

The



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PAKISTAN
5,000 YEARS
OF ART & CULTURE



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PAKISTAN : 5,000 YEARS OF ART AND CULTURE



Photo © Pepigny, Paris

The present grows out of the past, it has been said, and the future out of the present. The better we understand the past, the better shall we be able to mould the future. Pakistan is a nation which can boast a history going back almost 5,000 years. This land, perched in the heart of the Asian continent, has forged its own rich culture and original artistic expression, blending and assimilating cultural elements from both East and West : Greco-Buddhist art of Gandhara (cover photo of the Buddha), Moghul miniature painting and landscape art, Islamic architecture, and Pakistan's oldest cultural complex, Moenjodaro (which must be saved from destruction) have all enriched the nation's vast cultural heritage.

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PAKISTAN 5,000 YEARS OF ART & CULTURE

by Syed A. Naqvi

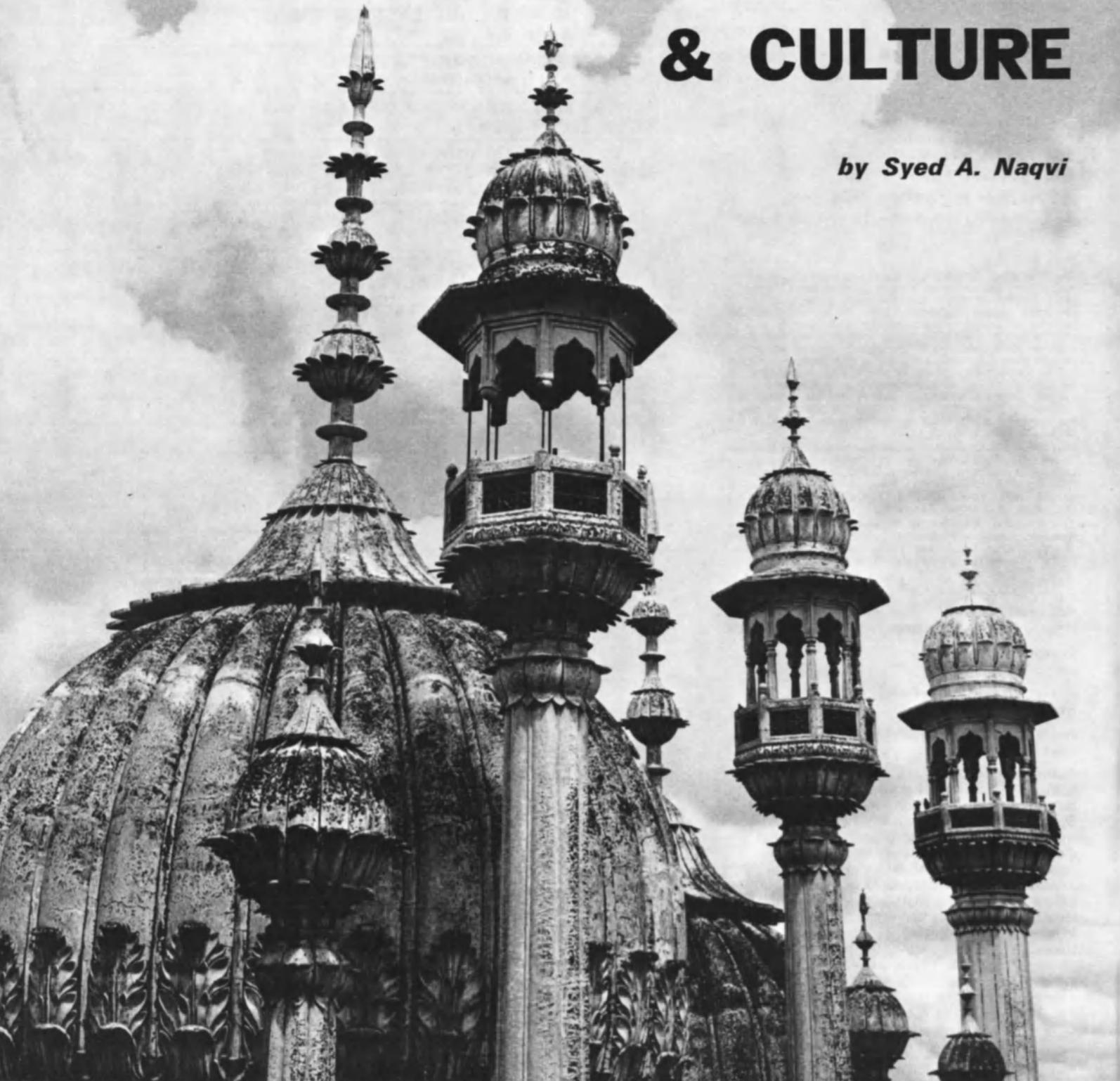


Photo Guy Thomas © J. Biltgen, Paris

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Islamabad is the new capital of Pakistan, but for a short period before its construction, Rawalpindi nearby had the honour of being Pakistan's interim capital. Located near the ruins of Taxila, it marks the site of the Stone Age civilization of the Soan valley (see page 5). Photo shows delicately carved minarets and dome of a mosque in Rawalpindi.

CULTURAL relics of a country are the virtual foundations for advancement in corporate life. As achievements acquired after prolonged struggle with nature and environment, they manifest the store of creative intelligence, initiative, perseverance and integrity that have gone into the making of a particular national character.

Pakistan has been very fortunate in this respect. Admittedly, this land has been an important primeval stage for the grand and grim drama of man's first endeavour, his integral rise, his phenomenal fall and the great resilience which kept the stream of human life in action in spite of all obstructions and intermittent lapses.

Rough and rugged implements unearthed by the eroding current of the river Soan near Rawalpindi carry the saga of human toil and labour to the interglacial ages roughly estimated at 500,000 years before our time. These are stone "choppers" and "hand-axes" which are hardly different from river-rounded pebbles to the layman's eye. They have revealed a written chapter to the archaeologist proving that even in so remote a period man had proved his intellectual superiority over all other beings of the jungle. Indomitable and free, he roved through the thick forests and hunted other animals for food and perhaps even for sport.

But we have no other records to link those interglacial *anthropos* to their primate ancestors or to more civilized progeny. It is in the mounds of Baluchistan that a chink is opened to the distant past.

