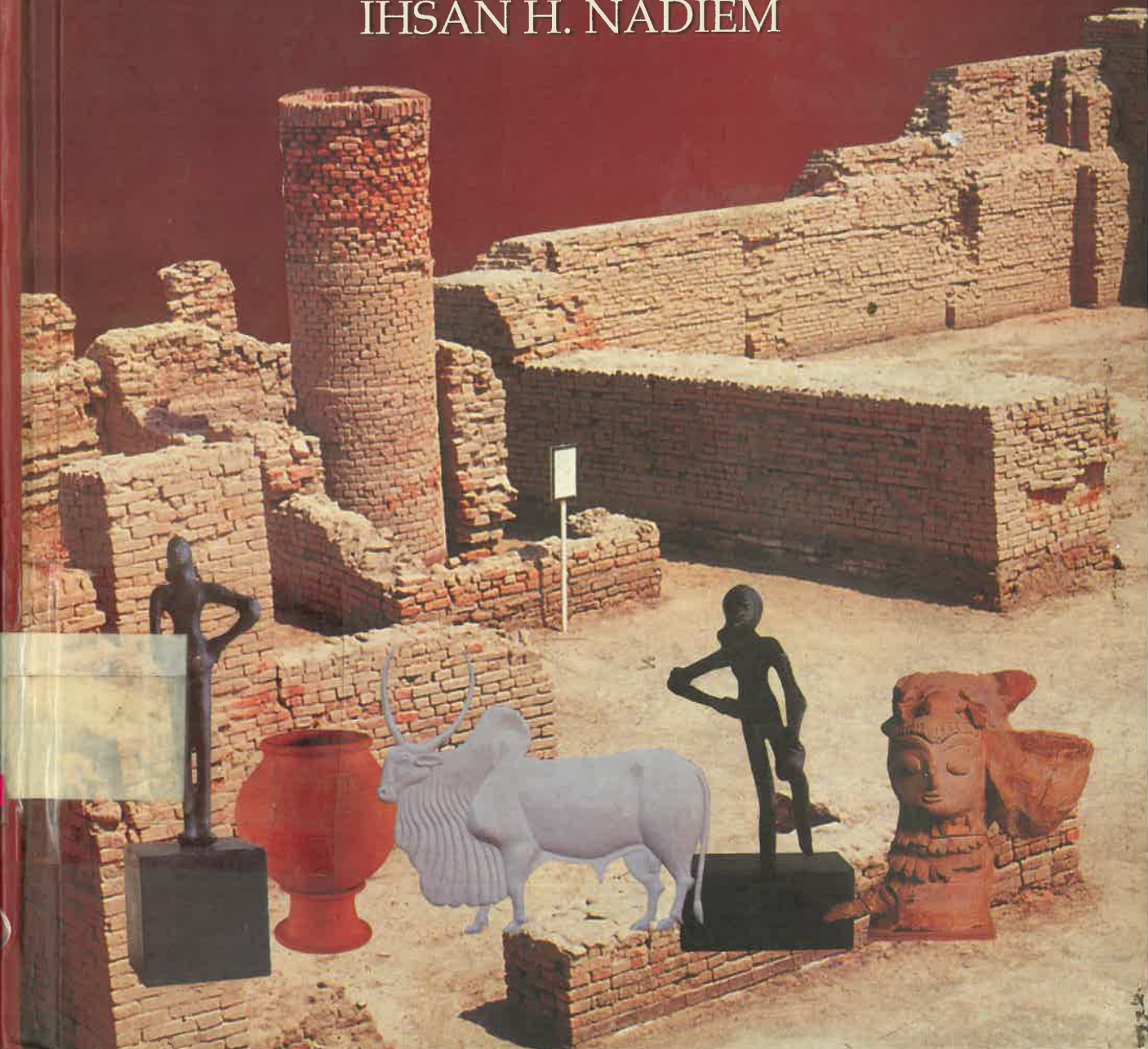


MOENJODARO

HERITAGE OF MANKIND

IHSAN H. NADIEM



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IHSAN H. NADIEM



SANG-E-MEEL PUBLICATIONS
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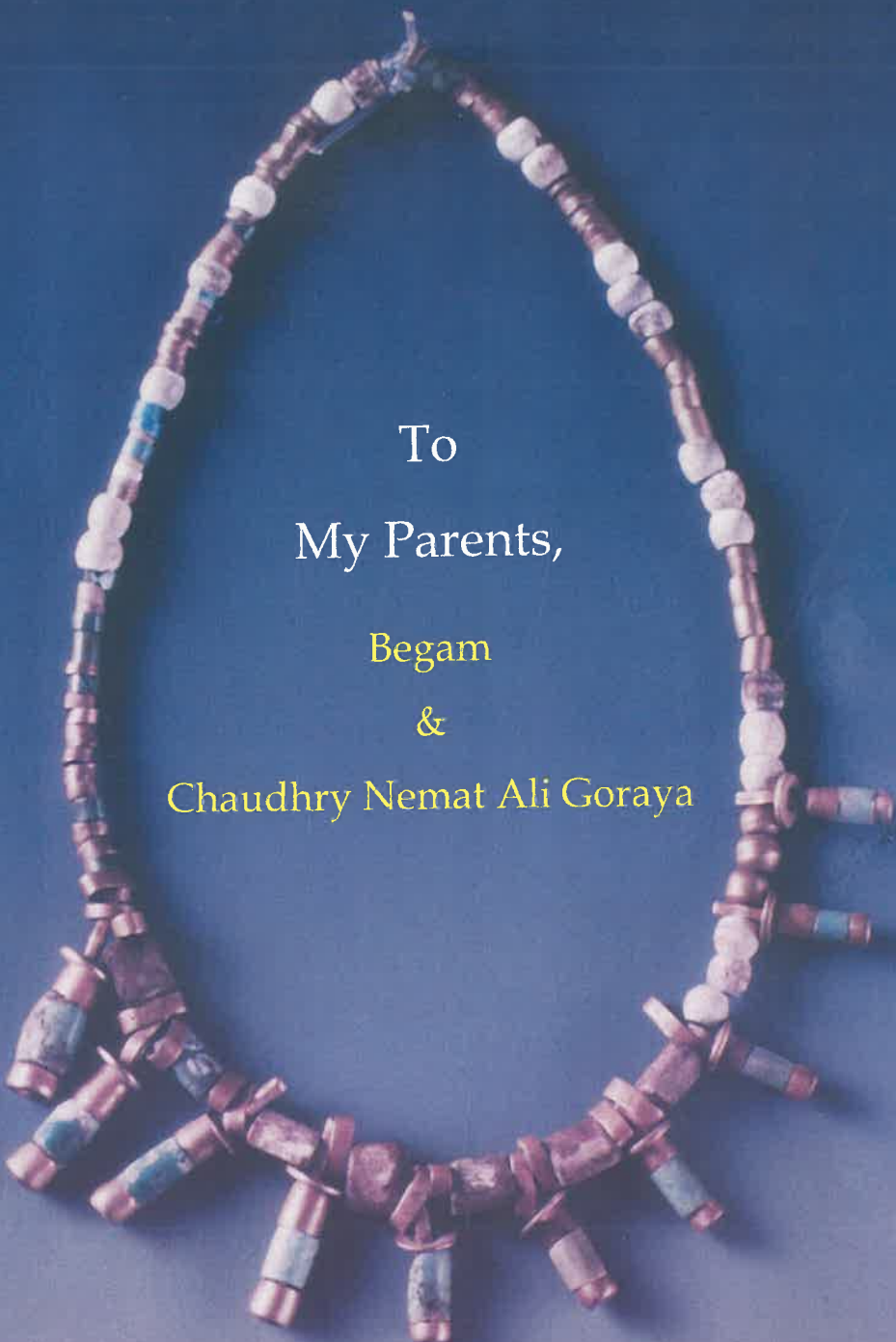
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A necklace made of red, white, and blue beads with a tassel, set against a dark blue background.

To
My Parents,

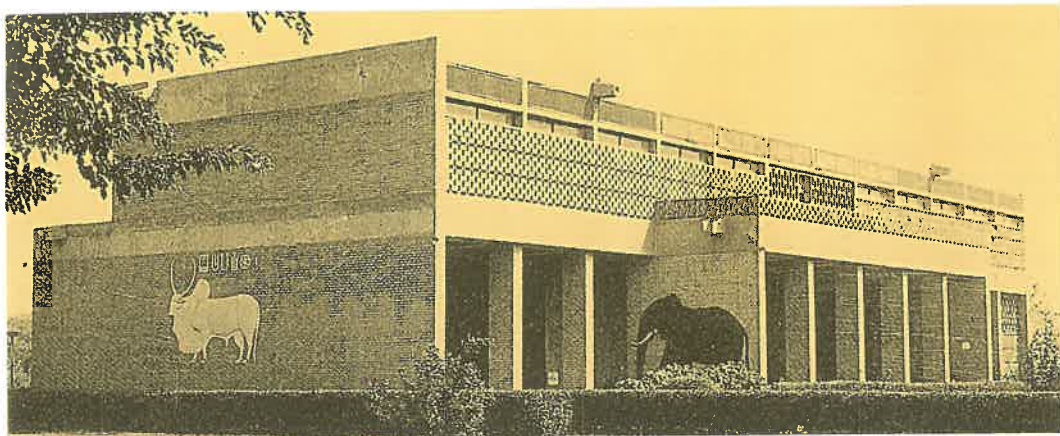
Begam
&
Chaudhry Nemat Ali Goraya



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Foreword



It was about three quarters of a century ago that discovery of Moenjodaro, so to say, startled the whole world. It presented so perfectly, and so faithfully, the life of our distant ancestors that it immediately became one of the most prolific sites of the ancient society, which incidentally is seen continuing in several ways upto the present day.

Sharing with Harappa, in Sahiwal district, the honours of being a metropolitan city of an unprecedentedly vast Indus Civilisation, Moenjodaro became the nucleus of research because of its well-preserved mounds. While the systematic archaeological excavations here have revealed many an interesting feature of this unique culture, the professionals also faced problems and are still trying to solve some of the riddles like the genesis and the fall or end of the city and the civilisation, decipherment of its script, spelling out its religion if at all there was any etc. etc. It is the presence of these questions that has kept alight the torch of further research on Moenjodaro.

However, it was the problem of the possible extinction of its physical remains due mainly to natural causes. which forced its inclusion in some of the burning issues in the field of cultural heritage of the whole mankind. For the past many years UNESCO, in collaboration with the Government of Pakistan, have taken several steps to save this singular architectural legacy to hand over to posterity.

To transfer the records of the archaeological excavations carried out at Moenjodaro



Second century stupa



Re-assembled toy cart with driver & bulls

Preface

To the 2nd Revised Edition

The book was written towards the end of 1993 with the sole aim of presenting somewhat comprehensive information on the world-famous site, in a concise shape, especially for a general reader or a visitor to the ancient city of Moenjodaro. It is a matter of considerable satisfaction that it was well-received even in a wider circle of the society when published in 1994. Its first edition exhausted in a short time impressing upon the imperative need of arranging for a reprint. My publisher friend, Mr. Niaz Ahmad, acting as 'barometer', indicated the preference for its revision to further its usefulness and make it a compendium to serve as basis for studies on Moenjodaro. I have, therefore, added other areas of excavations which make integral part of the overall picture, though mostly skipped by a visitor to this metropolis of the yore.

The part III of the book, Preservation of Moenjodaro, has also been revised and updated. To make it serve better, critical appreciation of the measures adopted in the efforts to save the remains has also been included.

A select bibliography has been given towards the end, for the benefit of students and those who wish to read further on the subjects of archaeology and Preservation of Moenjodaro.

I must thankfully acknowledge the credit for some of the illustrations appearing in this book. The black & white photographs portraying End of Moenjodaro, as also the plans of the Great Bath and the Assembly Hall, have been picked up from John Marshall's reports. The axonometric reconstruction of stages I and II of the Granary comes from Wheeler's book. The site plan, RWTH Aachen-ACAD drawing, was provided to me by my old friend Michael Jansen. I have included it after correcting and updating, just to keep it in line with this publication. Two photographs, view of the Stupa mound form DK area and that of the lone full-height walls, have been taken from the collection of Asef Nadiem. The rest of the illustrations, including four aerial photographs taken from single-engined Beaver, are exclusively my own love's labour.

My wife Suraiya, children Asem, Asef and Iram stayed with me at the site at a time when living conditions at Moenjodaro were not as congenial as we find them today.



