

CHAPTER - I

SALIENT FEATURES OF INDUS CIVILIZATION

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As late as 1920 it was generally held that civilization in the Indian subcontinent began only after the invasion of Alexander in 326 B.C. But the archaeological discoveries made in 1921 and 1922, added a new chapter to Indian history taking it back to the 3rd millenium B.C. In 1921 D.R. Sahni⁽¹⁾ carried out trial excavations at Harappa in Montgomery District of Punjab and in the following year R. D. Banerjee⁽²⁾ dug at Mohenjo-daro in Larkana District of Sind (Fig. 1), both bringing to light hitherto unknown seals, pottery and other antiquities of a Bronze Age Civilization. The discoveries made by Sahni and Banerjee were followed by large-scale excavations at Mohenjo-daro under the general direction of John Marshall⁽³⁾. Further excavations at the same site were carried out by E. J. H. Mackay⁽⁴⁾ who also dug at Chanhu-daro. M. S. Vats⁽⁵⁾ excavated at Harappa, which was subjected to further digging in 1946 by R. E. M. Wheeler⁽⁶⁾. On account of its being widespread in the Indus Valley, this civilization was given the name the Indus Valley Civilization. Explorations conducted during the twenty-five years following its discovery in 1921, indicated that its area of spread lay principally in the Sind plains with significant cultural contacts with sites in Baluchistan and Makran coast, close to the Iranian border on the one hand and with Harappa in Punjab and Kotla Nihangkhan (near Ropar) on the Sutlej. A few sites along the Hakra in the erstwhile

Bahawalpur state and Rangpur on the Sukha Bhadar in the former Limdi state of Kathiawad, Gujarat were the only other recorded sites of this civilization, lying outside the Sind region (Fig.2). The post-partition India has witnessed an enormous increase in the number of sites of the Indus Civilization in Rajasthan⁽⁷⁾, Haryana⁽⁸⁾, Punjab⁽⁹⁾ and Gujarat⁽¹⁰⁾, thereby extending the limits of this civilization in the east up to Alamgirpur on the Hindon, a tributary of the Yamuna some 45 kilometres north of Delhi, in the north upto Manda⁽¹¹⁾ on the right bank of the Chenab, about 28 kms north-west of Jammu, and upto Bhagatrav (Gujarat) in the south⁽¹²⁾. Daimabad which lies on the left bank of the Pravara, a tributary of the Godavari, some 230 kms east-north-east of Bombay is also a settlement of the Late phase of Indus Civilization.

The spread of the Indus Civilization far beyond the Indus valley in all directions has necessitated redesignating it as Harappa Civilization which is further subdivided into Mature Harappa Culture (2500 - 1900 B.C.) and Late Harappa Culture (1900 - 1600 B.C.). The latter includes a Transition Phase (1700 - 1600 B.C.) of the culture when an evolved culture with a distinct pottery known as the Lustrous Red Ware (LRW) makes its first appearance at Rangpur.

This area of Harappa Civilization falls broadly into four different geographical regions which are designated by S.R.Rao as (1) the Central Province, (2) the Western Province (3) the Eastern Province and (4) Southern Province.

