

Exploring the Industrial Heritage of Our Past - A Study of the Shell Industry in Ancient Tamil Nadu

Vikas K. Verma

Associate Professor, Department of History, Ramjas College, University of Delhi. E-mail: vikasverma@ramjas.du.ac.in

Received : 19 June 2023 • **Revised :** 16 July 2023 • **Accepted :** 23 July 2023 • **Published :** 29 December 2023

TO CITE THIS ARTICLE:

Verma, V.K. 2023. Exploring the Industrial Heritage of Our Past – A Study of the Shell Industry in Ancient Tamil Nadu. *Journal of Historical, Archaeological and Anthropological Studies*, 1: 2, pp. 147-155.

Abstract: Ancient Tamil Nadu was a home to several industries since the Sangam age. The major crafts practiced by people in ancient Tamilakam included textile, metal working, ship building, shell craft and lapidary. Gems, beads and other products manufactured in the region were important merchandise in trade with the countries on the east across the Bay of Bengal and the Mediterranean World on the west. Rich marine resources of the Coromandel Coast and the Gulf of Mannar provided the raw material for many of such commodities either for the local consumption or for exchange with distant lands. In this context, important archaeological discoveries include shell products of different kinds, especially ornaments, which are also mentioned in the contemporary literary works. They occur in coastal as well as inland sites indicating the presence of dynamic trade network in the region. The industrial activities, nevertheless, accelerated the pace of economic growth leading to urbanisation in early Tamil Nadu.

Keywords: Archaeological; Chank; Coast; Excavation; Industry; Literary; Pearl; Port; Sangam; Shell; Tamil

Introduction

Shell industry is one of the oldest industries of India that originated as early as the Harappan period. The practice of shell working and trade of shell products in ancient Tamil Nadu is observed in the light of artefacts discovered at several burial sites as well as the notices in literary works including foreign accounts. Indian seas are known for the marine products of numerous kinds, especially the much valued seashells in diverse forms. Of these, a large sea conch called *shankha* in Sanskrit (Tamil *sangu* or *sanku*) is treated as a sacred chank by Indians for its religious significance (Hornell 1914:1). Literary references and the archaeological discoveries of shell products in different stages of their manufacturing from several sites, particularly the bangles made of conch shell, reveal that these have

been in use since ancient times. The chank fishing is very much in practice all along the Tamil coast till today and the yield is much sought after by Indians and foreigners (Athiyaman & Rajan 2004). Although chanks are available along the Gujarat and Kerala coasts of Arabian Sea, its best quality of is found from the fishery in the Ramanthapuram district of Tamil Nadu. Sri Lanka's coast in the Gulf of Mannar, however, is the largest producer of chank (Athiyaman 2000:14–18). Indigenous as well as foreign literary works of ancient period furnish ample evidence for the prevalence of chank and pearl fisheries in India. Unfortunately, we do not get sufficient information about the origin of pearl fishing and its trade until about twelfth century CE although grants of the pearls made to temples by the Cholas come to light through their epigraphic records. It was only during the rule of the later Pandyas (from early thirteenth to early sixteenth centuries CE) that the Arabs, the Jesuits and the Chinese visitors to the region recorded adequately about this industry. Marco Polo, an Italian explorer who visited the Pandya territory at the close of the thirteenth century CE has left an important narrative of the pearl fishery. He describes the practice of diving into the sea for collection of pearls, the measures employed for the same and other details associated with the trade (Arunachalam 1952:10, Sastri 1939:63). In the course of time Tamil coast witnessed the predominance of pearl fishery which reduced the significance of chank fishery in the region. The British annexation of the Thanjavur Maratha kingdom under the Doctrine of Lapse further affected the once celebrated chank fishery of the Carnatic coast which included the coasts of Tamil Nadu, southern Andhra Pradesh and south-eastern Karnataka). During the period sixteenth – eighteenth centuries CE, however, the Portuguese followed by the Dutch contributed to the trade and commerce on the Pearl Fishery Coast, i.e., the area between Kanyakumari and Mannar Island, especially to the chank fishery due to its profit yielding nature (Caldwell 1881:80, Deckla 2004, Ostroff 2016). The present paper presents a study of the shell working industries in ancient Tamil region in the light of the contemporary literary works and archaeological discoveries. Based on the survey of the sources, an attempt is made here to figure out types of shell products which were manufactured and used by Tamil society.