I must also record my grateful appreciation for the patience they showed during my odd trips to collect material, take photographs and restudy some of the remains.

I take it as my pleasant duty to thank the friendly team of workers belonging to the Department of Archaeology at Moenjodaro. Their involvement in and concern about the upkeep and preservation of the unmatched site is indeed very commendable. I wish them luck in their sincere efforts against so many odds.

As I had mentioned in the first edition, this book was written under very peculiar circumstances, but I was not dissatisfied with the result. The way it was welcomed on publication, the apathy of some of those managing Moenjodaro affairs notwithstanding, has given a positive boost to my morale. I am thankful to my friends and colleagues who are appreciative of these efforts and openly welcome the book 'the first of its kind on the subject', as they term it.

Quaid-e-Azam House
241-Fatima Jinnah Road,
75530
April 4, 1995.

Ihsan H. Nadiem
Director of Archaeology Karachi-
Southren Circle

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there are quite a few voluminous reports published over the years. But they are neither handy nor easily accessible to a general reader, or a visitor, thus of not much use for a majority of interested persons. What has always been lacking was the availability of a book on Moenjodaro which would present all the basic facts in a communicable way. A couple of such publications appearing lately in the market are mainly written by non-professionals thus devoid of the faithful presentation. Even when they come from archaeologists, they are too full of technical jargon not easily digestible by layman. However, in either case the writers did not have the first hand experience in the field, which fact alone takes away the true flavour from the 'narration'.

I am happy that this demand has now been met by no other than Ihsan Nadiem who is the most appropriate professional, fully competent to undertake such a project. On an instigation from certain quarter and on my sincere persuasion he has indeed fulfilled a long overdue obligation to the national as well as international community interested in this very outstanding city of the yore. He is a professional archaeologist and has excavated at the site. He has remained here as a Curator. He is also a visiting professor in the University of Engineering and Technology, Lahore, where he teaches Conservation of Architectural Heritage. He has to his credit an Excavation Report, in two volumes. published from Rome, over fifteen research papers published in different professional journals of international repute and proceedings of Seminars and Symposia, and exceeding seventy articles of popular nature appearing in different periodicals of Pakistan. His present effort to present in a concise form the knowledge of a large site and a vast subject is very commendable. I am sure the book will itself speak alike to the professional, the general reader and the visitor to this world-renowned site, which already stands inscribed on the World Cultural Heritage List of UNESCO.

Dr. Nilofer Sheikh

Professor & Chairperson,
Department of Archaeology,
Shah Abdul Latif University
Khairpur.

Introduction



The very word "Moenjodaro" locally construed to say "mound of the dead", evokes an awe. But on reaching the site it turns out into an indescribable sensation of visiting a sprawling city, with lanes and streets having public service amenities, and buildings standing to almost full height. Reclaimed from oblivion only about eighty years ago, after staying buried under the earth for almost four thousand years, the place still gives the visitor a puzzled feeling of walking in a living city, with the only difference that its original inmates are no longer there.

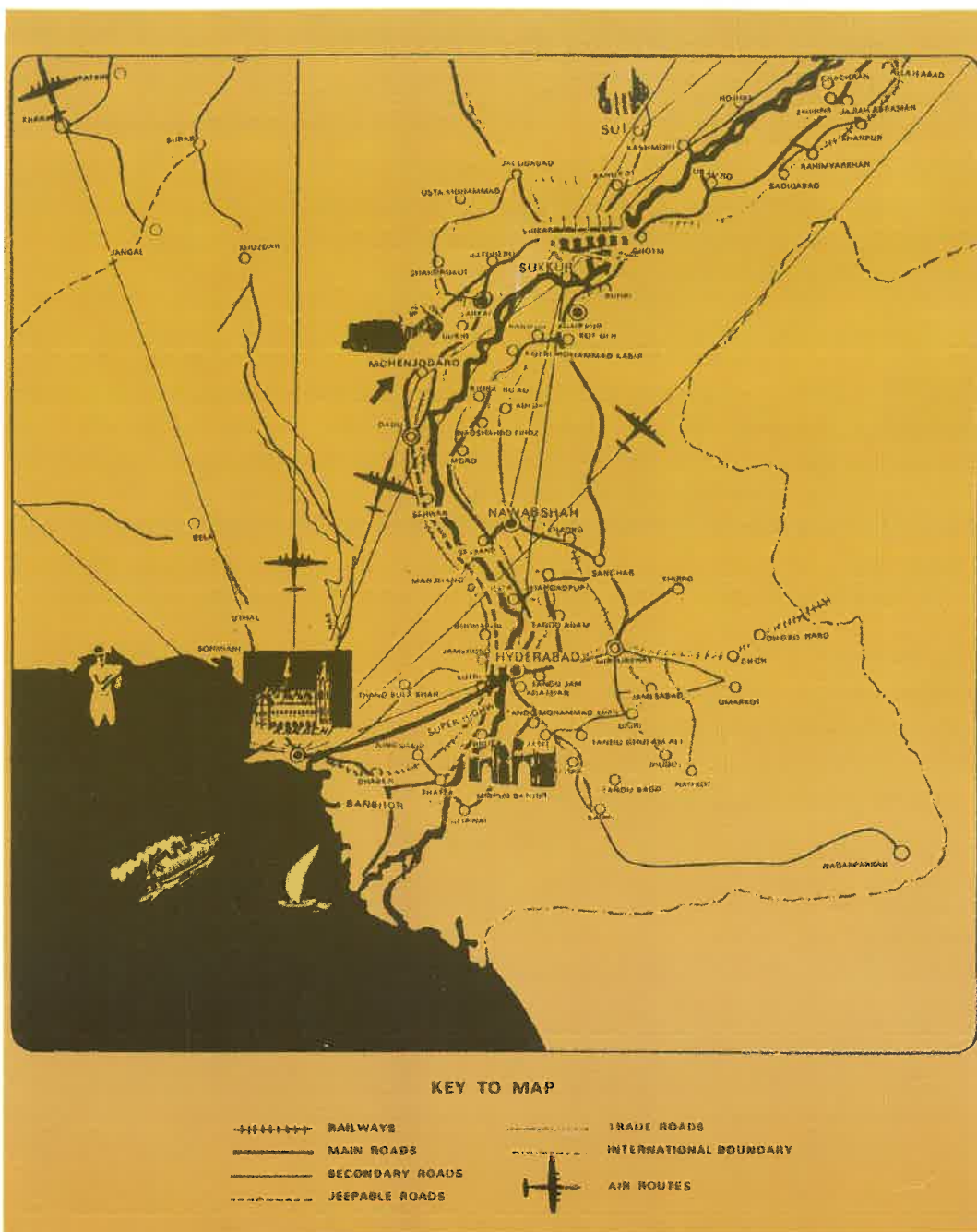
The name of the site has been variedly spelt since its coming to light. The original discoverers, not familiar with the Sindhi language, took it as 'Mohen-jo-daro', attaching the 'mound' with a proper noun. Although not fully backed by later researchers, a school did insist on this name taking the word for 'Mohana', a local riverine tribe. However, in the late-1950s and early 1960s a comprehensively thorough study in this respect brought them to a consensus when its presently spelt name, Moen-jo-daro, with the natural meanings, was officially adopted.

The site is now internationally known to be one of the most prolific metropolitan cities of the Indus Civilisation which flourished roughly from 2,500 to 1,800 years before the advent of the Christian era. The coming to light of a series of highly important sites along the bed of Indus and its tributaries, and its extension along the Ghaggar, has resulted in considerable widening of our knowledge.

The expansion of our understanding of one of the greatest civilisations of all times is



LOCATION MAP



DISCOVERY

The discovery of Moenjodaro is perhaps one of the most fortuitous ones of our period. In the second decade of the present century, when scientific excavations at Harappa had progressed considerably signifying the proto-historic nature of the settlement, R.D. Banerjee, while probing a Buddhist stupa of second century A.D., at Moenjodaro, struck remains of amazing similarity to those already laid bare some 570 km north-east in the district of Montgomery (now Sahiwal) in the Punjab. This aroused the interest of archaeologists and led to full scale and systematic excavations started under the direction of pioneering archaeologist, Sir John Marshall, in the season of 1922-23. The archaeological dig continued intermittently up to 1993

During all these years a number of archaeologists worked in specific different sectors of the site. The areas of their-respective operations were named after each of the excavators. They are still known as SD for A.D. Siddiqui, DK after K.N. Dikshit, HR denoting H.R. Hargreaves, VS referring to M.S. Vats, L named after L. Dhama and MN for Moneer.

After independence, the renowned British archaeologist, Sir Mortimer Wheeler who was then Archaeological Adviser to the Government of Pakistan, restarted the excavations in 1950. But the operation lasted for only one season. He was, however, able to lay claim on another remarkable discovery when he laid bare the remains of a sizeable Granary on the western limits of SD area in the portion now known as W Area. Although amply proved by then, it was further brought closer to Harappa in sharing the nature of metropolitan status.

Even with such extensive excavations over considerable period yielding a host of information about a remarkable civilisation, the archaeologists remained faced with the enigma of knowing about its earlier periods. The rise in subterranean water table made it difficult nay impossible to excavate its lower remains to unfold the mystery shrouding its birth or formative stages. With the specific aim of digging deeper, an American team headed by George F. Dales, in collaboration with the Department of Archaeology & Museums, Pakistan, represented by Ihsan H. Nadiem, excavated at the western fringe of HR area for one season during 1964-65. The dig uncovered a considerable area of structural remains but failed to reach earlier levels in spite of elaborate arrangements for dewatering of limited ground for the purpose. The operations were thus abandoned without achieving the target.



principally due to the extraordinary discoveries which have already engulfed Rajasthan and eastern Punjab on one hand while on the other, reaching far off areas like Shortughai on the northern border of Afghanistan, Ras el Junayz in Oman, and Ghagatrav in Gujarat. No civilisation matches it in extent and richness of cultural material. The source of inspiration of such a vast empire of influence was undoubtedly the metropolitan city of Moenjodaro, which stands out very prominently not only amidst its contemporaries but also among those which preceded or even followed it.

Moenjodaro now stands inscribed on the World Cultural Heritage List by UNESCO and is treated as the common legacy of the mankind. This international body, in collaboration with the Government of Pakistan, had come up with a programme to gather world resources in order to save it from annihilation, feared to be complete this time, due to the three-fold threat of water-logging, salinity and river erosion.

The site, situated at 27°15'N and 68°05'E, lies about 440 kilometres north-east of Karachi, hardly 30 kilometres south of Larkana. A network of black-top roads makes it easily accessible from various points and all the major cities of the country. The metalled road branching off from the Indus Highway at Nasirabad, about 25 kilometres away, links it most appropriately with Karachi and other areas in the southern Sindh. A small but beautiful airport bearing the same name, at a walking distance, serves it with scheduled flights. The Moenjodaro railway station, 10 kilometres away, on the main Karachi-Kotri-Sibi-Queutta line, connects it conveniently with other places.

A beautiful museum established at the site presents, reconstructing the old life, not only the representative collection from Moenjodaro but also the earlier evolutionary periods of man's cultural strides in Pakistan.



Indus seal on Museum wall

The Department itself carried out scientific excavations as salvage operations at the far-extending eastern fringes of the city-site. It was necessitated in 1987 when during the construction of spurs at the river Indus, structural remains and artefacts were found from outside the earlier-known perimeters of the metropolis. These excavations, over 2.5 kilometres away from the Stupa Mound, radically changed the idea of the fullest extent of the city and reopened the question of reconfirming its outer boundaries.

This fact gave rise to yet another of the theories that a large area of the city had submerged under water due to the change in the course of the river Indus.

In the meantime, however, joint efforts of a team of Italian, German and Pakistani experts had probed the site in 1986 mainly to document structures through the newly developed Sounding technique, also termed as 'non-destructive archaeology'. This was in addition to a German project started in 1979 to freshly document the architectural remains corroborating them with the records of the original excavators. It was mainly aimed at a more detailed analysis of the findings of the earlier researches and to carry out surface survey of the site to determine certain geophysical traits unknown so far.

With the newly discovered extent of the city-remains, the area already subjected to archaeological excavations is estimated to form only 10 percent of the whole site. Any further dig at Moenjodaro may, however, not be possible in near future in view of the hazards and problems being faced in preserving the exposed structures.



