

# OTHER TECHNOLOGIES

CLASS 12 KTPI – CHAPTER 7

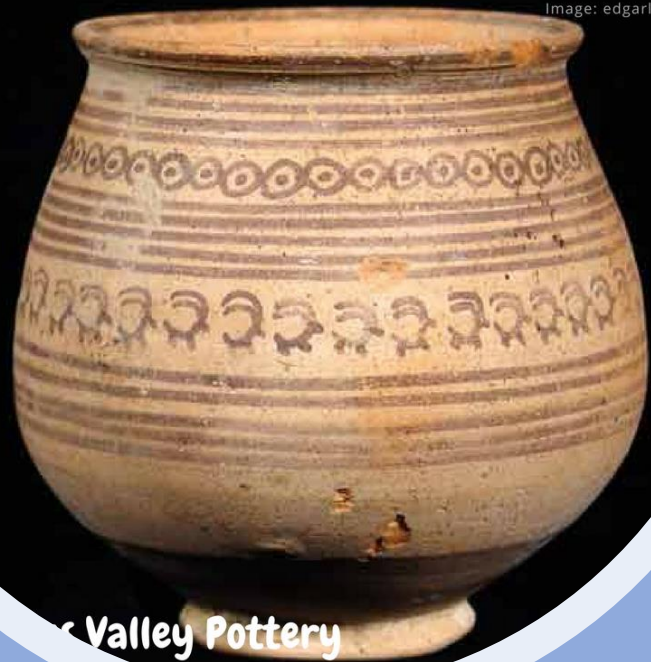
# HARAPPAN TECHNOLOGIES

- 1. CERAMIC TECHNOLOGY – BRICK TECHNOLOGY AND POTTERY
- 2. BEAD AND BANGLE TECHNOLOGY
- 3. GLASS TECHNOLOGY
- 4. WATER MANAGEMENT TECHNOLOGY
- 5. TEXTILE TECHNOLOGY
- 6. WRITING TECHNOLOGY
- 7. PYROTECHNIQUES
- 8. COSMETICS AND PERFUMES



# POTTERY

- ceramic technology developed and produced fine fired bricks as well as pots, which are required to carry water, store seeds and grain, and to cook food.
- Harappans produced wheel-turned pots in various shapes and sizes, some of them glazed or painted.
- Their pottery was generally covered with a red slip (produced from red ochre, that is, iron oxide), while floral, animal or geometric designs were painted in black. The black pigment was the result of mixing iron oxide with black manganese.