The pieces of pottery excavated in Baluchistan disclose the existence of a new era. Here we find a more continuous chapter of human activity dating back to 5000 B.C. though still in the Stone Age. Here, man is already established both as herdsman and farmer. He is found settled in villages in the little valleys amongst the hills or occasionally on the outskirts of the plains. He is seen growing crops, milking cows and shearing sheep.

Yet much more has to be explored to reconstruct the true position of Pakistan in this vital phase of growth and experiment which culminated in the great civilization of ancient Mesopotamia on one side and the Indus Valley on the other.

Between the years 2500 and 1500 B.C., there flourished in the Indus plain one of the most well-developed civilizations of the ancient Middle East.

SYED A. NAQVI, internationally known archaeologist and museologist, was General Director of Pakistan's Department of Archaeology and Museums until last July, when he joined Unesco's Division for the Development of the Cultural Heritage. Former head of the National Museum of Pakistan, in Karachi, he has excavated at many Pakistani sites including Moenjodaro, Taxila and Mansura. Among his studies on archaeology and ancient art are "The Muslim Art" (1966), "Gandhara Art" (1967) and "1,400 Years of Quranic Calligraphy" (1973).

THIS issue of the "Unesco Courier" is devoted in major part to Pakistan and its rich heritage of art and culture. Pakistan's cultural history goes back almost 5,000 years when a great civilization was born in the Indus valley (see article page 9). Excavations at two of its major cities, Moenjodaro and Harappa, show that the Indus valley people reached a remarkable stage of development in town planning and architecture and an extraordinary degree of artistic sophistication. Today the site of Moenjodaro is threatened with destruction by salt corrosion and flooding from the Indus river.

THE recent flood damage to cultural monuments and educational facilities in Pakistan amounts to a real disaster affecting the country's future, declared René Maheu, Director-General of Unesco, at a special press conference held in Paris last September. World public opinion, he said, must be alerted to the serious damage from floods in the Punjab and in the Indus valley. The number of educational establishments at all levels either destroyed or damaged was in the order of 8,000, nearly 800 of them secondary schools or post-secondary and technical institutes. The damage, so far calculated at \$13 million, affected buildings, libraries, equipment and laboratories, said Mr. Maheu.

DAMAGE had also been suffered by over 30 monuments of major importance and 150 other monuments or archaeological sites. The threat to the famous site of Moenjodaro, in which Unesco is particularly interested, had been considerably increased. Mr. Maheu appealed to international solidarity, urging those who were able to contribute in cash or in kind to help the rebuilding of the educational infrastructure and the preservation of the cultural heritage of Pakistan.

UNESCO and the Government of Pakistan have drawn up a plan for the preservation and development of the Moenjodaro site. The first phase will require an estimated \$7.5 million (see article page 16). The Executive Board of Unesco has authorized the Director-General to launch an international campaign aimed at raising \$5 million towards the first phase of the preservation and protection of Moenjodaro.

Moenjodaro and Harappa, the two important city sites of this civilization exposed by the archaeologist's spade, are the outstanding examples of regimented life.

The wide, straight roads dividing and sub-dividing the city in square blocks, well planned houses and underground system of drainage are still a model to the present day town-planner. The inhabitants lived largely by agriculture but also maintained a trade with lands as far away as Mesopotamia and northern Afghanistan.

Of the early stages of this civilization, nothing was known till the recent excavations at Kot Diji in Upper Sind which provided important clues to this question and also brought to light remains of an earlier culture of equally remarkable character, roughly datable from 3000 to 2500 B.C. It seems to have influenced different aspects of life and culture of the Indus people, though our information is still very meagre.

By about 1500 B.C., the Indus Valley Civilization, however, seems to have disappeared under inexplicable conditions followed by a wide gap of about one thousand years. The excavated remains at Taxila and a number of monasteries and stupas in the north-west now bring us down to the period of recorded history. It was no longer an isolated culture.

Although separated by the lofty Himalayas and the Hindu Kush ranges from the neighbouring cities of central Asia, Taxila still formed part of one and the same Buddhistic civilization. The first city of Taxila or Bhir Mound as it is known, has preserved little to show any notable advancement in art and architecture (see "Unesco Courier", October 1972).

The serene pool of this life was, however, rudely disturbed by the haughty and youthful Macedonian intruder in 326 B.C. But this conquest by Alexander proved a boon in disguise. The pagan Greeks soon



Photo Turab Ali, Karachi, Pakistan



Photo Dept. of Archaeology and Museums, Pakistan

Few sculptures in stone have been found at Moenjodaro. Above, two striking pieces now in the National Museum of Pakistan, at Karachi. Left, a limestone head from the late period of Moenjodaro (1500 B.C.). The hair is cut short and held in place with a net. Right, the famous King-Priest, carved in steatite (about 2500 B.C.). The trefoil pattern on his tunic suggests his priestly functions. From Mesopotamia to the Indus the trefoil was a religious symbol closely linked with the cult of the stars.

PAKISTAN (Continued)

found themselves subdued by the superior religious logic of the Buddhists and employed all their art and intelligence in creating a new Buddha with beautiful Greco-Roman features and an oriental halo. This mode of sculpture, which has since come to be known as Gandhara Art, marked an escape from the conventional Indian style.

In 711 A.D., at the time when the Gothic Kingdom of Spain was captured and when Kashghar was being conquered by an Arab army, the provinces of Sind and Multan were annexed to the dominions of Islam. This first impact of Islam on the life and culture of this region is markedly manifest in the excavated remains of Banbhore, an Arab port near Karachi, and in the early Islamic art and architecture of Hyderabad, Multan, Rohri, Uch, Sehwan and Brahmanabad.

The culture which the Muslims brought from Syria and Persia created, with the fusion of local elements, a tradition which was henceforth to dominate the scene, and gradually became identical with the art and culture, thought and aspirations of the sub-continent.

The political conquest of the land was, however, left to the Turks who came in the wake of the invasions of Sultan Mahmud of Ghazni in the 11th century A.D. But, with the exception of very few specimens, most of the surviving relics of Islam may be attributed

to the Imperial Moghuls or their contemporary local dynasties. The marked absence of Muslim monuments prior to the Moghuls is a strange phenomenon and difficult to explain unless it is supposed that the enhanced building activity of the 16th and the later centuries completely swept away earlier and outmoded structures.

