MODULE-2
IRON AGE AND EARLY HISTORIC SOCIETY
TOPIC- PATTANAM EXCAVATION

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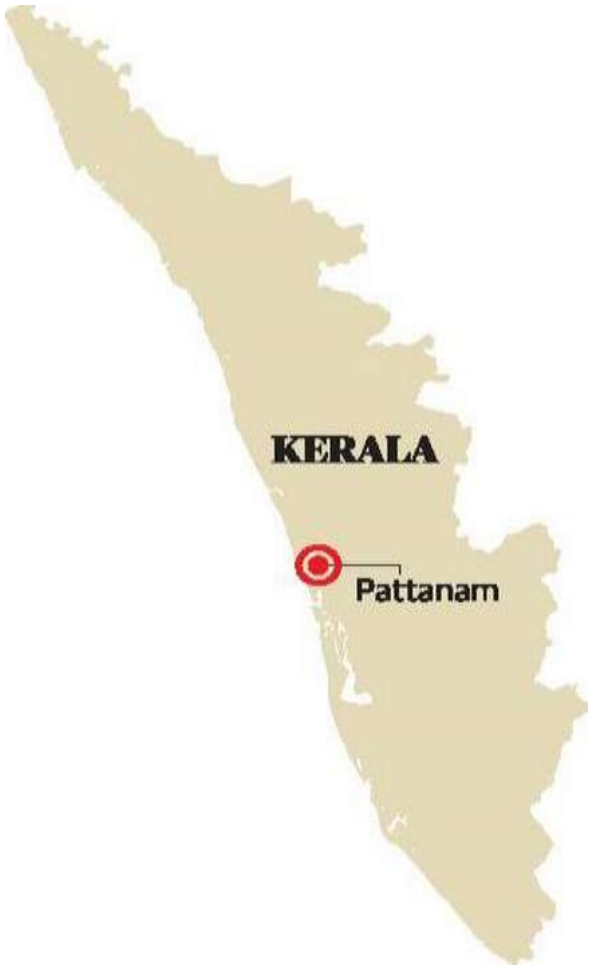

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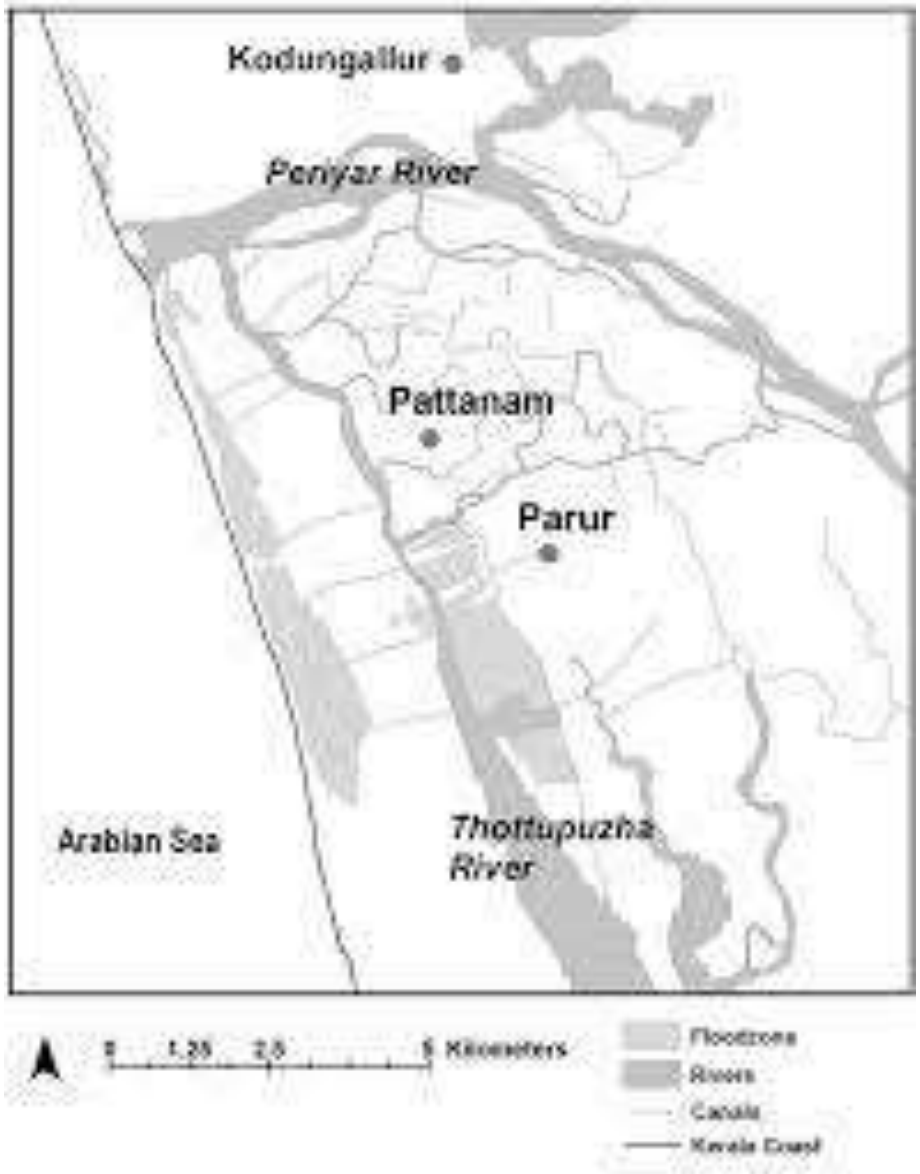

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- Pattanam, located on the southwestern coast of India excavated by the Kerala Council for Historical Research (KCHR), Thiruvananthapuram since 2007 revealed an early historic (1st c BCE – 5th c CE), multi-cultural port site, is now widely considered as an integral part of the ancient port of Muziris.
- The most striking material evidence unearthed at Pattanam is the enormous quantity of terracotta objects, ranging from sherds of a variety of jars and pots to roof-tiles and bricks.
- Pattanam is a typical Kerala coastal village, thickly populated and densely cultivated.
- Interestingly, the place name "Pattanam" has etymological significance, in nearly a dozen Indian languages, it means town or port city

- Pattanam is a densely populated hamlet in the Vadakkekkara revenue village in Paravur taluk of Ernakulam District in Kerala, India.
- The site is located in the delta of the river Periyar about 25 km north of Ernakulam /Kochi.
- About one km south of the site flows the Paravur Todu, a tributary of the river Periyar which is about six km to the north of Pattanam.
- The Arabian Sea is about 4 km west of the site.
- About one km from the western boundary of the site is the Tattapally River or Munambam kayal, a backwater body that runs parallel to the Arabian Sea.

- Another noteworthy feature of the site is the network of canals linking the area with the Paravur todu and the Tattappally river and many residents remember country boats plying these canals until the mid 20th century.

