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THE ROLE OF INDIAN TIMBER TRADE IN THE SILK-ROAD NETWORK

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Abstract:
The wood, being a commonly existing versatile material, has indeed played a vital role in all human history. Since the wood is the most vulnerable to decomposition, the wood artefacts of the prehistoric period have rarely survived, except in the extraordinary conditions for preservation. Some of the excavations in the prehistoric sites revealed the multipurpose use of wood as digging sticks, firewood and other purposes by the prehistoric men. The tradition of erecting wooden stems as an embodiment of deity and worshipping them has been found in many countries in the ancient times.

Key words*: wooden artefacts; Indian trade; historic value.*

USAGE OF WOOD IN PREHISTORIC PERIOD

The earliest evidence for structural use of wood has been reported recently in the waterlogged deposits at the prehistoric site of Kalambo Falls, Zambia, dated to at least 476,000 years ago.[1] The site preserved two interlocking logs joined transversely by an intentional notch cut, a clear evidence of wooden structure. The evidence of post-holes in the habitation area of the Neolithic-Chalcolithic culture indicate the profuse use of timber for the construction of their structures. One of the most exciting discoveries at Dholavira (3rd to mid-2nd millennium BCE), a Harappan site in India is a large wooden "signboard" just outside the north entrance to the citadel. This is actually one of the longest Indus inscriptions known. There are 10 symbols in the panel made of white gypsum used like mosaic tiles, attached to a wooden background.[2]

TIMBER SPECIES IN THE ANCIENT INDIAN LITERATURE

The *Ashṭadhyāyī,* a Sanskrit grammar of about 500 BCE by Pāṇini mentioned a large variety of timber species, namely Simsapa/Rosewood (*Dalbergia sissoo*), Amra/mango (*Mangifera indica*), Khadirakhair (*Acacia catechu*), and Salmali/silk cotton (*Bombax malabaricum*) used for various purposes including ship construction.[3] Kauṭilya, the author of *Arthaśāstra* (4th-3rd century BCE) has assigned the powers of forest and forest products to the Superintendent of Forest Produce who was responsible for safeguarding forests and stated several types of timbers, including teak and also mentioned their usage.[4] Similarly, Patañjali (2nd century BCE) mentioned varieties of timber used for shipbuilding, among them *Devadāru* (deodar) used for construction of different parts of the vessel.[5]

NOTABLE INDIAN TIMBER SPECIES OF COMMERCIAL SIGNIFICANCE

India is blessed with an endemic and variety of trees and plants which offers ample scope for their use in building construction, shipbuilding, furniture, herbal medicine, perfume and also for export. The evidences reveal that the wood of Teak (*Tectona grandis*), Sal (*Shorea robusta*, Sāla, Shala, Sakhua, or Sarai, a species of tree in the family of *Dipterocarpaceae*), Indian Rosewood or Shisham (*Dalbergia sissoo*), Anjili or Wild Jack (*Artocarpus hirsutus*), Benteak or Venteak (*Lagerstroemia microcarpa*), Deodar (*Cedrus deodara*) and Sandalwood (*Santalum album*) and the wood-based products have been a prime material of export from the Indian sub-continent to other countries since the Harappan period (3000-1500 BCE).

TEAK (*TECTONA GRANDIS*)

Teak (*Tectona grandis*) is a tropical hardwood tree species in the family of Lamiaceae. It is a large deciduous tree up to 40 m tall that occurs in mixed hardwood forests. *Tectona grandis* is native to south and

[1]L. Barham, et al. "Evidence for the Earliest Structural use of Wood at least 476,000 years ago", *Nature*, vol. 622 (2023): 107–111.
[2]R.S. Bisht, *Excavations at Dholavira (1989-90 to 2004-2005)* (Draft) (New Delhi: Archaeological Survey of India, 2015), 227-331.
[3]V.S. Agrawala, *India as known to Panini* (Lucknow: University of Lucknow, 1953), 210 and 216.
[4]R. Shamasastry, edited and translated, *Kautilya's Arthashastra*. (Mysore: Mysore Printing and Publishing House, 1967), 109.
[5]A.K. Bag, "Ships and Ship-building Technology in Ancient and Medieval India", In *Marine Archaeology of Indian Ocean Countries: Proceedings of the First Indian Conference on Marine Archaeology of Indian Ocean Countries, Oct. 1987*. edited by S.R. Rao. (Goa: National Institute of Oceanography, 1988), 8–11.

