes were dyed. In it the caliphate came to al-Ma'mūn when he rose up against his brother Muḥammad b. Zubayda.²² From it came a large number of military commanders and secretaries of the caliphate in Iraq, and governors of Khurasan and Imams, legal scholars and celebrated men of letters and were it not for the fact that our book would become too long and the fact that those we have left out are mentioned in other well-known works, we would list the famous men and all the other information we have collected.

In the days of the Persians, they were the leaders among the districts of Irānshahr²³ for character and culture so that their doctor called Barzūya was the leading Persian doctor and their minstrel [*mulhī*], called Bārbud was better than all those who composed songs and played on musical instruments.

Then it is one of the best places in Khurasan for food and as for their bread, there is none cleaner than it. And the most delicious food from it is the dried fruit, raisins and others which are better than those from other places. Herat produces a larger quantity but the Marw one is to be preferred for flavour and quality. Among the best of its fruits are the melons which are cut into strips and dried and taken to Iraq and I do not know of any other place where this is possible.

Their city for its cleanness, its good paving, the divisions of its buildings and quarters [263] among the rivers and gardens and the separation of the people of each *sūq* from other is superior to the rest of the cities of Khurasan.

In their desert is the *ushturghāz* [root of the asafetida] which they take to the rest of the world. In Marw they produce *ibrīsim*²⁴ and silk in large quantities. I have been told that the

ib̄r̄sim in Jurjan and Tabaristan was originally brought from Marw in ancient times and perhaps the silkworms were brought from there to Tabaristan. They also make there the cotton which is known as soft cotton [*al-quṭun al-layyin*] and the clothes which are exported all over the world.

There are old and new *minbars* [mosque pulpits]. There are two *minbars* in Marw and *minbars* in Kushmayhan, Hormuzfarra, Sinj, Jīranj, Dandānqān, al-Qarīnayn, Bāshān, Kharaq and Sawaqān and these are the *minbars* of Marw that I know of.

And as for Herat ...

Al-Muqaddasi, Muhammad b. Ahmad, *Ahsan al-Taqaṣim fī Ma'rifat al-Aqalim*, translated into English as *The Best Divisions for Knowledge of the Regions*, by B A Collins, Reading, 1994

Marw al-Shāhijān is an ancient district, Dhu al-Qarnayn (Alexander the Great) having established it. It is recounted of Ibn 'Abbās – and may God be merciful to them both – that he said, 'What a wonderful city is Marw! Dhu al-Qarnayn built it, and al-Uzayr prayed there.' Its streams flow into the pool from which there is no exit; however, an angel stands over it with drawn sword to ward off evil. According to Qatādā, in the words of God – may He be exalted – 'warn the mother city and those who dwell around her'; (*Qur'ān*, sūra 6, V.92), said he, the mother city in al-Hijāz is Makka, and in Khurāsān it is Marw.

Moreover, he said that when Ṭahmūrath [a mythical king] began to build the *quhandiz* of the capital he set up a market which had everything one would need. And so it was that if a man would stay there in the evening when he was given his wages he would buy there the food and provisions and sustenance for his family, thus the *dirham* would return to the market. When the market was empty they would count the money, and behold it would amount to a thousand *dirhams*. It is a delightfully situated district, except that water is scarce, though the course of the water is constantly breaking out. The place where the water is most scarce is near the country domains of the ruler, and formerly they would not allow a ruler to buy a hamlet there. I heard some of them say, 'A woman ejected al-Ma'mūn from our town.' 'How?' said I. Said my informant, 'She came to him and said, "You have destroyed Marw, and Marw will not permit anyone to own its hamlets except the people." So al-Ma'mūn ordered a retreat from the town.'

Marw is also the name of the capital, and it is said that it was called Marw al-Shāhijān only because 'al-shāh' means 'the king', and 'al-jān' means 'the spirit'. Here is an abundance of dates and raisins; and the baths are very fine. The capital has the same

name; and among the towns are: Kharaq, Hormuzfarra, Bāshān, Sanjān, Sawsqān, Sahba, Kīrank, Sink 'Abbādī, Dandānaqān. Its sections are: Marw al-Rūdh, and its towns al-Tālaqān, Qasr Ahnaf, Hanīna (?), Lawkar. (298–99)

Marw is known as Marw al-Shāhijān; a capital delightful, fine, elegant. It is brilliant, extensive, pleasant; there, foods are delicious, clean; the houses are well-built, tall; and because of their elegance, both sides of the town are like the decorated edges of a garment. Their scholars, of the highest intellect, are honoured. The two mosques are built of *bānāt* [a type of soft marble], without the use of wood and without colonnades. Every night groups of upright people meet in council; the preacher is a jurist, and follows the school of Abū Hanīfa; the schools have a daily allotment of food for each pupil. Their markets are fine – do you not see the rows of them winding around the Upper Mosque from every side? Here is the renowned region of abundance, here the courtyard of the noble ruler. Do not ask about the baths of Marw, nor of its *harīsa*; nor of its bread, its intellect, its strength, for they are well-known. But do ask about their waters, their learning, manly qualities, for they are weak; and about their slyness, and their disorder – for I could write a book about them. The true account is desirable for itself, and I am not one of those who eats his bread by the exercise of his science; but I seek Paradise, and hope for the call to the blessed life. Marw is a notable town but its population is small, for it has gone to ruin except for a few houses; a third of the suburbs are laid waste as if it dated from antiquity. Houses have decayed and the roofs have tumbled down. Vice is evident, their disorder well-known; their earnings are low, altogether insignificant. They are not generous, nor are their cooking pots clean. Their clay has no tenacity; and in summer the heat dries up everything. The bureaus of the land tax and of the police are in the mosque; their river is constantly overflowing its banks. They commonly put the sound of *zā'* [a letter] before the *yā'* [a letter] in the [word of] attribution [eg Balkhī, Balkhazī]. They are a people of mocking and laziness, as a man of understanding knows.

Everyone in his cunning and mockery is subtle. However, it pours forth an abundance of agricultural produce, the pigeons in their flying to the dovecotes try to outdistance one another, and excellent bread is readily available.

Marw is on a plain far from the mountains. The old central city is on a hill, in the middle of which is a place of prayer which used to be the Friday mosque formerly; there are many houses around it. At the gate of the suburbs are buildings and a small market, and in the suburbs are two mosques: one at the gate of the inner city, the other in the money exchange, and most of its

congregation are followers of Abū Hanīfa. This latter mosque, and what is around it was built by Abū Muslim, the governor. The city has clean markets.

Abū Muslim had brought it into desuetude because he cursed 'Alī bin Abī Tālib – may God be pleased with him – on his pulpit; and he built another mosque amidst the suburbs, so the other was filled with refuse to the time of al-Ma'mūn; he ordered its restoration, Ashāb al-Hadīth (adherents to the Traditions) undertook that task, and they appropriated it. However, the call to prayer is uttered here twice.

My own impression is that the people only adorned themselves, and adopted 'Irāqī habits because of the stopping-off of the khalif there, when the people of the country adopted from his mercenaries and followers the manners of al-'Irāq – but God knows best. Of all the cities, it most resembles al-Ramla in Palestine. The inner city has four gates – Bāb al-Madīna beside the mosque; Bāb Sanjān in the other direction; Bāb Bālin; Bāb Darmashkān, beside which stood the palace of al-Ma'mūn. The *quhandiz* is in the inner city; it is in ruins and difficult to get through, and may be entered only by the giving of a certain sign. The water channel enters the inner city and flows through all the suburbs. Here are well-tended reservoirs, on which are sluice gates, and canals run through parts of the town. (310–12)

Marw al-Shāhijān from Yāqūt's *Mu'jam al-Buldān* (abridged), translated by H Kennedy

Merv was at its zenith in the Seljuk period, when scholars, including Omar Khayyam, flocked to live there, consult its libraries and study at the observatory. Yāqūt's description is one of the most valuable of its time.

This is greater Marw, the most famous city in Khurasan and its capital. Al-Hākīm Abū 'Abd Allāh says in his history of Nishapur that, despite the fact that he wrote his book on the merits of Nishapur, they could not rival the merits of this city.

The *nisba* [personal name] from Marw is Marwazī, which has no parallel, but the garments from it are called Marwī in the usual way.

Between Marw and Nishapur there are seventy *farsakhs* [Persian *parasang*; approximately 420km] and from there to Sarakhs is thirty *farsakhs* and to Balkh is a hundred and twenty-two, twenty-two stages.

As for the name of Marw, we have mentioned that in Arabic the word means a white stone with which you strike fire [flint] but this is Arabic and Marw has always been Persian and furthermore I have never seen any of these stones there. As for al-Shāhijān, it is Persian and means the soul of the Sulṭān,

because *jān* means a soul or spirit and *shāh* means sultan. It was called that because they thought it was so magnificent.

It is related on the authority of Burayda b. al-Ḥuṣayb, one of the companions [*aṣḥāb*] of the Prophet: 'The Prophet said to me, "O Burayda, missions will be sent out after me and you will be among the missionaries so go on the mission to the east, then on the one to Khurasan, then on the one which goes to the land called Marw and when you get there settle in the city which Alexander [lit. Dhū'l-Qarnayn, the two-horned one] built and in which 'Uzayr [Ezra] prayed. Its rivers flow with blessings and over each ditch [*naqab*] of them there is a king with a drawn sword who will defend its people from evil until the Day of Resurrection.'" So Burayda came on a military expedition and stayed there until he died and his tomb can still be seen there marked by a standard which I have seen.

(There follows a short discussion of the position of Marw and what *iqīm* (climes) it is in.)

The people of Khurasan are slandered and accused of miserliness as Thumāma²⁵ alleges that in every country the cock regurgitates what it has eaten for the hen except for the cock from Marw which steals the grain from her beak. This is a clear and transparent lie obvious to anyone who looks and could only come from a malicious slanderer who has no fear of disgrace and exposure. In fact, the cock of Marw is just like the cock in everywhere else.

It is said that when Ṭahmūrath was king, he built the citadel of Marw and he built the city of Babylon, the city of Ibrāyīn in the land of the people of Moses and a city in India on the top of the mountain called Awq. It is said that Humāy daughter of Ardashīr b. Isfandiyār ordered the building of the wall which surrounds Marw.

It is said that when Ṭahmūrath was building the *quhandiz* in Marw, he employed a thousand men. He established a market for them with food and drink in it. Every evening each man was given a dirham and he bought food and everything he needed and so a thousand dirhams was returned to its owner so he only spent a thousand dirhams on the building.

Al-Ma'mūn said, 'The noble and humble in Marw enjoy three things equally; the water melons, the cold water because of the amount of ice there and the soft cotton.'

In Marw is the Razīk [canal], with the R before the Z, and the Mājān. These are the two big, beautiful rivers which flow through its streets and irrigate most of its agricultural lands.

Ibrāhīm b. Shammās al-Ṭāliqānī said, 'I came from Samarkand to Marw to visit 'Abd Allāh b. al-Mubārak²⁶ and he took me by the hand and walked round the walls of the *madīna* of Marw

and then asked me, 'Ibrāhīm who built this city?' and I replied, 'I don't know, Abū 'Abd al-Raḥmān.' He said, 'A city like this and nobody knows who built it!'

Marw has produced more distinguished and learned people than any other city like it. Among them were Aḥmad b. Ḥanbal the Imam,²⁷ Sufyān b. Sa'īd al-Thawrī,²⁸ who died without a winding sheet but whose name will live until the Day of Resurrection, and Iṣḥāq b. Rāḥway²⁹ and 'Abd Allāh b. al-Mubārak and others.

Despite the vast extent of his kingdom, Sulṭān Sanjar, son of Malik-Shāh the Seljuk, chose it above the rest of his cities and continued to live there until his death. His tomb is there in a vast dome and a window towards [*ilā*] the great mosque [*al-jāmi*]. Its dome is blue and can be seen from a day's journey away. I have been told that some of his servants built it for him after his death and established a *waqf* [library] to provide for the Qur'an readers and pay for covers for the tomb. In Marw there are two great mosques [*jāmi*] for the Ḥanafiya and the Shafi'iya and they share a common wall.

I left it in 616/1219 in the best possible condition. I had stayed there for three years and found nothing to criticize except that they suffer from the Guinea worm very badly and very few people escape it each year. Were it not for the disaster which afflicted that town with the coming of the Tatars and its destruction, I would have stayed there for the rest of my life because of the kindness of the people, their good nature, the excellence of the company and the number of books on the principles of law there. When I left there there were ten *waqf* the like of which could not be seen anywhere else in the world for size and excellence. Among them were two in the mosque, one called the 'Azīziya which was founded by a man called 'Azīz al-Dīn Abū Bakr 'Atīq al-Zinjānī or 'Atīq b. Abī Bakr, who was a beer-seller (*fuqqāṭ*) for Sulṭān Sanjar. He began his career selling fruit and herbs in the market at Marw. He then became Sanjar's wine merchant and a figure of influence with him. There were approximately 12,000 volumes in this library. The other library [at the mosque] was called the Kamāliya but I do not know who it was named after.³⁰ There was also the library of Sharaf al-Mulk al-Mustawfī Abū Sa'd Muḥammad b. Maṣṣūr in his *madrassa* [theological college]. This Mustawfī died in 494/1100–1 and he was of the Hanafi school.³¹ There was also the library of Niẓām al-Mulk al-Ḥasan b. Iṣḥāq³² in his *madrassa* and two libraries of the Samāniyīn.³³ There was another library in the 'Amīdiya Madrasa and the library of Majd al-Mulk,³⁴ one of the historian viziers in it, and the Khātūniya libraries in her³⁵ *madrassa* and the Ḍumayriya³⁶ in the Khanqāh of that name. They were very easy of access and I could borrow two hundred volumes without a deposit and take them to my house and their value was 200

dinars. I used to browse in them and seek knowledge in their store. Most of the information in this book and others was collected in these libraries.

(There then follow some poems in praise or lament for Marw.)

In Marw are the graves of four companions of the Prophet, Burayda b. al-Ḥuṣayb, al Hakam b. 'Amr al-Ghifārī, Sulaymān b. Burayda in a village called Fani or Fanin which has a standard on it, and another whose name I forget ...

THE MONGOL CONQUESTS OF MERV

There are two main accounts of the devastating Mongol sacks of Merv, that by Ibn al-Athīr in 616/1220–1, and that by Juvaynī.

Ibn al-Athīr's account of the Mongol conquest of Merv, xii, 391–3, sub anno 617/March 1220–February 1221, translated by H Kennedy

Then Genghis Khan gathered the people he had given guarantees of safety [*aman*] to in Balkh and other cities and sent them with one of his sons to Merv. When they arrived they found that more than 200,000 Arabs and Turks and other Muslims who had escaped had gathered there. They were camped outside the city walls and were determined to confront the Tatars. They were convinced that they would prevail against them and conquer them. When the Tatars arrived they went out to meet them and fought them: the Muslims held their ground and the Tatars know nothing of flight. When one of them was captured he told the Muslims, 'If someone says that the Tatars can be killed, he is right, but if he says that they can be put to flight, he is wrong.' When the Muslims saw that the Tatars were holding their ground and advancing, they turned and fled. The Tatars killed and captured a huge number of them and only a few escaped. Their possessions, arms and riding animals were pillaged. The Tatars then sent to the neighbouring areas to collect men for the siege of Merv. They invested the city with great ferocity and persevered in the fighting [392].

The people of the town were demoralized by the flight of that army and the extent of the killing and taking of prisoners among them. On the fifth day of the siege, the Tatars sent a message to the Amīr who was in charge saying, 'Do not destroy yourself and the people of the town. Come out to us and we will appoint you Amīr of this place and leave you in peace.' So he sent to ask for a guarantee of safe-conduct for himself and

the people of the town and he was given it. He went out to them and Genghis Khan gave him a robe of honour and treated him respectfully, saying to him, 'I would like you to parade your men so that we can see who has surrendered to our service and ask for their obedience. Then we can give them fiefs [*iqṭā'*] and they will be with us.'

When they presented themselves to him, they and their Amīr were overpowered and seized and bound. When this had been done the Tatars said to them, 'Write a letter to the merchants and chief men and wealthy people of the town and send a copy to the chief tradesmen and show it to us.' They did as they were ordered. When they read the letter, it commanded them to order the people of the town and their families to come out. So they all came out and no one remained in it. He [Genghis Khān] sat on a golden throne and ordered that the troops who had been seized should be brought before him. When they were in front of him, they were executed [literally: their necks were struck when they were captives] and the people looked on and wept.

When it came to the common people, they separated men, women, children and possessions. It was a memorable day for shrieking and weeping and wailing. They took the wealthy people and beat them and tortured them with all sorts of cruelties in the search for wealth. Some of them died when there was no money left to pay their ransom. Then they set fire to the city and burned the tomb of Sulṭān Sanjar and dug up his grave looking for money. They said, 'These people have resisted [393] us' so they killed them all. Then he [Genghis Khān] ordered that the dead should be counted and there were around 700,000 corpses. We come from God and to Him we return with regard to what befell the Muslims that day.

'Ala-ad-Din 'Ata-Malik Juvayni, *Genghis Khan, The History of the World Conqueror*, translated from the text of Mizra Muhammad Qazvini by J A Boyle, Manchester University Press, Manchester UK, 1997

OF MERV AND THE FATE THEREOF

Merv was the residence of Sulṭān Sanjar and the rendezvous of great and small. In extent of territory it excelled among the lands of Khorasan, and the bird of peace and security flew over its confines. The number of its chief men rivalled the drops of April rain, and its earth contended with the heavens; its *dihqans*, from the greatness of their riches, breathed the breath of equality with the monarchs and emirs of the age and set down the foot of parity with the mighty and haughty ones of the world.

A fair land and a merciful lord, and a soil whose clay bleeds ambergris;

And when a man prepares to depart therefrom, by its very name it forbids him to depart (Boyle, 1997, 153).

The rumours about the Mongols having by this time somewhat died down, Mujir-al-Mulk and the notables of Merv concerned themselves with pleasures and amusements and gave themselves completely over to the excessive drinking of wine. At this junction Ikhtiyar-ad-Din, the *malik* of Amuya, arrived with tidings that the Tartar army was besieging Qal'a-yi-Kalat and Qal'a-yi-Nau and that a detachment of them had come to Amuya and were at his heels. Mujir-al-Mulk made Ikhtiyar-ad-Din welcome; he joined the other Turcomans and took up his abode among them.

A Mongol army of eight hundred men now attacked the town; but Shaikh Khan and Oghul Hajib arriving from Khorazm with some two thousand men fell upon the rear of the Mongols, overcame them and left the greater part of them on the field. Some, whose horses were less tired, fled away; they were pursued by the Sulṭān's Turks and Turcomans, who captured sixty of them and after parading them through the quarters of the town and the market places put them to death. Shaikh Khan and Oghul Hajib established themselves in Dastajird.

As for the Ikhtiyar-ad-Din, the Turcomans made him their leader; and forming a compact among themselves they turned away from Mujir-al-Mulk and began to stir up such tumult and confusion that the face of the earth was made as black as the hearts of hypocrites, and strove to take possession of the town. Mujir-al-Mulk received tidings of their intention to make a night attack and took counter measures. Being thus unable to achieve a victory and their position having become insecure, they retired to the bank of the river and set their hands to plundering; they would come up to the gates of the town, pillage the villages and seize whatever they set their eyes on.

It was at this juncture that Chingiz-Khan [125] dispatched Toli to conquer the countries of Khorasan with men of action and lions of battle; and raising levies from the subject territories which lay across their patch such as Abivard, Sarakhs, etc., they assembled an army of seven thousand men. Drawing near to Merv they sent four hundred horsemen across the ford by way of vanguard. These came by night to the bank where the Turcomans were encamped and watched their activities. Twelve thousand Turcoman horsemen were assembled there and used at every dawn to go to the gates in order to attack the town.

*Upon a jet-black night whose face was washed with pitch,
when neither Mars was visible, nor Saturn, nor Mercury,*

[Shahnama 1065, 1]

the Mongols laid an ambush in their pathway and waited in silence. The Turcomans were unable to recognize one another [in the dark] and as they arrived in small groups the Mongols cast them into the water and on to the wind of annihilation. Having thus broken their strength the Mongols came like the wind to their encampment and left the trace of the wolf upon the herd. And thus the Turcomans, whose numbers exceeded seventy thousand, were defeated by a mere handful of men. Most of them flung themselves into the water and were drowned, while the remainder took to flight. For since the Mongols were aided by Fortune and assisted by Fate, none was able to contend with them and he whose time was not yet come fled away casting down his arms.

The Mongols proceeded in this manner till nightfall and collected on the plain a herd of sixty thousand cattle (including sheep) which the Turcomans had driven from the gates, as well as other possessions, the amount of which was beyond computation. On the next day, which was the first of Muharram, 618 [25th of February, 1221], and the last of the lives of most of the inhabitants of Merv, Toli, that furious lion, arrived with an army like unto a dark night and a raging sea and in [126] multitude exceeding the sands of the desert, 'all warriors of great renown'.

He advanced in person to the Gate of Victory together with some five hundred horse and rode right round the town; and for six days they inspected the outworks, walls, moat and minaret [sic] and reached the conclusion that the townspeople's supplies would suffice to defend them and that the walls were a stout bastion that would withstand their attack.

*On the seventh day,
When the shining sun sought to cast his glittering lasso
from the lofty citadel,*

the armies gathered together and halted before the Shahrīstan Gate. They joined battle, some two hundred men issuing from the gate and attacking. Toli dismounted in person –

*He uttered a roar like a furious elephant, raised his
shield above his head and showed his hand*

[Shahnama 476, 700]

– and advanced upon them. And the Mongols attacked in his company driving them back into the town. Others issued forth from another gate but the Mongols stationed there repelled the attack. And so the townspeople were nowhere able to achieve any result and could not even put their heads out of the gates. Finally the world donned garments of mourning, and the Mongols took up positions in several rings around the

fortifications and kept watch throughout the night, so that none had any means of egress.

Mujir-al-Mulk saw no way out save surrender and submission. In the morning, therefore, when the sun had raised the black veil from his moonlike face, he dispatched Jamal-ad-Din, one of the chief *imams* of Merv, as his ambassador and sued for quarter. Being reassured by fair words and promises, he got together presents from the quadrupeds in the town – horses, camels and mules – and went to Toli [in person]. Toli questioned him about the town and asked for details regarding the wealthy and notable. Mujir-al-Mulk gave him a list of two hundred persons, and Toli ordered them to be brought into his presence. Of the questioning of these persons one might have said that '*the Earth quaked with her quaking*' [Koran xlix 1] and of the digging up of their buried possessions, both money and goods, that '*the Earth cast forth her burdens*' [xlix 2].

The Mongols now entered the town and drove all the inhabitants, nobles and commoners, out on to the plain. For four days and nights the people continued to come out of the town; and the Mongols detailed them all, separating the women from the men. [127] Alas! how many peri-like ones did they drag from the bosoms of their husbands! How many sisters did they separate from their brothers! How many parents were distraught at the ravishment of their virgin daughters!

The Mongols ordered that, apart from four hundred artisans whom they specified and selected from amongst the men and some children, girls and boys, whom they bore off into captivity, the whole population, including the women and children, should be killed, and no one, whether woman or man, be spared. The people of Merv were then distributed among the soldiers and levies, and, in short, to each man was allotted the execution of three or four hundred persons. The people (*arbāb*) of Sarakhs in avenging their *cadi* exceeded [the ferocity of] such as had no knowledge of Islam or religion and passed all bounds in the abasement and humiliation [of their fellow Moslems]. So many had been killed by nightfall that the mountains became hillocks, and the plain was soaked with the blood of the mighty.

*We have grown old in a land in whose expanses one treads on
nought
but the cheeks of maidens and the breasts of striplings.*

Then, at Toli's command, the outworks were destroyed, the citadel levelled with the ground and the *maq̄sura* of the mosque belonging to the sect of the greatest *imam* Abu-Hanifa (*God have mercy on him!*) set on fire. One might have said that this was in vengeance for what befell in the time of the righteous rule of Shams-ad-Din Mas'ud of Herat, the vizier of the kingdom of Sulṭān Tekish; who caused a Friday mosque to be

built for the followers of the *imam* Shafi'i, which fanatics set fire to by night.

When the Mongols had finished plundering and leading captive and massacring, Ziya-ad-Din 'Ali, one of the notables of Merv, who had been spared by reason of his retirement, received orders to enter the town and be emir and governor of those that reassembled out of nooks and crannies. The Mongols also left Barmas as *shahna*.

When the army departed, [128] those that had sought refuge in holes and cavities came out again, and there were gathered together some five thousand persons. A party of Mongols belonging to the rearguard then arrived and wished to have their share of slaughter. They commanded therefore that each person should bring a skirtful of grain out on to the plain for the Mongols; and in this way they cast into the well of annihilation most of those that had previously escaped. Then they proceeded along the road to Nishapur and slew all they found of those who had turned back from the plain and fled from the Mongols when half way out to meet them. In this manner many persons lost their lives, and hereafter Taisi, who had turned back from Yeme Noyan's army, arrived in Merv; he too laid balm on their wounds, and all that the Mongols found there were drawn out of the noose of life and caused to drink the draught of annihilation.

By God, we live in violent times: if we saw them in a dream we should be terrified.

The people are in such an evil plight that he that has died deserves to rejoice.

Now the *sayyid* 'Izz-ad-Din Nassaba was one of the great *sayyids* and renowned for his piety and virtue. He now together with some other persons passed thirteen days and nights in counting the people slain within the town. Taking into account only those that were plain to see and leaving aside those that had been killed in holes and cavities and in the villages and deserts, they arrived at a figure of more than one million three hundred thousand. 'Izz-ad-Din quoted a quatrain of 'Umar-i-Khayyam which was à propos of the occasion:

*The form of a cup in which it has been moulded together
Even the drunkard does not hold it lawful to shatter.*

So many lovely heads and feet – by his art

Who has joined them in love and who has broken them in hate?

The Emir Ziya-ad-Din and Barmas both remained in Merv until news arrived that Shams-ad-Din, the son of Pahlavan Abu-Bakr Divana, had started a rising in Sarakhs. The Emir Ziya-ad-Din set out with a few men to suppress the rebellion; and Barmas, after taking out of the town the artisans, etc., who were to proceed

to Bokhara, [129] encamped outside. Hereupon a number of persons, the measure of whose lives was filled and their fortune reversed, thought that the *shahna* had received tidings about the Sulṭān and was preparing to flee. They at once beat a drum and rose in revolt, on the last day of Ramazan, 618 [7th of November, 1221]. Barmas came to the gate of the town and sent some men to summon the notables. No one showed his face or treated him with any respect; and in revenge he slew numbers of people whom he found at the gate of the town. Then he departed together with those that had accompanied him; among whom was Khoja Muhazzib-ad-Din Dashtabadi, who followed him as far as Bokhara. In Bokhara the *shahna* died, and there the people from Merv remained.

When Ziya-ad-Din returned he entered the town under the pretext of making preparations for his departure and distributed the plunder he had taken amongst the people. He also sent the son of Baha-al-Mulk to them as a hostage saying that he was his own son. He himself did not show his face but rose in rebellion with them and repaired the walls and the citadel; a number of people rallying around him. At this juncture a party of Mongol soldiers arrived. He judged it expedient to treat them well and kept them with him for some time.

When Kūsh-Tegin Pahlavan arrived from the Sulṭān's retinue together with large forces and began to invest the town, some of the common people revolted and went over to him. Ziya-ad-Din, realizing that his affairs could not prosper with such a conflict of interests, set out for the fortress of Margha together with the party of Mongols that were in attendance on him; and Kūsh-Tegin entered the town, where he began to lay new foundations, repair the fortifications, improve agriculture and mend the dam. Some of the people of the town dispatched a secret letter to Ziya-ad-Din urging him to return to the town. When he came back and halted at the gates, [130] one of his followers entered the town and told some person of his arrival. The news at once reached the ears of Kūsh-Tegin and Ziya-ad-Din's enemies. Kūsh-Tegin dispatched a party of men and had him seized. Then he demanded money of him. Ziya-ad-Din said that he had given it to prostitutes. Kūsh-Tegin asked who they were. 'They are', he said, 'persons of quality and men of trust who to-day are drawn up before you just as formerly they were drawn up before me; but when the time came for action they deserted me and set the brand of treason upon their foreheads.' When he realized that Ziya-ad-Din had no money and there was nothing to be got from him, Kūsh-Tegin deemed his death to be his own life and considered his destruction the survival of the realm.

After the death of Ziya-ad-Din he turned with an untroubled mind to his building and agricultural schemes and worked at the construction of a dam for the river, whereas the water of

Destiny had burst the dam of his life and confined the water of his existence in the wells of perdition.

While thus negligent [of events] he received tidings of the arrival of Qaracha Noyan in Sarakhs. He retreated by night by way of Sangbast together with a thousand picked (*muftrad*) horsemen. Qaracha went in his pursuit and overtook him at Sangbast slaying the greater part of his force; while his deputies remained in charge of the government of Merv.

Three or four days afterwards some two hundred horsemen, who were going to join Qutuqu Noyan, arrived at Merv. Half of them continued their journey in order to carry out their orders, while the other half laid siege to the town and hurriedly sent messengers to the generals Törbei and Qaban in Nakhshab reporting the gathering together of people at Merv; [131] for at that time strangers from all parts, attracted by the abundance of its wealth, had risen from their corners and turned their faces towards Merv; and the townspeople also out of patriotism were casting themselves into that well of stench.

Within five days Törbei arrived at the gates with five thousand men and accompanied by Humayun Sipahsalar, who had received the title of Aq-Malik. They took the town within an hour; and putting camel halters on believers they led them off in strings of ten and twenty and cast them into a trough of blood. In this manner they martyred a hundred thousand persons; after which they distributed the various quarters among the troops and destroyed the greater part of the houses, palaces, mosques and shrines.

The generals then returned to their post together with the Mongol army, leaving Aq-Malik behind with a small force for the purpose of laying hands on any persons that might have exercised prudence and escaped from the beak of the sword-crow by taking refuge in a corner. Aq-Malik put into practice the most impious forms of espionage. When no other wile remained untried a person from Nakhshab who was with them played the muezzin and gave the call to prayer; and all that came out of the holes in which they were hiding were seized and crammed into the Shihabi college, being finally cast down from the roof. In this manner many more people perished. For forty-one days Aq-Malik continued this work and then returned whence he had come. And in the whole town there remained not four persons alive.

When there was no army left in Merv and its surroundings, all those that had remained in the villages or departed into the deserts turned their faces towards the town. And the son of an emir, a man called Arslan, again assumed the emirate of Merv, and the common people (*avāmm*) rallied to his side.

When news of what had happened at Merv reached Nisa, a Turcoman in that place collected an army of his tribesmen and came to Merv. The townspeople went over to him and so ten thousand people were gathered around him and he was emir for the space of six months, during which time he constantly sent forces to Marv-ar-Rud, Panj-Dih and Talaqan to strike by stealth at the Mongols' baggage and carry off their cattle and horses.

At the same time, desiring to take Nisa, the Turcoman proceeded thither with the greater part of his force [132] and laid siege to the town, the governor of which was Nusrat. He continued the siege until Pahlavan, coming from the direction of Yazir, suddenly fell upon him, and he took to flight. Halfway back (*dar miyān-i-rāb*) he was attacked and slain by the governor of the castle.

Meanwhile Qaracha Noyan had come from Talaqan to attack the Turcoman and had suddenly appeared before Merv. He again put salt on the burn, slaying all that he found and causing their grain to be devoured. And in his train came Qutuqu Noyan with a hundred thousand men and began to torture and torment the inhabitants. And the Khalaj of Ghazna and the Afghans, who had been pressed into the levy, set their hands to such tortures as no man has ever seen the like. Some they laid on fire and some they killed with other torments, sparing not a single creature. In this manner they passed forty days and then departed; and in the town and the villages there remained not a hundred souls alive and not enough food even for these enfeebled few. And in addition to all these calamities, a person called Shah together with a small band of ruffians searched all the holes and cavities, and whenever they found an emaciated person they slew him. Some few such wretches escaped and were scattered throughout the country; and except for ten or a dozen Indians who had been resident in the town for ten years past there was no one left in the town.

O nights of Royal Merv when we were all united! God give thee to drink of the cloud of spring rains!

We snatched thee from the vicissitudes and uncertainties of Fate whilst the eye of Intention was anointed with the collyrium of sleep.

Now the vicissitudes of Fate have awakened and renewed their intention,

and have scattered them like rain in every land

(Boyle 1997, 158–68).