A general view of SD Area

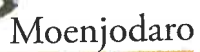


The Site



The vast site, lying on the right bank of the river Indus, consisted of a number of high and low mounds. The one closer to the river was spread over an area of about 450,000 square metres and rose to a height of 5 to 7 metres above the surrounding plane. The other lying towards its west, occupied approximately 80,000 square metres, though its smallness was well compensated by its height which was nearly 22 metres above the level ground.

The whole site was once strewn with potsherds, large number of baked bricks especially in the eroded portions, and out-cropping buried walls. The large scale excavations have laid bare the remains of a very well planned city which can roughly be divided into three areas: i) the citadel, containing administrative and religious buildings, ii) the lower city representing the residential quarters and iii) the outer portion consisting of industrial or commercial areas etc. The citadel, built over an artificial mound, had a fortification wall strengthened with towers. It was shaped like a parallelogram and at the beginning of the excavations, formed one high mound on the western side. A relatively low, though extensive, mound on the eastern side represented, what we now call the lower city, which has brought to light the widest specimens of civic establishment and town-planning, while also revealing different periods of building and rebuilding activity over the so far known span of about one thousand years of the existence of the city. The remains of important buildings uncovered in different areas of excavations are as under:



SITE PLAN OF MOENJODARO



The Citadel Mound



The most prominent of the mounds, lying towards west and having considerable height, is now known as Citadel Mound which consists of SD, L and W Areas. This area had concealed in it the remains of two very distinct periods though having no connection whatsoever with each other except that the Buddhist stupa of Christian era stood on the buried remains of Chalcolithic period buildings. It is, however, extremely interesting that both the periods here are represented by buildings having religious or administrative character.

Buddhist Stupa

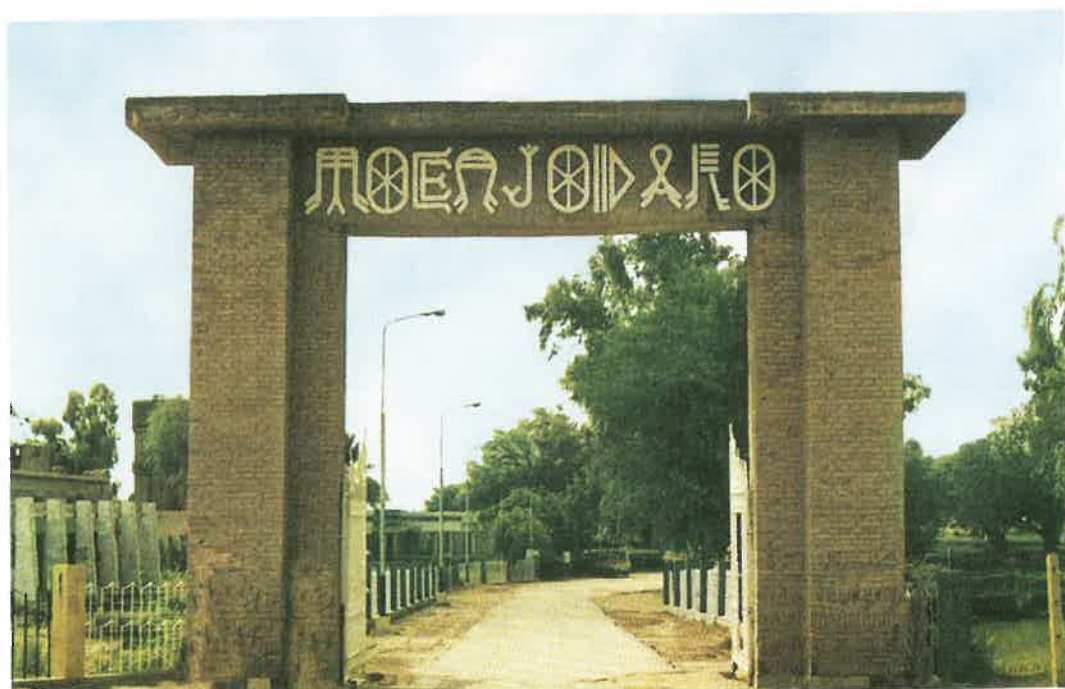
Crowning the citadel mound and adding to the grandeur of the site is a stupa of the 2nd century A.D. Keeping in line with Buddhist traditions of constructing their religious edifices over the elevated pieces of land, the stupa was erected at the highest surviving mound concealing under it the remains of a much earlier period. Encircled by monastic cells on all the four sides, the stupa itself is constructed over a raised platform. The inner core of the stupa proper was built by sun-dried bricks while at all other places, as also the monastic cell, baked bricks had been used. It is of particular interest to note that these bricks were quarried from the old remains perhaps without being aware of the presence of a magnificent city lying under the earth. It was this very stupa which led the archaeologists to the discovery of a marvellous city, and with that a bygone civilisation unsurpassed in many ways by any of its contemporaries.



Moenjodaro



An artist's view of life at Moenjodaro river port



Modern Gateway to Moenjodaro

Great Bath

On the western side of the stupa, across a couple of lanes and assorted structures, are located the remains of the Great Bath, by far the most fascinating building excavated anywhere in the Indus valley. The central tank with overall dimensions of about 12 metres x 7 metres is surrounded by a corridor, opened through brick-pillars. Sunk a little less than 2.5 metres below the courtyard level, the floor of the bath was approached by two separate flights of brick-steps, one each on the northern and southern ends. The brick-steps, in turn, were furnished with timber treads set in bitumen of asphalt. A low platform, raised from the bath floor, is found at the base of the northern flight of steps.

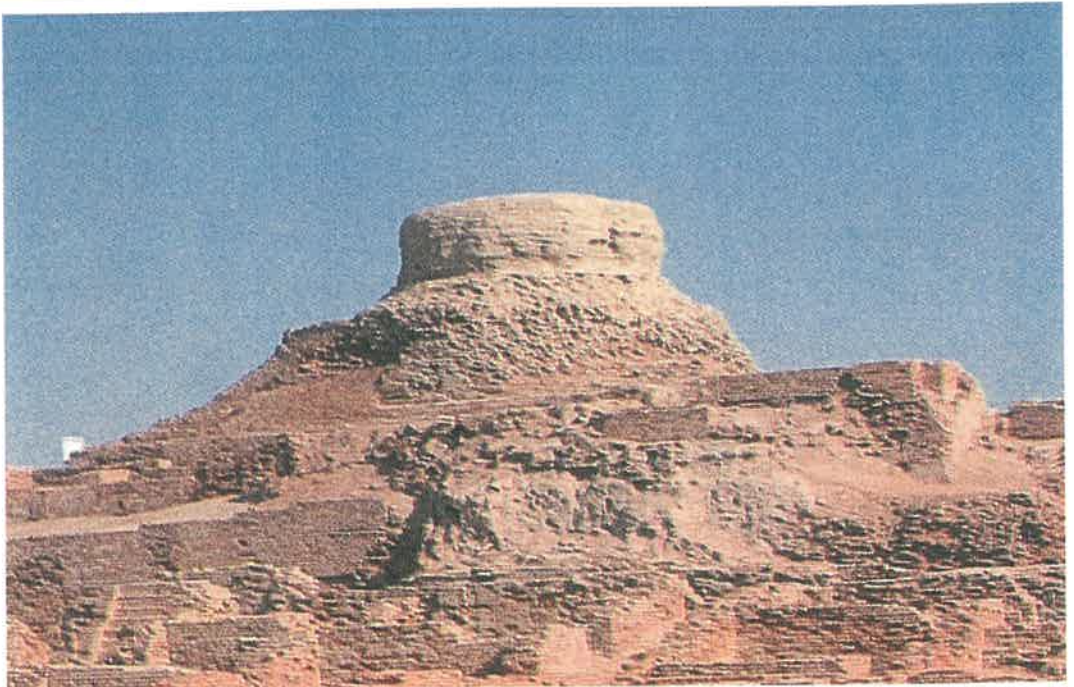
In order to make the floor watertight the bricks-on-edge were provided with gypsum mortar. The same type of mortar was also used on the side-walls, behind which about 2.5 centimetres thick damp-proof course of bitumen was used after raising another baked-brick wall to hold it on the outer side.

The floor of the bath slopes gently towards south-west admitting the water into a corbel-arched drain which turned towards north and then probably to west, out of the citadel.

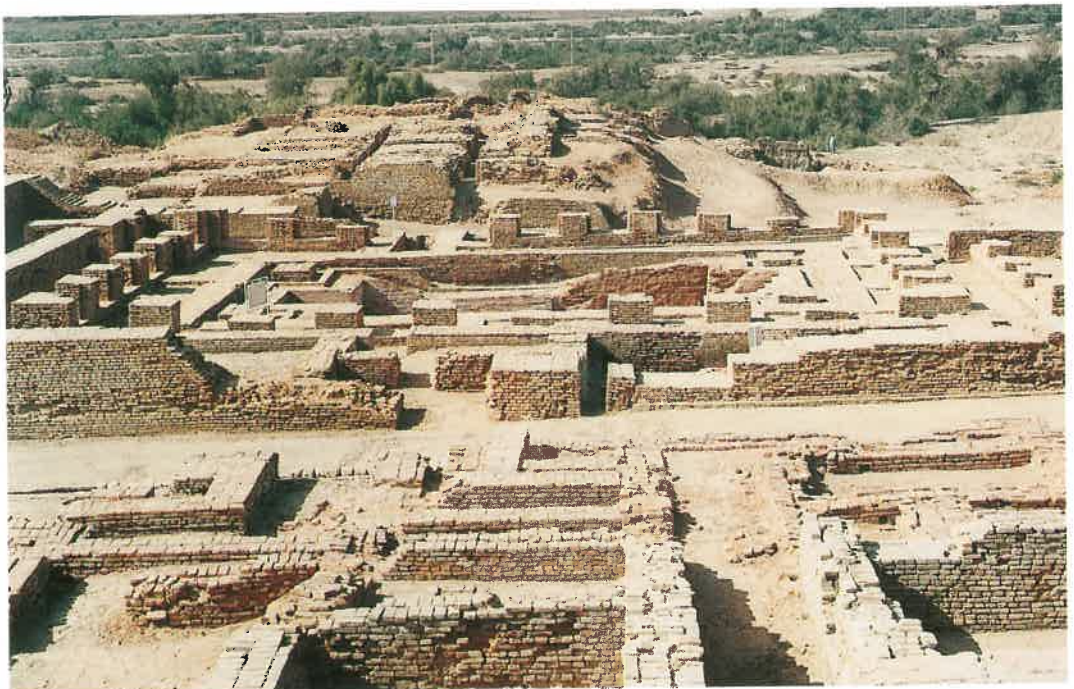
Beyond the corridor on the eastern side are rooms in one of which a double-lined well seems to have been used as one of the sources of water-supply to the Great



A closer view of Great Bath



A general view of Buddhist Stupa

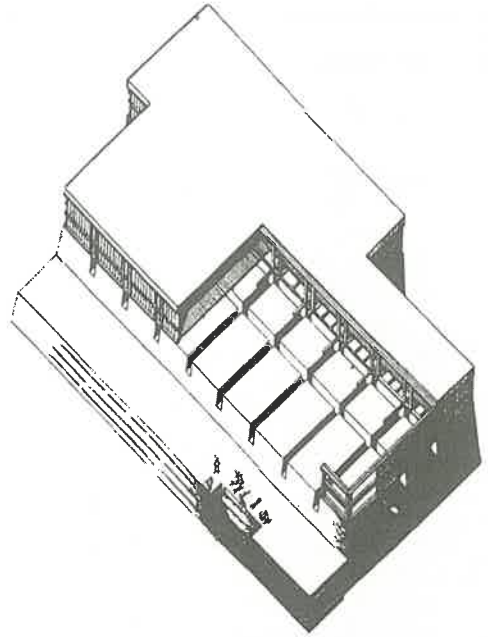


A general view of SD Area showing Great Bath (middle) and Granary platforms

Granary

Immediately west of the Great Bath complex is a well-ventilated building with massive construction. Although only the podium of the large structure survives yet the indication of the presence of features similar to those in the already-discovered Great Granary at Harappa leaves no doubt of its serving the same purpose.

The Granary, which is of earlier period, did have additions to it during the later period, equating it with the Great Bath. The Granary is provided with platform and one-time staircase to facilitate the loading of the grain. Such a large building as this could not be but a State Granary where the produce collected as a sort of tax or revenue was stored.