southeast Asia, mainly India, Myanmar, Sri Lanka, Malaysia, Indonesia and Bangladesh. The English word "teak" is derived from the Tamil word "*tekku*". The word was probably adopted owing to the fact that European first became acquainted with the wood in Tamil speaking area of south India. Teak wood has been most valued owing to its noble qualities such as long-term durability, higher tensile strength and stiffness and absence of development of cracks and splits in the products, high oil content and tight grain that makes it suitable to weather resistance. Teak contains a large quantity of fluid resinous matter, which fills up the pores and resists the action of water.[6]

Teak has been considered one of the best materials for boat building. In addition to relatively high strength, teak is also highly resistant to rot, fungi and mildew. The wood has a relatively low shrinkage ratio, which makes it excellent for applications where it undergoes periodic changes in moisture. Teak is an excellent structural timber for framing, planking or cutting board, and also being easily worked and finished, unlike some otherwise similar woods. Teak is also used extensively in boat decks, as it is extremely durable and requires very little maintenance.

Teak was one of the major items exported from India right from the early period. The mention of teak wood in the Mesopotamian records indicates that it was exported to the Persian Gulf from the Indian subcontinent during the Harappan period.

Interestingly, the finding of Indian teak in the ruins of Ur of the Chaldees, Iraq attested that the export of Indian timber to Babylon was much earlier.[7] The foundations of the temple of the Moon-god at Ur (Tell el-Muqayar) go back to a very early date. The temple was rebuilt by Nebuchadnezzar (604-562 BCE) and Nabonidus (555-538 BCE). In the second story of this temple, two rough logs of wood, apparently Indian teak, were found. The logs were imbedded in masonry characteristic of the age of Nebuchadnezzar and Nabonidus (556-539 BCE), and an inscribed cylinder of Nabonidus was found immediately above, and apparently resting on them. It is certain that the teak was built into the brick masonry, perhaps as a tie-beam, by Nebuchadnezzar or (most probably) by Nabonidus.[8] The logs were noticed by John Taylor in 1853-54 and written a detail report on his findings.[9] The extract of the letter of Mr. H. Rassam published by Kennedy is quite interesting in identification of the logs. The extract of the letter is as follows:

"Most probably the block of wood which Mr. John Taylor discovered in the ruins of Moggaier was Indian cedar, like the beam I discovered in the palace of Nebuchednezar at Birs Nimrud, of which I brought a piece for the British Museum. There is no doubt that this wood was imported into Babylonia from India, as it is the only cedar which does not rot so quickly as other cedar, and it is, in my opinion, a kind of teak."[10]

Darius (522-486 BCE), the king of ancient Persia, undertook a massive building project at Susa, and it was the splendid seat of the government of the Achaemenid empire. The work was started in 515 BCE and finished in 490 BCE. The Darius inscription of Susa on this building is one of the most fascinating texts in its genre, because it describes the building of the palace in great detail. The inscription mentions that yaka-timber (teak wood) was brought from Gandara, a region in the Indian sub-continent for the construction.[11]

The *Periplus of the Erythraean Sea* (*Periplus Maris Erythraei*) of the 1st century CE describes that teakwood, sandalwood, sissoo, blackwood, copper and ebony were exported in ships from Barygaza to Apologos and Ommana on the Persian Gulf coast.[12] Mandagora (Mandara giri, the modern Bankot) was also a great centre for the trade of teak and blackwood and for ship building.[13] Al-Masudi (10th century) records the export of enormous teak wood to the depots of Iraq and Egypt. Ibn Jubayr (1145– 1217 CE) states that the Indian timber was exported to Aydhab, Egypt for ship building.[14] It is mentioned that the teak was used in the construction of the Kaaba in the Masjid al-Haram of Mecca, the holiest structure in the Islamic faith.[15]

