SAGARDHARA

April 2020 MARITIME HISTORY SOCIETY VOL I / 20-21


Suvarnadurg


Dock at Lothal

Mission Samudra Setu


Meluhhan interpretors with a Mesopotamian King

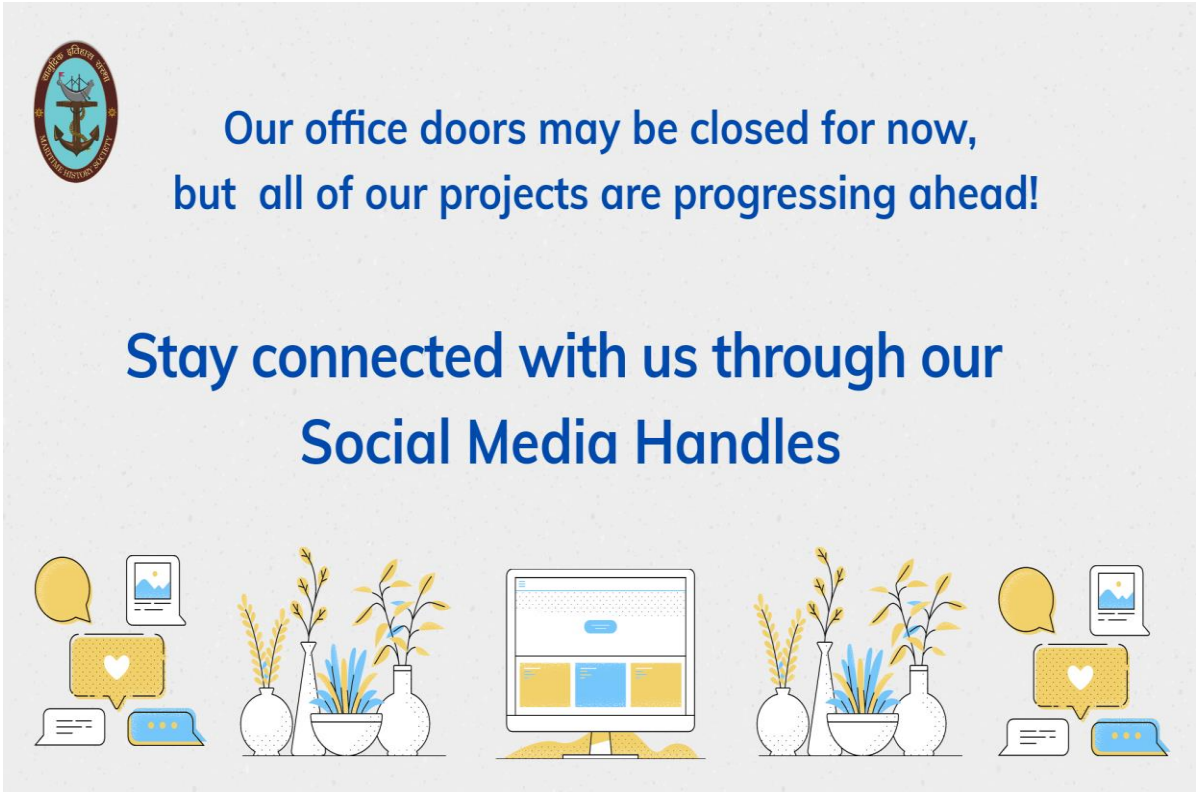

A rescue steamship during the 1896 Plague

CONTRIBUTIONS FROM
Team MHS

OTHER REGULAR FEATURES
Jewel from the Past
Book Review

A Day at Sea - Team MHS

SAGARDHARA APRIL 2020 - CONTENTS



The Enterprise of
Reimagination

The Fruits of Industry

How India's largest private enterprise reimagined a barren land into the world's largest refining hub and Asia's largest mango orchard!

For all others, it was just a barren land. For us it was earth waiting to be developed. While the refinery was a game-changer for the Indian economy, the mango orchard with over 100,000 trees provided an attractive livelihood for people in the area. It helped build a green belt that became the abode of flora and fauna. Along with Government organisations, we run the National Centre for Marine Biodiversity at Jamnagar. We work with various reputed organisations and sponsor the conservation of the Olive Ridley turtle in the Bay of Bengal.

Reliance
Industries Limited
Growth is Life

www.ril.com

DIRECTOR'S DESK

Vision statements across few years and more looked to Year 2020 as an epoch and how has it surprised us through a Wuhan origin virus! Amidst the constraints of consequent lockdown and social distancing, the MHS premises went into a shutdown at first and subsequently to extremely limited sustenance roles. As crisis begat opportunity, Team MHS went digital and launched a dynamic outreach and online interface.

Prior to the lockdown MHS had in a major trilateral initiative, conducted a workshop in "Maritime Journey of Contemporary Indian Security" on 26 - 27 February 2020 in collaboration with the Central University of Gujarat (CUG) and Department of Civics and Politics of Mumbai University at CUG Gandhinagar. MHS researchers Ms Priyanka Chaudhury and Mr Akshay Honmane presented their papers in this conference. The MHS initiative was appreciated by all participants.

In March 2020, MHS Team was strengthened by new additions, Dr. Soni Wadhwa as Joint Director and Ms Ashwini Nawathe as Archives and Collection Associate. Ms. Aishwarya Devasthali joined as Project Research Associate in April 2020. The MHS 12 are constantly engaged in enhancing Maritime Consciousness in multiple ways.

It was an honour to welcome Vice Admiral AR Karve (Retd) as our new Patron and Mentor of our Academic Council from 01 April 2020. MHS is confident that we will continue to contribute in the growth of Maritime India through our dedicated research work, including digital outreaches in the future.

Sam Noh Varunah!

Commodore Odakkal Johnson
Director and Head of Research

LOTHAL: INDIA'S FIRST ICONIC MARITIME SITE

Dr. Soni Wadhwa (Joint Director, Maritime History Society)

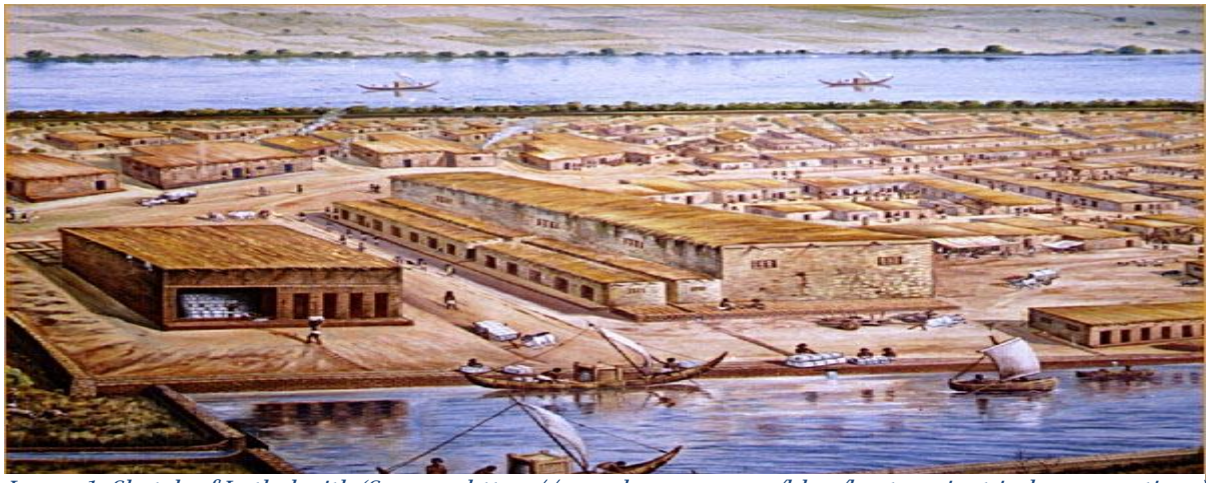


Image 1. Sketch of Lothal with (Source - https://www.harappa.com/blog/best-ancient-indus-recreations)

The excavation and discovery of Lothal was a result of the need for exploring India's ancient past within the territory identified as India after the 1947 Partition of South Asia. While the primary sites like Harappa and Mohenjodaro excavated before 1947 went to Pakistan, Rangpur in Saurashtra, Gujarat fell to India. First undertaken by M S Vats in 1931, the excavation of Rangpur was continued by G S Ghurye and K N Dikshit before S R Rao took it further in 1953. His excavation revealed that the Harappan Civilization had extended as far south as Gujarat. The discovery of Buff Ware and the Lustrous Red Ware in Rangpur's cultural milieu explained part of the continuity. No seals were found though to indicate the continuity in terms of commerce and trade. Thus, an important question emerged: why and when did the Harappans enter the peninsula? Hence, Rao felt the need for further exploration.

The hypothesis was that the Harappans reached Saurashtra from Sind through the Sabarmati river and its tributaries. However, no relics or ruins were found in north Gujarat: the thick wind seemed to have buried any traces of protohistoric settlements. That was why, Rao felt the need to explore estuary of the Sabarmati river between Rangpur and Dholka by exploring all the villages nearby. Rao and his team reached a low-lying mound near Laxmipura. Primary surface level findings like pottery made it evident that the mound called Lothal by the villagers nearby was a Harappan settlement. Like the Sindhi word "Mohenjodaro", the Gujarati word "Lothal" too means "mound of the dead".

Lothal is situated between Sabarmati and its tributary Bhogavo in Saurashtra, Gujarat. The sea is about 19 km away today but back then boats from the Gulf of Cambay could easily have sailed right up to the place. An

early Harappan site, Lothal was excavated in the years between 1953 and 1964. In his report – the first part of which was published in 1978 – S R Rao provides details of the remains found there. It consists of Lothal A and Lothal B – the former is the name given to the first four levels or zones associated with Mature or Urban Harappan period while the latter comprises two levels or zones associated with Late or Post Harappan period. The site dates to circa 2100 BC but there are various theories and calculations behind the other varying dates. Levels two to four are generally seen as of great interest to archaeologists and historians for these manifest signs of sophisticated community planning. Lothal must have been a town for the site barely measures 300 by 250 metres, with an area of 64,752 square metres. Harappa and Mohenjodaro are far bigger settlements than Lothal. It must have been an area housing a moderate population of one to two thousand people. The chief landmarks of the site are the citadel (called acropolis by Rao), the Lower Town and the Dockyard. The excavated residential area has a warehouse for packing and storing goods. Some large houses have up to six rooms, bathrooms, courtyards, and a verandah. This part of the town seems to have been for the elite. Some houses had fire alters or pits with terracotta cakes made of round lamps of clay and ash. A lot of rooms have been found: these seem to be lining a street. They seem to be shops and the street seems to be a bazaar street.

The citadel had a warehouse – the neighboring structures of what seems to a merchant's house and a complex of bathrooms for twelve people (like the Great Bath at Mohenjodaro) indicate that it must be a warehouse. The Lower Town area consists of houses and a manufacturing site. The artisans – coppersmiths and bead makers – seem to have lived in houses as indicated by kilns, raw materials, finished and unfinished artefacts. The Dockyard is an interesting story. The maritime significance of Lothal, and Harappan civilization as a whole, revolves around the discovery of this dockyard. Further traces of the settlement lie in the objects found there: pot sherds, stone anchors, seals, beads, terracotta models of boats, and an idol of a sea goddess, all parts of a maritime whole.

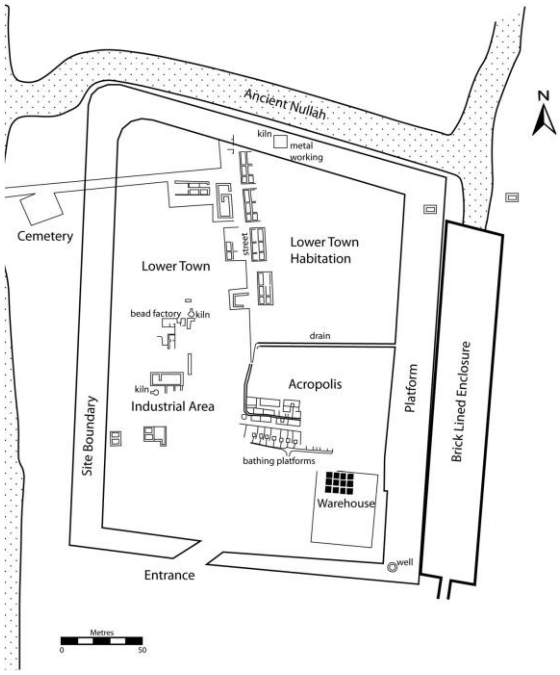


Image 2. Map of Lothal (Source - https://www.cambridge.org/core/books/archaeology-of-south-asia/an-era-of-integration/00DC42FB267DC54A977FD0EDFB9D3B47)

Lothal is the missing link between the settlements in Harappa and Gujarat. Because no traces of Harappan

Civilization are found to the north of Gujarat, it is understood that the people and goods did not move between the two places via overland routes: they must have travelled via the sea coast. The presence of a dock in Lothal confirms this.

The Remnants of the Port Town. The dockyard at Lothal is a brick-walled structure trapezoid in shape on the eastern side of the town. It is found to be the largest burnt-brick structure among all Harappan settlements. These burnt bricks would have been too expensive to be used building elaborate structures even for the elite. The fact that they are used for this construction indicates that the structure was very vital to the town.

The western and eastern embankment walls are around 716 ft and 705 ft long; the southern and the northern embankment walls are 117 and 123 ft long. The walls are quite wide – around 5-6 ft – at the foundation levels and about half of that at the top. Because there are no steps or ramp found to access the inner space, the possibility of the construction being a tank is ruled out. The walls also have offsets: it looks like these must have been created to resist the thrust of water. The construction has weep holes and wooden channels put in place for regulating water levels in the basin. Rao argues that the dock must have been built and rebuilt more than a couple of times. There is evidence for a new channel and a new inlet being created subsequently for sluicing water into the basin: flooding seems to have destroyed the infrastructure in place twice.

Image 3. Remnants of the Lothal Dock

The western embankment wall has a wharf or a platform that would have helped in loading and unloading ships with goods from the warehouse nearby. The platform also had stones representing Vanuvatimata, a sea goddess. Several ancient ports nearby – Gogha, Broach, and Surat – also have shrines to this goddess. The presence of the goddess so close to the dock indicates that she must have been worshipped by the seafarers before setting sail and soon after reaching the town. According to the locals, Lothal was a port still functioning in the 1850s.

The presence of the estuarine shells and saline silt in the construction also indicates that the sea water reached the dock. The townspeople build such a huge construction and allow it to be filled with sea water. A study has found traces of foraminifera in the basin (Nigam 2006). Paleographic investigations indicate that the river reached very close to the dock in the third millennium BCE (Khadkikar et al 2004).

Lothal shifts our attention from monuments in the terrestrial sense to spaces that contribute a different kind of built environment, the kind that is not inward looking for a settlement but

as enabling venturing out. For the purposes of maritime discussion, let us note that because there was a port at Lothal, it was a port town. Because it was a port town, its people must have experienced some form of maritime consciousness. Amidst archaeological bias towards the terrestrial and the agricultural (Reade 13), this dock is a precious find from the Bronze Age, an expression of the need to build what has now turned out to be the world's oldest port.

The engineering used in the sluice mechanism for automatic desilting seems to have been quite advanced. Rao remarks: "In contributing a long wharf and introducing water locking device, besides an artificial inlet, the Harappans have shown superiority in marine engineering over their successors at Gogha" (133).