The existing monuments of this pre-Moghul Sultanate period (1206-1526) are grouped—save a few tombs at Thatta—in Multan. The finest of them, the tomb of saint Shah Rukn-i-Alam (1320-24), has been described as "one of the most splendid memorials ever erected in honour of the dead". It is octagonal in plan and the brickwork is elaborately carved with a liberal inter-mixture of azure and white glazed tiles.

Architecturally, the tomb marks an epoch in Indo-Islamic forms and anticipates elements which went into the making of a number of Moghul monuments during the following centuries. The features which distinguish the architecture of this period are a rugged simplicity and massiveness showing central Asian and Persian influence, circular or polygonal forms, and extensive use of local material.

The Moghul Empire of India was established by Emperor Babur in 1526. But it was Akbar the Great who laid its real foundation. Born in 1542 at Umarkot in Sind, he left before his death in 1605 not only a large empire

and a dynamic social and economic system, but also a distinct style of art and architecture created by a harmonious fusion of the parallel strains of central Asian, Persian and indigenous traditions. This Indo-Iranian Moghul style was further developed and refined in the succeeding century by his grandson Shah Jahan, the Master Builder. Pakistan possesses some of the finest creations of this Golden Era.

Many buildings from the Moghul period are to be seen in Thatta, the ancient capital of Sind. Here, in the old city lies Shah Jahan's Mosque, a marvel in coloured tile work, while countless mausoleums of princes, ministers, governors and holy men spread over an area of six square miles on the nearby Makli Hill, the biggest necropolis of the East.

With the advent of the Moghuls, Lahore entered the front rank of Asian cities with the construction of a series of magnificent structures. Today, many of the great relics of Moghul architectural achievements can still be seen there including the fortified citadel begun by Akbar and subsequently enriched with dainty palaces by his successors. Jahangir's mausoleum, Noorjahan's tomb, the Shalamar Gardens and Wazir Khan's Mosque are some of the other outstanding monuments which remind us of the great role played by the Moghuls as patrons of art and architecture. ■

5th century peregrinations of the Chinese monk Fa-Hsien

The Chinese Buddhist monk, Fa-Hsien, is famous as one of the great traveller-scholars of antiquity. At the beginning of the 5th century he undertook an extraordinary pilgrimage, traversing thousands of miles of desert, mountain and jungle to follow in the footsteps of the Buddha across the ancient Indo-Pakistan sub-continent. For 15 years, from 399 to 414 A.D., Fa-Hsien travelled in search of all the places visited by the Buddha, recording every scrap of information about him and describing festivals held in his honour and the monuments erected to him. Below, a short passage from Fa-Hsien's "Record of Buddhistic Kingdoms" (translated by J. Legge, Oxford, 1886) :

...Seven days journey to the east brought the travellers to the kingdom of Takshasila, [Taxila] which means "the severed head" in the language of China. Here when Buddha was a Bodhisattva, he gave away his head to a man; and from this circumstance the kingdom got its name.

Going on further for two days to the east, they came to the place where the Bodhisattva threw down his body to feed a starving tigress. In these places also large topes [shrines] have been built, both adorned with layers of all the precious substances. The kings, ministers and peoples of the kingdoms around vie with one another in making offerings at them. The trains of those who come to scatter flowers and light lamps at them never cease. The nations of those quarters call those (and the other two mentioned before) "the four great topes"...

Right, detail of a statue of a bodhisattva or future Buddha. The folds of the robe and the style of the sandal are characteristic of a form of Greco-Buddhist art known as "Gandhara" (4th and 3rd centuries B.C.) which flourished in an area around Peshawar in north-west Pakistan.



Photo Guy Thomas © J. Biltgen, Peshawar Museum, Pakistan

The terracotta figurines found at Moenjodaro have furnished invaluable information about the customs and costumes of the period. Right, a woman carrying baskets on her head and wearing a short skirt held in place by a belt with a large buckle. Around her neck she wears a pendant with large stones. The men and women of Moenjodaro seem to have had a predilection for jewels.

Photo Guy Thomas © J. Biltgen, Paris



MOENJODARO MODERN METROPOLIS OF ANTIQUITY

4,500 years ago in the valley of the Indus,
an extraordinary civilization flourished
covering a million square kilometres

*by S.M. Ashfaque
and Syed A. Naqvi*

THE Indus valley in Pakistan shares with Mesopotamia and the valley of the Nile the pride of being the cradle of one of the earliest civilizations of the world. Moenjodaro, an important metropolis of that civilization, exposed by the archaeologist's spade about 250 miles north of Karachi, bears eloquent testimony of a highly developed society.

The original inhabitants of the South Asian sub-continent were described in the Vedas as heathens and barbarians speaking gibberish, living in fortified cities and raising herds of cattle. But excavations carried out at the Indus valley sites of Harappa and Moenjodaro in 1921 and the subsequent years established that the people living in these 4,500-year-old cities were highly civilized and industrious, possessing a high standard of arts and craftsmanship, and a well developed system of pictographic writing.

In area, the Indus Valley Civilization was much more extensive than the civilizations of Mesopotamia and Egypt combined, being roughly 1,600 kilometres in length from north to south and more than 800 kilometres in breadth from east to west.

The economy of the cities of Harappa and Moenjodaro was based

upon the fertile valleys of the major rivers of the Indus basin and the easy means of transportation which these rivers afforded. Agriculture was the main occupation of the people. There is evidence to show that wheat, barley, sesame, dates and cotton were the main agricultural products.

The vast quantity of burnt bricks and common use of terracotta pottery indicate that in the past, wood was available in plenty in the countryside to provide fuel for the kilns. The brick-lined drains found in the remains of the city and pictorial representation on seals of such animals as tiger, rhinoceros, elephant and buffalo, which favour a moist habitat, go to prove that the Indus valley enjoyed a copious rainfall in its heyday.

The surplus of agricultural products and the availability of easy means of communication made it possible for the people to barter their goods for raw materials such as metals, semi-precious stones and spices from outside. The trade links of the Indus valley have been traced to central Asia, Afghanistan, north-eastern Persia, south India, and nearer home to Baluchistan, Rajasthan and Gujarat. Trade was mostly carried over land routes, but there is also evidence of sea links.

Direct evidence of the use of sail-boats is confined to some pictures on a seal, a potsherd graffito and a terracotta relief found at Moenjodaro. The picture of the boat on a small steatite seal shows a craft with sharply turned up bows and stern, a central cabin, mast and steering oar. Such boats appear to be mainly suitable for river sailing, but possibly they

also ventured out along the coastal waters up to Lothal at the head of the Gulf of Cambay in the south-east and to Sutkagendor on the Makran Coast and the Persian Gulf in the west.