Literary References

Ancient literary works contain several references to marine species belonging to the Mollusca family such as conch, shell, snail, oyster etc. Pearl fishing on Tamil coast yielded high quality of pearls which commanded high demand in other parts of the subcontinent and lands as far as the Mediterranean region. As chank is not available on the Odisha coast, the shell industry of ancient Odisha procured the raw materials either from southeastern coast or Sri Lanka (Thakuria 2013). The Vedic and the post-Vedic literature shed light on the commercial exchanges between the north and south India in which the pearls from the southern coast was a prized commodity. The *Arthasastra* refers to the thriving trade in shells of all kinds and other precious stones between the two regions (Iyengar 1929:23–24; Shamasastri 1915:86–7, 366–8). The industrial activities flourished in ancient Tamil Nadu which was gifted with the port of Korkai as one of the greatest centre for pearl fishing in Sangam age. Early Tamil literature contains noteworthy facts with regard to the trade of pearls and chanks (Arunachalam 1952:13–28). The *Silappadikaram* mentions that Kaveripattinam (Poompuhar), which was a famous port of the Sangam age Cholas, possessed large store of the pearls (Arunachalam 1952:34–6; Daniélou 1967:3, 40, 211; Naidu & Ganesan 1979:37–9). This coastal centre also served as the capital of the Cholas in the first century CE and according to the *Pattinapalai* goods from different parts were gathered here and sealed with the tiger symbol as the emblem of the Cholas before exporting the

commodities to other countries (Raghunathan 1997:61). The manufacturing of products from chank and pearl at Kanchi is also referred to in the *Manimekalai* (Madhaviah 2000:76; Pandian 1989:268). The commercial relation between Kanchi and China can be traced back to the second century BCE when Chinese gold and silk were exchanged for south Indian pearls and other products. By the second century CE, Roman trade with India and China reached a highly developed stage in which south India acted as intermediary in the trade between China and the Mediterranean region (Sastri 1939:44–5; Sastri 1955:84–6). Sangam literature mentions about varieties of bangles and other kinds of shell ornaments worn by the men and women of the age (Kanakasabhai 1956:161).

The right-whorled chank called *Valampuri*, which is an object of worship today, has been sacred to Indians since early times. This kind of chank was rare to find while *Edampuri* or the left-whorled chank was commonly available. The *Ahananuru* mentions that such variety of chank was obtained from the sea at Korkai (Arunachalam 1952:38–9). The *Muthollayiram*, a collection of Tamil poems written between the fifth and twelfth century CE, refers to women wearing the chank bangles and also how the pearls are produced by the chank (Arunachalam 1952:20–5). But literary texts more often mention oysters as the source of pearls obtained by diving deep into the sea (Athiyaman 2000:12–4, 27; McCrindle 1877:114). A colony of chank cutters at Korkai is mentioned in the *Maduraikanchi* and their settlement also at Puhar (Kaveripattinam) is recorded by the *Silappadikaram* (Arunachalam 1952:27; Daniélou 1967:19; Naidu & Ganesan 1979:38–9).

Foreign accounts also accord significant space to these industrial activities. For instance, they note the Kholkhic emporium (Kholkhic Gulf or Gulf of Mannar) as the chief centre of pearl fishery. The fact was corroborated by the discovery of large quantities of pearl oyster shells from excavations near Korkai and Kayal by R. Caldwell (Caldwell 1881:17–8, 282–4). The *Periplus* also mentions Agarū identified with Uraiyur, which gathered pearls for trade from the Palk Bay. The work further refers to the imports of corals at the Indian ports of Barbaricum, Barygaza, Muziris and Nelcynda. The account further records that the pearls collected from Korkai on the Coromandel Coast were sold at Nelcynda on the Malabar Coast which was an emporium of foreign trade in the first century CE (Casson 1989:75, 81, 87; Liu 1988:55–7). Pliny mentions about the exchange of corals from Rome with Indian pearls as both were highly prized on account of their demands creating avenues for the export-import of these products (Rackham 1938:163). In ancient times, the pearls from the Persian Gulf and the Gulf of Mannar were preferred in Babylon, Egypt, Greece, Rome and even by China on account of its superior quality to those found in the Red Sea and Gulf of Aden. The highly valued ‘oriental pearls’ (Arunachalam 1952:31) till the beginning of the twentieth century were retrieved from the Persian Gulf and the Gulf of Mannar. The Pandyas of Sangam Age, who began their rule from Korkai and later shifted the capital to Madurai, had an undisputed monopoly in fishing the pearls and its trade up to the period before the commencement of the Common Era. But new breakthrough in this sphere came with the development of fisheries in the Palk Bay by the Cholas in the first century CE after their conquest over the Pandyas and Ceylon (Arunachalam 1952:31–3; Athiyaman 2000:6–14; Caldwell 1881:40–1, 73–7; Sastri 1929:140). The accounts of the Chinese traveller Pan Gu (Pan Kou) written in the first century CE record the maritime contacts between India and China. He mentions about Hounang-tche, identified as Kanchi by scholars, and a variety of its products including the large pearls (Arunachalam 1952:49–50, Sastri 1939:44). Faxian (fourth century CE) and Xuanzang (seventh century CE), however, do not provide any notable information about the chank and pearl industry in south India during the period of their visit to the region. Later, Ma Duanlin (Ma-Twan-lin), a medieval

