

TRADITIONAL PEARL AND CHANK DIVING TECHNIQUE IN GULF OF MANNAR: A HISTORICAL AND ETHNOGRAPHIC STUDY

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This paper attempts to highlight the traditional pearl oyster fishing technology in Gulf of Mannar region. The technique followed by the native divers of the Indian Coast is traced from *Saṅgam* age onwards to recent days through the sources like *Saṅgam* literature, travellers' accounts and colonial period administrative records. Field survey was done to document the diving techniques of the ethnic community who still follow the traditional methods for collection of conch and other kinds of shells. The study reveals that the technique of pearl oyster collection and conch shell collection is unchanged over centuries till the advent of modern diving equipments. A few of the modern diving accessories like facemask and fin plates found intruded in conch shell diving. The process of pearl fishing is described in chronological order.

Key words: Ethnography, Gulf of Mannar, History, Pearl fishing, Traditional technique

INTRODUCTION

It is a well-known fact that even before Christian era the pearls and chanks (*Xancus pyrum*) obtained from Gulf of Mannar of Indian and Sri Lankan coasts enjoyed a position among the important export commodities to various parts of the world. It is attested by the accounts of travellers like Megasthenes and anonymous author of *Periplus*, *Saṅgam* literature and the archaeological excavations conducted at the ancient port towns of Tamil Nadu and Sri Lanka.

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Pearl and chank trade in huge volume requires a big industry to obtain them from the sea. The pearl oysters, which live at a depth between 4 and 12 fathoms, are to be brought up for processing. This involves diving, collecting the oysters, bringing overboard and to shore. Diving undersea requires good physique and mental caliber. It involves teamwork and must be done carefully to avoid accident or loss of life. From the earliest times the diving community had a set of diving procedures and it is followed till recently with negligible changes. Arunachalam¹ has studied in detail on the history of pearl fishery of Tamil Coast. His study included the entire Gulf of Mannar region embracing Indian and Sri Lankan coast. The history of pearl fishery exclusively for Sri Lankan region is traced by Mahroof². More over, the technology of pearl fishing is not dealt with adequately in the previous studies. The history or technique of pearl fishing cannot be studied for India or Sri Lanka separately, as the people of both the countries were involved in both the regions. At present there is no pearl fishery conducted in Indian waters and divers are engaged only in chank shell fishing. There is however hardly any difference in the techniques of diving for chank as compared with that of pearls. While the former requires movement of the divers from one spot to another in search of the chank shells the latter requires only the collection of pearl oysters where they are abundant. In order to find out the changes in the technique of traditional pearl fishing an ethnographic study is undertaken on present day chank shell diving techniques along the coast of Tamil Nadu (Fig.1). The procedures followed by the divers at Gulf of Mannar along Indian and Sri Lankan coasts from ancient times are discussed here on the basis of the field data coupled with on the literary evidences and travellers' accounts.

SOURCES

Saṅgam literature mentions the pearl and chank and the people who dived for fishing them. But the method of diving is not adequately recorded. *Kalithogai* (131.22) mentions that the pearl is obtained from the deep sea and *Aganamuru* (350.10-11) talks of the fishing community namely *parathavar*

