

VIII CHANK FISHERIES AND INDUSTRIAL USES OF CHANKS

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The fishery for the chank in the southeast coast of India has been the regular calling of the fishermen of the region from time immemorial. A look at the statistics of chank landings for the recent years from the important areas of fishing will show (Tables XV to XX) the large quantities of chank fished annually. But for a negligible percentage of these, the entire stock goes to Bengal where there is an organised small-scale industry for chank bangles. About 12,000-13,000 artisans in West Bengal are engaged in this profession. The present level of supply is found to be far below their requirements since the chanks which otherwise they can get from the Ceylon coast are not available now as in the pre-independence days. This is because of the fact that in those days the Ceylon fishery was conducted with the help of divers drawn from India. Now these divers are not allowed to go there as a result of which the fishery in Ceylon has suffered a great set-back. This has considerably helped the chank fishing in India to prosper.

It is felt that if a proper survey of the chank resources of our waters is undertaken and if the tempo of the exploitation is increased, there is every possibility of the chank industry expanding further. This will give greater profits to the fishermen and the people who are engaged in the chank bangle industry and greater revenue to the Governments of the states where chank fisheries exist. The following account is presented with the object of drawing the attention of scientists to the existing chank fisheries of India and to indicate the possibilities for expansion of the fisheries based on (a) the results of a preliminary survey conducted to find out the extent of chank beds notably in the Gulf of Mannar and (b) on the effectiveness of modern methods of exploitation.

DISTRIBUTION OF CHANK, AREAS OF OCCURRENCE AND DEPTH

The chank is extremely abundant on the east coast of India being found and fished everywhere from Cape Comorin to Madras (Fig. 15-18) although the density of its occurrence appears to thin out north of Point Calimere. The northern limit of this coast may be put as the mouth of the Godavari. On the west coast its geographical distribution is peculiar. Large numbers are fished in the