Chinese historian of the twelfth century CE, notices about south Indian merchants trading in pearls with South-East Asia during the second half of the sixth century CE on the basis of earlier records (Sastri 1939:93). Marco Polo (thirteenth century CE) also mentions the months April and May during which pearls were grown in the Pandya kingdom (Sastri 1939:163).

Archaeological Sources

In the epigraphic records the trade of pearls in Tamil region can be traced to as early as the second century BCE through the contemporary Mangulam Tamil-Brahmi inscription from Madurai district which mentions about the pearl trade and also of an official as the Superintendent of Pearls (Mahadevan 2003:123, 153). Furthermore, the ancient community of the *Paravas*, who are believed to be the ancestors of the Pandyas of Madurai, were engaged in pearl fishing as shown in an early Tamil inscription (Deckla 2004, Heras 1936). The later period copper-plate grants such as those issued by the Cholas and Pandyas also mention pearl among the items of donations to religious institutions or temples. For instance, the famous Thanjavur (Tanjore) inscriptions of Rajaraja Chola record the setting up of a copper image in the Rajarajesvara Temple and gifts of ornaments including variety of pearls for the deity (*SII* 1891:222–4). The noteworthy numismatic discovery in relation to the importance of conchs in south Indian context are several coins with the depictions of Srivatsa and conch shell motifs found at different sites such as Kyaikkatha, Kyo Bin Kone Kyaung and Winka in Lower Myanmar. Many of these discoveries, datable to the period between the fifth and seventh centuries CE, show similarities in design with those issued in Andhra region during the early centuries CE (Gutman 1978, Thuang 2019).

The earliest use of shell ornaments such as beads and pendants can be traced to the Upper Paleolithic period as observed in the excavation at Patne in Maharashtra (Thakuria 2013). The excavations at various sites in Tamil Nadu too have brought to light valuable evidence of ancient shell industry. The shell objects have been found in the form of beads, bangles, pendants, ear-discs, circular head ornaments, and utilitarian items such as ladles, spoons, palettes, etc. are commonly found in many early historic sites of Tamil region. The mention of the chank cutters at Korkai in the poem *Maduraikanchi* is corroborated by the archaeological finds by James Hornell. He discovered the chank-cutting machinery at this coastal site which was used for manufacturing bangles (Arunachalam 1952:27, Hornell 1913, Hornell 1914:42–5). A large number of shell objects were also discovered at Korkai suggesting the presence of a major shell industry at this place. The occurrence of shell bangle pieces and sawed conches for making bangles in large number along with inscribed potsherds indicates the origin of this industry in Sangam age. The archaeological finds at Korkai also reflect further continuation of the shell working at the site and in the nearby areas almost up to the late medieval times (Majeed 1987). This can be seen in the flourishing stage of chank working at Kayalpattinam (Kayal/Palayakayal), located in the present day Thoothukudi (Tuticorin) district, which emerged as a port to the north of Korkai on the new mouth of river Tamraparni in *circa* 1000 CE. A series of chank workshop waste along with Pandyan coins have been found at the site (Caldwell 1877:80–2, Hornell 1913, Raman 1988b). Excavations at Alagankulam also brought to light several shell objects including conches in different stages of bangle manufacturing which reveal that there too existed a shell industry since 500 BCE. A large number of broken conch bangle pieces and sawed off conch cores were also collected from the site. The evidence suggest that the shell objects such as bangles were an item of export from this port town (Nagaswamy 1991, Sridhar 2011c:75–7). Poompuhar (Kaveripattinam) excavations too have yielded shell bangles datable to the early centuries (*IAR* 1961-62:26–7, 1964-65:24–5, 1977-78:50). Similarly,