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[6]George Watt, *The Commercial Products of India*. (London: John Murry, 1908), 1070.
[7]R. K. Mookerji, *Indian Shipping: A History of the Seaborne Trade and Maritime Activity of the Indians from the Earliest Times*, (Bombay: Longmans, 1912): 52-60; S.M. Edwardes, "A Note on the Durability of Indian Teak", *The Empire Forestry Journal,* 1, No. 2 (1922): 257-260.
[8]J. E. Taylor, "Notes on the Ruins of Muqeyer", *Journal of the Royal Asiatic Society of Great Britain and Ireland*, 15 (1855): 264; J. Kennedy, "The Early Commerce of Babylon with India-700-300 B.C", *Journal of The Royal Asiatic Society of Great Britain and Ireland*, 30, Issue 2 (1898): 241-288.
[9]E. Taylor, "Notes on the Ruins of Muqeyer", *Journal of the Royal Asiatic Society of Great Britain and Ireland*, 15 (1855): 260–276.
[10]J. Kennedy, "The Early Commerce of Babylon with India-700-300 B.C", *Journal of The Royal Asiatic Society of Great Britain and Ireland*, 30, Issue 2 (1898): 267-268.
[11]Josef Wiesehofer, *Ancient Persia* (London: I. B. Tauris 2001), 26-27; Sailendra Nath Sen, *Ancient Indian History and Civilization*. (Delhi, New Age International, 1999), 116-117.
[12]Wilfred. H. Schoff, *The Periplus of the Erythraean Sea* (New York: Longmans, Green, and Co., 1912), 36.
[13]Wilfred. H. Schoff, *The Periplus of the Erythraean Sea* (New York: Longmans, Green, and Co., 1912), 201.
[14]G. F. Hourani, *Arab Seafaring in the Indian Ocean and Early Medieval Times* (New Jersey: Princeton University Press, 1995), 90.
[15]*Al Arabiya*, 9 December 2016.

The antiquity timber and other trade of India with Gulf region existed for at least three millennia and India was the source of a diversity of products, including grains, timber, textiles, medicines, spices and others to the Gulf region. There are evidences of maritime commerce of Arabs with the Deccan al-Ballahara (Rashtrakutas) state (743-974) in India and main exporting from India include aromatics, timber, cotton, and indigo among other items.[16] Kerala's timber and pepper were great demand in the western countries and the Kerala coast is mentioned has an important stop on the route to China in *Akhbar al-Sin wal-Hind*.[17]

Marco Polo (1254– 1324 CE), Duarte Barbosa (148– 1521 CE), Ludovico di Varthema (1470– 1517 CE) and Tom Pires (1465–1524 or 1540 CE) have referred to the export of Indian teak to Ormuz and Arab countries and the shipbuilding centres on the west coast of India.[18] The evidences show that Alauddin Khalji (1296-1316 CE), the Sultan of Delhi sent teakwood, ebony, sandalwood, and other materials as a gift to the king of Persia.[19]

George Watt mentions that the teak wood export from India during1901-2 was 60,671 cubic tons; 1902-3, 57,500 cubic tons; 1903-4, 73,913 cubic tons; 1904-5, 46,912 cubic tons; 1905-6, 52,768 cubic tons; and in 1906-7, 44,202 cubic tons. The large bulk of the exports is consigned to the United Kingdom, while other chief markets are Germany and Australia.[20]

INDIAN SANDALWOOD *(SANTALUM ALBUM*),

Indian sandalwood *(Santalum album*), a small tropical tree, is native of southern India and Southeast Asia. It is significant for its fragrant qualities and also the traditional source of sandalwood oil of high alpha santalol content (about 90%). The sandalwood, known in Indian vernaculars as *Chandan, Chandal, Sandal, Sukhad, Gandha, Gandada, Suket, Sukhud, Sundel, Srigandam, Santagu* and so on. Santalum album is an evergreen tree that grows between 4 to 9 metres. *Srikhanda* is the white sandal, whereas the *Pitachandana* is the yellow sandal. The *raktachandana* or red sandal has two kinds namely *Pterocarpus santalinus* and *Caesalpinia sappan*.

Thirty-one genera of plants and plant products have been mentioned by Herodotus and various other writers in the operations of embalming, cosmetic application and coffin construction of the ancient Egyptian mummies. The sandalwood was one of the main objects used in the operation because of its fragrant property.[21] The sandalwood was known in the western countries in the 5th century BCE by their Tamil designation.[22] It is said that King Solomon obtained sandalwood and peacocks from Ophir and Ophir's twin Tarshish, both located most probably in India.[23] The finding of a comb made of sandalwood found in the Kara-dong ruins indicate the trade link between India and China in the early centuries of the Common Era. [24]