Rao reports that five anchor stones were discovered at Lothal: three on the floor of the basin and two elsewhere. These stones are understood to be anchors because they are perforated right across and they also have shallower grooves that seems to have been used for the use of ropes. The anchors can be dated back to the Bronze Age (3000 BC onwards). The variety of these anchors also indicates that the marines all over the world learned from anchor designs from the other parts of the world too (Tripati 2014). The size of the anchors along with the width of the inlets suggests that the ships could carry as much as 60 tons of cargo.

The excavation yielded miniature terracotta boats: these are precious insights into how they constructed boats. One boat is quite heavy. It has a pointed prow and a broad stern. The boat four holes: one near the prow for securing the sails, one away from the stern for fixing the mast, and one on each margin as pegs for resting oars. Another boat is much lighter but then only half of it has been found: it has a flat bottom with a wide centre and a pointed prow. The stern half is lost. From the half that survives, it seems that it must have been a river boat for loading and unloading bigger ships. One more broken boat seems to have been modelled after quite heavy a boat. It has a thick broad stern. Its missing prow seems to have been quite pointed. There is another narrow boat found: it is quite long like the contemporary catamarans. A depiction of such a boat on a pot sherd shows as many as thirty oars used to plow it.

A painting discovered at Mohenjodaro is that of a boat with a high prow, a stern, a single mast, and a rudder. Similar representations are found in the pottery of Egypt, Minoan seals, and cylinders of Sumer. It suggests mutual contact among these countries. The mast, yard and rudder indicate that the depicted boat is that of one sailing high sea.

Another pot sherd has paintings of a whale or a similar large fish. That means that the Harappans knew about the animals in the deep sea.

Vanuvatimata, the idol of the sea goddess found on the platform on the dock is quite similar to Sikotrimata, denoting a parallel with a similar goddess in the island of Socotra in Western Asia. The shrines honouring the tradition of worshipping the sea

goddess before setting sail and after landing are found in several ports like Nanu Boru or Moti Boru ("boru" means "port") around Saurashtra. Several folk songs are dedicated to the goddess even today. There are at least seven forms of the goddess, five are still worshipped in Kutch, Little Rann, Gogha, Lothal and Hajira.

Trade between Harappa and Mesopotamia. While the overland trade routes between the Indus Valley and Mesopotamia are quite understood – North Afghanistan, northern Iran, Turkmenistan, Mesopotamia crossing Tepe Yahya, Dad Hissar, Shah Tepe, Kish as the southern route and Tepe Yahya, Jalalabad, Kacleh Nisar, Susa and Ur as the southern route – the discovery of the dock at Lothal has brought to light a maritime trade route. Rao estimates that the maritime trade route possibly included Sutkagen-dor, Balakot and Sotka-koh (on the Makran coast), Navinal, Prabhas, Mehgam, Bhagatrav (in Kutch) and Lothal. The presence of these ports "gives a coastal bias to the Indus Valley Civilization" (Rao 230).

65 terracotta seals were found at the warehouse at Lothal. The Harappan seals have been found in Mesopotamian sites such as Kish, Lagash, Nippur and Ur. However, no Mesopotamian seals have been in Harappan sites. It seems that the Mesopotamian traders were not directly involved in trade with the Harappans. One circular Persian Gulf seal found here indicates that the Persians were the intermediaries of trade between Lothal and Mesopotamia. Harappan seals, in general, show Mesopotamian influence: whorl design, man grappling with two animals, and a gatepost.

A circular kiln was found at the warehouse: it must have been used to heat the raw material. Also found were an anvil, terracotta crucibles and copper implements, all pointing towards the possibility that the warehouse must have been a bead factory. Hundreds of beads in various stages of manufacture have been found. The warehouse must also have been used for ivory working, shell working, and bronze smithy. According to Rao, the Harappan ports Bhagatrav and Mehgam, situated near the Ratanpura mine – a source of agate and onyx – probably exported these raw materials to Lothal. In turn, Lothal exported etched and non-etched carnelian beads to cities like Ur, Kish, Brak, Lagash, Asmar in Mesopotamia, and to Giyan, Sailk, and Susa in Persia and to Egypt and Bahrain. Lothal also seems to have imported copper from Oman. The firing technique at the kiln in the warehouse seems to have been borrowed from Egypt where it was known to have existed earlier.

Shell bangles, shell flakes, rejected columella and partly-finished objects at the warehouse in Lothal indicate that these were meant for export. Harappans in general also exported carnelian beads, textiles, conch shell objects to West Asia and ivory and ivory objects to Afghanistan, Turkmenistan and Persian Gulf. The Mesopotamian texts mention a list of imports from "Meluhha", now understood to be the Indus Valley: lapis lazuli, carnelian, gold, silver,

copper, ebony, ivory, tortoiseshell, and even animals: chicken-like bird, dog, cat, and monkey.

Painted pins of ivory bone, gamesmen with ivory handles found in Egypt seem to have come from Lothal. The carved hair pins and khol rods found at Ur and Ras Shamra must have been from Lothal. The inlays, bangles, gaming pieces, ornaments found in Susa, Ur and Brak must have been from Lothal and other Harappan sites.

It is difficult to overestimate the importance of trade to Harappans: some scholars opine that says trade, especially of lapis lazuli, was so important that the decline in trade led to the decline of Harappan civilization itself.

Cubical, spheroid and barrel shaped stone weights found at Lothal adhere to two different standards – Harappan as well as Assyrian. Stone weights figure into Childe's list of markers of a civilization. The presence of stone weights corresponding to two different systems indicates trade and the necessity to be vigilant about quantities exchanged.

Exchange beyond Trade. Some pieces of Reserved Slip Ware belonging to the early Sargonid period of Mesopotamian history have been found at Lothal too, apart from Mohenjodaro. There is also a terracotta model of a man with Sumerian features: a beard, bald head, sharp nose.The Harappans were familiar with these places, an indication that trade took them to East Africa. Lothal has also given us terracotta models of the gorilla found in East Africa and an Egyptian mummy.

The discovery of Lothal is not just about excavating one more site of Harappan settlements but an indication of maritime orientation. Archaeological investigation and thought tend to be agrocentric, as Julian Reade puts it (13). He further notes:

Societies based on the exploitation of fish and shellfish, turtles and marine mammals, have a modest material culture in the archaeological record. We shall never know who developed the first net or net-weight, the first tidal fish-trap or ornamental shell ring. Evidence for the earliest phases should survive, in creeks and estuaries sheltered from the violence of the waves, far below the modern water-table; their identification is a challenge for archaeologists of the future (14).

Therefore, the dock, the goddess, the anchors, and the trade found at Lothal mean something very concrete: for instance, that those living in Lothal must have felt something towards the sea. It was their livelihood, a source of food (fish bones were found - river or sea, we don't know). and an entity they worshipped. Rao's observations make an interesting technological point about Lothal. The excavation undertaken there, he holds, "has added a maritime province to the Indus Empire has given Harappans a high place of honour in the development of marine engineering on account of the dock, wharf and warehouse which they built at Lothal" (259). The town brings to light the diversity within Harappan settlements. Possehl argues that Lothal must have been a "gateway" to the Indus Civilization, rather than being at

its centre (Possehl 1976). It brings coasts into the historical imagination of ancient India which generally sees them as locations "beyond" the Deccan Plateau (Singh: 2016, 4). This idea of "beyond" is imprinted on the geographical and historical discussions about the "territory" of Indian history and historiography. In the maritime imagination, the coasts emerge as key sites of cultural exchange, trade, evidence of struggle for survival, intimacy with nature and expressions of divinity; in other words, they constitute an ecology in itself – an ecology that transforms our understanding of the ancient world as well.

References

1. Khadkikar, A. S; C. Rajshekhar & K.P.N. Kumaran. "Paleogeography around the Harappan Port of Lothal, Gujarat, Western India" 2004.
2. Nigam, Rajiv. "Foraminifera [Marine Microfossil] as an additional tool for archaeologists – Examples from the Arabian Sea" in Glimpses of Marine Archaeology in India, 2006.
3. Pearson, Michael. *The Indian Ocean*. USA & Canada, Routledge, 2003
4. ___. "Lothal: A Gateway Settlement of the Harappan Civilization". South Asia Occasional Papers and Theses, No 4: South Asia Program. Cornell University, 1976.
5. Rao, S. R. *Lothal: A Harappan Port Town (1955-62), Vol 1*. New Delhi: Archaeological Survey of India, 1979.
6. Reade, Julian. "Evolution in Indian Ocean Studies" in *The Indian Ocean in Antiquity* (ed) Julian Reade. London and New York: Kegan Paul International, 1996.
7. Tripati, Sila. "Stone Anchors of India: Findings, Classification and Significance" in *Proceedings of the 2nd Asia-Pacific Regional Conference on Underwater Cultural Heritage* (ed) Hans Van Tilbury, Sila Tripati, Veronica Walker, Brian Fahy, Jun Kimura. Honolulu, Hawaii, May12-16, 2014, Vol. 2: 973-986
8. Singh, Upinder. *A History of Ancient and Early Medieval India: From the Stone Age to the 12th Century*. Noida: Pearson, 2016

FORT SUVARNADURG: A GOLDEN PAGE IN KONKAN'S MARITIME HISTORY

Aishwarya Vivek Devasthali
(Project Research Associate, Maritime History Society)

Maharashtra or the *Great Land* has a rich past which forms a nimbus for the state. History of Maharashtra is quite glorious as some of the great rulers and kings have ruled this region living behind some of the greatest traces of Cultural Heritage. It remains a great cultural composition of different tangible and intangible tradition flourished under many dynasties and rulers including Maurya, Satavahana, Gupta-Vakataka, Chalukya, Rashtrakuta, Shilahara, Yadava, Bahamani, Mughal, Portuguese, Maratha and British.

These dynasties left behind a large material culture. The various art traditions came into vogue in the form of Stupa, rock-cut caves, paintings, temples, tombs and mosque, churches, forts and palaces etc. Their forts form the strongholds against invading armies and reconstruct the tales of enterprising leader, military triumph, warfare and defence strategies & management. The state of Maharashtra is home to more than 400 massive forts. These stand as a proof to the excellent craftsmanship and exhibiting military power as well. Each of them showcases uniqueness and magnificence.

The term fort suggests a stronghold, by offering protection and security to its dwellers. Sanskrit term '*Durg*' means unapproachable or untenable denoting its strong and massive character, with defence as its primary characteristics. In the medieval period, rulers had to strategically erect defence mechanisms in order to protect the port towns. Konkan region, due to its geographical setting and location, formed one of the most strategic locations of India. It is bounded by the Sahyadri mountain ranges which form the "Western Ghats" on the East and the Arabian Sea on the West. It extends throughout the western coasts of Maharashtra, Goa and Karnataka.

In Maharashtra, the Konkan region consists of coastal districts such as Raigad, Ratnagiri, Sindhudurg and Thane. It formed a link between the seas and land. Since ancient period, it proved to be a heart of trade and commerce and as a result, it has island forts and coastal forts. Sindhudurg, Suvarnadurg, Janjira are some examples of island forts while Vijaydurg, Vasai fort, Jaigad are few examples of coastal forts.

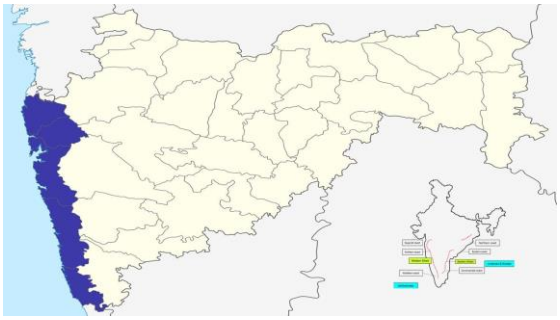


Image 4. Konkan region in State of Maharashtra, Source - Google Images)

Ratnagiri has north-south length of about 180 km and average east-west extension of about 64 km. Sahyadri hills surround it in the east beyond which there are Satara, Sangli and Kolhapur districts, Raigad district in the north, the Arabian Sea in the west and Sindhudurg district in the south. Over 85% of the land surface in Ratnagiri district is hilly. All rivers in the district originate in the Sahyadri ranges and flow from east to west and merge in Arabian Sea. The important rivers of the district are Vashisthi, Jagabudi Bay and Naringi. The climate of the district though moist is generally healthy. The rainfall is plentiful and regular. The year may be divided into four seasons, the summer season from March to May, the south-west monsoon season from June to September, the post-monsoon season from October to November and the winter season from December to February. It has a long sea coast which contains many beaches, pats, and forts.

A strong ascendancy of prominent rulers such as the Mauryas, the Nalas, the Silaharas, the Chalukyas, the Kadambas, as well as the Portuguese, the Marathas and the British, has ensured that a rich tapestry of built structures exists at Ratnagiri. However, it also means that this area was considered to be significant for occupancy, which is why a concentration of fortifications exists here. Although its historicity was evident with the wealth of monuments, Ratnagiri's ancient roots were firmly established on discovery of the Panhala Kaji caves in the 1980's. Later, the maritime forts of India were a witness to India's maritime power and competitive games of the Portuguese, French, Dutch and English sea warriors. Harnai, a minor port in Ratnagiri, about two miles south of Anjarle and fifteen north of Dabhol, lies in a small rocky bay, a shelter for coasting craft in north-west winds. Under the Marathas, Harnai was the head-quarters of a sub-division and here, in 1818, a station for British troops was established. The main attraction of Harnai port is a fort dating back to medieval period named Suvarnadurg.

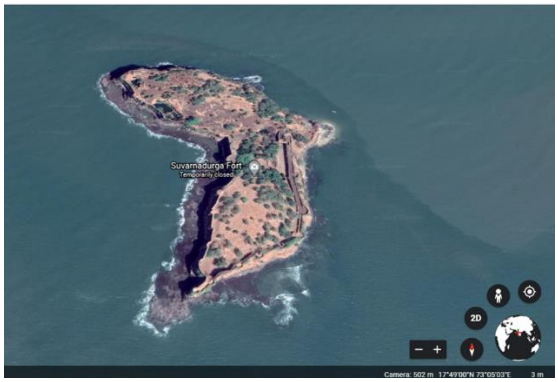


Image 5. Sky view of Suvarnadurg (Source: Google Earth)

Suvarnadurg, splited as '*suvarna' & 'durg'* literally meaning the Golden Fortress, with an area of eight acres on a low irregular island, about a quarter of a mile from the shore, surrounded by a very high wall, is the most striking of the Ratnagiri sea and coastal forts.

Fort Suvarnadurg was probably built by the kings of Bijapur. It was repaired and strengthened during the reign of Chhatrapati Shivaji Maharaj. Kanhoji Angre was groomed under the *killedar* of Suvarnadurg. Later Kanhoji Angre took all controls of the fort, and came to prominence. For his extensive efforts and achievements, he received a title 'Sarkhel' from Tarabai. In year 1696, it was a station of Kanhoji

Angre's fleet. It was formally under Raja Shahu since year 1713. During the reign of Tulaji Angre, (a successor of Kanhoji), it became one of the seats of his power, resulting in damage of various Indian and foreign ships and emerged as a terror among the contemporaries. A joint effort in suppressing the Angres was proposed to the English by the Peshwa. In 1755, a joint attack on Suvarnadurg was planned. The siege lasted from 25th March to 2nd April, when the garrison surrendered. According to an agreement, commodore William James made over Suvarnadurg to the peshwa government on 12th April. In year 1802, Suvarnadurg was a residence of Bajirao II for few days. In year 1803, a Maratha sardar had tried to get back Suvarnadurg from Marathas, but Britishers were successful, in letting it back to Peshwas. After the death of Sir William James, Lady James built a memorial to him and his exploits at Suvarnadurg on shooter's hill as 'Severndoorg Castle'. Finally, in year 1818, Karnal Kennedy gained the controls of the fort from Peshwas. This itself suggests how the fort gained fame and rose to prominence.