unfinished shell beads and cut pieces of bangles found mixed together at Karaikaddu (Kudikadu) in Cuddalore district also serve as a testimony to the existence of a well-developed manufacturing centre of shell objects. On the basis of the antiquities, the site is tentatively dated between the first century BCE and second century CE (*IAR* 1988-89:80, Raman 1992). The excavation of Arikamedu has also yielded cut chank cores from the post-Arretine layers in the Northern Sector, datable to post-50 CE, suggesting the practice of chank fishing and manufacture of shell artefacts at this port centre. These sawn conch shells appear to be the unfinished bangles (Wheeler et al. 1946:22–3, 108).

The beads, bangles and pieces of cut-shell discovered at inland centres such as Tirukkampuliyur show different stages of manufacturing these shell products (*IAR* 1961-62:28, 1962-63:14, Mahalingam 1970:19). A large number of shell beads and bangles datable from *circa* second century BCE to the sixth century CE were also found at Alagarai (Mahalingam 1970:50). Twenty-five shell bangles from early levels at Uraiyur found along with russet-coated painted ware and black-and-red ware suggests the early origin (*circa* third century BCE) of the shell industry. The bangles with vertical grooves and floral decorations from this site are remarkable specimen of craftsmanship (*IAR* 1964-65:25, Raman 1988a:100). The decorations on the bangles from Uraiyur, however, are different from those found at Alagarai, Tirukkampuliyur and Arikamedu which indicate that they were produced locally. Furthermore, the remains of sawed conches from the excavated trenches at Kodumanal in Erode district attest to their use in the making of beads and other shell objects (Sridhar 2011b:8–13). The site has undergone many seasons of excavations yielding varieties of shell products in different stages of manufacturing which indicate that the place, located on a principal trade route, was famous as an industrial and trading centre (*IAR* 1990-91:67–8, 2012-13:142; Rajan 1991:111–2, Rajan 1998:72–7; Rajan & Athiyaman, 2004; Sridhar 2011b:40). Boluvampatti in Coimbatore district also yielded shell bangle pieces in the excavated trenches at the site (Sridhar, 2004, pp. 61–62). Such evidence have also been found at the sites such as Perur (*IAR* 1970-71:33–4, Shetty 2003:8–9) in Coimbatore district and Kambarmedu (*IAR* 1982-83:79, 89) in Thanjavur district. Shell bangles, beads and bangle pieces in large number datable to the third century BCE to sixth century CE occur at Perur. The presence of conches and sawed conch pieces further show that the site functioned as a manufacturing centre of shell products (Shetty 2003:20–5). Shell beads and bangles, dated to *circa* first century CE, also constitute precious finds at Karur (Sridhar 2011b:70).

In this context it is important to observe that the shell products reported from burials at Megalithic sites such as T. Kallupatti (*IAR* 1976-77:46–7) in Madurai district push back the antiquity of the shell industry in Tamil region by a few centuries. The site of Kovalanpottal in Mudrai district, excavated in 1980 by Tamil Nadu Archaeology Department (TNAD), also showed the presence of shell bangles, a sawed conch, and shell bangle pieces decorated with designs such as criss-cross pattern and vertical lines (Sridhar 2004:29–30, 33). Shell objects including hairpins and bangles were unearthed at Sengamedu in Villupuram district (Banerjee 1956, Ramachandran 1980:104–5). Pieces of shell bangle datable to the period from *circa* 100 BCE to 200 CE were also discovered from excavations during 1980-81 at Adiyamankottai in Dharmapuri district (*IAR* 1980-81:65). The excavation, which was continued in the following year 1981-82, yielded further evidence in the form of shell bangles and bangle pieces belonging to the periods *circa* 100 BCE – 300 CE and *circa* 300 – 1000 CE respectively (*IAR* 1981-82:63). Teriruvveli in Ramanathapuram district is another site which was systematically excavated during 1999-2000. Of the two cultural periods observed here, Period II datable to the period from 100 CE to 300 CE showed the presence of shell bangle pieces along with rouletted ware, sherds