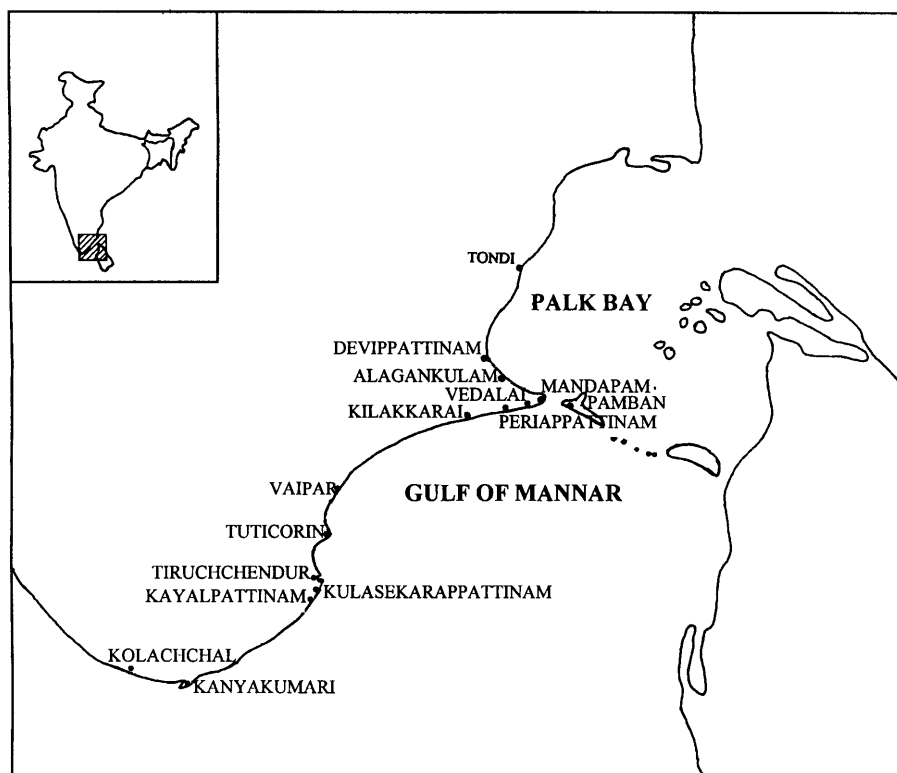


Fig. 1: Map showing the coastal villages surveyed

who charmed the sharks and dived for right whorled chank. But in contrast to this, the travellers' accounts had references mostly to pearl fishery. For them, the pearls were of immense importance in terms of trade. Almost all the travellers who visited Gulf of Mannar region talk about the pearls derived from the sea off Korkai during *Sāṅgam* age. Megasthenes (3rd c. BC) mentions that pearl yielding oysters were fished with nets³. *The Periplus of Erythraean Sea*⁴ (AD 60) mentions that at Kolkhai (Korkai) condemned criminals were employed in this service. As the data is insufficient during *Sāṅgam* age, the method of diving in this period could not be ascertained clearly.

The first reference on pearl diving procedure came from Chau Ju-Kua (AD 1225), the Chinese author of *Chu Fan Chi*, who wrote about the trade between Arabia and China and on the pearl fishery of South India during the

rule of Cholas ⁵. Marco Polo ⁶ (AD 1260-1300) mentions about the pearl fishery and diving procedure of Gulf of Mannar of Indian and Sri Lankan coasts. Later Wang Ta-Yuan (AD 1330), a Chinese traveller, vividly explains the diving for pearl at Gulf of Mannar⁷. After a long gap Caesar Frederic (AD 1563-1581), a Venetian merchant and Van Linschoten who travelled in India between AD 1576 and 1592, left some interesting accounts on pearl fishing technique⁸.

Jean-Baptiste Tavernier (AD 1631-1668) a merchant from France gives valuable data on pearl fishing done at Gulf of Mannar⁹. The description of the conduct of the fishery by Juan Ribeiro in his *History of Ceilao*¹⁰ dated 1685, is one of the detailed accounts available. Father Martin¹¹, a Jesuit missionary, gives graphic description about the diving near Tuticorin conducted in AD 1700. During the British Period, there are several accounts: LeBeck and Steuart¹², Vane and Thurston¹³ and Hornell¹⁴. The 600 years' records between 13th century and 19th centuries do not show remarkable change in the pearl and chank diving procedure.

SEASON OF DIVING

Based on the records available during the colonial period it is generally found that the months between March and middle of May were considered the best season for the fishing. However, the pearl fishing season and period is generally decided on inspection of banks regarding the abundance of pearl oysters and its economic viability.