MAP OF SITES OF MATURE HARAPPAN PERIOD

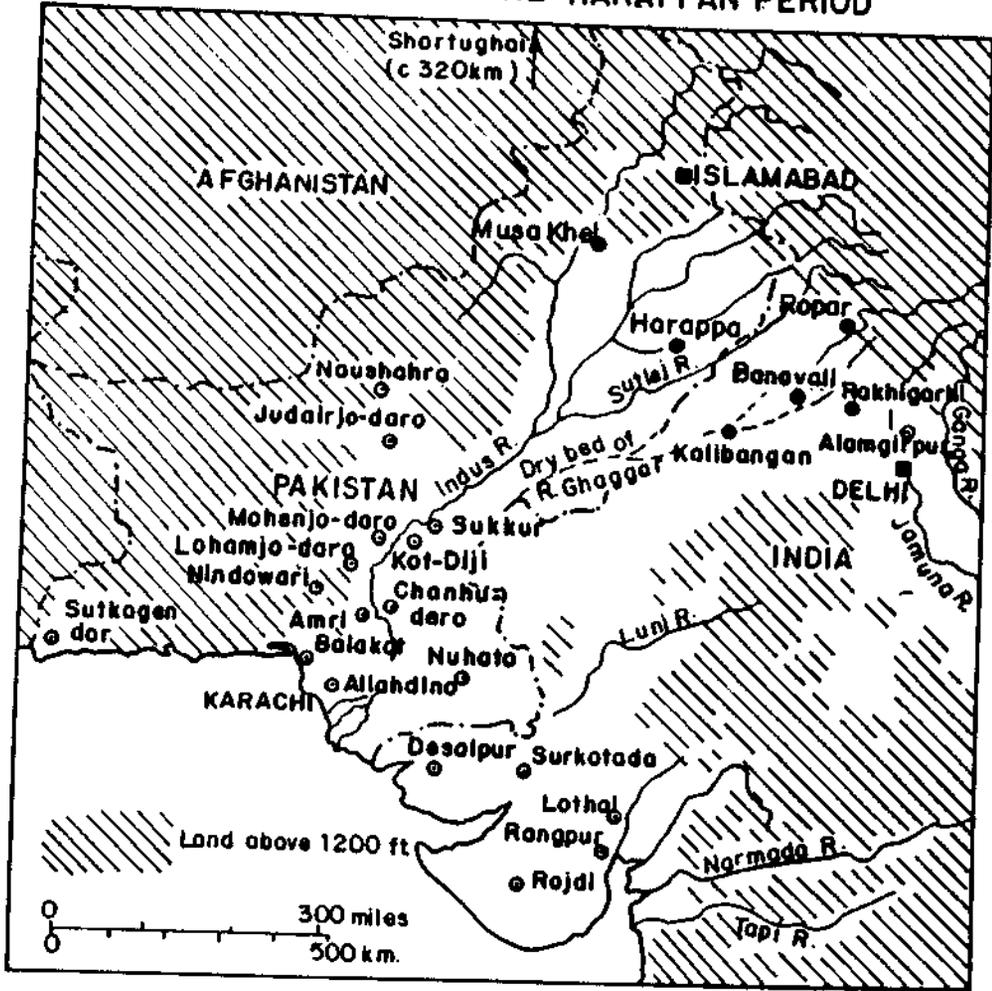


FIG. 1

EARLY HARAPPAN PERIOD SITES OF THE HAKRA RIVER COAST :