inscribed with Tamil-Brahmi characters, beads and other antiquities (Sridhar 2011a:105–15). Besides the shell bangle pieces found in the exploration of the site, a shell bangle was also collected from the megalithic layer at Tiruttangal in Virudhunagar district in the excavation conducted by the TNAD during 1994-95 (Sridhar 2004:7, 16). Mangudi in Tenkasi district was also excavated by the TNAD during 2001-02. Besides other antiquities, the finds from the site include pieces of conch bangles and small shells datable to the early historic phase (Shetty 2004:59–61). Andipatti in Tiruvannamalai district, excavated during 2004-05, brought to light twenty-four bangle pieces which were made from conch shell. Besides, shell beads too were found at the site (Sridhar 2005:25–6, 43). Conch bangle pieces including a few decorated with criss cross lines, datable to 500-1400 CE (Period III), were also found from different trenches at Modur in Dharmapuri district which was excavated in 2004-05 by the TNAD. In total sixty-five such pieces along with a few sawed conches and shell studs were unearthed indicating that the site was an important industrial centre of shell products (Sridhar 2005:11–6, 43–4). The recent excavations at Keeladi (Keezhadi) in Sivaganga district during 2015-16 yielded considerable number of pearls suggesting the presence of a pearl and shell industry at the site. The occurrence of shell bangles along with other kind of ornaments in large number from the excavated trenches indicates the economic prosperity of this industrial centre in the early historic period (Rajan, 2019, Ramakrishna et.al. 2018).

Conclusion

The available evidence help us trace the origin, continuity and survival of the shell industry in the ancient Tamil Nadu. Besides the notices in the literary works including foreign accounts, archaeological excavations too have revealed the existence of shell working industries at many sites of early Tamil Nadu since the third-second centuries CE, which was necessitated by the popular demand of the shell objects. The nature of the excavated artefacts suggests that the production was mostly organised at local level as the designs, decorations and other features contained in the objects vary at different sites. The evidence discovered hitherto further suggests that shells were mostly used for manufacturing ornaments such as bangles studs etc. which ancient Tamils were fond of. Furthermore, the extensive coastline of Tamil region facilitated the supply of such marine products in ample quantity in order to meet the demand not only from other regions of the subcontinent but also from other countries. The products, nevertheless, were among the prized commodities of exchange in trade. These molluscan species were procured from diverse coastal regions and their presence at various sites within the subcontinent as well as countries across the seas suggests human mobility facilitating commercial and cultural interaction. As such objects were not confined to the coastal sites, their occurrences also at inland centres testify to the presence of very active trade network in the region. This provided stimulus for the economic growth in the region leading to urbanisation. The study, therefore, indicates that the sea and the marine resources were of immense value in the life of ancient Tamils.

Abbreviations

IAR: Indian Archaeology – A Review

SII: South Indian Inscriptions

TNAD: Tamil Nadu Archaeology Department (Tamil Nadu State Department of Archaeology)