The ruins of Moenjodaro fall into more or less two distinct parts: a lower and upper city. The upper city, close to the Archaeological Museum of Moenjodaro, is an oblong mound of which a considerable portion has been exposed to view. It comprises the Great Bath, the Great Granary, the Pillared Hall and a number of other structures arranged in rows divided by lanes and by-lanes. The remains of the ancient civilization are topped by an imposing Buddhist stupa of the second century A.D., rising 72 feet above the surrounding plain to dominate the scene.

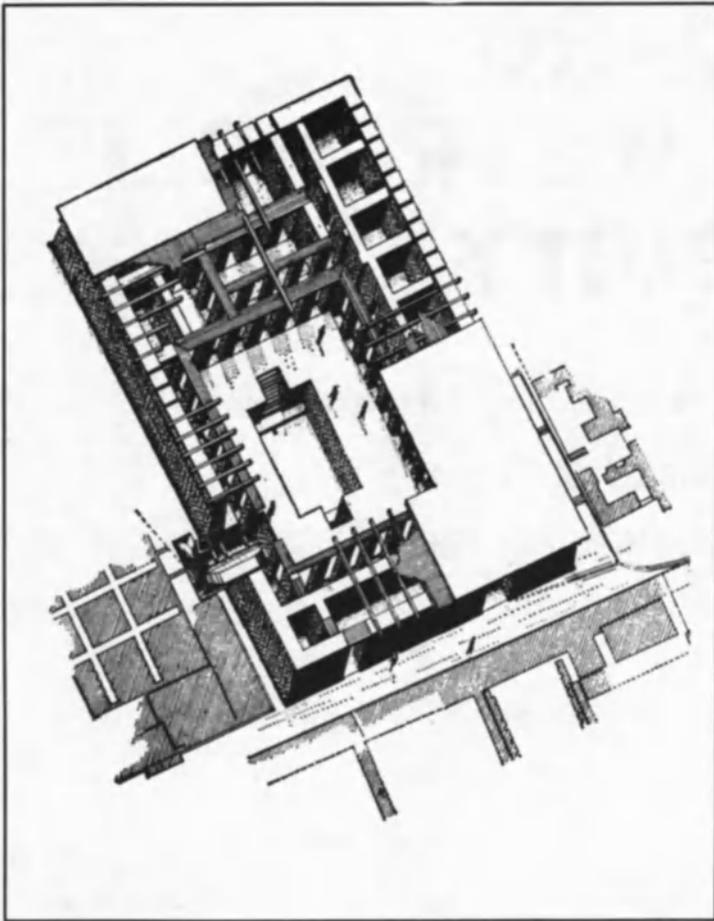
The lower city lying to the east is an extensive mound of undulating surface, three large portions of which have been excavated. The exposed areas show extensive remains of residential quarters arranged in blocks neatly divided by streets and lanes.

Excavations in the upper city have revealed that for the most part, it was rebuilt upon an artificial hill 20 to 40 feet in height, crowned by the Buddhist stupa. The artificial platform of the citadel is built of mud-brick and mud.

Evidence shows that a rising water table and floods had plagued the city even as they do today. Especially in the lower city, closer to the river in the east, there are traces of embankments and terraced structures built to protect the settlement from the river erosion and inundation.

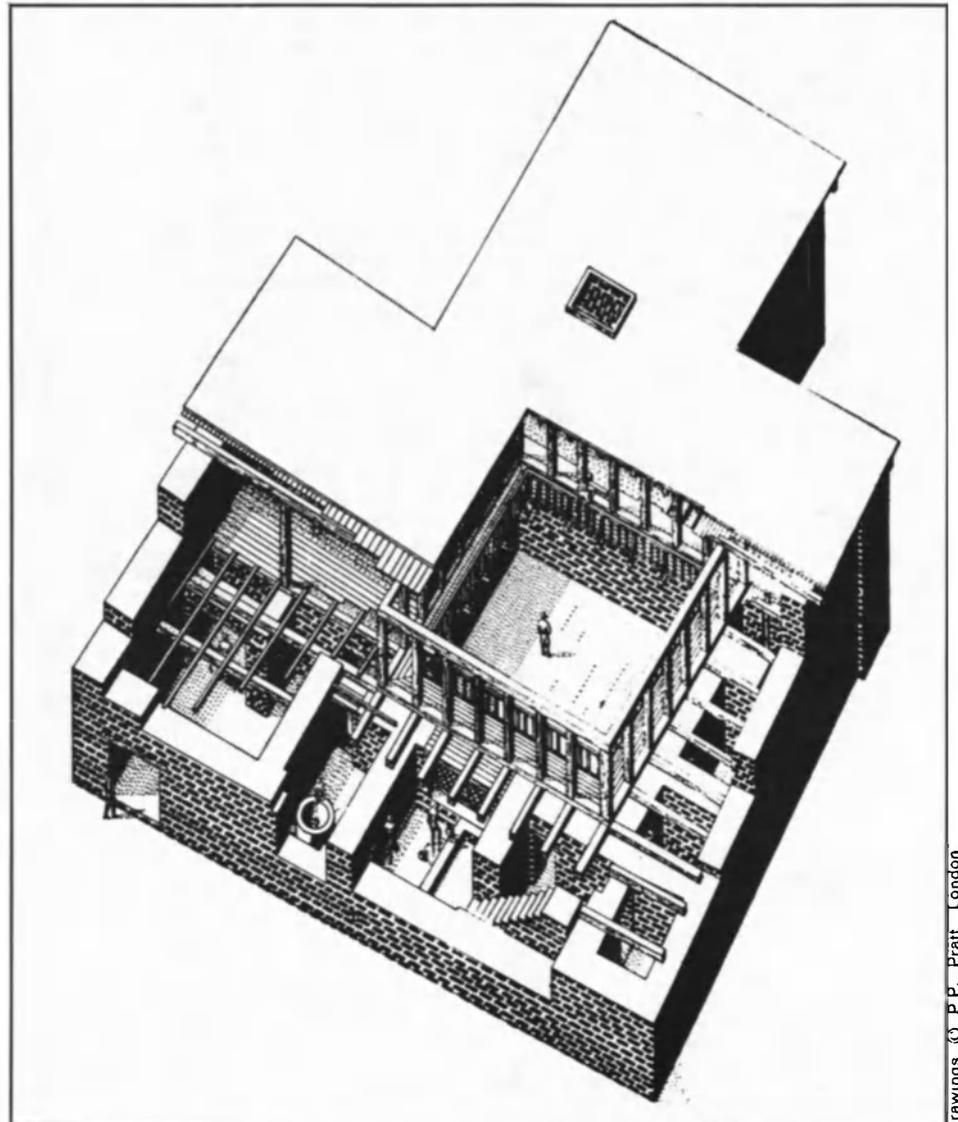
S.M. ASHFAQUE is head of the Epigraphical branch of Pakistan's Department of Archaeology and Museums and was formerly head of the Ethnological Department of the National Museum of Pakistan in Karachi. Author of many papers on archaeology and museology, he has made a special study of astro-labes and other astronomical instruments developed during the Moghul period.