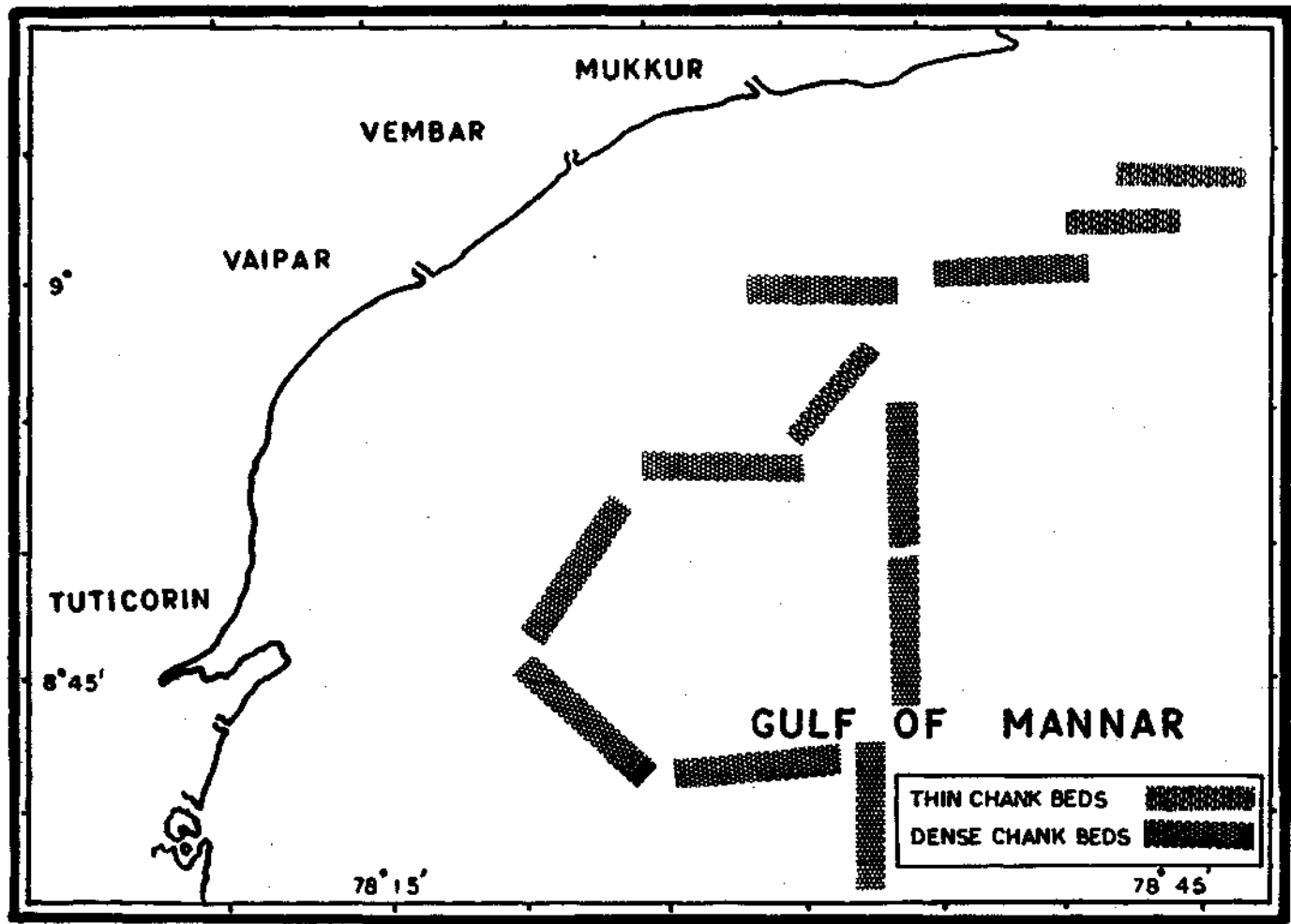


Fig. 15. Diagrammatic representation of the disposition of the chank beds in the zone between Tuticorin and Kilakarai in the Gulf of Mannar.

Gulf of Kutch coast, but southward of this no trace of the chank is found up to southern coastline of the Kerala State where this shell appears and forms a small fishery (Fig. 18). It is also found in the Andaman Island.

Being gregarious, its haunts form distinct beds. The most important beds are in the Gulf of Mannar along the Indian coast in depths 10-20 metres with sandy bottom (Hornell, 1922b). In the Palk Bay to the north of Adam's Bridge it occurs at lesser depths up to 12 metres in sand mixed with mud. Along the Coromandal coast it is found on sand mixed with mud at depths varying from 6-20 metres. The chanks fished off Trivandrum and Kanyakumari districts coast are also found in the depth range 10-20 metres. Along the Gujarat coast the chank is found on or about the coral reefs where one can wade through the shallow water to pick the chanks (Gokhale, 1963). The depth of occurrence on the Ceylon coast is very much the same as that of Palk Bay and Gulf of Mannar coasts of India. In the shallow waters off the land-locked Jaffna lagoon chank is found as sub-fossil deposits where people wade through and collect. Generally speaking the chank beds may be defined as those which have fine sand of silky texture, superficially muddy coloured with loosely lying small corals and other paar detritus adjacent to the margins of the rocky sea beds or a region of very fine loose sand in furrowed formation with a crust of filamentous green algae (Mahadevan and Nagappan Nayar, 1966). In addition to the above, chank is found on reefs or on sea floor covered with an ad mixture of sand and a little mud or on gravel and coarse sand.

CHANK FISHERIES OF INDIA

The following are the distinct chank fisheries that exist today.

1. Madras coast :
 - a. Tirunelveli fishery
 - b. Ramanathapuram fishery
 - c. Sivaganga fishery
 - d. Tanjavur fishery
 - e. South Arcot and Chingleput fishery
 - f. Kanyakumari fishery
2. Kerala coast :
 - a. Trivandrum fishery
3. Gujarat coast :
 - a. Gulf of Kutch fishery

Without exception the fishery in each state is Government monopoly although the *modus operandi* in the exploitation of the chanks varies from place to place.