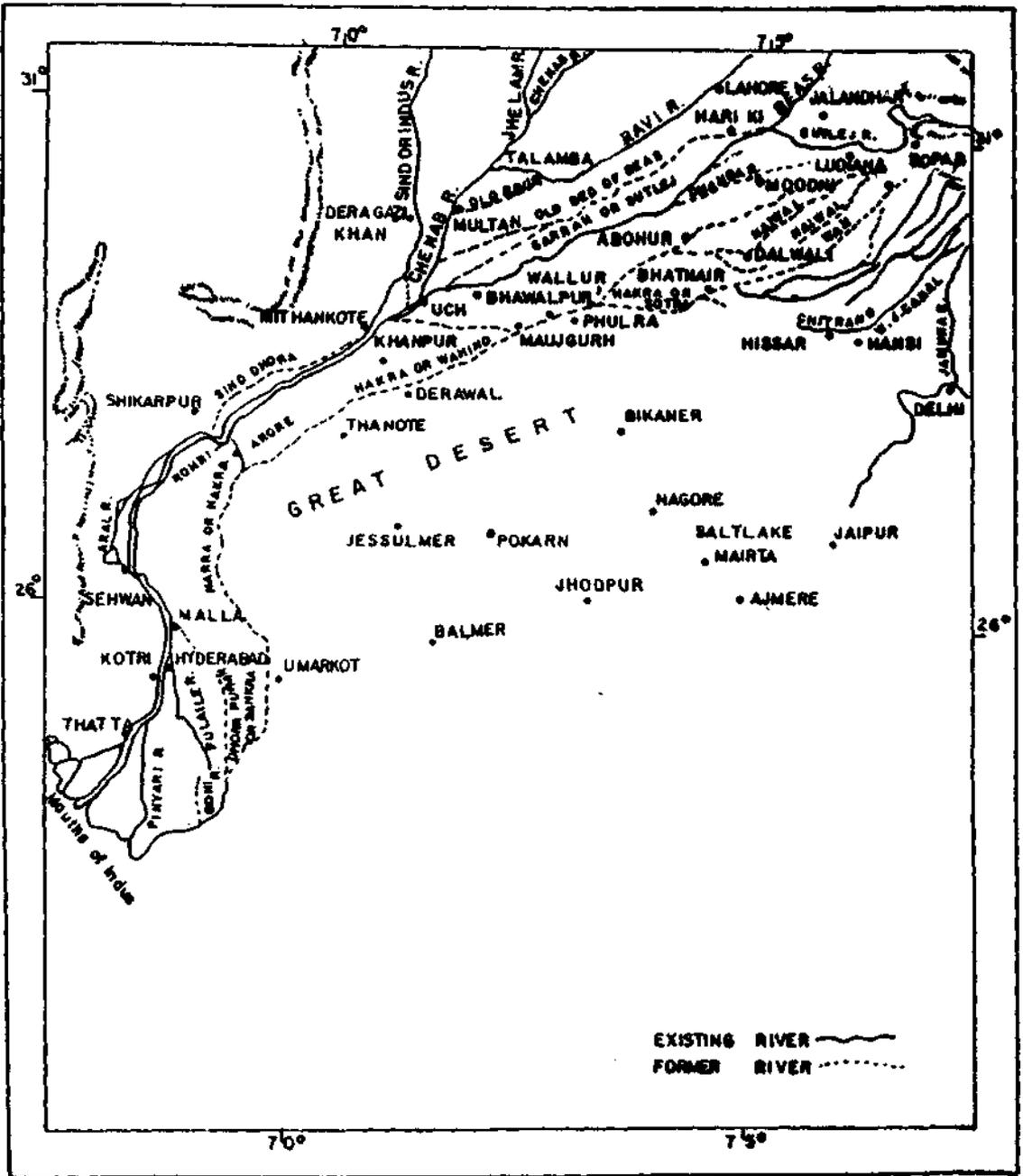


FIG. 3

(1) In the Central province of the Indus Empire, several new Indus sites were located by M. Rafique Mughal⁽¹³⁾. The Kot-dijian sites of Cholistan which Mughal terms as 'Early Harappan' are actually 'Pre-Harappan'. The culture is represented in the vast plains extending from Rehman Dheri to Jalilpur.

Mughal's Cholistan exploration has produced as many as fortyone sites of the early Harappan period⁽¹⁴⁾. In this period, the settlements increase in number over those of the preceding Hakra sites and the main focus of occupation appears to have been between Fort Derawar and Fort Abbas where settlements of Hakra wares are very few. This pattern seems to extend across the border in India up to Kalibangan and even further east to Banawali near Fatehabad (Fig. 3).

(2) The Western Province of the Indus Empire can be recognized as a distinct geographical unit comprising the highlands of Baluchistan and North-Western Province extending from the Makran (Pakistan) coast to the Khyber and Bolan passes.

Dabar Kot in the Loralai Valley is an important Harappan settlement. Sutkagendor and Sotkakhoh are two ports on the Pakistan Makran coast. Proto-historic settlements discovered by A.H.Dani include Gumla, Hathala, Bud-ki-Terai and Kot Allah Dad⁽¹⁵⁾. Sarai Khola and Rehman Dheri⁽¹⁶⁾ near Islamabad shed new light on Harappa culture in the north-west.

(3) The Eastern Province, affording wide flood plains, topographically homogeneous with vast aggravalational surface for the annual flood-silt, was a formative region for the development of Indus Civilization. The site of Kalibangan is noted for its pre-Harappan and Harappan settlements. Other Harappan settlements along the Indus and lower reaches of the (Ghaggar) Sarasvatī must have been deserted during the Late Harappan period. They are termed as 'arma' and 'armaka' by the Vedic Aryans who were in occupation of the middle and upper courses of the Sarasvatī. By the time the Mahābhārata was composed the lower reaches of the Sarasvatī was turned into a semi desert. In the Yamuna-Sutlej Valleys there are some significant Harappan settlements at Manda, Banawali, Chandigarh, Ropar, Alamgirpur and Bara.

(4) The Southern Province shows different geographical features;

(i) Small dissected plateaus and scarplands in Kutch and Kathiawad

(ii) a long sea-board indented by large inlets like the Gulf of Cambay and the Rann of Kutch and

(iii) tidal flats, fertile plains and a marshy coastal zone- offered amongst other things possibilities of maritime activity⁽¹⁷⁾. In the north-western parts of Gujarat, where the rivers Banas, Sarasvatī and Rupen, flowing into the Little Rann of Kutch, and in Saurashtra proper, over seven hundred sites of pre-Harappan, Harappan, Late Harappan affiliations have been located⁽¹⁸⁾. Some of the noteworthy

sites of different regions are given below with the years of excavation.