NOTES

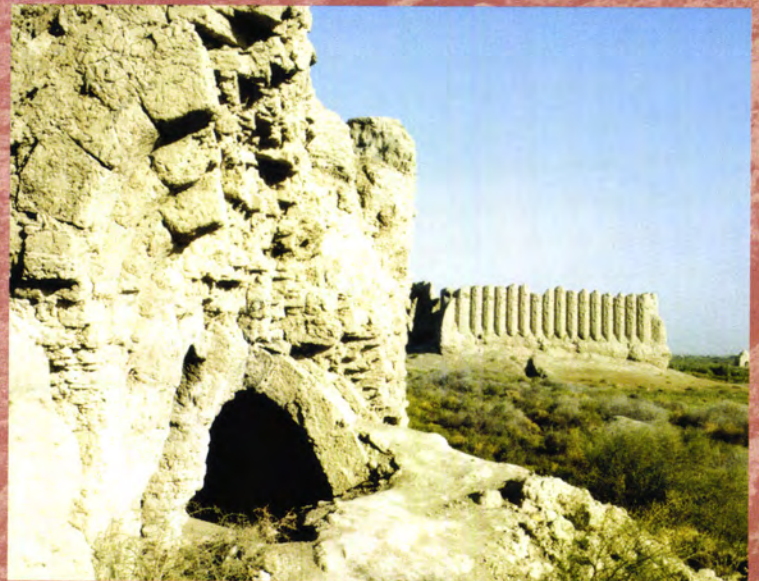
- 1 The modern edition of Du You's 200-chapter *Comprehensive Compendium* (*Tongdian*) used here is Wang Wenjin *et al* 1988. The cited passages of Du Huan's *Record* are located in two chapters at *Tongdian* 192.5226; 193.5256/5263/5266/5271/5275/5279.
- 2 The length of a *li*, the Chinese unit of distance, varied under different governments. In the Tang period 1 *li* was composed of 1800 *chi* (feet). Metric equivalents for the *chi* vary most commonly between 29 and 31cm, equating *li* to a range of 522 to 558m.
- 3 Du Huan's use of this name is not paralleled in other geographical literature, and it remains unclear what place it stands for.
- 4 Following long-established tradition, Chinese writers named people from west of China by the collective generic of Hu, and often applied this name to western objects, customs and crops (see below).
- 5 That is the first of the two characters used in Merv's transcription, Molu.
- 6 Although numbers or quantitative adjectives can qualify them, nouns in literary Chinese are not inflected with singular or plural forms. Grammatically, therefore, this passage could also be understood as 'there are salt pools'. However, in Chinese administrative texts, the number of salt pools in any location was invariably a matter of careful record, since salt was subject to a government monopoly. The legion references to these pools habitually give a precise total of two and above or else mention them without any number in many instances, which should be taken as 'one pool'.
- 7 The syllable *fō* stands as a shorthand transcription for the name Buddha, and the term *fōsi* in Du Huan's text can be taken literally and quite legitimately as 'Buddha temple'. Nevertheless, it is also possible that *fō* refers by extension to Muhammad and *fōsi* denotes a mosque. A clear instance of such an usage occurs in a description of Syria, contained in the official history of the Song dynasty (AD 960–1268), completed in 1345, *Songshi* (Beijing, 1985), 490.14124. A comparative borrowing of the Buddha's name occurs quite commonly in *Fojing*, 'Buddha canon', which in appropriate contexts stands for the Koran. There were indeed 'Buddhist monuments in Merv': see Pugachenkova and Usmanova 1995, 51–81 [GH].
- 8 It is uncertain whether Du Huan refers to a 'prefecture' as a provincial unit of Merv territory, or else means to compare a southern zone of Merv with a level of administration familiar to Tang readers. A Tang prefecture was a sizeable Chinese unit of government located in a large town or city and controlling subordinate counties and districts around it.
- 9 This is a local value. Chinese currency values would be expressed in copper cash.
- 10 Wang Jinwen, editor of the *Tongdian*, reads *ebai* as the two-syllable name of a plant, but Professor Liu Yingsheng suggests that *e* and *bai* are colours that, like 'yellow', qualify 'plums' at the end of the sentence: 'grey, white and yellow plums'.
- 11 *Cucumis melo*, named Yue after the region in south-east China where they were, and are, commonly grown.
- 12 Many species that include the word *ge* in their names are climbing plants.
- 13 Professor Liu Yingsheng suggests that *juncla* is a name for beetroot. Other instances of this name in Chinese literature are rare.
- 14 *Equus przewalskii* according to modern Chinese pharmacopoeias.
- 15 'Hitting the ball' was the usual Tang expression for polo, a highly ritualized military game in which Chinese emperors sometimes participated. In his remarks concerning Ferghana (*Tongdian* 192.5226) Du Huan mentions a 'ball field', the familiar term for a polo ground in Tang China.
- 16 Although the 'Western Sea' can indicate variously the Caspian Sea or the Indian Ocean, Du Huan probably refers to the Persian Gulf.
- 17 Xiu Ouyang (1007–72) *et al* 1975, 221B.6263.
- 18 The reconstruction of the palace in Creswell 1940, 3, is based on this passage which he translates in full. His translation differs in places from mine and the text is open to different interpretations. In particular, there is no textual reason for incorporating the courts (*ṣāḥn*) into the perimeter of the building: it could easily be a more simple *chāhār ṭāq* design with the courts outside.
- 19 Creswell translates this sentence as, 'There is access to the flat part of the roof from the interior'. This seems unlikely as the *lihā* must refer to the *qubba* (fem) not the *saḥ* (masc) but the text is confused and probably corrupt and there is no interpretation that is entirely satisfactory.
- 20 Al-Bal'amī (d. 329/950–1), vizier of the Samanids 310/992 to 327/938 and patron of the Persian poet Rudaki.
- 21 Variant reading says that this was 'the palace and *kūshk* of the family of Khālid b. Aḥmad b. Ḥammād'. He is probably to be identified with Khālid b. Aḥmad b. Khālid al-Sadūsī al-Dhuhlī, described as Amīr of Khurasan, who was arrested in Baghdad on the orders of Caliph al-Mu'tamid on his way to the *hajj* and died in prison in AH 270/AD 883–4 (Ibn al-Athīr 1867, VII, 412). As governor of Bukhara,

APPENDIX

- he had expelled the great traditionist al-Bukhārī from the city. His palace was probably located at or near the site now known as the palace of al-Ma'mūn (Figure 27).
- 22 The caliph al-Amin, 193/809–198/813.
- 23 The Sasanian empire. I have preferred the variant reading of msC. to Abrashahr (the old name for Nishapur) in the text.
- 24 Silk brocade.
- 25 Thumāma b. Ashras, a Mu'tazili theologian prominent at the court of al-Ma'mūn. The anecdote first appears in al-Jāhiz (d 255/868–9), 15. For other anecdotes illustrating the famous and proverbial miserliness of the people of Merv, *ibid* 14–24.
- 26 The traditionist 'Abd Allāh b. Mubārak al-Marwazī who died at Hīt in Ramadan 181/797 aged 63 (Ibn al-Athīr 1867, VI, 159).
- 27 Lawyer and founder of the *hanbali* school of Islamic law, d. 271/885.
- 28 Religious scholar d. 185/775.
- 29 Lawyer and pupil of Aḥmad b. Ḥanbal, d. Nishapur 238/852–3.
- 30 Probably Kamāl al-Dawla Abū Riḍā Faḡlallāh, one of Niẓām al-Mulk's two chief assistants and head of the department of Correspondence and the Seal (Bundārī 1889, 59; *CHI* V, 69).
- 31 Bundārī 1889, 59, says he was head of the department of Financial Control and Accounting and the second of Niẓām al-Mulk's assistants.
- 32 Correctly al-Ḥasan b. 'Alī. This is the famous Niẓām al-Mulk (killed 485/1092), vizier to Malik-Shāh, who had begun his official career in Merv.
- 33 Abū Sa'd 'Abd al-Karīm b. Muḥammad al-Sam'ānī (d. 563/1167–8) was chief of the Shafī'is in Merv in the reign of Sanjar and *khaṭīb* (preacher) of the great mosque and in charge of its endowments (*awqāf*), Ibn al-Athīr 1867, XI, 333; *CHI* V, 276. He was the author of a now lost *Ta'rikh Madīnat Marw* (*History of the city of Merv*).
- 34 Vizier to the Seljuk ruler Bark Yāruq, assassinated in 492/1098–9 (Ibn al-Athīr 1867, X, 289; Ibn al-Rāvandī 1921, 145–7; *CHI* V, 267–8).
- 35 Khātūn Sufriya, mother of Sulṭān Sanjar, who died in Merv in 515/1121–22 (Ibn al-Athīr 1867, X, 593).
- 36 Possibly named after Abu Ḍumayra, *mawlā* of the Prophet.

Figure 137 (title page)
The rooms of the upper floor of
Porsoy Köshk [16] were
exceptionally tall, as can be seen
in the surviving arch of a
corridor room.

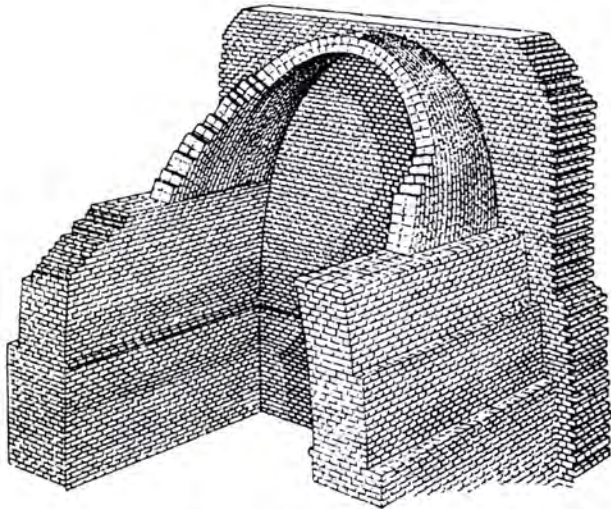
GLOSSARY OF ARCHITECTURAL TERMS



GLOSSARY OF ARCHITECTURAL TERMS

Balkhi vault: see Squinch vault

Barrel vault: a vault of semicircular section, so-called because the shape resembles that of the inside of an inverted half-barrel, though some barrel vaults are slightly pointed, rather than truly parabolic.



A Sasanian barrel vault; note the string course at the junction between the wall and the vault (Reuther 1981, 500, fig 129).

Caravanserai: a fortified structure serving as a defence against bandits, and providing accommodation and shelter for travelling merchants.

Corbelled dome: a dome in which each course of bricks projects further inward than the preceding course, continuing in this way until the dome is completed; typical of circular structures, such as ice-houses (Figure 49).

Corrugations: an important and diagnostic decorative feature consisting of semi-cylindrical tower-like projections encasing the exterior walls of the building.

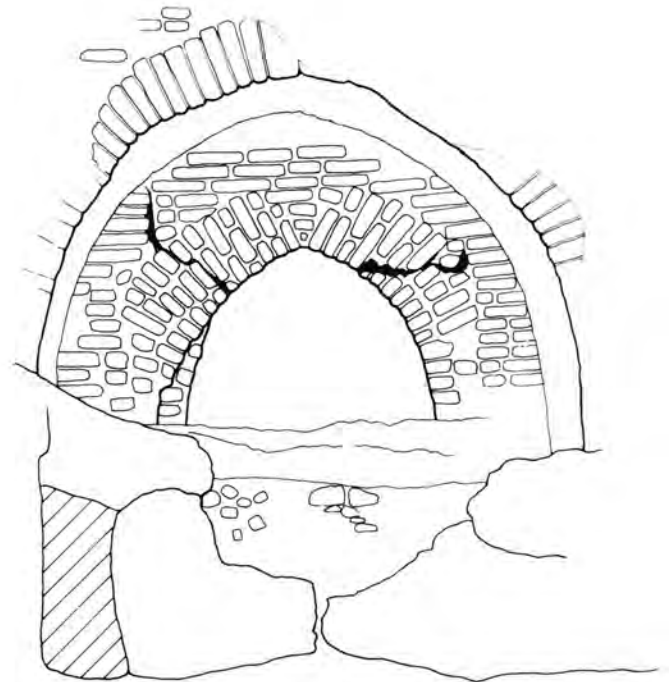
Dings: multi-storey fortified towers, similar to the *kōshk*, but smaller, with one or two rooms on each storey, used as a refuge against marauders, and as a lookout.

Fired brick: similar to mud brick, but fired in kilns to create additional durability – often used in foundations for damp-proofing, for flooring, and for decoration.

Four-centred arch: a depressed pointed arch, composed of the intersection of two different pairs of arcs.

Glacis: the massive sloping skirt that encloses the lower storey or ground floor of a monumental building, such as the *kōshks* of Group I (see pages 141–6).

Ice-house: a cone-shaped structure (Figures 113 and 126).



The doorway in the north-west iwan at Garam Kōshk. Note the use of a four-centred arch and the brick-lay with a rudimentary

'keystone' of bricks laid horizontally, a method repeated in Ice-house 2 (Figure 127).

Iwan: a vaulted architectural space, opening towards a courtyard by means of a monumental arch; the term is also used to denote the arch itself.

Kepter khana: a long narrow building with numerous tiers of internal niches arranged in chequerboard fashion. *Kepter khana* means 'pigeon house' and the niches were originally thought to be pigeon roosts; they have also been interpreted as fruit stores, libraries, archive stores and treasuries.

Köshk: a fortress-like building, often with corrugated exterior walls, probably built as the mansion of an important member of the nobility. Though they may once have been the focal point of an enclosed range of buildings, the ancillary buildings have not survived, and the term has come to mean an isolated mud-brick building.

Mud brick: as distinct from *pakhsa*, mud bricks are made individually in moulds from clay, straw and water, often by recycling the material from collapsed walls, and laid in courses with a mud, straw and water mortar.

Pakhsa: the local name for walls built of blocks of rammed earth, a widespread building technique in Africa, Europe, the Middle East and Central Asia, whereby shutters are erected to form a mould which is filled with a mixture of clay and water, which is then compacted using a rammer and left to dry.

Pavilion: a decorative building, originally set in a garden among pools and fountains, designed as a place of relaxation and as a cool retreat from the summer heat.

Piano nobile: the upper storey and main living area of a monumental building, such as a *köshk*, consisting of domed and vaulted rooms of varying heights and importance, sometimes surrounding an internal courtyard.

Pishtaq: a large rectangular screen framing the iwan or entrance to a building or room.

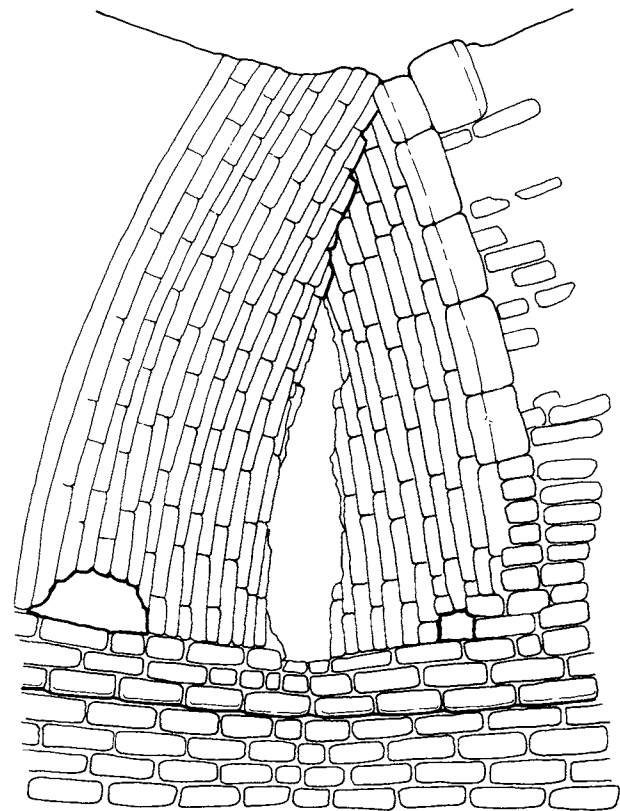
Putlog: a cavity left by scaffolding poles in the walls of domed and vaulted rooms.

Quadripartite lanceolate vault: a vault in which the roof curves inwards from each of the four walls to create a self-supporting structure with four bays or compartments.

Segmental arch: an arch consisting of a segment of a circle that is less than a perfect semicircle.

Seljuk era: the period from 1078 to 1258 named after the Seljuk dynasty of sultans.

Serdab: a room in the lower storey of the building, dimly lit and designed as a cool living space for use during the hot summer months.

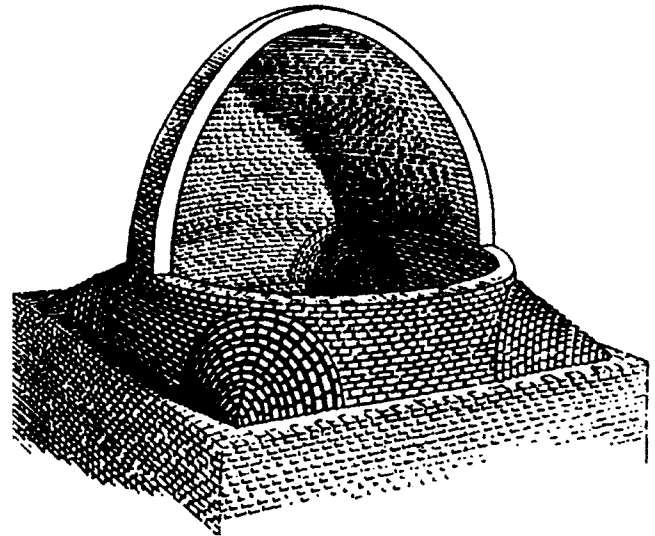


The remains of a quadripartite lanceolate vault from Room 5 of the Greater Kyz Kala.

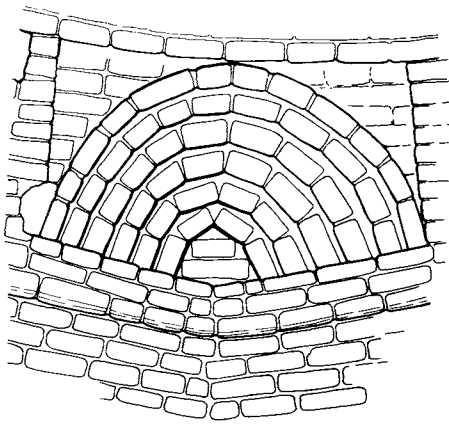
GLOSSARY OF ARCHITECTURAL TERMS

Squinch: a small arch or series of arches placed diagonally across the corner of a room to carry the weight of a dome (right) and effect the transition from square walls to the drum. Two basic types of squinch were employed at Merv. The earlier version is cone-shaped and consists of a series of concentric arches (below). In the Seljuk period the arch of the squinch (opposite page) carried the weight of the dome, freeing the hood for decoration, as in the Mausoleum of ibn Zayd (Figure 46).

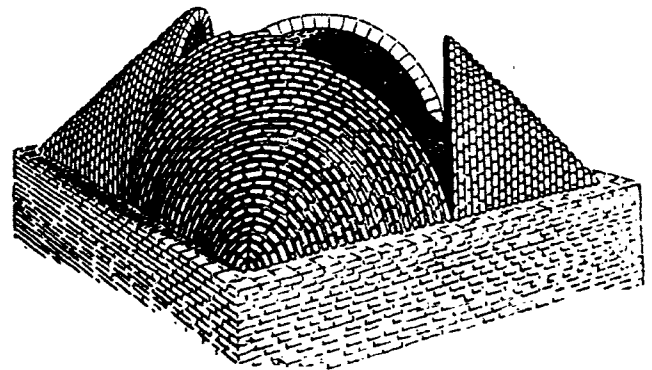
Squinch vault: in a squinch vault (known locally as a *balkhi* vault), the squinches do not simply support the dome – instead, they continue rising in a series of concentric brick courses until the four half-cones so formed eventually meet up to form the vault itself (below right).



A dome supported by cone-shaped squinches (Reuther 1981, 502, fig 131).



A cone-shaped squinch set within a recessed rectangular panel above a string course from the Greater Kyz Kala (Figure 45).



A typical squinch vault (Reuther 1981, 501, fig 130).

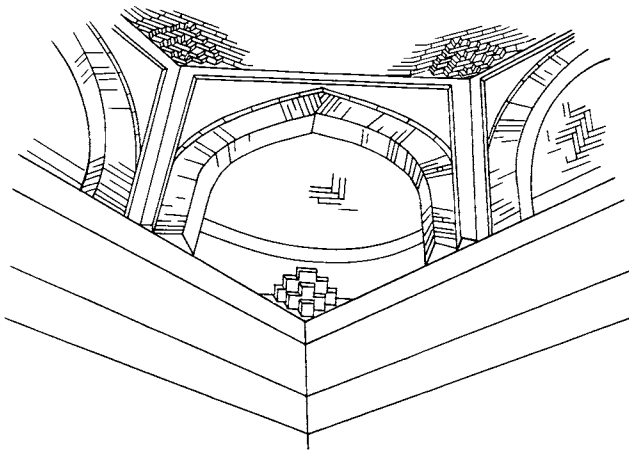
Stepped-tunnel vault: a series of vaults roofing a stairway (Figures 59 and 60).

String course: a horizontal line of projecting bricks, used to articulate features such as the transition zone from the wall to a vault or dome.

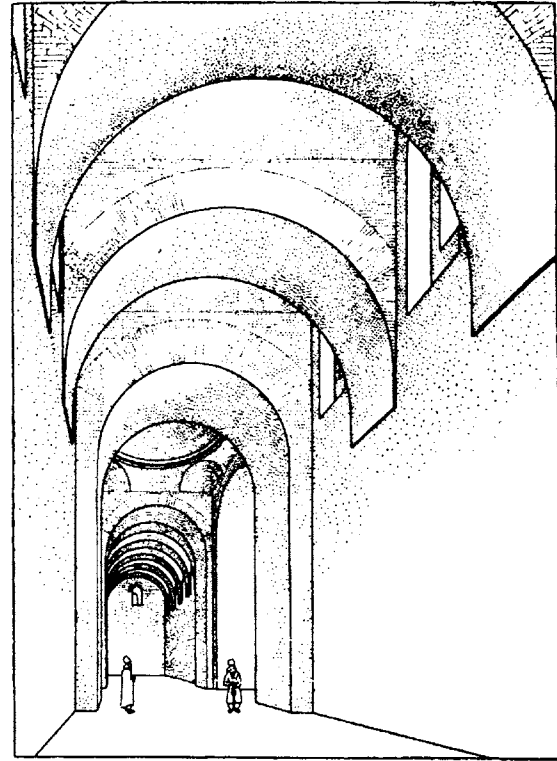
Tie-beam: a timber beam used to strengthen and stabilize walls.

Triangular-headed vault: a vault in which the bricks are laid at a steep angle to form a vault with a pointed triangular profile.

Transverse or cross vaults: a series of short vaults, rising from courses of fired bricks, spanning the interior. The roofing of the intervening spaces is not known.



An arched squinch and curved hood from the Seljuk Mausoleum of Muhammad ibn Zayd (Figure 46).



Reconstruction of Iwan-i Karkha (Reuther 1981, 507, fig 135).

Figure 138 (title page)
The Greater Kyz Kala [1] from
the Lesser Kyz Kala [4].

TABLE OF BRICK SIZES AND SIGNIFICANT FEATURES

SITE	MUD BRICK	BAKED BRICK	WOOD	SQUINCH/DOME
Köshks of Groups I and II				
1. Greater Kyz Kala	340 ² x 80mm			cone-shaped squinch
2. Greater Nagym Kala	340 ² x 80mm	Fragments found		
3. ibn Zayd <i>köshk</i>	330 ² x 90mm			
4. Lesser Kyz Kala	350 ² x 75mm			cone-shaped squinch
5. Byash Ishyk	330 ² x 80mm			cone-shaped squinch
6. Garam Köshk	330 ² x 75mm			cone-shaped squinch
Köshks of Group III				
7. Suli Köshk	300 ² x 60–70mm; ivan 400 ² x 90–100mm Blocking 310 ² x 60mm	290 ² x 60–70mm	Tie-beams	<i>pakhsa</i> dome and walls
8. Byash Barmak Köshk	320 ² x 80mm	290 ² x 50mm	Tie-beams	
9. <i>Köshk</i> near Penpir	300–320 ² x 70mm	Yes	Tie-beams	
10. <i>Köshk</i> south of Gyaur Kala	290 ² x 60mm	Yes	Tie-beams	
11. Lesser Nagym Kala	330 ² x 80mm	260 ² x 50mm	Tie-beams	
12. Durnalii Köshk/ <i>Ding</i>	300 ² x 70mm	Probably	Tie-beams	
Köshks of Groups IV and V				
13. Kyz Kala near Kelte Minar	310–330 ² x 70mm	270–300 ² x 50–60mm	Tie-beams	'Ribbed' quadripartite
14. Ovliali Köshk	320 ² x 60mm			
15. House east of Gyaur Kala	300 ² x 70mm	Yes	Tie-beams	
16. Porsoy Köshk	295 ² x 70mm	180 ² x 40mm	Tie-beams	
17. Yakkiper Köshk	290 ² x 60mm	250 ² x 50mm	Tie-beams	'Ribbed' quadripartite
18. Dig-house Köshk	300 ² x 70mm		Tie-beams	
19. Yelhazar Köshk	300 ² x 70mm	250 ² x 50mm	Tie-beams	
20. Palace in Shahryar Ark	280 ² x 70mm	230–250 ² x 40–50mm		Arched squinch
21. Pavilion at Kurtly	290 ² x 60mm	290 ² x 60 & 250 ² x 50mm		Arched and tri-lobed squinch
22. <i>Kepter khana</i> in Shahryar Ark	250–350 ² x 60–65mm	230–235 ² x 40–45mm	Tie-beams	
23. 'Seljuk House'	280 ² x 60mm	200 ² x 40mm	Tie-beams	
24. <i>Kepter khana</i> in Iskander Kala	300 ² x 50mm		Tie-beams	
25. Kharoba Koshuk	400–410 ² x 110mm; 290 ² x 60mm			
26. Köshk Imaret	250 ² x 50mm	250 ² x 50mm	Tie-beams Wood floors Wooden poles Wooden poles	
27. Ice-house 1	270 ² x 60mm			
28. Ice-house 2	240 ² x 50mm			
29. Ice-house 3	260 ² x 50–60mm			
30. Ice-house 4	260 ² x 50mm			
31. 19th-century merchant's house	250 ² x 50mm		Tie-beams	
32a. Electricity Station <i>Ding</i> 1	280 ² x 70mm	Yes	Tie-beams	
32b. Electricity Station <i>Ding</i> 2	250–300 ² x 50–60mm		Tie-beams	
32c. Electricity Station <i>Ding</i> 3	260 ² x 50mm		Tie-beams	
32d. Bairam Ali <i>Ding</i> 1	260 ² x 70mm		Tie-beams	
32e. Bairam Ali <i>Ding</i> 2	260 ² x 70–80mm		Tie-beams	
32f. Kalinin <i>Ding</i> 1	260 ² x 50mm			
32g. Kalinin <i>Ding</i> 2	250 ² x 50mm		Tie-beams	
Abdullah Khan Kala palace	240 ² x 50mm		Tie-beams Wood floors	
IMP excavation Gyaur Kala 5	300–440 ² x 120–140mm			Fourth to fifth century
IMP excavation Erk Kala	210–400 ² x 70–100mm			Sixth to seventh century
IMP excavation Gyaur Kala 4	280 ² mm	190 ² x 30–40mm		Ninth to tenth century
IMP excavation, residence in Ark	260–270 ² x 50–55mm	190 ² x 40mm 210–220 ² x 45–50mm		
Sultan Kala hollow walls	290–300 ² x 60mm	190–200 ² x 45–50mm 310 ² x 50mm		Eleventh–twelfth century
Sultan Kala solid walls	310–320 ² x 60mm	Reused and broken		Twelfth–thirteenth century

GAZETTEER

THE MONUMENTS



GAZETTEER: THE MONUMENTS

NOTES TO THE GAZETTEER

Information in the Gazetteer has been assembled both from recent observations and from a study of archive photographs. The first paragraph generally discusses the monument's location, followed by a description of the surviving remains. A final paragraph is concerned with technical details, such as the size of the mud bricks and the presence of fired bricks and timber. The principal references are given at the end: it was not, unfortunately, possible to assemble a comprehensive bibliography.

The arrangement of the monuments follows that in the text. The most coherent group of buildings, the *köshks*, houses and medieval *dings*, are discussed first, in Section I. These are subdivided into the five groups discussed in Chapter 4: the first two probably date to the late eighth or ninth centuries, while the others probably belong to the Seljuk period. Section II discusses two audience halls or pavilions of the Seljuk period: III, the so-called *kepter khanas*; IV, the enigmatic building known as Kharoba Koshuk, long considered to be a church; V, a pavilion of the Timurid period; VI, the ice-houses, and VII, a few eighteenth- or nineteenth-century buildings. Numbers in square brackets refer to the number given to the monument in the Gazetteer.

Plans consist of previously published versions from Pugachenkova (1958a or 1963a), Pilyavsky (1947 or 1950), or Atagaryev and Pilyavsky (1974). Pugachenkova's plans are reproduced as illustrated except for the orientations. These are corrected, to help comparisons with the new plans provided by the IMP and prepared by Rejeb Akhmedov.

Figure 139 (title page)
The Lesser (left) and Greater
(right) Kyz Kalas.

I: KÖSHKS, HOUSES AND DINGS

Group I: Greater Kyz Kala, Greater Nagym Kala and the *köshk* near the Mausoleum of Muhammad ibn Zayd

1. Greater Kyz Kala

This immense structure stands on the west side of the Hormuzfarra canal. It is the largest in a group of buildings outside the west wall of Sultan Kala, which includes the Lesser Kyz Kala [4], 250m to the south, the Kyz Bibi complex, approximately 300m to the north east, and two more *köshks* to the north [3] and [18]. The immediate vicinity has been protected, and the ground surface shows little sign of disturbance. The remains of a ruined structure of uncertain plan survive to the north east of the main building, though these have been cut by a road. Some conservation work has been carried out since 1960 by the Archaeological Park 'Ancient Merv', in particular the construction of two mud-brick buttresses on the interior of the east wall: some underpinning was undertaken in the autumn of 1998 to try to prevent the collapse of undercut walls.

Greater Kyz Kala is the largest *köshk* in the Merv oasis, only a little smaller than [20], the palace in Shahryar Ark. Although internally in a ruinous condition, its general form and many details of the architecture are still visible. This two-storey *köshk*, approximately aligned north–south, consists of a rectangular platform with sloping sides, with corrugated walls above. In 1937 Pilyavsky recorded the maximum dimensions as 42.2 x 37.2m: in 1998 these were recorded as 45.3 x 37.8m. The platform is c 4m high, and the building survives to a height of c 12m. The walls of the upper storey are c 2m thick.

The north and west walls are eroded, although runnels indicate the original position of most corrugations. The central section of the east wall has collapsed since 1974 (Figure 179) (Atagaryev and Pilyavsky 1974, 117). Originally there were twenty-two corrugations, with an arched entrance at upper-storey level, visible in both Zhukovsky's and Pilyavsky's photographs (Figures 63 and 95). Zhukovsky suggested that this entrance might not have been original (1894, 163). Since there is no sign of an entrance at ground level (the platform is relatively complete), and breaks in the north and west walls do not have original edges, it seems probable that this was indeed the entrance, particularly as Zhukovsky noted rubbish below the entrance which he thought may have been the ruins of a staircase, or, more probably, a ramp. The best-preserved corrugations are on the south façade, where they have been

protected from the prevailing wind. Eighteen survive: each corrugation is half-octagonal in plan, with a diameter of c 1.3m. They rise from a pointed base in the platform to form the crenellated parapet. The corrugations at the corner have a pointed profile.

The lower storey or basement rooms are inaccessible, although they were once reached by a stairway at the north end of the *köshk*: their presence is implied by the windows at the base of the corrugations. Today four windows survive on the south wall, four at the north end of the east façade, with an eroded area at the south end probably indicating the site of a fifth window, at least one more on the west and two on the north at a higher level, lighting the stairway. These narrow windows measure approximately 0.9m in height, and widen from a top of c 0.15m to a base of 0.26m: the roof slopes downwards into the interior and is formed of a single line of bricks.

The interior of the upper storey is a vast, sloping open expanse, 38.55 x 32.1m: the southern end is higher than the northern, suggesting that the southern rooms of the lower storey were taller than those at the north. Fragments of walls indicate that there was a minimum of sixteen rooms built around a central space. The best-preserved traces are against the west wall. From south to north, Room 1 measured 3.5 x 5.5m in Pilyavsky's time, although only a 1.4m stump of wall survives today (Figure 180): it was barrel vaulted and aligned east–west. Room 2 is poorly preserved with only traces of the side walls visible. It was built at a lower level than Room 1 and is c 3.55m wide. Traces of a zone of transition and a squinch at the south corner, not previously noted, prove that it was domed. The floor of Room 3 was probably about a metre lower than that of Room 2: a squinch in the north-west corner indicates that this room, width c 4.8m, was also domed. The well-preserved squinch is composed of seven concentric arches set within a recessed rectangular panel, 1.7 x 0.85m, over a projecting string course, three bricks thick. The walls on either side of the squinch are slightly curved to form the drum of the dome, a feature repeated in the Lesser Kyz Kala and the Kyz Bibi mausoleum. Room 4 is a large rectangular vaulted room, 7m long, the vault formed with bricks laid horizontally. There is a panel of appliqué decoration above the zone of transition consisting of a series of tri-lobed, blind niches. In the centre of the wall below the decorative frieze are the remains of a large, poorly preserved niche, width c 1.1m. Room 5 in the corner measures 5.35 x 4.93m and was roofed with a quadripartite lanceolate vault, springing from a three-brick string course. The bricks of the vaults are laid radially, edge to edge, either at 90 degrees to the

axis of the vault or slightly oblique to it (Pugachenkova 1958a, 137). The outline of the floor of the parapet can be made out about a metre below the triangular tops of the corrugations/ crenellations on the interior of the west wall.

Little survives on the north side, although it was better preserved in Zhukovsky's photograph and when planned by Pilyavsky in the 1930s (Figures 181 and 183). The stairway, 6, is located next to Room 5. One flight of stairs, roofed with a series of stepped tunnel vaults, led down to the basement, and the other, lit by a narrow window, led up to the roof. The stairway measures 1.05m in width. Of Rooms 7 and 8 to the east, only stumps of walls survive next to the central break in the north wall and 7.2m to the east.

Rooms 9 and 10 (Figure 53), both barrel vaulted and aligned east-west, survive at the north end of the east wall: they measure 5.32 x 2.85 and 2.9m respectively. Finally, a stump of wall, 1.25m in length, survives 9.3m from the south wall. The interior of the south wall is too poorly preserved to suggest the original arrangement of the rooms. The internal walls of the upper storey measure c 1–0.85m, with the exception of the stump, width 1.7m, in the southern end of the west wall.

In 1998 a glass rim sherd of a bowl of Early Islamic date, eighth century or later, was recovered from a brick *in situ* on top of a corrugation. This was clearly residual, included within the brick. A number of sherds were found during a preliminary rake-out of loose debris prior to conservation work. These included sherds from bowls of the so-called Nishapur Buff Ware tradition, known locally as *ishkor* ware, a black and yellow slip-painted glazed ware (St J Simpson, pers comm). This ware is quite common at Merv: examples were found in our excavations in the furnace area in Gyaur Kala (*Iran XXXV* 1997, 14–15) in levels dated to the ninth to tenth centuries.

Mud brick of a uniform size, 340² x 80mm: numerous putlogs at the level of the vaulting indicate that wood was used for scaffolding.

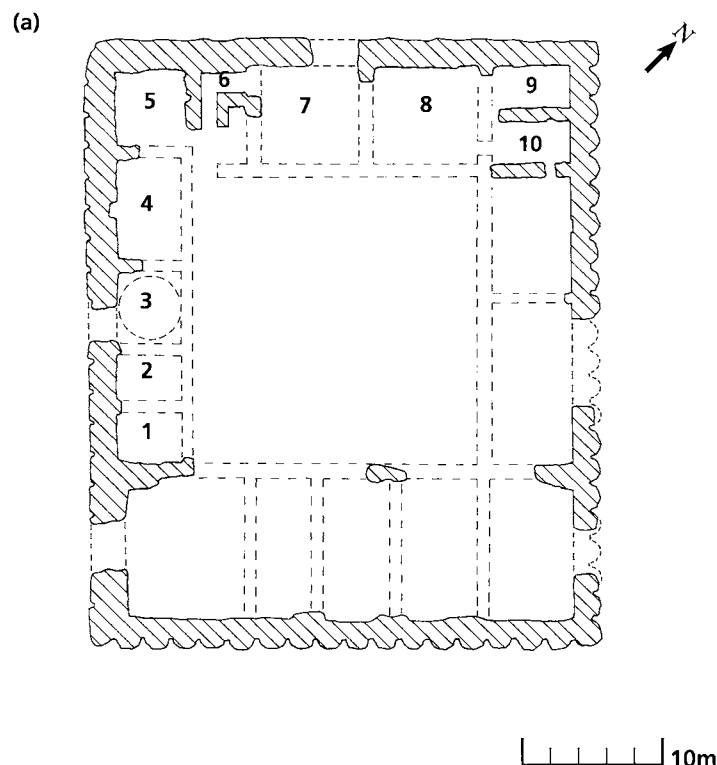
About 30m to the north east of the Greater Kyz Kala is an extensive mounded area on both sides of the road. That to the south of the road extends c 32 x 28m. Only fragments of walling survive. The mud bricks measure c 360² x 80mm.

Principal references

The Greater Kyz Kala, one of the most important monuments of the oasis, is referred to in numerous publications. Some of the principal ones include Zhukovsky 1894, 163–7; Pilyavsky 1947, 63–6, and 1950; Pugachenkova 1958a, 135–42; Atagaryev and Pilyavsky 1974, 116–17; Gubaev, Koshelenko and Tosi 1998, 618, site 618, field no. 192

Illustrations

Figures 28, 45, 52, 53, 56, 63, 79, 84, 92, 95, 132, 138, 140, 177–83



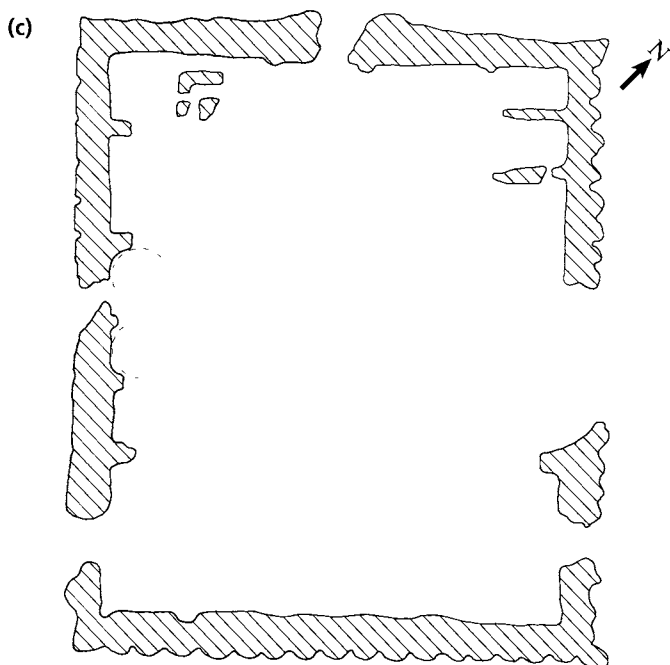
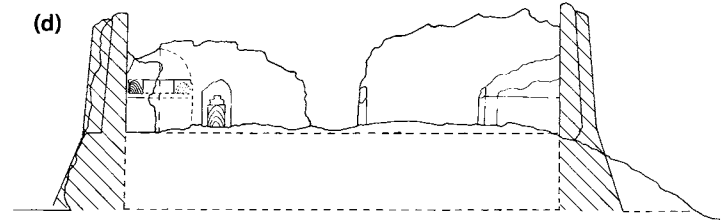
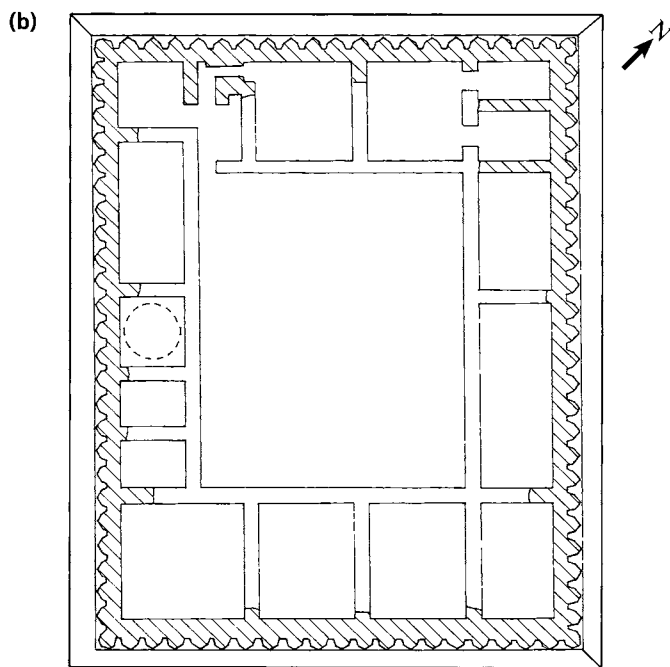


Figure 140 Plans of the upper storey of the Greater Kyz Kala [1].

