CHAPTER - VI

UNDERWATER EXPLORATION AND EXCAVATION

Under water exploration and Excavation in Nagapattinam District (Poompuhar) was carried out by the joint efforts of Tamil Nadu State Department of Archaeology and the National Institute of Oceanography, Goa. The findings from above works are discussed in this chapter.

Underwater Archaeology

Excavation is not confined to dry land. Underwater archaeology has been considerably developed in 20th century. It involves many of the same techniques of observation and excavation required at land sites. In addition, of course one must be trained as a diver.

Sponge divers made the first great archaeological discoveries in Mediterranean. In 1942, Jacques Yves Cousteau developed the self contained breathing apparatus known as the Scuba, of which the most commonly used type is the aqualung. Cousteau’s pioneering work near Marseilles and that of the American Archaeologists George Bass and Peter Throckmorton off the coast of Turkey demonstrated the amazing possibilities of archaeology under the sea. Work on a Byzantine shipwreck near Yassi Ada, Turkey, from 1961 on led to the development of the photogrammetric mapping of shipwrecks and
the launching in 1964 of the Asherah, a two seated submarine specially designed for archaeological exploration.¹

**Under Water Exploration in Nagapattinam District**

Surface exploration at Kilaiyur, a part of poompuhar in Nagapattinam District in the year prior to 1963 had yielded square copper coins with tiger emblem which was the royal crest of the early Cholas. Other finds include beads of semi-precious stone and amphora pieces. The most significant discovery was an “I” shaped brick structure, exposed in the ancient channel of Kaveri at Kilaiyur which is now completely silted. This brick structure with a drain for the flow of water and platform and wooden posts for handling cargo served as wharf.² The joint offshore exploration in 1981 by the Department of Archaeology, Tamil Nadu and National Institute of Oceanography, Goa revealed some conspicuous features of Poompuhar. They could not be identified as no underwater exploration followed immediately.

Since 1989 underwater explorations have been carried out in Tranquebar, Poompuhar waters.³ The successive investigations in the intertidal zone as well as offshore region in 5 to 8m water depth revealed a number of ring-wells and brick structures in the intertidal zone and submerged stone structures along with early historical pottery in shallow
waters and two other objects in deeper water. One of them was identified as a shipwreck which was carrying lead ingots dated 1791-1792 A.D.

**Under Water Exploration in Poompuhar**

A Purananuru poem (padal. 30) says that big ships entered the port of Puhar without slacking sail, and poured out onto the beach precious merchandise brought from overseas. In the extensive markets of Puhar there were many tall mansions surrounded by platforms reached by high ladders. These mansions had many apartments and were provided with doorways, great and small, and with wide hallways and corridors (Pattinappaalai-II-142-158). In all parts of the town there were flags flying of various kinds and shapes. Pattinappaalai, a poem that describes the ancient Puhar very vividly, was written by the poet Kadiyalur Uruthirangannanaar is part of the Ten Idylls anthology and was sung in praise of Karikala Chola, second century Chola king.

The preliminary survey on the sea off the shore of Poompuhar began in the year 1981. This exploration was carried out by the joint efforts of Tamilnadu state Department of Archaeology and the National institute of oceanography, Goa. The exploration was made by deploying side scan sonar, Echo sounder and magnetometer. These sophisticated equipment showed some tangible results on the graphs. Three peaks measuring about two to three metre height were located. The national institute of
oceanography had suggested the undertaking of intensive exploration by sending divers into the sea.\textsuperscript{7}

On the advice of the National institute of oceanography, state Department of Archaeology submitted a proposal to government for carrying out the intensive exploration. Government were pleased to grant an initial sanction of about 10 lakhs rupees for the year 1990-91. After having made necessary arrangements for the survey, the exploration had started on 25\textsuperscript{th} February 1991 in the sea off the shore of poompuhar.