Cosmas Indicopleustes, a merchant traveller of the 6th century CE from Alexandria in Egypt mentions sandalwood as *Tzandana* and thereafter sandalwood was frequently mentioned by the early Arab traders who visited India and China. Ibn Sina (980-1037 CE) commonly known as Avicenna, a prominent philosopher and physician, who served in the court of various Iranian rulers gives the medicinal properties of the sandalwood.[25] Cosmas Indicopleustes, Avicenna and Arab traders attributed sandalwood to China instead of India. This mistake arising, as George Watt pointed out, from the fact that Chinese vessels at this time made the voyage between China and the Persian Gulf, stopping to trade in Sri Lanka and India, and disposing of their cargoes finally to the merchants in the Gulf region. Therefore, they mistook it is from China,

[16]Ibn Kurdadhbih and al-Sirafi claimed it was the largest and most prosperous state at the time. Al-Sirafi, *Accounts of China and India*, 38-41; S. Maqbul Ahmad, *Arabic Classical Accounts of India and China* (Shimla: Indian Institute of Advanced Study, 1989), 3.

[17]Alain George, "Direct Sea Trade Between Early Islamic Iraq and China: from the Exchange of Goods to the Transmission of Ideas", *Journal of the Royal Asiatic Society,* Third Series*,* 25, 4 (2015):15

[18]Archibald Lewis, "Maritime Skills in the Indian Ocean 1368 -1500", *Journal of the Economic and Social History of the Orient*, 16 (1973): 238–264.

[19]Simon Digby, "The Maritime Trade of India", In *The Cambridge Economic History of India*, edited by T. Raychaudhuri and Irfan Habib. (Delhi: Orient Longman, 1982), Vol. 1, 125-159; Rashldu'ddin Fazlallah (d. 1318), *Mukatabdti-i Rashidi*, edited by M. Shafi', (Lahore, 1948), 281-289.

[20]George Watt, *The Commercial Products of India*. (London: John Murry, 1908), 1071-1072

[21]Bill. B. Baumann, "The Botanical Aspects of Ancient Egyptian Embalming and Burial", *Economic Botany*, Vol. 14, No.1, (Jan-March 1960): 84-104; A.N. Arun Kumar, Geeta Joshi and H.Y. Mohan Ram, "Sandalwood: History, Uses, Present Status and the Future", *Currant Science*, Vol. 103, No. 12 (2012): 1408-1416. Ophir is identified with the ancient seaport Suparaka (Sopara) near Mumbai.

[22]J. Kennedy, "The Early Commerce of Babylon with India-700-300 B.C", *Journal of The Royal Asiatic Society of Great Britain and Ireland*, 30, Issue 2 (1898): 269.

[23]William Smith, Smith's Bible Dictionary, (Scotland: Thomson Nelson, 1986); Ramaswami Sastri, *The Tamils and their culture* (Chidambaram: Annamalai University, 1967), 16.

[24]Aurel Stein, *Ancient Khotan: Detailed Report of Archaeological Explorations in Chinese Turkestan* (London: Indigo Books, 2003), 447 and 452.

[25]George Watt, *The Commercial Products of India*. (London: John Murry, 1908), 976.

but in fact this wood is not native of China.[26] The evidences show that Alauddin Khalji (1296-1316 CE), the Sultan of Delhi sent sandalwood, teakwood, diamond and ebony as a gift to the king of Persia.[27]

INDIAN ROSEWOOD OR SHISHAM (*DALBERGIA SISSOO*)

It is one of the best hardwoods produced in India. It is very durable, does not warp or split, and is highly esteemed for all purposes where the strength and elasticity are required. It is used for making furniture, wood-carving, carriage-frames and wheels, boat-building, agricultural implements and others.

DEODAR (*CEDRUS DEODARA*)

Deodar, popularly known in India as *Devadāru* (the wood of the gods) is a large evergreen coniferous tree reaching 40 to 50m tall with a trunk up to 3m in diameter. It has a conic crown with level branches and dropping branchlets. Deodar is in great demand as a building material because of its durability, rot-resistant character and fine, close grain, which is capable of taking a high polish. Its rot-resistant character makes it an ideal wood for the construction of small boats, barracks, bridges, canals and other purposes. The inner wood is aromatic and used to make incense. Inner wood is distilled into essential oil. As insects avoid this tree, the essential oil is used as an insect repellent. It also has antifungal properties and has some potential for control of fungal deterioration of spices during storage. Cedar oil is often used for its aromatic properties, especially in aromatherapy. India now exports deodar wood to Canada, Italy and few other European countries.