Bibliography

- Arunachalam, S., 1952, *The History of the Pearl fishery of the Tamil Coast*, Annamalai Nagar: Annamalai University.
- Athiyaman, N., 2000, *Pearl and Chank Diving of South Indian Coast (A Historical and Ethnographical Study)*, Thanjavur: Tamil University.
- Athiyaman, N. and Rajan, K., 2004, “Traditional Pearl and Chank Diving Technique in Gulf of Mannar: A Historical and Ethnographic Study”, *Indian Journal of History of Science*, 39(2):205–26.
- Banerjee, N.R., 1956, “Excavations at Sengamedu”, *The March of India*, VIII (8):43–46.
- Caldwell, R., 1877, “Explorations at Korkai and Kayal”, *Indian Antiquary*, VI:80–82.
- Caldwell, R., 1881, *Political and General History The District of Tinnevely, in the Presidency of Madras, From the Earliest Period to its cession to the English Government in A.D 1801*, Madras: Government Press.
- Casson, Lionel (tr.), 1989, *The Periplus Maris Erythraei: Text with Introduction, Translation, and Commentary*. Princeton: Princeton University Press.
- Daniélou, Alain (tr.), 1967, *Shilappadikaram (The Ankle Bracelet)*, London: George Allen & Unwin.
- Deckla, S., 2004, “Maritime History of the Pearl fishery Coast with special reference to Thoothukudi”, Ph.D. Thesis Department of History, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu.
- Gutman, P. Pamela, 1978, “The Ancient Coinage of Southeast Asia”, *Journal of the Siam Society*, 66(1):8–21.
- Heras, Henry, 1936, “The ‘Minavan’ in Mohenjo-Daro”, *The Journal of Oriental Research*, Madras, X:281–88.
- Hornell, James, 1913, “The Chank Bangle Industry; Its Antiquity and Present Condition”, *Memoirs of Asiatic Society*; 3 (7):407–48.
- Hornell, James, 1914, *The Secred Chank of India: A Monograph of the Indian Conch (Turbinella Pyrum)*, Madras: Madras Government Press.
- Hultzsch, E. (tr. & ed.), 1891, *South Indian Inscriptions (Tamil Inscriptions of Rajaraja, Rajendra-Chola and others in the Rajarajesvara Temple at Tanjavur)*, II(1), inscription no. 55, 222–24.
- Indian Archaeology – A Review*, 1961-62:26–28; 1962-63:14; 1964-65:24–25; 1970-71:33–34; 1976-77:46–47; 1977-78:50; 1980-81:65; 1981-82:63; 1982-83:79, 89; 1988-89:80; 1990-91:67–68; 2012-13:142.
- Iyengar, P.T. Srinivas, 1929, *The History of the Tamils From the earliest Times to 600 A.D.*, Madras: C. Coomaraswamy Naidu & Sons.
- Kanakasabhai, V., 1956, *The Tamils 1800 Years Ago*, Madras: SISSW Publishing Society.
- Liu, Xinru, 1988, *Ancient India and Ancient China (Trade and Religious exchanges A.D 1-600)*, Delhi: Oxford University Press.
- Madhavia, A. (tr.), 2000, *Manimekalai*, Chennai: International Institute of Tamil Studies.
- Mahadevan, Iravatham, 2003, *Early Tamil Epigraphy from the Earliest Times to the Sixth Century A.D.*, Cambridge: Harvard University Press.
- Mahalingam, T.V., 1970, *Report on the Excavations in the Lower Kaveri Valley (Tirukkampuliyur and Alagarai), 1962-64*, Madras: University of Madras.
- Majeed, Abdul, 1987, “A Note on Korkai Excavations”, *Tamil Civilization*, 5 (1&2):73–77.
- McCrindle, J.W., 1877, *Ancient India as described by Megasthenes and Arrian*, London: Trubner & Co.
- Nagaswamy, R., 1991, “Alagankulam — An Indo-Roman Trading Port”, in Magrabandhu, C., Ramachandran,