TIRUNELVELI FISHERY :

The fishery along the coast of Tirunelveli from Kootapuli to Kannirajapuram, a distance of about 136 km with Tuticorin as the headquarters,

TABLE XV

Chanks fished from Tuticorin in the years 1931-32 to 1966-67

Years	Fullsize	Under-sized	Wormed
1931-32	309943	62711	17016
1932-33	309226	79971	27438
1933-34	441520	79010	26067
1934-35	326999	68892	13187
1935-36	323475	145081	20781
1936-37	398782	58526	6364
1937-38	309257	37187	13256
1938-39	363960	36578	6547
1939-40	539662	58224	7987
1940-41	436626	47882	13509
1941-42	495403	46113	20377
1942-43	458894	29918	46421
1943-44	430274	29541	24500
1944-45	268318	21033	13664
1945-46	476302	19622	13596
1946-47	666	475	120
1947-48	683919	25859	27021
1948-49	599103	397183	28368
1949-50	1034667	56826	30225
1950-51	983815	63345	30831
1951-52	681006	42025	19189
1952-53	944666	64380	50843
1953-54	900345	83997	61438
1954-55	346680	28305	9987
1955-56	503365	32338	16838
1956-57	660869	35045	27387
1957-58	860472	30858	30470
1958-59	1155644	61871	43357
1959-60	1134191	47946	64857
1960-61	561726	76388	28446
1961-62	574893	82311	33059
1962-63	459762	115792	43658
1963-64	355439	71639	28711
1964-65	112046	39877	17088
1965-66	7031	4546	1856
1966-67	265344	50984	18304

is controlled by the Tamil Nadu Government and the exploitation is done departmentally. The important centres where chanks are collected are Idinthakarai, Ovari, Tiruchendur, Kayalpattinam and Tuticorin.

The fishing season starts from the middle of November i.e. the beginning of north-east monsoon period and lasts till the end of May when the south-west monsoon sets in. This is one of the very important fisheries yielding annually about 5,00,000 of good chanks valued at Rs. 8,00,000 annually.

RAMANATHAPURAM FISHERY :

The ex-Ramanathapuram zamindari fishery along the Ramanathapuram district coast from Kannirajapuram in the Gulf of Mannar to Pamban and from Rameswaram to Karagadu in the Palk Bay, an approximate distance of 190 km

TABLE XVI

Chanks fished from Ramanathapuram and Sivaganga waters
in the years 1954-55 to 1966-67

Years	Full size	Under-sized	Wormed	
1954-55	325505	21819	26678	Ramanathapuram
	3824	374	330	Sivaganga
1955-56	349609	16853	7185	Ramanathapuram
	6544	780	1569	Sivaganga
1956-57	392573	23747	23612	Ramanathapuram
	124572	3478	28141	Sivaganga
1957-58	690510	21287	48413	Ramanathapuram
	243153	1680	60256	Sivaganga
1958-59	533085	14741	50394	Ramanathapuram
	66831	22029	—	Sivaganga
1959-60	587960	52815	8923	
1960-61	1059099	64931	16893	
1961-62	688668	56355	2038	
1962-63	822622	72283	21341	
1963-64	895624	98615	15765	
1964-65	252168	36390	9382	
1965-66	844401	73090	17148	
1966-67	6223	4683	27693	

Separate figures of chank fisheries for Ramanathapuram and Sivaganga waters are not available from 1970.

is leased out to a private party. The important centres in the region from where fishermen go out for chank fishing during the season and the season of fishing are as follows :

	Place	Season
Gulf of Mannar :	1. Kannirajapuram	December to March
	2. Kilakarai	September to December
	3. Periapatnam	September to December
	4. Vedalai	September to December
Palk Bay :	5. Rameswaram	March to June
	6. Thangachimadam	March to June
	7. Pamban	March to June
	8. Devipatnam	June to September
	9. Irumeni	May to August
	10. Tiruppalakudi	June to September

Annually about 3,00,000 of chanks are fished from this area and the rental derived amounts to nearly Rs. 2,25,000.

CHANK FISHING OF OTHER REGIONS :

The ex-Sivaganga zamindari fishery from Karangadu to Sundarapandyapatnam, a distance of about 30 km is separately leased to a private party although this area is also part of the Ramanathapuram district. The important fishing centres are Karangadu, Mullimunai, Tondi, Pasipattanam, and Vattanam. The season of fishing in this area is from April to October.

The number of chanks fished in this area being very small, the amount realised out of leasing the fishery comes roughly to Rs. 30,000 per year. All along the coast of Thanjavur district except for a short distance between Point Calimere to Pudukuda, the right of collection of chanks is leased to private party. There are about 20 centres of collection of chanks of which Mullipattinam, Chinnamunai, Senthalai, Periathambiranpattinam, Gopalapattinam, Adiram-pattinam and Sethubavachatram are important. Only about 30,000 chanks are fished annually and hence this is a minor fishery only. There is no particular period in which the chanks are fished. Fishing may be said to extend all through the year since no diving work is involved.