SYED A. NAQVI (See note page 5).



EVERYDAY LIFE IN THE CITIES OF THE INDUS

The vestiges uncovered at Harappa and Moenjodaro have provided a valuable insight into the daily lives of the inhabitants of these two cities 4,500 years ago. Archaeologists have been able to reconstitute a picture of the architecture and the function of many buildings. Above, a reconstitution of the Great Bath, the most remarkable building of Moenjodaro. The 12-metre-long bath itself was made completely watertight by the application of a layer of bitumen between two layers of brick pointed with lime mortar. Right, reconstitution of a large house containing a bathroom, a well and several rooms giving on to a central courtyard. At Harappa, archaeologists have also uncovered 17 threshing floors (opposite page) placed at the base of the city's grain silos. They consist of large, circular, brick platforms with a central hole perhaps used for crushing the grain with a pestle. Above right, a shop or craftsman's workshop at Moenjodaro. The cone-shaped depressions in the floor were perhaps dyers' vats or holders for oil jars.





Photos © Papiqny Paris

MOENJODARO (Continued)

The houses of Moenjodaro remind one of the dictum of Francis Bacon, "Houses are built to live in, not to look at." It seems that the aim of the city builders was to make life comfortable rather than luxurious. The ante-chambers, parlours, courtyards, toilets, staircases and wells seen in almost every dwelling give an impression of immaculate planning for every convenience.

Within the exposed parts of the upper city, the most famous structure is that of the Great Bath, 39 feet in length from north to south, 23 feet in breadth, sunk 8 feet below a brick paved floor enclosed in a courtyard. The rows of rectangular pillars on all four sides indicate a corridor or pavilion which shows that the Bath was a place of some kind of social gathering or, as interpreted by the archaeologist, a place of religious bathing on some particular occasion. The complex of adjacent rooms and water closets strengthens the latter inference, and it may be concluded that life in Moenjodaro was dominated by some kind of priestly guardian or authority.

From the technical viewpoint, the masonry structure of the Great Bath reveals the high degree of skill and craftsmanship that went into its conception and construction. The floor of the bath is reached by brick steps originally provided with timber treads set in asphalt. To make the basin watertight, its floor and sides were lined with bricks set on edge in

gypsum. Behind the facing bricks of the sides was a layer of bitumen held in place by an additional lining of bricks encased in a packing of mud-bricks.

On the eastern side of the bathing pavilion, a well with a double ring of brickwork undoubtedly supplied water to the tank through a sluice connected to the basin. Near the south-western corner, there was an outlet by an underground drain covered by a corbelled arch through which the water of the tank was flushed and led down to the western side of the city. All those details not only show the technical ingenuity of the builders but also reveal their deep preoccupation with matters of hygiene.

On the western side of the Great Bath is a peculiar masonry structure consisting of a number of square platforms of more or less uniform size rising five feet in height. The blocks are divided by a network of narrow passages meeting at right angles.

On the eastern and southern sides there are remnants of a superstructure showing timber holes. Basing himself upon the analogy of a granary found at Harappa, the noted archaeologist Sir Mortimer Wheeler advanced the view that this structure also represents a kind of silo for grain storage.

A series of solid masonry blocks formed a podium supporting the timber floor of the Great Granary. The

narrow passages were the air ducts to keep the bottom of the silo dry and safe from the effect of ground moisture. The external walls of the podium were battered like that of a fortress, and on the northern side was an alcove with a brick pavement. The presence of a granary at Moenjodaro indicates that there was probably a barter system for exchange of commodities, the granary serving the purpose of a state treasury.

Towards the north-east of the Great Bath, there is an outline of a long building the plan of which suggests that it was the residence of the Chief Priest, or perhaps a hostel for a number of priests. This cloister-like structure includes an open courtyard enclosed by verandahs on three sides. The structural alternations suggest that once five doorways opened into it from a lane on the eastern side and one door each on the southern and western sides. The floor throughout the rooms is paved with bricks, and there is evidence of two staircases leading to an upper storey.

The presence of such buildings besides the ordinary dwellings suggests that the ancient people had certain social institutions which provided occasions for group activities. It is just possible that this large building might have been the "punchait" or court of the city magistrate.

The three important buildings of the upper city, the as yet unexcavated complex of structures in the southern

CONTINUED NEXT PAGE



Photo Guy Thomas © J. Biltgen, Paris

TERRACOTTA IN WONDERLAND

In the Indus Valley Civilization terracotta was widely used for a variety of purposes—in architecture (bricks and pipes), for household objects (vases and other containers), for ornaments (bracelets) and in sculpture (figurines of humans and animals). (1) A terracotta rhinoceros found at Moenjodaro. The potters also made terracotta toys such as this solid-wheeled, single-shaft cart (4) drawn by a pair of water buffaloes, identical with those still used today by Pakistani farmers in the Sind. Many curiously fashioned human figurines have also been unearthed at Moenjodaro. (2 and 3.)

MOENJODARO (Continued)

sector and the probability of peripheral towers suggest that it was the residential sector of the élite and the officials who controlled the secular and religious administration.

The lower city of Moenjodaro is an excellent example of scientific town planning with its basic gridiron system of main streets demarcating blocks of residential houses. The principal thoroughfare is the Central Street running the whole length of the ruins from north to south. The main streets are about 30 feet wide joined by lanes and side streets varying from 5 to 10 feet in width. The doors of the houses usually open on to the lanes rather than the main streets.