The Central Province:

Harappa (1986-88), Mohenjo-daro (1921-22), Chanhu-daro (1931), Kot-diji (1957), Balakot (1973-75), Amri (1927), Allahdino (1973-77).

The Western Province:

Mehrgarh (1977), Saraikhola (1968-71), Gumla (1970), Sutkagen-dor (1931), Dabarkot (1929), Rehman Dheri (1976).

The Eastern Province:

Kotla Nihang (1929), Ropar and Bara (1953-55), Kalibangan (1960-69), Mitathal (1968), Siswal (1970), Sanghol (1968-73 and 1980-86), Banawali (1975-83), Bhagwanpura (1975-76), Manda (1976-77), Hulas (1978-83) and Rohira (1982-83).

The southern Province:

Rangpur (1935, 1937, 1947 and 1953-56), Rojdi (1951-52, 1977-78 and 1983-84), Bhagatrav (1953-55), Lothal (1955-62), Prabhas Patan (Somanath) (1956-57 and 1975-77), Desalpur (1963-64), Malvan (1969-70), Surkotada (1972-75), Daimabad (1974-78) and Lakhabawal (1955-56).

Sumer and Egypt had long emerged into a civilized way of living at the time the Indus People built their remarkable cities. Egypt had been unified for seven centuries and the Early Dynastic period in Sumer was over four centuries old. Among these civilizations the Indus Valley was by far the largest in area covering more than what Egypt and Mesopotamia

together covered. Its frontiers reached well beyond the watershed of the Indus river. From Ropar to Sutkagen-dor is 1600 Kms. The axis of the two Egypts is only some 960 Kms and lowland Mesopotamia is of a similar length⁽¹⁹⁾. Behind so vast a uniformity lay a remarkable administration and economic discipline.

A brief account of the cultural remains from the recent excavations is given below as a background for the study of the Indus Script and language.

Harappa: M.S. Vats excavated Harappa between 1923 and 1934 and published the report in 1940. The University of California at Berkeley and the University of Wisconsin at Madison excavated Harappa from 1986 to 1988. The report by G.F.Dales, J.M.Kenoyer and others highlights some important findings⁽²⁰⁾. The excavation in Mound E revealed Harappan brick structures, mud-brick platforms, sump pits etc. Craft activity such as copper smelting, agate bead manufacture, stone tool manufacture, shell working and wood-working was prominent on the southern slopes of the mound. Some strata yielded undisturbed cemetery H and transitional Harappan habitation deposit. Harappan architectural units with streets and drains were exposed in the excavation of mound E. Wheeler⁽²¹⁾ and M.R.Mughal⁽²²⁾ excavated Harappan Cemetery. Excavation by Dales team revealed the western extension of the Cemetery into the fields, where the Harappan burials were dug into natural soil. A few burials contained a large number of pots and a significant variety of ornaments too, but the

majority had very limited grave goods.

A very significant finding of the excavation by Dales' team was the construction of platforms of mud-bricks revetted with burnt bricks as in Lothal. The plans of buildings and streets in 'Area G' and 'Mound AB' at Harappa are not traceable owing to brick-robbing. Another interesting feature is that all the inscribed seals of Harappa are of the Late phase when pictures of hill, pipal leaf, insects, birds and animals were omitted from the scripts.

Mohenjo-daro, situated on the river Indus in Larkana district of Sind was excavated under the direction of John Marshall in 1921-22 and continued upto 1930⁽²³⁾. E.J.H.Mackay (1938) who also excavated the site suspects that originally a channel of the Indus washed the northern edges of the Citadel. The Citadel complex encompasses within its limits several important buildings, such as the Great Bath, the Granary and the Cottage, all built on massive platforms of mud-bricks below which there are some earlier buildings, not yet fully explored.

The Citadel of Mohenjo-daro is protected against flood by a peripheral wall in which towers and salients have been traced on the northern, western and south-western sides. There is a public bath situated in a courtyard. The brick-paved courtyard is surrounded by Verandahs, at the back of which are ranged rooms on three sides. Across a lane to the north of the Great Bath there is a block with eight small bath rooms ranged in two rows, one on either side of a drain.

Bathing is a necessity and an important ritual to one and all. Mohenjo-daro had the unique distinction of providing a public bath. There is a large building which might have served as an assembly hall.