(a) after Pilyavsky (Atagaryev and Pilyavsky 1974, 117)

(b) after Pugachenkova (1958, 137)

(c) by Akhmedov (IMP)

(d) east-west section of the Greater Kyz Kala [1] (from the YuTAKE archive)

(e) glass sherd of a rim, diameter 85mm, with a folded-in lip. Transparent with pale blue tinges

2. Greater Nagym Kala

Greater Nagym Kala is the larger of two buildings of the same name located on the west of the oasis, north of the Karakum canal and 5km north of the village of Vakil Bazar, the medieval site of Penapir. The immediate vicinity of Greater Nagym Kala is a conservation zone. Number 11, Lesser Nagym Kala, is located 200m to the west. The area between is cultivated, and Seljuk sherds can be found on the surface.

Greater Nagym Kala and Greater Kyz Kala [1] are the two largest *köshks* in the oasis. According to Pugachenkova's measurements in the 1950s, the former was nearly square and measured 39.4 x 38.2m. Since that time the *köshk's* condition has deteriorated considerably: nothing survives of the north and west walls, and much of the east wall has collapsed since being photographed by Pugachenkova (1958a, 132) (Figure 96). In 1998 the size of the building, including the platform with its sloping sides, was recorded as 39.3 x 36.2m. The platform is 3m high and is constructed of five levels of *pakhsa*, separated by courses of mud bricks. Above the platform, the corrugations of the walls survive to a height of 7m. Pugachenkova planned twenty-two corrugations on the longer south and north sides and nineteen on the east and west sides (1958a, 134); in 1998 only two were standing on the fragmentary east façade, with seventeen on the south. The semicircular corrugations have a diameter of 1.68m, survive to a maximum depth of 1.12m, and are separated by gaps of 0.15m.

Like the Greater Kyz Kala, the entrance was at upper-storey level (Figure 186) and was entered via a ramp of mud brick on the east side, traces of which can be established to a distance of c 12m in front of the *köshk*. Pugachenkova described the entrance as consisting of a slightly projecting rectangular panel with a central arched niche set between half-corrugations (1958a, 134–5), which she suggested was reminiscent of that of the Lesser Kyz Kala [4].

Several windows are set into the platform of the south façade to light the lower-storey rooms, and a small entrance provided secondary access to the upper storey. This measures 1.1m in width and is roofed with a rising tunnel vault of slightly pointed profile. This vault can be compared with one at Kharoba Koshuk [25]. The tall windows, height c 1.15m, are narrower at the top (0.2–0.25m) than the bottom. One wider window, 1.1m high and 0.58m wide, has a corbelled roof with bricks placed diagonally along the apex of the vault. A more sophisticated version of this form of vaulting on a narrow interior room or corridor can be seen at Garam Köshk [6] (cf Figures 56 and 58).

Most of the extant rooms belong to the upper storey and are of different sizes, probably arranged around a large central courtyard. Room 1, to the south of the entrance measured 7.1 x 6.3m, while Rooms 2 and 3 in the south-west corner measured 4.1 x 1.7m and 2.7 x 2.3m. They appear to have been roofed with barrel vaults of slightly pointed profile (Figure 55). Several connecting doorways survive; they are of two types, those with arches made of bricks arranged radially with a central keystone and those with arches of bricks laid in curved layers, like that from Room 8 in the Lesser Kyz Kala. On the south side, to the west of the door, are the remains of a stairway leading to the lower storey.

Mud brick of a standard size, 340² x 80mm. Fragments of fired brick, 280² x 50–60mm, have been found in collapsed debris. Pugachenkova (1958a, 134) reported traces of dark red paint on a clay ground on the walls of one of the lower-storey rooms.

Principal references

Initially surveyed by Vyazgin during the YUTAKE surveys of 1950–2 and published by Pugachenkova (1958a, 132–5), with a plan and reconstructed elevation as well as an artist's reconstruction by Mashrikov. These plans and reconstructions have been republished frequently: the reconstructions are conjectural, being based on the Rabat-i Malik caravanserai and the Anikov silver bowl. Gubaev, Koshelenko and Tosi 1998, 146, site 580, field no. 43

Illustrations

Figures 55, 57, 96, 141, 184–9

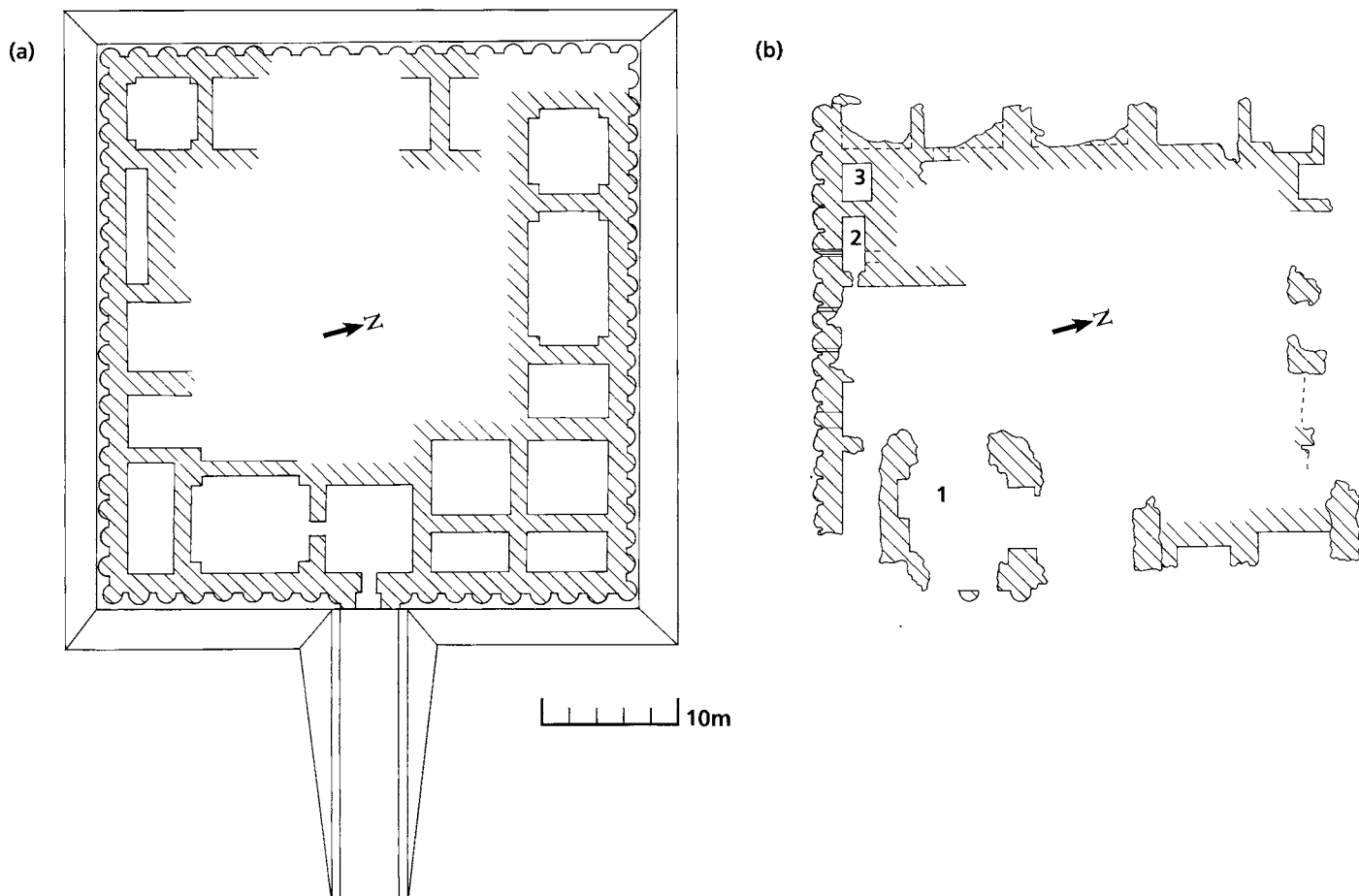


Figure 141 Plans of the upper storey of the Greater Nagym Kala [2].

(a) after Pugachenkova (1958, 133)

(b) by Akhmedov (IMP)

3. *Köshk* near the Mausoleum of Muhammad ibn Zayd

The remains of a large *köshk* are located some 24m to the east of the twelfth-century Mausoleum of Muhammad ibn Zayd, beside an old *aryk*, or small canal. Although the mausoleum was one of the first buildings to attract the attention of scholars, the *köshk* failed to interest them, perhaps because of its condition.

The *köshk* is heavily eroded on three sides, leaving a large steep-sided mound with a single standing wall on the south west. Although today it is more mound than monument, it is nevertheless important because of its location close to the mausoleum, suggesting that it must have been built earlier, and because of its size. It is nearly square, still measuring approximately 33.8 x 32.5m with plain walls with a gentle batter surviving to a height of 9m. Faint traces of vertical runnels represent all that survives of corrugations. The surface is too worn to distinguish any features except for four windows set into the lower part lighting rooms on the lower storey, to which there is no access. Each tall, narrow window, height 1.3m, is narrower at the top, width 0.25m, than at the base, width 0.5m, and has a corbelled roof, which slopes downwards.

The remains of a room, 2.28 x 1.7m, survive in the north-west corner at lower-storey level. Above, on the upper storey, slightly to the south, is part of a large room, currently measuring c 2m in width, with a small pointed niche high up in the west wall.

Mud brick, 330² x 90mm.

Illustrations

Figures 98, 142, 190

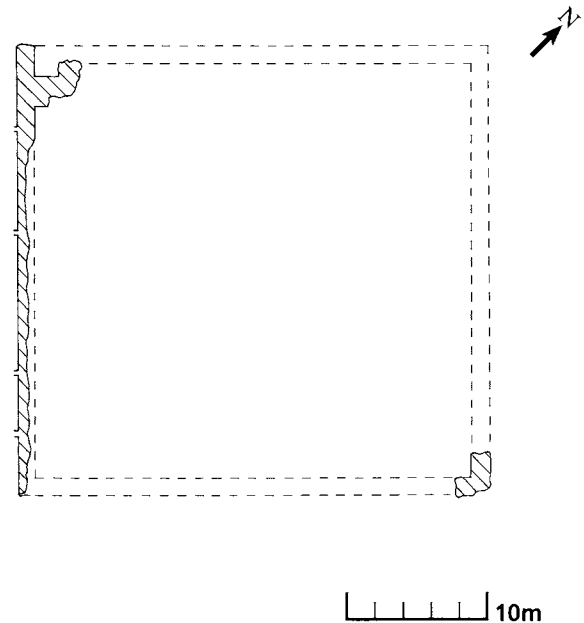


Figure 142 Plan of the *köshk* [3] near the Mausoleum of Muhammad ibn Zayd, by Akhmedov (IMP).

Group II: Lesser Kyz Kala, Byash Ishyk Köshk and Garam Köshk

4. Lesser Kyz Kala

Lesser Kyz Kala stands outside the western wall of Sultan Kala, east of the Hormuzfarra canal and approximately 250m south of Greater Kyz Kala [1]. The immediate vicinity is protected from agriculture. This building is considerably smaller than its neighbour and in a much worse state. Photographs of 1937 (Pilyavsky 1947, 59), 1954 (Pugachenkova 1958a, 136) and 1971 (Atagaryev and Pilyavsky 1974, 114) showed all four external walls surviving with only a few areas of collapse.

However, in 1991, the east and north walls fell down, and there has been further collapse in the north-west corner. Like Greater Kyz Kala, the west wall has been flattened by weathering, eroding the corrugations. In 1998 the only surviving section of exterior wall with corrugations was on the south (Figure 100). The following description is based on Pilyavsky's and Pugachenkova's surveys, current observations and information provided by archive photographs.

The two-storey *köshk* is nearly square and was recorded by Pilyavsky and Pugachenkova as measuring 22.5 x 22.1m: in 1998 it measured 20 x 19.1m and stood to a height of 7.5m. The rooms of the lower storey are enclosed within thick, plain walls, more than 2m thick with a gentle batter, c 2.4m high, while the slightly thinner walls of the upper storey are decorated with corrugations similar in size to those of Greater Kyz Kala, diameter 1.3m, but semicircular rather than half-octagonal in form. The best-preserved façade is on the south, where eight corrugations frame a central feature consisting of a flat panel, 4.9m wide, projecting 210mm, framed by half-corrugations. Partially similar features also occur at Greater Nagym Kala [2] and Garam Köshk [6]. Unfortunately, there are few archive photographs of the poorly preserved north façade, only an out-of-focus photograph by Cohn-Wiener (Figure 193) and one in deep shadow taken in 1937 (Pilyavsky 1947, 59). The former shows an opening at ground level near the centre of the northern side, which may have served as the entrance to the building; cf Garam Köshk [6]. Pilyavsky did not mention any entrance and recorded this opening on his plan as a 'break' in the wall.

The most interesting feature is probably the stairway in the south-east corner, 4. In Zhukovsky's day it was possible to enter this stairway through an enlarged window on the east and to walk through the rooms and corridors of the lower storey to a considerable distance

(1894, 165). He noted that the walls had been beautifully plastered, although they were then gradually filling up with dung and dirt from the herds of sheep driven in for protection from the weather. Fortunately, Pilyavsky drew a detailed plan of the stairway (Pilyavsky, 1947, 60; Atagaryev and Pilyavsky 1974, 114): the first flight, width 1m, led up to a landing, with access to a barrel-vaulted room, Room 6, 3.35 x 2.82m; a second flight, height c 2.8 x 0.96m, now collapsed, connected the first landing to the second and gave access to a small store room, Room 5, 1.42 x 1.8m, at mezzanine level; a third flight, width 1.05m, led to the principal residential floor. The staircase was roofed with a series of stepped tunnel vaults of pointed profile, parts of which survive. There were elaborate cross vaults on the landings (Figure 61), destroyed when the east wall collapsed. Lighting was provided by narrow windows in the east and south walls.

Pilyavsky planned a number of rooms on the lower storey, which are still accessible (Pilyavsky 1947, 60; Atagaryev and Pilyavsky, 1974, 114). The longer east and west sides each had a small, nearly square room in the centre: the west room, Room 2, measures 3.4 x 2.65m, the east room, Room 6, 3.4 x 2.67m. To the north are rectangular rooms, Room 1, c 6.1m long, while to the south is the stairway in the south-east corner, 4. A long room runs parallel to the south façade, Room 3, c 8.5 x 2.1m, with presumably another in the inaccessible south-west corner: all the rooms were roofed with high vaults of pointed profile, formed of courses of bricks laid at an angle, without scaffolding. Access to the central area is impossible.

The principal rooms on the upper storey were probably built around a central courtyard. Three rooms, Rooms 7–9, survive along the better-preserved west side, two of which, Rooms 7 and 8, still have walls standing to a height of about 5m. A doorway from the courtyard led into the domed Room 8, 3.98 x 3.95m. Although the crown of the dome has collapsed, all four squinches have survived, each consisting of at least five concentric arches within a curving rectangular frame, c 1.4 x 0.8m, set over a projecting double string course. The walls linking the squinches are slightly curved to form the drum of the dome, a feature repeated in the Greater Kyz Kala [1] and Kyz Bibi. The base of the dome is articulated. The doorway, width 1.22m, height c 2.35m, is covered with a segmental arch, set on a projecting string course and formed of two layers of mud bricks laid tile-wise. To the left (south) of the door there is a narrow rectangular window, 0.85 x 0.3m. At the south end of the west wall a recessed rectangular panel, 1.4 x 1.22m, may originally have been a shallow niche but now frames a rough

opening. Openings in the south and north walls are too eroded to determine if they were once doorways.

Room 7 to the north is also entered from the courtyard and measures 4 x c 6.6m (the north wall has collapsed). Only fragments of the vault remain. The doorway, width 1.33m, is similar to that of Room 8, although more eroded. Finally, corners survived of Rooms 10 and 11 on the north façade.

Large mud bricks of a uniform size, 350² x 75mm. The stepped tunnel vaults of the stairway were built using curved mud bricks with triangular insets at the apex. Traces of mud plaster can be seen on the interior, particularly on the squinches. Holes in the walls of Room 8 may have been putlogs for scaffolding.

Principal references

Zhukovsky 1894, 165–7; Pilyavsky 1947, 58–63, and 1950, 99; Pugachenkova 1958a, 137–40; Atagaryev and Pilyavsky 1974, 114–15

Illustrations

Figures 28, 44, 59, 61, 67, 93, 100, 138, 143, 191–201

Figure 143 Plans of the upper and lower storeys of the Lesser Kyz Kala [4].

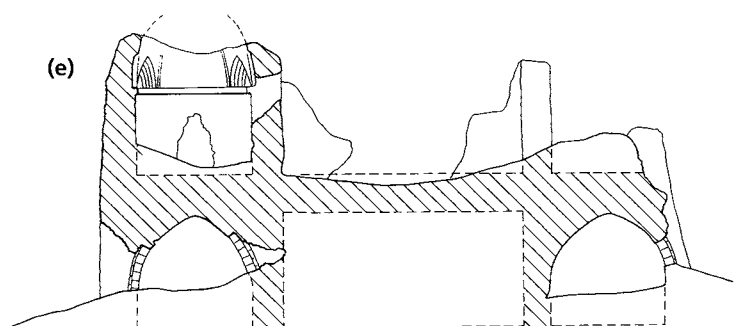
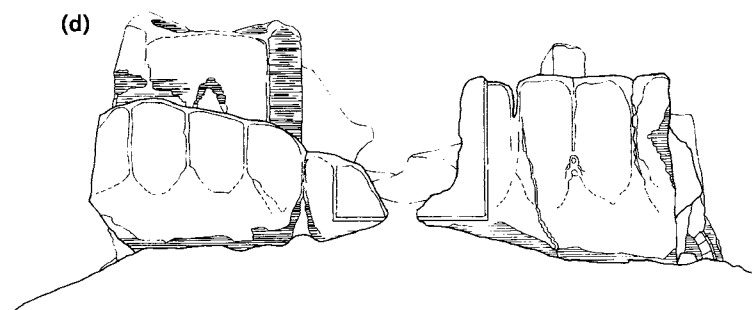
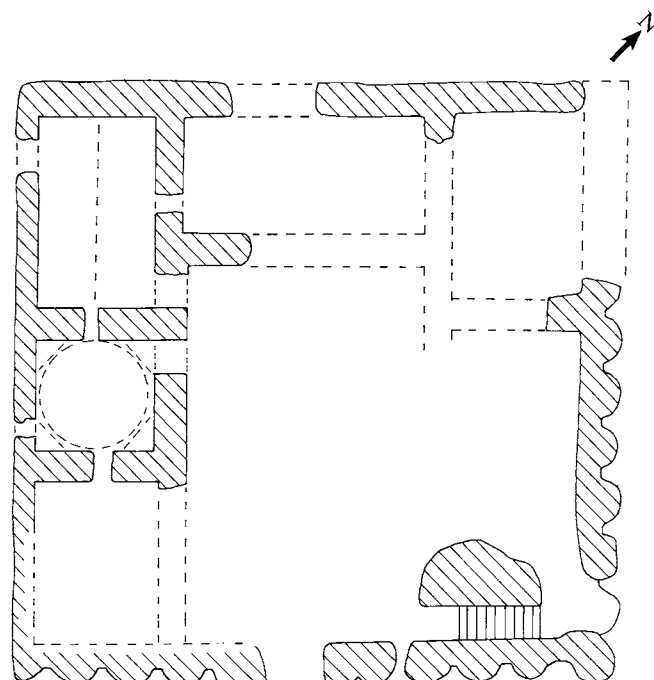
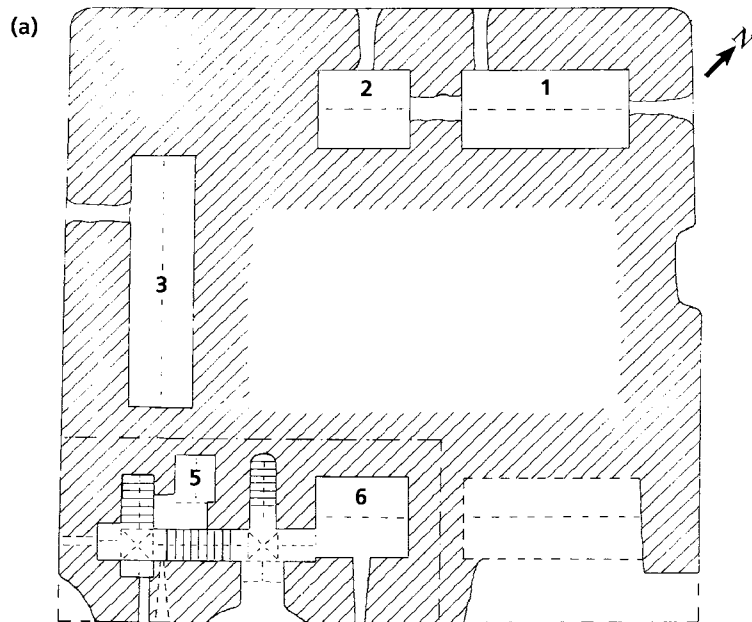
(c) by Akhmedov (IMP): lower storey (left), upper storey (right)

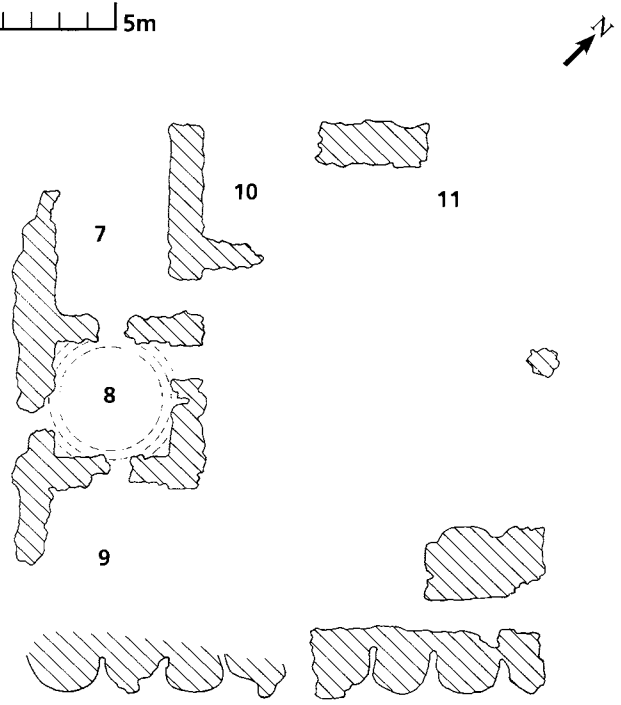
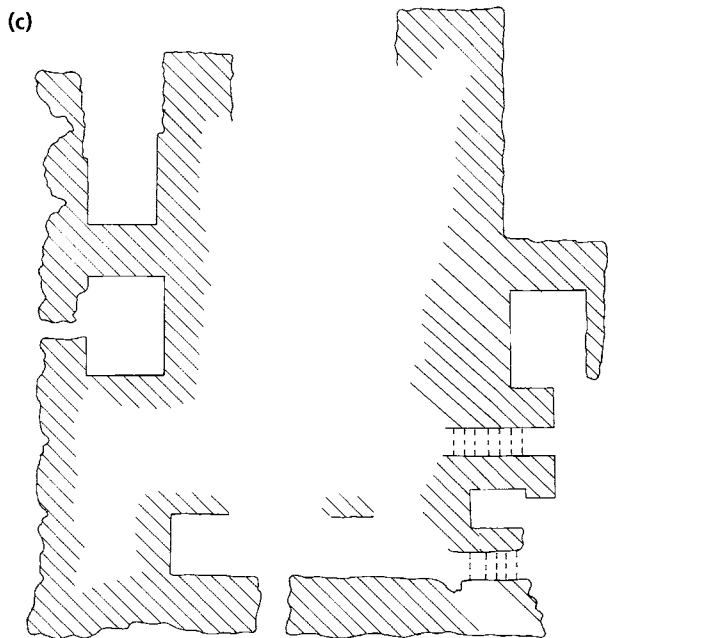
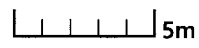
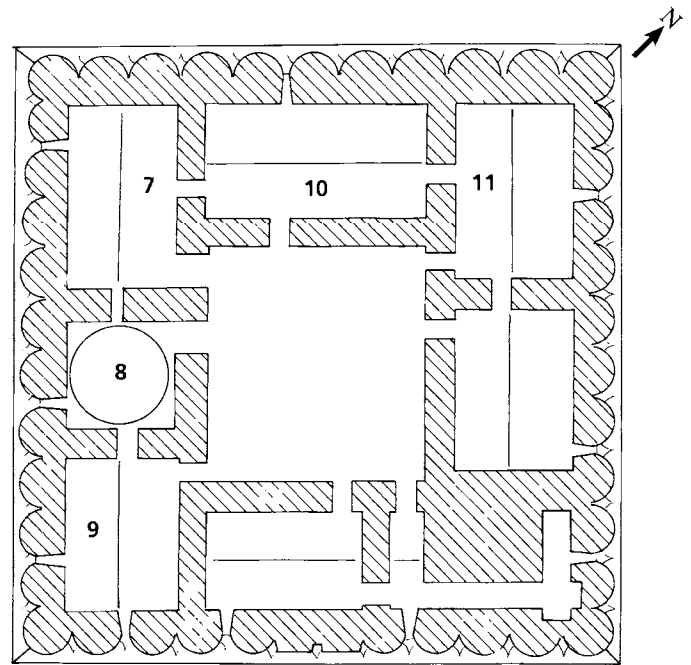
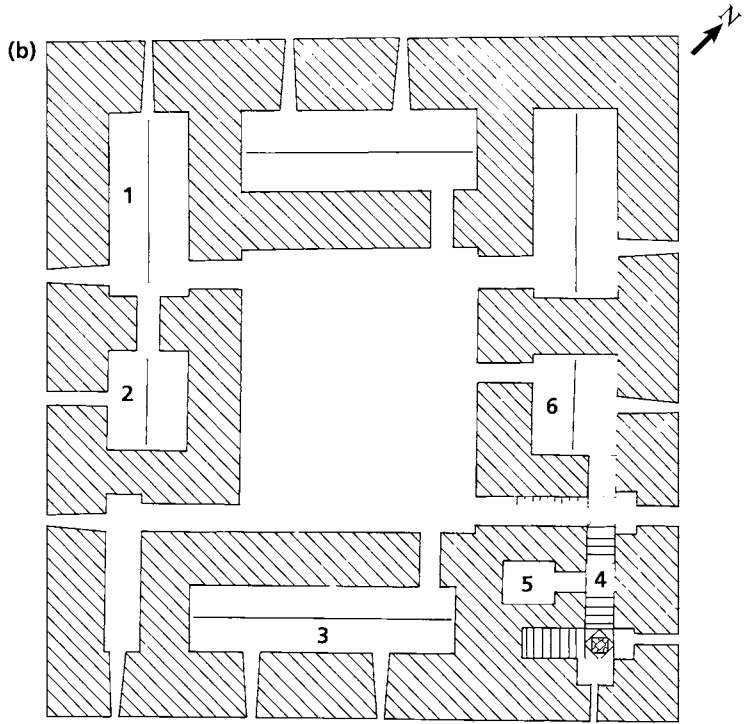
(a) after Pilyavsky (Atagaryev and Pilyavsky 1974, 114–15): lower storey (left), upper storey (right)

(d) The south façade of the Lesser Kyz Kala [4] (after Kononenko)

(b) after Pugachenkova (1958, 138): lower storey (left), upper storey (right)

(e) east–west section of the Lesser Kyz Kala [4] (after Kononenko)





5. Byash Ishyk or Besh Aghyz Köshk, Pugachenkova's Akyoli Köshk

Byash Ishyk Köshk lies north of the Karakum canal, in cultivated land, formerly part of a medieval settlement with a fortress, Changly Depe. At its maximum the settlement occupied c 150ha: occupation ceased in the thirteenth century, evidently as a result of the Mongol invasion (Koshelenko, Bader and Gaibov 1991, 185).

This two-storeyed *köshk* is rectangular with corners oriented to the points of the compass. Measurements vary from Pugachenkova's 20 x 22.5m, to Koshelenko's 20 x 22m, to the IMP's 21.2 x 22.2m. The *köshk* survives to a height of 5.55m, the lower 4m of which consist of a steeply battered wall, with cylindrical corrugations above. Sixteen corrugations survive on the well-preserved, longer south-east façade and traces of probably fourteen on the shorter north-east façade. The corrugations on the south-east façade are semicircular with a diameter of c 1.2m and are separated by narrow gaps, c 100mm wide. The north-west exterior wall has collapsed, exposing a row of five vaulted rooms, Rooms 7–11 (Figure 203). The rooms on the south-east façade, Rooms 1–5, were lit by tall narrow windows with corbelled arches, two of which at the southern end have been enlarged to form entrances, allowing the rooms to be used as animal shelters (Figure 202).

The plan of the lower storey is simple, consisting of two rows of five rectangular rooms, 1–5 and 7–11, entered from a central corridor, 6, probably with doorways at both ends: the crown of the arch of one doorway can be seen in the centre of the south-west side. The rooms measure c 6.12 x 2.6m, while the central corridor would have been c 3m wide. They are roofed with barrel vaults with a slightly pointed profile, and there is a pair of small arched niches, 240 x 290 x 200mm, in Room 1. The measurements of the rooms provided by Koshelenko, Bader and Gaibov differ slightly from those taken in 1998: Rooms 1–5, 5.6 x 2.6m, Rooms 7–11, 6.2 x 2.2m (1991, 181).

The upper storey is poorly preserved (Figure 206). According to surviving fragments the plan was different to that of the lower storey. There may have been a central courtyard. There was a domed room, Room 12, 3.12m, in the north east, with a squinch formed of concentric arches, and vaulted rooms in the corners. There are serious inconsistencies, already noted by Koshelenko, Bader and Gaibov, between Pugachenkova's plan and the surviving remains. They noted plentiful ceramics of the tenth to eleventh centuries, with occupation ending in the early thirteenth century (1991, 185).

The walls of the lower storey were built of *pakhsa* blocks, each 0.8m high (Koshelenko, Bader and Gaibov, 0.5 x 0.5m). The vaults and the upper walls and corrugations were built of mud bricks, 330² x 80mm (Koshelenko, Bader and Gaibov, 320² x 65–70mm).

Principal references

Pugachenkova 1958a, 154–7, with photograph, plans and architectural details; Koshelenko, Bader and Gaibov 1991, 180–3; Gubaev, Koshelenko and Tosi 1998, 243, site 539

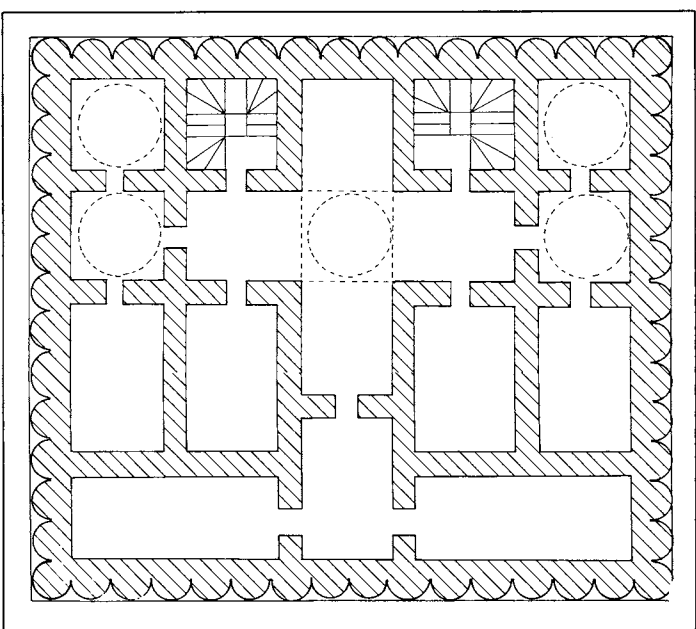
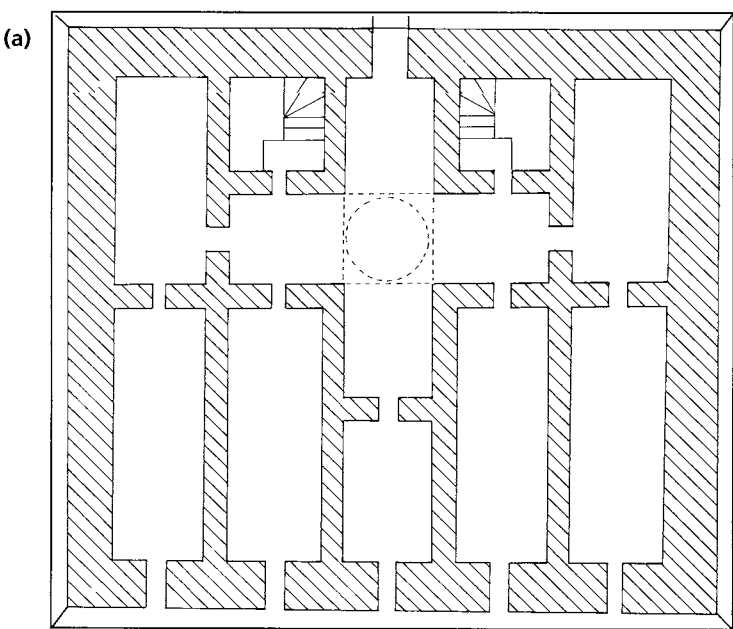
Illustrations

Figures 144, 202–6

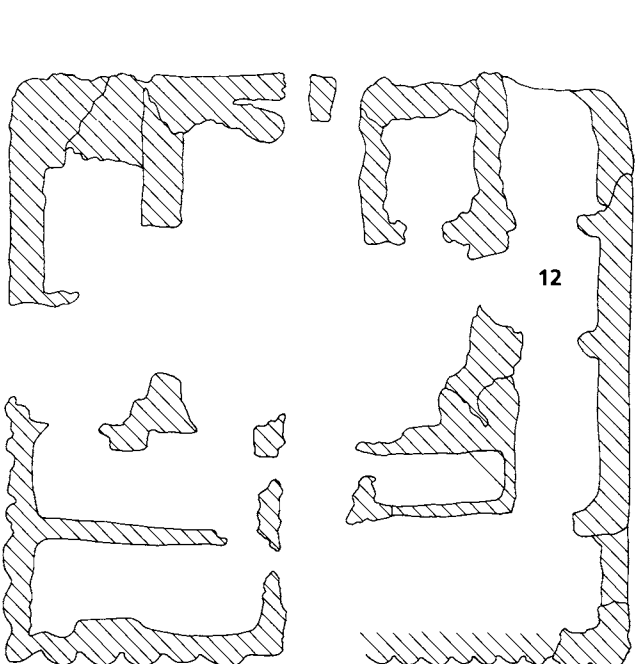
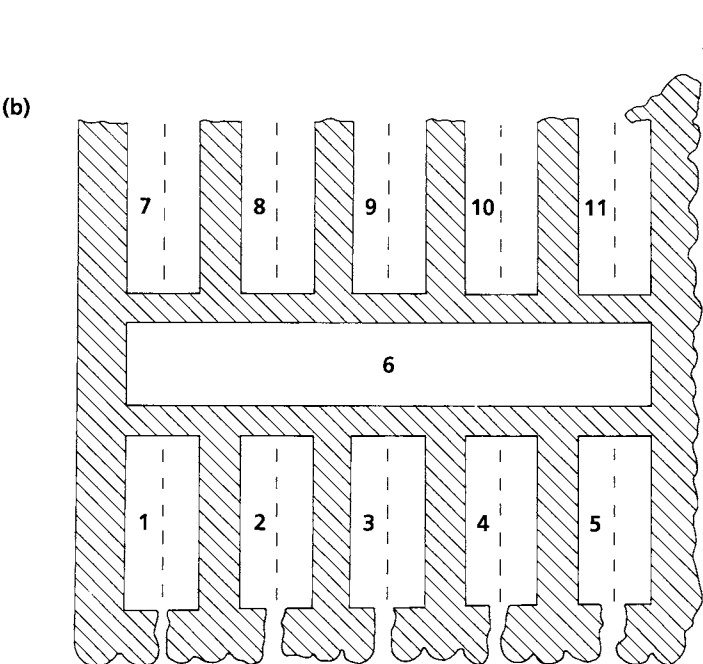
Figure 144 Plans of the upper and lower storeys of Byash Ishyk Köshk [5].