12 Some of the houses have rectangular windows, which might have originally been closed by lattices of alabaster and terracotta. To keep out the scorching sun the number of doors and windows was reduced to an

absolute minimum. The common features are the courtyards, a range of rooms of modest size, staircases leading to the upper floors, and quite frequently, wells to supply water.

The age of the lower city of Moenjodaro can be clearly judged where stack-like masonry columns are seen standing on the floors of rooms in the houses. These are the brick linings of the wells dug in later times when the houses below had already fallen into ruins and been covered with deposits up to the top of the wells. Looking down into a well is a common enough experience, but seeing a well from the outside, like a water jug, is intriguing and irresistibly reminiscent of Alice in Wonderland.

Walking south down the Central Street one passes acres of the unexcavated mound arriving at an area with a community well. This area had

been the scene of the massacre of the innocent people of Moenjodaro when a horde of Aryans attacked the city and rang the death-knell of this most remarkable culture.

A short distance further south is the dyer's shop where we see a number of shallow pits capped with bricks to hold the vats of chemicals and dyes. From there the Central Street leads to an area where the reduced size of the residential quarters indicate it to be the sector of the working class and the poorer people.

South beyond that point the mound extends much farther but has been left intact for future excavations. On the eastern edge of the lower city there is considerable evidence of mud-embankments and terraced structures obviously raised to protect the metropolis from inundation during monsoon floods of the river Indus.

Various art objects have been



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2 : Photo Frances Mortimer © Rapho, Paris ; 3 : Photo Guy Thomas © J. Biltgen, Paris ; 4 : Photo Dept. of Archaeology and Museums, Pakistan

found at Moenjodaro including a large number of burnt clay male and female figurines, models of birds and miniature representations of animals.

The females figurines are bejewelled and wear pannier-like head-dresses, some of which are stained with smoke perhaps because they served as incense burners. These figurines are supposed to represent the Mother Goddess whose cult was widespread in the contemporary cultures of the Middle East.

The male figurines are usually bearded and nude. They probably also represent some kind of deity. The terracotta figurines are modelled by hand and painted flesh-colour. Noteworthy among the male figurines is a steatite bust of a nobleman or King-Priest wearing a loose robe engraved with a trefoil pattern in relief. Such a pattern seems to carry some divine or authoritative connotation as

it occurs on the Bull of Heaven found at a Sumerian site, and dates to the time of Gudea, ruler of Ur about 2200 B.C.

Trefoil patterns also occur on some Egyptian antiquities of the second millennium B.C. At Moenjodaro such patterns can also be seen on a large steatite head which might have been an amulet or a protective sign against the evil eye, worn by some priest or a monarch. This enigmatic pattern and the sedate bearing of the male bust have impressed the archaeologists enough to assign him the title of King-Priest.

Sculptural art shows further diversification in the small bronze figurine of a dancing girl standing with her right arm akimbo, and her left hand resting on her left thigh. She is naked, has a rather ugly face and is wearing a necklace with three pendants hanging over her burgeoning breasts.

Two thick bangles are seen on her right arm above the elbow while a spiral ornament covers the whole length of her left arm.

But the best examples of the plastic art of Moenjodaro uncovered up to now are no doubt the many magnificent seals bearing life-like figures of animals. These include the Brahmani bull, the short-horned bull, buffalo, tiger, rhinoceros, crocodile, and also mythological creatures like the unicorn, a human figure with horns and a tail, and a horned tiger.

Besides these animals and goblins depicted on seals, there are also several miniature replicas of monkeys and squirrels carved with a mastery of natural detail. In their more light-hearted moments the sculptors also modelled toy bullock carts and domestic animals for the amusement of children.

The seals found at Harappa and

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Far right, visitors at the Moenjodaro Museum examine an artist's impression of the ancient city at the height of its prosperity. Right, a once bustling street in the lower city of Moenjodaro. Preserved for centuries beneath a protective layer of soil, the excavated city now faces the triple threat of a rising water table, corrosion by salts and flooding by the river Indus.

MOENJODARO IN PERIL

Unesco alerts world opinion
to an imminent catastrophe

Photo Dept. of Archaeology and Museums, Pakistan

by *Hiroshi Daifuku*

CHANGE is ever present and stability an illusion. Even continents, once thought to be immovable, are known to be great rafts floating above the liquid core of the earth. Their movements affect the rise and fall of mountains, the shape of the coastline, and only the relatively short lifespan of man makes them seem immutable.

Streams form, change their courses or disappear. Temperature changes, from those of long duration lasting millenia to changes which take place in a few minutes (due to a passing cloud), the growth of bacteria, lichens, woody plants and trees, all contribute towards the change of the environment.

Preservation of a site or monument represents, therefore, a constant struggle to stay or to slow this process. Inevitably, if the climate is harsh and there are great variations in temperature and humidity, as in the case of the site of Moenjodaro in Pakistan, the task becomes difficult and costly.

It is a semi-arid region with an average annual rainfall of about 12 cm. (under 5 inches). It is a region of low relief and as a result the Indus river, through silting, raises its bed above the plain (during the rainy season the mean level of the river is about 3 metres above the level of the site). The river thus forms great loops, succeeded by ox-bow lakes, and constantly shifts its bed. At times it moves away from Moenjodaro; at others (as at present) it turns towards the site to threaten its eventual destruction.

The construction of a dam (the Sukkur Barrage) nearby and the development of irrigation agriculture have contributed to a rise of the water table. While irrigation agriculture can be productive in semi-arid lands, drainage in a nearly level flood plain is very difficult, and all too frequently irrigation results in the rise of a heavily saline water table.

In the southern reaches of the Indus the area of canal-irrigated and cul-

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Photo © Paul Almasy, Paris

tivated land which has been seriously damaged by water-logging and salinity is close to 5 million acres. In the area of Moenjodaro, low-lying land already glistens with salt and lies abandoned. At the site itself the level of the water table varies seasonally from 1.5 to 3.9 metres below the surface, reflecting the rise and fall of the level of the river, and seasonal irrigations.

Through capillary action water rises about 2.4 metres (8 feet) above the aqueous layer and introduces salts into the bricks composing the monument. During the day high temperatures and low humidity result in rapid evaporation leaving behind, in the bricks, a deposit of salts.