Pattanam – chronology

- The chronology of the Pattanam site spans across three millennia: the story beginning with the Iron Age habitation, with the commercial peak between 1st c BCE and 5th c CE and life going on with its inbuilt continuities and discontinuities.
- High precision Accelerator Mass Spectrometry (AMS) Carbon14 (C14) dating on the charcoal samples from the sandy layers at depths varying from 340 cm to 370 cm confirm that native settlement had begun at Pattanam in the Iron Age phase (around 1000 BCE).

- The Pattanam cultural periods are
- Iron Age (1000 *BCE – 500 BCE)
- Iron Age - Early Historic Transition (500 BCE – 300 BCE)
- Early Historic (300 BCE – 500 *CE)
- Early Medieval (500 CE – 1000 CE)
- Sketchy evidence for six centuries (1000 CE to 1600 CE)
- Modern (1600 CE to the present

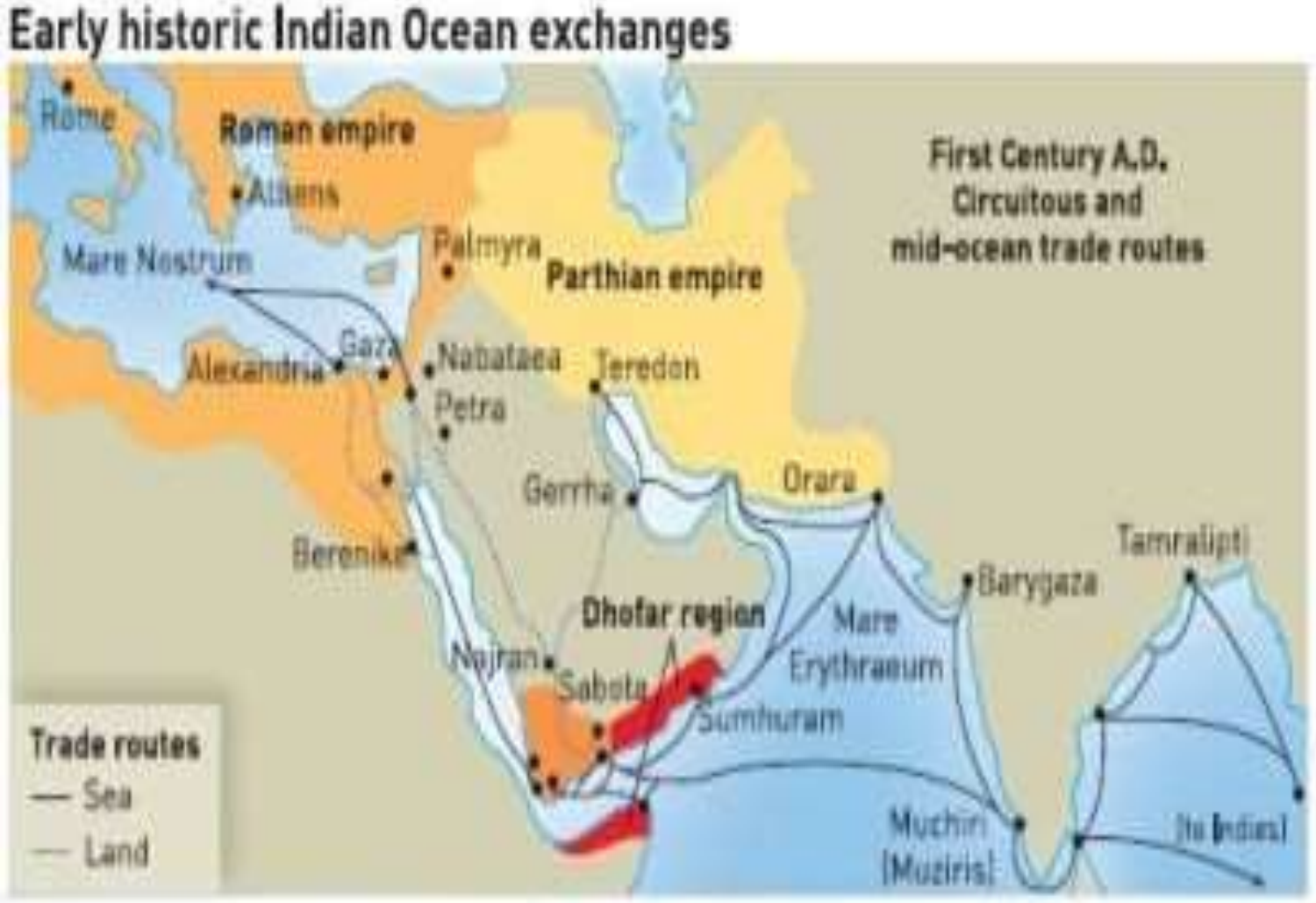
- The earliest period, over natural soil, is the Iron Age, from which levels megalithic pottery and iron objects were found.
- The second period represents the end of the Iron Age and the beginning of the Early Historic, and was prior to the trade across the Arabian Sea.
- Materials such as Iron Age ceramics and iron objects, as well as a piece of Russet Coated Pottery and fragments of Turquoise Glazed Pottery, suggest the transitional nature of this period.
- Most of the material related to trans-oceanic trade was found from layers belonging to the Early Historic period.

- Non-local ceramics such as amphorae, terra sigillata, Turquoise Glazed Pottery, torpedo and ovoid jar suggest these and their contents were brought into Pattanam.
- The Indian Rouletted Ware shreds in significant number mark the links with the Indian sub-continent trade network.
- Other material such as glass beads, Roman glass ware and stone cameo blanks indicate trade exchanges.
- In this period, Pattanam seems to have achieved an urban status as seen by burnt bricks, roof tiles, terracotta ring wells and other finds like early Chera copper and lead coins.

- The Medieval period was marked by typical blue glazed pottery and the use of glass beads.
- However, architecturally, there seems to have been a reuse of bricks in this period rather than any substantial construction activity.
- There is very little evidence for trade activity between 1000 CE and 1500 CE.
- Blue and white Chinese ceramics as well as their European imitations were found in levels of the last period, the Modern, suggesting the influence of new trade networks.

Categories of Evidence

- **Mediterranean: (100 BCE to CE 400)** Amphora, terra sigillata shreds, Roman glass fragments and gaming counters.
- **West Asian, South Arabian & Mesopotamian: (300 BCE - CE1000)** Turquoise glazed pottery, torpedo jar fragments and frankincense crumbs.
- **Chinese: (CE 1600 – CE 1900)** Blue on white porcelain shreds.
- **Regional/Local: (1000 BCE to CE 2000)** Black and red ware shreds, Indian rouletted ware, gemstones, glass beads, semi precious stone beads/inlays/intaglio, cameo–blanks, coins, spices, pottery and terracotta objects.