(a) after Pugachenkova (1958, 158): lower storey (left), upper storey (right)

(b) by Akhmedov (IMP): lower storey (left), upper storey (right). There are serious inconsistencies between the two plans



5m



6. Garam Köshk

Garam Köshk is located in cotton fields approximately 7km north west of Sultan Sanjar and east of Suli Köshk [7]. This rectangular building is approximately oriented to the cardinal points. Measurements vary between Pugachenkova's 19.1 x 15.2m and the IMP measurement of the surviving mound as 18.1 x 16.6m. The north-east and south-east façades are the best preserved; the state of preservation of the north-west façade is fair, but the south-west façade has been eroded by the prevailing wind and rain. The west corner had collapsed by 1992, and the north corner between 1992 and 1997, both revealing high vaulted rooms.

The *köshk* survives to a height of 6.25m, the lower 4m of which consist of a steeply sloping wall, with corrugations above. These are semicircular with a diameter of c 1.2m and are separated by narrow gaps, c 100mm wide. Prior to the collapse of the north corner there were fourteen on the longer north-east façade (not sixteen as in Pugachenkova's plan), and four each side of a central feature on the south-east façade: the north-west façade is poorly preserved. The entrance iwans, 1 and 2, are located in the centres of the shorter sides. The south-eastern iwan, 1, is slightly deeper, 2.08m instead of 2m. The iwan arch projects slightly, leaving the wall within recessed. There are doorways, unfortunately blocked, formed of four-centred arches at the rear of each iwan. Above the better-preserved south-east iwan is a poorly preserved decorative element of a panel framed by enlarged flattened half-corrugations, cf the south façade of the Lesser Kyz Kala [4].

Small domed rooms, 5 and 6, 3.52m, flank the south-east iwan and are entered via enlarged windows. The domes rest on squinches with a span of 1.4m, formed of six concentric arches set on a two-brick string course (Figure 209). They are similar in form to squinches at the Kyz Kalas [1] and [4] and the Kyz Bibi mausoleum, but, like the example at Byash Ishyk [5], they lack the rectangular frame.

Rooms 3 and 7, flanking the north-west iwan, 2, are covered with barrel vaults with pointed profiles: Room 7 is aligned north-east, while Room 3 (Figure 102) is aligned north-west and measures 4.56 x 3.12m. A doorway in its south-east wall leads into a narrow rectangular room, 1.2m wide, with an elaborate corbelled vault formed of seven courses of bricks, three of which consist of bricks set diagonally: the bricks of the flat roof are also set diagonally (Figure 58). There is a more primitive form of this type of vault in a window at the Greater Nagym Kala [2].

The upper storey is in a ruinous condition and little can be distinguished. The location of the stairs is uncertain, although two windows half way up the north-east side suggest it was probably on this side. Pugachenkova's plan of a central dome with axial iwans is conjectural.

Mud brick, 330² x 75mm.

Principal references

Pilyavsky 1947, 61, fig 14; Pugachenkova 1958a, 151–3; Atagaryev and Pilyavsky 1974, 120; Gubaev, Koshelenko and Tosi 1998, 203, site 13, field no. 53

Illustrations

Figures 58, 62, 99, 101, 102, 145, 207–10

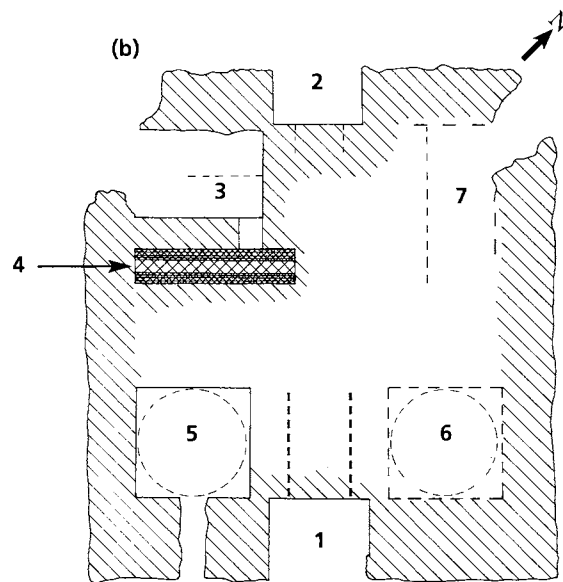
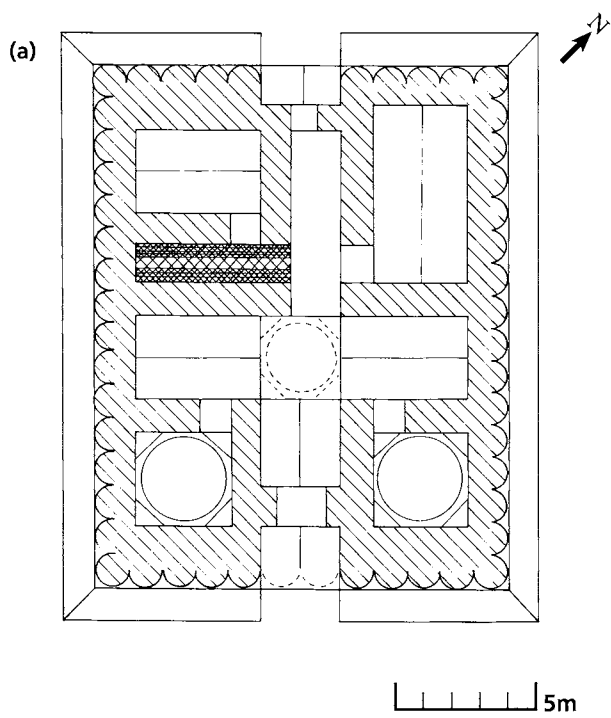


Figure 145 Plans of the lower storey of Garam Köshk [6].

(a) after Pugachenkova (1958, 154)

(b) by Akhmedov (IMP)

Group III: Suli Köshk, Byash Barmak Köshk, köshk near Penapir, köshk south of Gyaur Kala, Lesser Nagym Kala and Durnali Köshk/Ding

7. Suli (Pugachenkova Sulu) Köshk

Suli Köshk is approximately 2km north of the Karakum canal and 500m south of the Merv–Durnali road in an agricultural zone: a modern canal runs near by to the west. When surveyed in 1950 by YuTAKE the area was deserted, and many more features were visible, including the medieval settlement, which has since been ploughed out (Pugachenkova 1958a, 153). The *köshk* was partially constructed over an existing mound on the east.

The *köshk* is oriented to the cardinal points and is nearly square: measurements vary between Pugachenkova's 18 x 19.5m at upper-storey level to the IMP 17.4 x 18.5m. The south-west exterior wall has collapsed, and the north-west wall is eroded: the north-east and south-east walls are slightly better preserved, although deteriorating, and survive to a maximum height of 5.9m, the lower 3.2m consisting of a plain battered wall with remains of corrugations above. The corrugations are semicircular and measure 1.2m in width separated by 130mm gaps. In Pugachenkova's photograph of the south-eastern façade (Figure 103) four corrugations flank the entrance iwan, one side of which is still visible: most of these corrugations are still traceable, particularly since they rose from a course of fired bricks. Some corrugations also survive on the north-east façade. Narrow windows, 0.23 x 0.6m, were set into the lower walls and in the gaps between the corrugations.

The principal feature of Suli Köshk is the large entrance iwan, 1, in the centre of the south-east façade. This iwan, width 3.2m, depth 2m, occupied the full height of the lower and upper storey and is not bonded to the back wall. It was subsequently blocked with mud bricks of a smaller size. Additional or later access was provided by two small arched doorways in the lower storey on the north west and north east. Another room, 2, also two storeys high, is located in the centre of the north-west side. It is possible that the entrance iwan led directly into this domed chamber, but more probably there was a connecting chamber roofed with a lower vault to permit access to the side rooms of the upper storey, as at Yakkiper [17]. Suli's high central section is flanked by low rooms roofed with slightly pointed barrel vaults on two storeys (Figure 104). Room 3 in the south corner measures 3.16 x 7.07m. Collapse has revealed a stairwell, 4, in the west corner.

The upper storey would have been dominated by the central block of the iwan, 1, and domed room, 2. Pugachenkova considered the corner rooms were domed. Three of these rooms, 5–7, are visible, and a fourth may be inferred, but nothing survives of the roofing. Set into the surviving interior wall of Room 5 in the north are several deep slots, 0.4 x 0.2m, which may have functioned as air vents (Figures 217 and 218). There is a *suffa*, or bench, on the east side of Room 6, with a stairway, 0.85 x 2–3m, opposite, presumably leading to the roof.

The building techniques at Suli were unusual, with much use of *pakhsa*, a variety of brick sizes, fired bricks and timber reinforcing beams. Some of the walls of the lower storey, such as Room 4, were made of three or more courses of *pakhsa*, varying in height from 0.88 to 1m, separated by one or two horizontal courses of mud brick, 290–300² x 60–70mm. The dome of Room 2 is constructed of *pakhsa*. The rest of the building, including the corrugations and the interior walls and vaults on the upper storey, is made of mud bricks. The bricks of the walls measure 300² x 60mm, while those used for the vault of the iwan measure 400² x 90–100mm. The bricks blocking the iwan are smaller, 310² x 60mm. A course of fired brick, 290² x 60–70mm, marks the base of the corrugations, and fired bricks were also used for floors, as can be seen through enlarged windows or areas of collapse (Figure 215). A similar range of brick sizes occurs at Kharoba Koshuk [25].

Principal references

Pugachenkova 1958a, 153–6; Gubaev, Koshelenko and Tosi 1998, 242, site 526, field no. 72

Illustrations

Figures 103–5, 146, 211–18

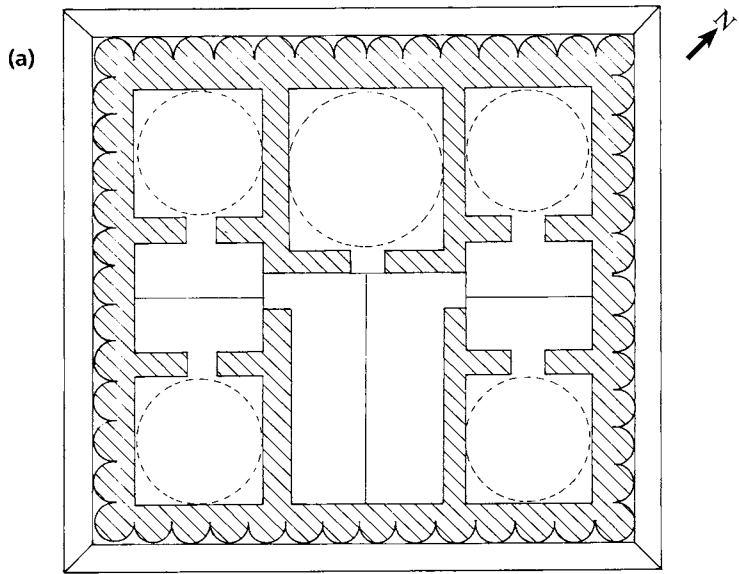
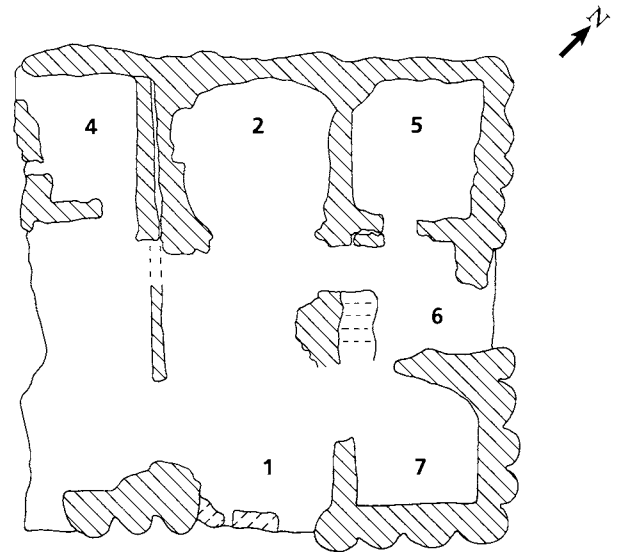
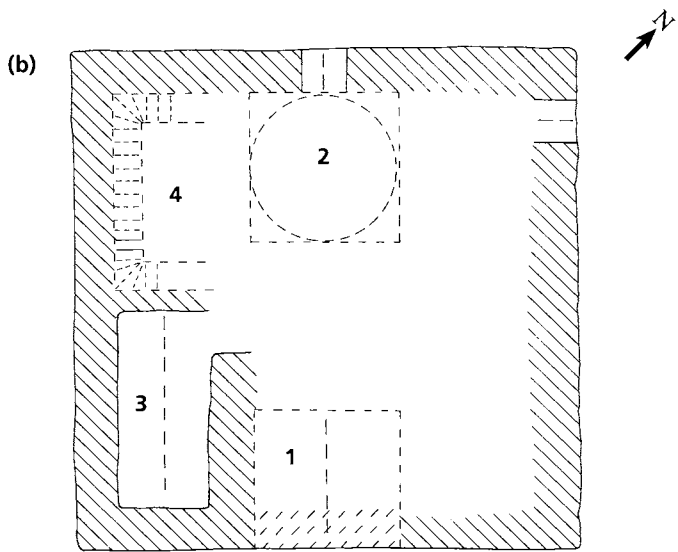


Figure 146 Plans of Suli Köshk [7].

(a) after Pugachenkova (1958, 156)

(b) lower (left) and upper (right) storeys, by Akhmedov (IMP)



5m

8. Byash Barmak Köshk

This *köshk* is sited in the north-west quarter of Sultan Kala near the junction of the walls of the northern suburb and the city. Most of the building, oriented to the cardinal points, has eroded into a low mound, measuring c 21.6 x 18.3m. The southern corner of this two-storey *köshk* is reasonably well preserved with walls surviving to a height of 9m, the lower 4m being a plain battered wall, eroded at the base, with the remains of semicircular corrugations above. These are 1.25m in diameter and are separated by narrow gaps, 140–150mm wide. Five corrugations are well preserved and give the building one of its names, the ‘five finger’ *köshk*: traces remain of a further two. The corrugations rise from a course of fired bricks. Three openings or windows, each 0.9m high, widen from 150mm at the top to 350mm at the bottom: their corbelled roofs slope down into the interior to light the rooms of the lower storey.

There is little evidence of the internal arrangements of this building. A rectangular, barrel-vaulted room, 8 x 3m, on the lower storey has been exposed at the north-west corner. The top of a connecting doorway is visible in its south wall. In the exposed section above the vault a line of fired bricks forms the pavement of the upper storey, as at Suli Köshk [7]. Traces of two rooms survive on the upper storey, 5.3 and 3.85m wide respectively.

Mud brick, 320² x 80mm, and fired bricks, 290² x 50mm, for the floor of the upper level, and at the base of the corrugations. Krikis reported fired bricks measuring 175² x 35mm, 180² x 40mm and 200² x 40mm being used in the five courses forming the foundations (1958a, 21). Horizontal beam-slots run diagonally into the brickwork. A recent supporting mud-brick wall has been built against the interior of the southern wall.

In 1957 Krikis excavated an 8²m sondage near the north-west corner of the *köshk*. The foundations were found near the surface and consisted of five rows of fired bricks of various sizes, projecting from the wall face c 900mm and constructed on compacted soil. Virgin soil was reached at a depth of 2.3m below the surface. No additional occupation layers were identified. Glazed and unglazed sherds were dated to the eleventh to twelfth centuries.

Zhukovsky suggested that Byash Barmak might have been built in the eighth century by Nasr b. Sayyar, the last Umayyad governor of Khurasan, d. 171/748 (Nasr b. Sayyar, EI²). This is unlikely not only because the building did not lie on the Majan canal, as his residence was reputed to have done, but also because the Group III *köshks* are almost certainly later in date.

Principal references

Zhukovsky 1894, 12; Pugachenkova 1958a, 150; Krikis 1958, 20–6; Gubaev, Koshelenko and Tosi 1998, 247, site 604, field no. 204

Illustrations

Figures 147, 219, 220

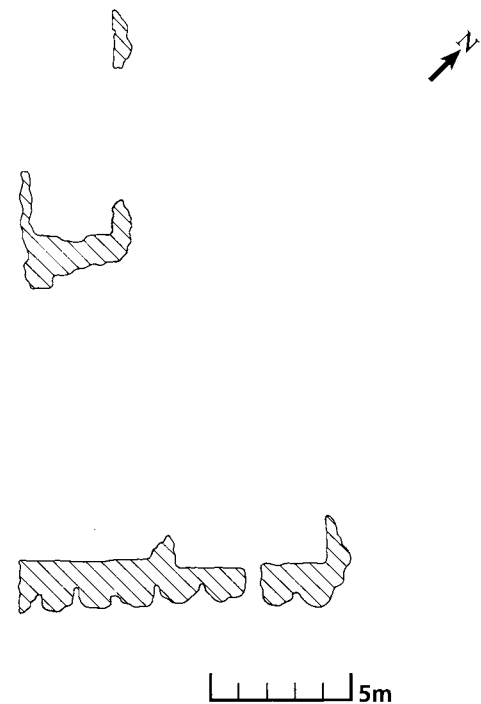


Figure 147 Plan of Byash Barmak Köshk [8], by Akhmedov (IMP).

9. Köshk near Penapir

This building was first recorded by Koshelenko *et al* during their surveys of the oasis in 1986 and 1994 and described as an anonymous *köshk*. The remains of Penapir Kala (site 44), Sasanian to Early Islamic, are located 300m to the north.

This poorly preserved *köshk* is located in agricultural land 300m south of Penapir Kala and the modern village of Wakil Bazar, and approximately 3km south of the Karakum canal. It was built on a small mound, 2–2.5m high, in the centre of which is the outline of a rectangular building, 16.4 x 22.1m, oriented to the cardinal points and consisting of two storeys. The battered, lower walls stand to a height of 1.9m up to the course of fired bricks that marked the base of the corrugations, only traces of which survive on the south façade. The maximum surviving height is 2.85m.

Although the interior is decayed the layout is clear. A central area, width 7m, running north–south, is flanked by two rectangular vaulted rooms, 1 and 2, 4.85 x 4.2m wide, and two domed rooms, 3 and 4. The dome of Room 4 was relatively complete in 1997 but had partially collapsed by 1998. It was coated with a clay plaster and decorated with a band of bricks set diagonally. The rooms are filled with debris: only the crown of the dome is visible.

Mud brick, 300–320² x 70mm. Fired bricks at the base of the corrugations. Tie-beams built into the thickness of the wall.

Principal references

Gubaev, Koshelenko and Tosi 1998, 203, site 11, field no. 45

Illustrations

Figures 148, 221, 222

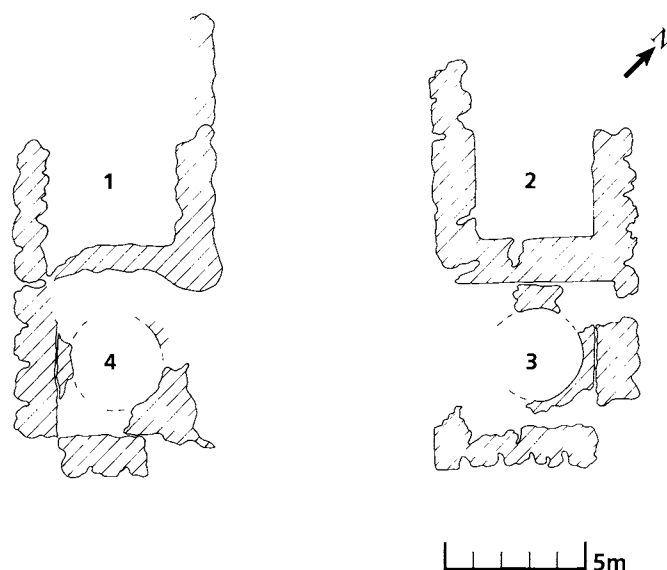


Figure 148 Plan of the lower storey of Penapir Köshk [9], by Akhmedov (IMP).

10. Köshk south of Gyaur Kala

This ruined building stands in cultivated land, approximately 1km south of Gyaur Kala and 400m east of Ice-house 1 [27]. Its condition has deteriorated since being recorded by Pugachenkova in 1950–2: it is dominated by a pylon and electricity lines. In Pugachenkova's photograph (Figure 224), both the south and east walls are partially preserved although the centre of the building had already been destroyed or collapsed, as had the north wall. In 1998 little survived of either the east or west walls, while the remains of the northern side of the structure have been removed to facilitate the erection of the pylon. Pugachenkova measured the *köshk* as 26 x 12.8m: in 1998 the remains were only 25.6 x 9.3m. The *köshk* may have been built on a low brick platform, which can be seen in Pilyavsky's photograph (Atagaryev and Pilyavsky 1974, 118): traces of such a platform remain on the south and west façades.

The *köshk* still stands to a height of c 6m, the lower 4m consisting of a battered wall, heavily eroded at the base, and built on fired-brick foundations. Above are the remains of semicircular corrugations, constructed on a course of fired bricks. Pugachenkova suggested that originally there were twenty corrugations on the main façade, of which traces of only seven survive to the west of the central cut. Pugachenkova's photograph showed ten corrugations on the east façade, of which traces of only one can still be identified.

Traces survive of an iwan entrance in the centre of the southern façade: bricks set vertically, edge to edge, and once forming the vault, can be seen at the top right of Figure 225. Of the interior plan Pugachenkova recorded two rectangular rooms at ground level, one at each end. Examination of the internal walls suggests that these 'rooms' were originally divided by cross-walls into two smaller rooms, measuring 4.2 x 3m.

Small mud bricks, 290² x 60mm. Fired brick for the foundations and at the base of the corrugations. Reinforcing beam-slots run horizontally and diagonally through the walls, four in the east wall of the western rooms, one in the south façade with the remains of the beam *in situ*, and traces of others in the east rooms.

Principal references

Pugachenkova 1958a, 150–1; Atagaryev and Pilyavsky 1974, 118; Gubaev, Koshelenko and Tosi 1998, 250, site 668, field no. 186

Illustrations

Figures 149, 223–5

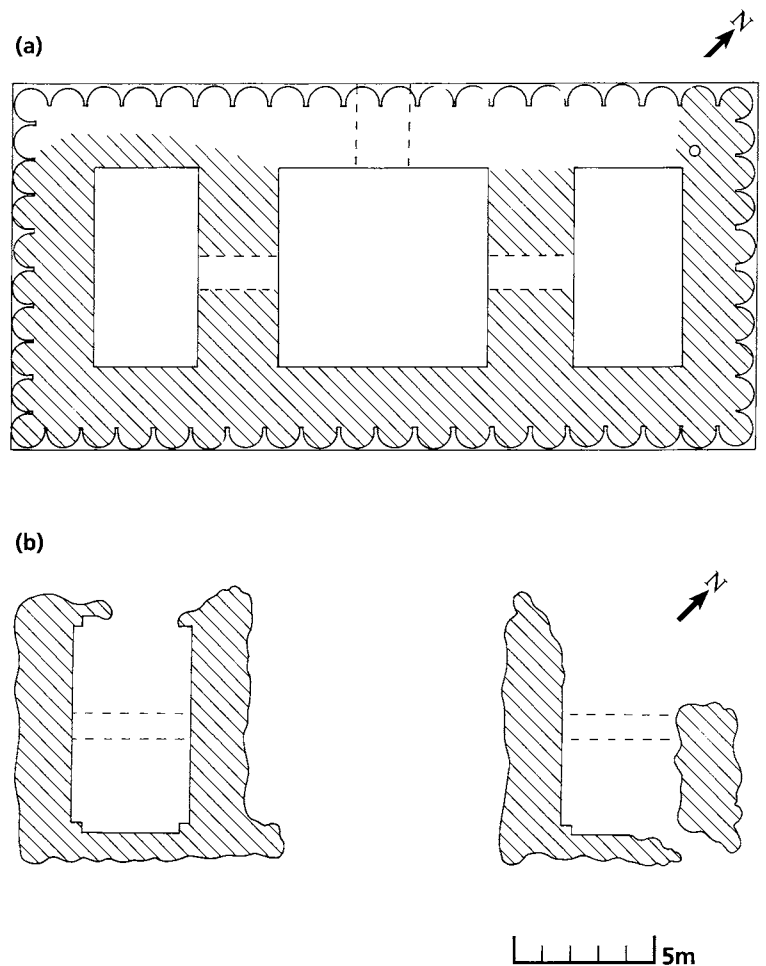


Figure 149 Plans of the *köshk* [10] south of Gyaur Kala.

(a) after Pugachenkova (1958, 150)

(b) by Akhmedov (IMP)

11. Lesser Nagym Kala

Lesser Nagym Kala is located 200m west of Greater Nagym Kala [2]: sherds can be found in the ploughed area between the two. The Kala is bordered on the north by a small irrigation canal. To the south, east and west of the building is an area of approximately 50²m set aside from agricultural use and marked by an earth bank.

The ruined condition of this two-storeyed structure makes it difficult to determine its original size. Pugachenkova recorded it as square, measuring 12²m, but she did not plan it: in 1998 it measured 10.9 x 6.5m. Comparing photographs, preservation appears to have been much the same in 1998 as in the 1950s. Only some of the north-east and south-east walls are standing, together with a few fragments of an internal dividing wall. Corrugations rise above the battered lower wall, c 2m high, to a height of 5.85m. Four corrugations survive on the north-east side and seven on the south-east side. They are semicircular in form, built of curved mud bricks, 1.2m in diameter, and separated by gaps of 120mm. A series of round beam-holes, some paired, were set diagonally into the walls at the base of the corrugations. Most are empty, although some still contain wood. The interior area was divided into two rectangular rooms, a larger room, 5 x 3.75m, and an antechamber, 2.2 x c 3.75m.

Mud bricks, 330² x 80mm. Wood also played a significant role. The diameter of the wooden beams varies from 150 to 300mm. They are set both singly and in pairs. A fired brick, 260² x 50mm, was found near by.

Principal references

Pugachenkova 1958a, 134–5; Gubaev, Koshelenko and Tosi 1998, 246, site 581, field no. 135

Illustrations

Figures 106, 150, 226–8

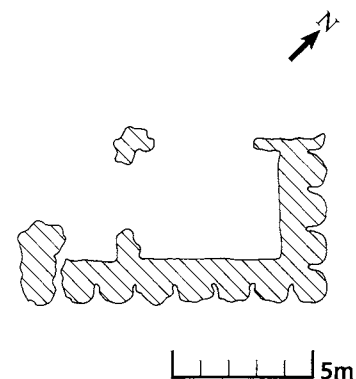


Figure 150 Plan of the Lesser Nagym Kala [11], by Akhmedov (IMP).

12. Durnali Köshk/Ding

The urban site of Durnali lies approximately 24km north of Sultan Kala. The *köshk/ding* is sited some 100m east of the Islamic fortress and approximately 300–500m south east of the Sasanian fortress. It can be seen from the Byash Ishyk Köshk [5], 3km south west of Durnali. It was first noted and planned by Pilyavsky (1947 and 1950) and published by Pugachenkova.

The Durnali Köshk/Ding is a small, two-storeyed structure. Pilyavsky and Pugachenkova recorded it as square measuring 8.8²m: in 1998 it measured c 7.6 x 6.7m at the height of the corrugations and c 8.9 x 8m at ground level. It survives to a height of over 8m. As usual the north side is eroded and the west side has collapsed. In 1998 the battered lower wall rose to a height of some 4m above present ground level, which was considerably lower: only the top of the pointed vault of the entrance on the south side is visible (more visible in Pilyavsky 1947, 63, and Pugachenkova 1958a, 159). The surviving corrugated façades consist of three semicircular corrugations on either side of a pair of pilasters with an enlarged central gap.

Of the lower storey all that is visible is a hemispherical dome, diameter c 5m, which is partially collapsed. The room is filled with debris, and it is not possible to determine its original shape, which was probably square rather than circular as suggested by Pilyavsky or circular with internal buttresses by Pugachenkova. Only parts of the brick floor and the south wall survive of the upper storey. The infill between the dome and the outer wall is *pakhsa*.

The skirt of the building is constructed of three levels of *pakhsa* blocks of decreasing size, from 1m at the bottom, to 700 and 600mm at the top, each separated by a single row of mud brick, 300² x 70mm, on a mud-brick base, cut by erosion along the present ground level. Mud bricks were used for the interior and upper parts of the walls.

A series of beam-slots can be seen at the base of the corrugations.

Principal references

Pilyavsky 1947, 63–4; 1950, 101; Pugachenkova 1958a, 157–60; Atagaryev and Pilyavsky 1974, 119; Bader, Gaibov and Koshelenko 1994, 127; Gubaev, Koshelenko and Tosi 1998, 243, site 534, field no. 319

Illustrations

Figures 107, 151, 229, 230

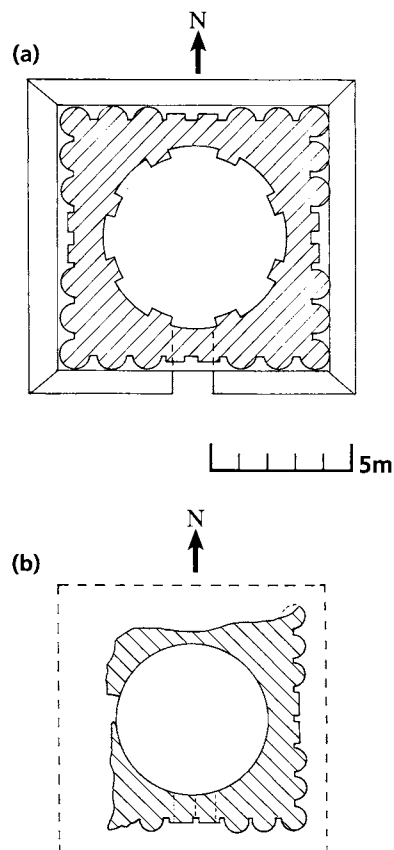


Figure 151 Plans of Durnali Köshk/Ding [12].

(a) after Pugachenkova (1958, 159)

(b) by Akhmedov (IMP)

Group IV: The transition from corrugated buildings to 'houses', Kelte Minar, Ovliali Köshk and House east of Gyaur Kala

The Kelte Minar and Ovliali *köshks*, [13] and [14], were discovered in 1955 by K A Adykov, while surveying the course of the medieval trade route between Merv and Sarakhs. They were recorded by Pugachenkova in 1956 (1963a, 227–34). The *köshk* or Kyz Kala, known as Kelte Minar, stands about 1.2 to 1.5km west of a deserted medieval town, approximately 15km west of Talkhatan. The town consists of a walled enclosure, c 0.5km square, with a mound in the north-west corner, on which a minaret once stood and which gave the site its name of Kelte Minar.

13. Kyz Kala near Kelte Minar

The corrugations of this two-storey building start from a low sloping skirt, only 1.7m above current ground level instead of from the tall skirts so typical of the *kōshks* of the preceding groups. The building is rectangular, measuring c 15.85 x 14.7m rather than Pugachenkova's 14²m, with corners oriented to the cardinal points. The walls stand to a height of over 5m: in Pugachenkova's photograph (Figure 82) the entrance on the north-east façade is more or less intact. As usual, the walls on the north-west and south-west sides have collapsed, leaving the interior exposed, while those on the north-east and south-east sides are reasonably well preserved.

The plan is essentially symmetrical, with an entrance on the north east, still arched in 1956 but since collapsed. The entrance is flanked by flattened pilasters, of which part of only one survives, and by four corrugations, with additional corner corrugations: these had collapsed even in 1956. The corrugations of the north-east wall are 1.1m wide, with 150mm gaps, the pilasters 1.5m wide and the central area 4.2m wide. The shorter south-east wall is slightly better preserved than the north-east, and essentially identical, except that the central space was probably occupied by a window, 1.2m wide, framed by pilasters, each 1.2m wide. Reinforcing slots for tie-beams can be seen at the base and near the top of the pilasters. The corrugations are slightly narrower than those on the north-east façade, c 1m wide and c 650mm deep.

Little can be seen of the rooms of the lower storey, except in the north-west corner where collapse has revealed a stairwell, 1, roofed with a quadripartite vault of bricks laid end to end with a narrow raised transverse barrel vault, 640mm wide and 40mm thick. The stair led from the lower to the upper storey via a doorway, 1.1m wide, into Room 2. The plan of the upper storey is symmetrical, with a central space, 9, opening on to four iwans, 2, 4, 6 and 8, with corner rooms measuring c 3.9 x 3.7m.

Mud bricks of different sizes, 310–330² x 70mm, laid in clay mortar. A few fired bricks, 300² x 60mm and 270² x 50mm in the stairwell area and used among the mud bricks. Slots, diameter 120–130mm, on either side of the break in the south-west wall, for timber tie-beams.