The fisheries of South Arcot and Chingleput districts are of very minor importance. Annually less than 15,000 chanks are fished. The fishery is leased out for an amount of about Rs. 17,000 per annum. Chank is fished as and when they are available along the coast. The fishery extending from Cape Comorin to Thuttur, a distance of about 65 km is also leased out to private party. The important centres of collection are Muttam, Colachel, Thengapattinam, Enayaputhanthurai, Kodimunai and Ramanathanthurai.

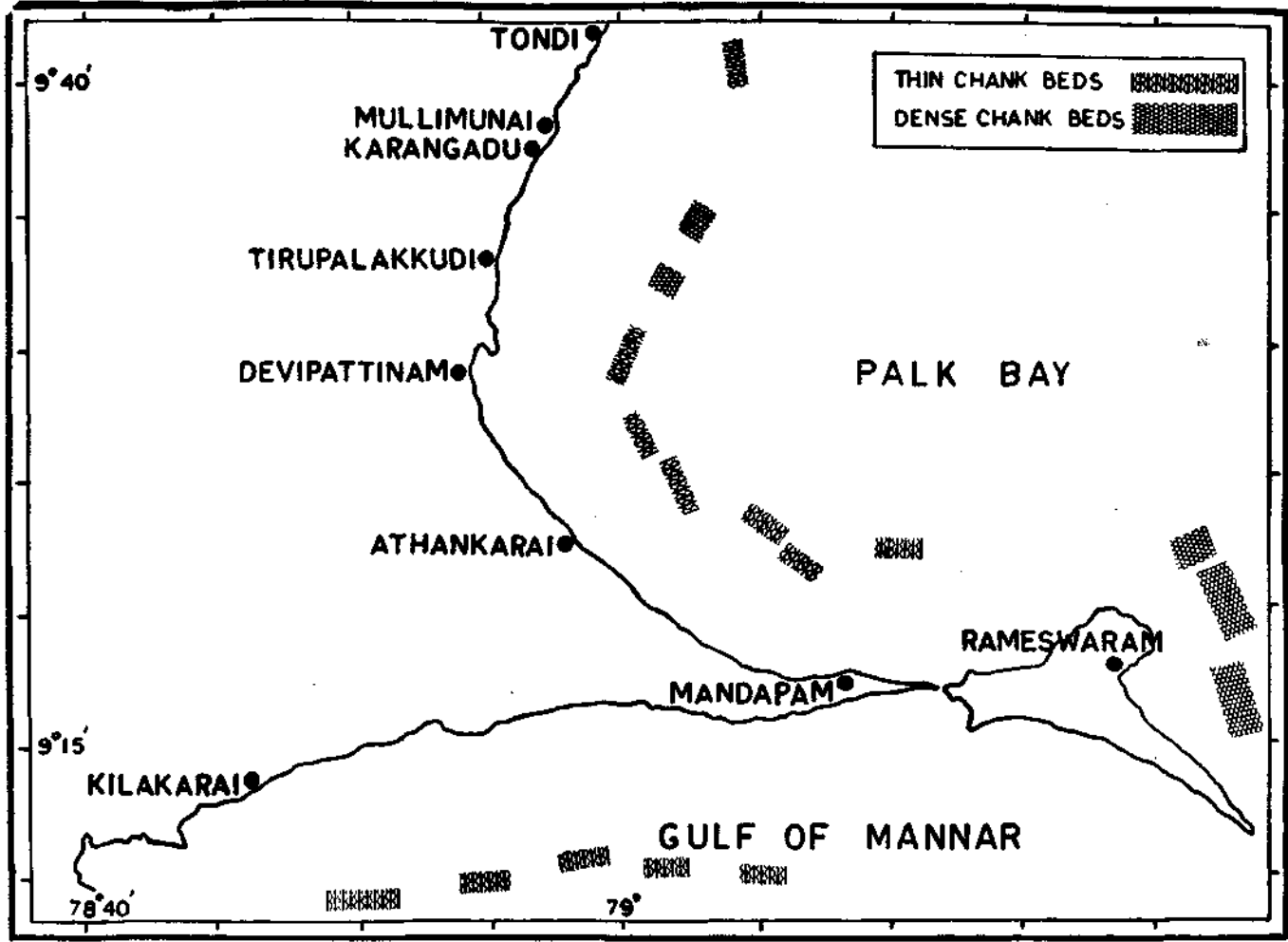


Fig. 16. Diagrammatic representation of the disposition of the chank beds in zone between Kilakarai and Rameswaram in the Gulf of Mannar and the zone between Rameswaram and Tondi in the Palk Bay.