EBONY (DIOSPYROS EBENUM)

Diospyros malabarica, the gaub tree, Malabar ebony, black-and-white ebony or pale moon ebony, is a species of flowering tree in the family Ebenaceae that is native to the southern India and Sri Lanka. It is uniformly jet black, sometimes with grey or dark brown streaks. The fine finishing makes these woods popular in the wood industry. The presence of mineral streaks like white spots or silver spots and brown colour are some of the main quality issues faced by Indian ebonies. The mineral streaks of the wood can be reduced by keeping them for 3-4 weeks before using.

Both the bark of the tree and the unripe fruit have medicinal uses in *Ayurveda*. The juice extracted from the bark is considered to be very good for the treatment of bilious fevers. The seeds are used for the treatment of chronic dysentery and diarrhoea, the oil from the seeds is used to make medicines. This tree was mentioned as *Tinduka* in the ancient Sanskrit texts. It is known in the trade as Coromandel Ebony and by the following, amongst many other names *tendu, kendu, temru, abnus, tumi, kari-mara, damadi, balai,* etc. The wood is sometimes used in guitar and high-end furniture manufacturing for its distinctive black striped on off-white to golden beige background appearance.

The fruit, especially when unripe, contains a viscid pulp that is rich in tannins and is the source of a gum. It can be used to caulk boats; to paint the undersides of boats and thus act as a preservative; and as a gum and adhesive. A dark oil prepared from the fruit (this is probably the gum) makes an excellent varnish. An infusion of the fruit is used to toughen ropes and render them more durable in water. The unripe fruits and also sometimes the leaves are a source of tannins that are used for dyeing silk and other clothes black.

An Egyptian inscription of king Merenre, VIth Dynasty (2500 BCE) mentions ebony as a product brought down from the Upper Nile. The expedition of Queen Hatshepsut, XVIII Dynasty (1500 BCE) records that myrrh as the important cargo; its list of the marvels of the country of Punt was as follows: All goodly fragrant woods of God's land, heaps of myrrh-resin, fresh myrrh tree, ebony, ivory, cinnamon wood, apes, monkey, dogs and other commodities. Many of the commodities including ebony mentioned in the list are native to India.

The earliest definite Old Testament reference on ebony is in Ezekiel XXVII, where it appears as a commodity in the trade of Tyre: "the men of Dedan were they merchants; many isles were the merchandise of thine land; they brought thee for a present the horns of ivory and ebony." Dedan is probably identified with the south shore of the Persian Gulf. This passage indicates the trade of ebony from India to the Gulf region prior to the 7th century BCE.[28] Periplus mentions that ebony was shipped from Barygaza to Omanna and Apologus.[29]

Pliny says that ebony came to Rome from both Indian and Egypt, and that the trade began after the victory of Pompey the Great in Asia. He noted two kinds, one precious and the other ordinary. Virgil speaks

[26]Wilfred. H. Schoff, *The Periplus of the Erythraean Sea* (New York: Longmans, Green, and Co., 1912), 152.
[27]Simon Digby, "The Maritime Trade of India", In *The Cambridge Economic History of India*, edited by T. Raychaudhuri and Irfan Habib. (Delhi: Orient Longman, 1982), Vol. 1, 125-159; Rashldu'ddin Fazlallah (d. 1318), *Mukatabdti-i Rashidi*, edited by M. Shafi', (Lahore, 1948), 281-289.
[28]Wilfred. H. Schoff, *The Periplus of the Erythraean Sea* (New York: Longmans, Green, and Co., 1912), 153.
[29]Wilfred. H. Schoff, *The Periplus of the Erythraean Sea* (New York: Longmans, Green, and Co., 1912), 36; E. H. Warmington, *The Commerce between the Roman Empire and India* (Delhi: Vikas Publishing House, 1974), 213–214.

in glowing terms of the ebony tree, as peculiar to India.[30] Ebony was also included in the list of materials sent as a gift to the king of Persia by Alauddin Khalji (1296-1316 CE), the Sultan of Delhi.[31]

SHIP BUILDING TRADITION IN INDIA

In the Indian subcontinent, the earliest evidences of boat building come from the Harappan culture where representations of boats were found on seals, sealings, clay models, amulets and pottery. The terracotta models of boat from Lothal and engravings on Indus seals give some idea of ships during the Harappan times. An engraving on a seal from Mohenjo-daro represents a sailing ship with a high prow; the stern was made of reeds. In the centre, it had a square cabin. A Harappan ship depicted on a terracotta amulet is quite interesting. This boat had a flat bottom with raked stern and prow, and there are two steering oars at the stern. In the middle of the boat, there is a cabin. At both ends of the ship, a sea-bird is depicted. They are called *dishakak* and were used by sailors to find land. There are two masts on both sides of the central cabin.