During this season geophysical survey was also conducted first to locate the object. This survey was done by a team of scientists of C.S.I.R. First they located a shipwreck under sea, about 70 feet in depth and about 4.5km away from the sea shore. When this shipwreck was examined by trained divers, it was found that there were considerable number of ingots some of which bearing the legend W.blackett written in English script on one side and the year 1792 on the side. Hence it is clear that this shipwreck might have occurred in the year 1792 or after.\textsuperscript{8}

Further survey had revealed that there is a row of strutures under sea in shallow waters about 200 to 300 meters away from the seashore. A group of structure is located near the kaveri confluence another just opposite to the present kannagi statue and a few just opposite to the present light house. When one site was examined by sending divers, it was found that the
structure was completely covered by sea sand, and is about one meter below the sea bed. Due to the transportation of sand by tides the clear visibility was not found. However with great effort the divers could collect few sand stone slabs, a brick and some potsherds. These artifacts confirm that there could have been habitational structure.

During the closing period of exploration the scientists were able to locate one big site surmising that it could be a big structure of Sangam age assignable to 1\textsuperscript{st} century A.D., to 2\textsuperscript{nd} century A.D. Then it became the centre of intensive survey. Divers were sent to explore it thoroughly. First they paid attention to decide if it could be a structure or a sea rock. Finally they came to the conclusion that it was a man made structure. Then they took measurement and made drawings on graph sheet. They brought some sample of stones that were found used for construction. The stone appear to be either sandstone or laterite.

This structure appears to be in apsidal shape facing north. The thickness of the wall runs about one to two meter. At some places the height of the wall goes upto five to six meters. Total length of the structure is about 20m meters and the with about 15 metres. It is about 23.5 meters in depth this place was traditionally known as karaiyappar. This site is about 4.5km. away from seashore. If this structure is proved to be one of the structures of ancient city Poompuhar, then the city could have extended upto this part. So
there could be the possibility of having about half of the city submerged under sea. The reference to the submersion of Poompuhar in literature has clear bearings and is proved beyond doubt by the material evidence. Further survey would reveal more facts about the once glorious city Poompuhar.

During the year 1993 the explorations were carried out from 27.1.93 to 28.2.93 and the diving operations were supported by echosounding and side-scan sonar surveys for seafloor studies. The mini-ranger and GPS were deployed for position fixing. The main objective of this survey was to find out the submerged extension of the ancient town of Kaveripoompattinam and how much of it was swallowed by the sea. During the present season explorations were carried out in the inertial zone as well as offshore area between Vanagiri in the south and Nayakkarkuppam in the north at the water depth of 5 to 7m. Also some more details on previously located shipwreck and a stone structure in 23m, water depth were collected.

The exploration of the intertidal zone revealed the presence of ringwells at at vanagiri and Poompuhar. At both the sites one ringwell each was exposed. A brick wall of the sangam period was exposed a few meters south kannagi statue. The brick size of this structure is 36x18x6cm the ringwells and structure are assignable to period II if the kilaiyur wharf is assigned to period I (3rd century A.D.) Ring wells may be of 2nd century A.D., to 4th century A.D. During low tide operation four brick structures
were exposed opposite the present kaveri mouth at 1m depth. The exploration of these structures indicate that they are disturbed walls 25m, in length and 3.4m, in width. The size of brick used is 22x13x6cm, and lime mortar served as binding medium. Provisionally the structural remains are assigned to period II.

As a follow up action deeper water of Poombuhar were explored. Two site were selected on the basis of geophysical survey. One is opposite to the present kaveri mouth near Vanagiri and another opposite to Kadaikkadu situated north of Poombuhar. Airlift operation in 7m depth revealed three courses of stone masonry off vanagiri. The blocks vary in size 30x20x5 cm, and 60x35x10 cm. the approximate date of the structure can be ascertained from associated pottery collected at both the sites. Megalithic black and redware, redware, greyware and buff ware are assignable to period II (2nd century A.D., to 4th century A.D.,) the artifacts belonging to period III (5th-12th century) such as chola coins, bricks and tiles ect., were absent.11

The shipwreck discovered in 1991 at a water depth of 19m was explored further and the wooden planks of the hull were traced. This ship is about 50m, in length and 15m, in width. This ship wreck of 1791-92 is assignable to period IV (12th-18th century A.D.,) as a result of this seasons exploration it was possible to identify three periods of structural remains of ancient Poombuhar, the first one above high wave level, the second in 1m,
depth and the third in 5 to 7m depth. These evidences are only indicative of the extensive submergence of the ancient port settlement.\textsuperscript{12}