TABLE XVII

Chanks fished from the Thanjavur district in the years
1952-53 to 1966-67

Years	Full size	Under-sized	Wormed
1952-53	33239	5891	8816
1953-54	43007	163	13990
1954-55	11832	4677	657
1955-56	17992	7068	766
1956-57	31768	13099	1566
1957-58	41394	6459	815
1958-59	44981	10644	5257
1959-60	30299	7142	1217
1960-61	33239	5891	8816
1961-62	43007	163	13790
1962-63	43945	23731	10999
1963-64	33237	18297	10999
1964-65	43391	17855	12405
1965-66	29452	14768	540
1966-67	13816	7505	5897

TABLE XVIII

Chanks fished in the Kanyakumari district in the years
1957-58 to 1963-64

Years	Full size	Under-sized	Wormed
1957-58	2032	282	361
1958-59	2702	922	280
1959-60	2485	239	735
1960-61	8607	2909	244
1961-62	13231	1409	4
1962-63	10103	1994	1385
1963-64	5945	4556	-

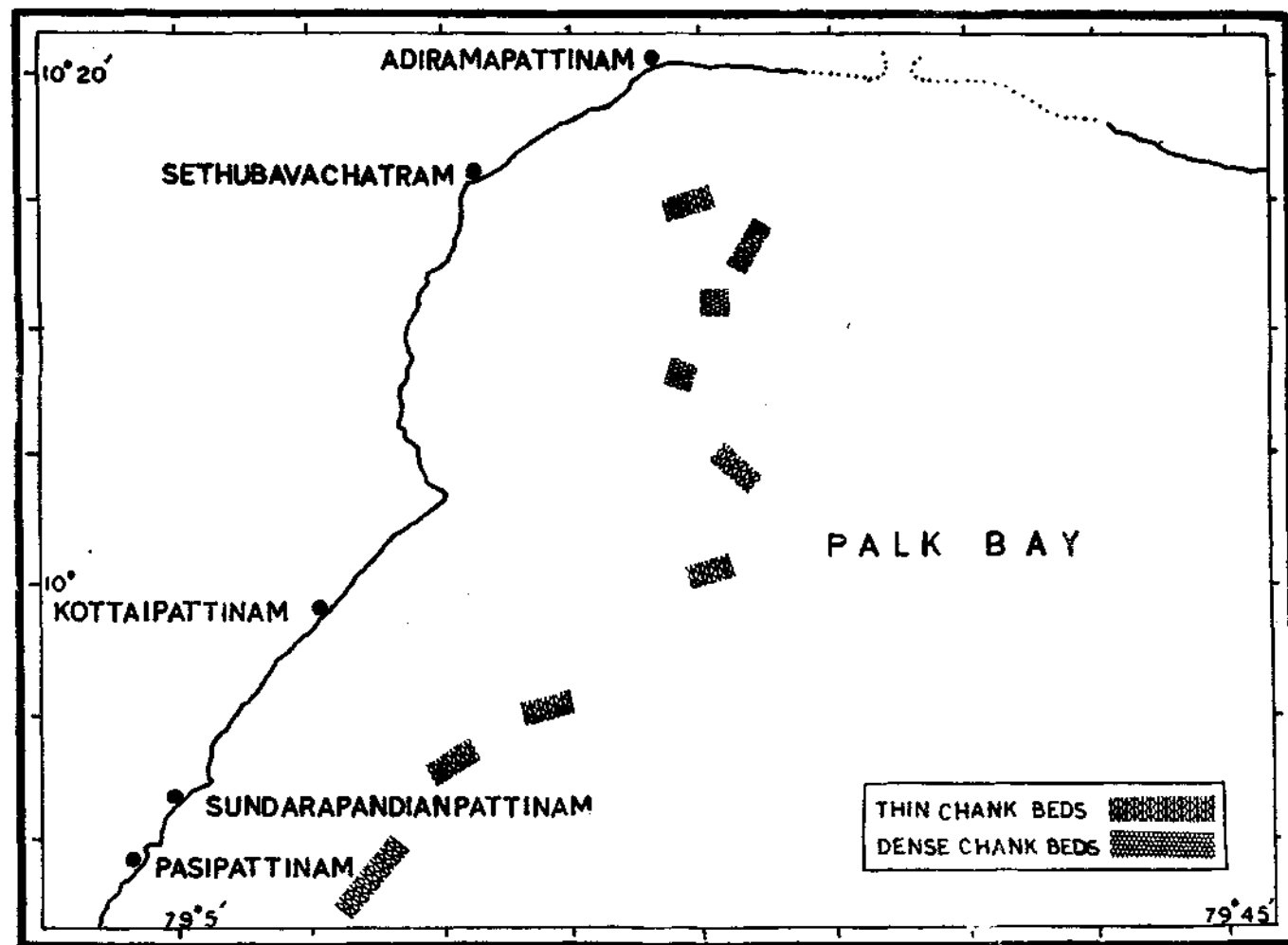


Fig. 17. Diagrammatic representation of the disposition of the chank beds in the Palk Bay Zone between Tondi and Sethubavachatram.

The season of fishing extends from middle of January to the end of April. About 10,000 chanks are fished annually and the lease amount comes to approximately Rs. 5,000 per year. The Trivandrum fishery is leased out by the Government to Co-operative Societies on a minimum royalty basis. The amount realised is about Rs. 20,000 per year. The important places where the chank is collected

TABLE XIX

Chanks fished from Kerala State : Trivandrum fishery from 1956-57 to 1962-63