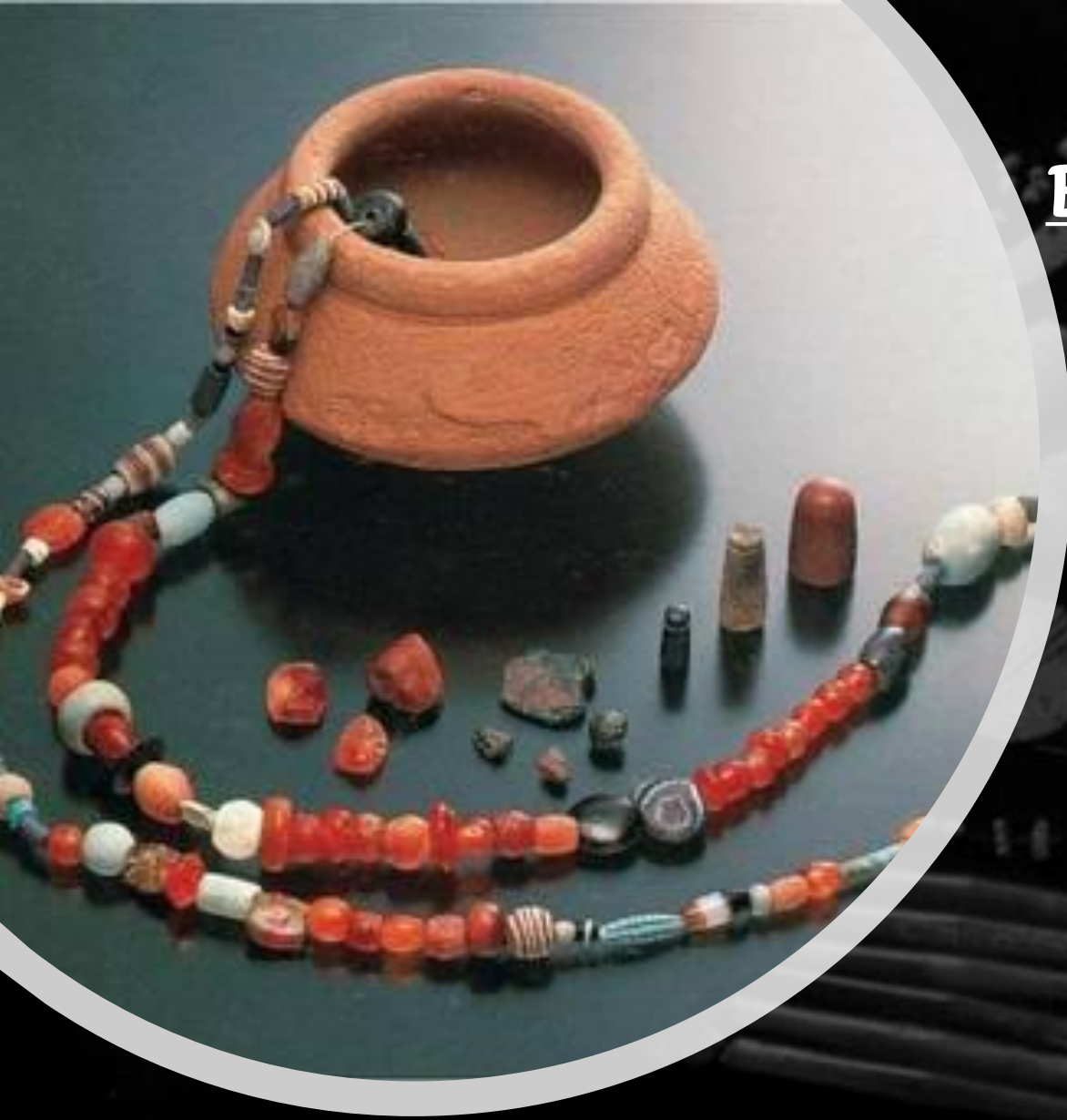


# Brick Technology

- Harappan fired bricks had proportions of 1 x 2 x 4 (width equals two heights; length equals two widths).
- They were of such quality that those who first encountered them at Harappa and Mohenjo-daro thought they could not be more than two or three centuries old!
- There was a practical reason for the above proportions, as they permitted alternating courses and therefore stronger walls with the least quantity of bricks — the so-called “English bond” of masonry.



# BEAD AND BANGLE TECHNOLOGY



- While soft-stone beads are reported from many Neolithic sites (from about 7000 BCE), Harappan craftsmen took bead-making to a different level and perfected techniques of polishing, colouring, glazing, drilling and bleaching.
- Their favourite semiprecious stones were carnelian, agate and jasper, but they occasionally made beads out of bone, terracotta or synthetic faience. The long-perforated carnelian beads, in, were highly prized in royal families of Mesopotamia their length-wise drilling with special drill bits represented a technological feat.
- So did the still mysterious manufacture of micro-beads of steatite (or soapstone), measuring just one millimetre in length and diameter.
- India's love for bangles is traceable to the Harappans' manufacture of large numbers of gold, bronze, conch-shell, glazed faience or humble terracotta bangles.