- K.S., Sagar, A.P. & Sinha, D.K. (eds.), *Indian Archaeological Heritage, Shri K.V. Soundara Rajan Festschrift*, vol. I, 247–58, Delhi: Agam Kala Prakashan.
- Naidu, S. Shankar Raju and Ganesan, S. N. (tr.), 1979, *Chilappadiharam (Hindi), Adi Tamil Mahakavya of Ilango Adihal*, Madras: University of Madras.
- Ostroff, Samuel Miles, 2016, “The Beds Of Empire: Power And Profit At The Pearl Fisheries Of South India And Sri Lanka, C. 1770-1840”, Publicly Accessible Penn Dissertations. <https://repository.upenn.edu/edissertations/2507>. (accessed on 21 August 2021)
- Pandian, P. (tr.), 1989, *Cattandar's Manimekalai*, Madras: The South India Saiva Siddhanta Works Publishing Society Limited.
- Rackham, H. (tr.), 1938, *Pliny, Natural History*, vol. I, London: The Loeb Classical Library.
- Raghunathan, N., 1997, “Pattinappalai”, in *Six Long Poems from Sangam Tamil*, 55–68, Chennai: International Institute of Tamil Studies.
- Rajan, K., 1991, “Iron and Gemstone Industries as revealed from Kodumanal Excavations”, *Puratattava*, 20 (1989-90):111–12.
- Rajan, K., 1998, “Further Excavations at Kodumanal, Tamil Nadu”, *Man and Environment*, XXIII (2):65–76.
- Rajan, K. and Athiyaman, N., 2004, “Traditional Gemstone Cutting Technology in Kongu Region in Tamil Nadu”, *Indian Journal of History of Science*, 39 (4):385–414.
- Rajan, K., 2019, “Maritime Relations between Peninsular India and Southeast Asia: An Archaeological Perspective”, *Act East: ASEAN-India Shared Cultural Heritage*, 45–84, New Delhi: Research and Information System for Developing Countries (RIS) and ASEAN-India Centre (AIC).
- Ramachandran, K.S., 1980, *Archaeology of South India – Tamilnadu*, Delhi: Sundeep Prakashan.
- Ramakrishna, K. Amarnath. et. al., 2018, “Excavation at Keeladi, Sivaganga District, Tamil Nadu (2014-15 and 2015-16)”, *Heritage: Journal of Multidisciplinary Studies in Archaeology*, 6:30–72.
- Raman, K.V., 1988a, *Excavations at Uraiyur (Tiruchirapalli) 1965-69*, Madras: University of Madras.
- Raman, K.V., 1988b, “Port Towns of Tamilnadu – Some Field Data and the Prospects of Marine Archaeology”, *Marine Archaeology of Indian Ocean Countries (Proceedings of the First Conference – October 1987)*, 114–18, Goa: National Institute of Oceanography.
- Raman, K.V., 1992, “Further Evidence of Roman Trade from Coastal sites in Tamil Nadu”, in Begley, V. & De Puma, Richard Daniel, (ed.), *Rome and India: The Ancient Sea Trade*, 125–33, Delhi: Oxford University Press.
- Sastri, K.A.N., 1929, *The Pandyan Kingdom, From the Earliest Ties to the Sixteenth Century*, London: Luzac & Co.
- Sastri, K.A.N., 1939, *Foreign Notices of South India (From Megasthenes to Mahuan)*, Madras: University of Madras.
- Sastri, K.A.N., 1955, *The Cōlas*, second edn., Madras: University of Madras.
- Shamasastri, R. (tr.), 1915, *Kautilya's Arthashastra*, Bangalore: Government Press.
- Shetty, K. Ashok Vardhan (ed.), 2003, *Excavations at Perur*, Chennai: Department of Archaeology, Government of Tamil Nadu.
- Shetty, K. Ashok Vardhan (ed.), 2004, *Excavations at Mangudi*, Chennai: Department of Archaeology, Government of Tamil Nadu.

- Sridhar, T.S. (ed.), 2004, *Excavations of Archaeological Sites in Tamilnadu (1969-1995)*, Chennai: Department of Archaeology, Government of Tamil Nadu.
- Sridhar, T.S. (ed.), 2005, *Andipatti (2004-05)*, Chennai: Department of Archaeology, Government of Tamil Nadu.
- Sridhar, T. S. (ed.), 2005, *Excavations of Archaeological Sites in Tamilnadu, Modur (2004-2005)*, Chennai: Department of Archaeology, Government of Tamil Nadu.
- Sridhar, T.S. (ed.), 2011a, *Archaeological Excavations of Tamil Nadu, Vol. I (Sendamangalam, Maligaimedu, Teriruveli)*, Chennai: Department of Archaeology, Government of Tamil Nadu.
- Sridhar, T.S. (ed.), 2011b, *Archaeological Excavations of Tamil Nadu, Vol. II (Kodumanal, Karur, Poompuhar)*, Chennai: Department of Archaeology, Government of Tamil Nadu.
- Sridhar, T. S. (ed.), 2011c, *Alagankulam, An Ancient Roman Port City of Tamil Nadu*, Chennai: Department of Archaeology, Government of Tamil Nadu.
- Thakuria, Tilok, 2013, “Shell Bangle Making in Coastal Odisha: A study of Surface Collection art Manikapatana”, *Journal of Indian Ocean Archaeology*, 9:23–34.
- Thuang, Mya Mya, 2019, “A Study on Ancient Cultural And Civilization Links between India and Myanmar”, *Act East: ASEAN-India Shared Cultural Heritage*, 85–107, New Delhi: Research and Information System for Developing Countries (RIS) and ASEAN-India Centre (AIC).
- Wheeler, R.E.M., Ghosh, A. and Deva, Krishna, 1946, “Arikamedu: An Indo-Roman Trading Station on the East Coast of India”. *Ancient India*. 2:17–124.