Reference

Pugachenkova 1963a, 231–4

Illustrations

Figures 82, 108, 152, 231–5

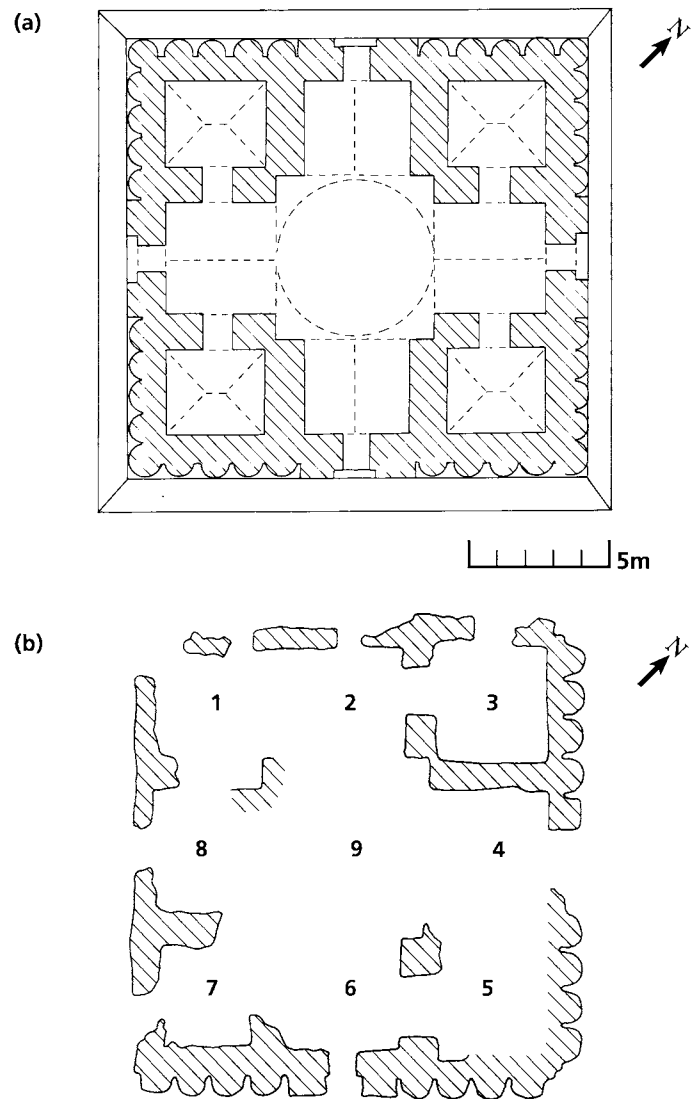


Figure 152 Plans of Kyz Kala [13] near Kelte Minar.

(a) after Pugachenkova (1963, 235)

(b) by Akhmedov (IMP)

14. Ovliali Köshk

Ovliali Köshk stands next to the roadside adjacent to a modern village, 3km east of the Murghab River and 20km south west of Bairam Ali. It originally stood at the eastern end of a settlement occupied, according to ceramic evidence, from the ninth to the early thirteenth centuries (Pugachenkova 1963a, 227). It was a 'long village' typical of the Merv region, built along a canal over a length of almost 3km.

Little survives of the *köshk* – only about half the south-east façade, although in 1956 some of the north-east side was also preserved. The ruins consist of a small mound, some 4m high, oriented to the cardinal points and measuring c 17.6 x 14.3m, although recorded as 18²m when surveyed in 1956. On top of the mound a few wall lines suggested the internal layout to Pugachenkova (1963a, 229).

The principal feature is the projecting entrance, width 4.6m, photographed by Pugachenkova (1963, 228). Two projecting pilasters formed the sides of a shallow iwan or entrance portal, no longer extant in 1998, flanked by a pair of recessed rectangular panels. In 1998 one panel and three corrugations on the east survive. The corrugations start near ground level and measure 1.1m wide, c 550mm deep, separated by gaps of 160mm. Only the crown of the arched doorway is visible within the iwan. There is a rectangular panel, width 800mm, depth 100mm, with a niche with a stepped head, width 450mm, depth 100mm, above the doorway. A similar panel above the entrance occurs in the House east of Gyaur Kala [15].

Nothing survives of the north-east façade, which Pugachenkova restored with rectangular panels rather than corrugations.

Mud bricks 320² x 60mm: Pugachenkova recorded the bricks of the walls as 330² x 60mm and those of the vaults as 300² x 60mm.

Reference

Pugachenkova 1963a, 227–31

Illustrations

Figures 153, 236

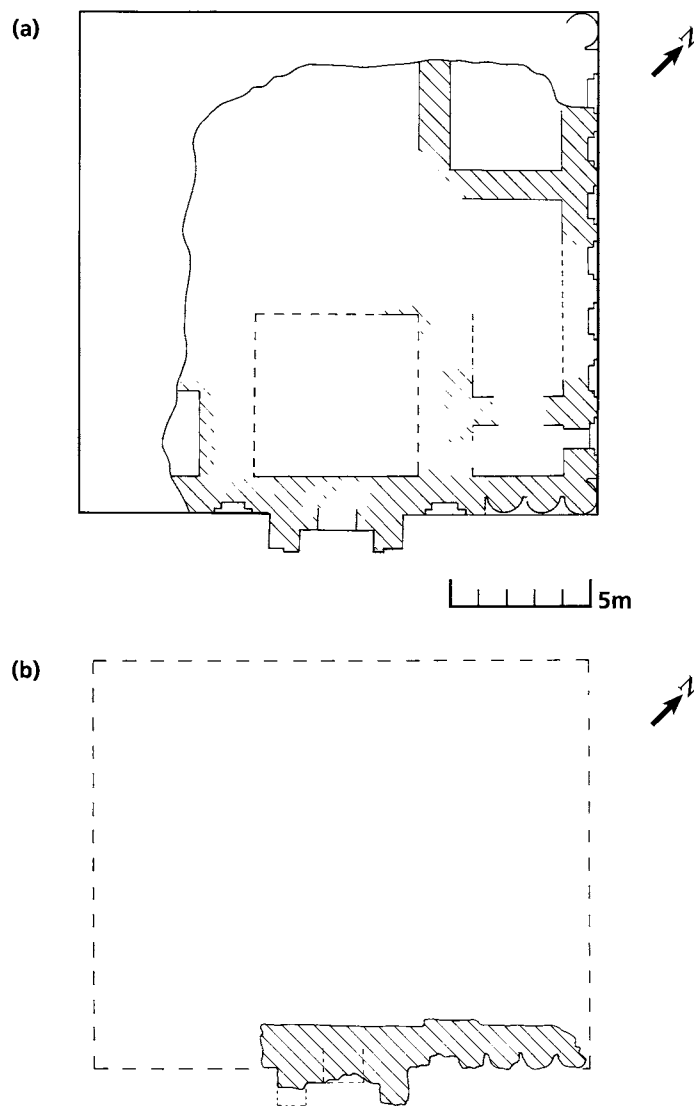


Figure 153 Plans of Ovliali Köshk [14].

(a) after Pugachenkova (1963, 229)

(b) by Akhmedov (IMP)

15. House east of Gyaur Kala

This is one of two buildings located about a kilometre from the east wall of Gyaur Kala, near a small canal, the modern version of the Asadi Khurasani canal, and beside the road from Bairam Ali north. The other is a corrugated *köshk* too ruined for inclusion in the Gazetteer. They are near the Sultan Sanjar Peasants' Association *kolkhoz*. The cold-store of this *kolkhoz* is reputed to have been built over a demolished Buddhist stupa (see article by Rtveladze referred to in Pugachenkova and Usmanova 1995, 51).

No photograph of this small, two-storeyed house is published by Pugachenkova, and it is difficult to establish how much of the poorly preserved building was extant when she planned it in the 1950s. She recorded it as 14 x 13m: in 1998 only some of the south-eastern corner survived, measuring 10.5 x 9.4m. It is oriented north–south. The walls are plain with a slight batter. The principal feature is the entrance in the south façade. This is set in a shallow iwan, width 2.68m, depth 1.25m, and consists of a doorway with a pointed arch, only the crown of which is visible. The rectangular panel, 1.6 x 0.6m, above contains a niche with a stepped head, comparable to that of Ovliali Köshk.

Pugachenkova reconstructed a cruciform plan with a central domed room opening into four iwans. Of her plan at upper-storey level all that survive are parts of a vaulted room, 1, width 2.75m, behind the entrance, and traces of a square room, 2, to the east, 3.25²m. Of the lower storey, only a corner of the room to the west of the entrance survives, together with a doorway leading into the interior.

Mud brick, 300² x 70mm, on foundations of broken, reused fired bricks of two colours and varying sizes, probably faced with complete bricks. Slots for tie-beams run horizontally and diagonally deep into the brickwork.

Reference

Pugachenkova 1958a, 207–8

Illustrations

Figures 110, 154, 237–9

Group V: Tall *köshks*, Porsoy and Yakkiper, and the poorly preserved Dig-house and Yelhazar Köshks

16. Porsoy Köshk, variously known as Porsi, Parsu, Porsu or House west of Sultan Kala

This tall, two-storeyed building stands in fields to the west of the rapidly expanding Merv *kolkhoz*, in land currently designated for housing. It lies approximately 3km north west of Sultan Kala. It was first surveyed and planned by Bachinsky and Pilyavsky of the 1937 expedition of the Institute of History of the Turkmenian SSR, when it was well preserved, and again by Pugachenkova (1958a). The following description is based on Pilyavsky's reports (1947 and 1950), augmented by recent observations.

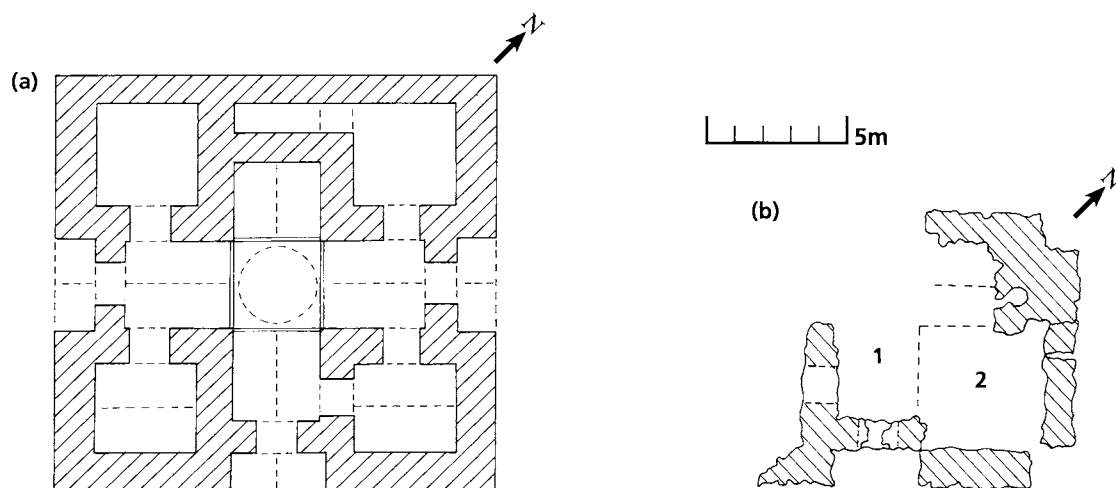


Figure 154 Plans of the House east of Gyaur Kala [15].

(a) after Pugachenkova (1958, 207)

(b) by Akhmedov (IMP)

The *köshk* is nearly square: according to Pilyavsky it measured 20.5 x 20m: in 1950 Pugachenkova measured it as 20.9 x 20.6m; in 1998, the less well-preserved remains were recorded as 21.2 x 20.2m. It is oriented to the cardinal points. Most of the exterior walls have collapsed since the photographs taken in 1937, 1950 and 1971 (Pilyavsky 1947, 56; 1950, 98; Pugachenkova 1958a, 210; Atagaryev and Pilyavsky 1974, 125–6): in 1998 only a section on the south east survived. One of the ‘pinnacles’ has also collapsed.

The lower external walls are thick, c 2m, with a distinct batter. The upper walls are vertical though much thinner, c 1m thick. Although the walls of the lower storey, height 3.65m, are plain, those of the tall upper storey, height c 7m, were broken up by flat pilasters. These had two vertical grooves or raised central ribs, which protruded from the wall surface by c 200mm and framed broad reveals, of which unfortunately the tops were not preserved even in 1937 (Figure 65). Pilyavsky restored them as arches in his reconstruction (1950, 98), while Pugachenkova drew them at two heights with stepped heads (1958a, 210). There are several narrow vertical windows in the external walls in both the lower and upper storeys.

The plan is symmetrical around a north-east–south-west axis, with entrances on the axis. The main entrance was probably that on the south west, 3, but this was not preserved even in 1937. This iwan was deeper than the north-east iwan and probably led directly into Room 2. It is flanked and supported by two long, high, corridor-like rooms, Rooms 7 and 13, 1.27 and 1.3m wide respectively, from which narrow doorways, 0.8m wide, led into the vaulted corner rooms, Room 6, 2.87m wide, and Room 12. The north-east entrance, recorded in Pilyavsky and Pugachenkova’s photographs (Figure 65), had partially fallen by 1971 and had collapsed by 1992. The photographs show an iwan framing a wide doorway with a segmental arch, which led via an antechamber, Room 1, 3.4 x 3.5m, into Room 2. Above the doorway is a matching segmental arched opening, described as a *belvedere*.

Room 2, 4.1²m, is cruciform in plan with four arches and was probably two storeys high. The best-preserved arch is on the north west and measures 3 x 1.5m; the back wall is decorated with a rectangular panel, 1.08m wide and 100mm deep, containing a shallow niche with a stepped head, 0.9m wide and 150mm deep. The matching niche of the facing arch is only partially preserved. These panels were set above doorways, concealed by fallen debris, which would have provided access to Rooms 5 and 11. The north-east arch is shallower, only 0.8m deep, to allow for the antechamber, Room 1. To the north a

narrow, vaulted corridor, Room 8, only 1m wide, was presumably entered from Room 9, as in Pilyavsky’s plan – the doorway is no longer extant. The small vaulted Rooms 9 and 10, 2.7m wide, were probably reached from the outside (an arched opening in Pilyavsky’s photograph (Atagaryev and Pilyavsky 1974, 126) may have been the entrance).

A stairway, 4, in the east corner led to the upper storey. It is 1.65m wide, ascended around a central pylon, 2.2 x 1.7m, and was lit by narrow windows. The upper storey was more spacious than the lower because the walls were thinner. The principal feature is the central rectangular octagon, rising from the ground floor of the building: Pilyavsky noted traces of pendentives suggesting that this space was roofed, and the room lit through a dome or its drum (1947, 56). There must have been a gallery running round Room 2, linking the rooms of the upper storey.

The surviving walls of the iwans at upper-storey level are decorated with deep niches flanked by raised rectangular pilasters, which presumably formed the base of transverse vaults (Figure 245), as in the palace in Shahryar Ark. Doorways lead into the corner rooms and the high vaulted corridors. The doorway above Room 8 measures 4m in height and 1.15m in width. Its arch is set below a rectangular head.

Pilyavsky considered that there was an additional range of cellar rooms below the lower storey, which he established by striking the floor of a corridor, probably Room 8, and hearing a hollow sound (1947, 58).

Mud bricks, 295² x 70mm, with fired bricks, 180² x 40mm, for the transition between the floors and probably for the foundations. A short section of vertical brick-lay can be seen in the exposed wall above Room 8. The vaults are high and pointed, and were made of bricks of the same size as the walls, set vertically. There are numerous slots for tie-beams, running horizontally into the walls.

Principal references

Pilyavsky 1947, 54–8, and 1950, 96, 98; Pugachenkova 1958a, 208–10; Atagaryev and Pilyavsky 1974, 124–6; Gubaev, Koshelenko and Tosi 1998, 245, site 561, field no. 25

Illustrations

Figures 65, 88, 111, 155, 240–7

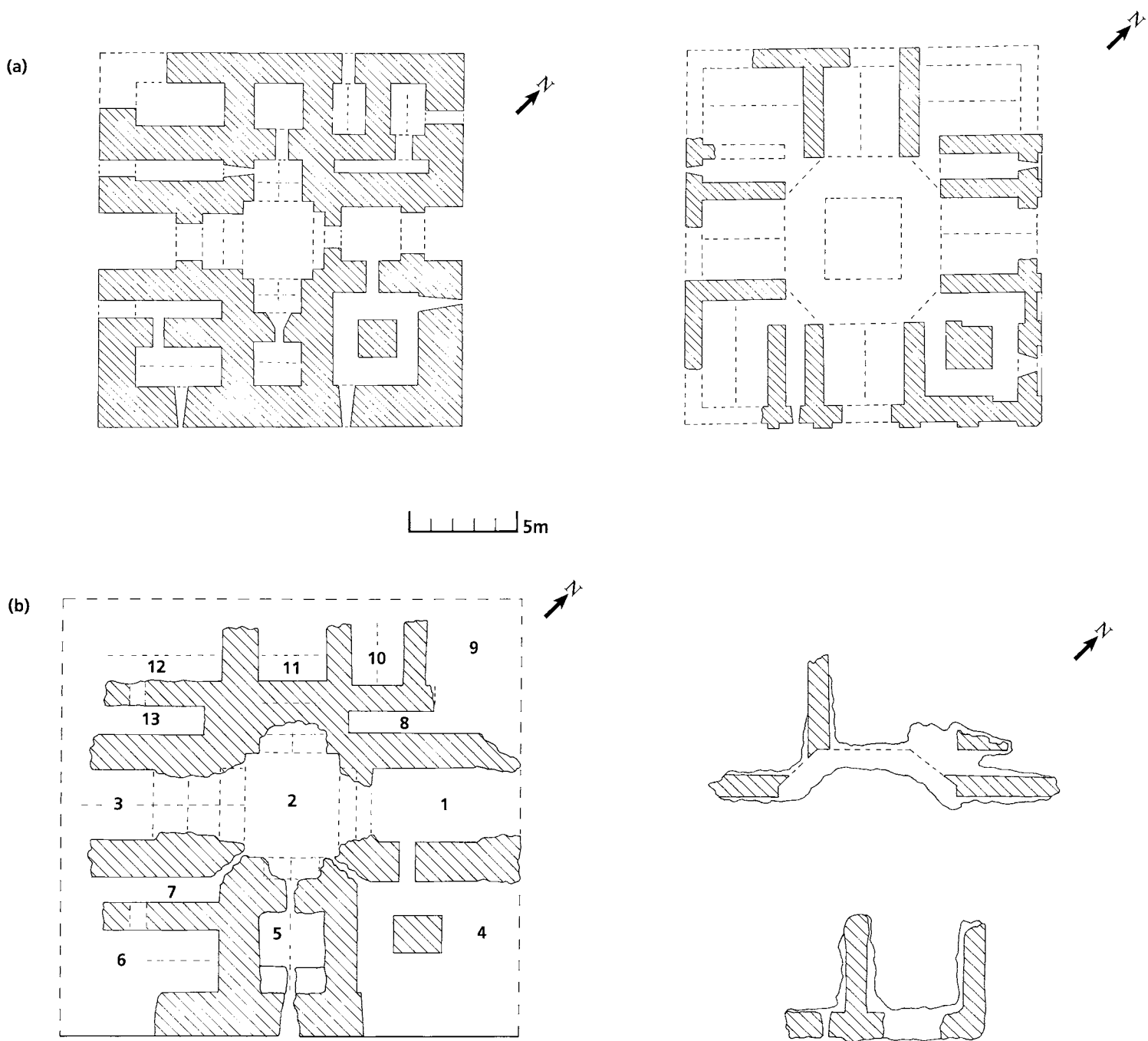


Figure 155 Plans of the upper and lower storeys of Porsoy Köshk [16].

(a) after Pilyavsky (1947, 55): lower storey (top left), upper storey (top right)

(b) by Akhmedov (IMP): lower storey (below left), upper storey (below right)

17. Yakkiper, Yakke-per, Yak-kiper, Ekeper

This unusually tall, three-storey *köshk* is located 10km north of Sultan Kala near Khulli-depe, close to a small canal, or *aryk*, in an area under modern cultivation. The external walls are plain with a slight batter: a course of fired bricks marks the transition from the second to the third storey. In the 1950s Pugachenkova recorded the *köshk* as square, 16.2²m: by the 1980s the north-west wall had collapsed. In 1998 the south-east façade measured 16.5m, while the incomplete north-east side measured c 13.8m: even allowing for the collapsed north-west wall, maximum width 0.9m, this side would have been unlikely to have exceeded 15m in length. The *köshk* is, therefore, more rectangular than square. It is preserved to a height of c 10m. The corners of the building are oriented to the cardinal points.

The principal entrance is a tall shallow iwan, 3.3 x 1.9m, partially extant, in the centre of the south-east façade. A stub of wall from a later blocking still survives at the front. Additional doorways lead into Rooms 6 and 8: these are identical, having broad, three-centred arches, width 1.55m.

The iwan leads into an antechamber, 1, and to the central room, 2, as well as to the low corner rooms, 7 and 9. Room 2 is cruciform with four arches framing doorways leading to Rooms 6, 8 and 3. The rear of the *köshk* is occupied by three tall rooms, Room 3 in the centre and Rooms 4, width 3.72m, and 5, width 3.74m, on either side. All the principal rooms of this *köshk* are two storeys high and form a T-shape, the iwan, Room 2 in the centre and the three rooms along the rear, 3–5. The remaining rooms, 6 and 7 on the south west and 8 and 9 on the north east, are low, two-storey rooms, presumably providing stability to the tall structure. Room 9, the stairway, width 1.25m, leads to the second storey. The first section from the antechamber is 1.7m in length, before turning at right angles to the east. It is covered with a series of low, rounded, stepped vaults (Figure 60).

Rooms 3–5 were roofed with quadripartite lanceolate vaults reinforced with raised ribs or armatures, rising from a three-brick string course, at a height of 3.4m above current ground level (Figure 112). The single-storey Room 6, 3.1 x 2.95m, is also roofed with a quadripartite lanceolate vault with armatures (Figure 51), while Rooms 7 and 8 are roofed with squinch or *balkhi* vaults. Relatively little remains of the second storey. A small low room with a *balkhi* vault survives above Room 8: a doorway gave access to the stairway. Of the third storey all that survives is the single section of exterior wall in the east corner, rising above the course of fired bricks. Its height suggests

that there was an additional level of rooms rather than just a parapet. There are some narrow vertical windows on the north-east and south-east façades.

Small mud bricks, 290² x 60mm, with a string course of three rows of fired bricks, 250² x 50mm, to mark the transition between the second and third storeys. The later blocking of the entrance iwan was built of smaller mud bricks, 260² x 60mm. The arches in the central Room 2 contained a course of bricks laid vertically. Pugachenkova (1958a, 212) noted the presence of numerous fired bricks near the north and east walls, which she suggested were the remains of a decorative cornice around the top of the walls or parapet. There were putlogs for scaffolding and numerous slots for tie-beams.

Principal references

Pugachenkova 1958a, 209–12; Gubaev, Koshelenko and Tosi 1998, 204, site 19, field no. 63

Illustrations

Figures 42, 51, 60, 64, 112, 156, 248–55

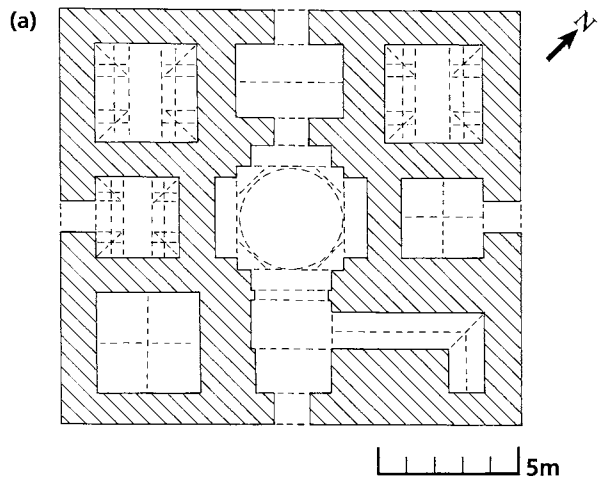
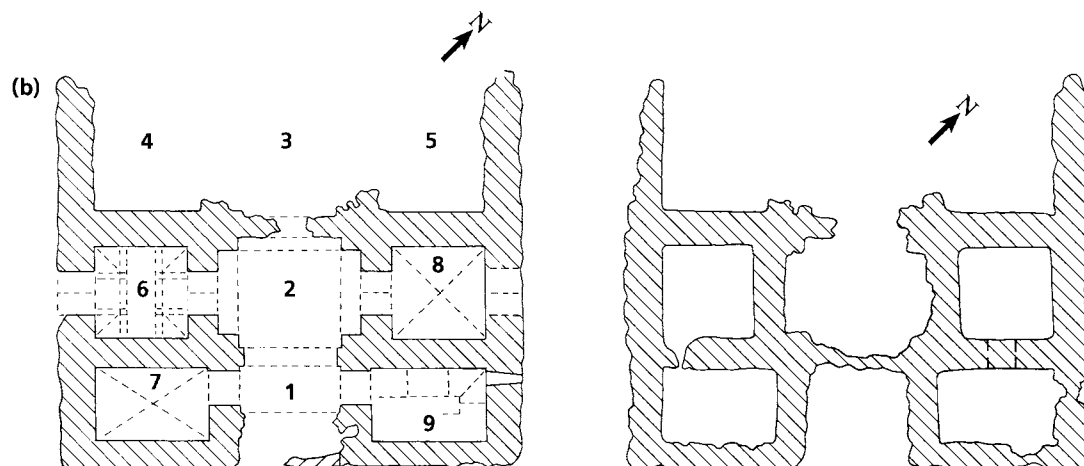


Figure 156 Plans of Yakkiper Köshk [17].

(a) after Pugachenkova (1958, 212)

(b) by Akhmedov (IMP): lower storey (left), upper storey (right)



probably flanked by corridors, only one of which, width 1.3m, survives. There is a similar large central room, 3, width 4.1m, to the west, flanked by stairways, 1.55 and 1.32m respectively. This was probably a four-iwan courtyard building with corner rooms. As usual Pugachenkova restores a central domed room instead of a courtyard.

Mud bricks, 300² x 70mm. Slots for putlogs and tie-beams.

Reference

Pugachenkova 1958a, 206–7

Illustrations

Figures 157, 256

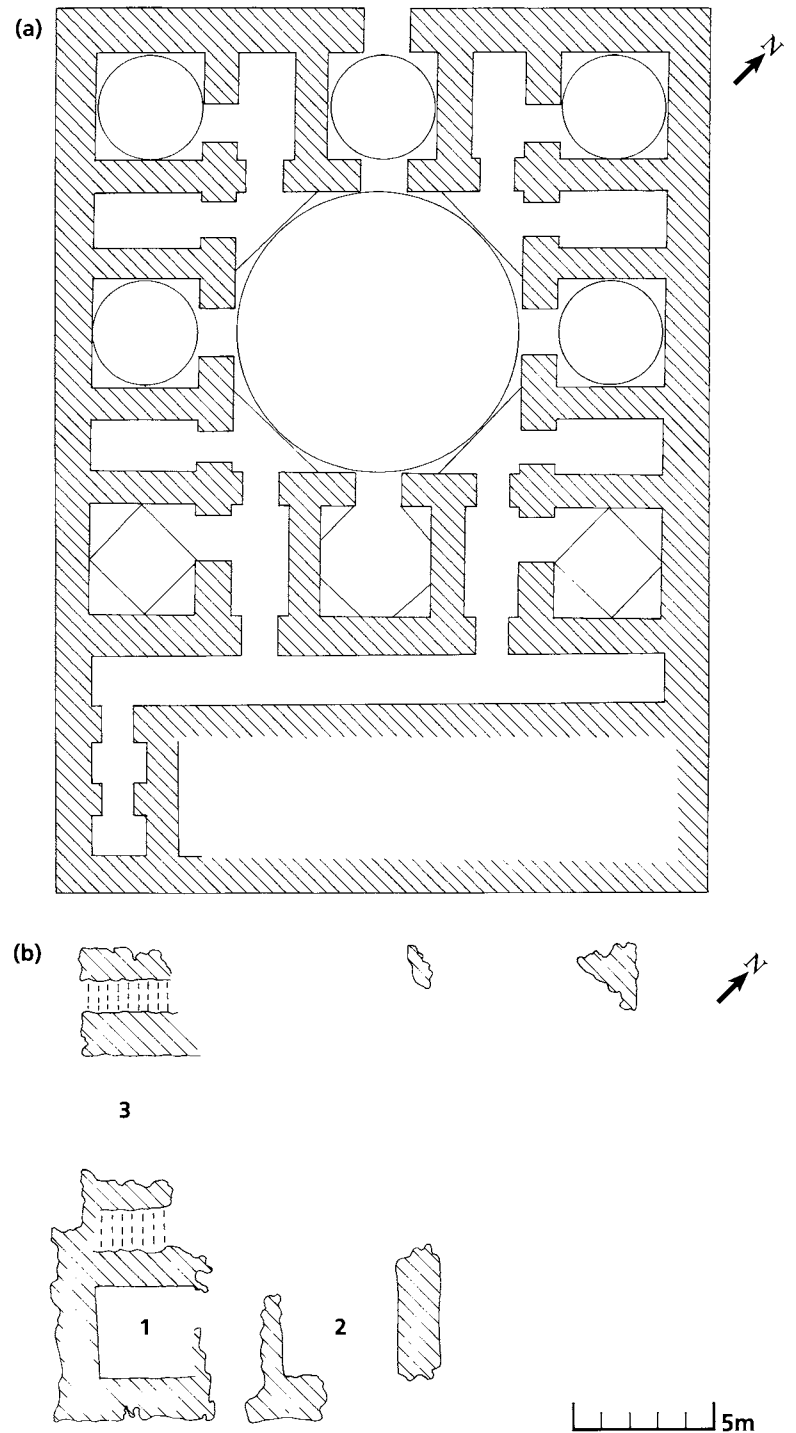


Figure 157 Plans of the Dig-house Köshk [18].

(a) after Pugachenkova (1958, 206)

(b) by Akhmedov (IMP)

19. Yelhazar Köshk

This poorly preserved *köshk* stands on a low mound in derelict land approximately 500m north of the Kalinin *kolkhoz*, on a line with the Electricity Station *dings* in Bairam Ali, about 3km distant, and 5km west of Sultan Sanjar. The mound has been cut on the east and north sides by a modern canal and lies under power lines.

This ruined rectangular building, 21.1 x 19.8m, is aligned roughly north–south with the main entrance on the south. Only a few of the exterior walls still stand, preserved to a maximum height of 6.1m. The existing rooms belong in the main to the upper storey, with little of the lower storey visible, just the lower walls on the west side and traces of a vault in a room in the south-west corner. The walls are between 2 and 1.7m thick: such thick walls suggest that there may have been a third storey.

At least six rooms of differing sizes surround a central space. The best-preserved is in the north-west corner and measures 2.8 x 5.12m. It is roofed with a tall barrel vault with semi-vaults at either end, springing from a three-brick string course. Where evidence has survived, other rooms seem to have been similarly covered. The remains of several doorways are visible, though in most cases the arch has collapsed. The best-preserved example is a tall narrow doorway to the room in the north-east corner. This is over 2m high but only 0.65m wide and is covered with a segmental arch made of three bricks (one horizontal in the centre and two at 45 degrees either side).

Mud bricks, 300² x 70mm, with occasional courses of fired bricks, 250² x 50mm. There was extensive use of wood, with tie-beams varying in diameter from 80 to 200mm, set horizontally into the walls.

Illustrations

Figures 158, 257, 258

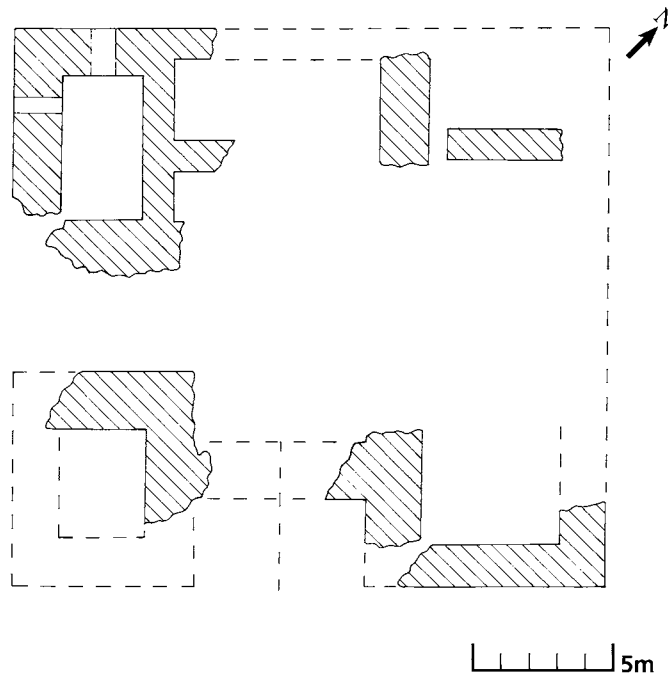


Figure 158 Plan of Yelhazar Köshk [19], by Akhmedov (IMP).

II: SELJUK PALACES, AUDIENCE HALLS OR PAVILIONS

20. Palace in Shahryar Ark

The palace, the most important building in the citadel, was built on a mound in the centre. It was entered from the east, presumably through an outer courtyard connecting the palace to the street, which ran due north from the south gate into the citadel. Low areas to north and south of the palace were probably gardens, while mounded areas to the west represent additional buildings. Sixty metres to the north west is the *kepter khana* [22].

Even in 1890, the palace was poorly preserved, the south-west corner had already collapsed, and Zhukovsky failed to mention the building. Since that time there has been continuing deterioration. Pugachenkova, the first to record the remains of this rectangular building, measured it as c 45 x 39m; in 1998 the ruins were 43.2 x 38.8m. The room numbering follows that in her 1958 publication.

The entrance iwan projects 2.16m from the external wall: only part of one wall still stood in 1998, although the lines of the other walls can be traced on the ground. This led, probably via an antechamber, 21, and iwan, into a large, nearly square courtyard, 1, 16.5 x 16.7m, the principal feature of the building. This originally had four iwans, 2, deeper on east and west than on the north and south: walls survive above ground only on the north and west. The north iwan is 5.33m wide and probably about 4m deep. The west iwan survives to a depth of 16.7m.

The decoration of the courtyard is best preserved in the north-east and north-west corners and consists of grooved pilasters (Figure 261), traces of which also survive along the north wall. No decoration survives on the lower walls of the iwans, although the upper sections consist of deep niches framed by raised panels, rectangular in form and two bricks deep, set on a course of fired bricks. The tops of the panels are not preserved: the upper sections of those on the north wall of the west iwan curved inwards to form the springing of a cross vault, like the pilasters in the adjacent *kepter khana*, and in Porsoy Köshk. A segmental archway with a span of 2.3m connected the north iwan with rooms to the north and was built out of two courses of brick, rising from a course of fired bricks.

The north iwan is flanked by low rooms, 10 and 13, built on two storeys and occupying the same height as the iwan. Room 13 measures 4.7 x 3.35m, while Room 10 is smaller, only 2.92 x 3.52m, with a deep arched niche, depth 1.8m on the west. Both are roofed with *balkhi*

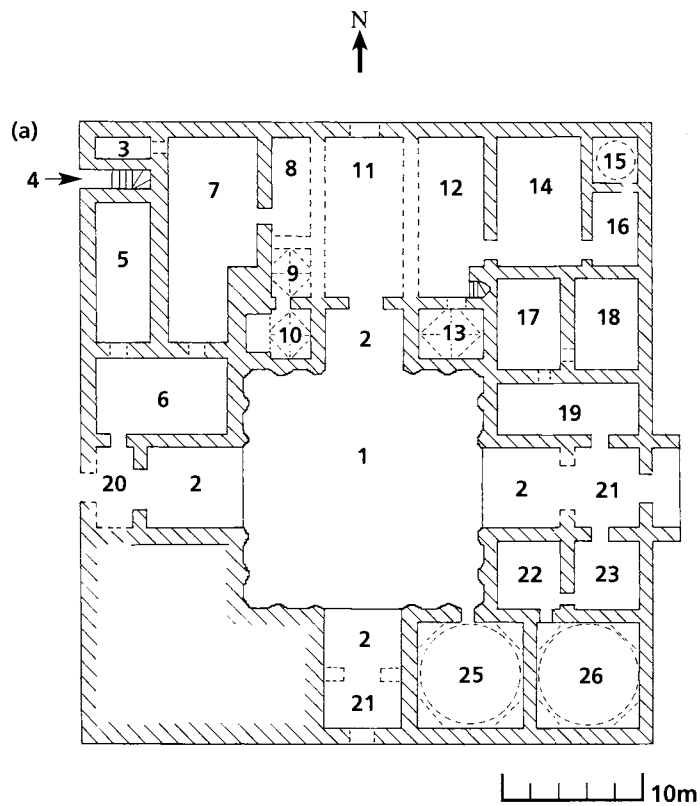
vaults, rising from a three-brick string course. Behind Room 10 is another low room, 9, with two segmental doorways: it formed part of a staircase, the crowns of the stepped tunnel vaults of which have been revealed by a collapse in the west. Two more staircases are located in Rooms 12 on the east and 4 in the north west.