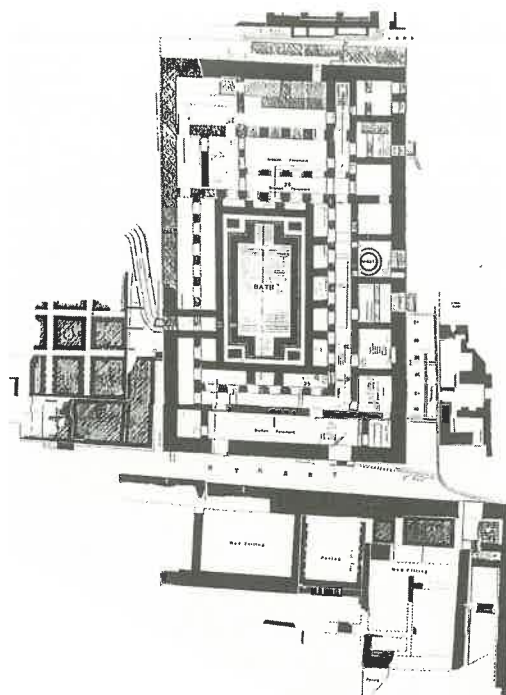
Axonometric reconstruction of stage I and II of the Granary



General view of Granary (foreground) Great Bath and other buildings (middle) Buddhist Stupa (background)



Drain of Great Bath



Plan showing remains around Great Bath

Bath. In yet another room a rising flight of steps points unmistakably towards the one-time presence of an upper storey.

True significance of the Great Bath is yet to be determined, but there is ample proof of its having religious importance. The water-proofing on all the four sides of the Bath suggests its special place amidst the buildings of the city. Perhaps they wanted to be doubly sure that the holy water inside was not polluted by the least quantity of seeping water from the drains situated outside this complex. Moreover, the double-ringed well, the only of its type unearthed at Moenjodaro so far, was also so designed with, surely, the same objective in mind.

The presence of eight sets of small bath-rooms, in two rows of four each, on the northern side of the Great Bath could have been used by the priests who lived on the upper storey and washed themselves in these bath rooms to pure their bodies before going for some sort of rituals at the Great Bath.

These small bath-rooms are, again, marvels of architecture. Their floors are of very closely joined bricks, discharging the water into the main drain in the passage between the rows. Every bath room had a baked-brick staircase leading to the roof. As none of these bath-rooms opened against the other, they were left open without interfering in the privacy of the users.

Great Bath

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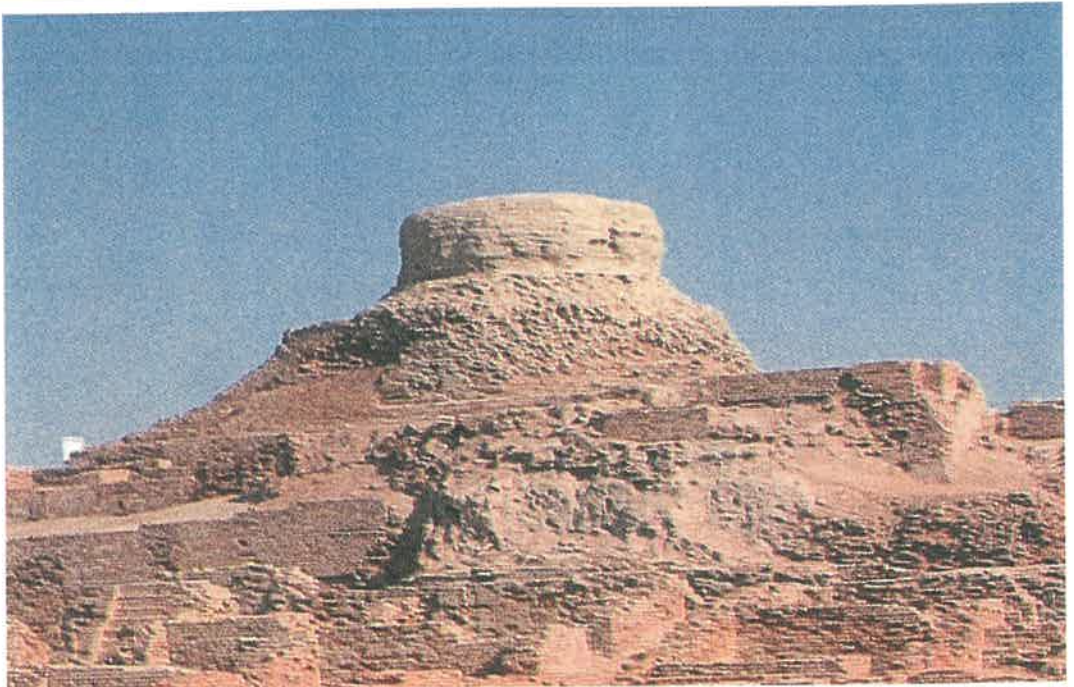
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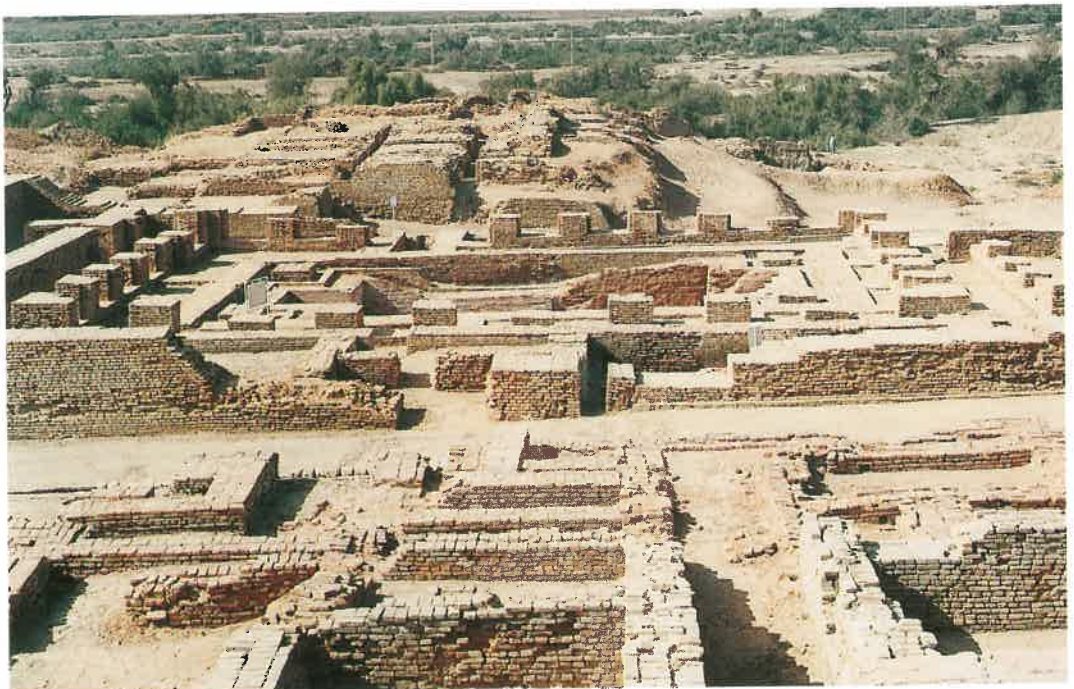
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A closer view of Great Bath



A general view of Buddhist Stupa



A general view of SD Area showing Great Bath (middle) and Granary platforms

The Lower City



The lower area of Moenjodaro consists of a number of mounds where the archaeological excavations, in sectors, have revealed the remains of a very large town. A few hundred metres from the citadel with its administrative or religious buildings, the city spreads on its eastern side while also extending to its southern direction.

DK Area

The most interesting of the unearthed sections of the site is the DK Area, named after its excavator, K.N. Dikshit. This sector is now approached through a modern access-road winding eastward from the Citadel Mound.

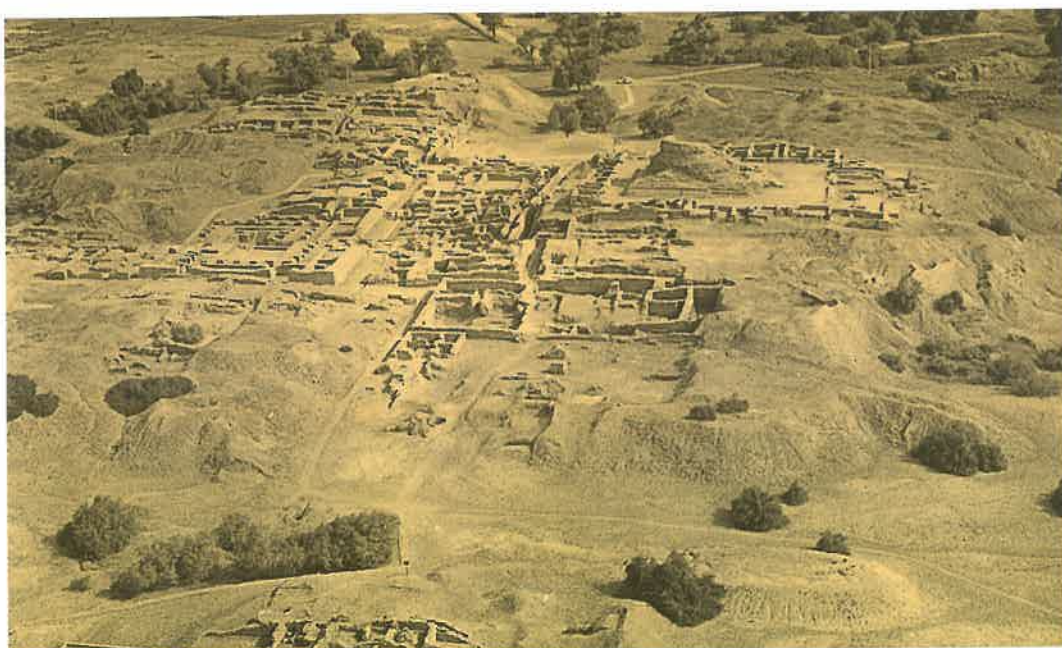
From the remains brought to light here it is clear that the city was a model of town planning. The main streets run north-south and east-west, cutting each other at right angles and dividing the city into compact rectangular blocks. The walls of baked bricks and mud mortar present a spectacular scene with their height from 6 to over 9 metres. Usually the houses had very few openings to the outside. With one approach door, the rows of rooms centred round the courtyard allowing their openings towards it.

The drainage system for the whole of the city is of remarkable character. The covered drains run along the streets. The drains of earthen-ware pipes encased in brick masonry have also been found. The water of the upper storey was discharged into the drain in the street by means of earthen-pipes built vertically into the wall.



Collegiate Building

On the north eastern side of the Great Bath, immediately west of the Stupa Complex, is an unusually long building. It has a square open courtyard with verandas on three of its sides. Also on these three sides of the building are situated barrack-like rooms. Some of these rooms have been provided with fine baked-brick floorings. The very appearance of this complex structure is unlike any of the houses for normal use. Although the exact function of such an odd building could not be ascertained yet the age-old tradition of attaching educational institutions to religious establishments strongly suggests its being a, 'College of Priests'.

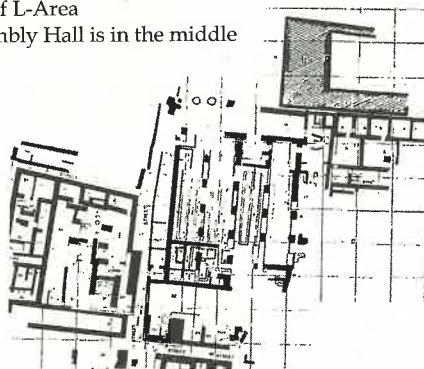


An aerial view of Stupa Mound and L-Area: Assembly Hall seen in lower left corner

Assembly Hall

In the southern-most part of the citadel area there is still another magnificent building. It consists of a large hall with twenty pillars, in four rows of five each. In spite of the later modifications the general look of the building suggests its use either as a state-secretariat, assembly hall or a community centre for religious congregation to partake in some rituals.

Part of L-Area
Assembly Hall is in the middle



Besides the frequent presence of wells and bath-rooms, built-seat latrines have also been found. The refuse water from latrines was discharged either into the street drain by means of a stepped channel or a water-chute built of finely jointed rubbed bricks, or into a pottery receptacle.