After having a glance at history of Suvarnadurg, we can imply that the Angres played major role in history of Suvarnadurg, and are also credited for not only strengthening the fort but also establishing the ship building yard at Suvanadurg and creating a large fleet of warships to secure the west coast, from attack from the French, Dutch, Portuguese and British. It is also inferred that the small forts (Kanakadurga, Bankot fort, Fattegad fort and Gova fort) were primarily built by Kanhoji Angre to defend Suvarnadurg from any enemy attack from the land route.

Art & Architecture. As per Google Earth survey and some documentations of the fort carried out by scholars, architecturally, Suvarnadurg has common features like other contemporary forts. The fort is irregular in shape, as the irregular island itself is fortified. It is encircled by a dry moat. It tapers towards the southern direction from where the Kanakadurga fort is clearly visible. The fortification quite close to the village Harnai, largely constitutes of a cut from solid basalt rock, while the remaining part is built of blocks of stone, measuring 10-12 feet square. The fort is well protected by ramparts and bastions. Most of the structures are cut from the rock. Mortar was not used everywhere during construction. Cementing material analysis undertaken of the lime collected from different parts of the fort suggested that same composition of lime was not used for construction of all parts of the fort. Within the fort, several reservoirs and a small step well having abundant water is noted.

After getting down at Suvarnadurg, one finds remains of a gate like establishment much nearer to the main gate. One can reach to the main gate also known as *Mahadarwaja* with flight of 10-12 steps. Two canons half buried are seen near the ruined gateway. As one proceeds further towards the fort, one comes across a huge seven feet long canon. The main gate which stands still in good condition is sculpted with variety of patterns. The

sea-gate depicts carved figures of a tiger, eagle and elephants. The most important and rare depiction is the presence of tortoise on the threshold of the postern gate. Opposite to it on the wall towards the left is the one of Lord *Maruti* which has modern application of *shendur* on itself. The centre of the arch is decorated with depiction of a flower which is mostly seen in medieval period forts of Maharashtra. The inner side of main gate has rooms and vestibules for the soldiers. After entering the main gate, one comes across a vestibule consisting of two rooms towards left side. The steps near it take to the ramparts of the fort. Two guard rooms like structures are constructed at both the sides and under the bastions. A stone building plastered with mortar, identified as a magazine lies in the vicinity. Remains of old palaces are traceable with reference to some

Image 6. Entrance to the Fort (Source: https://en.wikipedia.org/wiki/Suvarnadurg)

extensive foundations. The fort has total 24 bastions, each one measuring 25 to 30 feet high. There are three huge tanks inside the fort area with drinkable water. On the western rampart, a four feet long *chor darwaja* (a secret escape) is situated near the tank which directly opens at the sea. Few remains of steps starting at the *chor darwaja* meet the sea. Towards the southern direction, close to the southern rampart lies a water tank.

The fort is declared by the Archaeological Survey of India as the monument of national importance since 1910.

Discussion. The Marathas were among the few powers in India, after the Cholas, to have a powerful navy, as

Image 7. Fort Suvarnadurg (Source: https://ratnagiritourism.in/en/forts/suvarndurg-fort-dapoli/)

Chhatrapati Shivaji Maharaj realised the importance of having a military presence on the seas. But as discussed above, Maratha navy reached to zenith during the reign of Kanhoji Angre. According to historical data it can be stated that, Suvarnadurg has always been a subject of importance within the rulers of the region.

The Konkan coast has had a long history of trading relations with Malabar, Gujarat, and countries of the Arab, Oman and Persian Gulf and East African coast. The terrain, and the

coastline punctuated by river mouths, creeks and inlets and the political dynamism led to development of a number of ports. The numerous creeks and river mouths helped the boats to reach far inland up to their tidal limits. Initially these port sites were guarded by a garrison of army detachment of local rulers. And later, these sites were fortified. These fortified sites, later known as forts, were located either on an offshore island or on a prominent headland overlooking the entrance of the harbour or in the creek along which the port sites or trading centers were located.

On some forts like Janjira, and Vasai, we can understand how these fortified places later evolved into proper cities, having all facilities like temples, churches, hospitals schools etc. yet, Suvarnadurg seems to be a focused maritime/defence structure only according to the pattern of structures. The area of the fort is just 8 acres, which is comparatively smaller as compared to other island forts. Yet, the fort overlooks three coastal forts namely Gova fort, Fattehgad/ Kanakdurg and Bankot which are hardly 2 miles away from the fort. Presence of three forts very near to the island fort itself suggests importance of Suvarnadurg and need for its protection by three other forts. Suvarnadurg being an only island fort in the nearby area also suggests the responsibility of the fort in protecting the main land.

Small islands around the world are rich in remarkable landscapes, and are shaped by human activities. A strong link between nature and civilisations can be traced here. These are the sensitive territories which at times are vulnerable to environmental changes. They face many issues related to sustainability, water, energy and waste management disaster management etc. Often, heritage conservation and tourism seem to conflict with these natural and cultural considerations. Heritage management and conservation of monument at island becomes a matter of concern and is a big challenge. With respect to conservation**,** island forts and coastal forts are challenging due salinity in the shores, waves hitting the ramparts and walls, high tides and low tides, and labour movements and availability.

Non-availability of information about the forts, becomes another important issue. Whatever knowledge is available about the fort is shared by local people, who are not qualified as guides. As a result, this may create a doubt within tourists and knowledge authenticity becomes questionable. This creates a communication gap between monuments and tourists.

Shortcomings in facilities with respect to hygiene, transportation, drinking water, Canteen, Staff cooperation, monumental cleanliness, conservation and information accessibility are basic and need to be developed on larger front. Primarily good infrastructure & logistics would a play vital role in attracting tourists.

Suvarnadurg is an example of a victim of a vicious circle having lack of tourism, leading to less facilities which again results in less tourism. Issues and tensions relating to the

management of the island monument should be discussed and influencing aspects be investigated. Nature-culture dualism, effect of land's history and identity, and the influence of the '*islandness'* on the heritage management are some of its shades which should be highlighted and interrelation amongst three basic factors that include Island (maritime) heritage, local inhabitants and the tourists should be studied. Looking at the initiations and significance of long-term heritage projects, it is important to place the local community at the heart of the action in order to encourage sustainable tourism. Being important stakeholders, local inhabitants are the one needs to be focused. Cultural heritage for inclusive growth should primarily benefit local communities should be a priority. Therefore, it is vital to first understand the local context, identify the needs of the locals and determine the role that heritage can play in addressing these needs and also how can they contribute in encouraging heritage initiatives and boost tourism.

Probable solutions for improvement of the area should be based on development of an effective transportation, communication and infrastructure facilities. A comprehensive capacity building module can be developed with special reference to maritime history and heritage since it is a developing domain in India.

Coastal Ratnagiri is a region that has tremendous potential for development of tourism in Maharashtra. Rich natural landscape and historical background provides an impetus to the growth of tourism in this region, which in turn will result in regional development and provide boost to local economies. Suvarnadurg being the most striking fort of Ratnagiri, is potentially rich with respect to art and architecture of the fort and maritime activity. A 360-degree communication plan to create & enhance public awareness in terms of maritime heritage is prime requirement and a collective effort on all levels on all fronts is the key to develop a monument.

As per the 136 nations covered in the *World Travel & Tourism Competitiveness Report* – 2017, India ranks - 40th on global fronts, and Cultural resources wise ranks 9th and 24th in terms of Natural resources thus creating an opportunity for heritage management and tourism. Suvarnadurg, primarily a maritime monument, for being a stronghold and dominating waters, give an ample of opportunity in order to highlight its maritime importance.

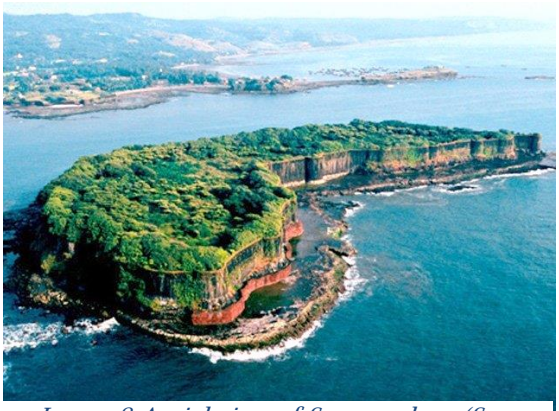
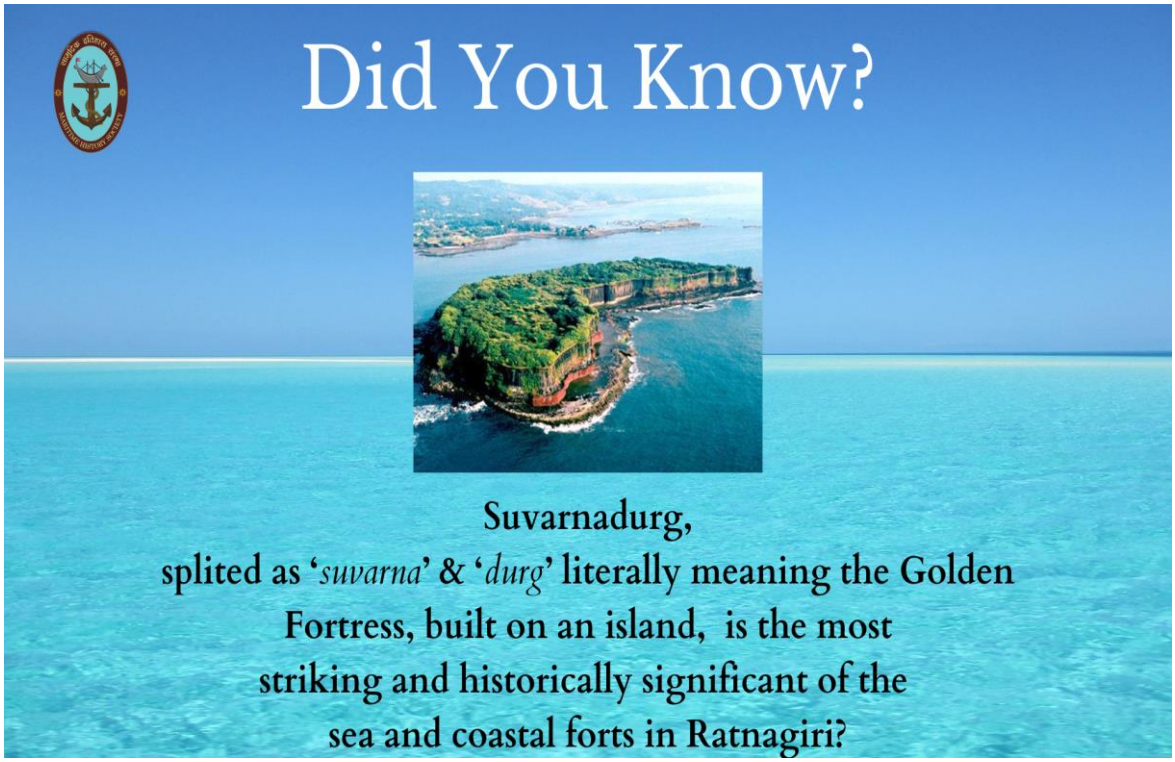


Image 8 Aerial view of Suvarnadurg (Source: https://www.hindujagruti.org/history/39831.html)

References

1. Joshi Sachin Vidyadhar, 2011, *Ratnagiri Jillyachi Durgajidnyasa*, Bookmark Publications

2. Imperial gazetteer of Bombay presidency
3. Naravane M.S., year 1995, Forts of Maharashtra, Aph Publishing Corporation
4. Ratnagiri District Gazetteer
5. Joshi Sachin, 2016, *Bulletin of the Deccan College Post-Graduate and Research Institute*, Vol. 76, Study of Defence Architecture and Geo Political Significance of Coastal and Hinterland Forts on Konkan Coast, pp. 201-206
6. Naravane M.S., year 1998, *Sea and Hill Forts of Western India*, Maritime History Society
7. Apte B.K., year 1971, *History of Maratha Navy and Merchantship*, State Board of Literature and Culture
8. Ghanekar, P. K. 2003. *Jaladurganchya Sahavasat (Book in Marathi language).* Snehal Publisher, Pune
9. *World Travel & Tourism Competitiveness Report* – 2017
10. Dikshit Moreshwar G., *Bulletin of The Deccan College Research Institute, Vol. 4*, No. 4, Notes on Political and Cultural History of Konkan
11. Marathe Ashok, (2004-2005), *Bulletin of the Deccan College Research Institute*, Contribution of The Deccan College to the Study of Prehistoric and historical archaeology of Konkan, Vol. 64/65 Pp. 21-26
12. J. B. Kamalapur, year 1960, *The Deccan Fort*, Bombay.



THE MONSOONS AND THEIR ROLE IN INDIAN OCEAN'S MARITIME HISTORY

Dennard D'souza (Research Associate, Maritime History Society)

The monsoons are a very unique phenomenon that happen all throughout the globe. But in India, they have a very special place in the religious, cultural and civilizational ethos of the Nation. The oldest literary reference to the monsoons comes from the most ancient of Indian literary works, the Rig Veda. The Frog hymn as it is called, Glorifies the frogs as the soothers of the parched lands and the harbingers of the rains.[1] The Hymn was thought to have been a rain charm by the ancients. Besides cooling the scorching terrain the monsoon also fulfilled another requirement. It aided agriculture and irrigation of field lands. This quality of the monsoons are related in a hymn dedicated to the Rain god *Parjanya*. The seer of this hymn glorifies the monsoons as the catalyst that sets the chain of fertility rolling.[2] From soil to the grains from the grains to humans and animals the rains brings virility to all of nature. These two aspects of the monsoon season are celebrated even into the present times.

The *Hariyali Teej* is a festival celebrated in honour of the arriving monsoons in the Hindu Month of *Sravana*. The festival is celebrated with great pomp and fervour all throughout north India, which after experiencing the long scorching summers of the Northern plains witnesses a period of respite, with the onset of the monsoon season. The festivities are marked by the celebration of the celestial Union of Shiva and Parvati, who represent the spirit and nature respectively. The monsoons truly is the soul of India and the backbone of its economy.

Image 9. Teej celebrations in Jaipur

However, the monsoons are remembered for yet another reason. It was the force that fueled the ancient maritime trade in the North Indian Ocean. The monsoons helped to bring distant markets closer, assisted in comingling of culture and was the precursor to modern concept of a global village. In this article we shall enumerate the contribution of the monsoons in the realms of Martime History.

Civilization of Monsoon Sailors. Winds have been harnessed for navigational purposes since time immemorial all throughout the world. The Egyptians, Mycenaeans, Minoans, Etruscan and the Greeks and Romans after them used oared ships having sails as additional appendages to their galleons. The notorious sea peoples of the Bronze Age too possessed similar technologies. However they all plied in the Mediterranean Sea where the

climatic conditions are different to that which prevailed in the Indian Ocean arena. Here the monsoons did not make their presence and the people inhabiting this region were happily unaware of this phenomenon. Or else there would had been an indigenous term rather than the borrowed Arabic Mawsim, in later times. The first Europeans to have been acquainted to the monsoons were the Greeks in the

In the Bronze Age period the Indian seas too were teaming with activity. The Harappans were also sailing their ships in the Indian Seas. Their ships were often made of reed and fitted with oars and the iconic sails. However, the possibility of wooden ships cannot be ruled out as one of the main commodities traded by the Harappans with the Mesopotamians was wood.[3] These ships sailed to the near east whose markets had an insatiable demand for Indian merchandise. Sadly, we are unaware whether the Harappans ever knew to sail using monsoon winds as there is a dearth of decipherable written material from that period. Owing to the land fall patterns of the ships using monsoon winds in recent times and the availability of Harappan artefacts in the same region it is more likely that the Harappans did harness monsoon winds for sailing

This now brings us to the moot question. How did Indian mariners use these monsoon winds to navigate the Indian Ocean region? Because there is hardly any Indian document that gives a detailed account of the monsoon wind being used by Indian mariners. Fortunately for us we have Strabo who tells us of the early Greek navigator *Eudoxus of Cyzius* and how he managed to sail to India from the Information obtained from a stranded Indian sailor.