The iwans, 2, and many of the rooms of the palace occupied the full height of the surviving walls. Indeed it is possible that most of the building was single storey with stairways leading to the roof rather than to another storey of rooms, but this is conjectural. Many rooms were roofed with barrel vaults, although some were domed. In 1998 traces survived of only one squinch (Figure 48) in Room 26, 7.52m, although traces had survived of another in Room 25 in 1992. The squinch in Room 26 has a projecting arch with a groin rising from the corner to the crown, a typically Seljuk form. According to Pugachenkova, a small domed room in the north-east corner, measuring only 32m and no longer surviving, was supported by corbelled squinches in the form of rectangular niches with stepped heads.

Many of the rooms were either built with an unusual brick-lay or this chequerboard of bricks laid vertically was designed as decoration. In Room 17, for instance, the upper section of the back wall of this barrel-vaulted room is decorated with at least three bands of chequerboard brickwork, slightly offset. The chequerboard effect is achieved by setting bricks vertically alternately four to five ends and faces outwards. The bands start eight courses above the offset and are separated by two courses of bricks laid horizontally. Variations on this form of decorative brick-lay can be seen in Rooms 9, 11, 14, 22 and 23 (from current ground level). Vertical brick-lay is also employed on the west iwan between the raised panels.

Mud brick, 280² x 70mm, Pugachenkova 260–270² x 60mm, bonded in a clay mortar. Most of the walls are laid in common bond, although there is extensive use of vertical brick-lay. Some wall faces are coated in clay plaster. Occasional use of fired brick, 230–250² x 40–50mm. Pugachenkova found cut bricks on the east and north sides (1958a, 204–5). Numerous slots for tie-beams run horizontally into the walls.

The relatively small size of the palace raises questions as to whether it served as the residence of the Seljuk sultan. Its location and plan suggest that it more probably served as the audience hall.



Principal references

Pugachenkova 1958a, 203–6; Hillenbrand 1994, 411; Gubaev, Koshelenko and Tosi 1998, 251, site 680, field no. 338

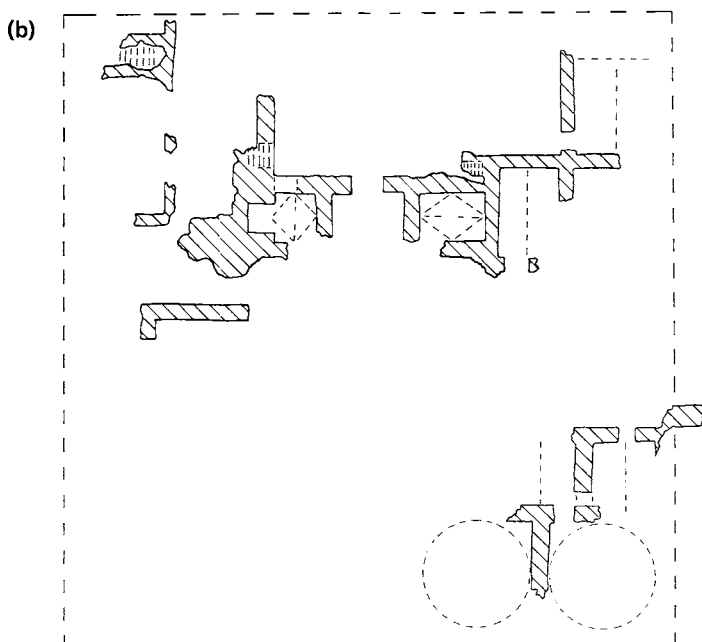
Illustrations

Figures 37, 48, 50, 68, 71, 115–17, 159, 259–66

Figure 159 Plans of the palace in Shahryar Ark [20].

(a) after Pugachenkova (1958, 204)

(b) by Akhmedov (IMP)



21. The pavilion at Kurtly, medieval Bashan

The Institute of History of the Turkmenian SSR's 1937 expedition travelled north from Sultan Kala, recording tells and ruins, including buildings at 'Kurkli-tepe' (*sic*), 25–30km from Sultan Kala. Pilyavsky (1947, 64–70) noted a fortress, a mosque and minaret, and the remains of numerous dwelling houses, including the pavilion. The 1950s' YuTAKE expedition established that the urban ruins of Kurtly-tepe were medieval Bashan. Bashan is mentioned by al-Iṣṭakhrī and al-Muqaddasi in the tenth century, and by al-Idrisi in the first half of the twelfth century. By the early thirteenth century, Yaqut refers to it as a village. The town's loss of importance may have been linked with the Ghuzz revolt (1140s–1150s), and its abandonment with the Mongol disruption of life in the oasis (Pugachenkova 1958a, 241). Archaeological material found by Pugachenkova provided dates from the tenth to the thirteenth centuries. Material of the eleventh and first half of the twelfth centuries was particularly plentiful, diminishing during the second half of the twelfth and thirteenth centuries, after which the city was abandoned.

The pavilion, called a dwelling by Pilyavsky and a caravanserai by Pugachenkova, is unique. It stands on a low mound to the west of the main city-site and was built at two or even three different periods. First was a pavilion or audience hall, an open airy structure, presumably set in gardens. Later, there was a courtyard extension to the east, built on a different alignment to the main structure. There may have been further additions to the south, but a deep modern bulldozer cut separates the remaining structures. There are major discrepancies between Pugachenkova's plan and that made by the IMP in 1998, which affect the history and interpretation of the building.

The *main building*, 16.2 x 17.4m, oriented to the cardinal points, is symmetrical in plan. Four iwans, 2, 4, 6 and 8, lead into a central room, 5, with rectangular rooms in the corners. The portals of the iwans were probably once decorated with cut brickwork: a few bricks survive above the fired-brick string course of the southern arch on iwan 4, and Pilyavsky's photograph (1947, 70, fig 27) illustrates the remains of bricks on the northern arch below the string course at that time. Iwan 2 faces the courtyard and is 5.8m long by 3.8m wide. It was roofed with a vault and semi-dome, resting on distinctive lobed squinches, part of one of which survives (Figure 47). Too little survives to determine whether the other iwans were roofed in the same way. Room 5, in the centre, was domed: traces of squinches above the string course can just be determined. The corner rooms, c 4.3 x 3.5m, were vaulted.

The foundations are built of fired bricks, 290² x 60mm, and the walls of mud brick of the same size, with occasional courses of fired brick. There are string courses of three rows of fired bricks, 250² x 50mm, around each room and the exterior. A few decorative cut bricks survive on the south-west iwan, 4.

The *courtyard extension*. Pugachenkova planned the courtyard as a rectangular extension from the main building, with rooms on all three sides and an entrance portal to the north east (1958a, 241). This is incorrect, for the courtyard is not aligned with the main building but is built at an angle. There are five rooms along the north-east wall, built on an artificial platform containing a lower storey, suggested by the crown of a vault in the room adjacent to the entrance iwan. No windows could be observed in the platform. The courtyard extension was entered through a vaulted gateway in the north-east corner.

Mud brick, 290² x 60mm, with some fired brick of the same size. The standard of workmanship is crude.

A small section of wall in the south west is aligned to the main building, but is separate. It contained a band of vertical brick-lay.

Twelve metres to the south, separated from the main block by a deep gully (a recent bulldozer cut), is an annexe. It is a simple rectangular structure, 11.3 x 5.9m, roofed with a barrel vault and built of larger mud bricks, 330² x 70mm.

The *main building* with its open airy plan probably served as a summer pavilion and can be dated to the Seljuk period because of the brick size and the cut-brick decoration among other features. Despite employing the same size of brick, the *courtyard extension* was clearly built subsequently and was of considerably lower status, by which time the building may have served as a type of guest house. This remodelling may have occurred in the Khwarazmshah period. Remains of plaster, possibly Timurid, in the north-east iwan of the pavilion suggests continued use at that time. A local man reported that it was relatively complete until the 1950s and was still being used until recently. A patch of recent plaster in one of the doorways would agree with this.

Principal references

Pilyavsky 1947, 68–70; Pugachenkova 1958a, 241–2; Atagaryev and Pilyavsky 1974, 131; Gubaev, Koshelenko and Tosi 1998, 244, site 551, field no. 326

Illustrations

Figures 47, 66, 118, 160, 267–73

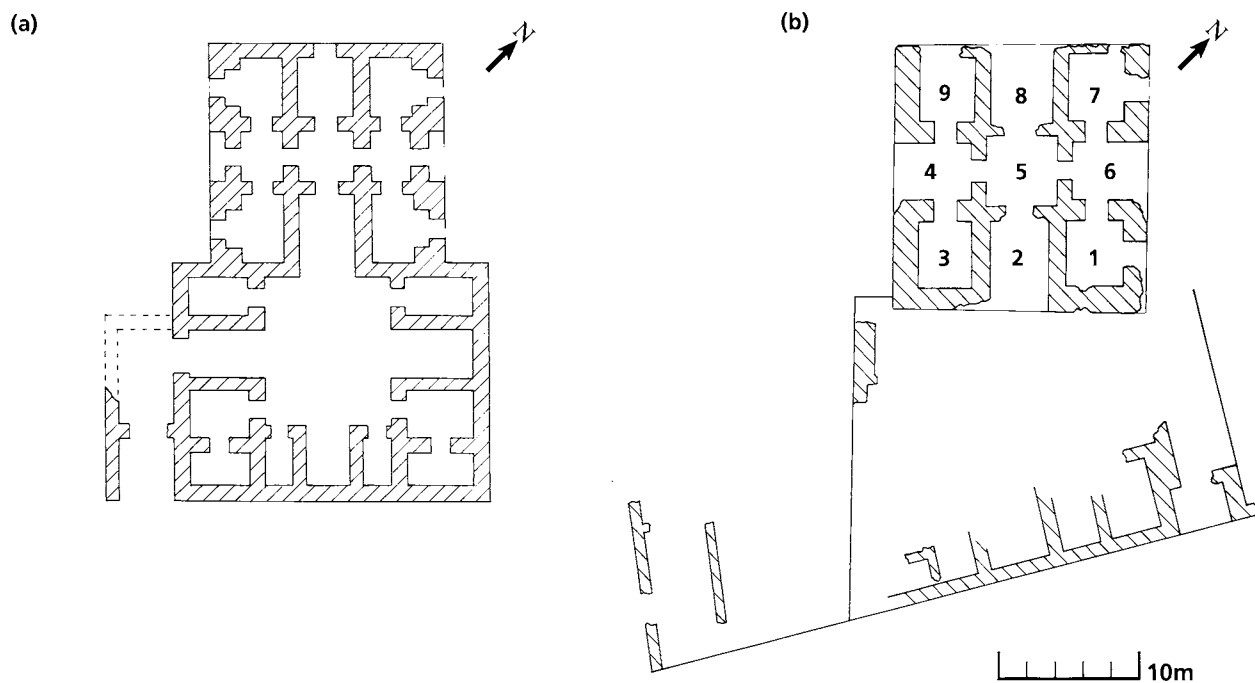


Figure 160 Plans of the pavilion at Kurtly [21].

(a) after Pugachenkova (1958, 241)

(b) by Akhmedov (IMP)

III: KEPTER KHANAS

22. Kepter khana, Kabul-khana in Shahryar Ark

This corrugated building is one of the best-preserved structures in Merv. It is built on a low mound in the centre of the citadel, 60m north west of the palace [20]. It is rectangular in plan and oriented north–south. Pilyavsky recorded it as 21.65 x 7.65m; in 1998 it measured 21.4 x 7.4m. It survives to a height of c 8m. It is entered from a low doorway, width 1.05m, in the centre of the east wall. Externally the *kepter khana* resembles a *köshk*. The base of the walls is smooth and slightly battered, height 2.8m. The upper section is divided into a series of corrugations, six on the south and eroded north ends, and fifteen on the east and eroded west sides. The top of the walls has not survived: there is an area of collapse at the south-east corner, and relatively recent breaks in both east and west walls at the level of the corrugations. No windows can be observed either in the plinth or between the corrugations.

The corrugations are unique in form: they are semicircular with a flat vertical rib, width 500mm. The corner corrugations are tapered. They rise sharply from the sloping skirt, probably from a course of fired bricks and terminate in another course of fired bricks, which formed the base of a row of squinch arches: all that survives are shadows of these arches on the south and east façades, more visible in Zhukovsky's photograph (Figure 119).

The interior consists of a single long room, 17.8 x 3.52m, filled to a considerable height with debris from the collapsed roof and from continued use. The internal space is divided into three by four pilasters. These terminate in a string course of fired bricks, which formed the base for transverse arches. Surviving sections of these arches were slightly narrower than the pilasters. Between the pilasters are panels of square niches, arranged in a chequerboard pattern (Figure 74). Traces of the niches survive on the end walls and the edges of the pilasters, although most have broken off. The niches are three bricks high and one brick wide and deep, the bricks measuring 220–250² x 60mm. Pilyavsky recorded the niches as 200² x 300mm and Krikis as 200² x 280mm. Pugachenkova claimed that none of the bricks was bonded to the wall and that they were a later addition (1958a, 218). However, the centre brick of the three is bonded to the wall, and the niches are probably original.

Two sondages were undertaken by YuTAKE, one by Krikis in 1957 on the south east and the other by Asilov in 1961 in the entrance. The

Krikis sondage was an 8m square sunk to virgin soil, reached at 4.5m below the current ground surface. The foundations of the *kepter khana* were near the surface and consisted of eleven rows, height 700mm, of fired bricks of various sizes (130² x 35, 200² x 35, 260² x 40, 300² x 50, 305² x 50 and 350² x 50mm), constructed on a layer of compacted soil. Complete bricks were used to face the foundations while the core was filled with reused fragments and half-bricks. Earlier brickwork was found at a depth of 2.1m below the foundations, suggesting earlier occupation. Glazed and unglazed sherds of the eleventh/twelfth to early thirteenth centuries were associated with the *kepter khana* and of the tenth century with the lower level.

Asilov's sondage, 6.5 x 1m, in the centre of the east side, cleared the entrance. A possible floor level, a thin yellowish layer between 20 and 50mm thick, was identified level with the eighth row of bricks of the foundations. A fired-brick column base, not shown on the plan, was found near the doorway. A *tandyr* (oven) at a higher level would have been from squatter reuse. Numerous Seljuk cut bricks, glazed and unglazed sherds, including fragments of wares typical of post-Mongol production, and fragments of vessels without bases, similar to those from the *kepter khana* in Iskander Kala, were found, as well as peach stones, and grape and water-melon seeds.

Pugachenkova dated the construction of the building to the eleventh–twelfth century and suggested that it was reused in the fifteenth century, a view supported by Krikis (1958) and Asilov (1962, 21) on the basis of their excavations.

Mud bricks of varying sizes: Pilyavsky 1947, 250–350² x 60–65mm; Krikis, 260–300² x 70mm; on foundations, reused fired bricks of varying sizes, 220–320² x 40–50mm; Asilov, 270–290² x 60mm, fired bricks 205² x 45mm, 230² x 40mm. IMP, smaller bricks, 220–250² x 60mm, for the niches, larger for the walls, 300² x 60mm. Fired bricks for the foundations, string courses and in the mainly mud-brick walls. Timber tie-beams were also used.

Principal references

Zhukovsky 1894, 119–20, fig 3; Cohn-Wiener 1930, Pl B; Pilyavsky 1947, 48–50; 1950, 100–3; Pugachenkova 1958a, 216–21; Grazdankina 1958, 77–8; Krikis 1958, 24–31, 37; Asilov 1962; Atagaryev and Pilyavsky 1974, 122–4; Gubaev, Koshelenko and Tosi 1998, 248, site 622, field no. 196

Illustrations

Figures 41, 74, 85, 119, 161, 274–8

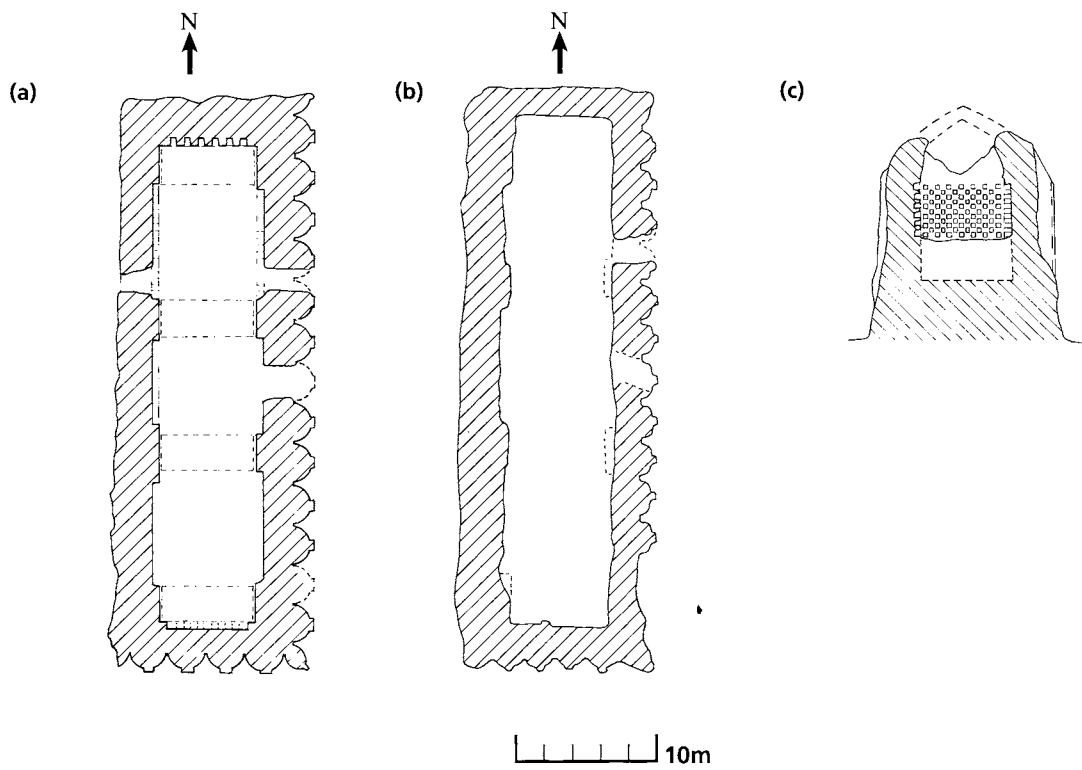


Figure 161 Plans and section of the *kepter khana* [22] in Shahryar Ark.

(a) after Pilyavsky (1947, 49)

(b) by Akhmedov (IMP)

(c) east-west section, after Pilyavsky (1947, 49)

23. *Kepter khana* in the south of Sultan Kala, the so-called 'Seljuk House'

The 'Seljuk House' is on a low mound in the south-east corner of Sultan Kala, 300m from the corner. A deep ditch, a former canal, lies 10m to the west of the structure. A 16²m sondage by Krikis in 1957 was excavated within the house and sunk to virgin soil, reached at a depth of 5.7m below the surface. It was this sondage that revealed the characteristic panel of niches, like those in the Ark *kepter khana*, shown in YuTAKE archive photographs, and also uncovered the foundations.

This small rectangular building is aligned north–south. The entrance was in the north wall, no longer extant. Pugachenkova's and Krikis' measurements are more or less similar, the former recording it as 12.4 x 6.1m and Krikis as 12.5 x 6.5m. Surviving external walls measure 11.5 x 5.2m and are preserved to a height of 4.5m. In 1998 the east and south walls were reasonably well preserved, while fragments of the west wall and the central partition survived. The most interesting feature is the exterior façade. The walls are divided into shallow rectangular panels containing niches with stepped heads. Krikis described eight panels, each 3m high, 1.25m wide and up to 150mm deep. Six decorated panels still survive on the east wall, widths c 1.17m, and one on the surviving section of south wall, width 1.2m. The raised frames measure c 75mm. Their original height is hard to determine, as the bottom of the wall is eroded. In her plan, Pugachenkova suggested that there were three panels on the south façade, although there would only have been sufficient space for two. Each panel contains three deep square slots in the centre: single slots occur on the buttresses. The square slots on the south-east corner buttress join to form a right-angle slot.

The interior consists of two rooms, approximately equal in size, both 3.5m wide and either 4.5m or 4.4m long. Krikis recorded them as square, 4²m. His sondage uncovered a collapsed arch and five rows of small square recesses, 200² x 280–300mm, creating a chequerboard of niches similar to those in the Ark *kepter khana* [22].

He considered his 'Tier V' to be the floor of the building 'on the grounds that more finds have been made here than in the whole of the rest of the area examined and that it is here that the construction of the buttresses began' (Krikis 1958, 10). This floor lay c 2.5m below ground surface. A 2 x 1m trench was excavated to virgin soil, revealing a fired-brick paving from an earlier building in Tier XIV: the bricks measured 240² x 55mm and 180² x 35mm. This paving was c 4.3m

from the surface. Virgin soil was reached in Tier XIX, c 5.7m below the 1957 surface.

Krikis' report is insufficiently specific but pottery finds above the floor of the 'Seljuk House' seem to be compatible with habitation in the eleventh to twelfth centuries (Krikis 1958, 18), while earlier material included sherds with '*ishkor*' glaze, typical of the tenth century. Examples of this slip-painted ceramic have been identified in our excavations in the Early Islamic industrial area, Gyaur Kala 4 (*Iran XXXV* 1997, 10–17, fig 7). Krikis notes that the small size of the fired bricks of his earlier paving is typical of the ninth–tenth centuries. Small bricks were employed on the fired-brick paving found in the courtyard of Gyaur Kala 4, 210²mm and 180²mm (*Iran XXXIV* 1996, 15, Pl IIIb). Based on this evidence, he considered that the south-east corner of Sultan Kala was inhabited not earlier than the ninth century and that the 'Seljuk House' was built in the eleventh to twelfth centuries, continuing in use until either the Ghuzz revolt or the Mongol destruction.

Pugachenkova's plan, elevation and measurements present problems, and the orientation shown on her plan is incorrect (1958a, 215–16). She recorded that the walls were plastered with a coating of clay: this was probably mud-brick 'melt' and was not noted by Krikis.

Mud brick, 280² x 60mm (Krikis, 280² x 70mm; Pugachenkova 270–280² x 60–70mm) on a fired-brick foundation, 200² x 40mm, constructed on a compacted earth platform 1.65m wide.

Principal references

Pugachenkova 1958a, 215–16; Krikis 1958, 6–19, 37

Illustrations

Figures 89, 162, 279–81

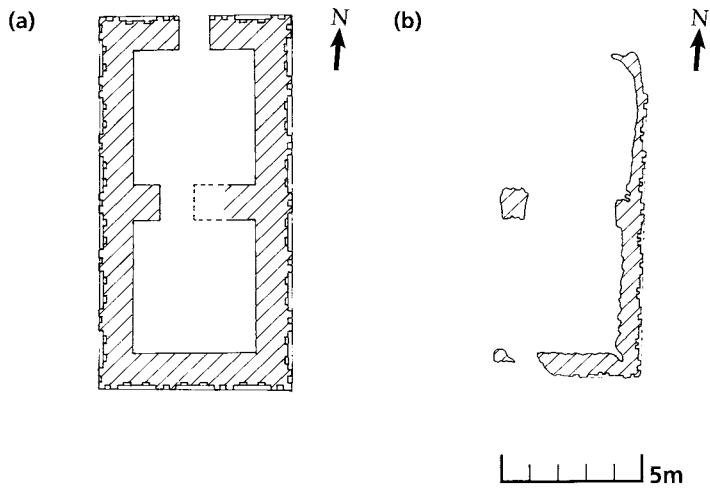


Figure 162 Plans of the *kepter khana* [23] in the south of Sultan Kala, the 'Seljuk House'.

(a) after Pugachenkova (1958, 215)

(b) by Akhmedov (IMP)

24. *Kepter khana* in Iskander Kala

This *kepter khana* lies in the north west of the northern suburb of Sultan Kala, an area known today as Iskander Kala; it stands about 100m from the north wall and is in a ruinous condition with walls heavily eroded by the wind and surviving to a maximum height of 3.3m. In 1960 and 1961 trenches were dug across the walls at the west and east ends and the central area was completely excavated (Asilov 1962). Except for the excavated areas, the interior is largely filled with collapsed debris from the roof and walls and aeolian deposit.

The building is elongated and rectangular; Asilov recorded it measuring 46 x 7.5m, in 1998 c 42.4 x 6.5m of the structure survived. It is oriented east–west, and Asilov recorded a 2-degree bend in the centre of the building. The walls had a uniform thickness of 2m, today eroded to c 1.6–1.1m. Asilov’s plan showed the interior divided into two long narrow rooms with a small entrance vestibule, 3.5²m, in the centre, whose doorways gave access to both rooms, 18 x 3.5m. There is no evidence for windows.

The rooms were lined with up to ten rows of niches reaching from the floor to the surviving top of the walls, c 5m high in 1961. Some still survive on the north wall of the west room. Asilov measured the niches as between 200 and 250mm in width, up to 300mm in height and 50mm deep. In 1998 well-preserved ones on the north wall measured 240² x 18mm and had a curved hood. The niches were built at the time of construction, forming part of the *pakhsa* wall. Asilov

noted that the inner surfaces were not all identical, some having a smooth surface while others were coarser, looking like pits in the wall. The niches are arranged in a chessboard pattern. Asilov calculated that there would have been no less than 1500 niches in the two rooms.

Blocks of *pakhsa*, up to 1m high, alternating with courses of mud brick, 300² x 50mm. Slots for tie-beams with a diameter of 200mm and a length in excess of 2.7m are visible on the east side of the entrance and in the south-east corner.

Asilov distinguished three phases of occupation, dating from the eleventh to the early thirteenth centuries. While sherds of plain and glazed ceramics were found in the upper layers, large numbers of an unusual type of pottery vessel were found in the levels associated with the lower four rows of niches. These ovoid jars were perforated a number of times and lacked bases. The vessels, both sherds and some complete examples, were concentrated near the walls, with only a few found in the centre. A number of beams, ranging from 50 to 140mm in diameter, were found in the same levels, and may perhaps have formed some system of shelving.

Reference

Asilov 1962

Illustrations

Figures 43, 121, 163, 282

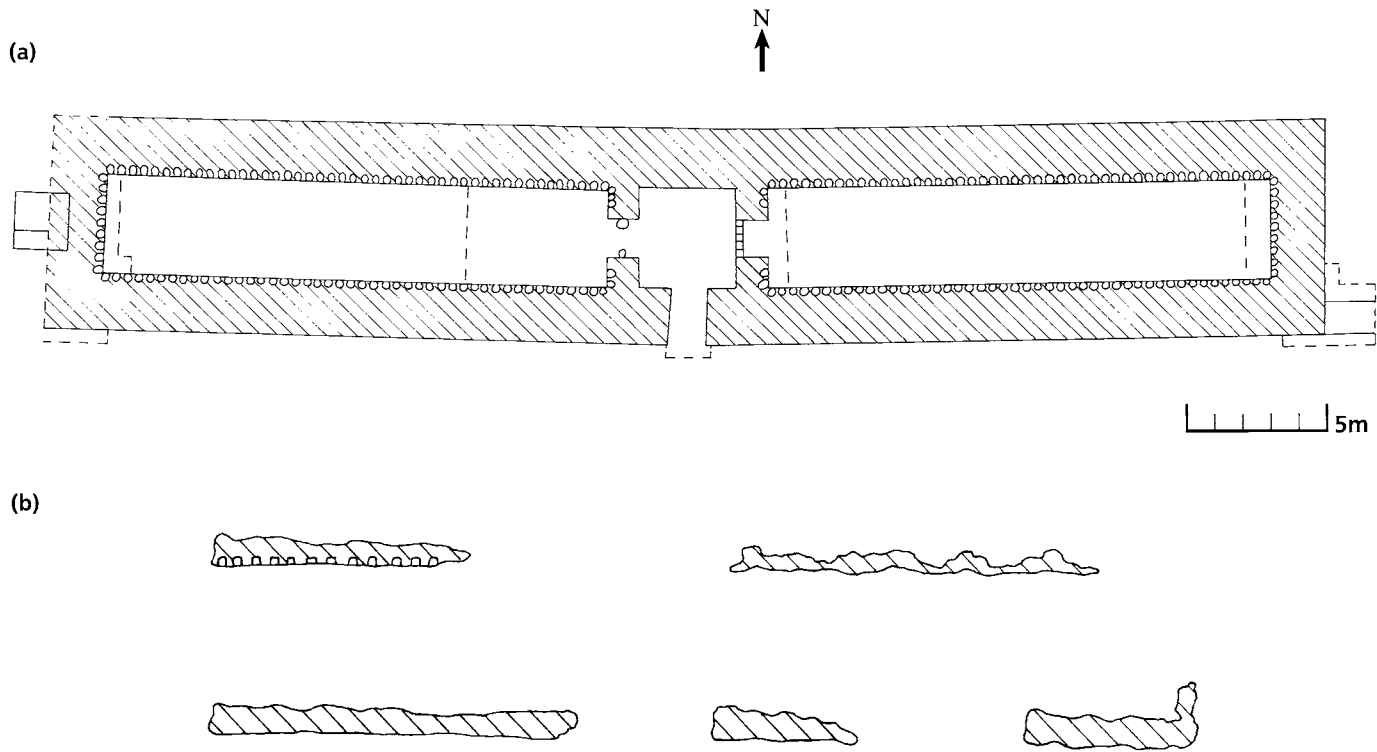


Figure 163 Plans of the *kepter khana* [24] in Iskandar Kala.

(a) after Asilov (1962)

(b) by Akhmedov (IMP)

IV: KHAROBA KOSHUK BY GABRIELE PUSCHNIGG

25. Kharoba Koshuk

Kharoba Koshuk is situated about 15km north of Sultan Kala along the ancient route to Khwarazm, just north of the Karakum canal. The nearest standing monument is Suli Köshk [7], to the north. The site consists of a single elevated monumental structure built within the boundaries of a settlement in the vicinity of the fortification Duechakyn. Settlement and fortification have been dated to the Late Sasanian period, and there is also surface material of the eleventh to twelfth centuries. A nearby canal and intensive cultivation has resulted in the area being wet and saline, causing the building to deteriorate rapidly. Few architectural details are recognizable today.

The building was recorded by Pugachenkova in 1951; excavations supervised by Dresvyanskaya were conducted in 1966–7. In 1990 Vysotsky undertook a fresh assessment of the building, with an extensive comparative study. The plans published by Pugachenkova and Dresvyanskaya differ in design, size and orientation of the building. Dresvyanskaya's plan, based on her excavations, seems more reliable and was followed by Vysotsky with minor alterations. The following description is based on Dresvyanskaya's plan and report, with the divergencies with Pugachenkova's plan noted.

Kharoba Koshuk is a rectangular structure, 41 x 11.4m (Pugachenkova 51 x 13m), with corners oriented to the cardinal points. It is divided into two parts, an oblong hall and a differentiated structure at its east end. The hall has a wide central corridor and is divided into ten sections by partitioning walls that reach 3.2m into the interior. Each section was probably vaulted (Vysotsky 1990, 96) and is provided with an arched opening in the side wall, ten on each side. These vary in size from c 500mm to 1m.

The eastern end consists of two vaulted niches on either side of the longitudinal axis with a third shallower one in the end wall. Parts of the vault covering the side niches were standing until recently. In Pugachenkova's drawing (1958a, 128) the shallow niche is depicted as a semicircular apse with two small rooms in the corners. This area was reconstructed by Vysotsky (1990, fig 27) as rectangular. The opening to the hall was embellished with reveals.

The complex is built of mud bricks of two sizes, 400–410² x 110mm and 290² x 60mm. There were two types of arches, those c 3–4m wide were laid with wedge-shaped bricks, while smaller ones, c 1.5m wide,

were pointed in shape and constructed of flat bricks.

The publications have presented an incomplete architectural description and few illustrations of small finds. Emphasis has been laid on historical interpretation, which has remained unchanged since Pugachenkova formulated her hypothesis on the presumed religious character of the monument, itself heavily dependent on the dating. Few finds have been recorded, with ceramics and coins mentioned only for dating purposes. They represent two different chronological periods. Material collected from the surface is dated to the eleventh to twelfth centuries, while excavations in the east part of the building revealed Sasanian pottery and coins from Kavad I (AD 498–531) to Khusro II (AD 590–628) respectively. Pugachenkova considered that the building was constructed as a church in the Sasanian period with modifications and a change of function in the Islamic period. There is no architectural evidence to support her hypothesis, and the Sasanian material is more likely to be residual, having been used for making bricks as regularly occurs at Merv and elsewhere.

The large bricks, 400–410² x 110mm, were considered by Pugachenkova to confirm construction in the Sasanian period but were also used in the nearby Suli Köshk [7], again in conjunction with smaller-sized bricks. This combination of brick sizes is unique to the two structures and presumably reflects a local building preference. Since Suli can probably be dated to the eleventh to twelfth centuries, a similar date of construction for Kharoba Koshuk can be proposed. The function of this unique building awaits resolution.

Principal references

Pugachenkova 1958a, 126–30; Dresvyanskaya 1968, 28; Vysotsky 1990, 90–100

Illustrations

Figures 122, 123, 164, 283–7

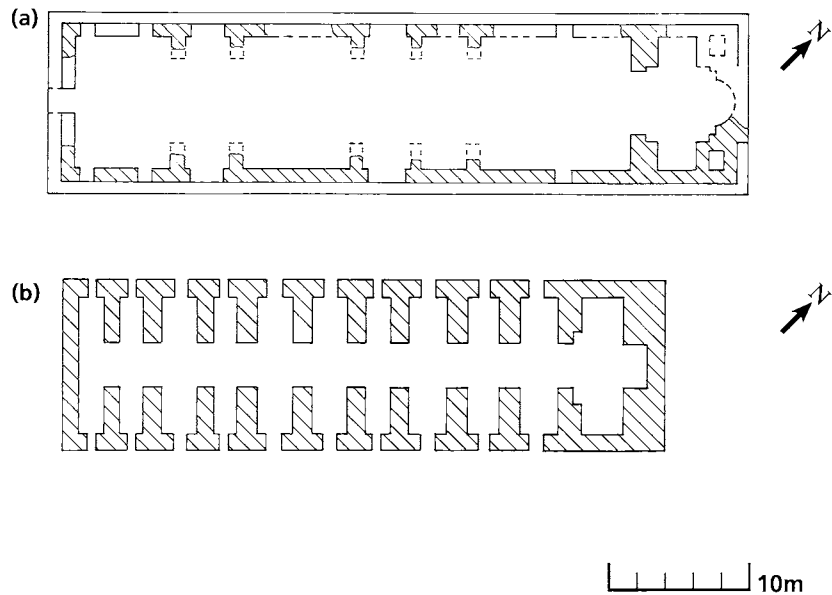


Figure 164 Plans of Kharoba Koshuk.

(a) after Pugachenkova (1958, 128)

(b) after Dresvyanskaya (1968, 28)

V: THE TIMURID PAVILION

26. The Timurid pavilion or Köshk Imaret

The pavilion is located 800m north east of Abdullah Khan Kala and 150m south east of Ice-house 2 [28]. It was first recorded by Pugachenkova, when two structures were still standing, the main building or pavilion and an entrance gateway or portal, 28m to the west (1958a, 390). There is no trace today of this portal, even as soil marks in air photographs. The main building can be seen in the background of Cohn-Wiener's photograph of Ice-house 2, and both can be seen in Pugachenkova's photograph (1958a, 389, taken from the west). The stumps of the portal walls can be seen in Chmelnizki's photograph taken in 1961. The pavilion was built on a low mound and currently stands in a large and dense reed bed next to a track and modern irrigation canal.

The portal façade consisted of a *pishtaq*, or screen, with a pointed arch and a doorway giving on to an iwan in the form of a half-octagon (Pugachenkova 1958a, 389–90).

The pavilion, doubtless set in a garden or orchard, is rectangular, 11.3 x 12.75m, and consists of a monumental façade on the west leading into a single square room, 7 x 6.95m. There are arches in each wall, presumably originally open, but later blocked and plastered. The roof was flat and would have been supported on wooden beams. Remains of a high parapet above the iwan, visible in archive photographs, had disappeared by 1961, as had the tops of the upper niches. A stairway, 1m wide, on the south wall led to the roof: there are still two vertical ceramic drains, square in section, 700mm wide, on that wall.