The depiction of different types of ships in the coins, paintings, sculptures, seals and sealing, etc., exhibit the variety of vessels used for navigation and other purposes in the early period. The Tamil literature of early centuries speak of various types of contemporary vessels such as *ampi, cōṅku, kaipparicu, kalam* or *marakalam, kappal, matalai, mitavai, muṭuku, nāvāy, ōṭam, paricil, paṭaku* or *paṭavu, puṇai* or *piṇai, teppam, timil, tōṇi, vaṅkam*, etc. The historical text *Yuktikalpataru* (11th century CE) deals with shipbuilding and gives details of various types of ships. Vessels used for different purposes were called by different names. Ship building has a long tradition on the west coast of the Indian subcontinent. Especially, on the Malabar coast port towns like Calicut, Nileshwar, Ponnani and Cochin had been well known to Arab Geographers since 9th century CE.

USE OF WOOD IN SHIP BUILDING

The inscription of Sargon of Akkad or Sargon, the Great (c.2334-2279 BCE), the first ruler of the Akkadian empire mentions ships came from Meluhha (Indus valley), Magan (Oman and UAE) and Dilmun (Bahrain, Kuwait and eastern Saudi Arabia).[32] The discovery of the bitumen fragments from the coating of a wooden boat and the wood fragments probably of Indian origin at RJ-2 (Ra's al-Jinz), Oman exemplifies the connection of Mesopotamia with the Harappan people during the Bronze Age.[33] The finding of bitumen fragments from the coating of a boat and the objects like ivory comb, seals and sealings, painted potsherds of Harappan origin found in the excavations at Ra's al-Jinz also attested this fact. Interestingly, the painted jar found in Ras-al-Junayaz (Sultanate of Oman) has been inscribed with four Harappan characters on its shoulder.[34]

The teak wood has been used for ship building for many thousands of years before in India. In fact, the teak wood mainly from Malabar area, provided the most durable wood for the vessels which carried the trade. In addition to relatively high strength, teak is also highly resistant to rot, fungi and mildew. The wood has a relatively low shrinkage ratio, which makes it excellent for applications where it undergoes periodic changes in moisture. Teak is also used extensively in boat decks, as it is extremely durable and requires very little maintenance. The use of timber for the construction of ships was mentioned by various ancient authors in India.

INDIAN WOOD AND TRADITION IN SHIPBUILDING OF THE MARITIME SILK-ROAD COUNTRIES

The Indian wood, mainly the Teak and Sal, and the shipbuilding tradition of India are noticeable in many countries on the maritime Silk-Road.

The recent archaeological excavations at Berenike, the early historic port on the Red Sea coast (1st century BCE to 6th century CE), has yielded evidence of Indian contacts with the Roman Empire. The excavation finds include Indian pottery, pepper, Indian beads and Tamil-*Brāhmī* script on amphorae and

[30]Wilfred. H. Schoff, *The Periplus of the Erythraean Sea* (New York: Longmans, Green, and Co., 1912), 153.
[31]Simon Digby, "The Maritime Trade of India", In *The Cambridge Economic History of India*, edited by T. Raychaudhuri and Irfan Habib. (Delhi: Orient Longman, 1982), Vol. 1, 125-159; Rashldu'ddin Fazlallah (d. 1318), *Mukatabdti-i Rashidi*, edited by M. Shafi', (Lahore, 1948), 281-289.
[32]Jerrold S. Cooper, *Sumerian and Akkadian Royal Inscriptions*. 1 *Presargonic Inscriptions*; New Haven, Connecticut: American Oriental Society, 1986.
[33]S. Cleuziou, and M. Tosi, "Black boats of Magan: Some thoughts on Bronze Age water transport in Oman and beyond from the impressed bitumen slabs of Ra's al-Junayz", *Annales Academiae Scientiarum Fennicae.* Series B 273/2 (1993):745–761; S. Cleuziou and M. Tosi, "Ra's al-Jinz and the Prehistoric Coastal Cultures of the Ja'alan", *Journal of Oman Studies,* 11 (Ministry of Information and Culture, Sultanate of Oman. Muscat, 2000):19–73.
[34]M. Tosi, "The Proto Urban Cultures of Eastern Iran and Indus Civilization", *South Asian Archaeology*, 1 (1979):149-71.