Years	Numbers of chanks fished
1956-57	16125
1957-58	18355
1958-59	26629
1959-60	23979
1960-61	23975
1961-62	21294
1962-63	10443

are Poovar, Vizhinjam, Kovalam, Cheriathurai, Valiathurai, Sankumugam, Veli and Cherumankarai along a stretch of nearly 60 km. The fishing season is from December to April.

GULF OF KUTCH FISHERY :

The Government of Gujarat does not engage any fishermen for the collection of the chank. But the local *wagher* fisherfolk collect and surrender them to Government in different places. The intertidal zones of Okha, Aramda, Poshitra, Ajad, Wadinar, Bharana, Salaya, Sikka, Pirotan Island and Bedi on the southern side of the Gulf are the important places located approximately over a distance of 130 km.

METHODS OF FISHING FOR THE CHANK IN VARIOUS LOCALITIES

In the Gulf of Kutch the local fishermen make the collections by picking the chanks from the intertidal flats. Along the Trivandrum and Kanyakumari coasts they dive for the chank. Similarly on Tirunelveli, Ramanathapuram and Sivaganga coasts also the fishermen do skin diving and bring the catches and sell them either to the Government or to the lessees as the case may be. In the Coromandal coast the Thanjavur fishery is mainly dependent on the shells obtained fortuitously in the course of net fishing by catamaran fishermen. The bulk of the shells are taken by *vellai valai*,