The Indian who divulged the secret of monsoons. Strabo in his Geographia records an incident that transpired in the court of the Hellenistic monarch of Egypt, Ptolemy VIII. He notes that an Indian sailor whose ship had been wrecked somewhere in the red sea was presented in the court of Ptolemy VIII (B.C.E 145), where he was probably coerced to divulge the secret maritime route to India.[5] It is believed that *Eudoxus* having used the information divulged by the Indian sailor made two voyages to India using the monsoon winds. There he secured exotic goods for which were confiscated by the Egyptian royalty. This happened twice with two different kings ruling as monarchs.

From *Eudoxus's* account we can confer that Indian's had been sailing in the Indian Ocean region before any Europeans had attempted to do so. It is more than probable that the Indian's

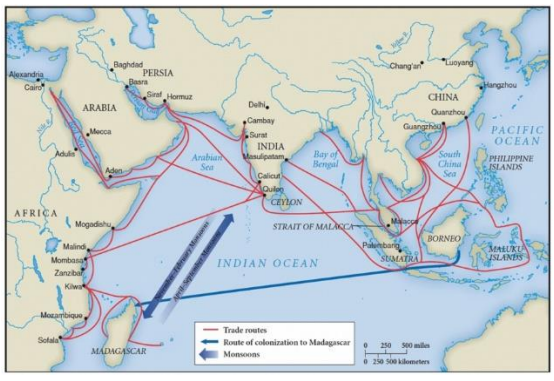


Image 10. Ancient trade route in the Indian Ocean region (source: Routes of Prosperity)

were aware of this sea route used *Eudoxus of Cyzius* many centuries prior to his period. It is also possible

that Indian's would have used more than one sea route besides doing the normal coasting.

However Greek accounts credit *Hippalus* with the use of the south west monsoon winds to reach India directly. Given that *Hippalus* followed in the foots steps of his near contemporary *Eudoxus*, who himself had learned the secret sea route from an Indian and knew the Indian sailors' capacity to keep secret their knowledge. It is likely that this direct route discovered by *Hippalus* was also know to the Indians, who by now were the champions of the art of sailing using monsoon winds in the Indian Ocean Region.

The coasting mode of navigation was probably a preferred route of the Indians and the Europeans sailors. This is borne out from the very fact that the first century C.E text, the Periplus of the Erythrean sea, gives a detailed description of all the port along the coast of the northern Indian ocean. Ports From *Berinke* in Africa to *Chryses* in South East Asia are presented in a sequential order one after another. It also gives provides an accurate schedule for the number of days and the distance between each port from Africa to India.

The reason behind preferring the coastal route as opposed to the direct route -which was purported to have been discovered by *Hippalus* - was the sheer safety and certainty that this sea route offered ships laden with merchandise. It is also likely that sailor made pit stops on the coastal port towns to replenish essential supplies like food and fresh drinking water, which would have not been available on the direct route to India if he had crossed the Arabian sea in one stride. However the coast route was fraught with dangers of pirates and natural hazard which the author of the *Periplus* himself warns against. It is on account of the safety from the unpredictable monsoon winds and the need to replenish the sailors would have preferred to take the coastal route rather than the more volatile direct route to India.

Image 11. Meluhhan interpreter on the lap of the Mesopotamian king

Mingling of culture and the nearing of global markets. The most significant contribution of the monsoons was that it brought people in contact with each other. People from one continent would find themselves on another continent merely in a matter of few days. One could also experience different climate zones like the arid lands of Arabia on one day and the tropical forest of south and South-East Asia in a matter of few weeks. The monsoons were the catalyst for what is called the globalization of the ancient world.

Indian merchants and sailors were known to have travelled far and wide in the Indian Ocean region since the ancient time. They made contact in the west with the Babylonians the Greco-

Romans and the Egyptian and in the east they established trade contacts with the Cambodians the Chinese and the Balinese.

"Expat Indians" is not a modern concept the first Indians to have settled abroad were the ancient Harappans. In the town of *Girsu* and Lagash the Harappans or the Meluhhan -as they have been referred to by the native Sumerians- established settlements in Southern Mesopotamia in the Pre Sargonic and Ur III era. The Meluhhans played a vital role in the textile industry of the Mesopotamians. Their power had started to advance in the Temple based polity of the Mesopotamian state. The Meluhhans became major player in the temple of Mesopotamians. Seals found from Mesopotamia indicate that some Meluhhan were so influential that one of the Meluhhan was made the overseer of the temple servants in the temple of *Nanshe*. In another inscription the meluhhan gardens were made suppliers to the temple of *Ninmar*.

A few millennia later the Indians were still active in the Arabian sea trade. Like their forebears before them they establish a settlement on the island of soccotra. Here they shared sacred and profane spaces with the Greeks and the Arabs. A classical example of this is the Hoq caves of soccotra. These caves were a sacred site for all ethnicities of the island. However, the Indian influence in the hoq caves is far more indelible and numerous. The walls of this caves are emblazoned with *Brahmi* Alphabets Left by Indian Mariner. Their faith in the *Buddha* and *Siva* are exhibited in the engraving of the stupa and the sacred trident. As a remnant of these ties with the Island of Soccotra, the *Gujaratis* worship a deity named *Vahanvati Sikotar* who is now venerated as the patron of Ships and seaward voyages.

The Indians did not just concentrate on the western front of their coast but the east was also always on their route. The land to the east of India was called *suvaranadvipa* "the golden continent". In these far eastern lands the Indians established trade on enclaves where they traded with the locals. This trade was not merely shuffling of commodities by also comingling of cultures. This phenomenon is beautifully encapsulated in the story of *Soma* and *Kaundinya*, who are considered by the most of the people in South East Asia as the progenitor of their race. This story sums up the beautiful tapestry of South East Asian culture which is the culmination of the Indian and South East Asian cultures.

While the Indians were trading with islands of the Indo China the Indonesians or the Javanese to be precise established contacts with Africa two thousand years ago. Here after intermingling with other ethnicities formed the modern Malagasy people of Madagascar. The Malagasy language has some Sanskrit loan words which are marker of the interconnectedness of different places in the Indian Ocean region.

The Africans also were an active player in the maritime arena of the Indian Ocean region. The Swahili coast was an active maritime hub from at

least the first millennium C.E. the cities of Rhapta and Toniki on the Swahili coast were urban trading centres.11 With the arrival of Islam the Swahili coast was region mushrooming with city states which independent of each other. These region soon started trading with place as far as Arabia, India and China. With the arrival of the Europeans colonialists the trade in the Indian Ocean region was monopolised in the hands of the new entrant which lead to the collapse of these city states.

Conclusion. The monsoons created what was the precursor to the modern concept of globalism. The Indian Ocean region became an arena for the exchange of culture, Ideas and religion apart from the humdrum of trade. This was only possible because of the monsoons which facilitated the peaceful movement of populations, which in contrast to the land would have been slower and hostile. The sea was the vehicle of peaceful interactions. A proscenium for the most virtuous of human activity. In this furtherance of human civilisation the Monsoons became the major catalyst for shaping the cultural milieu of the peoples inhabiting regions encompassed by the Indian Ocean.

References

1. Rig Veda. 7.103
2. Rig Veda.7.102
3. W. F. Leemans, *Foreign trade in the old Babylonian period as revealed by texts from Southern Mesopotamia,* Brill Archive 1960, p.130
4. McIntosh Jane, *The Ancient Indus Valley: New Perspectives*, ABC-CLIO, 2008 p. 174
5. Stein. Stephen K, *The Sea in World History: Exploration, Travel, and Trade [2 volumes]*, ABC-CLIO, 24-Apr-2017, p.72
6. Buraselis Kostas, Stefanou Mary, Thompson Dorothy J,*The Ptolemies, the Sea and the Nile: Studies in Waterborne Power*, Cambridge University Press, 04-Jul-2013, p199
7. Scarre. Chris, Fagan. Brian M, *Ancient Civilizations*, Routledge, 10-Mar-2016, p308
8. Vermaak P.S, Guabba, the Meluhhan Village in Mesopotamia, *journal for semitics* 17/2 (2008) pp. 454-471
9. Schnepel Burkhard, . Alpers Edward A, Connectivity in Motion: Island Hubs in the Indian Ocean World, Springer, 30-Oct-2017 – p.364
10. Heale Jay, Latif Zawiah. Abdul, *Madagascar*, Marshall Cavendish, 2009 , p.23
11. Harris Lynn, Sea Ports and Sea Power: African Maritime Cultural Landscapes, Springer, 14-Dec-2016, p.4

THE EFFECTS OF A PANDEMIC – THEN AND NOW

Amruta Talawadekar (Research Associate, Maritime History Society)

Image 12. Immigrants being inspected close to the docks (Source - https://wellcomecollection.org/works/awct3kzq)

Today, the Covid-19 virus has created a havoc, all around the world. People across nations are facing difficulties as the cities have shut down. The city of Mumbai is no less. With the ongoing pandemic situation, the city of Mumbai had almost come to a standstill. With pressure on the healthcare system, loss of livelihood, disruption in trade and increasing distress due to lockdown, the city is struggling to revive, sustain and overcome the virus outburst. While the situation might be new and at times petrifying for most of us today, the city is not new to it. It has faced a similar situation back in the late 19th century with the outburst of bubonic plague that cost a number of lives and had an irreversible effect on the port town of Bombay (now Mumbai). This article talks about the bubonic plague and its effects on the city and the similarities in the situation today. While the effects have been catastrophic, the city has risen like a phoenix from the ashes.

Bubonic Plague in Bombay

Occurrence. Let's go back to 1896, when the city called Bombay then, was a full-fledged port of the British Government. Bombay for them was full of opportunities. The residents had expanded their realm beyond the fort area. New docks were constructed. Railway lines connected the coast to hinterland. Population of the city was over 8 lakh. Trade was flourishing with the cotton boom, textile industries were established, opium was being exported on a large scale and the port

city was enjoying the privilege of being one of the chief ports under the British Empire. This was when Dr Viegas confirmed the first case suffering from the bubonic plague. The epidemic is said to have originated in China. The lack of stringent measures led to the spread across various ports that China had relations with. Bombay was comprehensively linked to Europe, China and other major port cities for circulation of commodity goods, agricultural products, and luxury items. It was also a period when there was surplus labour due to migration in the city for job opportunities. Bombay was under rapid urban growth. Increasing sea trade and human movement had become more frequent. Thus it reached Bombay through the ships travelling from Hong Kong and eventually spread rapidly across the city. Apart from Bombay, it spread across through major port cities like Sydney and San Francisco which were the maritime trade nodes. The first case at Bombay was found at Mandvi, a congested densely habited settlement in the Native town, close to the docks and north of the Bombay fort.

Effects on the city due to measures taken for containment. In the initial days, the authorities refused to take serious measures to curb the epidemic as they feared its effect on Bombay's trade. Many believed that the poor sanitation, overcrowding and lack of ventilation was the reason for its spread. Many areas lacked ventilation, sunlight and were congested during the plague outburst. Repeated warnings from the Health department went in vain as the Government of Bombay was engaged in rapid expansion of the industrial sector to boom the economy. Soon the disease began to spread across the entire area of Mandvi and beyond forcing the Government of Bombay to take strict measures. Many residents began suffering from high fever, swelling and headache. In due course, houses were washed, disinfected and lime washed. Authorities barged inside houses and undertook door to door checking and took into custody every other person who displayed any minor symptoms of ill health.

The Bombay Plague Commission was set up subsequently to further monitor and take necessary steps towards the containment. Any obstruction in the access to sunlight and ventilation was broken down, tiles were taken off, houses and water supply was cut off in case it caused dampness. Some said bamboos and temporary construction gave rise to the diseases due to which many houses were insensitively destroyed. The Committee did not issue notices of quarantined areas in advance leading to chaos among the locals. In February 1897, the then Municipal Commissioner, used his power to draft and bring out the Epidemic Diseases Act 1897. This further gave the authorities power to enter a building, prevent overcrowding and declare a building unfit for habitation eventually leading to evacuation of residents. This began to cause resentment among the locals against the colonial government. In spite of various attempts being undertaken, the disease was spreading rapidly. The Government of India sent a Surgeon Major General Clenghorn to inspect the existing scenario and

propose measures to implement. Based on his report, the government of India forced the Government of Bombay to undertake mass evacuation, disinfection of the houses and provide alternative accommodation for the victims of evacuation. The mortality rate shot up. Many alleged that the disease was caught only by the poor. Due to this many hospitals began to segregate between the income groups. The government considered the Indian elites an important part of the city to help maintain their colonial rule due to which they went softer on the rich business-oriented Indians and allowed free movement with privileged facilities.

Image 13. Medical inspection during the Bubonic Plague (Source -(Source - https://wellcomecollection.org/works/awct3kzq))

This created a massive socio economic unrest in the city and on its habitants. Forced hospitalization led to a big hole in their pockets. No income meant no food for survival and houses declared unfit led to large groups of migrant workers fleeing the city in panic leading to further spread into the hinterland. The mill workers and local merchants resented to the increasing insensitivity towards them. The steam used for sterilising the factories led to damage of their fabric. They were being forcibly checked, creating destruction of property and belongings. As time passed by, the situation worsened. Riots broke out in 1898 against the Epidemic Diseases Act 1897 which led to the assassination of the then Chairman of the Special Plaque committee, W.C Rand in Pune. The workers at the docks, railways and cartmen declared a strike which further paralysed the city's economy and functioning. By the end of the 19th century, many factories were setup in spite of the fact that the demand from major global markets was at a decline leading to losses due to over production of goods. Many in Europe believed that Bombay ships brought the plague to Europe leading to further hindrance in trade relations.

Image 14 . Rescue operations at sea back then (Source - (Source - https://wellcomecollection.org/works/awct3kzq)

The Government soon realized that the measures that were taken, only

increased the unrest between the government and the people leading to a change in their approach towards the public health policies. As part of this, the Bombay City Improvement Trust was set up in 1898 to restructure the city to create clean, affordable and planned localities for the lower and working class of the city which included creation of wider east west roads for effective passage of air, Reclamation to create new localities and provision for police accommodation. As the number of patients began to rise, various institutional buildings were converted into a temporary hospital. Infectious diseases hospital (now Kasturba hospital) was set up. The first vaccine was prepared by Haffkine after a number of experiments at a research laboratory set up at the Governor's House, Parel that later became the Haffkine's Institute. The Bombay Compulsory Vaccination Act was implemented to curb the spread and by the first decade of the 20th century, Bombay had successfully made it through the epidemic. The Presidency gradually recovered to its vibrant normalcy.

While the Bubonic plague in Bombay led to a massive exodus of population and disrupted the trade patterns and business, the city came out with the new normal. Eventually the Dadar, Matunga, Wadala, Sion scheme came up as the first planned scheme in Mumbai. New gardens and open spaces began to be made. Norms began to be altered to ensure hygiene and access to ventilation. Labour returned to work, taking the required precautions and trade resumed as the city yet again emerged as a multidimensional port.