INSPECTION OF PEARL BANKS

Before the start of fishery the oyster beds were surveyed for its potentiality. This kind of inspection is first reported by Caesar Frederic. He mentions that when the fishing season approaches, some good divers were sent to discover where the greatest quantity of oysters is to be found¹⁵. Tavernier mentions that before the commencement of fishery, inspections were carried

out in seven or eight boats. Thousand oysters brought by each boat are opened for the quantity and quality of pearl found in them. If the pearl worth of half *ecu* or 5 *fanoms* or more is found then the fishery is considered productive in that year¹⁶. Ribeiro adds that based on the yield on the inspection the traders or renters settle their royalty to the ruler¹⁷. Father Martin mentions similar thing¹⁸. From this one can infer that the inspection would have been conducted in the earlier periods also with the help of the experienced local divers who had the knowledge of the pearl beds. These people usually headed a group of divers and generally owned the boats. They were called *adappanars*. Other headmen noticed in the records were *mannigar* and *pattangatyan*. During the British period it is learnt that *adappanars* were utilised in the inspection of pearl banks. They were also used to guide the boats to the fishing grounds. Steuart¹⁹ suggests that these headmen had only general idea about the position of pearl beds. Hence, a planned inspection of the pearl banks was started by Steuart and the proper map was prepared by him. Later this map was updated by the successive superintendents of the fisheries.

COMMENCEMENT OF FISHERY

If the inspections of the pearl banks proved the potential of pearl fishing, the fishery is commenced after giving notice to the public. In the coast an empty space near the pearl banks is selected for the temporary buildings for the safe keeping of the oysters, until they are sold or the pearl is extracted. The Government building was called *cutcherry*. Nearby the boat owners build their temporary huts called *koottos*. This common place is referred by the Wang Ta-Yuan without a specific name²⁰. Ribeiro also quotes of such common place for the fishery²¹. The first specific reference to the name *cottoo* is from Steuart²². *Cottoo* or *kootto* in Tamil means collection or gathering.

Steuart alludes to such places in the following manner. Some of these places had compartments paved with bricks, and covered with *cunam* plaster, which formed a hard smooth surface. From these compartments small gutters

were made to carry off the water and drainage to the sea. To prevent the pearl being washed away with the water, small reservoirs deeper than the gutters were made in them for the pearl to sink into, where it is retained until the *cottoos* are cleansed out. In the *cottoos* prepared by the natives for their own oysters, straw or rush mats are spread on the sand for the oysters to be heaped upon. Through these mats much pearl is lost. Near this place there used to be temporary market of various articles during the entire fishery.

SELECTION OF BOATS FOR FISHING

During the British period the seaworthiness of the boats to be employed for the fishing is tested by the superintendent of the pearl fishery. But there is no evidence of such selection before this period. Boats have been given numbers before the start of the fishery. The boats without numbers were not allowed in the fishing area. There were 'number men' appointed by 'the Government to do this job²³.

Scanty information is available regarding the number of boats employed in each fishery till the British period. Chau Ju-Kua specifies that thirty or forty boats were employed in the fishery²⁴. Marco Polo mentions that boats of big and small size were involved in the fishery. He also says that big boats are anchored near the pearl banks and the smaller ones have been used for fishing²⁵.

Following are information from travellers regarding the numbers of boats employed in pearl fishery: Friar Jordanus (AD 1323-1330), eight thousand boats were engaged for three months²⁶; Caesar Frederic, great number of boats; Ribeiro, three to five thousand boats; Pedro Teixeira (AD 1568), fleet of four hundred to five hundred boats²⁷; Tavernier 250 boats²⁸. The variation of the number of boats in pearl could be the quantity of oysters expected to be taken up. Based on the above evidence it can be concluded that generally hundreds of boats some times more than a thousand from Indian and Sri Lankan coast were engaged in the fishery.

NUMBER OF DIVERS

There was countless number of divers in each boat and in the fishery. Most of latter-day travelers' accounts suggest that generally thousands were at work. In the Sri Lankan fishery of 1694 there were 5524 divers employed in the fishing²⁹. In Tuticorin fishery, during 1708 there were in total 8643 divers comprising of 4760 Christians, 3103 Muslims and 780 Hindus³⁰. In the pearl fishery of Sri Lanka 4090 Arabs from Persian Gulf, and 4577 Tamil and Muslim divers mainly from India were employed in diving³¹.

Chau Ju-Kua remarks that crew of several dozens in each boat were fishing³². Wang Ta-Yuan specifies that each boat had a crew of five men³³. Teixeira mentions that sixty to ninety men were employed in each boat and one tenth of them were divers and others were attendants³⁴. But Tavernier remarks that in bigger boats there were two divers and the smaller ones had only one diver³⁵. From the above it can be inferred that the number of divers in a boat was not a fixed one and varied according to the size of boats and the requirement.