The entrance iwan, 3.1 x 1.95m, is flanked by pairs of superimposed, rectangular panels containing arched niches, each with a *muqarnas* hood, width 1.25 and 1.32m: these were well preserved in Cohn-Wiener's and Pugachenkova's photographs (1958a, 389). The rear wall of the iwan is in two registers, the lower one containing the central, arched opening, width 1.7m, and the upper, an arched niche, flanked by rectangular panels with recessed niches. Traces survive of plaster decoration inside the main iwan and the side niches. The illusion of two storeys is continued on both the exterior and interior walls. They are decorated with registers of rectangular panels containing recessed niches. A 2m-wide panel over the central arches is flanked by alternate narrow and wide panels, 0.59–1.17m. The tops of the narrow panels contain a pointed, scalloped design, the wider panels have a chamfered

decoration. The decoration is plastered and painted; parts of the pink colour survive in the south-west corner of the interior. The frames of the panels of the upper register of the exterior back wall are formed of small engaged columns.

This decoration must have been secondary, as it could only have been done after the arches in the side and back walls had been closed. These arches, 1.7 x 2.1m, are set within rectangular frames with coved plaster decoration. The south, east and north entrances were blocked with a single course of mud brick with a grey mud-plaster render. Fragments of stucco decoration survive within the south arch. The north arch was already open in 1992; the blocking of the south arch had collapsed by 1997, apart from a small section on the east. An inscription on surviving plaster fragments recorded a visit in March 1942 by a Ukrainian from the Poltava region.

The mud bricks of the main construction and the 'blocking' are the same size, 250² x 50mm (Pugachenkova 270² x 55mm). The foundations are yellow fired bricks, 250² x 50mm. The walls on the exterior and interior were coated with mud plaster, c 60mm. thick. The interior was plastered with pink coloured gypsum, 150mm thick, and the iwan and niches were also plastered. Wood was extensively used: putlogs round the interior walls suggest the use of scaffolding. Wooden beams, diameter 150mm, were used above the blockings of the arches, and slots for tie-beams, often in pairs, penetrated the walls.

Reference

Pugachenkova 1958a, 390–2

Illustrations

Figures 75, 77, 78, 124, 165, 288–92

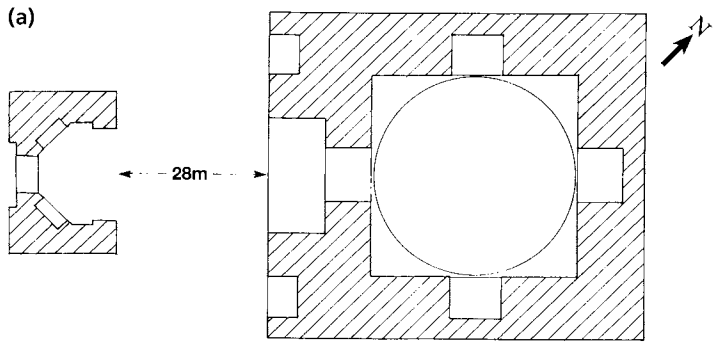
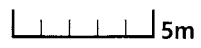
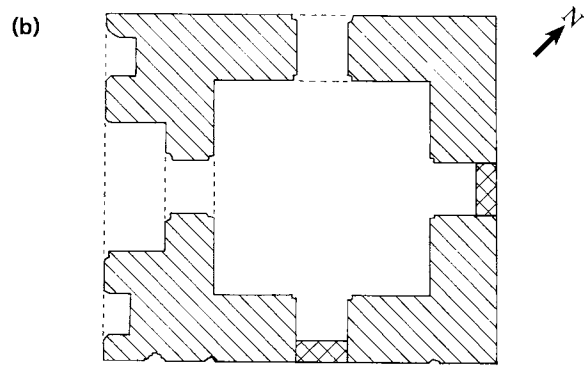


Figure 165 Plans of the Timurid pavilion or Köshk Imaret [26].

(a) after Pugachenkova (1958, 390), with the entrance some 28m to the west

(b) the pavilion, by Akhmedov (IMP)



VI: ICE-HOUSES

27. Ice-house 1

The ice-house is about a kilometre south of the south-west corner of Gyaur Kala, south east of Sultan Kala and due east of Ice-house 2 [28] and the Timurid pavilion or Köshk Imaret [26]. Number 10, the *köshk* south of Gyaur Kala, is c 400m to the west.

This tall conical structure has a steep, strongly banded profile, curving towards the top. The internal diameter is 17.2m, and the walls stand to a height of c 15m. The lowest part, height 1.45m, is built of *pakhsa* blocks, above which is a band of mud brick, approximately 1.85m high. A second layer of *pakhsa*, height 1m, marks the apex of the vertical side walls, above which the mud bricks of the walls corbel inwards to form a conical dome. At a height of approximately 7m above ground a row of circular holes is set into the side of the dome, with a further five, and traces of a sixth, rows above at irregular intervals. Fragments of wooden poles survive in a number of holes of all except the highest rows. They are angled, alternately to left and right.

Entrance is via an arched doorway in the north, the shadier side where the cooler winds blow: width at springing 3m. There are four niches in the base of the walls, of which the pointed arch of only one, Niche 3, is complete: width at springing 1.82m, depth 1.3m. Each contains a rectangular 'chimney' or ventilation shaft. That of the well-preserved Niche 3 measures 1.74 x 0.6m, and that of Niche 2, 1.38 x 0.56m. The openings at the top of the shafts of Niches 2 and 3 are visible near the top of the exterior dome.

Mud brick, 270² x 60mm and *pakhsa* blocks. The surface was roughly plastered. Wooden beams formed part of the structure.

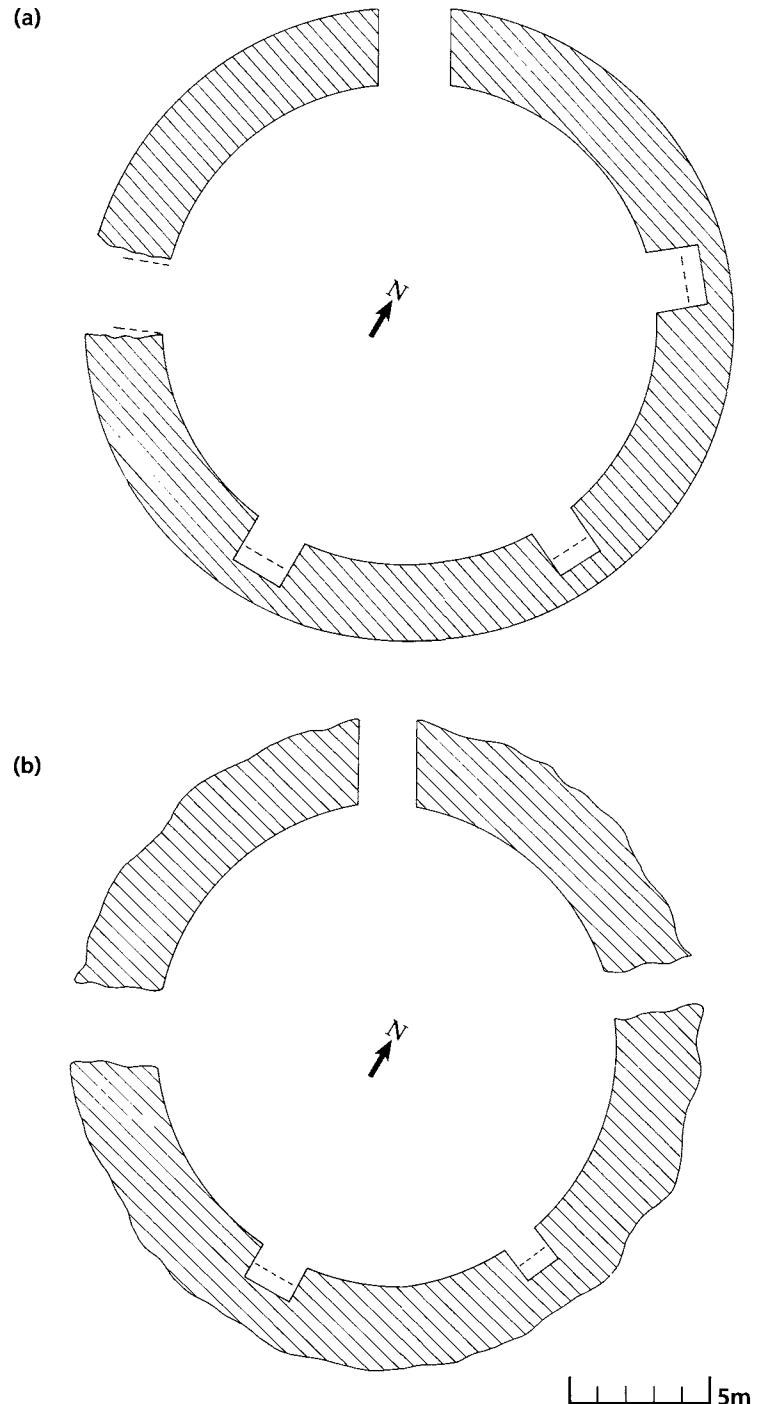
This building is unique in a number of ways. It is steeper and more curved in profile than the other examples, and the brick size is slightly larger. However, the most unusual feature is the presence of the ventilation shafts or 'chimneys', which scholars such as Beazley and Rogers suggest rule out the identification of this building as an ice-house, and by association of the others as well (pers comm).

Principal references

Evarnitsky 1893, 48; Zhukovsky 1894, 150; Bachinsky 1939, 12; Pilyavsky 1947, 71–2; Pugachenkova 1958a, 392–4; Gubaev, Koshelenko and Tosi 1998, 250, site 665, field no. 183

Illustrations

Figures 166, 293–7



28. Ice-house 2

The ice-house is north of Abdullah Khan Kala, 50m north west of the Timurid pavilion or Köshk Imaret [26]. Ice-house 1 [27], can be seen in the distance to the east.

This tall stepped conical building stands at least 2m above present ground level. The base is large, at least 3m high and 1.3m thick, and possibly originally octagonal in form. A recent collapse has revealed the crown of an arch in the centre of its south side. The building is entered from the north via an arched entrance, width 1.7m, depth 2m (Figure 127). The interior is circular, diameter 13.3m, with a corbelled dome of mud brick. Although ruined, the walls of the dome reach an interior height of c 15m. At a height of approximately 6m above the present floor level there are three courses of diagonally laid bricks (Figures 49 and 114). Four rows of such diagonal brickwork are found at differing intervals higher up. Above the second layer is a row of slots for beams, which pierce the walls.

There are arched niches on the east (Figure 301), width 1.62m, depth c 1.4m, and south west (eroded and open, width 1.68m): the east niche is still blocked by an outer layer of mud brick. There is no trace of any chimney. The arches were built of up to three courses of bricks, set radially, with the keystone formed of bricks set horizontally. There are four putlogs, 180 x 200mm, depth 52mm, between the north door and the east niche, and probably originally another four (only three are visible) between the east and south-west niches. Traces survive of a shallow, rectangular alcove on the south side, width at least 0.65m, height at least 1.1m, of unknown purpose.

Principal references

Evarnitsky 1893, 48; Zhukovsky 1894, 150; Cohn-Wiener 1930 (neg no. 1082, slightly out of focus); Bachinsky 1939, 12; Pilyavsky 1947, 71, figs 29–30; Pugachenkova 1958a, 392–4; Atagaryev and Pilyavsky 1974, 147, 151; Gubaev, Koshelenko and Tosi 1998, 250, site 667, field no. 185

Illustrations

Figures 49, 114, 126, 127, 167, 298–301

Figure 166 (page 184) Plans of Ice-house 1 [27].

(a) after Pugachenkova (1958, 390)
(b) by Akhmedov (IMP)

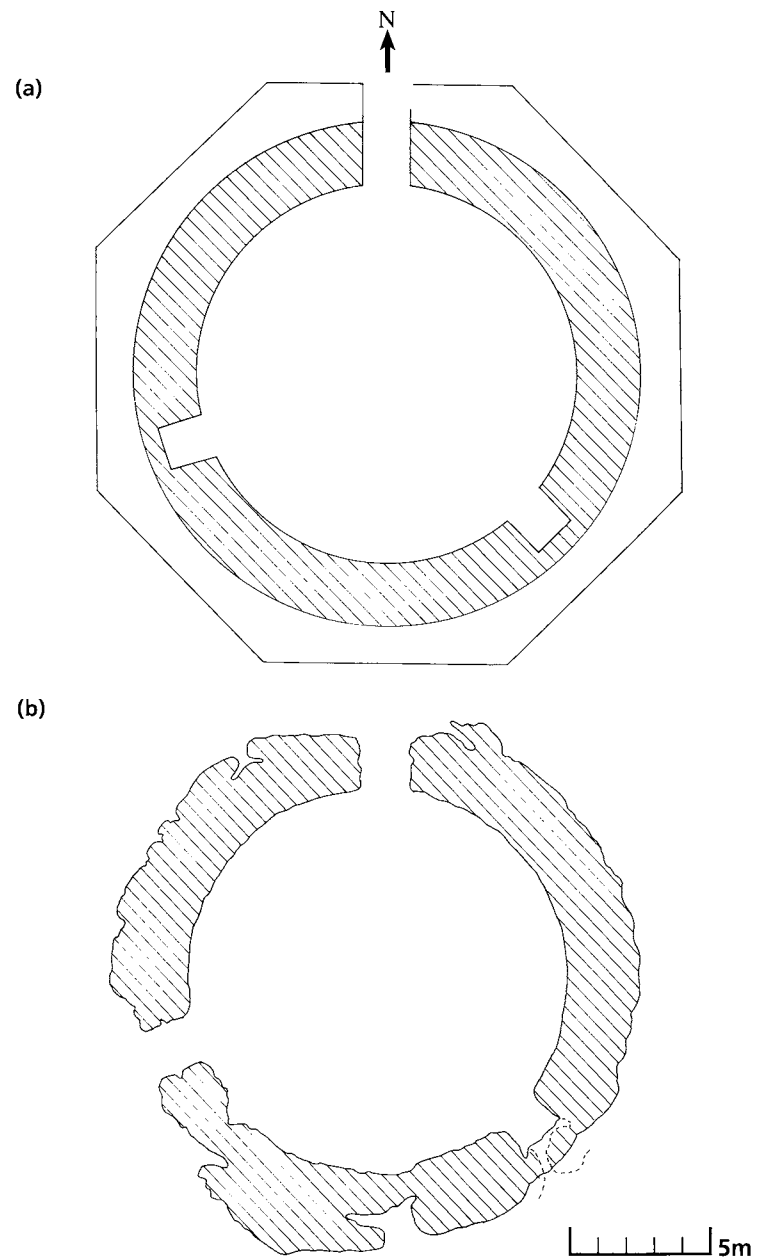


Figure 167 Plans of Ice-house 2 [28].

(a) after Pugachenkova (1958, 390)
(b) by Akhmedov (IMP)

29. Ice-house 3

This lies in wasteland about 500m north of Abdullah Khan Kala and has deteriorated since being photographed by Zhukovsky (1894, 150) (Figure 113).

Ice-house 3, built on a mound c 3m high above present ground level, has a stepped conical profile. Five stages survive in Zhukovsky's photograph but only two are now preserved, standing to a height of c 5–6m. The diameter of the interior is nearly the same as Ice-house 2, 13.4m, with a surviving internal height of 4.7m. There are two doorways, in the north-west and south sides, both covered with wide, low arches, reduced in size by a mud-brick blocking. The southern arch was presumably originally closed, forming a niche as in the other ice-houses.

Mud bricks, 260² x 50–60mm, on a base of *pakhsa* blocks. The interior is pierced with three or more rows of circular or square putlogs, diameters varying between 70 and 150mm; the lowest row is at the brick/*pakhsa* interface, 0.55m above ground level, the second row is 0.8m or 11–12 courses higher, the third is 1m or 12–15 courses higher.

Pugachenkova described and planned three ice-houses 'between Sultan Kala and Abdullah Khan Kala'. However, the photograph of her Ice-house 3 (1958a, 393) has more in common with Ice-house 4 [30], in the south west of Bairam Ali, than what is described as Ice-house 3 here. Her plan (1958a, 390) is incorrect for both – her diameter of 8.5m is considerably smaller than either the 13.3m of number 29 or the 11.05m of number 30.

Principal references

Zhukovsky 1894, 150; Pugachenkova 1958a, 390–3; Gubaev, Koshelenko and Tosi 1998, 250, site 666, field no. 184

Illustrations

Figures 113, 168, 302, 303

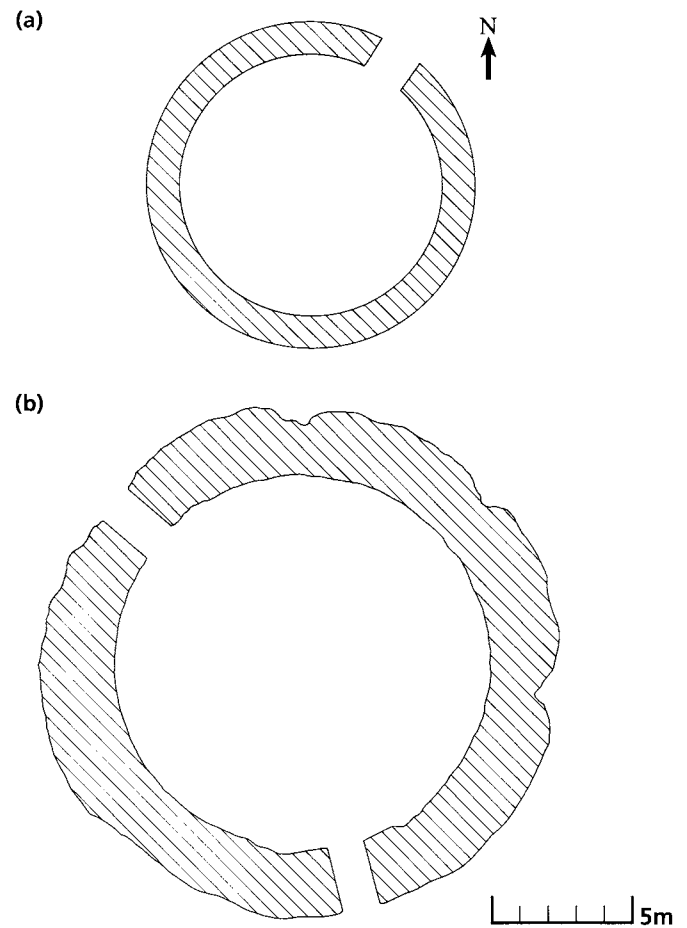


Figure 168 Plans of Ice-house 3 [29].

(a) after Pugachenkova (1958, 390)

(b) by Akhmedov (IMP)

30. Ice-house 4

Ice-house 4 is located to the west of the old Christian cemetery, to the south west of the Bairam Ali–Mary road, near a large chemical works. It is the worst preserved of the four, and part of it collapsed during the wet weather of the 1997–8 winter. It is also the smallest. It probably stood on a mound c 1–1.5m high above present ground level, although extensive clearing by bulldozers has changed the immediate environment.

The ice-house has a different profile from the last two examples, with walls rising vertically for the first 3m before forming a series of steps, eroded but still standing to a height of c 6m. The interior is circular, diameter 11.05m, with a corbelled dome of mud brick. Although ruined the walls of the dome reach an interior height of 4.5m. At a height of approximately 4m above the present floor level can be seen the remains of a double course of diagonally laid bricks, each three bricks thick, similar to those of Ice-house 2 [28]. Traces of a doorway, width 1.7m, depth 1.5m, current height 2.3m, survive in the east side: it was blocked with a wall constructed of mud-brick rubble. Traces of a second can be seen in the north. One may have been a niche rather than an entrance.

Mud bricks, 260² x 50mm, and *pakhsa* blocks.

The photograph in Pugachenkova 1958a, 393, may be of this ice-house although her ice-houses are located 'between Sultan Kala and Abdullah Khan Kala'. Her plan is incorrect for any of the ice-houses.

Illustrations

Figures 169, 304

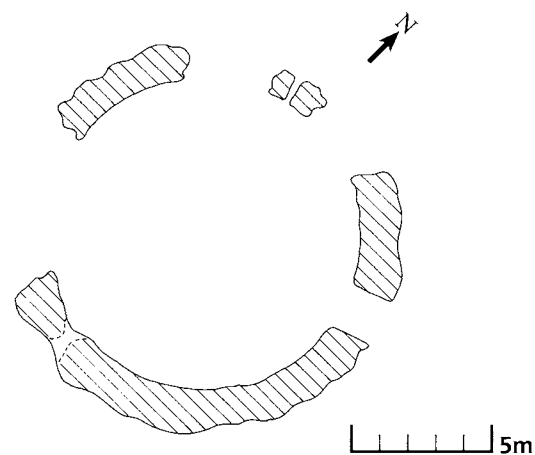


Figure 169 Plan of Ice-house 4 [30], by Akhmedov (IMP).

VII: BUILDINGS OF THE EIGHTEENTH AND NINETEENTH CENTURIES

31. Nineteenth-century merchant's house

This building is located in an area currently being developed to the north east of Abdullah Khan Kala, next to a brickworks. The house consists of a large rectangular courtyard or *howli*, 61 x 44m, with a long residential building occupying the north-west end. The courtyard wall was 2m high and was entered from the north-east corner.

The residential block consists of two long rooms separated by a central vestibule. The south room, 16.5 x 4.9m, is the best preserved. It is divided into bays separated by four arches or cross vaults and roofed with *balkhi* vaults. Three doorways, width 1.07m and 1.18m, lead into the main courtyard, while a fourth leads into the central section. The doorways have segmental arches. The internal walls survive to a height of 2.8m. The house was probably only one storey high, with a flat roof and parapet. The central section, width 4.8m, is slightly inset, and consisted of a stairway in the south-west corner and a small antechamber leading into the long northern room, also with three doorways leading into the courtyard.

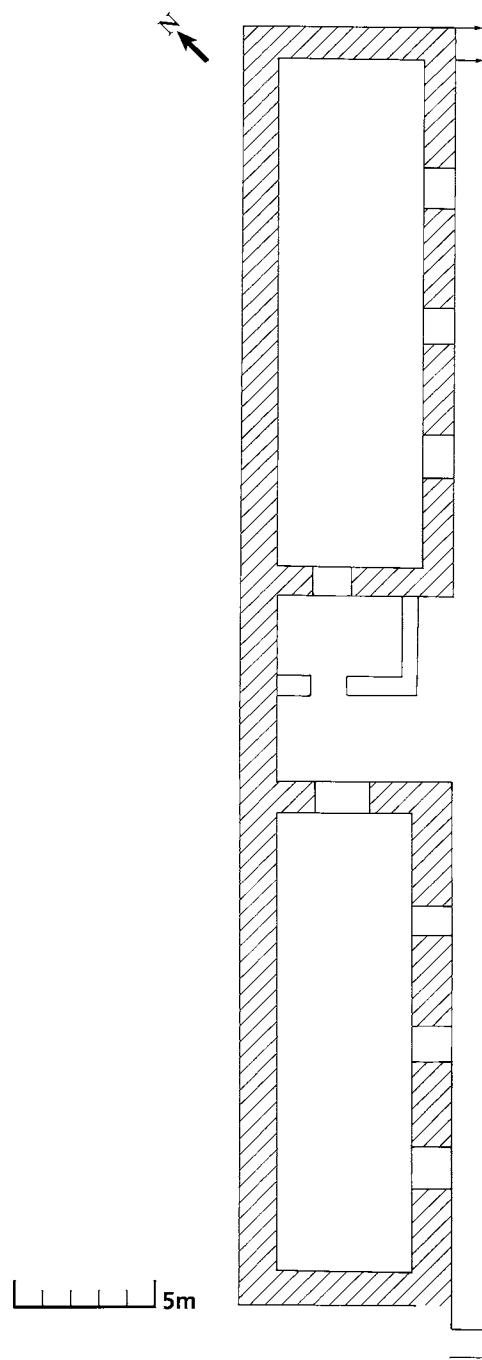
Blocks of *pakhsa*, height 0.85m, separated by two courses of mud brick, 250² x 50mm. Surviving sections of vaulting were of mud brick. Occasional slots for tie-beams.

The design of a house occupying one end of a large courtyard suggests a nineteenth-century date, cf house plans at Chardzhou (Pugachenkova 1958a, 461), a date confirmed by local residents.

Illustrations

Figures 170, 305–7

Figure 170 Plan of nineteenth-century merchant's house [31], by Akhmedov (IMP).



32. *Dings*, with a contribution by Pierre Brun

Many surviving *dings* are in the Bairam Ali district. Three *dings* still stand near the modern electricity station in derelict land to the north of the Bairam Ali–Mary road, together with the ruins of a fourth, but in the 1980s a young man remembered that there were ten, for he played on them. These *dings* are unlikely to survive much longer, for the area is being used for the extraction of clay for bricks, as a rubbish dump, and agriculture is also encroaching. The remains of two survive along the road from Bairam Ali to Merv. Another area with *dings* was within the territory of the Kalinin *kolkhoz*, near Yelhazar Köshk [19]. In 1998 only two survived, a third having recently been demolished. *Dings* might either have been freestanding refuge towers or have formed part of a complex of buildings within a courtyard (Pugachenkova 1958a, 457–8). Since they are so small and simple, they have been given a single number, [32], and are briefly described below. No two are alike.

Illustrations

Figures 10, 129, 171–6, 308–16

32a. *Electricity Station Ding 1* is unique and is the only surviving example of an octagonal *ding*. Since recorded by Pugachenkova in the 1950s, the upper part has deteriorated, and a section of wall on the north has collapsed. The defensive tower originally consisted of two storeys. There is no entrance on the ground floor, although a narrow slot has been enlarged in recent times, and the *ding* must have been entered via a ladder to the upper storey, probably on the north east. The façades measure 2.35m in width and are decorated with two registers of recessed rectangular panels, width 1.55m, depth 100mm, separated by a quadruple string course of fired bricks. The corners are buttressed. There are two loopholes, 200 x 250mm, one on the north-west and another on the south-west façade, as well as a larger ‘arrow-slit’, width 45mm, on the north-east façade. Numerous tie-beams, some in groups of three, run into the wall. Mud brick, 280² x 70mm, fired brick for the string course, and wood.

References

Levina, Ovezov and Pugachenkova 1953, 63; Pugachenkova 1958a, 457

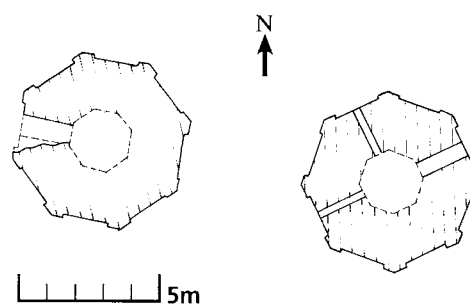


Figure 171 Plan of Electricity Station *Ding 1* [32a], by Akhmedov (IMP).

32b. *Electricity Station Ding 2* lies 250m north of [32a] and 50m south of [32c]. This two-storeyed, rectangular building, 4.85 x 5.9m, survives to a height of 5m. The lower storey consists of a small vaulted room, 3.4 x 1.89m, entered through an arched doorway, width 0.95m, on the south. The arch was built of two courses of bricks, set radially, with a keystone of horizontal bricks. Similar arches can be seen in Ice-house 2 [28]. There are shallow arched niches, 900mm wide x 250mm deep, in the centre of the interior west and east walls. A recessed rectangular niche in the north wall, width 900mm, depth 200mm, leads into a deep recess, which probably functioned as a ventilation shaft or chimney. To the left is a smaller niche for a lamp. The room was vaulted with courses of bricks laid at an angle to the north wall. Mud brick, 300² x 60mm and 250² x 50mm, and beam-slots.

Reference

Levina, Ovezov and Pugachenkova 1953, 63, fig 26

32c. *Electricity Station Ding 3* is the most northerly of the group. The east and south walls of this rectangular, two-storeyed building, 4 x 3m, survive to a height of 7m. The lower walls measure 0.95m in thickness, whilst the upper are thinner. There are two small windows or loopholes, 200²mm, at lower-storey level in the east wall and one in the south, and two niches with triangular heads, 900mm wide and 250mm deep, on the inside of the upper storey of the east wall, with traces of another on the south wall. Four beam-slots near the top of the east wall suggest that the roof was flat. There is a tie-beam in the thickness of the wall in the lower storey. Mud brick, 260² x 50mm, and wood.

Two dings beside the Bairam Ali–Merv road

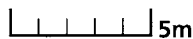
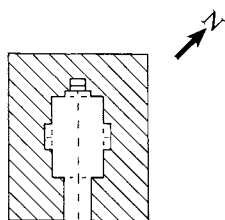


Figure 172 Plan of Electricity Station *Ding 2* [32b], by Akhmedov (IMP).

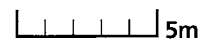
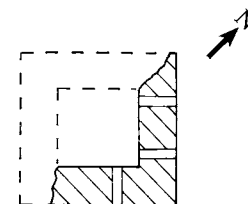


Figure 173 Plan of Electricity Station *Ding 3* [32c], by Akhmedov (IMP).

32d. *Bairam Ali Ding 1* on the outskirts of Bairam Ali beside the road to the Archaeological Park 'Ancient Merv'. Only two walls of this poorly preserved rectangular *ding*, 7 x 4.5m and 4.2m high, survive. It is roofed with a *balkhi* vault. Three small triangular niches are built into the walls, two on the south and one on the west side. There is a rectangular beam-slot near the top of the west wall. Mud brick, 260² x 70mm, coated in mud plaster, and wood.

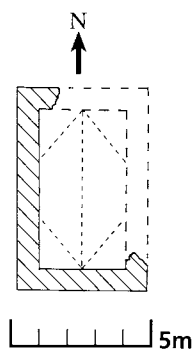


Figure 174 Plan of Bairam Ali *Ding 1* [32d], by Akhmedov (IMP).

32e. *Bairam Ali Ding 2* lies on the outskirts of Bairam Ali, 100m west of the Bairam Ali–Merv road behind a large modern house. Since being photographed in 1971 (Atagaryev and Pilyavsky 1974, 156), the north wall has collapsed. The rectangular building, 8.8 x 4.75m, originally consisted of two storeys and survives to a height of c 6m. An arched doorway, 1.2m wide, in the south side, leads into a room, 6.15 x 3.27m, roofed by a vault with courses of bricks set radially. Two circular putlogs in the south side of the vault may have been used for scaffolding. The east wall is slightly thicker, 1.5m, presumably to carry the weight of the vault, than the south wall, 1.4m. No trace survives of the upper floor. Mud brick, 260² x 70–80mm, coated in mud plaster, and wood.

The *Dings* in the Kalinin *kolkhoz* are in the playground of the school, about 500m south of Yelhazar Köshk [19], and in a nearby farmyard. A third, some 300m to the south, had been demolished.

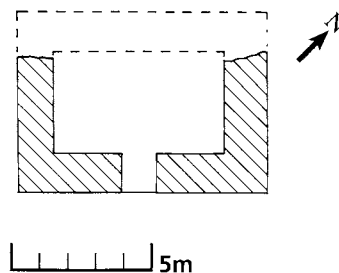


Figure 175 Plan of Bairam Ali *Ding 2* [32e], by Akhmedov (IMP).

32f. *Kalinin Ding 1*, the 'school *ding*', is rectangular, 6.5 x 5.85m, and survives to a height of 6m. It is oriented north–south. A poorly preserved door in the north leads into the interior, 4.85 x 3.35m, roofed with two forms of vault. The north contains two sides of a *balkhi* vault while there is a barrel vault with bricks arranged radially in the south. The bricks of the south wall were built in a semicircle, and there are shallow putlogs. Traces of the floor of an upper storey can be seen. Mud brick, 260² x 50mm.

32g. *Kalinin Ding 2*, the 'farmyard *ding*', has been incorporated into the structure of the farm buildings. The remaining building is square, 4.2²m, with a door in the north. The interior, 2.2²m, is roofed with a *balkhi* vault. Mud brick, 250² x 50mm.

References

Levina, Ovezov and Pugachenkova 1953; Pugachenkova 1958a, 457–8

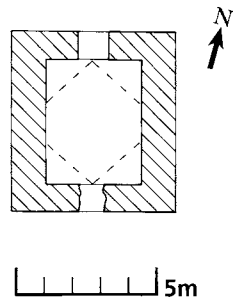


Figure 176 Plan of Kalinin *Ding* 1 [32f], by Akhmedov (IMP).



Figure 177
The Lesser and Greater Kyz Kalas, [4] and [1], from the south west; the Mausoleum of Sultan Sanjar is in the distance.



Figure 178 The eroded north and west façades of the Greater Kyz Kala [1] from the north west. Runnels indicate the original location of the corrugations.



Figure 179 The east façade of the Greater Kyz Kala [1] after the collapse of the central section. Note the additional break on the left and the undercut gullies below. There is no access to the rooms of the lower storey, which were lit by narrow windows. Little survives of the internal arrangements of the upper storey, seen through the central gap. Note the horizontal line on the west wall below the corrugations, which marked the floor of the flat roof.



Figure 180 Rooms 1, 2 and 3 against the west wall of the Greater Kyz Kala [1]. Of particular interest are their changing levels, as can be seen by comparing the levels of the string courses of the three rooms. The barrel-vaulted Room 1 is considerably higher than the

domed Room 2 (only a trace of a squinch in the left corner survives) and that is higher than Room 3. The cone-shaped squinch of Room 3 is set within a curving rectangular panel, rising from a two-brick string course.



Figure 182 Part of Room 3 and Room 4 photographed by Cohn-Wiener in 1920 when more of the appliqué design above the string course survived.



Figure 181 Rooms 3 to 5 and the stairway in the north-west corner of the Greater Kyz Kala [1]. Note the variety of roofing employed, the cone-shaped squinch in Room 3 and the quadripartite elliptical vaults in Rooms 4 and 5, that of Room 4 being embellished with an appliqué design above the string course.



Figure 183 The stairway in the Greater Kyz Kala [1]: the stepped tunnel vault of the flight leading to the lower storey and the springing of a flight leading to the roof. The linking flight has collapsed. Note the small window lighting the stairway.



Figure 184 Greater Nagym Kala [2] from the south east: only traces survive of the entrance (see Figure 186), which was reached via a ramp to the upper storey. Compare the same view in the 1950s (Figure 96).



Figure 185 The collapsed west and south façades of Greater Nagym Kala [2]. The doorway with a pointed head (see Figure 188) can be seen in the centre.



Figure 186 The remains of the principal entrance to Greater Nagym Kala [2], still relatively complete when photographed by Pugachenkova (see Figure 96).



Figure 187 Greater Nagym Kala [2]: a secondary entrance on the south façade, also at upper-storey level.



Figure 188 Greater Nagym Kala [2]: a doorway with a pointed head and bricks laid tile-wise; cf Kharoba Koshuk [25] (see Figure 287).



Figure 189 The steeply sloping secondary entrance in the south façade from the interior. Note the brick-lay and the triangular 'keystone' at the top.



Figure 190 The remains of two rooms on the upper storey behind the west wall of the *köshk* [3] near the Mausoleum of Muhammad ibn Zayd. Note the niche with the pointed head.

Figure 191

The Lesser Kyz Kala [4]: the east façade in 1950 prior to its collapse. The 'doorway' at ground level is a former

window, opened to allow access to the rooms of the lower storey – there was a second window to the right: on the left, the windows lit the stairway.



Figure 192

The Lesser Kyz Kala [4]: the same view as Figure 191, after the east wall had collapsed, revealing the stairway.



Figure 193

The Lesser Kyz Kala [4]: the only illustration of the north façade, unfortunately out of focus, by Cohn-Wiener (1924–5). The

arched opening presumably represented an entrance at ground level, as at Garam Köshk (see Figures 207 and 208).

Figure 194

The Lesser Kyz Kala [4]: the same view as Figure 193 after the collapse of the north wall.





Figure 195
The Lesser Kyz Kala [4]: detail of the stepped tunnel vaults covering the top flight of stairs. The vaults rise from a single brick impost and are formed of curved mud bricks with triangular 'keystones'.