Coronavirus disease

Occurrence. Today, years later, Mumbai is facing a similar health crisis. Just like the bubonic plague, the coronavirus disease is said to have originated at Wuhan, China. The first case was found in Kerela from a student studying at Wuhan. Mumbai too reported its first case in Mar 2020 after he met in contact with someone who was detected previously. Many began to complain of dry cough, difficulty in breathing and fever.

Effects on the city due to measures taken for containment. Just after the first case was detected, thermal screening began to be conducted at airports. Negligence of implementing a strict lockdown at the initial stage itself led to its spread across most cities of India by mid Mar 2020. By the time the lockdown was being thought of, the carriers of the disease were spread across the city. Dense settlements such as Worli and Dharavi began reporting cases. The Government initially began disseminating information and precautions to be taken until a country wide lockdown was declared on 25 Mar 2020. The lockdown was enforced in phases. The Indian Prime Minister, enforced the Epidemic Diseases Act of 1897 which was drafted hastily during the bubonic plague yet again to confront the Coronavirus in India. As part of the lockdown, all activities were to be shut, shops were closed down and all activities except essentials such as food, milk, medicines and bank

services were allowed. A nationwide curfew was exercised forcing people to stay at home. Initially, screening was done to all suspected patients across the city. As the pressure on the health care resources increased screening was restricted to the ones who showed symptoms only. This led to further spread of the disease. A Rapid Action Plan strategy was implemented at Dharavi and Worli which is said to have made a difference. Kasturba Hospital was declared as a government hospital dealing with the coronavirus disease. As the virus began to spread massively

Image 15. Medical inspection during Coronavirus pandemic (Source - Hindustan Times)

across the dense settlements, more government hospitals began treatment for the disease. Many open lawns, stadiums and exhibition halls have been converted into quarantine facility. The patients found positive are admitted and kept in these quarantine facilities till they recover. People have been requested to maintain social distancing and avoid crowded area.

The immediate effect of the lockdown before planning and taking initiating measures led to a socio economic unrest on the city yet again. The city has been the financial capital of the country and service sector oriented, due to which it almost came to a standstill. Employees were forced to work from home and all construction and labour based activities were temporarily suspended creating a wide spread panic among the masses. All public transportation facilities were temporarily suspended due to which many got stranded. The government enforced the lockdown without consideration of all classes leading to further panic. Deprived of daily wages leading to no income for food and shelter and no proper measures to transport them to their native place, forced a large number of migrant workers to begin walking towards their hometown miles away or be stranded on the streets till the government found a way. Many workers gathered around railway stations and bus stations to demand for arrangements to be made leading to breaking of social distancing norms. Due to the strict social distancing norms and lockdown norms, many consignment ships had been stranded at sea leading to supply deficit. On the other hand many consignments that were delivered are being dumped at the docks without being transported to the factories and the end user leading to a bottle neck at these docks. The Jawaharlal Nehru Port Trust located with the Mumbai Metropolitan Region handles more than half of the

Image 16. Rescue operations at sea now (Source - Indian Navy)

container cargo across all major ports in India and is suffering considerably due to the pandemic situation. Many sailors and cargo and naval vessels were stranded at sea. Gradually as the government realized the flaws, several attempts have been made to send the migrant workers back home and to bring back the citizens of India stranded at foreign locations through sea and air route. Many non-government organizations came up to help and supply essentials to the masses.

Now, that the lockdown is being gradually eased, many of the infrastructural, construction, trade, transport and other labour based works have still been on hold due to the lack of labour. The cases are still increasing at an alarming rate. While the city and its residents are in process of taking the required measures, the future is unsure. The city is currently struggling back to flatten the Coronavirus curve. Till date, the city accounts to almost half of the cases that the state of Maharashtra has. It is said to be the worst hit city in the country. By the end of June 2020, the Brinhanmumbai Municipal Corporation has recorded more than 72000 people in the city affected by the disease with a mortality of over 4000.

Conclusion. Both these circumstances brought with itself huge damage to the city and its residents. There were three elements involved and affected during the Bubonic plague as well as the current Coronavirus disease that was – Demography, Governance and Trade. As the disease spread, people died and some moved out of the city, there was a decline in population. The governance played a key role in both cases since they initiated a number of measures and norms for the citizens leading to a lot of socioeconomic unrest. Vulnerability of global economy during the spread of an infectious disease is the third element. With a lot of large and small scale businesses being hampered due to restricted movement and lack of labour, the trade has been subsequently suffered affecting the city's economy. While history tells a lot about the spirit of Mumbaikars who dealt with the pandemic, it would be interesting to see how the population of the city overcomes the current coronavirus situation. We might have reopened to begin the economy or to begin our way yet again but will the city ever be back to normal? What will be the new normal? Only time can tell.

References

1. Anirban Chanda, S. B. (2020, Apr 9). *The 1896 Bombay Plague: Lessons In What Not To Do*. Retrieved from Outlook: https://www.outlookindia.com/website/story/opinion-colonial-experiences-from-the-bombay-plague-of-1896-no-lessons-learned/350389

2. Bombay, G. o. (1909). *Gazatteer of Bombay and the Islands- I.* Mumbai: Government of Bombay .

3. Bombay, G. o. (1909). *Gazatteer of Bombay and the Islands- II.* Mumbai: Government of Bombay

4. Bombay, G. o. (1909). *Gazatteer of Bombay and the Islands- III.* Mumbai: Government of Bombay

5. Chitnis, P. (2020, May 07). *Here's The Economic Impact Of Mumbai Lockdown*. Retrieved from NDTV: https://www.ndtv.com/business/heres-the-economic-impact-of-mumbai-lockdown-amid-covid-19-coronavirus-2224633

6. Debroy, B. J. (2020, May 26). *76 days after its first Covid case, toll in Mumbai goes over*. Retrieved from The Times of India: https://timesofindia.indiatimes.com/city/mumbai/76-days-after-its-first-covid-case-toll-in-mumbai-goes-over-1000/articleshow/75985903.cmsFee, W. T. (1900). INDIA. Plague in the presidency of Bombay from September, 1896, to January 19, 190. *Public Health Reports (1896-1970)*, 1018-1022.

7. JNPT. (n.d.). *About us*. Retrieved from Jawaharlal Nehru Port Trust: http://www.jnport.gov.in/jnpt_info

8. Kidambi, P. (August 2004). An infection of locality': plague, pythogenesis and the poor in Bombay, c. 1896-1905 Vol. 31, No. 2. *Urban History*, 249-267.

9. Manoj, P. (2020, Apr 10). *JNPT draws up plans to avert logjam as Covid-19 throws trade out of gear*. Retrieved from Businessline: https://www.thehindubusinessline.com/economy/logistics/jnpt-draws-up-plans-to-avert-logjam-as-covid-19-throws-trade-out-of-gear/article31309873.ece

10. Parpiani, M. (2012). Urban Planning in Bombay (1898-1928): Ambivalences, Inconsistencies and Struggles of the Colonial State. *Economic and Political Weekly*, 64-70.

11. Ricci P. H. Yue, H. F. (2017). Trade routes and plague transmission in pre-industrial Europe. *US National Library of Medicine - National Institutes of Health - Scientific research*.

12. The Plague In Bombay. (1897). *The British Medical Journal, Vol. 2, No. 1929*, 1818-1819.

Over a century later, India is facing yet another world health crisis with the COVID-19 pandemic. In the ongoing situation, it is of paramount importance to follow all the social distancing norms and stay safe.

MHS 2.0: A DIGITAL TRANSFORMATION

Work from Home: Turning Crisis into Opportunity!

Mr Matthew John (Assistant Direction (Ops & IT)
Ms Ashwini Nawathe (Archives and Collection Associate)

"Going digital is no longer an option, It's a default" – Natarajan Chandrasekaran, CEO & MD Tata Consultancy Services.

This pandemic situation, the compulsory social distancing measures and the lockdown that followed have brought daily life to a halt all around the globe. We at Maritime History Society (MHS), like other Academic Institutes and Museums, had to rethink our normal way of working. Managing to work from home and setting up a feasible way of managing all the projects on hand was a challenging task. As a research institute that relies heavily on personal interactions between the researchers and the mentors, and the accessibility to the reference books, we were concerned about making the shift. We had to have a working plan and effective online platforms and programs in place before we closed down. The inevitability of managing all of the work digitally from our homes and having to manage and organize our events online hit us just as severely as the pandemic crisis.

Digital transformation is a necessity for organizations these days and for Team MHS establishing our "new normal" was a mammoth task. Starting from a limited digital and social media presence to launching a YouTube Channel, a Website, and conducting events online, MHS has excelled in creating its digital footprints.

Adopting and adapting to these new-age changes and technologies is important for Academy Institutes and Museums to connect with our audience and stay up-to-date. Our office doors may have closed for now, but our research work and other projects on the anvil are progressing ahead.

One always believed that working from Office was the only way to enforce productivity. Requests for occasional work from home were not usually entertained unless it was an extreme situation. While certain organizations already had infrastructure to support teams working from diverse locations, management was not very supportive of teams working from home to support business as it believed that without adequate monitoring productivity will be affected.

Naturally our team also faced some challenges in this transition phase, but our well-planned and well-executed in-house online training programs have

helped the team. As a remote workforce, our team has settled seamlessly and efficiently into this new routine. The course of this transition phase was largely possible due to the quick response and efforts from the Society's leadership and operations teams. The team realized the importance of weaving these digital transformations into the very fabric of the Society to stay relevant and have maximum impact.

But before we talk about our online transition, let's familiarize ourselves with the concept of digital transformation. One way of transforming digitally is to implement new age technologies to build sustainable relationships with our audience and increase our overall reach. It means rethinking our project objectives, by inculcating new technologies in our work culture to provide a better outcome and performance. Another way of digital transformation is to increase the digital and social media presence. These days' having a digital visibility is very crucial for any organization. It would not be an exaggeration to say: *if you are not online, you don't exist*. However easy it may seem, but for an organization to go digital, a lot of careful planning and strategizing is absolutely crucial. Furthermore, the process of digital transformation needs the organization to reinterpret their mission, goals, and vision in the new digital realm. It's about finding new possibilities and discovering new innovation and technologies for our benefits. It also means pushing the boundaries of the organizational reach. This process is very complex and requires a full transformation at multiple levels of the organization and its ways of connecting with its audience.

The sudden decision to lockdown the nation left everybody unprepared. Organizations that were not digital friendly got affected the most. As an organization, our focus was to keep the team connected through various digital platforms. Even though as a team we miss our hallway conversations and personal interactions, our digital journey was an interesting one and we would like to share our process and progress with our audience through this article.

MHS was fortunate enough to plan and execute its digital journey, in a miraculous way, just days before the lockdown. The long-standing dream to increase our digital presence began with acquiring G-suite services and registering for a website domain. Immediately after the lockdown was announced, the core MHS leadership team worked to educate its members on the various G-suite components so that each team member was able to use the tools to continue the operational needs of the organization. We redefined the approach to work and our routine activities so as to maintain

operational continuity. We reached out to individuals to ensure that everyone had a device to remain connected one way or the other and had a valid means to be available online.

Work from Home (WFH) is the new standard for many businesses. Organizations that do not evolve quickly were faced with the inevitability of losing out on their existing customer base and individuals who do not evolve their skill sets faced the fear of making themselves unemployable.

While the managerial role was an important one during the pre-covid days, monitoring and supervising individuals in a WFH setup looks redundant. Those in supervisory capacity will be expected to additionally contribute to the team with individual contributions as well. Relearning technical skills that one has migrated from, while moving into a pure supervisory capacity, will become vital for his own professional journey as organizations are looking to cut down roles in the current environment. Organizations are now also realizing that working in isolation (WFH) for long durations can impact the mental health of employees and that the organisations need to have a working support system in place to help the employees stay healthy and feel connected.

MHS aspired to build a fluid team that can work in a cross-functional way. Keeping in mind the need to connect, we launched a “dipole buddy system” wherein members were assigned a “buddy” and were expected to stay in touch with each other and to meet at regular intervals to socialize (digitally of course), to unwind and remain focussed at the task ahead. The team communicated with each other on a daily basis using the available tools. This greatly helped us to prepare for the launch of the MHS website and to conduct the Founder’s Day Event - all within the first two months of the lockdown. Individuals were egged on to pick up new skills and experiment with things that we would not have attempted without a lockdown.

With WFH becoming a norm, it will become imperative that individuals and organizations prepare for a new future. Certain roles which involve repairs and maintenance, transportation, physical storage and maintenance of assets or physical security will require their presence at their workplace and will not get too many options to WFH. While their roles will become critical, they will need to travel regularly to physical offices to retain their roles. Other roles like those involved in writing, designing, coordinating with teams/vendors, creative fields, finance management or

consulting roles might find more opportunities of WFH but they will need to evolve their skills regularly as organizations will find alternate skill sets easily in the market. The challenges for both roles are different and there is a need to evolve quickly.

An organization will need to consider the following to remain relevant to their vision and customer needs:

1. Develop a mix of online and offline connect. with limited scope to congregate together in the near future. An organization will need to develop a plan to create a mix of online and offline connect for all interactions within the organization and with its customers. MHS intends to keep a rotational roster to maintain its priceless assets at the museum while continuing its meetings in a digital manner into the near future. MHS has been active on social media, engaging with its audience and intends to conduct its flagship annual events in a similar approach.

2. Increased Communication. to ensure that there is no breakdown in communication especially with individuals in a WFH setup. Communication skills over the phone and in person is quite different and learning to empathize with individuals while trying to balance work and family will now become a key leadership skill in retraining and upskilling their talent. MHS started its own small team groups that share and connect with each other with discussions varying from work or soft skill areas.

3. Roles. Evolved and Upskilled. The need of the hour is to become multi-skilled and contribute in more than one area. Managers will need to contribute equally along with other team members while managing their teams. MHS teams have long transitioned into a multi-functional role. The small team size necessitated the need for individuals to contribute to more than one function within the organization.

4. Tech Literate. With the role of technology increasing even in a post-COVID world, one cannot depend on an offline only approach. Being able to quickly adapt and learn new technologies, in a cost-conscious recession world, is very important. The journey of MHS with the G-Suite has enabled us to collaborate effectively while launching a YouTube channel for conducting its Founder's Day Event. The launch of our website has enabled the team to acquire its initial technological skill sets. But the journey of digital learning at MHS has just begun. There's more to explore.

5. Short Term Action with Evolving Long-Term Vision. With the current state of affairs, it is difficult to predict the future even a week ahead of time. While the organization's vision remains its guiding force, the approach to implement things will need to be dynamic. Leaders will need to be flexible in their approach and past precedence should not become the benchmark in an ever-changing world. MHS aspires to create a multifold strategy to its existing flagship events, considering the current fluid environment due to the pandemic.

Having a great start to the journey of digital transformations at MHS, we would like to share a basic guide to help set up a WFH environment for other similar academic institutes. One can consider the following infrastructure guidelines:

1. Setup

(a) Laptops/Desktops - One can consider any branded/ unbranded systems. These could be new windows-based systems of basic configuration meant to browse the internet.

(b) Infrastructure - Tables/Chairs - Ergonomic models of Chairs are essential especially when sitting for long periods of time. Adequate table space for making notes will be required. This however, is subjective and should be managed by each individual as per availability of space.

2. Phones and Internet. A good phone with an internet router. Connections from any local vendor will suffice with a good router and/or an extender to provide a network in more than one area of the house. One needs to test for network speeds, strength of signals and service levels when deciding on the local vendor. A basic headphone will help if you do not want to disturb others during your meetings.