These salts (of which sodium, magnesium and potassium sulphates and carbonates are among the most destructive) crystallize. Those found below the surface exert pressure on the bricks, causing fragments to flake off, progressively destroying the surface and weakening the interior. In

solution the salts help to corrode and weaken the structure of the bricks.

Thus, the preservation of Moenjodaro is one face of a problem involving the development of the entire Larkana region. Anxiety about the future of Moenjodaro increased as the bricks began to show greater wear.

At the request of the Pakistan Government, Unesco sent a team of experts to Moenjodaro in January 1964. The mission was led by Dr. Harold J. Plenderleith, then Director of the International Centre for the Study of the Preservation and the Restoration of Cultural Property in Rome. He was accompanied by Mr. C. Th. de Baufort, a Dutch engineer with considerable experience in working on desalinization problems in Iraq and by Dr. Caesar Voute, a Dutch geologist. The team reviewed with Pakistani specialists all the problems involved as well as the measures which had been taken.

Despite severe handicaps, the Pakistani Department of Archaeology

maintained the site for many years, using mud-plaster and mud-brick cappings to help leach the salts away. When the plaster is moist the salts within the bricks will migrate to the mud until the two solutions attain an equilibrium. The removal of the now contaminated mud and its replacement by desalinized mud helped to lessen the concentration of salts and prevented the formation of crystals on or just below the surface.

This did not, however, arrest erosion as constant new supplies of salt were introduced from the ground water and the Department lacked the means to attack the basic source of contamination, the rise of the water table.

The measures to be followed in the preservation of the site are known and include: deflection of the river; lowering the water table; removing or leaching out the salts found in the walls of the buildings. All of these are costly. The decision taken to aid the Pakistani Government in raising funds through voluntary contributions

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from the international community will make possible the following measures:

- the construction of a slanting barrier in the river which will deflect the current and turn the river away from the site;
- the construction of a ring of tube wells surrounding the excavated area to lower the water table;
- salt removal and conservation.

The first measure required poses few problems, the technology is known and the results predictable. Insofar as the lowering of the water table is concerned, there are some unknowns. The use of tube wells in Pakistan to lower a saline water table has already been carried out by the government on a large-scale agricultural project in the Punjab.

The discharge of water from the wells at Moenjodaro can eventually contribute towards land irrigation. Nevertheless the process must be carried out with care. The lowering of the water level may result in compression and the effects, particularly on massive structures, must be carefully observed so as to avoid damage and ensure the preservation of the site.

Once the water table is sufficiently lowered the area found within the ring of tube wells will be progressively desalinized. This too may be a long process as the best methods to be used have still to be worked out. The salts found in the monuments dissolve readily which should make it easy to leach them out. On the other hand the fired brick is not of good quality and the mud mortar would wash away if too much water is used.

A common method used to extract salts from stone or brick is to cover it with wet paper pulp. The salts migrate to the pulp which upon drying, is removed. The experimental use of fresh mud (uncontaminated with salt) instead of paper pulp by the Department of Archaeology showed some promise. But it was abandoned as it became a veritable labour of Sisyphus since the salts were constantly replenished from the ground water below.

Once the tube wells are in operation, however, it should be possible to carry out thorough leaching of the salts and to follow this by ordinary maintenance.

The rapid deterioration of the bricks, noted by the Archaeology Department

and by the experts sent there should then cease. But work to ensure the continued survival of the monument will have to be continued on a long term basis. Obviously the water table cannot be permitted to rise again, so the tube wells will have to be checked and the machinery periodically renewed (experience in the Punjab gives an average life of 20 years).

Airborne salts, while not an important factor must also be taken into account. Worn bricks must either be replaced with sound ones or somehow consolidated.

INTERNATIONAL assistance to solve the problems of Moenjodaro has taken many forms. In 1969, leading archaeologists under the chairmanship of Sir Mortimer Wheeler examined several proposals to save the site. In 1972, Raoul Curjel (France) led a team which reviewed the final conservation project of the Government of Pakistan. Early this year, Mr. Zulfikar Ali Bhutto, then President of Pakistan and today its Prime Minister opened an international symposium on the preservation of Moenjodaro organized on the site with Unesco's assistance.

Practical aspects were not neglected and in 1972-73, Unesco supplied equipment for two experimental tube wells, including pumps which work inside the tubes and thus remove the need for above surface buildings. A laboratory equipped by Unesco is being built by the Pakistan Government and Unesco is providing a fellowship for the chemist in charge to study the latest techniques used in other countries.

Unesco's Executive Board recently examined the joint Pakistan-Unesco Moenjodaro preservation project which in its first phase will cost an estimated \$7.5 million. It authorized Unesco's Director-General to launch an international fund-raising campaign with a target figure of \$5 million.

After the work of conservation is completed, the sale of water from the tube wells for irrigation and the revenue from tourism will pay the expenses of maintaining the equipment and site. But while the measures foreseen will stop the primary cause of erosion, constant vigilance and care will be needed if the site is to survive as a vivid reminder that here was the birthplace of an ancient civilization. ■

ART TREASURES OF PAKISTAN

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BEJEWELLED WOMAN. Terracotta figurine unearthed at Moenjodaro (2500 to 1500 B.C.). The woman is bedecked with necklaces and pendants and garbed in a loin cloth girdled by a broad belt with buckle (see also photo p. 8).

Photo Dept. of Archaeology and Museums, Pakistan

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ARTIFACTS OF ANTIQUITY. Figures on this page, with the exception of figure (2) come from Moenjodaro. (1) Tiny statuettes of a parrot, monkey and squirrels. Some archaeologists believe them to be children's toys (3) Terracotta four-legged animal with human head. (4) Chessboard and pieces. The great antiquity of this game is here confirmed. (5) Terracotta female figurine; a basket was originally set on each side of the fan-shaped headdress, but only the right-hand one remains. (2) Terracotta figure from Pirak (900 B.C.) the only known archaeological site in Pakistan from the 1st millennium B.C.

1/4/5) Photo Dept. of Archaeology and Museums, Pakistan
2/3 Photos © C. Jarrige, Paris

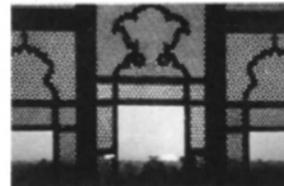
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THE HAND AND THE LOTUS. Sacred plant of the ancient Orient, the lotus is a symbol of fertility and purity. This hand holding a lotus is a work of the Gandhara school of art which flourished in north-west Pakistan and Afghanistan between the 2nd and 5th centuries.