# GLASS TECHNOLOGY

- The first appearance of glass objects in India in the upper Ganga-Yamuna region and datable to the last centuries of the 2nd millennium BCE, coinciding with the above-mentioned PGW phase.
- At sites such as Bhagwanpura (Haryana), Kopia (U.P.), glass beads and bangles were found
- Taksaśila, now in northern Pakistan), the Bhir mound yielded numerous glass beads of several shapes and colours dated to the 5<sup>th</sup> century BCE or so.

# Water Management

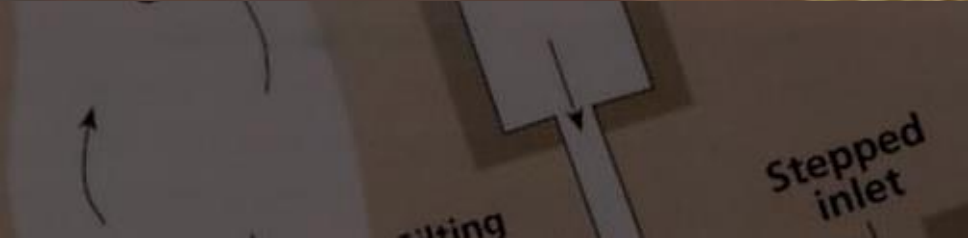


- Water conservation and management is an area of great importance, and the great variety and sophistication of water structures in ancient India testify to the care with which people harvested and conserved water and managed its distribution.

- Harappans invented trapezoid bricks to construct wells that would not collapse inward under the pressure of underground infiltrations.

which was filled with water. TANK B. The second tank constituted the primary source of clean water.

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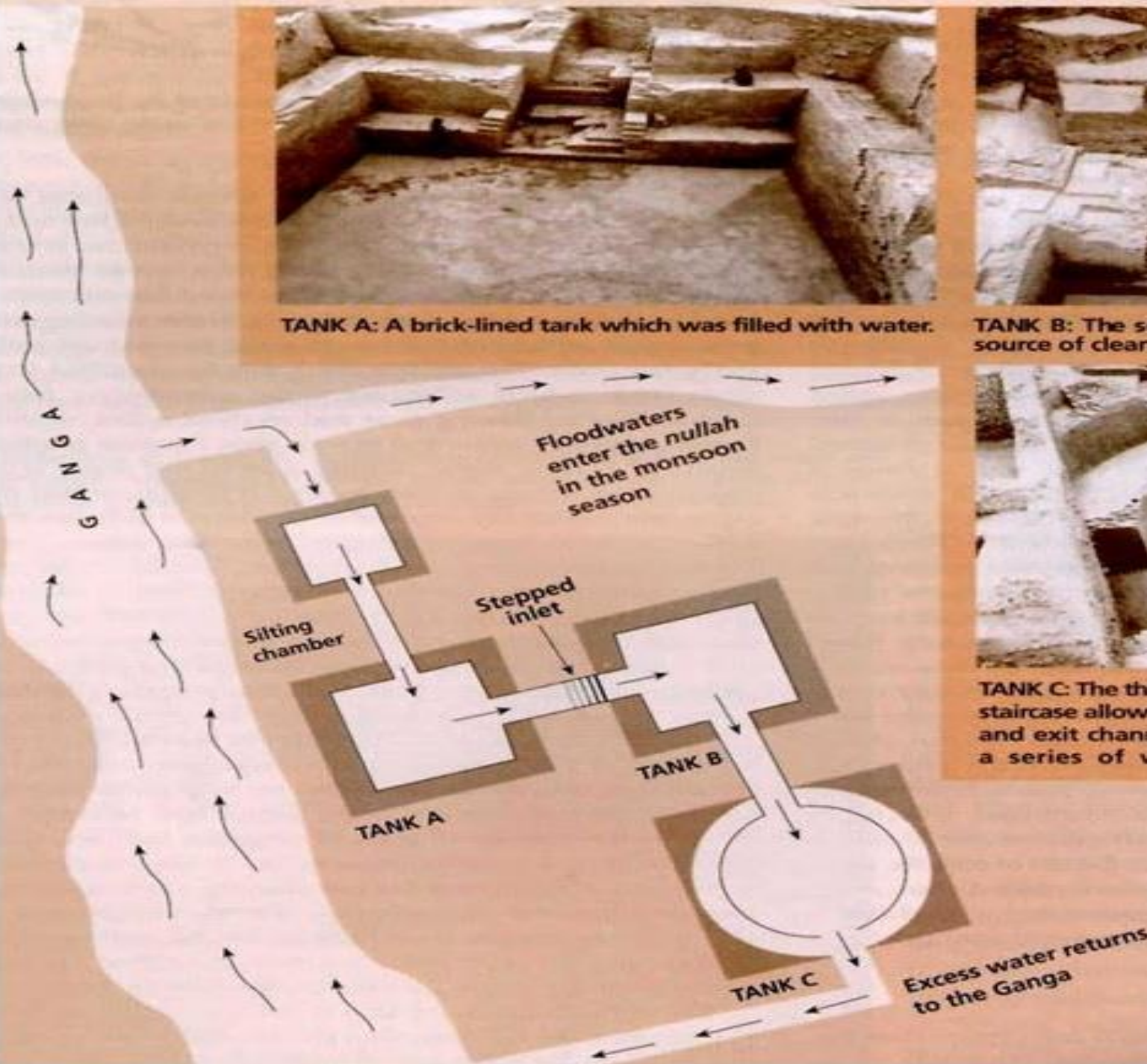
**TANK A:** A brick-lined tank which was filled with water.