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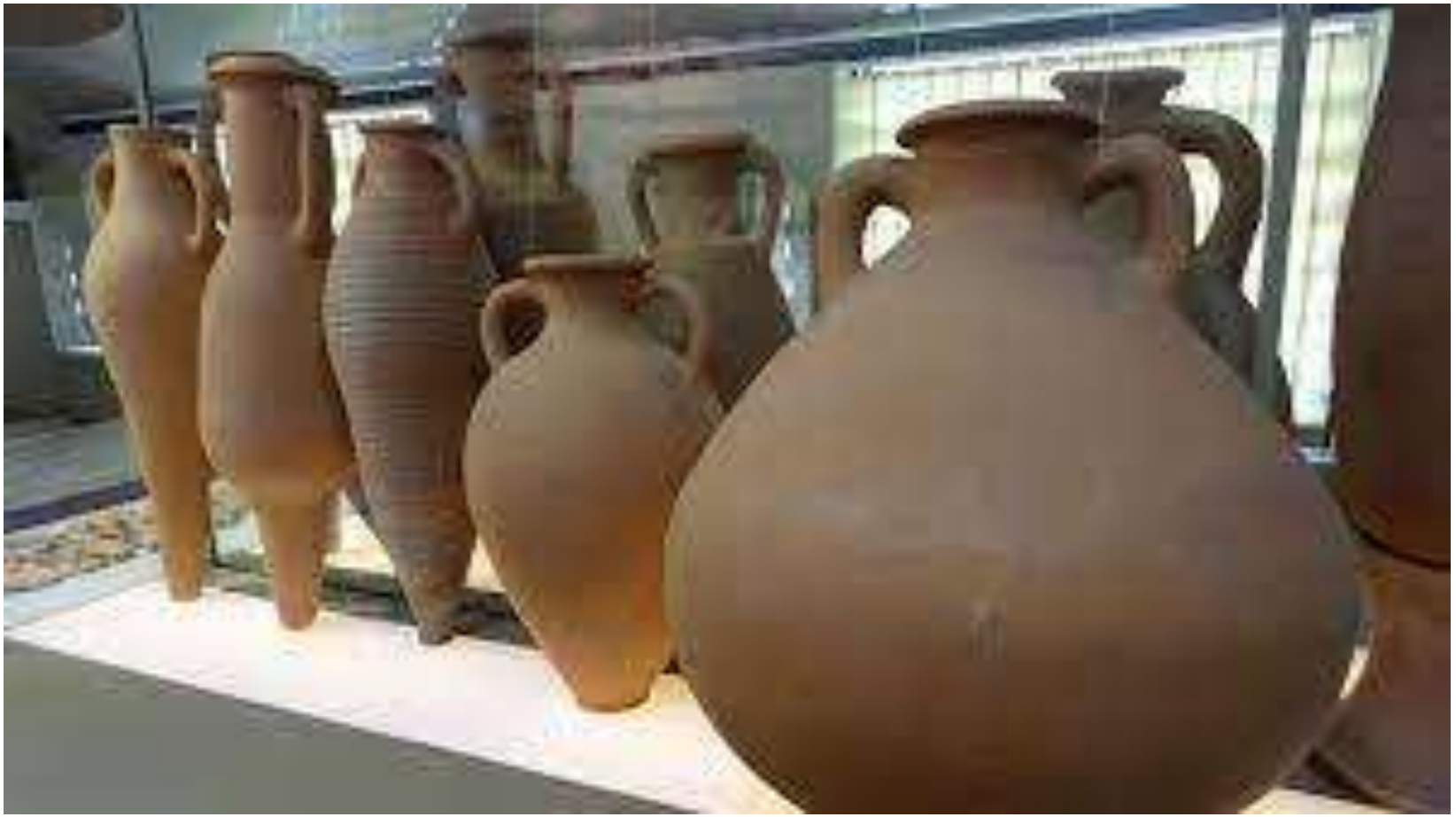
- **Urban life: (100 BCE to CE 400)** Technology, aesthetic elements, architecture, burnt bricks, rooftiles, ring-wells, storage jars, toilet features, lamps, coins, stylus, personal adornment items and scripts on pottery.
- **Industrial character: (100 BCE to CE 400)** Metallurgy reflected in iron, copper, gold and lead objects, crucibles, slag, furnace installations, lapidary remains of semi-precious stones and spindle whorls indicating weaving.
- **Maritime features: (100 BCE to CE 400)** Wharf, warehouse, canoe, bollards.
- **Eco-facts: (……. to CE 2000)** Botanical and faunal remains

Pattanam- features

- Pattanam has maritime features comprising a wharf context and other allied port features, urban features comprising of remains of planned architecture, personal adornment articles, fine wares and the industrial feature comprising lapidary workshops, kiln and furnace contexts.
- Ceramics and terracotta objects constitute the majority of artifacts from Pattanam.
- The terracotta objects include lamps, spindle whorls, toy wheels, discs (with and without perforation), oven knobs and stoppers, tiles, bricks, ring-wells and the enormous quantity of potsherds.

- broadly classified the ceramic assemblage into local pottery and fine/ distinct ceramics.
- The fine pottery includes the Indian, foreign and some unidentified types.
- The distinct ceramic assemblage comprises the Mediterranean (Roman) pottery which includes amphora (6029), terra sigillata (122), the West Asian torpedo jar shreds (3098) and Turquoise Glazed Pottery (1527), along with the Indian Rouletted Ware (8534), and unidentified fine wares (94671).
- The local pottery has an astonishing dominance with around 3.5 million shreds

- **Amphora** is a terracotta jar, used across the Mediterranean world and beyond, for storage and transportation of wine, olive oil and garum (fish sauce).
- The amphora shreds at Pattanam vouch for India's linkages with the Roman world in the Early Historic period.
- Pattanam has yielded the maximum number of amphora shreds ever found from an archaeological site in the Indian subcontinent.
- So far 6029 amphora shreds were found from the five seasons of Pattanam excavations