The Great Bath, the Assembly Hall and other impressive buildings lend dignity to the Citadel as a seat of power. A significant observation made in 1964-66 excavation of Mohenjo-daro is the presence of the so-called Jhukar pottery in the uppermost layers of Mature Harappan phase along with the typical Mature Harappan pottery and architecture thus shedding welcome light on the contemporaneity of the two cultures. The physical presence of the Jhukar and Kulli folk in Harappan centres has a distinct cultural identity among the advanced Indus people who had attained a high degree of literacy and technical achievement.

An important contribution made by Dales to our knowledge of Indus Script is the convincing evidence about the simplification of the writing during the last days of Harappa culture by the exclusive use of cursive signs on the seals recovered from the latest structural levels.

Chanhu-daro⁽²⁴⁾ 129 Km south of Mohenjo-daro is one of the three major towns of the central province of the Indus Empire. Majumdar who excavated this site confirmed that it was a Harappan settlement. Mackay recognized three cultural periods at Chanhu-daro, the earliest representing the Harappa culture and the second and third were identified with Jhukar and Jhangar cultures respectively.

There was some time lag between each sub-period in Chanhu-daro. In phase Ia, no platforms were built to serve as high plinth for houses of mud bricks. Platforms came into existence in Phase Ib at Chanhu-daro, but no fortification or peripheral wall was built. Chanhu-daro was prosperous in Phase Ib as can be made out from the large number of copper tools and weapons, stone weights, seals and ornaments. Phase Ic is better represented on Mound II than on Mound I by houses, streets and drains.

Chanhu-daro Ia and Ib should be equated to Mature Harappa culture and Chanhu-daro Ic to Late Harappa culture.

Kot-diji which was excavated by F.A. Khan is situated on the national highway 24 Km south of Khairpur and 40 Km east of Mohenjo-daro. The thick deposits of the Pre-Harappan settlements of the site indicate that it was inhabited by a distinct well organised and prosperous community several centuries before the arrival of the Harappans. These inhabitants could be called the 'Kot-Dijians', their houses built in stone and mud brick. The skill displayed in the manufacture of their wheel-made pottery has little or no affinity with the Harappan ware. A terracotta figurine of bull found along with Kot-diji pottery, represents their skill in the art of modelling⁽²⁵⁾. The Harappans lived in houses having mud-brick walls raised on stone foundations and used tools and personal ornaments made of copper and bronze.

Casal⁽²⁶⁾ finds a few Ceramic types common to Kot-diji and Amri suggesting the contemporaneity of Kot-dijian culture

with periods I and II of Amri.

Amri excavated by N.G. Majumdar is situated south of Mohenjo-daro. The Amri culture is known for pots with thin walls painted with a plain reddish brown band at the neck, a chocolate band on the inner side of the lip and geometric patterns on the body in black or chocolate or pink. Majumdar distinguished the Amri ware from the polychrome of Nal on which three or more paints were used⁽²⁷⁾.

Another Harappan site Allahdino was excavated by Walter A. Fairservis⁽²⁸⁾. It is situated 40 km east of Karachi and 16 km east north-east of the Indus river. Three phases of occupation have been distinguished so far. Structures of mud-brick were noticed in the upper levels of Phase I, while in the lower levels, mud brick and stone structures rebuilt several times were encountered. Phase II is noted for mud brick architecture with courtyard features. The basic decorated pottery of every phase was of the black-on-red type designated Mature Harappan. There was no central planning although there was regularity within and between architectural units.

After exploration in Bahawalpur a distinctive group of ceramics was discovered from a Cemetery called 'H' at Harappa. Similar material was also reported from two sites explored by Aurel Stein⁽²⁹⁾ in Bahawalpur.

Beautiful red pottery, often treated with thick glossy slip and black painted designs, many vessel forms and other materials from the Late Harappan sites in Cholistan compare

well with the known evidence from contemporary sites in Pakistan and India⁽³⁰⁾ .

Mehrgarh was excavated by J.F.Jarrige⁽³¹⁾. Its importance lies in the succession of pre-pottery Neolithic, Neolithic and Chalcolithic cultures beginning from the sixth millenium B.C. Mehrgarh is situated 150 km south-east of Quetta on the perennial river Bolan at the head of the Bolan Pass which connects the Indian sub-continent with West Asia. The excavator has distinguished seven cultural periods in this area.

Houses of mud bricks and mud have been traced throughout Period I and the imprints of barley and datestone noticed on clay in the early Neolithic levels throw light on the food habits of the people. In the Upper levels, a large settlement with symmetrical houses, also of mud bricks, built on a sort of mud-brick platform has come to notice.