3. Softwares for WFH

(a). Communication - Email Services - G Suite products which include Gmail for formal written communications, Google Chat for quick informal communication and Google Meet for Video Conferencing provides the basic tools for the team interaction.

(b). Storage Services - Since individuals working from home will need access to their files, Google Drive can provide the cloud storage services.

(c). Security Tools - Enabling the built-in windows antivirus or a paid Antivirus like Bitdefender can provide the basic security. Bigger firms can consider additional features like the VPN for an added layer of security.

(d). Collaboration Tools - One can use existing tools like Microsoft Excel or Google Sheets to track their projects/tasks on a shared folder for everyone to update. Google Calendar offers excellent meeting management capabilities when working remotely.

4. Social Media. These tools are extremely vital to engage with clients and customers. There is a plethora of tools available viz Youtube, Instagram, Facebook, Twitter etc. One can manage these accounts easily from anywhere in the world.

5. Research Requirements Access to research content can be done by enlisting to a digital/online library.

6. Backup systems. these are hardware alternatives to support the existing infrastructure in case the primary systems fail. One can use old/second-hand laptops with linux/android systems instead of purchasing new laptops as well. A tablet or a laptop is helpful to continue work during a power cut. A portable Wifi or a mobile hotspot can help remain online during blackouts. One can alternatively invest in an uninterrupted power supply (UPS) to a desktop system.

Going digital is a huge step for some organizations, but it is a need of this age. It has been one great initiative that makes extensive use of modern technology to meet our ends. Digital transformation is often said to be environmentally friendly too. Simply by taking a digital initiative of saving your files onto a computer or online instead of on paper or in a register goes a long way in protecting the Earth. Work from Home option aids in saving the paper as well as a day's worth of electricity consumption in an office space, hence releasing some pressure off of the environment.

As a part of our 2028 Mission, we have planned to digitize our library and collections. Digital archiving of publications, research, manuscripts and documents blanketing in-print articles and images is viewed as a stepping stone to the preservation of the "artefact" and also the culture and heritage that it depicts. Going further ahead, digitization is also a great way to make available our resources to the public at large. Digitization of, and easy accessibility to, the documents, manuscripts and artefacts that represent the rich maritime culture and heritage of India would help recalibrate the way we look at the maritime history of the nation. Digitization of such artefacts has also seen a significant increase in catching attention of the youth. It also improves accessibility and facilitates better information exchange. A proper digitalization plan can help reinvent processes, improve quality and promote consistency in an organization's work process. MHS has proudly started its digital revolution and has great plans for its journey ahead. We plan to evolve as a Digital Research Resource Center. Online businesses are all about communications, presentations and more importantly about preserving an organization's value system and building lifelong loyalty with their well-wishers. While as an organization we gear up to adapt and adopt our goals and vision, we look forward to your loyal support in this new digital realm as well.

INS JALASHWA AND OP SAMUDRA SETU

Janhavi Lokegaonkar (Research Associate, Maritime History Society)

Image 17 . Source: https://www.indiannavy.nic.in/sites/default/files/MISC/PIC%20%282%29.jpg

Op *Samudra Setu* & INS *Jalashwa*

The Indian Navy had launched its Operation "*Samudra Setu*" – meaning "Sea Bridge" on 05 May 2020 as a part of national effort to repatriate stranded Indian citizens from overseas. Indian Naval Ships INS *Jalashwa* and INS Magar were deployed to sail off for the port of Male, Republic of Maldives where the evacuation operations commenced from 08 May 2020, in structured phases.

The Indian Navy made appropriate preparations to undertake the task. This operation was conceived and progressed in close coordination with the Ministry of Defence, Home Affairs, Foreign Affairs, Health and various other agencies under the Government of India and State governments. Apart from the military and peace keeping role, the Indian Navy has carried out benign and constabulary role overseas on earlier occasions, as part of Op-*Sukoon* (2006) and Op-*Rahat* (2015).

Assessing the severity of the existing conditions, detailed lists of Indian nationals to be evacuated by Naval ships were prepared along with facilities that enabled their embarkation after the requisite medical screening catering for COVID-related social distancing norms. The ships had been suitably provisioned for the evacuation operation. The evacuated individuals were provided with the basic amenities and medical facilities during the sea-passage. In view of the unique challenges associated with COVID-19 stringent protocols had to be stipulated and its

implementation was pertinent. The evacuees disembarked at Kochi, Kerala and entrusted under the surveillance and care of Kerala State authorities.

INS *Jalashwa* assumed its duty of the evacuation of Indian citizens stranded at the Maldives during the ongoing pandemic, to bring back the Indian national's home from foreign shores. All necessary measures were undertaken and it was supervised that the ship had been provided relief and COVID protection material as well as medical and administrative support staff. As a precautionary measure, for the transit back to India the ship will be zoned to prevent intermingling of the crew with the evacuees. It is planned to evacuate about 750 persons.

Image 18. Source: Official Website of Indian Navy:https://www.indiannavy.nic.in/content/op-samudra-setu-phase-2-ins-Jalashwa-brings-home-588-indians-maldives

With the embarkation of 698 stranded Indian citizens in Port of Male, Maldives on board INS *Jalashwa* rightfully commenced Indian Navy's Operation *Samudra Setu* on 08 May 2020. In accordance to the social distancing norms, baggage disinfection stations, robust medical screening desks were set up at the jetty to ensure safe embarkation of the people and personnel. Being the first responder in such a time of crisis, highlights Indian Navy's unwavering commitment to safeguarding her diaspora anywhere in the world. The Indian Naval ships being deployed to support the ongoing national effort to repatriate Indian nationals across the seas amidst the global pandemic of COVID-19 and INS *Jalashwa* has demonstrated these high ideals of the Indian Navy's commitment to the national effort.

INS *Jalashwa*.

An amphibious assault ship-INS *Jalashwa*- can embark, transport and land various elements of an amphibious force to support operations on-shore. *Jalashwa* is the Sanskrit name for a Hippopotamus which can also be seen on the ships crest and its motto is The Fearless Pioneers. Being one of the largest ships in the Indian Naval inventory, she is capable of undertaking amphibious operations, maritime surveillance, special operations, search & rescue, medical support and as well as humanitarian relief.

Originally commissioned in the United States Navy as USS Trenton, she was one of the twelve vessels in the Austin Class amphibious warfare series. She was commissioned on 06 March 1971 and retired after nearly 36 years of service with the US Navy. She was commissioned into the Indian Navy on 22 June 2007 and renamed as INS *Jalashwa*. Besides being the first Landing Platform Dock (LPD) to be acquired by the Indian Navy, she has a distinction of being the first ship to be transferred from the US Navy.

Since her commissioning in the Indian Naval Fleet in 2007, INS *Jalashwa* has proved to be an extremely valuable acquisition. Her integration with the fleet has expanded the architecture-arm of the Navy and has been resourceful for providing valuable experience in operating, deploying, and maintaining an LPD. Her participation in special operations and joint-exercises requiring amphibious capabilities, HADR and strategic sealift missions has expanded the window of exposure to the Indian fleet and strategists

It was during the Tsunami in December in 2004 that a wide chasm in the Indian Naval Fleet was highlighted in order to provide Humanitarian Assistance/Disaster Relief (HADR) to the affected regions in times of urgent need. The capabilities of an LPD from other Naval Fleets internationally were observed to be extremely effective which led the Indian Navy to shortlist and commission USS Trenton as INS *Jalashwa* which is definitely proving to be a true force multipliers as it can efficiently engage in any kind of an operation ranging from HADR to out-of-area contingencies to evacuation operations as we have seen in the current times.

The LPD class plays a pivotal role in maintaining national security and strengthening the fleet. They are designed and engineered to operate in littoral waters alone or as part of a group operating forward in hostile theatre of conflict anywhere in the world. It supports the entire spectrum of crisis response from major combat ops to HADR missions. In terms of its sheer capacity, INS *Jalashwa*'s cargo space enhances its equipment carrying capability. Unlike other warships, this vessel has a flight deck for helicopter operations from which four medium helicopters can operate simultaneously. It has a capacity to generate 3MW of electrical power and about 60,000 gallons (212 tons) of fresh water a day along with extensive medical facilities including fully equipped operation theatres to ensure the health care of the embarked personnel which makes it the best-suited vessel to undertake the HADR missions.

LPDs: A Way Forward

In a conversation with Cmde Srikant Kesnur, Director MWC (Mbi) and former CO INS Jalashwa, as also former Director Navy's Amphibious Warfare Centre (AWC), he highlights the fact that this solitary LPD has brought a paradigm shift in the Indian Naval Fleet and broadened its range of conducting operations. INS Jalashwa's commissioning in the Indian Navy put us in an exclusive club as very few countries can boast of having LPDs. They are designed to scale up our capabilities in expeditionary operations out-of- area amphibious warfare and low intensity conflict contingencies, island protection and disaster response capabilities. They can transport the Army personnel or Marines or other Special forces engaged in frontline warfare. Their vast decks and interior spaces can accommodate nearly 1000 personnel along with all the equipment they need to go ashore. They also carry a crew of nearly 500 sailors. LPD was conceived

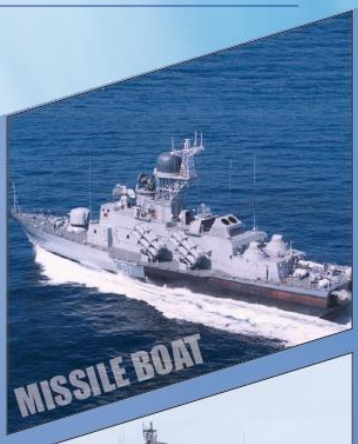
to form part of or support the air-ground task forces in a wide array of circumstances ranging from peacekeeping to wars. Such a vessel is an asset as it also provides opportunity and a platform for training the Army for amphibious operations and keep them prepared and equipped with 'sea-legs' for combat under all conditions. Due to its multi-mission role, its design is flexible and has agility. LPD has proven to be a valuable asset in the current global landscape as it can be quickly plugged into almost any contingency that arises and is undoubtedly the Navy's most versatile surface vessel.

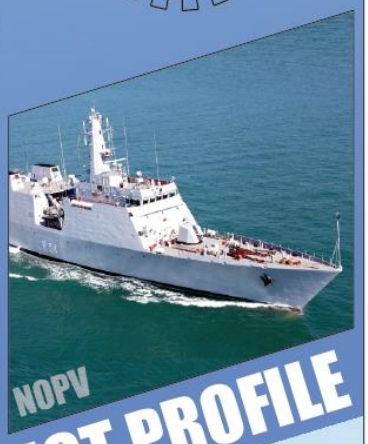
LPDs certainly are the next big thing after the AirCraft Carriers. Due to their reach, sustenance, versatility and flexibility they are the 'work-horses' that elevate the country's standing in terms of maritime infrastructure, scale and range of capabilities. Efforts on the side of the Indian Government and the Indian Navy continue tinclude more LPDs in our inventory, for, we have a Fleet that operates in Blue Waters and is a net provider of security and first-responder in times of calamities.

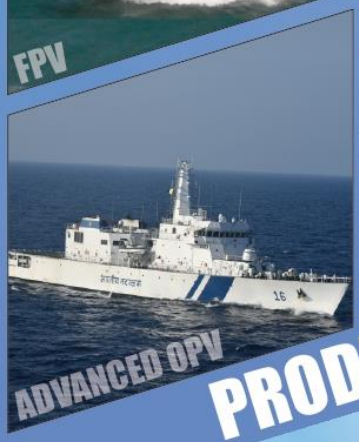
References:

1. Richard A. Bitzinger, 'Comparing US and Indian Naval Modernisation' accessed and retrieved through https://www.academia.edu/11905976/Comparing_US_and_Indian_Naval_Modernization
2. Online Article: "INS Jalashwa" sourced from: http://www.bharat-rakshak.com/
3. Online Article: https://www.navy.mil/navydata/fact_display.asp?cid=4200&tid=600&ct=4
4. Online Article: "The US Navy most versatile vessel isn't a destroyed or a submarine" sourced from: https://www.forbes.com/

GOA SHIPYARD LTD







PRODUCT PROFILE

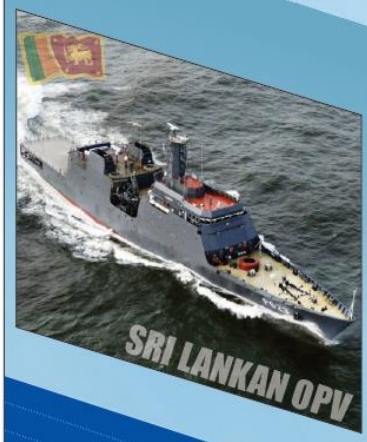
HIGHLIGHTS

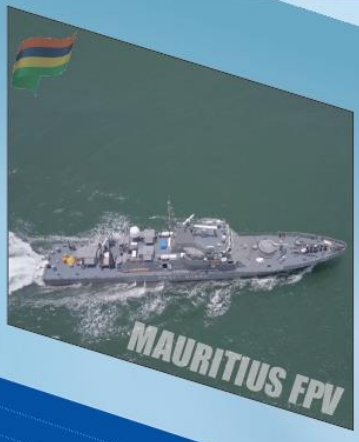
- Largest exporter of Defence Ships from Indian Sub-Continent with 607 Cr VoP from exports in FY 17-18
- 02 Advanced OPVs delivered to Sri Lanka, Largest Defence ships to be exported from India & largest in Sri Lankan fleet
- 29 deliveries in last 5 year, all 'ahead of schedule' at fixed cost
- Culminated 06 CG OPVs project in 2017 with all deliveries ahead of schedule
- Gearing up to execute 12 x Mine Counter Measure Vessels

'Excellent' MoU rating with 100% score for both FY17 & FY18

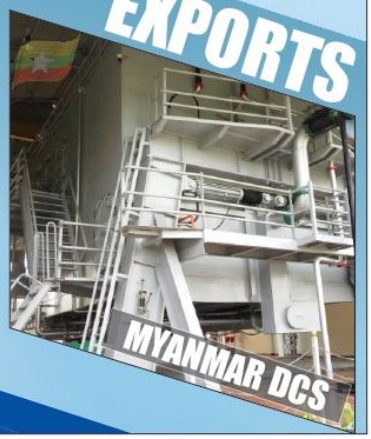
Achieved 1st time by any DPSUs in last 10 years

EXECUTING PROJECT FOR 2 ADVANCED STEALTH FRIGATES FOR THE INDIAN NAVY - A MAJOR IMPORT SUBSTITUTE PROJECT





EXPORTS



CRISIL CREDIT RATING
Long - Term "AAA"
Short - Term "A1+"

Email : fpg_office@goashipyard.com

JEWEL FROM THE PAST

Portuguese and Shipbuilding in India in the Sixteenth and Seventeenth Centuries

KS Mathew

Many of the early sixteenth century reports regarding the vessels used in the Arabian Sea belonging to Indians lay stress on the use of coir for joining together the planks of the ships. The contemporary writers noted with great surprise that unlike the Europeans, the Indians did not use iron nails in the construction of ships in India. Ludovico di Varthema of Bologna who spent some time in Calicut gives a report about the vessels built in Calicut before the Portuguese opened their shipbuilding centre there. According to his narration vessels of three hundred to four hundred butts were built in Calicut. Though the carpenters did not put any oakum between one plank and another the planks were so well joined that water was kept away in the most excellent manner. Pitch was applied outside. It may be mentioned that these ocean-going vessels were not very small. To cite an example, we have reports in Portuguese about a ship owned by two merchants of Cochin namely Mammal Marakkar and Cherina Marakkar, which was approximately of 600 tons and carried seven elephants and over three hundred men onboard. This naturally was far superior to the Portuguese ships of time and was really an anonymous ship while considering the background.