In the year 1746 the Dutch government, framed a rule of allowing only ten divers at the maximum in a boat. This would have continued even during the British period. A notice given by the government clarifies the exact number of people allowed in the boat³⁶. The crew of a boat consisted of 23 persons, who included one *tindil* or steersman, one *saman oattee* who has charge of the boat, one *thody*, who bales out water and cleans the boat, ten divers, ten *munducks*, an operational assistant or diver's attendants to pull up the stone and oysters and aid the divers.

TRADITIONAL EQUIPMENT

The divers in the boat had a minimum number of some locally made equipments. The essential materials are stone, ropes and a net for collection.

Stone

In order to produce negative buoyancy, stones tied in an end of the long rope were held by the divers while they are descending. Stuart says that

the stones were looking like pine shaped and about 25 to 30 pounds. The weight of the stone quite varies from 14 pounds to 60 pounds in different sources. LeBeck elaborates that the diving-stone is a piece of coarse granite, a foot long, six inches thick, and of a pyramidal shape, rounded at the top and bottom. A large coir rope was put through a hole in the top. The most common or pyramidal stone generally weighed about thirty pounds. It has been mentioned by Steuart and Vane that some divers tied some more stone to their waist along with this stone to increase their negative buoyancy. Some of the divers used another kind of stone, shaped like a half moon, to bind round their belly, so that their feet was free³⁷.

Rope and nets

Rope and nets were the important items used during the diving operation. Long rope was tied to of the divers upper hand, which enabled the attendant to lift the diver from bottom. The boats were provided with five small nets, which were commonly termed as baskets. They were made of coir yarn, and were about eighteen inches in width and depth. The mouth was laced to an iron hoop, which was properly slung and suspended to a coir rope³⁸. Father Martin says that pulley fixed on the boat was used to haul the diver up. But this information has not been mentioned in other sources.

DIVING COMMUNITY

The *Saigam* literature mentions an ethnic group named *parathava* were involved in diving. The major occupation of this *parathava* community is fishing. The *Periplus* mentions that condemned criminals were used for such job near Korkai. They would have been *parathavas* and not the criminals. The same community continued the diving activity even during the later Cola and Pandiya periods. The Muslims from the Persian Gulf also participated in the diving at Gulf of Mannar right from the 11th century, which triggered the rivalry between the Muslim divers and the Hindu *parathava* community. This made most of the Hindus to seek help from the Portuguese. They extended the help and thereby

converted the Hindus as Roman Catholics. It is also to be noted that the divers of Indian and Sri Lankan coast were engaged in pearl fishing of both the regions though there were different administrative divisions between these countries throughout the history.

PEARL FISHING

The fishery was commenced on the first night of the boats going out to the banks, and of course created great interest and excitement. If there was moonlight, thousands of people assembled on the beach to see the start, and gave their good wishes. At about 10 o'clock the *tindals* who carried on their right arm a ticket number corresponding with that painted on the bows of each boat, assembled with crews, and as the beach-master checked each crew, they went to their boat and made the preparations of getting under way and into position, ready to hoist the sails and start directly while the signal was given. At 12 o'clock the gun was fired, the *adappanar* (the senior head man) hoisted a light at the masthead and lead off. In a few minutes all the boats were under press of sail, and the sight was indeed a very interesting and exiting one. The crews of the boats cheered and the people on the beach echoed them, and the white sails followed the signal light of *adappanar*'s boat could be distinguished for miles out at sea.

The Inspector's guard vessel, anchored close to the fishery ground, had a light at the head of main topmast and in dark nights blue-lights were occasionally burned to show her position ³⁹.