Figure 197 The Lesser Kyz Kala [4]: the stairway in the south-east corner, revealed by the collapse of the east façade in 1991. There were three flights, with rooms accessed from the landings. Only the springing survives of the central flight.



Figure 196
The Lesser Kyz Kala [4]: the barrel vault of Room 3 behind the south façade on the lower storey. Note the floor of the upper storey.



Figure 198 The Lesser Kyz Kala [4]: the bottom flight of the stairway (see Figure 197), covered with a stepped tunnel vault, and Room 6.



Figure 199

The Lesser Kyz Kala [4]: the central space or courtyard. Doorways lead into Rooms 7 and 8. A window to the left of the arched doorway (see Figure 200) provided light and air to Room 8.



Figure 201

The Lesser Kyz Kala [4]: the west wall of the domed Room 8 on the upper storey. The dome was carried on cone-shaped squinches set in recessed rectangular panels on a double

string course. The base of the drum was also articulated. On the left, a shallow recess of uncertain purpose – the break is relatively recent.



Figure 200 The Lesser Kyz Kala [4]: the north-east corner of Room 8 with the squinch and the arched doorway into the central space or courtyard.



Figure 202 Byash Ishyk Köshk [5], the south-east façade in the 1980s, photographed by Nikitin. The windows lighting the rooms of the lower storey on the left

have been enlarged to allow the rooms to be used as animal shelters. A simple doorway in the south west led into the central corridor.



Figure 203 Byash Ishyk Köshk [5]: the vaulted rooms behind the collapsed north-west wall.



Figure 205 Byash Ishyk Köshk [5]: the pointed vault of Room 10.

Figure 204 Byash Ishyk Köshk [5]: the corbelled window at the east end (see Figure 202).



Figure 206 Byash Ishyk Köshk [5]: the eroded remains of the rooms of the upper storey. Note the crown of a vault belonging to the lower storey, probably to the central corridor. The remains of a cone-shaped squinch can be seen behind the further ranging rod.

Figure 208 Garam Köshk [6]: the north-west façade with a central iwan. An arched doorway can be seen at the rear of the iwan (Figure 62); collapse on either side has revealed high, barrel-vaulted rooms (Figure 102).



Figure 207 Garam Köshk [6]: the south-east façade with a central iwan entrance. The openings on

either side are windows enlarged to permit access to the domed rooms flanking the iwan.



Figure 209 Garam Köshk [6]: the cone-shaped squinch formed of six concentric arches in Room 5.

Unlike the squinches in the Kyz Kalas, this squinch is not set in a rectangular panel.



Figure 210 Garam Köshk [6]: view of the fragmentary remains of the upper storey looking west.

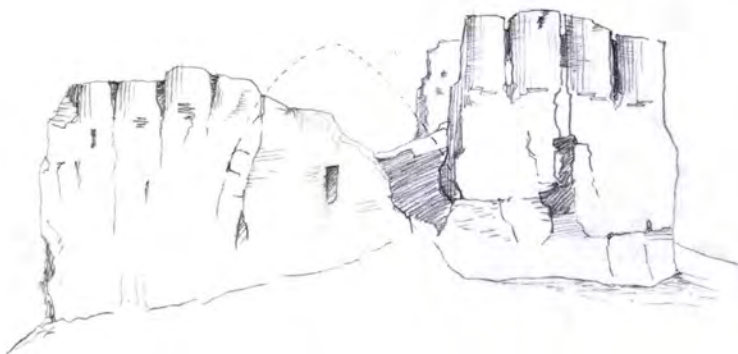


Figure 212 Suli Köshk [7]: drawing of the south-east façade by Rejeb Dzaparov, which indicates the

line of the iwan on the left and its probable curve. The later blocking with a central window can also be seen.

Figure 211

Suli Köshk [7]: the east corner. The two-storey entrance iwan in the centre of the south-east façade was subsequently

blocked and the resulting space lit by a narrow window. The corrugations rise sharply from a course of fired bricks.



Figure 213 Suli Köshk [7]: view of the rear of the iwan and its blocking. Some of the bricks of the iwan can be seen to the right of the ranging rod.



Figure 214 Suli Köshk [7]: the crown of the vault of the doorway near the north corner.

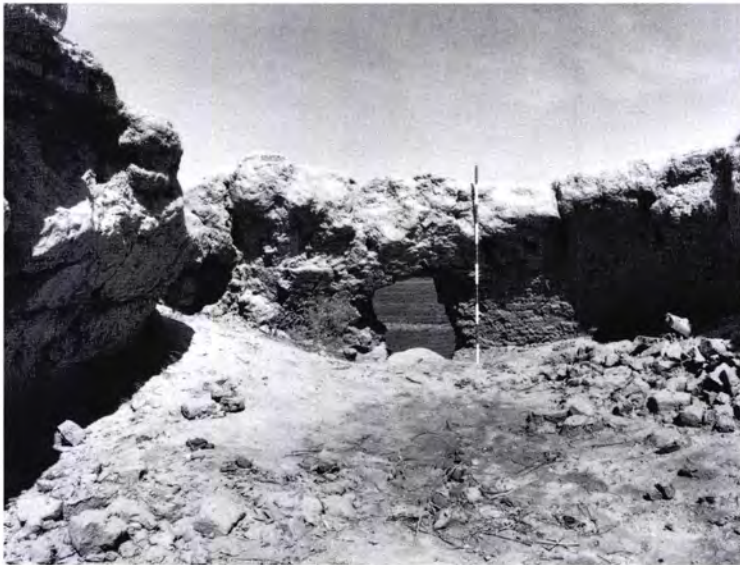


Figure 216 Suli Köshk [7]: the surviving sections of the *pakhsa* dome of Room 2.



Figure 215 Suli Köshk [7]: a deep crack in the façade has revealed the crown of the vault of a room on the east corner and the floor of an upper-storey room.



Figure 217 Suli Köshk [7]: the northern and central area of the upper storey. The stairway was on the left, the top of the domed room, 2, in the centre,

and Rooms 5 and 6 on the right. Preserved within the high walls are deep slots possibly serving as ventilation chimneys. In front of them is a low *suffa* or bench.



Figure 218 Suli Köshk [7]: the north corner of Room 6. The horizontal ranging rod is resting on the *suffa*. Above can be seen one of the ventilation slots. Timber beam-slots can be seen in the wall behind the vertical ranging rod.



Figure 219 View of Byash Barmak Köshk [8] from the south west, the only *köshk* surviving within a city.



Figure 220 Byash Barmak Köshk [8] from the rear during the excavations undertaken by

YuTAKE. The Mausoleum of Sultan Sanjar is in the distance, on the left.



Figure 221 Penapir Köshk [9] from the south east.

Figure 223

All that survived in 1998 of the south façade of the *köshk* [10] south of Gyaur Kala. There were rooms each side of a tall central

iwan, the springing of which still just survives on the west side. The corrugations rose from a course of fired bricks.



Figure 222 Penapir Köshk [9]: view of the surviving dome of Room 4 in 1997. The interior was covered by an exceptionally strong clay and straw mortar, blackened by smoke. Part of it had collapsed by 1998.



Figure 224

A view of the *köshk* [10] south of Gyaur Kala from the south east in the 1950s, taken from Pugachenkova (1958, 151). Since

that time the east façade, and the rear of the *köshk*, has collapsed and the south façade has deteriorated.



Figure 225 The *köshk* [10] south of Gyaur Kala: detail of the west side of the south façade showing at the upper right a few vertical bricks belonging to the springing of the central iwan.



Figure 227 The Lesser Nagym Kala [11]: the interior from the north west with the antechamber on the right. Note the deep slots for timber flooring and reinforcing beams.

Figure 226 The Lesser Nagym Kala [11]: the south-east façade. There are numerous deep slots piercing the walls near the base of the corrugations both for reinforcing beams and to carry timber flooring, the latter possibly a later addition. The opening in the skirt is an enlarged window.

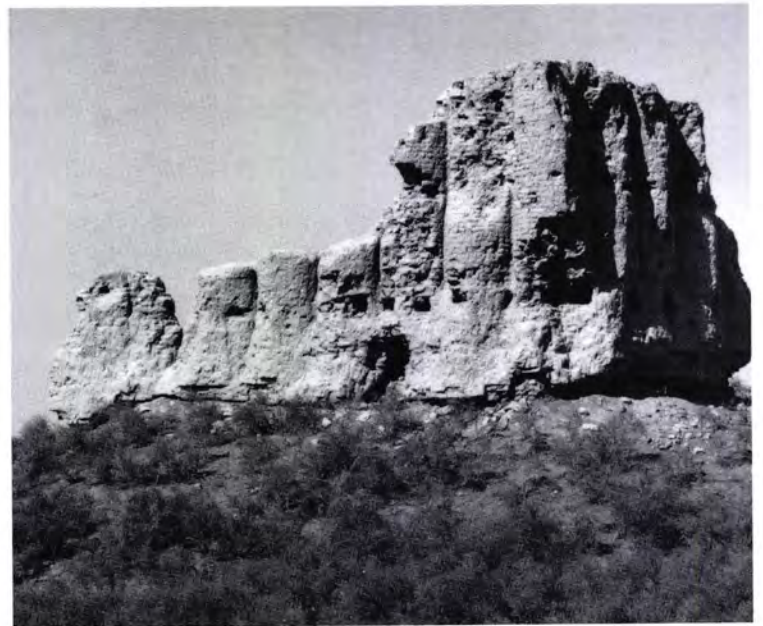




Figure 228 The Lesser Nagym Kala [11]: detail of Figure 226. The corrugations are formed of curved bricks and rise from a course of fired bricks.



Figure 229 The south-east corner of Durnali Köshk/*Ding*. The two central 'corrugations' on each side have been flattened and widened to form pilasters, separated by a slightly wider recess than usual to allow for windows (cf Kelte Minar, Figure 233). Note the slots for timber reinforcing beams. The tower formed part of a walled complex of buildings.



Figure 230 The interior of Durnali Köshk/*Ding*. Part of the dome of the single room on the lower storey survives, together with traces of the floor of the upper storey room. The windows between the pilasters still survive.



Figure 231 Kyz Kala [13] near Kelte Minar: the south-east façade with the principal entrance. The entrance is at ground level and is emphasized by being flanked by wide pilasters rather than corrugations: these start nearer the ground than in most *köshks*. The arched entrance still survived when the building was surveyed by Pugachenkova (1963, 232) (see Figure 82).



Figure 232 The south-west and collapsed north-west façades of Kyz Kala [13] near Kelte Minar. Note the flattened pilasters in the centre of the south-west façade, and the corrugations starting from near the ground.

Figure 233 Kyz Kala [13] near Kelte Minar: detail of the centre of the south-west façade with the flattened pilasters and central space, possibly for a window (cf Durnali, Figure 229). Timber beams would have strengthened the gap; note the beam-slots.





Figure 234 Kyz Kala [13] near Kelte Minar: detail of the collapsed north corner with the top of the vault of the stairway, 8. The vault was reinforced with ribs or armatures.



Figure 235 Kyz Kala [13] near Kelte Minar: Room 4 on the north east.

Figure 236 Ovliali Köshk [14]. The entrance in the centre of the south façade consisted of a high portal enclosing a doorway with a recessed panel above. This form of 'overdoor' became popular, occurring at the House east of Gyaur Kala [15] (see Figure 238) and Porsoy Köshk (see Figure 244).





Figure 237 House east of Gyaur Kala [15]: the surviving section of the east façade, with the arch of the central iwan rising on the right. Note the slots for timber reinforcing beams.



Figure 238
The left arch of the iwan of the House east of Gyaur Kala [15], with a rectangular panel with a stepped arched niche above the doorway, similar to those at Ovliali Köshk [14] and above the doorways of the central room of Porsoy Köshk [16].



Figure 239 House east of Gyaur Kala [15]: the vaulted entrance hall, Room 1.



Figure 240

Porsoy Köshk [16]: the north corner and north-east façade, with the side walls of the iwan entrance in the centre surviving. Many of the external walls of Porsoy Köshk were standing when it was photographed by Pugachenkova (see Figures 65 and 88). This was an unusually high *köshk*, particularly the rooms of the upper storey, with their belvederes. Some of the side walls of these central features are still standing. Note the pilasters and reveals at the top of the standing wall at the top right.



Figure 241

The east corner of Porsoy Köshk [16]. Note the ribbed pilasters surviving on the upper storey of the south-east façade, the remains of the stairway on the corner, and the raised pilasters and recessed panels on the standing interior wall of the north-east façade.

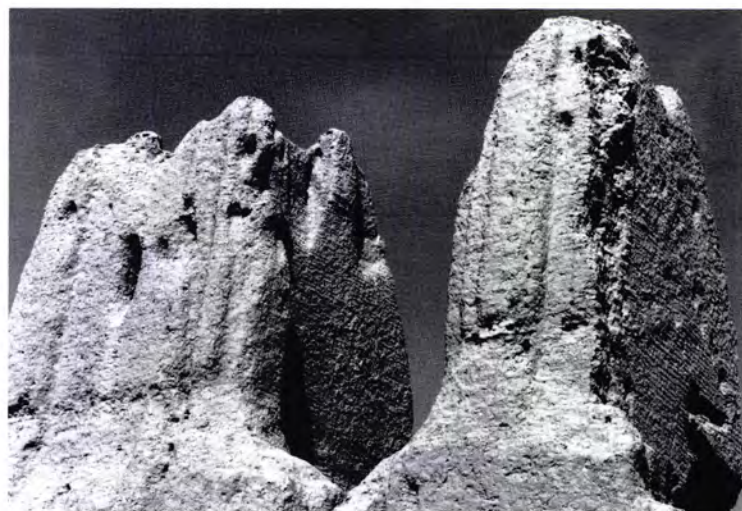


Figure 242 Porsoy Köshk [16]: detail of the ribbed pilasters and reveals decorating the south-east façade (see Figure 65). Note the high internal wall of Room 5 with a raised pilaster to carry a cross vault, flanked by recesses, as in the palace in Shahryar Ark [20].



Figure 243 Porsoy Köshk [16]: the only surviving section of external wall is on the south east. Traces can be seen of the decoration of the élite upper storey with engaged ribbed pilasters, framing the central opening of the belvedere (see Figure 111).



Fig 244 Porsoy Köshk [16]: the cruciform central room, 3, with 'overdoors' of rectangular panels and niches with stepped heads.



Figure 245 Porsoy Köshk [16]: view across the central room, 3. Note the pilaster which would have carried the cross vault, flanked by recesses, on the tall side wall of Room 11, and the deep slot for a timber beam or ventilation channel.



Figure 246 Porsoy Köshk [16]: the doorway of a tall, narrow, corridor-like room, 8, supporting the side walls of the north-east belvedere.



Figure 248 The east façade of Yakkiper Köshk [17]. The walls are plain, relieved only by a string course of fired bricks between the second and third storeys: there is a low door (see Figure 249) in the centre.



Figure 247 Porsoy Köshk [16]: Room 6. The barrel vault rises from a three-brick string course.



Figure 249 Yakkiper Köshk [17]: a low arched doorway in the north-east façade. There is a second such doorway on the south west.

Figure 251 Yakkiper Köshk [17]: a view into the cruciform Room 2 from the upper storey. Note the vaulting of the internal arches and the band of brick laid vertically.



Figure 250 Yakkiper Köshk [17]: the cruciform central room, 2, looking towards the principal entrance on the south east. Part

of the arch of the iwan is still standing, and a small stump of a later blocking wall can be seen through the arch on the left.



Figure 252 The tall Rooms 3 to 5 revealed by the collapse of the north-west façade of Yakkiper Köshk [17]. They were roofed

with quadripartite lanceolite vaults reinforced with armatures or raised ribs (see *also* Figures 51 and 112).

Figure 253 Yakkiper Köshk [17]: the crown of the doorway from Room 6 into Room 2.



Figure 254 Yakkiper Köshk [17]: Room 8, roofed with a squinch or *balkhi* vault on a string course, with triangular slots.



Figure 255 Yakkiper Köshk [17]: Room 8 and the room above, revealed by the collapse of the *balkhi* vault (see Figure 254).

Note the doorway in the upper-storey room providing access to the stairs, to the left of the ranging rod.

Figure 256 Little survives of the 'Dig-house Köshk' behind the expedition house, seen from the south west.





Figure 257 The south-east corner of Yelhazar Köshk [19]. The plan of this poorly preserved *köshk*, dominated by electricity pylons, is essentially cruciform. The walls appear to have been plain and there are numerous beam-slots.

Figure 258 A room in the north-west corner of Yelhazar Köshk [19]. The doorways are unusually narrow.



Figure 259 A view of the central courtyard of the palace in Shahryar Ark [20] from the south east. In the distance on the left is the corrugated *kepter khana* [22]. The wall in the centre is the surviving north wall of the great west iwan, the back wall of

which has collapsed, although it was still standing in Cohn-Wiener's photograph of 1924–5 (Figure 262). To the right are the remains of the northern section of the palace, including the north iwan and its doorway to the northern rooms.



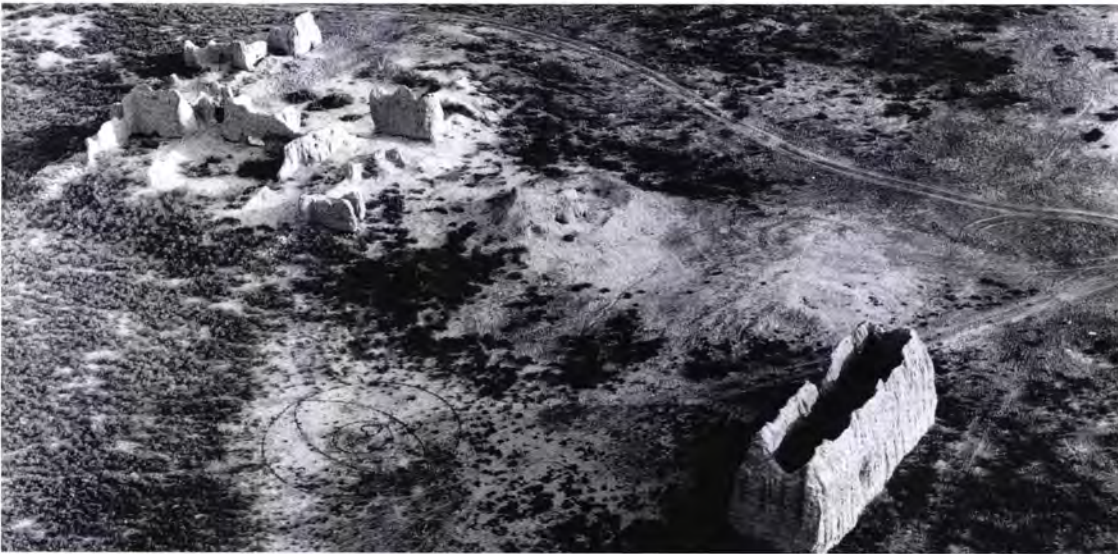


Figure 260 The palace in Shahryar Ark [20]: aerial view from the north west showing the ruins of the palace on the left, extensive areas of mounding covering additional buildings on the right of the palace, and the *kepter khana* [22] in the right foreground. The low arch in the centre of the palace ruins leads into the north iwan. The low area in the foreground would presumably have been occupied by gardens. The 'eye' on the ground is recent and laid out with stones.



Figure 261 The courtyard walls of the palace in Shahryar Ark [20] were decorated with engaged ribbed pilasters in the corners and along the façades, only a few of which survive. This example is in the north east with Room 3 behind.



Figure 262 The palace in Shahryar Ark [20]: the west iwan in 1924–5, photographed by Cohn-Wiener when the back wall was standing. Note the raised pilasters to carry the cross vaults, separated by recesses.



Figure 263 The palace in Shahryar Ark [20]: 'chequerboard' brickwork in the back wall of Room 17, framed by the walls of the vault and set above a deep string course.



Figure 264 The palace in Shahryar Ark [20]: a small 'landing', 9, covered with a low quadrupartite vault. The arches of the stairway are formed of bricks set radially.



Figure 265 The surviving west walls of Rooms 23 and 26 in the south east of the palace in Shahryar Ark [20]. The wall of Room 26

has a chequerboard brick design like that in Room 17 (see Figure 263). The doorway (see Figure 266) leads into Room 22.



Figure 266 The palace in Shahryar Ark [20]: the doorway from Room 26 to Room 22 (see Figure 265) with bricks set radially on a course set tile-wise.

Figure 267 The Kurtly city site. On the left, the pavilion; in the middle distance, the minaret, all that survives of the mosque; on the right, the fort.



Figure 268 The south-west façade of the pavilion at Kurtly [21]: on the left, the pavilion; on the right, the later buildings.



Figure 270 The pavilion at Kurtly [21]: view from the south, showing the main building, with entrances in the centres of both sides. In the foreground is the platform; the later buildings are not shown.



Figure 269 The pavilion at Kurtly [21]: the remains of a band of Seljuk cut-brickwork, set on fired bricks, on the south-west iwan. Originally all four iwans would, presumably, have been similarly decorated.



Figure 271 The pavilion at Kurtly [21]: the north-east façade opening on to the platform. The iwan was vaulted and ended in a semi-dome, which rose from elaborate squinches with a trilobate motif in the centre on a fired-brick string course.

Figure 273 The doorway from Room 4 into Room 9 in the pavilion at Kurtly [21].



Figure 272 The northern range of rooms, from Room 7, looking east through Rooms 6 and 1, in the pavilion.



Figure 274 The *kepter khana* [22] in Shahryar Ark from the south east. The low doorway in the centre of the east side seems to have been the only entrance and source of light and ventilation.

Figure 275 The *kepter khana* [22] in Shahryar Ark: the southern end showing the 'short' corrugations with central

rib and traces of the row of linking squinch arches, rising from a course of fired bricks, above.



Figure 277 The *kepter khana* [22], the north end. Note the pilasters carrying the cross vaults, the surviving curve of the vault at the end and the remains of the panels of deep brick niches between the pilasters.



Figure 276 The *kepter khana* [22] in Shahryar Ark: the low and narrow doorway in the centre of

the east side. The fired-brick foundations of the building can be seen near the base of the ranging rod.





Figure 278 The *kepter khana* [22] in Shahryar Ark: the south end of the interior. Note the pilaster on the right and the cross vault rising from a course of fired bricks, as well as the remains of panels of niches between the pilasters.



Figure 279 The *kepter khana* [23] in the south of Sultan Kala, the 'Seljuk House', from the south east. The external walls are decorated with recessed panels with stepped heads, like those used as 'overdoors' at Ovliali [14], the House east of Gyaur Kala [15] and Porsoy [23]. Although the ground level has risen considerably (see the excavations in the interior, Figure 281), the panels were probably approximately this size and would have risen from a course of fired bricks, seen in an archive photograph on the west wall (Figure 280). Since the original ground level was lower, there would probably have been a plain skirt below the panelling.



Figure 280 The remains of the west side and the interior of the 'Seljuk House', prior to the YuTAKE excavations. The course of fired bricks running along the west wall probably formed the base of the panelled decoration seen on the east side (see Figure 89). Note the slots for timber reinforcing beams.



Figure 281 YuTAKE excavations in the 'Seljuk House' revealed niches like those in the Ark *kepter khana*, preserved by being sub-surface.



Figure 282 The *kepter khana* [24] in Iskandar Kala from the north east, showing the northern façade and part of the interior with serried ranks of hooded niches along the southern wall (see also Figure 121).

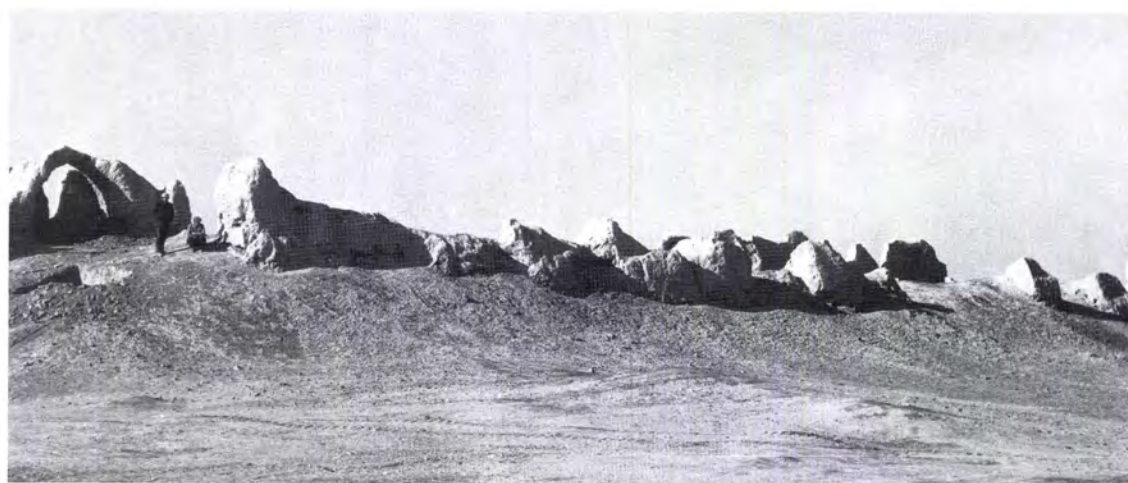


Figure 283 The north façade of Kharoba Koshuk [25] in 1966, showing one of the surviving arches at the east end (see also Figure 122).



Figure 284 The south façade of Kharoba Koshuk [25] in 1966 (a) and 1981 (b). There has been considerable deterioration since that time.



Figure 285 The west end of Kharoba Koshuk [25] in 1966.



Figure 286 The south wall from the interior of Kharoba Koshuk [25] in 1966.



Figure 287 Kharoba Koshuk [25] in 1966: a doorway in the south façade with the arch formed of bricks set tile-wise, as in the Greater Nagym Kala [2] (see Figure 188).



Figure 288 The façade and north side of the Timurid pavilion or Köshk Imaret [26] in 1961, photographed by S Chmelniczki.



Figure 289 The Timurid pavilion or Köshk Imaret [26] from the south east, showing the rear wall with

engaged pilasters in the upper register and the south wall embellished with registers of plaster panels.



Figure 290 The iwan of the Timurid pavilion or Köshk Imaret [26]: traces of plaster survive over the original brickwork.



Figure 291 The Timurid pavilion or Köshk Imaret [26]: the surviving stucco in the lower niche on the left of the façade.



Figure 292 The interior of the Timurid pavilion or Köshk Imaret [26], with registers of plaster panels, alternately wide and narrow.

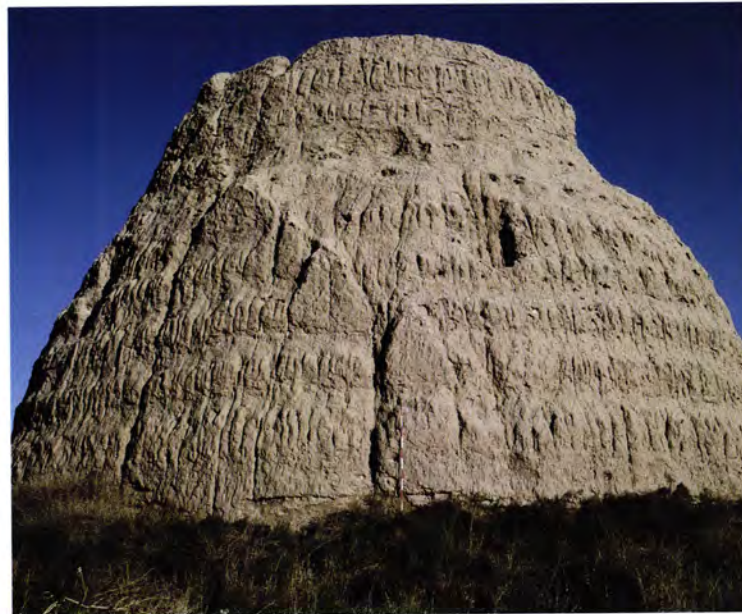


Figure 293 The banded profile of Ice-house 1 [27] from the north east: the openings of two ventilation chimneys can just be made out.



Figure 295 Ice-house 1 [27]: detail of wooden beams projecting from near the top of the interior.



Figure 294 The circular interior of Ice-house 1 [27]: the remains of the north door are on the left, and a broken chimney can be seen towards the right. The niche has been destroyed. The lower parts

of the ice-house are constructed of bands of *pakhsa* alternating with mud brick. Around the top are a series of rows of beam-slots, with beams projecting alternately to right and left (see Figure 295).

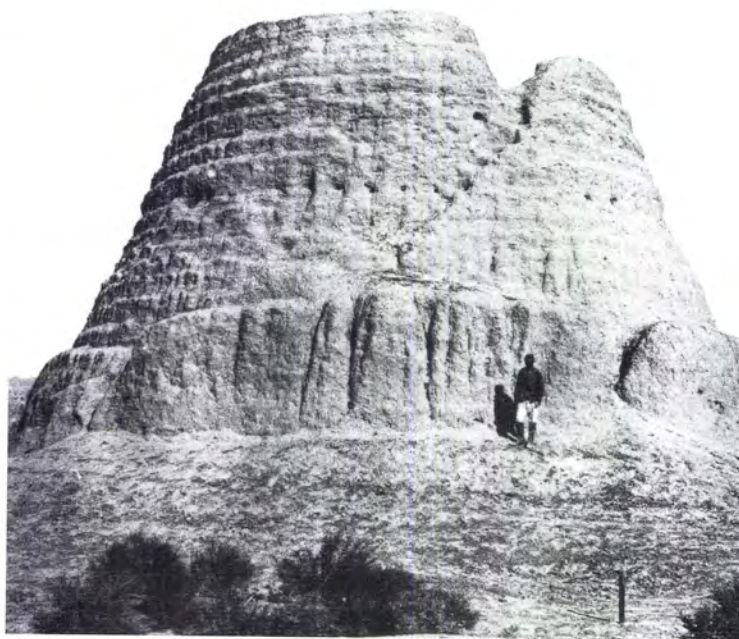


Figure 296 The best preserved of the arched niches in the interior of Ice-house 1 [27], with a chimney (see Figure 297) behind.



Figure 297 One of the ventilation chimneys of Ice-house 1 [27].

Figure 298 Ice-house 2 [28] in 1924–5 before the collapse of a large section (photograph by Cohn-Wiener).



The base, stepped profile and steps providing access to the dome are visible in this early photograph.



Figure 299 The cone of Ice-house 2 [28] rising from its platform, seen from the south west.



Figure 300
The interior of Ice-house 2 [28] with the north door on the right. Courses of diagonal brickwork embellish the upper zone.

Figure 301 Ice-house 2 [28]: the east niche with its blocking *in situ*. The arch is constructed of courses of bricks laid radially with a 'keystone' of horizontal bricks.



Figure 302 The interior of Ice-house 3 [29] looking north. The entrance (see Figure 303) is on the left. Note the numerous beam-slots.



Figure 303 The shallow arch of the doorway of Ice-house 3 [29], on the north west, blocked to reduce its size.



Figure 304 The remains of Ice-house 4 [30] in 1998: a section had collapsed in the preceding winter. The vertical walls and stepped upper section of this ice-house are different from the others.

Figure 305 The so-called 'nineteenth-century merchant's house' [31], seen from its extensive outer courtyard on the east.



Figure 306 The interior of the better-preserved southern room of the nineteenth-century merchant's house [31]. It was roofed by cross vaults and *balkhi* vaults.



Figure 307 The cross vaults and *balkhi* vaults seen at the south-west end of Figure 306.



Figure 308 Electricity Station *Ding* 1 [32a], the only octagonal *ding* surviving in the oasis, and the only one with decorated external walls. There is no access to the ground floor: the upper storey would have been reached by ladder.



Figure 309 Electricity Station *Dings* 2 [32b] and 3 [32c] (see Figures 310 and 311) from the south.

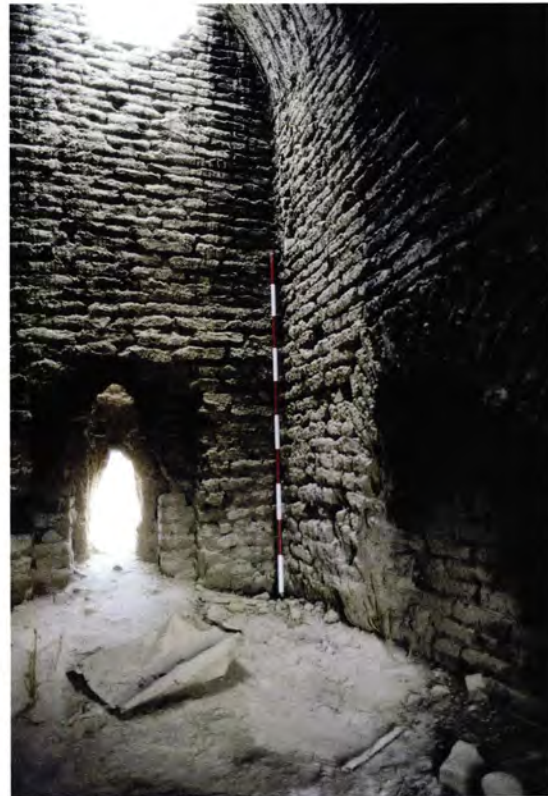


Figure 310 The interior of Electricity Station *Ding* 2 [32b], a tall, apparently single-storey *ding*.



Figure 311 The interior of Electricity Station *Ding* 3 [32c], a two-storey *ding* with niches on both floors.

Figure 313 The northern wall of Bairam Ali *Ding* 2 [32e] collapsed recently.



Figure 312 Little survives of Bairam Ali *Ding* 1 [32d], which lies beside the road from Bairam Ali to Merv. Typical squinch vaults with triangular slots, as in one of the rooms at Yakkiper (see Figure 254), were employed.



Figure 314 The 'school *ding*' [32f] in the Kalinin *kolkhoz* playground is unusual in having different forms of vaulting at each end, in this case a squinch vault.



Figure 315 The 'school *ding*' [32f] in the Kalinin *kolkhoz* playground: the barrel vault is closed with a semicircle of bricks (see Figure 314).



Figure 316 The 'farmyard *ding*' [32g] in a Kalinin *kolkhoz* farm.



ABBREVIATIONS
AND
BIBLIOGRAPHY

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ABBREVIATIONS

CHI	<i>The Cambridge History of Iran</i> , 8 vols, 1968–, Cambridge
EI ²	<i>The Encyclopaedia of Islam</i> , 2nd edn, Leiden
Iran XXXI 1993	Herrmann, G, Masson, V M, Kurbansakhatov, K, et al, 'The International Merv Project, Preliminary Report on the First Season (1992)', 39–62
Iran XXXIV 1996	Herrmann, G, Kurbansakhatov, K, Simpson St J, et al, 'The International Merv Project, Preliminary Report on the Fourth Season (1995)', 1–22
Iran XXXV 1997	Herrmann, G, Kurbansakhatov, K, Simpson St J, et al, 'The International Merv Project, Preliminary Report on the Fifth Season (1996)', 1–33
Iran XXXVI 1998	Herrmann, G, Kurbansakhatov, K, Simpson St J, et al, 'The International Merv Project, Preliminary Report on the Sixth Season (1997)', 53–75
Iran XXXVII 1999	Herrmann, G, Kurbansakhatov, K, Simpson St J, et al, 'The International Merv Project, Preliminary Report on the Seventh Season (1998)', 1–24
SPA	<i>A Survey of Persian Art from Prehistoric Times to the Present</i> , ed A U Pope 1938–9, 2nd edn 1964, reprinted 1967, 3rd edn 1977, reprinted 1981, New York and Oxford
Ṭabarī	al-Ṭabarī, Abū Ja'far Muḥammad b. Jarīr, 1879–1901. <i>Tārīkh al-Rusul wa'l-Mulūk</i> , ed M J de Goeje et al, Leiden, 15 vols in three series. English translation by various scholars, <i>The History of al-Ṭabarī</i> , Albany, New York, 1985–
Trudy YuTAKE	<i>Trudy Yuzhno-Turkmenistanskoi Arkheologicheskoi Kompleksnoi Ekspeditsii. Trudy Instituta istorii, arkheologii i etnografii AN Turkmenskoj SSR</i>

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