Small stone blades used for cutting sea shell, a very large number of bone tools, cores of conch shell and pottery turned on a slow wheel formed the main equipment of the Neolithic folk of the period II. The only metal object found in this period is a copper bead. Large quantities of wheat, barley and cotton seeds were found in the excavation. Painted pottery was very popular in Period III. Terracotta female figures and bone and terracotta seals distinguished period IV from the preceding and succeeding ones. In Period V, the distinct ceramic industry is the Grey Ware painted with 'pipal leaf' motif in red. There is a profusion of

terracotta female figurines with prominent applique breasts and exaggerated hairdo. Monumental architecture and Kot-Dijian pottery are encountered in Period VI assignable to the first half of the second millennium^(18a) B.C. Rehman Dheri, an important pre-Harappan settlement situated 23 km north of Dera Ismail Khan was excavated by F.A.Durrani⁽³²⁾. It is a large urban centre with mud-brick structures. Durrani mentions three cultural phases: Rehman Dheri (Lowest), Rehman Dheri II (intermediate), and Rehman Dheri III (uppermost). The lowest level represents a ceramic assemblage that seems to be proto-Kot-Dijian. The intermediate phase represents typical Kot-Dijian specimens with some motifs such as pipal leaf, peacock, intersecting circles and some geometric designs typical of the Mature Harappan phase. The upper phase yields some Kot-Dijian ceramic complex with more elements of continuity from Proto-Harappan to Harappan period.

Lower levels at Kalibangan, a Harappan town situated to the south-east of Harappa on the now-dry Ghaggar river indicate a pre-Harappan culture of some sophistication⁽³³⁾. The settlement was fortified from the beginning of the occupation and within the walled area there were mud brick houses with ovens, water-storage-pits and drains. The inhabitants made a wide range of earthenware vases and bowls as well as bull figurines, beads and toy cartwheels. They were acquainted with copper, though tiny blades of chalcedony and agate were also used. The economy of Mature Harappan

period depended on agriculture, industry and trade.. They have produced goods for both home markets and foreign trade. Potters turned sturdy red ware, often painted with black floral or geometric designs. Terracotta and stone figurines display the sculpture's remarkable art. Human portraiture reached a very high standard in the few surviving pieces. The contrast between this pre-Harappan cultural phase and the later Harappan or Indus style lies not only in the pottery forms, the size and materials of blades, the size of bricks and the layout of houses, but also in the scale of urbanization and the advent of literacy. The Cemetery at Kalibangan is noted for profusion of ceramic wares in a few burials. The fire altars in the Citadel are comparable with those of Lothal.

East of Kalibangan there is an important Harappan settlement at Banawali which is situated along the ancient bank of Sarasvatī, some 220 km north-west of Delhi, in District Hissar, Haryana⁽³⁴⁾.

The pre-Harappa culture of Banawali bears striking similarity to that of Kalibangan in ceramic wares and other equipments though copper is poorly represented. The structures were made of mud-bricks, the use of Kiln-burnt bricks was also recorded in drains. The important finds obtained from this site are : points and awls of bone, bangles of shell, copper and terracotta beads of semi-precious stone, shell, bone and gold and terracotta animal figurines. Another find is a sherd depicting a canopied cart

with spoked wheels. During the Harappan occupation, the settlement was fortified showing two subjoined parts with a bipartite wall. Other important finds are cubical weights, one terracotta and ten steatite seals bearing Indus Script, a few terracotta mother goddess figurines and a terracotta model of a plough.

Bhagwanpura is situated on the right bank of the Sarasvatī in District Kurukshetra, Haryana. The excavation⁽³⁵⁾ revealed in 2.70 metre-thick occupation strata a two-fold sequence of cultures of which the earlier was represented by the so-called Late Harappan and the latter, which was found interlocked with the preceding one, by the Painted Grey Ware culture. The finds from the Late Harappan occupation include in addition to pottery, terracotta bulls, toy-cart wheels, copper rods and pins, bone pins, terracotta bangles and beads of terracotta and semiprecious stones. The houses were built atop mud platforms for protection against flood. A noteworthy find from the overlapped phase was a terracotta seal bearing incised Indus characters. The interlocking of the Late Harappan and Painted Grey Ware cultures has also been attested to at Sanghal in District Ludhiana of Punjab.