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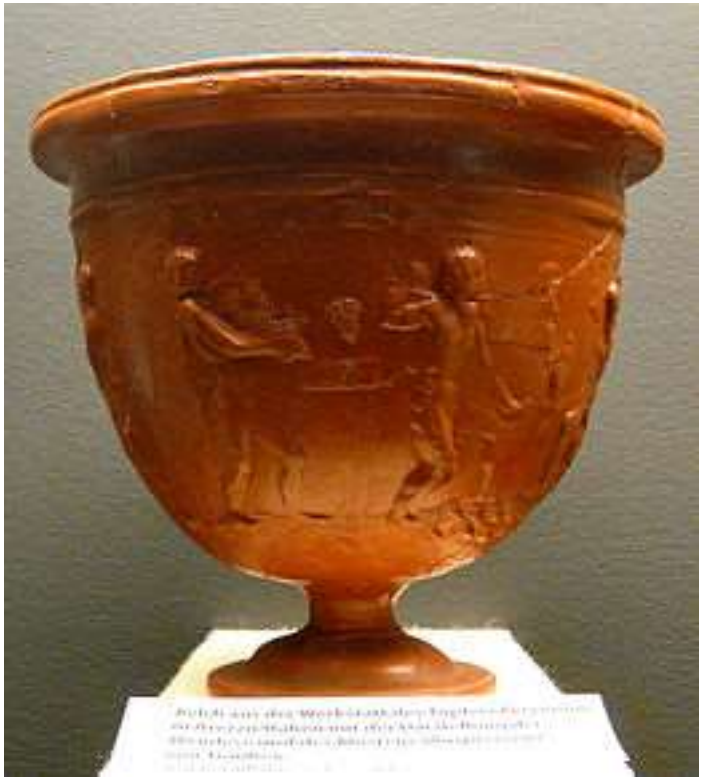
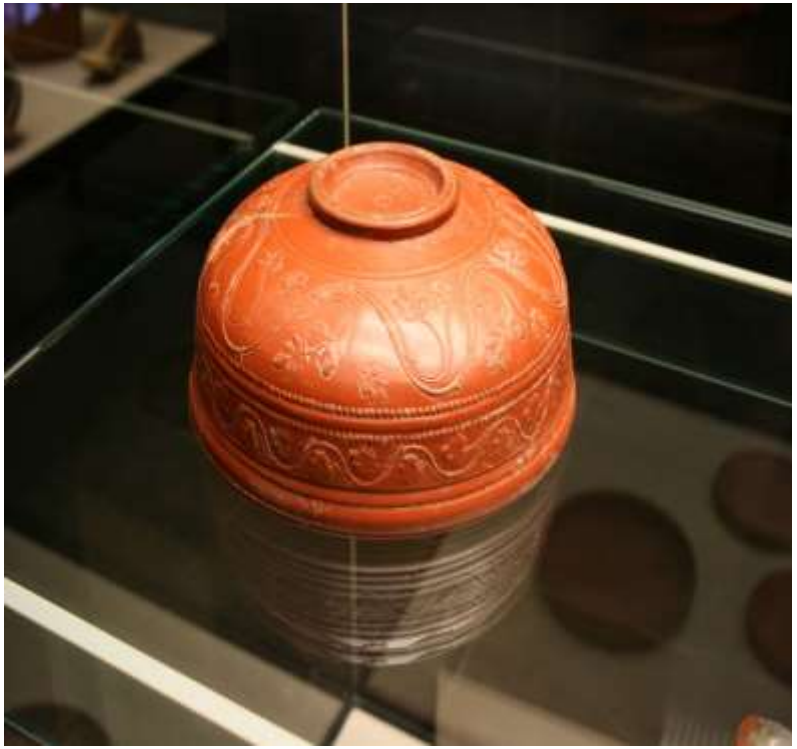
- According to Roberta Tomber, the majority of Roman amphorae shreds found at Pattanam, including those with double-rod handles, were transport-containers for wine.
- The double-rod style originated in the fourth century BCE.
- Their production was primarily during the Hellenistic period (c.336-30BCE) but it continued into the Roman Empire period through the first century CE.
- Tomber further identifies Dressel 2-4, the most common variety found at Pattanam as belonging to Kos (Greek Island), Campania, (Southern Italy and Bay of Naples) and Cilicia (Eastern Turkey and Syria).
- The amphora sherds seasons need to be studied comprehensively to understand more about the transactions between India and the Mediterranean and Red Sea regions.

- **Terra Sigillata** is another imported Italian ceramic referred to earlier as Arretine ware.
- This is strong evidence for maritime exchanges.
- This fine quality, stamped table ware, has red slip, smooth waxy surface and fine gloss.
- A total number of 122 shreds of Terra sigillata has been found from Pattanam





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- **Indian Rouletted Ware (IRW)** are fragments of Indian fine pottery including bowls and dishes.
- Large quantities were unearthed at Pattanam.
- The provenance of rouletted wares from other sites has already been identified as from the Bengal region.
- This Indian fine pottery found in almost all Indian Ocean rim sites, signifies the Indian role in the Indian Ocean trade network.
- Pattanam excavations produced the largest ever assemblage of the Indian rouletted ware.
- It should also be noted that roulette ware has not been reported from the southwestern coast of India till Pattanam excavations.

- The rouletted ware sherds are the largest in quantity (8534) among the distinct ceramic fabrics identified from Pattanam excavations.
- The occurrence of IRW at the lowest layers of occupation is a pointer to the probable contacts with other parts of India, even during the Buddhist and Jain (Early Historic) periods.
- These sherds can further deepen our understanding of the Indian Ocean trade dynamics.

- **Turquoise Glazed Pottery (TGP)** referred in literature also as 'TURQ', Sassano-Islamic, alkaline ware and alkaline glazed ware, is the term used to refer to a **glazed earthen ware that has a light beige fabric and a glaze that can be green, yellow, white or blue in colour.**
- The glaze is often badly weathered.
- The forms normally consist of **bowls, plates and jars of varying sizes.**
- This class is part of a broad tradition of alkaline glaze earthenware that goes back to the Neo-Babylonian period (c.626 BCE - 539 BCE) in Mesopotamia and appears to have continued well into the Islamic period (post 7th century CE).
- Earlier studies have identified the emergence of these glazed wares in Mesopotamia and Iran.
- It is also believed that TGP was principally manufactured in Southern Iraq possibly near Basra, although it is possible that other centers existed.

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- TGP has wide distribution around the Indian Ocean, mostly but not **exclusively on coastal sites**, reaching as far as Japan in the Islamic period.
- It has been traded to sites in Eastern Arabia as early as the 5th century BCE.
- On the South Asian side of the Arabian Sea some TGP were found in coastal and inland archaeological sites of Sri Lanka and India.
- Derek Kennet further reports that Pattanam shreds could potentially, at the very broadest level, be dated as early as **5th century BCE to as late as the 14th century CE.**
- However, based on his closer analysis of the shreds from the 2007 archaeological field season, Kennet concludes that, those may most likely be dated between the **3rd/2nd century BCE and the 7th/8th century CE.**

OVOID JAR

- This type of earthenware is common in **South Arabia**
- The main features are the reverted rim, the ovoid shape and the ring base.
- The vessels are handmade; the surface is smoothed, often wet smoothed.
- The color varies from light red to yellowish and greenish.
- The presence of a stopper on the rim (attested in South Arabia) and the narrow mouth of these jars suggest the transportation of liquids.
- The content of these jars could have been **Arabian wine**, famous in antiquity, according to ancient sources.
- These sherds are from the **Early Historic layers** at Pattanam.

TORPEDO JARS

- The torpedo jars are of **Mesopotamian origin** and have a body resembling a torpedo.
- They look like amphorae without handles and probably had similar uses.
- The majority of the torpedo jar sherds found in Pattanam have an **off-white powdery fabric and a black coating of bitumen on the inner surface.**
- The bitumen coating makes them **leak-proof,** thus making them safe to store and transport liquids.
- Most of the torpedo jar sherds have been found from the **Early Historic layers** and interestingly some were from the **Iron Age– Early Historic transition layers**, indicating that the **trade with West Asian, South Arabian and Mesopotamian regions had preceded that with the Mediterranean by at least two to three centuries**.

Chinese Porcelain

- The oldest Chinese dictionaries define porcelain as **“fine, compact pottery”.**
- The **Chinese porcelain of types of blue and white, white glaze and brown glaze** were mostly produced from De Hua, Da Long or E r Long kilns in FuJian Province, dating back to the 16th century.
- These sherds help to fix the chronology of the site and may be **relics from the Portuguese or Dutch colonies**.