**TANK B:** The second tank constituted the primary source of clean water.



**TANK C:** The third tank was circular, with an elaborate staircase allowing access to low water levels, its spill and exit channels led away from this. Its bed had a series of wells in case the tank dried up.



Series of interconnected reservoirs at Sringaverapura (source: *Dying Wisdom, Down to Earth,* and Prof. B.B. Lal)





- India was a major exporter of textiles, specially cotton and silk. Such evidence has come, for instance, from recent excavations at Berenike, an Egyptian port on the Red Sea where goods from India were unloaded to be carried overland to the Mediterranean port of Alexandria for further sea transport.

# TEXTILE TECHNOLOGY

# WRITING TECHNOLOGY



India even now possesses a wealth of manuscripts running into many millions. Traditionally, they were written on materials such as birch bark (*bhūrja patra*) and palm leaves.

# PYROTECHNICS

A 16th- or 17th-century Sanskrit treatise contains a description of how the gunpowder can be prepared using saltpetre, sulphur and charcoal in different ratios for use in different types of guns.

From the 16th century onward, rockets too began being used in wars waged in India, as testified by military annals of the period. For instance, the Mahrattas are reported to have fired rockets at the 1761 Battle of Panipat

# Cosmetics and Perfumes

Ghosa	Vilaka	Saalya	Karpura
Ullasa	Nihapagga	Vyghrananika	praha
Agara	Madanaka	Naha	Tapura
Dhanya	Kavira	Coraka	Camdana

16			
15	120		
14	105	560	
13	91	455	1820
12	78	364	1365
11	66	286	1001
10	55	220	715
9	45	156	495
8	36	120	350
7	28	84	210
6	21	56	126
5	15	35	70
4	10	20	35
3	6	10	15
2	3	4	5
1	1	1	1

Varāhamihira's list of 16 fundamental perfumes, to be systematically combined in various proportions. (From BihAt)



Cosmetics and perfumes were an article of trade with the Romans (along with textiles, spices and timber) and are described at some length in Varāhamihira's BihAt

SAuhitā: scented water for bathing, scented hair oil, perfume for cloths, for the mouth, scented tooth sticks are among the described items.

Varāhamihira also created a mathematical table (based on the same principle as Pascal' triangle) to combine fundamental scents in various ways, resulting in 1,820 combinations!

THANK YOU