Photo © Turab Ali, Karachi Pakistan

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SUNDOWN IN LAHORE. Built by Emperor Akbar (1542-1605) the great palace-fortress of Lahore was richly embellished by his successors Jahangir and Shah Jahan who added sumptuous decorations and pavilions. Here the setting sun glimmers through the marble filigree wall of the Naulakha pavilion built in 1633.

Photo René Burri © Magnum, Paris

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HILLTOP MAUSOLEUM. The Makli hill near Thatta, 50 miles east of Karachi, is an immense necropolis spread out over six square miles with countless tombs of rulers, dignitaries and commoners. Here, a view of the mausoleum of Diwan Shurfa Khan (1638), one of the most impressive of Makli's funerary monuments.

Photo © Papigny, Paris

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LIGHT OF THE WORLD. This miniature masterpiece is a portrait of Nur Jehan ("Light of the World") wife of Emperor Jahangir — Moghul school painting, 18th century (Lahore Museum). See article page 27.

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POETRY BY THE LAKE. The Princess Zebunissa with attendants—Moghul school miniature painting, 19th century. She was the daughter of Emperor Aurangzeb and was famous as a poet. She is shown here perhaps reading one of her own poems. (Lahore Museum).

Photos from "Treasures of Pakistan" published by the National Bank of Pakistan

MOENJODARO MODERN METROPOLIS OF ANTIQUITY

(Continued from page 13)

Moenjodaro bear pictographic inscriptions which have so far defied all attempts at decipherment. The interpretation of the script is one of the greatest problems of the archaeology of the Indus valley. The writing consists of loops, circles, combs, ladders, spoked wheels and a variety of leaf, fish and other shapes.

Sometimes these symbols appear tantalizingly within grasp, as a former custodian of Moenjodaro narrating a small incident pointed out. He once asked a small boy visiting the Moenjodaro Museum whether he could make out anything from these inscriptions. The boy replied after a moment's thought that these could be the spare parts of a bullock cart!

The Indus valley script consisting of some 250 symbols, excluding variants, is considered to be a pictographic writing, presumably read from right to left and is judged to be a level higher in precision than the hieroglyphic script of Egypt, or the cuneiform script of Mesopotamia.

The signs do not appear to be alphabetic and possibly may represent either syllables, ideograms, or determinatives related to the class of things to which the word belongs.

The script does not show any relation with the ancient writings of the Middle Eastern countries, but it is just possible that its invention was inspired by the example of the cuneiform script of Mesopotamia. At any rate the discussion remains purely academic as long as the script remains undeciphered. (See article page 28.)

MOST common ornaments found at Moenjodaro are necklaces and pendants of semi-precious stones. Decorative faience and paste beads also seem to have been fairly popular. Some cornelian beads etched and marked with designs in white are the same as those found in Mesopotamia and Iran, and they undoubtedly provide evidence of trade relations with the Middle East.

Gold necklaces, armllets, bangles and finger rings were commonly worn by both sexes, while long cornelian beads, ear-rings and anklets were meant for women only. Some of the unusually long cornelian beads indicate

advanced techniques of drilling fine and uniform holes through hard substances. A feat of such great skill might have been performed with some delicate drill of high speed.

Among the many implements unearthed at Moenjodaro are stone tools lying alongside copper and bronze tools and utensils. The stone tools are mostly long chert flakes with worn and serrated edges, evidently used as knives for cutting meat and vegetables. Stone vessels are few but there are some alabaster dishes thick and clumsy in appearance.

Almost a complete series of stone weights have also been found which bear a binary ratio. These weights are made of highly polished pieces of chert, quartzite, alabaster, limestone and jasper. Their shapes are cubical, half-cubical, cylindrical and spherical. Very few weights are reported to be defective in measure, a fact which signifies a consistency of commercial standards maintained by the state.

Among the other objects found at Moenjodaro, the gamesmen of carved stones for chess and games of dice are particularly noteworthy. There is also a terracotta saucer with a spiral channel, which is certainly the forerunner of the game of bagatelle. These paraphernalia of indoor recreation indicate that the ancient inhabitants led a life of considerable prosperity and pleasure.

There are some cooking pots, agricultural implements, mirrors, statuettes and ornaments made of copper and bronze. The earthenware objects include a wide range of pottery varying in size from miniature containers for perfumes and cosmetics to large vessels for animal fodder, storing other products, or for sanitary purposes.

The pottery is mostly wheel-turned in plain shapes or with decorations in paints, graffito, etc. The highly specialized character is evident from decorations on the red ware. The patterns consist of geometric shapes, as well as stylized human, animal and bird forms and vegetation. Fish-scale patterns, intersecting circles, pipal leaf motifs and checkerboard designs are fairly common, with some incised and stamped pottery.

The Indus Valley Civilization thus floats within the ken of knowledge

quite dramatically and disappears with equal suddenness. Between it and the next important phase in the chronology of the sub-continent there is a wide gap, which it is the hope of archaeologists to fill one day.

Among the causes of the decline and fall of this civilization, scholars enumerate a progressive desiccation of the climate of the Indus valley, devastation by floods, some kind of mysterious epidemic which wiped out the population, and lastly, but strongly emphasized, forays of marauding bands of Aryans, pouring down in waves from the mountain passes in the north and west. Each possibility has its own merits and arguments, but the definitive answer has yet to come.

THE ruins of Moenjodaro, buried beneath the accumulation of thousands of years, remained in an excellent state of preservation. But as soon as they were exposed from oblivion to the incredulous gaze of the 20th century, they were overtaken by the plague of water-logging and the leprosy of salinity. These two diseases combined with the threat of erosion by the Indus river, pose a grim danger to the very existence of one of the most remarkable cultural legacies of the human race.

The present state of the archaeological remains at Moenjodaro has attracted the attention of specialists and laymen alike. It is doubtful if any other country, had it inherited Moenjodaro, would have done more for its preservation than what has been done so far by Pakistan, despite her tight economy.

But saving the ruins of Moenjodaro from total obliteration is not the responsibility of Pakistan alone. It is in fact the combined responsibility of the entire civilized world.

Tangible arrangements to tackle this important task with the help of Unesco are now in the offing and on completion may in themselves be a monument to modern technology and international co-operation. ■

**S.M. Ashfaq
and Syed A. Naqvi**