Further work alone will reveal the full extent of one or more settlements of 3rd century A.D., to 4th century A.D., in a vast area extending from Nayakkarkuppam to Tranquebar. The nature and age of the v-shaped structure in 23m depth are yet to confirm that a part of an ancients in an area traditionally known as Poompuhar was submerged and archaeologically significant evidence has been obtained both for submergency of the town and transgression of the sea.\textsuperscript{13}

During the exploration carried out in the year 1994 it was found that the sea was eroding the coast heavily and even the month of Kaveri near Kaveri temple was buried under sediment. Its connections with the sea was cut off. Between vanagiri temple and chinnavanagiri at a few places rectangular compact mud platforms of what appeared to be plinths of buildings from which bricks were washed away were explored in the intertidal zone close to the shore. It was therefore decided to lay trenches at a few places (VGR 1 VGR 2 VGR 3) in the inter tidal zone over a length of 1km along the coast to the north and south of the vanagiri temple. The excavation had to be done very cautiously since the site was being eroded very fast almost every hour.
The excavation revealed two terracotta ringwells one to the north (VGR 1) and the other to the south (VGR 2) of vanagiri temple. Many rings have been washed away from them. After further excavation in trench (VGR 2) two more ring wells came to light but they could not be photographed owing to poor visibility. In trench (VGR 3) a neatly paved floor of a brick structure in situ which may be a wharf or floor of a house was exposed in excavation and a rectangular platform further north of it was also recored within a distance of 500m, south of vanagiri temple atleast two structures and three ringwells have been discovered.

The size of the bricks of the structure is 35x20x5 cm while stray bricks stray bricks found on shore measures 26x20x6 cm in view of the high rate of coastal erosion it is now fairly certain that the bricks structure in 7 m, depth off kadaikkadu associated with megalithic black and red ware (noted in the exploration in 1993) do belong to Sangam and Per Sangam periods as did the brick wharf at kilaiyur. Similarly other feature in 11-12m depth also a part of Poompuhar city and port and therefore the zone upto 23m depth needs to be intensively explored n the fair season. The sea has encorached on the ancient city and submerged atleast an area of 5 km along the coast and 2 km seaward from kadaikkadu to chinnvanagiri and further south. This must be minimum extent of the ancient chola port. It will not be surprising if the cairn circle near Tranquebar takes the ancient habitation to mid first millennium A.D.14
The 1994 exploration has extended the limit of the submerged city of Poompuhar and highlighted the fact that appeared to be mere caly patches are actually remains of ancient brick buildings under sediment. Due to the discovery of move artefacts in the inter tidal zone. It was proposed to explore initially seaward of kadaikkadu to chinnavanagiri in 5 to 12m. zone in August-September subject to weather conditions and visibility. Exploration in deeper depths up to 23 meters can be taken up later.15

On shore excavation is essenyial for correlating the submerged structure with those buried under sand dunes to the north south of Kannagi statue between Nayakarkuppam and Chinnakudi. It is also necessary to put some trial trenches between Kilaiyur wharf and the sea shore as also in the vanagiri and chinnavanagiri beach. Immediately after exploring structural remains in future onshore and offshore excavations. It is necessary to conserve a few highly significant ones such as ringwells, wharf and brick paved houses.

During the off shore exploration of Poompuhar which began on 18th August 1994, the scientist and the diver archaeologist made exploration to recover the things of archaeological potentialities immersed under the sea. Due to the bad manson and the unfavourable weather, it was impossible to deploy the air lifting opearations to unearth the antiquities that are hidden under earth. Due to the sea currents and rough waves the visibility is zero for
nearly 3 kilometers and also it was impossible to photograph the exploration work. Hence the exploration work was suspended for the time being and to be continued in the month of February-March 1995.16

In the year 1997 from 4-2-97 to 12-3-97 the exploration undertaken from north to south part of Poompuhar. The exploration revealed that the U shaped structure was constructed with laterite stone and noticed towards north south direction. The ship wreck portion was also explored for further investigation. The government of Tamilnadu has constituted an expert committee in continuation of the announcement made by chief minter of Tamilnadu at world Tamil Classical conference to under take off shore exploration at Poompuhar and Kumari Kandam.17 (vide Go. Rt. No 261 tourism dt 10. 12. 2010).