Early in the morning, crews of five at the minimum and a dozen at the maximum got ready for diving (Figs.2-5). The divers individually had an attendant to help. A stone weighing about 20 lb. to 30 lb. was tied by means of rope at the one end. The other end was with the men on the board. For collecting the pearl oyster a net, sometimes with a bamboo ring at its mouth for wide opening was attached by means of rope with the diver. Sometimes instead of

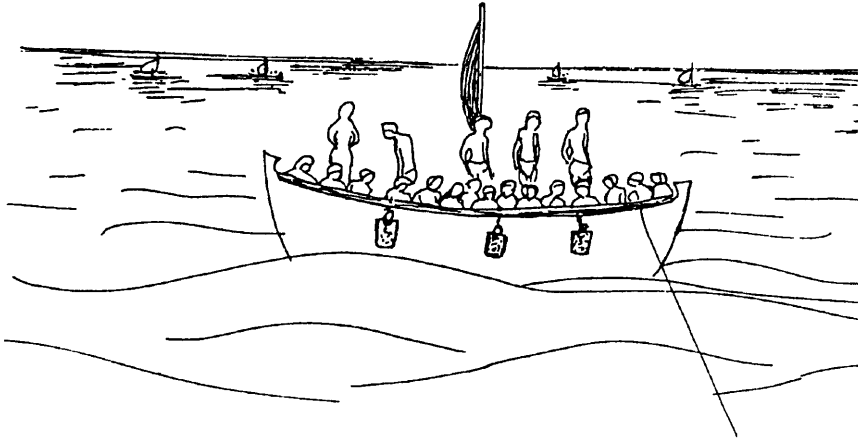


Fig. 2: Stones hung in the sides of the boat

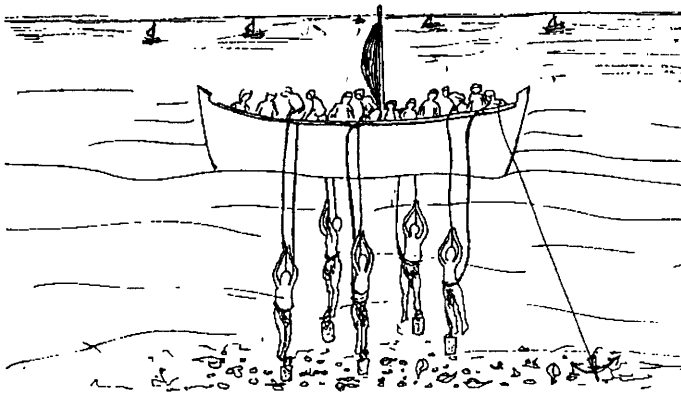


Fig. 3: Divers descend with stone

net a basket or a sack was attached. A long rope was tied over the one upper arm of diver and the other end is held by the attendant on the boat. The stone was dropped down as soon as the diver gets into the water. The diver held the rope, which was tied to the stone, and he placed his foot over the stone (Some of the accounts state that the rope tied with stone was wound around the diver's