Greater care in shipbuilding began to be taken with the arrival of the Portuguese on the West Coast of India and the creation of naval installations to cater to the needs of trade and naval battles waged against their enemies. The tonnage of the ships plying Indian Ocean and crossing over to the Atlantic ports of Portugal increased phenomenally during the sixteenth and seventeenth centuries. The Portuguese writer of the sixteenth and seventeenth centuries who dealt in detail on shipbuilding insisted that the climate of the Indian Ocean and the traditions followed by the Indian shipwrights should be taken into account in building ships in India for the Portuguese. They specifically mention that since the Indian vessels were not built with iron nails it was easy for the Europeans to overpower them. Such vessels were not able to withstand the impact of the cannons from Portuguese ships. The joining of planks by coir and even by wooden nails, gave way to the impact of cannons from the Portuguese ships. It was also possible that by using wooden nails, if at all they were used the ships were rendered weaker than those made with iron nails.

The present study is intended to highlight the reasons why the shipwrights in India during the sixteenth and seventeenth centuries were induced to use iron nails instead of wooden ones and how the use of iron nails became a common practice

in shipbuilding in India. There are a number of contemporary treatises in Portuguese language dealing with shipbuilding. Some of them remain in manuscript form in the archives and libraries in Europe though a couple of them have been recently published. The contemporary Portuguese sources related to shipbuilding are consulted in the preparation of this paper.

The Portuguese naval architects of the sixteenth and seventeenth centuries make motion of wooden nails used in France, Holland, Zealand and England for building ships. These nails had the advantage of not rusting. But these architects insist on the exclusion of wooden nails for the ships plying in the Indian Ocean regions for a couple of reason. First, the wooden nails had to be used more closely than the iron nails and they should be thicker than the latter. The use of bigger and more wooden nails in a ship weakened the timber used in shipbuilding. The timber being closely bored for wooden nails naturally becomes frail. The vessel that were used in the Indian Ocean regions had to be in water of higher temperature than in European waters. The temperature of the Indian Ocean is more conducive to the growth of woodworms than that of the Atlantic. Therefore, the wooden nails could be easily attacked by these worms and the ship could be in danger in a short span of its life. Hence, wooden nails were not recommended for ships in the Indian Ocean regions.

Another important factor that prevented the Portuguese from using wooden nails in the construction of ships on India Run was the size of the timber used in vessels of higher tonnage. As trade and the movement of people between Portugal and India grew unprecedentedly, the tonnage of ships went up from 150 to 600, 800, 1000 and even 1200. The naus of the Portuguese India especially those involved in trade between India and Portugal underwent drastic change ever since the time Vasco da Gama reached India in 1468. As we have noted above the tonnage of the ships in the first voyage of Vasco da Gama was between 50 and 150 or maximum 200. The tonnage of a ship of an Indian merchant captured by Cabral in 1502 near Ponnani definitely was much higher than the Portuguese caravel under the admiral of Indian Ocean, Vasco da Gama in the first voyage, because it carried seven elephants and 300 passengers besides victuals and so on. This was a vessel owned by two merchants from Cochin and had a tonnage of approximately 600 as mentioned above. The ships that plied in the Arabian Sea with cargo meant for distant places like the Red Sea or Persian Gulf regions in the West or Malacca in the East were of great size. In other words, the cargo ships for long distance trade were always huge to justify the expenses involved in distance to be covered and the risk to be faced

The Portuguese, as soon as their trade and transportation of personnel began to pick up, understood the need of having vessels of great tonnage. Therefore, they launched the construction of large ships (naus) of different types of tonnage. The mounting of heavy artillery for combating the enemies in the Indian

Ocean regions also compelled them to have large vessels. They realized the significance of the resistance put up by the Zamorin of Calicut and Malik Ayaz of Diu in collaboration with the Arabs supported by the Venetians in 1508 and 1509 at Chaul and Diu respectively. Hence after the discovery of the direct sea-route via Cape of Good Hope and the establishment of commercial relations under the Portuguese King Manuel, the tonnage of the ship in the India Run went higher The average tonnage of these ships under Dom Manuel and Jaeo III was between 500 and 1000. The contemporary naval architect, Fernando Olivera states that there were several vessels of 800 and 1000 tons which made always the best and safest voyage. But it seems that the tonnage of the ships of Carreira da India went higher and there were ships with seven decks. On account of the great abuse and shipwrecks caused probably through overloading in violation of all the existing instruction, King Sebastian was constrained to reduce the tonnage to 450. But alter his death the tonnage of the ships in the Portuguese India rose up and this situation prevailed 1621. In 1622, a board was set up to go into the details of the tonnage and opinions were collected from concerned person. Even in 1570's as reported by Fernando Oliveria, there were a few miserly people who argued, probably on account of large investment needed for bigger vessels, for ship of lower tonnage. He very scientifically and convincingly argues for ships of higher tonnage for long distance voyage of Portuguese India.

The proposal to have vessels of higher tonnage for the Portuguese India was defended very logically in the second half of the sixteenth century. Transportation of large volume of cargo required vessels of great tonnage. Vessels of bigger size were not easily liable to sink while the narrow ships were quicker to submersion. This was demonstrated by an example. If a plank is thrown flat upon the water, it will remain afloat. If on the contrary, the same plank is thrown on water on its edge it will immediately go down in the water until it remains in the same position, even though the weight of the plank is the same. The different reactions seen here are on account of the resistance of the water that it holds beneath itself. When the ship is wide it has a lot of water under and the resistance of the water will keep the vessel floating. The narrow ships will not have as much water under it for resisting its submersion as the wide ship. The same point can be clarified from another angle. This is in the context of equipoise or matching the weight, which is not clearly distinct from the earlier point. The water beneath the wide plank or ship weighs more than the plank or ship. Heavier object will keep the less heavy object above in case of liquid substance. So, the water under big ships will sustain the ships floating and help them from sinking. Air being lighter than water, the wide-bodied ships containing large volume of air will be kept floating on the water. The water draws such beamy ships upwards and resists them from sinking. The beamier the ships are, the more air they contain. Therefore, wide bodied ships in proper proportion are

safer than the narrow bodied ships of the same proportion. The long voyages undertaken by the ships of the Portuguese India required large volume of victuals. If the ships were small they would be filled with mariners and victual leaving no space for merchandise. Fernando Oliveira argued out his case for large vessels against the proponents of small ships for the India run. He states that if the tonnage of the ships was less safe than the larger one or two reasons: First, more men and armaments could be accommodated in big vessels and they could be used against robbers both on sea and in the ports they visited. Whereas small ships could not accommodate a large number of artillery and men and so were less powerful to fight against robbers. Secondly, the very sight of larger vessels could terrorise the enemy who would not dare attack them. Countering the argument of those who would say that when larger vessels would be lost the loss would be greater, he says that only very rare case of the loss of large ships was found whereas the contrary is galore. So, he very strongly upheld the idea that the tonnage of the ships should be enhanced and advised the Portuguese to follow the tradition prevalent during the period of D. Manual and D. Jado III. He confirms his idea of building ships with higher tonnage by citing the practices in the antiquity. The grain ships of Ptolemy Philopator was able to carry 400 sailors and 3000 fighting man Similarly, Hiero, the King of Sicily had larger ships of more than 1000 tons. Hence even by citing cases from the long past he buttresses his argument that Portuguese India should build vessels of greater tonnage for long distance voyages. The opinion given by Fernando Oliveira seems to have influenced the shipbuilders for Portuguese India very greatly. It was suggested by the Portuguese Admiral, Joao Corte Real who was in the service of the Portuguese king tor sixteen years that the ships should have four decks not three, so that more cargo and personnel could be transported. This could help naval battles to face other ships. This opinion was submitted to the King according to the ideas of the officials of the Shipyard and the Admiral Corte Real. The discussion given by Admiral Corte Real giving his opinion regarding the size of the ships to be built for Portuguese India was submitted to the King on 1 January 1622. (The document entitled "*Discurso que fex sobre as naus da carreira da India*" is in the Maco 347 of the collection called *Conselho Ultramarino de Biblioteca Nacional de Lisboa*). But another trend began to strike root againut such massive structure of ships which prompted the King to refer the matter to a committee of experts. A letter issued on 22 January 1622 resolved that there should be only three decks for the ships involved in trade in the Portuguese India.

Even after giving the order on 22nd of January 1622 the King conducted further inquiries and sought opinions of several individuals and committees regarding the size of the naus. The long discussion is contained in more than forty-two printed pages which shows the importance given by the king to the matter.

The increase in the tonnage of ships necessitated the use of planks thicker than the one used in early days of discovery. The wooden nails, if at all they were used, had to be thicker and longer in proportion to the pieces of timber used for construction. This would entail boring of a lot of area closely in the timber used in shipbuilding which in it turn weakens the structure of the ship. Therefore, wooden nails could not be used in such vessels if they were to be durable and strong. The other alternative was to use nails made of copper or iron. Oxidation could not consume copper nails as quickly as iron nails nor can moisture corrupt copper nails as it can do with iron nails. Hiero Syracuse is said to have built a ship by using copper nails. This was very lasting and famous. But copper nails were quite expensive though durability of such vessel would compensate for the high investment. Therefore, the best solution suggested by the architects for the construction of ships in Portuguese India was to use iron nails.

The iron nails should be well tempered, strong and well made. The best variety of iron nails was imported into Portugal from Biscay in Spain and from there to India. The people in Biscay knew how to make well-tempered iron nails, which would not break in driving and riveting. The iron nails made in Lisbon were not as good as the ones available in Biscay. Moreover, the nails made in Biscay were much cheaper than those of Lisbon. Thus the iron nails that were generally used in the Indo-Portuguese shipbuilding centre like Cochin were those brought from Biscay via Lisbon. The master-carpenter in Cochin shipyard used to write directly to the King of Portugal to see that iron nails and iron in sheets were sent from Portugal to Cochin as they were cheaper and of better quality. Discussing the reasons why iron nails were brought from Portugal to India for shipbuilding, a sixteenth century document gives two reasons: The quality of iron available in India was much inferior to the one brought from Europe. Chaul, Bassein and the kingdom of Vijayanagar used to provide iron. Iron from Bassein and Chaul was the best available in India. Even that was much below the in quality compared to iron imported from Portugal. Besides, the iron from India while being worked had a lot of loss. The people working on iron in India were also not as expert and hardworking as those of Europe and so the iron nails were imported from Portugal for shipbuilding.

Apart from the quality of iron nails, the price also counted much. The price of worked iron after all its loss was lower than that of India. A quintal of nails used to cost three crusodes in Portugal while that of India cost 8-10 pardaos. Iron as such cost 600 reales per quintal in Portugal and it was available in plenty. It was supplied to Lisbon by the contractors of Belgium. Even if one quintal of iron was available for 450 reales in India after the waste while being worked, it would cost the same as in Portugal. But the quality was still inferior. So the iron materials for shipbuilding in Portuguese India were recommended to be imported from Portugal. In order that the nails driven in the timber might permanently avoid

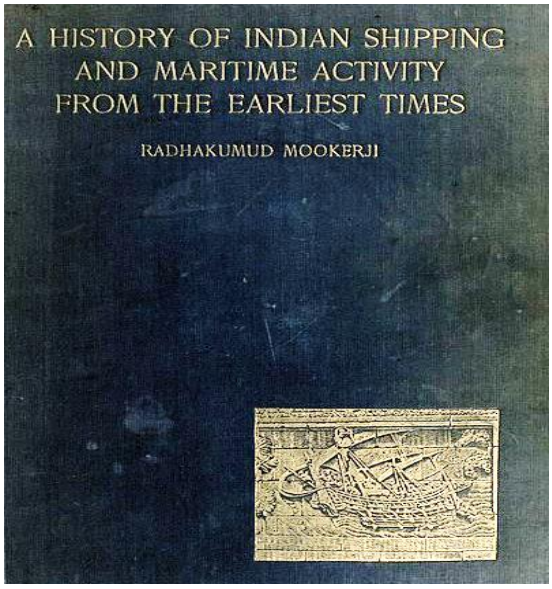
entry of water, these are to be caulked. A number of items were used for caulking.

Thus, it may be concluded that the use of iron nails in shipbuilding in India became more and more common since the beginning of the sixteenth century. It was chiefly because of the change in navigation. Naval battles were very rarely fought in the Indian Ocean regions till the dawn of the sixteenth century. Mostly bows and arrows were used by the Indian mariners in the event of any confrontation as the Portuguese reported in the first quarter of the sixteenth century. But the Portuguese and other European powers vying with each other for a foothold in the Indian Ocean regions introduced ships armed with cannons to fight against the enemies in this area. Moreover, the tonnage of the ships went on increasing in tune with the increase in the volume of cargo and the movement of mariners and ordinary people. Hence, larger ships were manufactured for the India Run, Thicker plank were employed in the manufacture of huge vessels. Wooden nails both on account of the fact that more boring would weaken the vessels and also that they were in danger of woodworms due to the temperature of the water, were discarded. Iron nails in large volume were imported at cheap rate from Spain. This practice started by the Portuguese in India was accepted by the Indian shipwrights in the sixteenth and seventeenth centuries and was transmitted to their successors and continued to be in vogue till the steam ships were introduced and timber began to be replaced by metal in the wake of industrial revolution.

BOOK REVIEW

Indian Shipping: A History of the Sea – Borne Trade and Maritime Activity of the Indians from the Earliest times by Radhakumud Mookerji

Saba Purkar (Academic Assistant, Maritime History Society)



The landmass of India is surrounded by the sea which gives it a unique strategic location in the Indian Ocean. Yet we are oblivious to the rich maritime culture and heritage that used to be the very heart of India. India was wealthy because of the pre-existing maritime feats of our ancestors that we are unaware of today. The gaining impetus of several Maritime activities in the past, is the reason for the existence of the rich maritime heritage and culture of India. Radhakumud Mookerji's book on Indian Shipping is a paramount work of compilation of several facts of shipping, shipbuilding, and some Navigation techniques ranging from the earliest times to the Mughal Era. There was a desperate need for the compilation of India's Maritime Trade and activity which is successfully executed by the author. Several records of Maritime activity are extracted by sources ranging from the interpretation of inscriptions to the foreign works as well as local accounts. This book gives us a connected and comprehensive history derived from the past references which were a part of our Maritime India.

Taking in account the facts related to Navigation, Shipping and Ship building, the author covers the wide spectrum of compilation from times as early as the Indus Valley to the Mughal Era. The significance of several pre-existing harbors is drawn vividly in the book. India's unique topography and its connection with the sea is what makes it the heart of the old world. Sea being the medium of connector of intercourse between a multitude of cultures shines through, making India the hub of diversity and rich culture, as we know of it today. This divergent intercourse led to lots of cultural and commercial exchange with the foreign countries. The book categorizes several timelines of Maritime history which are divided as Pre Mauryan, Mauryan, Kushan Period of North and Andhra period of south, Hindu Period, Pre-Mughal Period and the Mughal Period.

The pre-Mauryan Epoch spans from 321 BC where oldest records such as Rig Veda, the Bible, and some Old Tamil and Pali records are referred to.

According to the *Vriksha-Ayurveda,* the classification of the quality of the wood as Brahmana, Kshtriya, Vaishya, and Sudra depicts the deeply rooted caste system of India.