coconuts, all of Indian origin.[35] Apart from these, huge quantity of teakwood, teakwood artefacts, planks of dismantled boats and building and waste wood material are also found.[36]

The occurrence of Indian teakwood from the Roman seaports on the Red Sea coast of Egypt suggests that most probably the teakwood might have been brought from India for various purposes or they could be the timber of the dismantled Indian-built ships or driftwood.[37] Besides Berenike, teakwood has also been reported from nearby sites of Wadi Kalalat and Shenshef along the Red Sea, Egypt. The teakwood remains have also been reported from watering station of Wadi Kalalat and at Shenshef.

Interestingly, the discovery of a number of teak planks, beams and frames from the sewn boats at the site of al-Balīd, the al-Qusayr al-Qadīm timbers in Oman have exhibited the similarity of stitching patterns, joinery, and materials of India and Sri Lanka.[38] These evidences show the impact of ship construction of India in Oman during the period from the 10th to the 15th centuries CE.

The Belitung shipwreck, discovered in 1998 off Belitung Island, Indonesia, dated to the 9th century CE based on the materials found in the shipwreck revealed interesting evidences. The remains of the ship revealed that its planks were stitched rather than nailed together, using a method prominent in the western Indian ocean at that time. Furthermore, the timber used to build the vessel consisted of *Afzelia Africana* from East Africa and teak (*Tectona grandis*), from India. The use of these two woods strongly suggests that it was constructed somewhere in between these two regions, such as the Arabian Peninsula. [39]

The study of the timber of the sunken ships reported from the Southeast Asian waters revealed that teak wood, probably of Indian origin, was used for their construction. Lots of evidences during the medieval and the colonial periods reveal that the Indian timber served as an important commodity of international trade.

CONCLUSION

The timber and its products constituted the most important sector of Indian economy and Indian timber and its products are one of the leading export items of India since from the early period. India has the best varieties of timber such as Teak, Sal, Rosewood or Shisham, Anjili or Wild Jack, Benteak or Venteak, Deodar and Sandalwood, and they are in great demand not only for the construction, shipbuilding and furniture, but also their aromatic and medicinal value. The archaeological evidence and literary and epigraphical sources clearly indicate the prosperous status of timber trade of India since the very early period, and it played a vital role in the maritime trade relation between the countries all along the ancient silk route. The ancient silk route not only played a dynamic role in promoting maritime trade, but also responsible for the transmission of religion, culture, tradition, language, technology, art and architectural idioms from India to other countries and vice versa.

[35]Steven E. Sidebotham, *Berenike and the Ancient Maritime Spice Route* (Berkeley, University of California Press, 2019).
[36]Caroline Vermeeren, "The Use of Imported and Local Wood Species at the Roman Port of Berenike, Red Sea Coast, Egypt", In *The Exploitation of Plant Resources in Ancient Africa,* Edited by Marijke van der Veen (New York: Kluwer Academic / Plenum Publisher, 1999), 199-204; Caroline Vermeeren, "The wood and charcoal", In *Berenike 1996*, *Preliminary Report of the excavations at Berenike (Egyptian Red Sea coast) and the survey of the Eastern Desert*, Edited by E. Sidebotham and W. Z. Wendrich (Leiden: Centre of Non-Westem Studies, 1998), 331-348.
[37]*Ibid*
[38]Juris Zarins, "Aspects of recent Archaeological work at al-Balīd (Zafār), Sultanate of Oman", *Proceedings of the Seminar for Arabian Studies* 37 (2007): 316; Luca Belfioretti, "Al-Balīd ship timbers: Preliminary Overview and Comparisons*", Proceedings of the Seminar for Arabian Studies*, 40 (2010):111-118.
[39]John Guy, Regina Krahl, J. Keith Wilson, and Julian Raby, eds., *Shipwrecked: Tang Treasures and Monsoon Winds* (Washington, D.C. and Singapore: Arthur M. Sackler Gallery; Smithsonian Institution, 2011); Michael Flecker, "A Ninth-Century AD Arab or Indian Shipwreck in Indonesia: First Evidence For Direct Trade with China", *World Archaeology* 32, no.3 (2001): 335-354; idem, "A 9th Century Arab or Indian shipwreck in Indonesian waters", *International Journal of Nautical Archaeology* 29 (2):199-217.