Lothal, literally meaning in Gujarati 'the mound of the dead' is situated on the coastal flats at the head of the Gulf of Cambay, 80 km. South-West of Ahmedabad in Gujarat. Being situated only 16 km. north-west of the junction of the Sabarmati and Bhogavo rivers with the sea, Lothal was

subjected to frequent floods. The settlement, therefore, had to be reinforced with both mud and mud-bricks against floods. The excavations^(10,b,c) revealed five phases of continuous occupation of which the earlier four are included in Lothal period A and the fifth in Lothal period B. Except for the terminal one, the end of each phase was marked by flood damage.

The settlement was found to be fortified with a mud and mud-brick wall. Both public and private buildings stood on the terraced platform. The prominent structures located in the Acropolis included a regimented series of rooms, each with a brick-paved bath and a remarkable system of underground drainage with silting chambers. Lothal being a major Harappan port it had the distinction of building a dockyard bigger than the modern dock at Vishakhapatnam. In the Western embankment there was a mud-brick platform which was intended for handling cargo. The structure has been proved to be a dockyard for shipping. It had a lock-gate system for controlling water flow in high tide and low tide. Another important structure located in the citadel part is a warehouse. Both the dockyard and the warehouse coupled with the discovery of a Persian Gulf style seal⁽³⁶⁾ at the site, are indicative of the maritime trade of this coastal site.

A noteworthy ceramic ware of Lothal A is the reserved slip ware which indicates connection with Mesopotamian ware. The painted decoration on the Harappan pottery includes pipal leaf, intersecting circles, fish scale, peacocks etc besides

geometric designs. Other finds were characteristically of Indus mode such as seals, cubical weights, chert blades, copper objects and ingots, bone pins and terracotta sealings. The most important contribution of Lothal to Indus Script is the evolution of the writing from a sophisticated to a simple system through a large variety of seals.

Lothal B was marked by certain changes in ceramics; goblets, painted jars, loops, fronds, triangles, volutes, panels, stylized peacocks and birds, drawn in a free style on a limited surface of the pot. As regards other finds, terracotta bangles were completely replaced by those of shell, cubical chert weights and long ribbon flakes by short blades. A significant change in the script was the absence of the animal motif and other pictographic elements. The houses of period B were jerry-built, with bathrooms made of brick-bats. The settlement gradually shrank in size and lost its urban character. Frequent flooding is the principal cause of the decline of this settlement.

Rangpur is situated in District Surendranagar, in Gujarat, on the river, Sukha Bhadar. The site has been excavated four times. M.S. Vats who first excavated the site in 1934, came to the conclusion that Rangpur was a Harappan outpost.⁽³⁷⁾ G.S. Ghurye⁽³⁸⁾ agreed with Vats. But H.D. Sankalia's excavation in 1947 cast some doubts regarding its Harappan affinity⁽³⁹⁾. Finally in 1953-56 when a large-scale excavation was undertaken by Rao^(10a) among other things its status as a Harappan site was restored. The excavation

yielded pottery, stone weights, blades and beads typical of Harappa culture. Drains of Kiln-fired bricks and platforms of mud-bricks were also encountered here.

Three cultural periods are recognized at Rangpur. Period I represents the Late stone Age culture of Saurashtra. Period IIA represents the Mature Harappa culture and Period IIB the Late Harappa culture. Period IIC marks the transition phase.

In Period III an evolved culture i.e. 'the Lustrous Red ware culture' was prominent. Period II is divided into three phases, denoting respectively the mature, decadent and transition stages of the Harappa culture. In sub-period IIA, the pottery is typically Harappan. The pots were painted in black over red or chocolate over buff. Other finds are cylindrical carnelian beads, lenticular agate beads, disc beads of steatite and gold, chert blades, cubical stone weights, shell bangles and copper pins. The occupation of this sub-period was destroyed by floods. In sub-period IIB, the fabric of the pottery becomes coarser. The bulk of the pottery is not painted with any intricate pattern, the peacock being the only important animal motif. In sub-period IIC new forms and fabrics were introduced. The cylindrical perforated jar was totally dropped. Terracotta triangular cakes went out of use. Certain new painted motifs such as loop with fronds, fish, row of birds and deer were introduced.

The last cultural period at this site is marked by the dominant use of Lustrous Red Ware. Painting was now

restricted to the upper part of the vessel and executed in a deep black pigment over a shining red surface with less complicated designs and animals like bull, deer, bird. The black and redware, occurring in smaller quantities in the earlier sub-period IIC also came into greater prominence during this period. Faience, agate and steatite beads went out of use. Terracotta beads and shell bangles became more popular. Among terracotta animal figurines, the most noteworthy was of a horse. The graffiti marks on potsherds closely resembling cursive signs on Indus seals, suggest the survival of the Indus Script.