Special references to the types of ships and their sizes according to their purpose are divided into Ordinary (river vessels) and Special (sea going vessels) categories. Several native and foreign evidences are derived from the Indian sculptures and paintings and also from coins. The most famous being the depiction of a boat reflects a lot in Indian art. Several temple and cave complexes like Ajanta also depict sea faring voyages. Coins of the Andhra period with boat motifs on them is the evidence of the existing maritime activity of the period. The one of the many accounts of ships is given by Nicolo Conti in the earlier part of the 15th century is as follows:

"*The natives of India build some ships larger than ours, capable of containing 2000 butts, with five sails and as many masts. The lower part is constructed with triple planks, in order to withstand the force of the tempests to which they are much exposed. But some ships are so built in compartments that should one part be shattered the other portion remaining entire many accomplish the voyage."*

With the evidence of international trading and ship building comes a major fact of the evidence of existing information of navigation of the seas which are found in Rig Veda. Several famous references are related to Ramayana and Mahabharata. The Puranas also furnish several evidence to merchants engaged in overseas trading is several stories of merchants going on sea voyages in quest of pearls. Several navigation techniques also come to light, including astronomical navigation, knowledge of winds and currents, and taking birds on the voyage to find land nearby in the event of a storm. More of such ingenious accounts of the immense literature have been mentioned in the book.

Many of the Brahmanical and Buddhist texts also have references to maritime activity that are testimony to the existence and development of national trade and shipbuilding. Evidence of trade exists in literary texts, inscriptions, and coins which are both Indian and foreign. There is ample evidence in foreign works of the Indian commerce, arts, & manufacturers, which reflects the glorious position that India occupied for a really long period. The author mentions that given all the evidence, India was indeed at the heart of the commercial world for over thirty centuries with trade relations extending to Jews, Assyrians, Greeks, Egyptians, and Romans in the ancient times and Turks, Venetians, Portuguese, Dutch and English in the modern times. Several goods were traded to Europe primarily wool with precious stones like onyx, chalcedony, lapis-lazuli, jasper and other commodities which were highly prized in Babylon and Rome. The most valuable exchange however was silk which under the Persian empire was exchanged in gold. Hence, through ages India occupied a unique position in the commercial world as the main supplier of several luxuries. The *Baveru-Jataka* mentions the first peacock traveling by sea to Babylon.

The Jatataks also mention the ports of *Surparaka* (Sopara) and *Bharukaccha* (Bharuch). Several mentions of traders carrying spices, balm, and myrrh, on the way to Egypt. The author also speaks of similarities that mirrors in the dialects of the interconnected countries. For example: the word for peacock in Hebrew is *tuki* and purely Tamil-Malyalam name of the peacock is *tokei*.

In the Mauryan period shipbuilding was a flourishing industry. Ptolemy mentions vessels that could carry up to 8000 troops, some thousand horses and supplies in massive quantities. The *Arthashastra* by Kautilya gives detailed information on the then existing naval departments which are discussed in excruciating detail by the author. Several rules, regulations, taxes and ranks of officers have been explained. Seasons for ferries to travel in rivers are also mentioned like travel from only a licensed ferry was permitted from the *Ashadha* till the month of *Kartika* because of the overflowing of the rivers. Ensuring boat safety was the responsibility of a superintendent. Crossing the river outside the proper place and at an unusual time was a crime and traveling without a permit were fined. This shows that the people were not only aware of seafaring knowledge but also were aware of the seasons for intra state travels by river. A detailed review on the customs that were implied on the locals as well as the foreigner have been explained in detail as one of the responsibilities of the superintendent.

The Maritime activity during the age of Andhra's of the South and the Kushans of the North was similar to the trade in the Mauryan age where there was equal development of foreign trade in India. This is reflected in the Greek, Roman literature as well as numismatic evidence found in India. The author highlights that trade in this period was both overland and by sea with Western Asia, Greece, Rome, Egypt, as well as with China and the East. Pliny mentions a vast network of trade which is then confirmed by the *Periplus*. The roman influence on India was at its peak during the Kushan period. The numismatic evidence depicts trade. Before this Asoka the great had active trade with Egypt. The exchange of the cultures are reflected in the names of several commodities like Rice (Oryza), Ginger (Zingiber), which are similar to Tamil equivalents such as *arisi* & *inchiver.* We see the dialect reflecting even in the name Yavana which is derived from the Greek word *Iaones.*

Greek traders from Egypt brought wine, brass, lead, glass for sale in Muziris and Bakare, and who purchased from these ports pepper, betel, ivory, pearls, and fine *muslins.*

It is mentioned that the Roman trade gained impetus after Hippalus discovered the port of Muziris in Malabar which added security to the cargoes from pirates. The Roman trade mainly consisted of spices, perfumes, precious stones, pearls, silk, muslins, and cotton. In this period India was popular as the land of aromatics. Imagine a trade so thriving that ship loads of coins have been discovered archaeologically.

Vincent A Smith excellently summarizes the trade and so is

mentioned in the book: "*Tamil land had the good fortune to possess three precious commodities not procurable elsewhere, namely pepper, pearls and beryls. Pepper fetched an enormous price in the markets of Europe and the Pearl fishery of the Southern sea, which still is productive and valuable, had been worked for untold ages, and always attracted a crowd of foreign merchants. The mines of Padiyu in the Coimbatore district were almost the only source known to the ancient world from which good beryls could be obtained, and few gems were more esteemed by both Indians and Romans. The Tamil states maintained powerful navies, and were visited freely by ships from both east and west, which brought merchants of various places eager to buy pearls, pepper, beryls, and other choice commodities of India, and to pay for them with gold, silver, and art ware of Europe."* Such was the glory in the golden days of India.

Pliny in his accounts mentions India as the "sole mother of precious stones" Accounts like *The Periplus of the Erythraean Sea* and Ptolemy's *Geography* are dealt with as the most important primary accounts of maritime activity. It provides information of several ports such as *Barygaza* (Bharuch), *Suppara* (Sopara and Vasai), *Kalliena* (Kalyan), *Kanhiri* (Kanheri), *Semulla* (Chaul), *Mandagora* (Mandad), *Melizeigara* (Jayagad). Ptolemy's *Geography* as the title mentions describes geography in depth, mentioning towns and ports of Indus and Ganges. Added mentions are of *Syrastra* (Surat), *Monoglosson* (Mangrol) in *Guzerat, Ariake* (Maharashtra), *Soupara* (Sopara), *Muziris*, *Bakarei*, *Maisolia* (Maslipatam), *Kounagara* (Konarak), etc. Hence, these three sources, Pliny's *Natural History, Periplus,* and Ptolemy's *Geography,* and a treasure of knowledge of the maritime ventures of the ancient times.

Tamil works have also been a source of information regarding some of the South Indian ports in which is expressed paramount details of descriptions of the international life of these merchants. Several details of trade and information come to light and so are conveyed in excruciating detail by the author focusing on the Cholas.

Several Buddhist texts elaborate upon the trade of the East with highlighting of several navigational aspects of the Bay of Bengal and the Indian Ocean. The Cholas also spread out crossing the Bay of Bengal and the Indian Oceans to the islands of Malay Archipelago. While viewing the eastwards maritime activity, Kalinga comes to light which is known to be a very ancient city extending from the mouth of Ganges to the mouth of the river Krishna. Chilka lake here was popular as the hub of anchorage which was said to be crowded with ships from different countries. There is evidence of a steady commerce between Burma and Buddhist traders of Kalinga. The evidence of the intercourse is visible in the dialects as words in the Malayan language might be traced back to an Indian Sanskrit origin. Till today we find settlers on this intercourse living there, which were known as Klings. Indians colonized Java in the 75th year of Christian era where they built towns, cities and developed trade with India.

There are several proofs of this feat including several inscriptions which show the Magadhi element which must have reached Java from Sumatra. The Bombay Gazetteer mentions the east coast of India had a large share in colonizing both Java and Cambodia.

The maritime activity of Bengal also marks as a remarkable achievement in the history of India. Their travels are mentioned to be as far as China, Korea, and Japan spreading their Buddhist faith. The *Mahawansa* speaks of the Prince Vijaya of Bengal who, with his 700 followers achieved the conquest and colonization of Ceylon and renamed it as Sinhala. Several Japanese scripts of 11th century that have been preserved by priests are found in Bengali characters, is one of the several evidences of this intercourse, including sculptures. Bengali traditions and their maritime activity are conveyed in several Bengali folk-lore.

In the age of the Guptas and Harshavardhana's the Maritime activity of India extended to as far as China and Japan beyond the small colonies of Java and Sumatra. According to the author this intercourse must have began as early the advent of the Christian Era. The *Milinda Panha* boasts about the Kshatrapa dynasty of the Kathiavad being at the height of its supremacy. Fa-hein is one of the well-known Buddhist travelers who sailed from Ceylon to China. Several of such travels or great Buddhist scholars are also mentioned by the author.

In the latter days of the Gupta Empire during the 5th and 6th century, Indian Maritime activity also was diverted towards the West. The ports of Sindh and Gujarat emerge as the chief centers of naval activities of that time. Huein Tsang describes the people of Surastra earning their livelihood from the sea by indulging in commerce and trading of commodities.

The intercourse with Japan started from the mid of the 7th century. The proof are names of the Japanese evangelistic who visited Japan to spread Buddhism. Bodhidharma traveled from China to Japan by an Indian prince. The known visit of Bodisena to Japan is a well-established fact as he later stayed in Japan and taught Japanese priests Sanskrit. There are also mentions of cotton being introduced to Japan by two Indians. By the end of the 10th century and start of the 11th century there was an outburst of Naval activity in South India under the Chola kings. Several naval conquests were undertaken and trade relations were established. Hence, we see a vast network of trade spreading all over India and to foreign countries as far as Japan.

The Pre-Mughal period from 11th to 15th century is mostly depicted in Persian works. The source for Indian maritime activity in the 11th century would be Al-Biruni. Sugar export from Gujarat: Rubies, aromatics, pearls exported to Europe, cotton fabrics from Coromandel: Pepper and Cardamom of Malabar etc. are mentioned under trade. Marco Polo has left import details of Indian shipping where he mentions ships are built of fiber timber and are double planked. Several details regarding the size, forms, fittings, and mode of repairs are also mentioned. Several details of Pearl

fishing on the Malabar coast are observed with skilled divers extracting oysters with pearls enclosed. In the same century Ibn Batuta visited India and noted detailed accounts of India.

Marco Polo mentions the flourishing horse trade who remarks "*the greater part of the revenue of the country is employed in obtaining the horses from foreign countries".* Several more naval feats of kings like Firoz Shah and Timur have been elaborated upon in the book. Meanwhile in 1498, Vasco Da Gama found sailors from India who navigated using stars and their own navigational instruments. In this period Chaul emerged as a great timber producing district. Many ships were used to load timber and carry it to Mecca, where the Turks used it to build their fleet.

During the reign of Akbar, the Indian shipping and ship building gained impetus especially in Bengal. The main source of maritime information here is Ain-i-Akbari. Several details of the naval establishment have been extracted by the author and are written in detail. Later under the viceroyalty of Man Singh India saw outburst in Naval activity of Eastern Bengal. [1]

Thomas Bowrey left a valuable account of countries around the Bay of Bengal in which descriptions and representations of ships and boats are given. Accounts of several shopping centers has also been mentioned in the book. According to Dr. Fryer important shipping centers were established in the west during Aurangazeb's reign.

The growth of the Maratha power was strengthened by the formation of a remarkable fleet as well as the building of several docks at Vijayadurg, Kolaba, Sindhudurg, Ratnagiri, and Anjanvela. Around 1698, Kanhoji Angre succeeded in commanding the Maratha Navy with the title of *Darya-Saranga.* The Naval legacy of Angre's is known for its glory as only under them did the Martha Naval Power reach its epitome. [2]

Exhaustive accounts of shipbuilding activities under the British have also been given special mention in the book, which includes rise of Parsi Ship builders, establishment of several marines, contractions of several dry docks, and establishment of the Indian Navy. [3]

The book highlights several aspects of the Maritime shipping activities of India with respect to several periods. It counts as a major contribution towards literature related to the Maritime domain. Such exhaustive compilation is necessary which helps in unfolding the lost Maritime History of India. Very few numbers of people are aware of the maritime history of India. So awareness of the history of our Maritime domain will procure the lost maritime identity as well as imbibe a sense of belonging towards our maritime culture.

---

[1] Mookerji R 1999, Indian Shipping, Book II-Chap II *The Reign of Akbar*.

[2] Ibid, pg 239

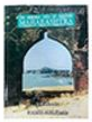
[3] Mookerji, R. 1999, Indian Shipping, Chap IV: *Later Times*.

MHS PUBLICATIONS

Glimpses of Indian Maritime History

MHS 1: Essays in Maritime Studies; Prof B Arunachalam (Retd); Rs 450.00

MHS 2: Sea & Hill Forts of Western India; Wg Cdr (Dr MS Naravane (Retd); Rs 750.00



MHS 3: Heritage Sites of Maritime Maharashtra; Wg Cdr (Dr) MS Naravane (Retd); Rs 650.00

MHS 4: Heritage of Indian Sea Navigation; Prof B Arunachalam (Retd); Rs 500.00

MHS 5: Essays in Maritime Studies, Vol II; Prof B Arunachalam (Retd); Rs 350.00

MHS 6: Chola Navigation Package; Prof B Arunachalam (Retd); Rs 250.00

MHS 7: Mumbai By the Sea; Prof B Arunachalam (Retd); Rs 500.00

MHS 8: Navigational Hazards, Landmarks and Early Charting – Special Study of Konkan and South Gujarat; Prof B Arunachalam (Retd), Prof Mary Edward and Prof Sachin Pendse; Rs 450.00

MHS 9: The Environmental History of Maritime Forts in and around Mumbai; By Dr Sudha Srivastava and Dr Dipti Mukherji; Rs 400.00

MHS 10: Uncertain Life And Sure Death: Medicine And Mahamaari In Maritime Mumbai; Kalpish Ratna; Rs 500.00

MHS 11: Indian Boat Designs and Forms By Prof B Arunachalam (Retd); Rs 600.00

MHS 12: Maritime Heritage of Southern Peninsular India; Prof B Arunachalam (Retd); Rs 650.00

MHS 13: Maritime Heritage of Konkan; Prof Sachin Pendse; Rs 650.00

MHS 14: Maritime Heritage of Lakshadweep and Minicoy Islands; Prof B Arunachalam (Retd); Rs 600.00

MHS 15: Maritime Heritage of Goa and Uttar Kannada; Prof B Arunachalam (Retd) and Prof Sachin Pendse; Rs 600.00

MHS 16: Maritime Heritage of Gujarat, Kathiawad and Kutch; Prof Mary R Edward; Rs 650.00

MHS 17: Timeless Wake: The Legacy of The Royal Indian Navy During World War II; Commodore Odakkal Johnson; Rs 950.00

MHS 18 &19: The First Indian: Story of the First Indian Solo Circumnavigation under Sail; Commander Dilip Donde (Retd); Rs 499.00

MHS 20: Maritime Heritage of Andhra Pradesh and Odisha; By B Sukumar & Ahalya Sukumar - Prof B Arunachalam (Retd); Rs 650.00

MHS 21: Essays in Maritime Studies, Vol – III; Prof Sachin Pendse and Commodore Odakkal Johnson; Rs 650.00

For Further Details Please Contact

Maritime History Society

First Floor, Noorbhoy Building, SBS Marg, Near RBI, Fort, Mumbai – 400 001
Phone: 022 22751944 Fax: 022 22626180 Email: mumbaimhs@gmail.com

Maritime History Society

maritimehistorysociety

MHSofIndia

www.mhsindia.org