The buildings of houses do not vary much from each other pointing towards the egalitarian nature of the society. It is, therefore, little wonder that no spectacular or gigantic palaces or the like have been unearthed here. The residential or lower city, however, had its share of important structures with outstanding, unique or peculiar features.



Pottery Receptacle



A general view of DK Area



Low Lane



General view showing wells in houses

Wells

A couple of wells, in two separate houses in the vicinity of chief's palace, present three different periods of construction, assigned as late, intermediate and early. The decline in the quality of architectural construction suggests the gradual downfall in cultural standards of the Civilisation.

HR Area

A modern access road stretching eastward from the Stupa Mound is not entirely a new one. Now known as the East Street, it was partly used in the ancient times. Presently it cuts across the excavated remains, dividing them into two distinct blocks, the one on its north being called VS Area while on the south is the HR Area, the latter initials referring to H.R. Hargreaves the excavator of the site.

The HR Area is approached through the First Street, the longest and by far the broadest ancient thorough-fare so far discovered at Moenjodaro. There is a long narrow lane running parallel to the First Street for some considerable distance before it finally turns westward. These two sections of the lane have been named "High Lane" and "Dead Lane" the latter name referring to the discovery of human skeletons at the corner where the lane turns westward.



Chief's House

One of the most remarkable among the secular buildings of Moenjodaro is the so called Chief's House. Although the residence is quite modest and much like other houses yet its expansive nature, covering a considerably large area, combined with some unusual features do certainly substantiate the idea of its having belonged to an important person. The complex which is situated in the southern part of the DK area had two court-yards with a 2.5 metres wide opening through the corridor towards south. Some other noticeable features of the house include two wells, the remains of a bread-oven and four flights of steps at different places strongly indicating the presence of a second storey.

First Street

A little beyond the Chief's House is the low lane which opens into one of the major arteries of the Moenjodaro town, now known as the First Street. It can be traced almost straight through the western flank of the Lower City and cuts across the HR and VS Areas, while forming the eastern fringe of the densely populated DK Area. The street is wide enough to let the free movement of two bullock-carts simultaneously. The street is provided with two elaborate drains, running, on each side of its whole length. The windows or other openings into the First Street are conspicuous by their absence. All the openings of the houses on both the



First lane

sides of the street were on to the side lanes, perhaps pointing at their impeccable planning to keep privacy of a house intact while also avoiding accidents by sudden appearance or rushing on to the main street.



A well



A common house with well inside



Moenjodaro

The general lay-out and plan of the houses in the HR Area are almost similar to those in the DK Area, though here they are relatively smaller in size. The variation in the design, and the size, of the houses indicates the social status of the owners. The courtyards, normally on the northern side of the entrances, are through antechambers or side rooms accessible from the narrow side lanes. The boundary walls of the houses are mostly plain and uninterrupted except for entrance doors, or occasional rubbish chutes.

The layout of some of the houses suggests that they served some purpose other than mere residential function. From a variety of evidence the excavators deduced that some of the houses with larger courtyards served as industrial units for potters, carpenters and such other skilled workers. A couple of the most

interesting structures in the HR Area are two well-built privy latrines constructed against a wall about half a metre above floor level. Each privy is provided with a small square paved floor in front of it, for ablutions. These privies are very much like the familiar old-style W.Cs. which are still commonly used in many towns and villages of South Asia.

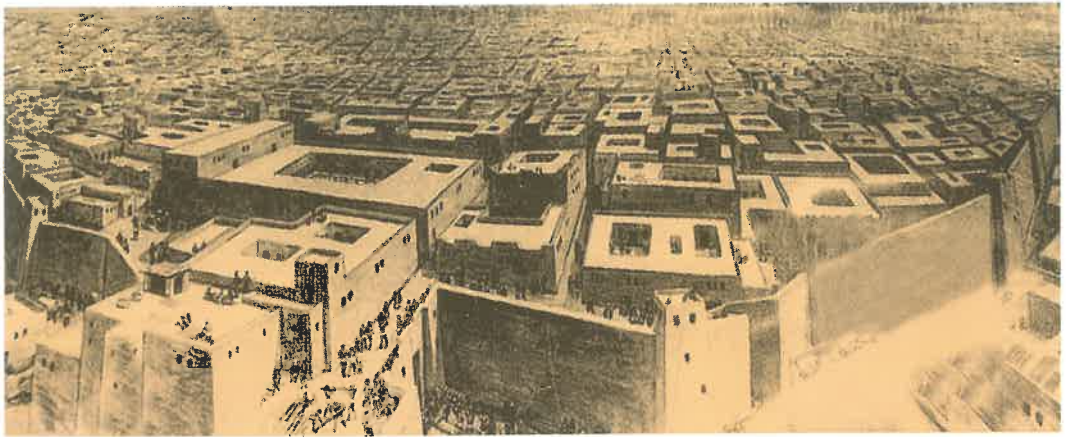
VS Area

The area lying north of the intersection of the two main thoroughfares described earlier, is named as VS Area after its excavator, M.S. Vats. Almost all the houses and structures are similar to those in the HR area. However, one very interesting



Well showing three periods

Town Planning & Architecture



The evidence gathered so far from the excavations at Moenjodaro strongly suggests that the architecture was utilitarian rather than decorative in nature. In planning their houses much emphasis seems to have been laid on making them comfortable in a particular type of climate with an eye on the ease in maintenance and keeping them hygienically clean.

The architecture of Moenjodaro is basically very simple, but despite this simplicity there is a distinct quality inherent in the construction. The material used is of a superior quality. The methodical planning of the city and a sophisticated drainage system set the real example for all times to come.

On the periphery of the thickly built area of the city, are the poorer dwellings what the archaeologists have termed as 'workmen's quarters'. This could have been the result of the influx of the working population towards large cities rendering urban land costly hence cramped dwellings.

The salient features of the architecture of Moenjodaro make it one of the most outstanding ones in the contemporary civilisations of the world. In Moenjodaro there is evidence of the extensive use of rectangular burnt bricks which were perfectly fired and carried a very superior quality. They seem to have been standardised as they come in almost equal size throughout the city. The corbelled arch was in vogue while the brick-pillars were either square or rectangular but never in the round. As timber was available in abundance, wooden columns were



Dyer's Shop

Building is encountered on the left hand side while entering the site. The building appears originally to have been a single unit, covering an area of approximately 26 by 20 metres but subsequently divided into four separate dwellings. A flight of steps from the main street comprised the main entrance to this house.

The entrance chamber has some interesting features, the most significant being five conical pits or holes sunk in the floor. These holes are formed by wedge-shaped bricks and were most probably used to hold the pointed bases of large storage jars. This building has been described by excavators as a dyer's workshop.

MN Area

Lying on the eastern side of VS Area the MN Area was excavated between 1932-36, and named thus after its excavator, Q. M. Moneer. It has been assigned to the late-urban phase (c.2100 B.C.) and presents a good deal of residential houses with bathing platforms. The quality of brick-work is relatively poor. At places the bricks from the older demolished structures seem to have been re-used.



A general view of street and houses

maisons of Moenjodaro used two brick-laying techniques. In one we find headers and stretchers arranged alternately in the same course, while in the other the entire course is of headers alternating with a course of stretchers.

Two of the most notable features of Moenjodaro houses were the construction of bathrooms and drains. The floors of the bathrooms were made water-tight by closely-jointed polished bricks, sometimes provided with gypsum mortar. The drains descending from the upper storeys were constructed in the thickness of the walls and were connected with the main drains of the lanes.

The material used in the floors of the rooms is of three different types viz. beaten earth, sun-dried brick or burnt brick. Windows do not appear as a common feature in the architecture of Moenjodaro. Most of the houses were double-storied, an inference based on the thickness of the enclosing walls, and the presence of stairways leading upward. These flights of steps were invariably steep and narrow. There is evidence to suggest that the roofs of the houses were flat and were supported by wooden rafters and purlins, covered with burnt brick tiles and were made water-proof by rammed earth and a plaster of impervious clay. The remains of terracotta conduits for disposal of rain water from the roof tops can still be found



Architecture, simple and utilitarian

probably also used. The outer faces of the walls of the important buildings were in the battered shape. The structures were simple with little or no ornamentation on the exterior or the interior. The walls were kept bare except at a couple of places where mud plastering has been done. But this bareness and simplicity does not undermine the beauty of the architecture, since the buildings have been constructed to meet the needs of the people and to cater for their comfort. There does not seem to be much difference in the living conditions of the rich and the common men as is revealed by the relatively uniform state of architecture.

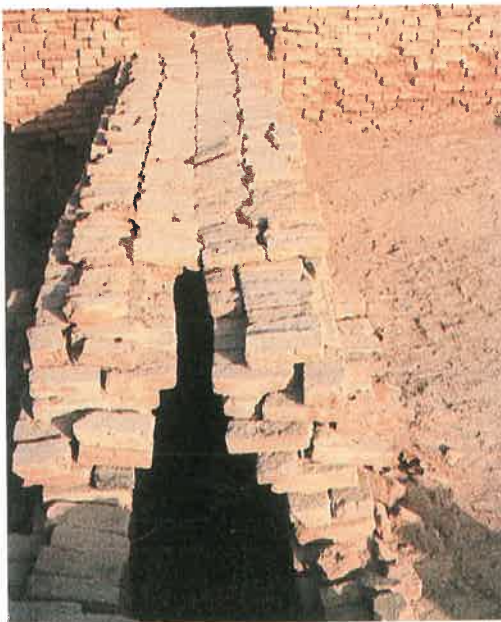
As already mentioned, although the houses vary in sizes yet the architectural features introduced in them are usually common. The smallest house has two rooms whereas the largest may contain ten or more rooms. The houses were aligned properly with the streets which ran north-south and east-west, with their openings into the side lanes instead of the main street.

The rooms were generally arranged on the four sides of an open courtyard. Fine quality of bricks were used and were laid in mud mortar. However, a mixture of gypsum has also been found occasionally for beautification of the surfaces, strengthening of the corners of the buildings or to make them water-tight. The

Drainage System



The drainage system discovered in Moenjodaro has a unique place in even modern-day public health engineering and is an unending source of extreme marvel and amazement. It is the only complete system so far discovered in any of the remains of the ancient civilisations.



Large culvert with corbelled roof



Drain with gradual bend



Moenjodaro

in large numbers.

Most of the houses had private wells in their courtyards, while public wells were also provided, near open spaces for the benefit of commonalty. The wells were lined with brickwork and had a protective barrier built around their mouths, probably to prevent accidental fall into them.

The remains of the architectural features uncovered in the city suggest a profound collective effort towards the comfort and welfare of its inhabitants. It is observed from its vestiges that such a city could have been built and sustained only by a very prosperous and resourceful people. In its heyday the city is modestly estimated to have a population of about 40,000 people -- which is a very large urban habitation for that period.