The Decline

Now the obvious question is that how such a well established and sophisticated civilization disappeared suddenly. In this regard Dales⁽⁴⁰⁾ says that the decline is due to natural calamity. He discarded the invasion theory propounded by Gordon Childe and supported by Wheeler⁽²¹⁾. The peripheral walls and the terraced platforms over which houses were built were antiflood bolsters. Sometimes hurried repairs were carried out to the Citadel walls of Harappa and Mohenjo-daro to prevent further damage by floods. The accumulation of flood debris in 'HR Mound' is a clear proof of inundation of Mohenjo-daro.

The invasion and destruction of Harappa by the Cemetery H people is now dismissed as it is not supported by archaeological evidence. The hiatus between the Harappa and

Cemetery H culture establishes that the invaded were not present when the so-called invaders came. At Mohenjo-daro Dales has proved that the so-called massacre does not belong to the last phase. Hence destruction of Mohenjo-daro cannot be attributed to any invasion. The peripheral walls were not defenses against invaders but a protection against flood.

The Indus civilization made several permanent contributions to the progress of man. The Harappan metrology laid the foundation of science and technology with its decimal graduation system. It had the minutest measurements in weights and on linear scale. The Harappans met the danger of flood by building solid and massive platforms of brick and mud to serve as high plinths for blocks of houses to keep them above the normal flood level. In doing so they standardized the most convenient sizes of bricks and developed the technique of firing on modern principles. The burnt-brick revetments of the mud-brick fortification at the three major settlements namely Harappa, Mohenjo-daro and Lothal confirm that the inhabitants had to safeguard the mud-brick walls against erosion. The engineering skill of the Harappans, especially in building a dock after a careful study of tides, waves and currents is remarkable for the age. They not only followed modern principles in building docks, warehouses, drains and baths but also achieved advanced standards of construction. The science of Yoga is another great contribution of the Harappans to the progress of man in the material and spiritual field. Several terracotta human

figures depicted in Yogic postures have been recovered from Harappa, Mohenjo-daro and Chanhu-daro. The Indus seals also show the gods seated in Yogic postures. They had recognized three forms of energy namely the fire, the sun and the lightning and postulated a theory of single supreme source. This energy is responsible for the creation, sustenance and destruction of the Universe which is beautifully expressed by their immediate successors namely the Vedic Aryans in several hymns of the Rg. Veda. The Harappans worshiped the fire god and offered sacrifices as did the Vedic Aryans later. The most important contribution of the Indus Valley Civilization is the simplified alphabetic system of writing which facilitated quick communication and recording of thought. Without such an easy system of writing sophistication would not have been possible⁽¹⁸⁾.

The Harappans maintained their individuality both in the shape of the seals and in the script adopted for communicating their ideas. More than 3000 Indus seals and sealings have been found throughout the Indus Empire. The intaglio designs on the seals include a wide range of animals associated in almost every case with groups of signs in a semi-pictographic script. Some seals, however, bear script only and some bear human or semi-human forms. There are likewise purely cursive designs, notably the swastika, multiple squares set concentrically, a criss-cross pattern and a plain multiple cross. The early and Late seals and tablets were taken together by early excavators of Indus

sites in considering the Indus Script as pictographic, while recent stratigraphic evidence from Lothal, Kalibangan, Mohenjo-daro and Harappa shows a clear evolution of the writing by dropping pictures in Late levels. Until this fact was known, the Indus Script was considered as uniform throughout its long life of 800 years from 2500 B.C. to 1700 B.C. The inscriptions begin from the right, but where there is a second line it begins from the left, i.e. the sequence is boustrophedon. Till now it was believed that the script bears no ascertainable relationship with any contemporary or near contemporary script. But recent researches have shown that the signs in the Late Harappan cursive script resemble those of the Semitic Script to a large extent.

The conditions requisite for the interpretation of the script - a bilingual inscription including a known language or a long inscription with significant recurrent features - are not available. A majority of the available inscriptions are short, with an average of half a dozen letters. Their variety prevents from assuming that they relate to the limited designs on the seals. It has been conjectured, with all reserve, that they may consist largely, though not entirely, of proper names, sometimes with the addition of a patronymic, a title or a trade. Such conjectures made without proper analysis of the script have not proved fruitful.

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