Antiquities Collected from Undersea Excavation

In the above excavation the following antiquities were collected. The parts of the submerged ship unshaped parts of a broken ship excavation under Poompuhar sea were found. This belong to 18th century A.D., Lead blocks of wreckship in 1792. At about five lead pieces measuring about 8 cms x 16 cms were discovered in a ship near Poompuhar. In a particular leadblock the year 1792 was inscribed and in another lead block the letter blackett were inscribed. The wreck site lies at a depth of 17 m and is visible over an area approximately 30x15m. the echogram indicates its height above
the seabed to the 2.5 to 3m the wreck appears to be buried in coarse grained sediment. Results of the side scan sonar survey carried out at the shipwreck location indicate two exposures separated by 5 to 6m. it seems likely that the sunken ship broke in two. The metal detector confirmed that part of the ship is buried beneath the sandy sea floor.\textsuperscript{18}

The larger exposed part of the ship is covered with ballast of various sizes and barnacle growth. Due to active fishing at this site a large number of fish nets fish hooks and catamaran anchors are lying over and around the wreck metal detector signals showed that the length of the wreck sites is around 50m with a width of around 15m. The two parts are located close to each other and separated by sand. The larger section probably represents the fore part of the wreck. Since it is lying tilted to one side with a heavy growth of barnacles and a large amount of sediment deposition, it is very difficult to determine the position of the wreck.

A heavily encrusted cannon measuring 2 to 1m in length was located close to the wreck. Two gun powder box and several unidentified objects were also recorded. Between the two parts of the wreck two round circles about 1m diameter were observed. These appear to be the hatches of cargo holds. Airlift operations inside these holes were difficult due to the heavily encrusted stone blocks.
The most informative findings were lead ingots recovered from the smaller portion after part of the wreck. Due to barnacle growth the ingots were cemented together and it proved extremely difficult to separate them. However, a few ingots were successfully retrieved for further study. All the symbols and signs impressed on the lead ingots were made visible by chemical treatment. Based on their shape, size and imprints the ingots could be classified into three broad groups. Similar lead ingots have been found in wrecks discovered in other countries. Lead ingots with the (VEIC) stamp were recovered from the English east Indian man albion which sank in 1765 enroute for china. These were boatshaped and ranged in weight from 76.8-79.4kg. the lead ingots in group 5 from the wreck of the Dutch east Indian company are close in weight and length to the Poompuhar wreck (larn, 1985 100).

Another Dutch East Indianman the kannemerland contained lead ingots of similar length to those of the Poompuhar wreck but these were heavier. Lead ingots with the inscription blackett have been reported from Dutch waters but these belong to the later period 1825 A.D. Lead ingots from both the Netherlands wreck the Poompuhar wreck were manufactured by William blackett. This company dates back to the 17\textsuperscript{th} century and for much of the 19\textsuperscript{th} century was exported through Newcastle, and particularly Sunderland, to the Baltic among other places. The (VEIC) stamp on two W. blackett ingots shows that the firm was supplying the English East India company.
A copper alloy object was another important artifact recovered from the site. It has two arms 1.27 m long with seven holes in each arm. This rudder gudgeon was recovered along with the lower part of the rudder also made of copper alloy as were ten nails. These were lying about 10 m distant from the exposed portion of the wreck. The artilifiting operation yielded four wooden planks each 20 m wide and possibly from the deck portion of the vessel. Two copper alloy nails were fastened to the planks and it seems to clear that copper was extensively used in the construction of the ship.

**Buddha Statue**

An exquisite Buddha statue made of planad stone dateble to 1st-2nd century A.D., was retrieved from sea at a depth of about 40 feet and in a distance of one and half kilometer seaward from chinnamedu near poompuhar. This Buddha sculpture is a rare object and may be considered to belong to Amaravathi art. This statue was found undersea by a fisherman.\(^{19}\) Under water exploration in Nagapattinam district especially of Poompuhar is explained in a detailed manner. The Antiquities colleted from under sea excavation are also discussed very elaborately in this chapter. A Buddha statue is also fined under see by fisherman was an additional information.
END NOTES


6. **Puranaanuru padal, 30 (poem).**  புராணனுரு படல் 30.

8. Ibid., p. 105.


10. Ibid.


17. Ibid.