Aerial view of Buildings and Lanes



A general view of street and houses

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Architecture, simple and utilitarian

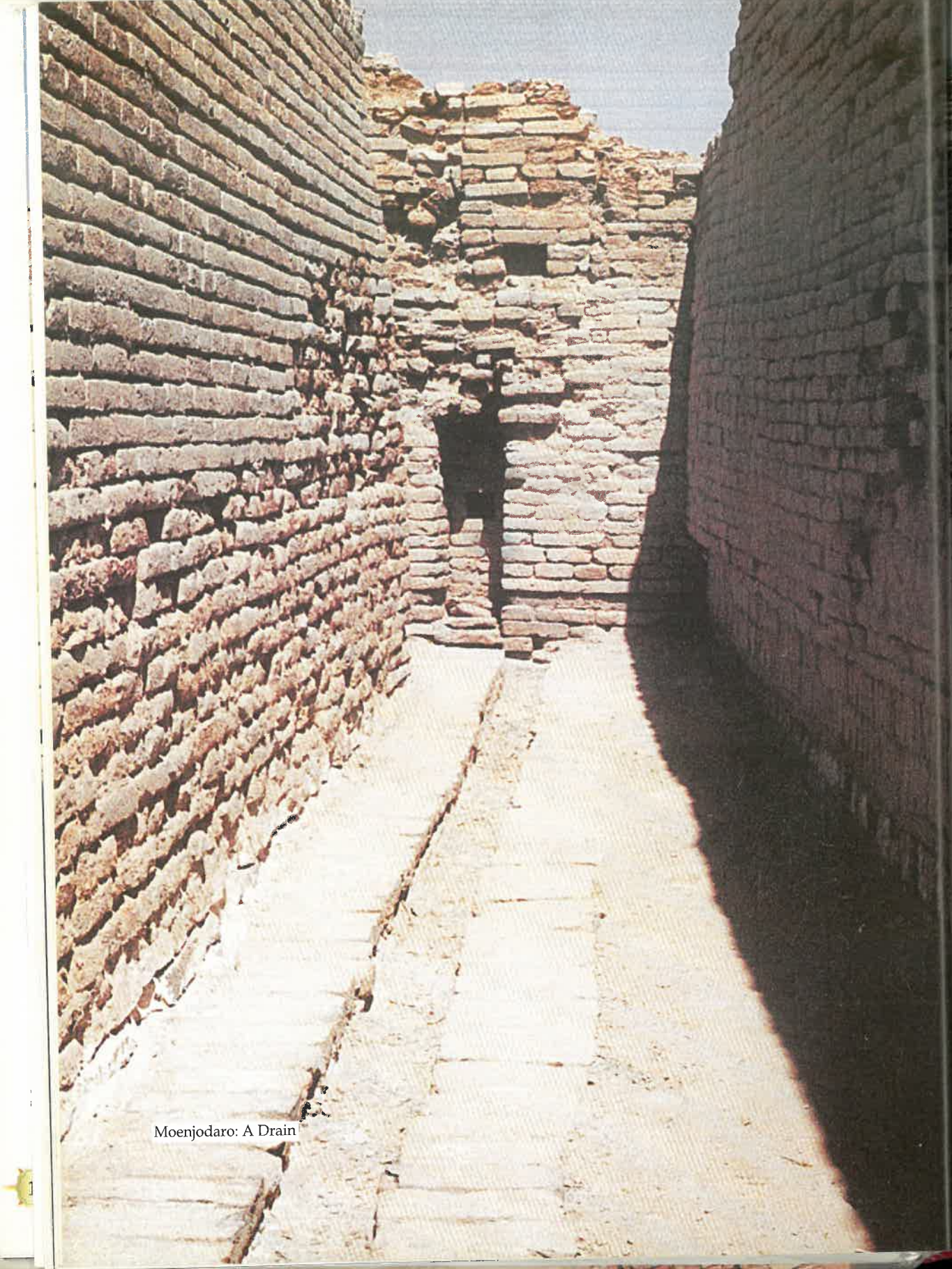
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Another covered drain



Moenjodaro: A Drain

The Artefacts



The excavations at Moenjodaro have yielded a rich harvest of smaller objects which provide us with an interesting insight into the culture and, possibly, religion of this ancient civilisation. These discoveries include a vast range of decorative, utilitarian, recreational and religious objects which are made of different materials like baked clay, metals, ivory, lapidary, shells and other substances which have withstood the hazards of thousands of years. The use of perishable material can also not be ruled out and as such it could be left to speculation to visualise the kind of furniture and fabrics they used. The sculptured figure of King Priest indicates that they liked clothing with elaborate embroidery and prints. Moreover, the discovery of the dyer's workshop in the remains of the city certainly suggests that this art was liked and thus practised.

One of the most interesting and artistic artefacts discovered at Moenjodaro is the wide range of statuettes and figurines. These present us with a vivid picture of the culture and beliefs of this civilization.

The most famous statue is a bust of the King Priest, so named by excavators for its sophisticated and sober features, and stately attire. It is made of steatite, a very expensive material further justifying the title. The half-shut eyes, low forehead and neatly cropped beard and moustaches could probably have only a vague resemblance with the original model. The ears are represented as concave hollows surrounded by an oval rim. The general appearance of the face and the sturdy back



Chutes

The system consisted of an elaborate network, beginning with water-discharge sluices from the houses, which collected dirt and refuse in small cess-pits lined with bricks at the base. From here the refuse water was drained through conduits to the main drains mostly running through the middle of the streets below pavement level. These drains were covered with flat stones and solid tile bricks. This network of covered drains opened into the larger outlets which finally led the waste outside the populated areas. The large sewerage outlets were also covered and indicate a sense of hygiene in these ancient people. The bricks and tiles covering the drains were generally loose and could easily be lifted for inspection and for cleaning the channel below. Some of the drains were given a gradual bend at the turning points to enable the refuse water to flow without any obstruction.

The outskirts of the city were provided with a system for draining away rain and storm water. This consisted of large masonry culverts with corbelled roofs hinting at a marvellous piece of architecture and engineering.



Seals with figures and pictographs

and shoulders indicate a man of considerable importance for wealth, social status or religious authority.

The man's superior social status is further reflected in his dress. A plain fillet is fastened around the forehead, which in turn is decorated with a circular ring or buckle. A similar fillet is worn as a band around the upper arm, perhaps to indicate some kind of status or authority. The back of the head is flattened and together with the slits over the ears, it seems to suggest that there must have been some form of head-gear. This was probably made of gold or silver or some precious metal and perhaps studded with valuable gems. The statue is wearing an embroidered shawl wrapped diagonally across the chest and covering one shoulder. The shawl is another indication of wealth and distinction since the pattern on it is similar to that found on a number of Mesopotamian cult objects with religious significance. This trefoil pattern is also found on pedestal for worship in the Harappan culture.

It is still open to speculation as to whether this bust represents the image of an actual ruler of Moenjodaro or it was merely an objet d'art.

Another sample of exquisite sculpture is a small bronze statuette of a 'Dancing Girl',



Statuette in bronze



Dancing girl, in bronze



Mother goddesses



King Priest



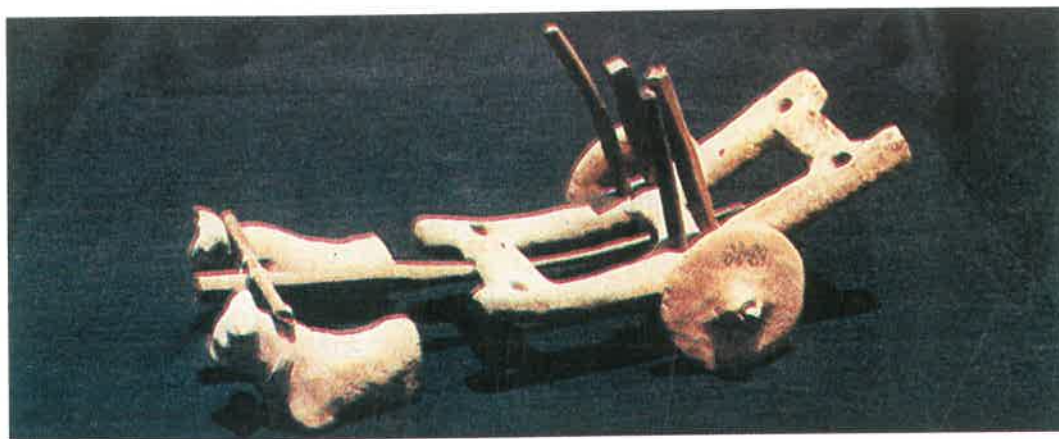
A seal depicting elephant

probably representing a 'nautch girl'. The figure is nude save jewellery. The left arm is covered with bangles from shoulder to wrist. The curly hair are thick and features flat. The hair is tied up with a fillet and lies over one shoulder. The body of the sculpture is given a slight swing indicating a sway to the rhythm of music. However, it is yet to be seen if music and dancing could be merely a part of Indus Culture or they had some religious significance.

A large number of terracotta figurines were found from the excavations of Moenjodaro. A great majority of them has been termed to depict a 'mother goddess'. Although not so intricate and artistic, these figurines distinctly represent a being or a deity with a supernatural aura about them. They are roughly sculptured their eyes, necklaces, head gears, belts and earrings done in 'applique' technique. The jewellery and head-dresses are lavish, which fact points at their being favourite with women. The elaborate hairdo of most of these figurines spreads like a fan above the head. The attire consisted mostly of topless skirts.

A fine piece of artistic value is the smiling limestone-head of a deity. It has almond-shaped eyes which are inlaid, a beard and hair which is tied up at the back.

Toys



A large variety of terracotta toys was also discovered. These included models of both human beings and animals. Amongst the toys unearthed from the site are animals with wheels, toy carts and figures with movable heads and limbs. Apart from these terracotta rattles, balls, marbles and board games played with pieces



Terracotta toys

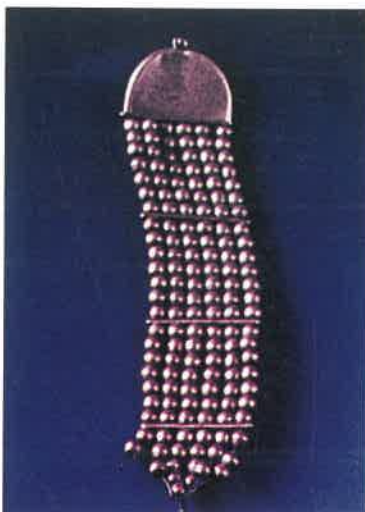


Moenjodaro

The female figurines and the abundance of jewellery discovered suggest that the women of Moenjodaro loved adorning themselves with gold, silver and precious stones. Many of the items of jewellery were worn by men as well, which include necklaces, head bands, armlets, bangles and rings. The girdles, ear-rings, nose studs and conical head ornaments seem to have been worn only by women.



Jewellery in gold and semi precious stones



Faience, ivory, shell objects



Seals



A large number of seals in different materials with highly sophisticated pictographs and depiction of animals is among the very special finds from Moenjodaro. Although of extreme informative value, the pictographs are a continuous source of mystery since they still stand undeciphered. Most of these seals are of steatite although some are made of faience, copper, stone or clay. They are usually square or rectangular and occasionally round, with a figure of an animal and one or two lines of pictographs. There are seals perforated with a hole at the back, through which a thread could pass, thus easing their carrying to be used for stamping purposes.

The seals are intricately carved and represent a variety of fascinating animals. The most common amongst these are the mythological unicorn, the short-horned bull, humped bull, rhinocero, elephant, tiger, crocodile, Brahamani bull etc. Some seals bear a single symbol such as the swastika, the endless knot, the multiple cross or the grid. Others depict interesting scenes like representing acts of sacrifice and religious rituals. One of the finest examples of this phenomenon is a central figure found in many of the seals and which probably represents a deity. He also wears horned head-dress while his body is adorned with necklaces, bangles and bracelets.

Some of the seals depict a tree spirit or deity in the shape of a human figure placed between the branches of a tree while there are others depicting partly human and partly animal forms. A seal depicting a house boat is of considerable interest, since similar house boats are still used by the fishermen of Sindh and, like the bullock-cart, it might be the continuation of the ancient tradition.



Moenjodaro

alabaster and ivory were also used in making toys. Amongst some of the exquisite toys discovered are figures of animals such as squirrels and monkeys in faience. The intricacy and masterly craftsmanship used in modelling these objects only go to give a testimony of the fact that those people considered them to be of extreme importance in their or their children's lives.



Terracotta Figure-Lady with Basket

Indus Script



It is the writing on the seals which is of immense value and great interest. The writing is in the form of pictographs using symbols for various sounds, ideas, actions or objects, which would have been recognised by the society in general. Usually the script is found on the seals though its depiction on pottery etc. Is also not

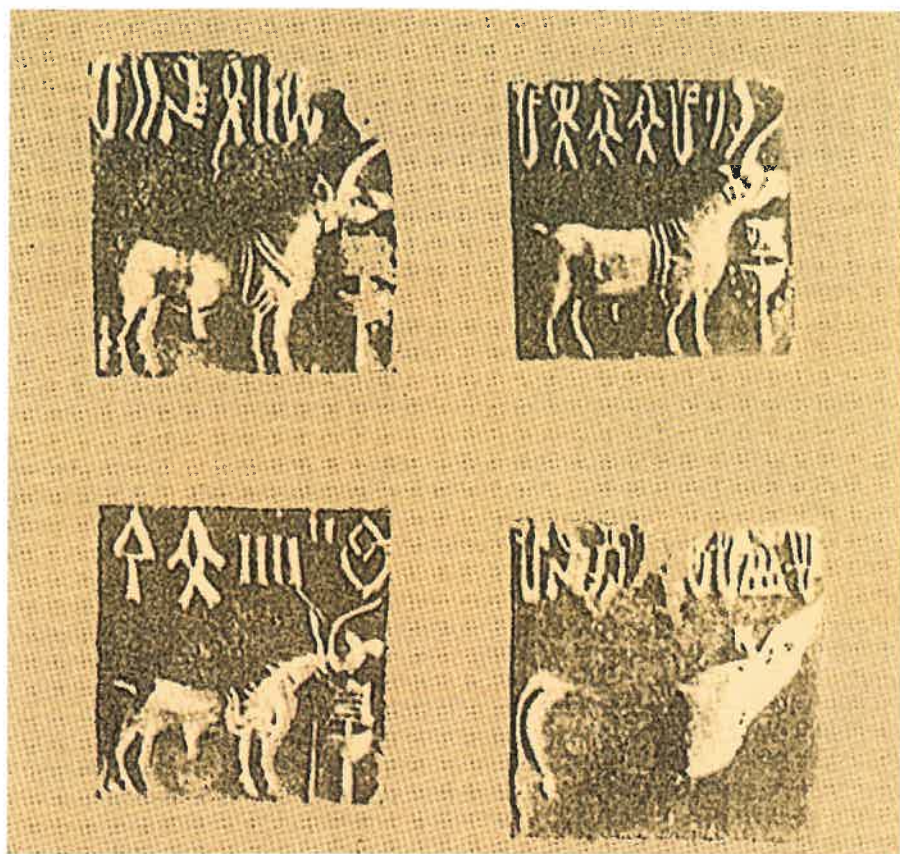




Hunting seems to have occupied an important place, since many of the seals present hunting scenes. One very interesting find was a seal depicting a river-going ship with a high prow, a central cabin and a double steering oar.