- **Unidentified distinct pottery** is the substantial quantity of pottery (94671) and may be a clue to the linkages of the Malabar Coast with places and people hitherto unknown.
- The pre-occupation with the Romans would have submerged the local and other regional categories.
- **Local Pottery** is the largest assemblage and probably the most challenging study material at Pattanam.
- Truckloads of local pottery were recovered and shreds of 3 cm and above were quantified by size, number and weight.
- The diagnostic shreds are closely studied and the rest are stored.
- As mentioned earlier, the local pottery sherds amount to a staggering 3.5 million.

- They express the various aspects of the socio-cultural life of the residents at the site of Pattanam.
- The local pottery included containers for day-to-day use, industrial use and architectural materials such as bricks, tiles and ring wells.
- They would be crucial to the understanding of the social history of Tamilakam

GLASS AT PATTANAM

- INDO-PACIFIC TRADE BEADS:
- These glass beads are monochrome, undecorated and usually tiny, less than 6 mm in diameter.
- The colours are green, blue, red or orange/red, black and yellow.
- They are called Indo-Pacific beads because they have been found from a large number of sites stretching from Africa to the countries in the Pacific Ocean.
- The Pattanam beads are similar to those from Arikamedu and Kodumanal in peninsular India, Mantai in Sri Lanka and Berenike on the Red Sea.

- There is a strong likelihood that glass beads were not made at Pattanam but reached there from Arikamedu on the east coast.
- Arikamedu shows ample evidence for glass bead production. Most of the glass beads are found from the Early Historic layers though through erosion, these reach the surface.
- The term muthuparambu (plots that yield beads) is commonly used in the Pattanam village to denote the beads that dot the surface. In contrast, glass bangles are rarer.
- These are made from translucent and opaque glass

ROMAN LUXUARY TABLE WARE

- Pieces of curved glass with distinctive ribbed designs have been identified as Roman ribbed or pillared bowls.
- These are monochrome, being either dark blue or green, though other colours such as yellow and light brown can be seen here.
- Such bowl pieces are found in large numbers at the Red Sea port of Berenike.
- Ribbed or pillared bowls were produced in the Mediterranean region in the late Republic or early Augustan period and largely stopped being produced by the late 1st century CE, though some continued in use till the early 2nd century CE .

PAINTED GLASS

- A polychrome or multi-coloured variety of Roman tableware was produced in the Mediterranean region in the early centuries CE .
- These are decorated with designs.
- A piece shows a long necked and big beaked bird, possibly a water bird.
- Another common design is one with rows of double yellow/gold spirals.

MOSAIC GLASS

- This is another category of imported glass, where the effect is of one kind of glass material and design inserted into a glass body.
- All the fragments are of pieces of Roman tableware.
- All these were found from the Early Historic layers at Pattanam. These suggest the trade networks with the Mediterranean world.

ROMAN BOARD GAME COUNTERS

- Round monochrome glass objects are identified as gaming counters, pieces to be moved on a board game.
- These sometimes have both sides flattened, or one side flat and the other convex.
- Pliny called them ‘oculi’(meaning eyeballs) because of their rounded shape.

BEADS

- Beads are made of several varieties of semi-precious stones such as agate, amethyst, beryl, quartz, quartz crystal, carnelian, chert, chalcedony, garnet, onyx and topaz and are cut into various shapes.
- A special type of decorated bead is the one called the ‘etched bead’.
- This is made by painting a design in gum on an agate or a carnelian bead and firing it so that the design gets etched onto the surface of the bead.

- Stone bead making was a craft practiced at Pattanam. Archaeologists know this because objects at various stages of production have been found.
- To make stone beads, raw materials are required. Nodules or blocks of various raw materials are found: agate, amethyst, beryl, chalcedony, carnelian, quartz crystal, garnet and quartz. Some of these, such as beryl and quartz, are found in interior areas such as the Kongu country.
- Others seem to have been brought from areas further away
- Lumps of raw materials, roughouts, tiny chips and flakes of semi-precious stones, fully formed beads left unperforated, all suggest that beads were made at Pattanam

CAMEOS

- A cameo is a piece of jewellery very often used in signet rings or as earrings.
- Sometimes, large cameos were not used as ornaments but as valuable objects of art to be admired.
- Cameos refer to round or oval objects which have carved designs in raised relief on their surfaces. Stones that have multiple hues such as banded agate or carnelian were preferred.
- The Romans preferred oval cameos. Interestingly, several of the unfinished cameos or 'cameo blanks' found at Pattanam, are of oval shape.
- The cameo blanks could have been exported from Pattanam to the Roman world to be carved and used as cameos

STONE INLAYS

- Inlaying is a technique of decoration where material of one colour is inserted into a material of contrasting colour, for example, bone inlays in wood.
- Pieces of inlay were used to form designs such as floral motifs and figures of animals and humans.
- At Pattanam, inlay pieces made of agate, amethyst, beryl, carnelian, garnet and onyx have been found.
- Most of these pieces are dated to the Early Historic period. It is likely that the craftspeople who manufactured stone beads and cameo blanks may also have produced pieces meant to be used as inlays

STONE MOULDS

- Moulds are stone slabs with depressions within which a molten material, often metal, would be poured to take the shape of the depression.
- Beautifully crafted moulds made from close-grained stones have been found at Pattanam.
- These depressions have designs and decorated edges indicating that the objects moulded in them were pieces of jewellery, probably made of gold

THE FORTUNA INTAGLIO

- A carnelian intaglio, with a human figure etched on it, measures about 1.5 x 1.0 cm.
- The figure is etched on one side of a thin oval-shaped carnelian piece that is slightly curved or convex.
- The figure is placed vertically on the oval piece. It was recovered from the Early Historic layer
- Stratigraphically, it can be dated to the early centuries CE.
- The human figure etched on it with striking perfection is the Greek Goddess Tyche or the Roman Goddess Fortuna.

THE LEAPING LION INTAGLIO

- This carnelian intaglio, measuring 1.2 x 1.0 cm, has a figure of a leaping lion on it.
- The figure is etched on one side of a thin oval-shaped carnelian piece which is slightly curved or convex.
- The figure is placed horizontally on the carnelian piece
- It was recovered from the Early Historic layer
- Stratigraphically, this can also be dated to the early centuries CE.

IRON TOOLS AND IMPLEMENTS

- Artefacts made of iron, copper, lead and gold have been found at Pattanam.
- At Pattanam, iron was used from the beginning, from the Iron Age.
- However, the largest number and variety of artefacts made out of iron are found in the Early Historic period.
- It seems that largely objects of a utilitarian nature, were made out of iron.
- These tools ranged from kitchen tools to farming and manufacturing tools to objects used in construction; iron was used to make weapons as well.

- In the category of kitchen tools, are knives, tongs and spoons. Farming tools were axes and sickles, while chisels were manufacturing tools.
- Other artefacts of a domestic nature were hooks, chains, rings and nails.
- Axes might also have been used as weapons, as were spearheads and daggers.
- Iron is a metal that corrodes or rusts easily.
- Having been buried in the soil for several centuries, most of the iron objects you may see here have encrustations.