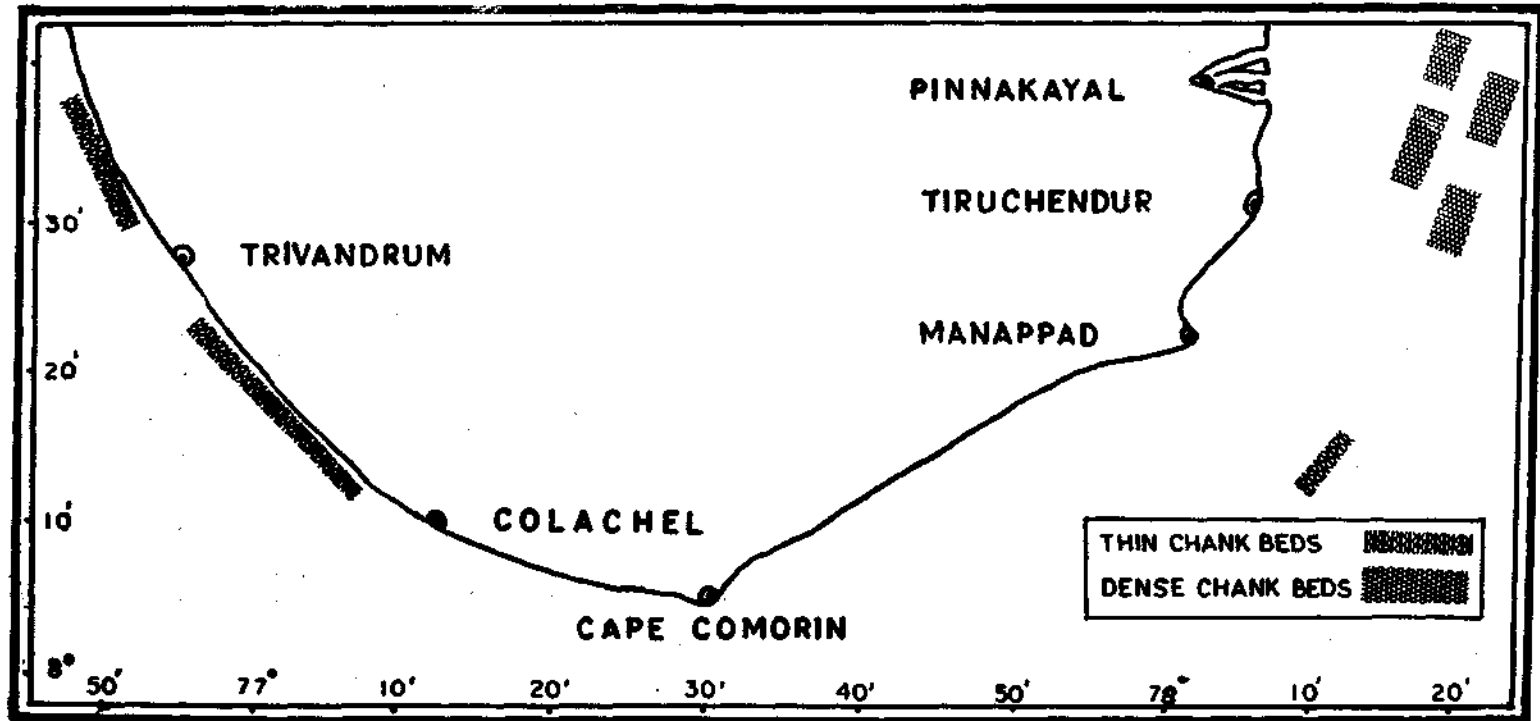


Fig. 18. Diagrammatic representation of the disposition of the chank beds in the zone between Tuticorin and Cape Comorin in the Gulf of Mannar and in the zone between Cape Comorin and Trivandrum in the west coast.

a light trawl operated by two catamarans. Along the South Arcot coast chanks are taken in *thurivalai*, which is also a catamaran light trawl.

TABLE XX

Chanks fished in Gujarat State in the years 1952-53 to 1966-67

Years	Numbers of chanks fished
1952-53	14058
1953-54	16752
1954-55	14419
1955-56	11628
1956-57	10002
1957-58	10601
1958-59	15580
1959-60	23037
1960-61	16079
1961-62	19373
1962-63	18123
1963-64	25655
1964-65	24752
1965-66	13688
1966-67	12161

In the Ceylon coast also chanks are dived for and taken by skin divers as in the case of Tirunelveli coast, modified in many places by the fact that the beds are in shallow waters so that the divers dispense with the stone and the rope. In the shallow Jaffna lagoon, approximately an area of 670 sq. km. the fishermen wade through shallow water up to 1.5 metres depth and with the help of a long iron rod search in the mud till they strike against a chank. They hook it with other end of the iron rod where they have provided a hook and bring the chank to the surface. This method requires great dexterity.

It may thus be seen that the most important method of chank fishing is by skin diving although it is an age-old method. The best skin diver will be able to keep himself under water for a little over a minute and he can make about 40 dives a day, depending on his ability and the weather. Although the craft used in carrying the divers differs from place to place in shape, size and capacity, the Tuticorin type of boats are the most common and they can carry about 10-15

persons while the Kilakarai type of boats and Tondi type of boats which are heavier and balanced with planks and outriggers respectively can carry more number of divers. Mechanised boats are not used at present in commercial chank fishing anywhere in India. It has been estimated that there are about 1,000 divers drawn from Tirunelveli, Ramanathapuram and Kanyakumari districts only taking part in the chank fisheries of the Gulf of Mannar and Palk Bay.