A vast bulk of the seals depict a single animal with the 'standard' before it and the writing above. On some of the small copper tablets discovered here the seal animals bear symbols on their bodies resembling vital organs. These include a rabbit, a two-headed Llama-like creature and a horned hunter.

In general, there are two categories of seals: those used as amulets and those with representations of an individual, his family or clan. The latter type probably served as signatures of the individuals, specific mark of family etc.



Pottery



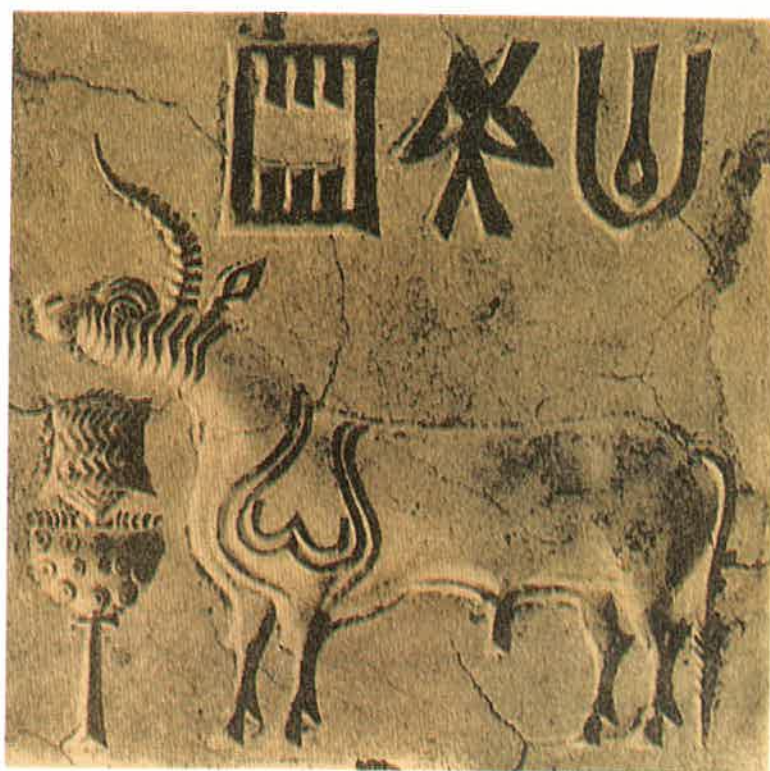
A large variety of pottery items, mostly wheel turned, were discovered at Moenjodaro. They include all kinds of sizes, forms and decorative features. They range from huge storage jars down to small bowls, slim vases, tiny cosmetic containers and elaborate dishes-on-stand. There are also large troughs for washing clothes and feeding cattle, and perforated vessels used perhaps as sieves or incense burners.





rare. So far, over 400 symbols or 'characters' have been recorded. The fact that primitive form of writing did exist indicates the sophistication of this ancient culture.

A vast number of the symbols and signs are as yet undeciphered, and remain an enigma and great challenge and frustration to scholars and students in this field. Several 'translations' of the Indus Valley script have appeared from time to time, but none of these have whole-heartedly been accepted so far. These translations were made under the assumption that the language spoken by these people was Indo-European or Dravidian. Lately a 'break-through' was announced in Denmark. According to this theory the language spoken by the Harappan Civilisation was Proto-Dravidian and this argument along with the new approach could be the most convincing presented so far.



Seal with pictographic script and Unicorn



Goblet-on-stand, bearing seal impression



Baked-clay pots displayed in Museum

Studies in the origins of the style of pottery adopted in Moenjodaro suggest that many of the features such as bases, necks and rims date back to Kot Dijian times. It is made of red 'fabric' often polished with red or cream slip. The surfaces were either smooth or matt. The plain types include cups and saucers, beakers, goblets, dishes, water jars, and large storage jars for grain. Though the plain variety seems to predominate, painted ware was also in abundance. Pottery painted with black or brown tints often bears geometrical designs along with vegetation, animals, birds and human forms. The representation of fields and water by chequered patterns and wavy lines, and the depiction of plants, birds, fish and animals could possibly indicate a profound love for nature.

Other Objects



Apart from clay, a vast variety of materials was used to make various items of daily use as well as ornamental value. These include stone spindle whirrs, ivory, bone and metal needles, clay buttons chipping and grinding stones, quadrangular axes, mortars and pestle, flint blades, bone combs, clay spoons, clay and stone model house, clay sling missiles, bronze, copper and silver vessels, copper hooks, faience, ivory, bone and shell Inlays for furniture and other wooden objects etc.

Faience was very Popular and has a hard and fine granular body covered with a glaze. The most common colours found are blue and green, although white, brown and red also occur occasionally. Shells were also very popular and the people of Moenjodaro were quite proficient in using them for decorative purposes. They also made cups, ornaments and other dishes with shell and used its cut pieces for inlay. The most popular patterns used included petals, crosses, crescents, hearts, leaves etc.

Tools and weapons were manufactured in copper and bronze. Metal weapons such as a leaf-shaped flat-sided lance or spear, axe-heads, barbed arrow, points and daggers were found.

The weapons found in the lower levels were not very menacing and are an indication of the fact that perhaps at the early stages the people of Moenjodaro were more peace-loving and not involved in many armed conflicts. However, in the upper levels of the site, heavier and more effective weapons were found. Other



Moenjodaro



Modern steps leading to Buddhist Stupa



Sun-rise across the Indus

End of Moenjodaro



Like its beginning the end of such a large, and by far extremely prosperous city as Moenjodaro, is engulfed in a thick haze of mystery. The archaeologists have not been able to dig deep enough to gather knowledge about its nascent phases of development.

The remains uncovered through scientific excavations present a people at a very mature stage when the life was well-organised, comfortable and peaceful. The main reason given by scientists for this restraint in extraction of knowledge in earlier periods is the rise in the subterranean water-table making it impossible to excavate down to the virgin soil. However, in spite of exposing a considerable area of the remains of Moenjodaro, archaeologists have not yet been able to put forward any plausible cause of its extinction. It is inevitably a complex and contentious problem for there cannot be a single factor responsible to obliterate from the face of the earth a city as expansive as Moenjodaro, or for that matter a civilisation as extensive as the Indus Valley.

Some of the theories that may hold currency include the natural degeneration, deep floods derived from geomorphological changes, shift in the course of the Indus thereby submerging the whole or a part of the city, invasion by a barbaric enemy and the resultant mass scale massacre etc.

The authors of these theories certainly have evidence from the site to substantiate



Moenjodaro

Metal items such as cleavers, chisels, razors etc. as well as quadrangular axes, which appear to have been quite common. were also found. Some bronze axe-heads were also discovered. Some of the flat axes are inscribed with signs of the Indus script, which is very interesting.



A stone sculpture

Preservation of Moenjodaro



The site of Moenjodaro is situated in a part of the Indus Valley where the ground level varies between 45 and 47 metres above the Mean Sea level. The maximum flood level here is about 51 metres while the canal water level stands at approximately 49 metres. However, with the considerable elevation of the Moenjodaro mounds containing the structural remains, the lowest excavation level is generally little lower than the surrounding plain-level.

The climate of the lower Indus Valley is arid, average rainfall around Moenjodaro being less than 130 millimetre per annum, most of which occurs in the months of July and August. This area of Sindh experiences fierce summer heat alternating with winter cold. Maximum summer temperature goes up to 46C (about 115F) as against winter minimum of about 4C (about 40F). Because of strong winds and high temperature, evaporation is high. The top soil of the area is predominantly loam and sandy loam. The sub-soil consists of about 90 percent of water yielding acquifer, the top about 15 metres of the soil profile being relatively of heavier grade.

Before the systematic archaeological excavations, the site of Moenjodaro existed in the shape of high and low earthen mounds. The remains of the structures at Moenjodaro when unearthed were in a very good state of preservation. Almost all of them were in red baked bricks and, in a majority of the cases, standing to full height. However, not long after their exposure, possibly due to the particular soil and climate, development of white salt efflorescence was noticed on these bricks.



Skeleton unearthed from site

Their respective points of view. As such it may be inferred, at least till the time some definite reason comes to light, that all these causes could have played a role, to varied degrees, in pushing Moenjodaro towards its end.



Another mudwall provided with cover

Harappan Civilisation. Although not confirmed to any degree of certainty, this very river is said to be one of the causes of decline and consequent disappearance of such a sophisticated people. After the exposing of its remains with the help of the archaeologist's spade, it was thought to be once again doomed to meet the same fate if nothing were done to rescue it this time. It was brought home that the remains of this city were situated very close to the active course of the river Indus on the convex side of a meander loop. The eroding current of the river had reportedly been shifting westward, towards the site. After the identification of this problem it became imperative to tackle it through river training.

The two-pronged menace of water-logging and salinity was noticed scourging the newly excavated remains even by the pioneer archaeologists and measures, mainly temporary in nature but of immense positive consequences, had been taken from time to time. Sir John Marshall during the early years of the archaeological excavations noted encrustation of salts on the exposed remains. In order to combat the menace he applied sodium silicate solution on the bricks. It, however, produced no encouraging results and was, therefore, discontinued.



Mudbrick wall conserved by providing cover

This resulted in fast deterioration and disintegration of the brick-fabric. It was thought to have been caused by capillary action of the sub-soil water level which had risen considerably. This phenomenon was attributed to the rise in the river bed over the centuries and, most recently, due to the introduction of the Sukkur Barrage Irrigation System in the early 1930s. The former cause is supported by the fact that remains of Moenjodaro are encountered variedly from 4.5 metres to over 18 metres below the present surface, as has been confirmed through bore-holes when cultural material like pot-sherds and bricks were encountered. The latter conclusion is drawn from the quick rise in the subterranean water table from 8 metres in 1922, when the excavation started, to about 4.5 metres in winter and almost 2 metres in summer, as recorded in 1960s. The water-logging in its wake was accompanied by the menace of salt-petre, which caused encrustation on the bricks. This has a peculiar incisive action of eating up the structural remains, by flaking off their substance, ultimately causing their collapse in course of time. The other major threat to the very existence of Moenjodaro was advocated to be the changing of the course by the river Indus in its vicinity. In the days of yore the same river was responsible for sustaining life in this metropolis, as also in others of the famous

help in slowing down the speed of deterioration, in addition to being completely reversible.

After this experimentation which was carried out by Pakistani experts under the guidance of Haji Waliullah Khan, many a foreign mission visited Moenjodaro and tried out quite a few methods.

Dr. Werner, Keeper of the British Museum laboratories, recommended in 1961, the brushing off of the brick work before the rainy season every year, vertical damp proofing of the foundations of the structures and treatment of the vulnerable parts of the brick masonry with chemicals.

The effectiveness of this method can be gauged from the fact that its author himself admitted that there was no easy solution to the problem and a long-term conservation project would have to be carried out on fundamental scientific basis.