IRON METALLURGY

- Iron metallurgy seems to have been practiced at Pattanam.
- The immediate hinterlands of Pattanam are rich in lateritic iron ores.
- This explains the easy availability of the raw material.
- We know this from numerous finds of slag, a major by-product of metallurgy.
- When the iron ore is smelted in a furnace, the ore is reduced to the metal, and other residues and impurities. It is these residues or impurities that are called ‘slags’.

COPPER

- The popularity of iron for making basic tools meant that copper was used to make decorative artefacts and ornaments.
- Rings and antimony rods (or kohl sticks) fall within the category of ornaments and toilet articles.
- There are a few functional objects like hooks, lid pieces and nails.
- A few copper slags suggest some amount of copper smelting at Pattanam

COPPER COINS

- An important category of copper artefacts are the coins.
- Coins are immediately datable through either their inscriptions or - if there is no writing - then through their motifs and styles.
- Coins and their denominations also give us information on the economy.
- Often, coins were issued by a state. Most of the coins at Pattanam belong to the early Cheras.
- They have been recovered from a secure stratigraphic context for the first time in Kerala.
- The Chera coins are either circular or square, and heavily eroded. Their obverse has an elephant motif and the reverse has a bow and arrow motif.

LEAD

- Lead is a durable metal and resistant to corrosion
- Lead was used by the Cheras to make coins.
- These coins have the same elephant motifs on one side and the bow and arrow motifs on the other side, as seen in the copper coins.
- Lead was also used for making objects that we cannot immediately recognize.
- These are long strips that have been rolled up tightly. These have been called ‘scrolls’.
- Several scrolls have been found at the Red Sea port of Berenike, a contemporary port site of Pattanam.

GOLD

- Gold is a highly malleable, indestructible metal, with an advantage - it never corrodes.
- Its malleability enabled it to be used to make varying kinds of artefacts of complicated shapes and designs.
- We know that gold is found at Kolar in Karnataka.
- But, as Pliny lamented, some of the Roman gold brought in to pay for the black pepper could have been used to make artefacts such as these.
- Gold at Pattanam was used to make ornaments, wires, filaments or threads, and a few artefacts. Among the artefacts there is a gold ring and a remarkable miniature axe

THE WHARF

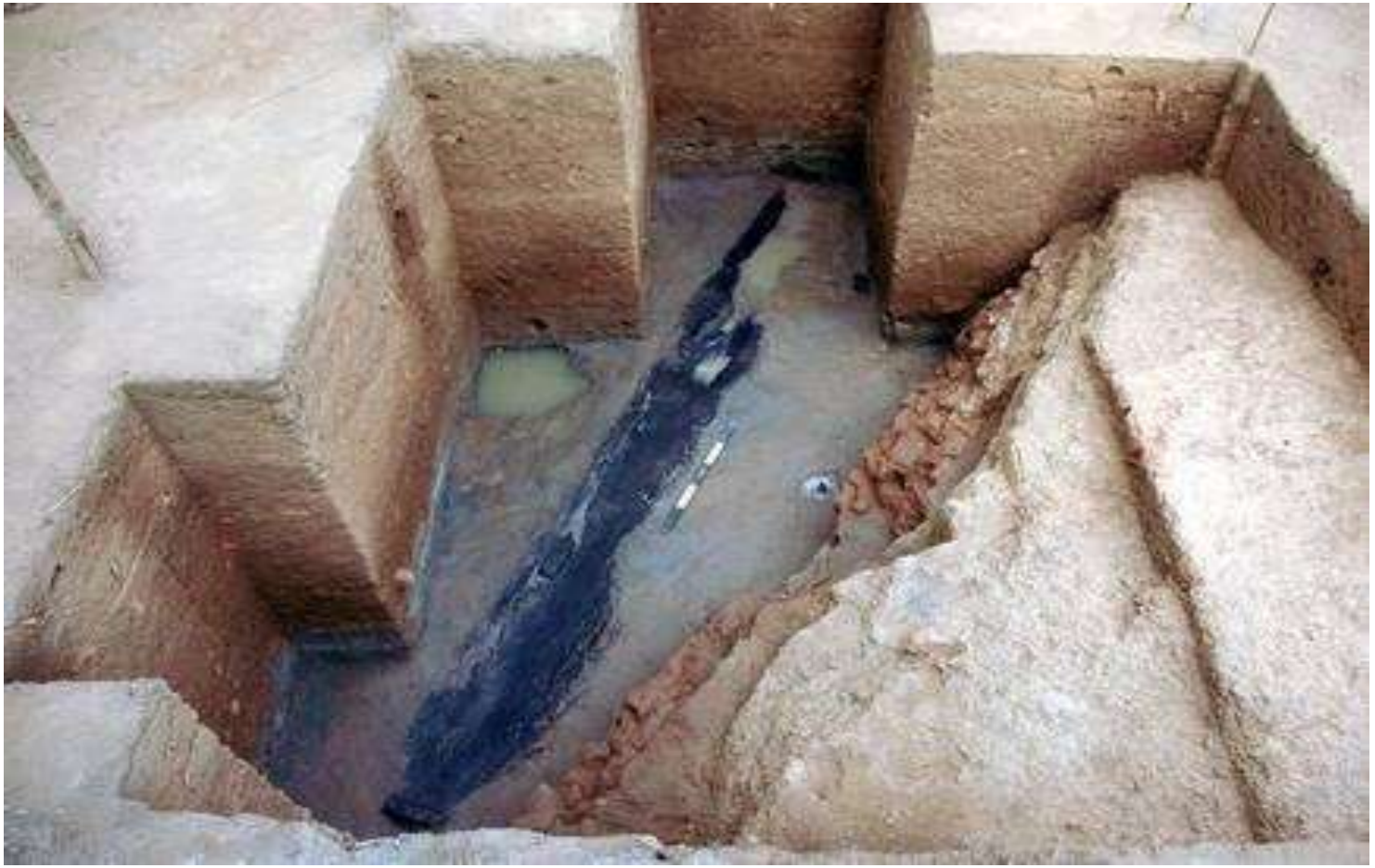
- wharf is an area like a wide wall built beside the edge of the sea or river, to moor ships and boats, and to load and unload cargo or passengers.
- In 2007, a wharf-like structure made of laterite granules, lime, and clay was found adjacent to a waterlogged deposit, at Pattanam
- A brick lining, probably a protective layer, has been found towards the lower part of the wharf where it touched water.
- Only a portion of the wharf could be exposed as it extended into land that was privately owned

- The exposed part of the structure in the North-West, South-East direction is 6 m long and 7.30 m thick at a depth of 245 cm in the Early Historic layers.
- A rich assortment of botanical remains in a surprisingly well preserved condition was found in the water-logged area of the wharf context at a depth of 275 cm under a layer of 25–35 cm thick clay.
- It seems that the clay layer acted as a protective cover, hence, preventing oxidation and consequent decay of the palaeo-botanical remains.