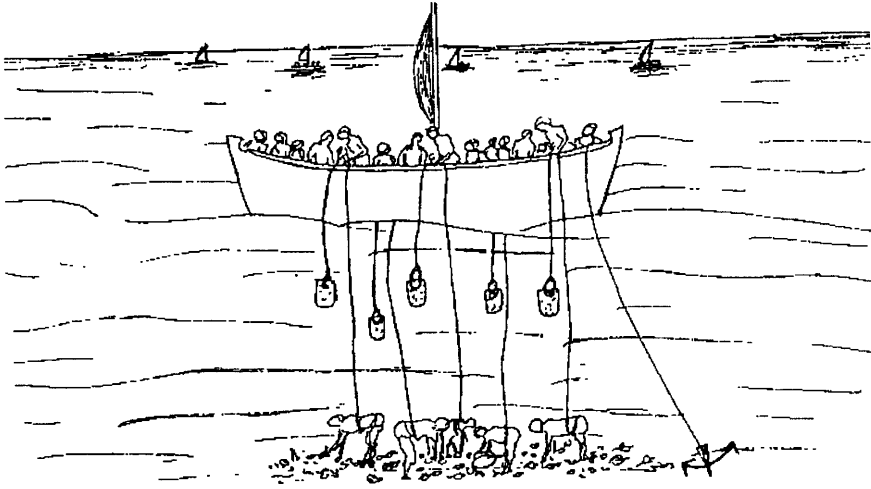


Fig. 4: Collection of oysters and stone are being hauled up

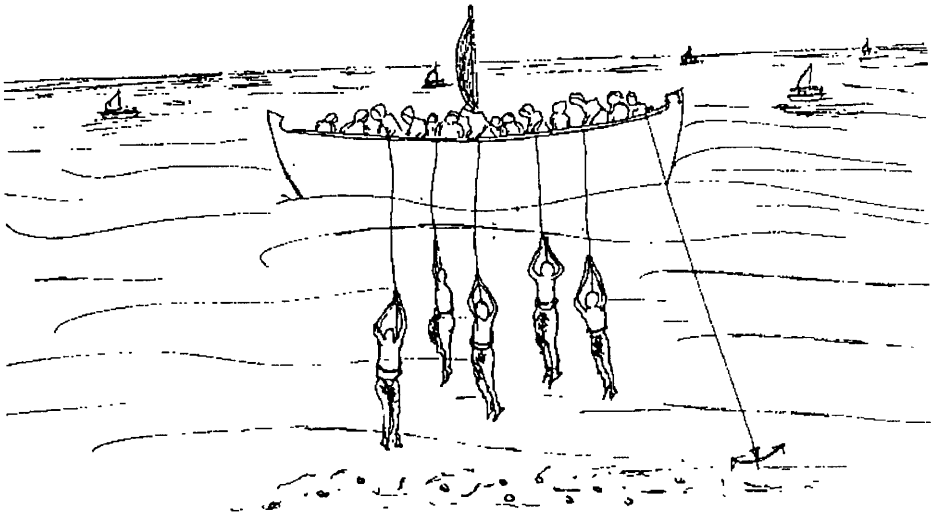


Fig. 5: Divers being hauled up

leg or waist). The rope tied with the stone was released, while the diver took deep breath and went down rapidly due to the weight of the stone. As soon as he reached the sea floor he removed the feet placed on the stone and gathered as much of pearl oyster as possible and put them into the basket. The stone was lifted up in the mean time by his attendant. The diver gave the signal on

completion of job by shacking the rope tied to him. The men on the boat hauled him on to the boat along with the collected oyster. After a few minutes gap they went down again and the process was repeated. When the divers came up to the boat for rest, the second set went down. The work was so exhausting and therefore the diving was generally finished always before noon and the boats returned to shore in the evening.

Duration of Diving

Duration of the dive is the time taken by the diver to go down from the surface and returned to the surface. Ribeiro mentions that the time of diving is to be the time taken in saying two *credos*, which means about sixty to seventy seconds. LeBeck takes it to be about two minutes. Steuart puts it about a minute for the diving during his tenure. Though Vane has recorded the time taken by the divers as even 95 seconds, he believed that to be a special one and the general working period is about a minute only. Thurston also observes it to be a minute only. From the above information it can be said that the time taken by the traditional divers is about one minute and exceptionally they can remain under water even for a couple of minutes.

Number of dives per day and area covered

In pearl fishing, generally a diver covers about 3 sq. yards at the depth of 6 fathoms in a single dive⁴⁰. In case of deeper diving then the area covered will still be less. LeBeck mentions that a diver generally covers fifty dives a day on accident-free occasions⁴¹. The quantity of collection of oysters depended on the abundance of the oyster in the seabed.

Sharing of Oysters

After the fishing was over, the oysters were shared by the Government, native chief, boat owners, divers and attendants. This economical factor always experienced fluctuation in the ratio of shares and disputes arose over this matter continually. This aspect requires a separate detailed study.

Cleaning of Oysters

Chau Ju-Kua mentions that the oysters were placed in a pit and allowed to decay for more than a month and the pearls were removed from the oysters⁴². Wang Ta-Yuan also comments on the shells with rotten meat stirred around a sieve where the pearls are left in them⁴³. Caesar Frederic mentions that people search for the pearls in dead and dry shells after the end of the fishery⁴⁴.

Ribeiro comments on the evil smell of decomposed oysters in the coastal region and enormous number of flies gathered in that area⁴⁵. Soon after the fishery has commenced the air became tainted with putrescence of the oysters in the *cottoos* and was often very offensive, particularly if the weather was rainy. Because of this the cholera morbus broke out on many occasions⁴⁶. The method of cleaning oysters seemed to have been primitive until the 18th century when it was changed by the government.