The very next year a specialist firm, Messrs Sir M. Macdonald and Partners, was the first to suggest the use of tube-wells to lower the sub-soil water table, which would also help controlling the transmission of ground-salts through capillary action. They, along with Messrs Hunting Technical Services, carried out preliminary investigations into water-logging and problems of deterioration of the structures. These studies were undertaken for Water and Power Development Authority (WAPDA) on behalf of the Government of Pakistan. Taking into consideration mainly the soil and water table analysis, their report proposed installation of 45 tube-wells in and around Moenjodaro to lower the water table to nearly 4.5 metres below the surface.

In 1963, an agreement for assistance was entered upon between the Government of Pakistan and UNESCO. Consequently the Plenderleath Mission undertook detailed studies at the site and did some experimentation. They recommended in 1964, in addition to installation of tube-wells, construction of a drainage channel encircling the remains and a complete ban on rice cultivation in the area around Moenjodaro. The report was examined by experts and an engineering company was asked to prepare a detailed project.

Side by side with these studies and experimentation to devise means and methods to check further deterioration of the remains and control the major causes of decay, Pakistani experts were taking necessary measures for the conservation of the structural remains. Sir Mortimer Wheeler's Mission in 1968 made systematic



Salt-eaten bricks

The problem continued to worry the professionals but no easy solution was coming forth to arrest the fast decay of the brick structures exposed in excavations. In 1940 an experiment was carried out at the remains of the Great Bath. In order to remove salts in its structure, it was washed with plain water, later to treat it chemically. The experimentation did not meet with success and was abandoned.

The site of Moenjodaro could not be maintained properly in the wake of the Second World War. During this period of neglect for several years, the salt action, coupled with defective and choked drainage, multiplied the adverse effects on the already decaying portions of the site.

It was only after independence and emergence of Pakistan in 1947 that serious and systematic efforts were made to save Moenjodaro. The first in the long series was the application of mud-capping over the burnt-brick structures. The experiment was successful to a great extent but it failed to completely extract or counteract the salts already present in the remains. It was also not favoured with any degree of enthusiasm as the dripping mud covered the whole height of reddish burnt bricks reducing the marvellous impact to a drab scene. It was, however, noted that it did

of the schemes provided in the Master Plan, and also to keep a liaison with the international body.

The Master Plan for the Preservation of Moenjodaro, prepared in 1972, could not be got approved from the relevant authority in the Government of Pakistan before 1979. The UNESCO campaign for fund raising also met with partial success. Thus the work on the execution of the Master Plan could be started only in 1979-80.

In the meanwhile the state of preservation of the remains further aggravated. As such additional advice of experts was continued to be sought even during the implementation of the Master Plan. A UNESCO expert, Peter Cock, studied the condition of the remains in 1979 and suggested the building of a damp-proof course by injecting silicon so that the moisture-borne ground-salt would not travel to the walls. The experiments carried out by an international company specialising in such jobs, however, showed that the movement of moisture and salt through the silicon-treated area was not impeded to any significant level.

Two UNESCO experts, James R. Clifton and Patrick Faulkner, visited Moenjodaro in 1979 and 1982 respectively, to see the on-going conservation works and advise on some means for protecting the brick from damage, identify methods to remove the salts already present in the structures, and suggest material which could be beneficial for consolidating the deteriorating bricks.

The use of bitumen-coated pre-cast cement concrete slabs for Damp Proof Course (DPC) also needed improvement, on which the advice of these experts was sought. Clifton suggested the use of bituminous-coated fibre-felt sheets (lead cored or equivalent) in place of the said slabs, for horizontal isolation of walls. However, Faulkner, considering the difficulty in procuring treated fibre-felt sheets and complementary cutting machinery, recommended injected bitumen DPC using Massari method for its pouring in desired places.

The Faulkner suggestions were put to test in the Collegiate Building of the SD Area in 1983-84. The mechanism used in the process did not conform to the Massari method due to non-availability of the requisite drilling equipment. The experiment thus failed and was abandoned.

On the other hand James Clifton recommended a few measures to cut back the rate of brick-deterioration. He was of the opinion that such measures were necessary even if the sub-soil water table was successfully lowered. He also dealt at length on



Moenjodaro

studies on this aspect and recommended specific short-term measures to treat the exposed remains. Accordingly, a scheme was prepared by the Department of Archaeology, which was approved by the Government of Pakistan and its implementation commenced in 1970-71. The short-term conservation scheme, as recommended by the Wheeler Mission, was still in operation when another UNESCO Mission arrived at the site of Moenjodaro in 1972. The Mission comprised of the experts like Dr. Zaky Iskandar, Raoul Curiel and S.J. Vankroton. They along with a team of Pakistani experts, took stock of the measures and the recommendations made up to date and, in their light, made further studies of the challenges in conservation of this unique metropolis of the Indus Valley Civilisation. They were thus able to suggest solid guide-lines for preparing comprehensive master Plan providing steps, measures and methodologies covering almost all aspects of the cancerous problems of conservation and preservation of the site.

Another step forward to save Moenjodaro was taken in 1973 when the Government of Pakistan in collaboration with UNESCO organised an International Symposium right at the site. The deliberations continued for three days. The scholars, experts and professionals from all over the world not only stressed the significance of Moenjodaro as a heritage of mankind but also recorded their concern over the gravity of the problem of its preservation. The Symposium unanimously approved and endorsed the Master Plan prepared jointly by Pakistani and UNESCO experts.

The cost of the whole project was estimated then at US\$11.27 millions. According to an agreement between the Government of Pakistan and UNESCO, both the parties were to bear the cost in the ratio of 2:1. The Director-General of the international body later visited Pakistan and held extensive discussions and consultations with the local authorities. As a result of these parleys it was decided that at the first instance only the first phase of the Master Plan should be executed. The works in this part included: i) ground water control, ii) river training schemes, iii) conservation of structural remains and iv) projection and landscaping of the site. These measures were supposed to form the basis for averting the threat caused by the twin-menace of water-logging and salinity, erosion of the site by the river Indus, consolidation of the remains and their presentation in a more scientific manner.

It was at this stage, in 1974, that UNESCO launched an appeal for fund raising. An Authority for Preservation of Moenjodaro was created to co-ordinate the execution



Stone-picking along the Indus

continued to play havoc even up to 1994. This, according to most of the scholars, only is reflective of the ill-conceived priorities.

Conservation of Structural Remains

Most of the conservation works have been done piecemeal, either as they were recommended by some experts, missions or simply following the success of locally-attempted measures. These works, among others, include the replacement of decayed and salt saturated bricks, mud-capping, insertion of Damp Proof Course of several types, under-pinning of undermined walls, replacement of salt-affected earth with sweet earth, provision of "pushtas" of salt-free soil, site drainage, etc.

It is, however, very evident that throughout the currency of the project emphasis has remained on installing tube wells, digging canals and constructing spurs. In the wake of these priorities, the archaeological remains have not been attended at a matching degree which in fact they deserved, and warranted. In the words of Prof. Dr. A.H. Dani, "..... what is the good of all the luxuries if the sick man is dead?"



the success of the tube-well scheme yet independent studies reveal that even if it could be of any positive effect its faulty operations have rendered it almost a failure. There were hardly a few tube-wells operating at any given time, the rest standing idle for want of repairs/ maintenance or simply sufficient strength of staff on duty, or else power failures. Similarly, the ring-canal over-flowed almost incessantly because of insufficient maintenance and a poorly working pumping station meant to discharge its water into the Dadu Canal. All of this was in addition to the havoc already played to the still-buried remains at the time of digging for tube-wells and the canal without caring to record the archaeological evidence vanishing for ever from these specific areas.

The near-failure of the works carried out to lower the sub-soil water-table and even the quantum of its results, made it a subject of argument. Many an archaeologist and scholar started challenging this arrangement. They vociferously counted the 'demerits' so much outweighing the 'merits', if any, inherent in this scheme. The system now stands idle for the last many years resulting in resurgence of the natural water table with still worse affects.

River Training

The training of the river Indus was taken in hand to stop the bank's erosion on the outside bend of the sharp meander and to direct the river flow into flood channels further east, away from the site.

The design for river training was also prepared by WAPDA and their Consultants and was based on the examination of the river's previous history and modelling.

Four spurs with considerable lengths of stone-pitching have been constructed. The work on the fifth spur, however, could not be taken in hand. It has been reported that the spurs and stone-pitching have minimised the threat of erosion to the protective bunds (embankments) and consequently to the site of Moenjodaro. However, no definitive study data is yet available as to the shifting of the river course towards the east, farther from the site.

The experts are on record having admitted the futility of such a gigantic operation on presumptive threat of the Indus. Prof. Ahmad Hasan Dani and other Pakistani professionals have expressed their concern in print about the matching usefulness of a heavy spending on constructing spurs while, on the other hand the rain water

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The fourth area of responsibility envisaged in the Master Plan, 'Projection and landscaping of the Site' was yet to take-off from the ground even after 20 years of the start of the work against the project.

Tail-Piece

Even the foreign consultants have started doubting the usefulness of the measures like digging of the tube wells, ring canal, insertion of mass-scale DPC etc. The emphasis is now on reverting to the use of mud-capping and/or mud-plastering of the brick structures. They are now advising the 'locals' to practise the 'indigenous' methods after causing all that irreparable damage on their 'experimenting' with irreversible methods on the original site!

From the brief story of the long conservation history of the unique site of Moenjodaro it would also be evident that it has served too long as a cavy for whimsical experimentation of too many experts, and 'consultants'. No two 'foreign experts' agreed on one method, or any of their 'advised' methods was found sufficiently successful in even arresting the fast speed of deterioration. In fact the remains of this World Heritage Site suffered a third menace in the shape of these advisors and experts. If the destruction to the ancient structures caused by these experiments is quantified it may well match, if not surpass, the damage effected by natural agents over a much longer period. Many of these steps of irreversible nature taken on their advice could either have been avoided or delayed till such time as advancement in knowledge or technology had made it possible to conserve these remains without compromising with their authenticity which, of course, should remain as a keyword in any of the operations for conservation/ preservation of an antiquity. In no case the management, experimentation, conservation and presentation should be left to non-professionals or inexperienced novices as the nation, and the world community at large, can ill-afford such a treatment of this heritage of mankind.

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Born at Sahiwal, Ihsan H. Nadiem got his higher education at the Government College, Lahore. He was trained as archaeologist on scholarship by the Government of Pakistan. At a later stage, however, he did specialised studies in Museology, in addition to undergoing a Certificate Course in French Language, when he earned French government fellowship. In architecture, he benefited from the scholarship of Sir Bernard M. Feilden, Director Emeritus, ICCROM, (International Centre for Conservation of Cultural Property, Rome), Italy.

He joined the Department of Archaeology, Pakistan and excavated at Banbhore, Swat (Panr I, Saidu I & II), Moenjodaro and Tulamba. As a curator he kept the charge of museums as diverse as Harappa, Umerkot, Moenjodaro, Lahore Fort and Taxila. He commanded the Regional Offices of the Department at Peshawar and Quetta before being posted as Officer-in-Charge of the Publications Branch, which he successfully reactivated after it had remained dormant for over 13 years.

He raised the prestigious Pakistan Institute of Archaeological Training and Research (PIATR) at Lahore, from the scratch and co-ordinated specialised courses, symposia and seminars arranged at the international level. He has held the charge of Director of Archaeology of

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He has published about twenty Research Papers in different journals of international repute, over 250 popular articles on cultural heritage of Pakistan appearing in different dailies and periodicals, and an Excavation Report on Panr, in two volumes, from Rome. Four departmental brochures on Cultural Heritage - Lahore Fort, Shahdara Monuments, Rohtas Fort and National Museum of Pakistan, Karachi - have also been authored by him. In addition, he edited Pakistan Archaeology volumes 10-22, and has to his credit the preparation and publishing of numerous professional and technical reports.

He has rendered in to English the First Volume of Al Amin, a book on the life and times of Prophet Muhammad (peace and blessings of Allah be on him) written in Urdu by M. Rafique Dogar.

His other books include: 1) Moenjodaro - Heritage of Mankind; 2) Lahore - A Glorious Heritage; 3) Historic Mosques of Lahore; 4) Makli - the Necropolis of Lahore; 5) The Desert of Pakistan; 6) The Heritage of Pakistan; 7) The Heritage of Pakistan: Buddhist Architecture; 8) The Heritage of Pakistan: Architectural Heritage of Lahore. He has also published a book on the subject of "The Heritage of Pakistan: Architectural Heritage of Lahore".

His poems have appeared in different publications as also two collections: 1) Illusory Trance, and 2) Golden Rays.

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