- The botanical assemblage from the wharf context include black pepper, cardamom, rice, wheat, bread fruit seeds, grape pips, teak, Aini, leaves, coconut fronds, coconut shells, prop root base of arecanut, bamboo pieces, green gram, lentil, mango seeds, Indian gooseberry, Indian jujube, Borassus palm, brinjal, ladies' finger, gourds, Anjeni, and resin (frankincense).
- Decayed rope pieces, made of an unidentified plant fibre, have also been found from the water logged area, though away from the wharf context.

A CANOE

- A canoe is a small light narrow boat tapering at both ends. In the 2007 Pattanam excavation, a highly decayed 6 m-long wooden dug-out canoe was found adjacent and parallel to the wharf like structure.
- The wood was identified to be Anjili (Artocarpushirsutus Lamk), a locally available wood.
- The canoe and bollards, from the same context as the wharf, have been radiocarbon dated by leading laboratories in the USA and India: the University of Georgia and the Institute of Physics, Bhubaneswar.
- Recovered dates fell within the 1st century BCE – 1st century CE period.
- Hence, it may be assumed that the wharf could also belong to roughly the same period



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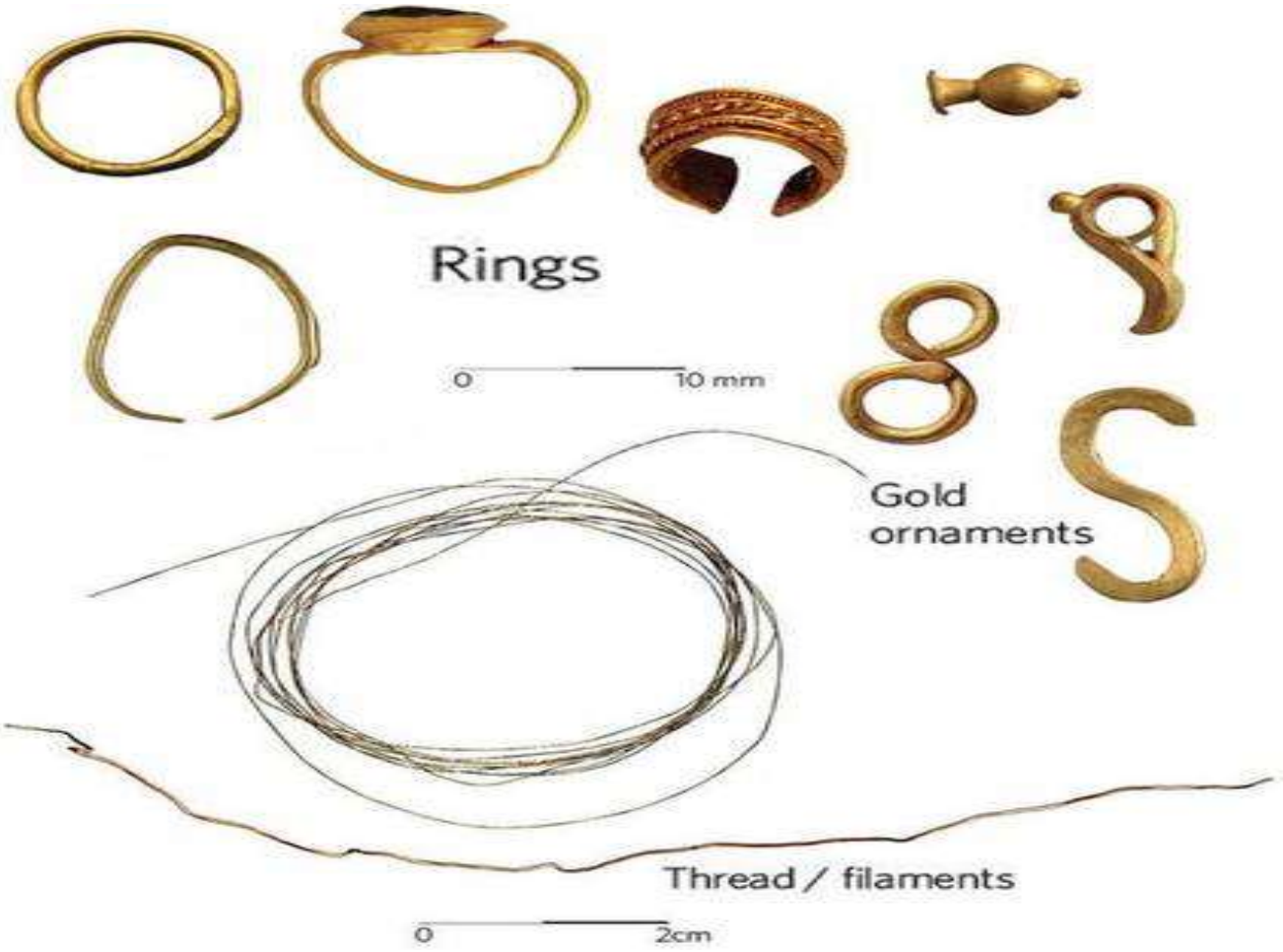
- **Paleo-botanical evidence**
- Beneath the ceramic layer of the water-logged area of the wharf, at a depth of 3m, was a rich collection of botanical remains with a layer of clay over them.
- Apparently this layer of 25-35 cm thick clay prevented oxidation at the lower layers and preserved the paleobotanical remains.
- The botanical assemblage included black pepper, bread fruit seed, grape pips, teak, coconut fronds, coconut shells, prop root base of areca nut, bamboo pieces and indeterminate wooden tissues.
- In 2008, cardamom, rice, wheat, green gram, lentil, mango seeds, Indian gooseberry, Indian jujube, Borassus palm, brinjal, ladies finger and gourds were added to the list.
- Another important botanical item distributed in almost all the trenches was frankincense.

- In 2007 and 2008 archaeological field seasons Teak (Tectona grandis. L.f.) Anjili (Artocarpus hirsutus Lamk.), Punna (Calophyllum inophyllum.L), Kadukka (Terminalia chebula Retz.) and Karimaruthu/Thenmavu (Terminalia crinulata H.heyni ex Roth.) were identified.
- The ecofacts from the wharf context, as well as the antiquity of the local canoe reiterate the available information on the spice trade that flourished in the period of the Roman empire (27 BCE to 393 CE).
- The akananooru poem 149, refers to the pepper trade where as purananooru poem 343 mentions about a water craft kazhithoni resembling the dugout canoe excavated at Pattanam.
- This also corroborates with information from the Periplus that Roman ships anchored off shore