The washing of the oysters took place in canoes or *vallam*, boats made of single piece of timber hollowed out, twenty to thirty feet in length, two to three feet wide and eighteen inches deep. After the oysters were put into *vallam*, sea water was poured in until about three fourths was filled and then several men being conveniently seated on each side of the boat carefully washed and examined every oyster shell. Those shells, which had pearl adhering to them, are set apart for the pearl to be cut off and those which have no pearl is thrown in heaps outside the *cottoos*. The muddy water was then carefully baled out and more seawater was thrown in. The process was repeated until all the mud and filth were washed away and nothing remains but pearls and sand. The whole that remains was then spread on cloth and exposed to the sun to dry.

Sorting of Pearl

After removal the pearls from the oysters they were sorted and classed as per their quality. Chau Ju-Kua mentions that the best pearl considered valuable was round in shape, which rolled always and never ceased to stop when put on a plate⁴⁷. Wang Ta-Yuan gives the first reference to the sorting of pearls using five sieves⁴⁸.

Caesar Frederick refers to certain persons called *Chitini* (*Chettis*) who were learned in pearls. They were employed to sort and valued them according to their weight, beauty, and goodness, divided them into four sorts. The first sort which was round was named *aia* of Portugal, as they are bought by the Portuguese. The second, which was not round, were named *aia* of Bengal. The third, which were inferior to the second, were called *aia* of Canara, which is the name of the kingdom of Vijaynagar, into which they are sold. And the fourth, or lowest kind, was called *aia* of Cambaia, being sold into the country⁴⁹.

Ribeiro mentions that the persons who sorted the pearls brought small sieves with which they shifted the pearls and deposited them on sheets. Then they separated those which had an individual price according to their size and degree of perfection. All the rest they divided into nine classes. The first class was the best and they called it *aljofar* of the highest quality. This classification went on until their ninth which were of equal size and rounded⁵⁰.

Father Martin accounts that the pearls were placed in a metal receptacle containing some five or six colanders of graduated sizes which were fitted one into another so as to leave a space between the bottoms of every two and were pierced with holes of varying sizes smallest of them being the undermost. When dropped onto colander No. 1 all but the very finest pearls fell through into No. 2 and most of them passed into Nos. 3, 4 and 5 while the smallest of all the seeds were strained off into the receptacle at the bottom. when all stayed in their proper colanders they were classified and valued accordingly⁵¹.

Steuart clearly describes the method of sorting and classing the pearls⁵². The classing of pearls was done by passing them through a succession of brass colanders called baskets, in a shape of large saucers. There were ten and some times twelve of these colanders. The first had twenty holes in it. The pearls that did not pass through these holes after being well shaken, were called of the twentieth basket. The succeeding baskets had 30, 50, 80, 100, 200, 400, 600, 800, 1000 holes, each basket given the name corresponding with its number of holes. The pearls those did not pass through those holes were called

by the number of holes in it. There were pearls of 20th, 30th, 50th and so on to the thousandth basket. The pearls which passed through the eleventh and twelfth baskets were called *masie*. The sorted pearls were then classed in seven distinct descriptions.

CHANK FISHING

Unlike pearl fishing which depended upon the abundance of oysters, the chank fishing was held each year throughout the centuries. Perhaps this continuity only helped to provide the experienced divers in the pearl fishery even after a decade of interruptions. There is no announcement made by the Government to the start of the chank fishery and generally only a few boats and a few hundred divers were employed. During the seasons the chank fishers went by boats to the area where the chanks were likely to be available. There is a slight variation in the method of diving. As the chanks are scattered about, and not aggregated together in cluster like those of pearl oysters, the divers have to move around in search of them. He places a foot over the stone and holds the rope till he reaches the bottom. He leaves the stone and move away in search of chank shells. After the collection (with the net tied) is over, he came on his own because the chank he collected in one dive would not be many and heavy.

Every day collection of chanks was sold to the Government on some fixed price. All the chanks bought by the Government were exported to Bengal from Dutch period onwards. Previously it was in the hands of local kings.