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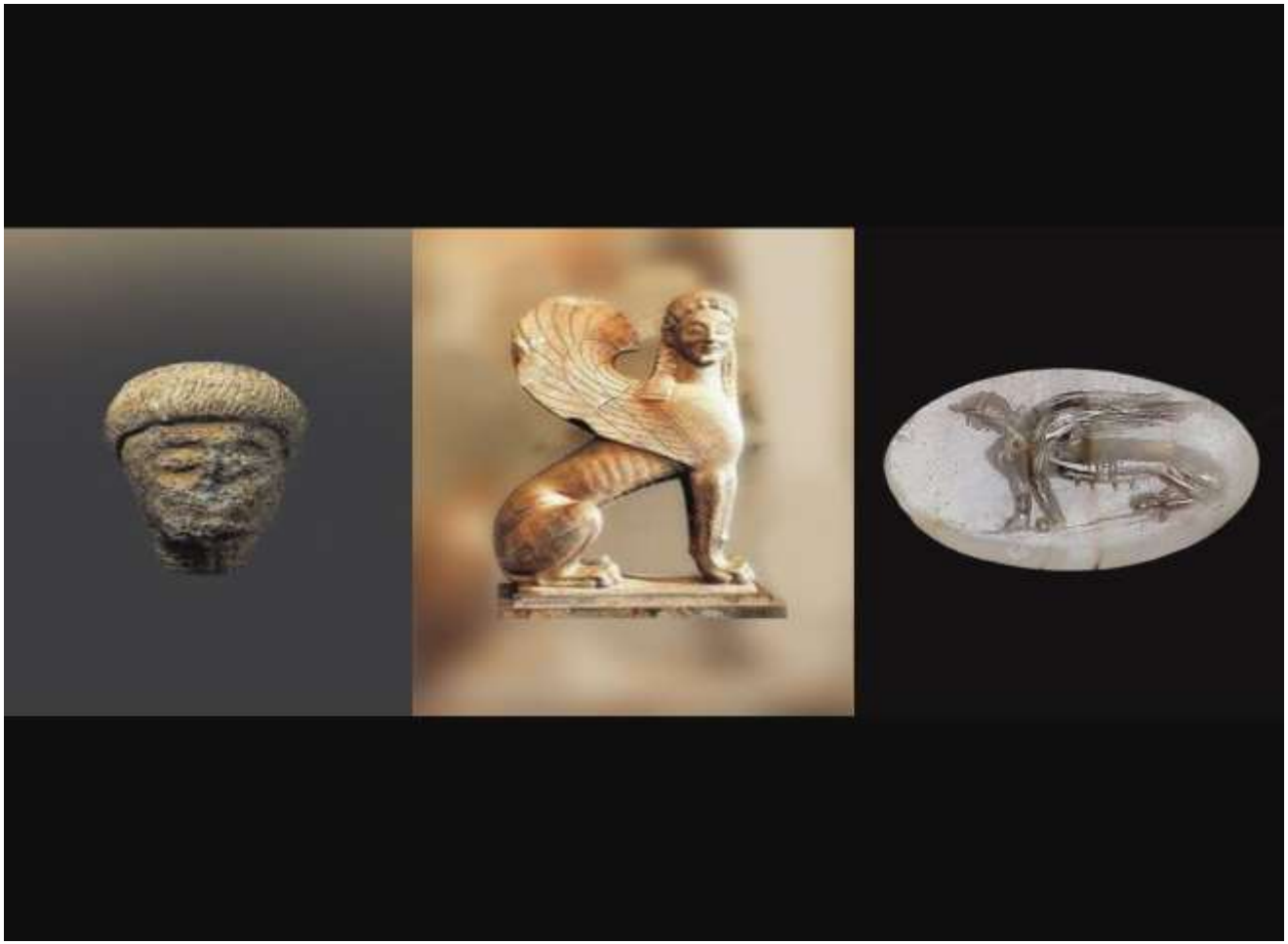

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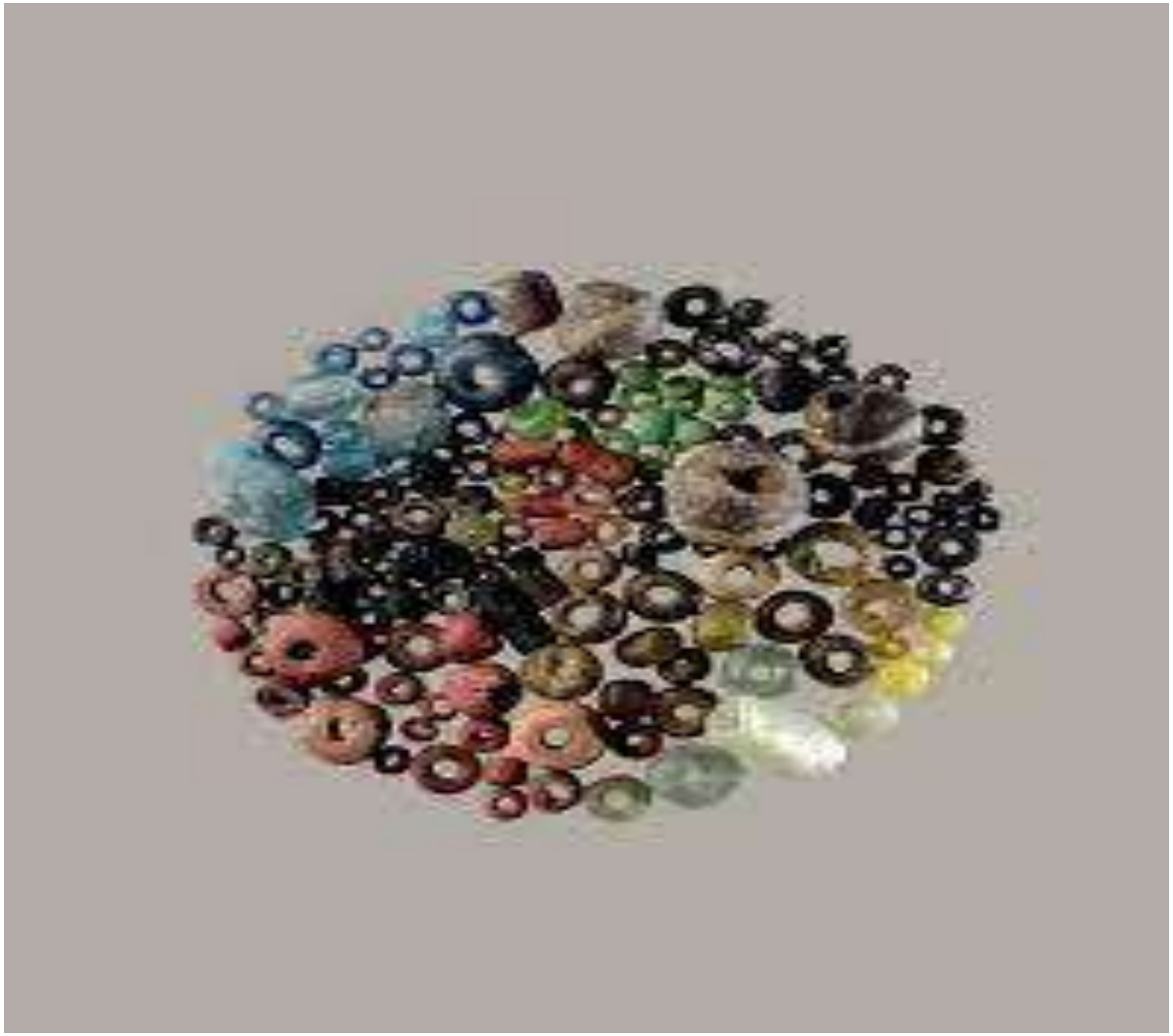

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