MODERN-DAY TRADITIONAL DIVING

A field survey was conducted to document the traditional diving practice followed in the Mannar Gulf region of Indian coast. More than 18 villages were covered for the interview with the traditional divers and documentation. Divers of age between 31 and 80 have been interrogated. Sea trips with the divers in the boat were also done to see the method of diving. As there is no pearl fishery in the coastal region of Gulf of Mannar of Indian

coast, diving is done only for collection of chanks, varieties of shells and seaweed. The divers individually have an aluminium plate which is used as a fin by reinforcing a rubber strap, a net made of nylon which is tied in their waist to gather the shells and country-made masks to cover the eyes and nose (Figs. 6-8). In Tuticorin region the divers have a lead weight tied in a rope to use them as additional weight to descend fast to the bottom.

DIVING NEAR RAMESWARAM REGION

In Rameswaram region divers numbering more than twenty generally go by an outrigger boat early in the morning. On reaching a spot where the chank and other kind of shells are available they cast the anchor. The selection of site is based on the experience only and in case no shell or only a few shells are found, the anchors are lifted and the boat is taken to some other



Fig. 6: Diver wearing fin plates



Fig. 7: Nets for chank collection



Fig. 8: Diver wearing mask

spot. Upon casting the anchor the diver straps the aluminium plate in one of his leg, ties the net in the waist and puts on the mask in the face and jumps into the water. This way except a man who looks after boat from drifting away, all the divers plunge into the water and search for the chank and shells. Upon seeing the shells they collect and put it in the net and move to some other place by swimming. Since no rope is tied with them they move freely wherever

they wish. During the fieldwork it was noticed that the divers move even about half a kilometer away from the boat. The depth they generally dive is about six to eight fathoms and they are able to be under water for more than a minute. The maximum time took by a diver named Ansari of Kilakarai village was one minute and thirteen seconds. On filling up the net they come to the boat to unload the items and take rest for a while and again go for diving. This process continues till two o'clock in the afternoon and they come back to the shore by four. The collection of individuals is bought by the brokers and in turn is sold to companies situated in Kilakarai. Fifteen per cent of every individual diver's earning is taken as hiring charge by the boat owner. It is learnt that the income varies from a meager sum to a thousand per day for a diver.

DIVING NEAR TUTICORIN REGION

In Tuticorin region similar procedure is followed as in Rameswaram area except for the following differences. In Tuticorin region the number of divers going in a boat is limited to 10. The stone/lead weight tied in the end of a rope is used for fast descendance. In this process the weight is hung near the boat. The diver rests his foot on the weight and holds the rope. When the rope is released he goes to bottom rapidly and removes his foot from the weight and search for the shells. The weight is lifted up by the men on the boat for another set of divers to go down. In Tuticorin region the maximum depth of diving is about 14 fathoms, whereas in the Rameswaram region it is only about 8 fathoms. Hence without the use of stone/lead weights diving is difficult in this area. Only about twenty years back the mask and fin plates came into vogue. Information from the old divers suggests that before twenty years they used stone to go down fast to the bottom even in Rameswaram region.

On comparing the old records with the present day diving procedure one can conclude that the traditional method of diving still survives among the divers with only slight alterations introduced by modern technology. This traditional chank fishing technique will continue to prevail among the fishermen of Gulf of Mannar region because the SCUBA (Self Contained Underwater

Breathing Apparatus) diving is highly uneconomical for this diving. Infact diving with diving bell was carried out during the British period and was found uneconomical⁵³. If training is given to these chank shell divers for using the modern diving equipment, certainly the output will increase, but the cost of the equipment is very high and will be uneconomical compared to the conventional chank fishing. The sporadic distribution of the chanks nowadays fetches the divers limited income. Since this sort of fishing is seasonal generally two to four months in a year, divers are eager to earn fast money which could be useful for the whole year. They feel that the reason for scarce number of chanks found in the Indian waters is the extensive use of fishing trawlers resulting disturbance to the chank beds and the discharge of industrial disposals into the sea causing water pollution have reduced the culture of chanks and other shells.

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