VARIETIES OF CHANKS FISHED COMMERCIALY

Hornell (1915) distinguished 5 well marked sub-species of the central form *Xancus pyrum* (Linn.) in different localities. The diversities are attributed to the differences in the nature of environment, such as exposure to unfavourable conditions like surf action, prolonged spells of turbid mud-laden water, and physico-chemical properties of the water in which they live. The differences in the varieties depend mainly on the ratio of length and width, the ratio of the axial length to the diameter of the body whorl, weight of the shell and the thickness of the periostracum. The varieties distinguished are 1. *Xancus pyrum* var. *obtusa*, 2. var. *acuta*, 3. var. *globosa*, 4. var. *comorinensis*, and 5. var. *fuscus*.

The barrier formed by Rameswaram and Mannar Island and Adam's Bridge very nearly forms a dividing line; *obtusa* being found entirely north of this line while *acuta* is found in the coastal waters of the Gulf of Mannar. But in and around Rameswaram up to Mandapam a small number of chanks locally called *Irupiravi* meaning 'two origins' are found showing characters of *obtusa* in the matter of formation of spires and the appearance of opercular region like that of *acuta*. The varieties of *globosa* and *comorinensis* are viewed as closely related forms of *acuta* and are restricted to the extreme south of Indian peninsula running northward from Cape Comorin on the east and west coasts for nearly 20 km and 64 km respectively. *Comorinensis* lives in shallow water exposed to heavy swells. The variety *globosa* lives at greater depth in the same geographical range. The variety *fuscus* is confined to Andamans and has developed fixed character because of its isolation. The Gulf of Kutch form appears almost identical with the Rameswaram variety perhaps due to identical habitat in which they live.

The variety *acuta* is called 'Jadhi' (Pl. III A) and *obtusa* is known as 'Patti' in commercial parlance. Even amongst these two there appear to be many local races, although difficult to distinguish clearly as such.

A. Variety *obtusa*:

Judging the importance in both Indian and Ceylon catches, from the numerical point of view, this variety occupies the first place, making up all except a fraction of the produce of the great fisheries in the north of Ceylon and along the Indian coast of Palk Bay and from Point Calimere to Madras. The characters



Plate III. A. *Xancus pyrum* var. *acuta* (Jadhi). B. *X. pyrum* var. *acuta* (Sinistral type called Valampuri).

of this variety fluctuate within considerable limits, from a form with well-marked though short spire (Irumeni, Devipatnam race) to one in which it is extremely abbreviated with whorls much telescoped (Tiruppalakudi race).

B. Variety *acuta*:

Next in importance to variety *obtusa* comes this elegant form, comparatively narrow, moderately elongate with well-balanced spire. The breadth in length averages to 1.83 and is lower 1.75 in short specimens. Apart from the variety represented in Gulf of Kutch three well-marked local races are present at (1) Tuticorin, (2) Kilakarai and (3) Rameswaram.

On account of the local varieties having different physical characters, their usefulness in the bangle industry also varies with the result that the price offered also differs. The shells from different localities are kept and sold separately. The

Tuticorin and Kilakarai forms are considered best amongst 'Jadhi'. 'Jaffna' and Ceylon chanks come close in esteem. The chank bangle manufacturers distinguish the following qualities:

- | | | |
|----------------|-------------------|-------------|
| 1. Tuttikudi | 2. Ramessari | 3. Patti |
| 4. Jammaipatti | 5. Noyakhad Patti | 6. Gharbaki |
| 7. Duani | and | 8. Surti |

The 'Tuttikudi' chanks are well-known for their opalescent whiteness, greater hardness and evenness of texture. 'Ramessari' approaches quality (1) but are slightly inferior. These are shells fished off Kilakarai and Rameswaram. 'Patti' shells fished in the Palk Bay of which 'Jammaipatti', the shells fished off the mainland to the north of Mandapam and from there to Tondi, are held inferior to 'Jadhi'. The 'Noyakhad patti' are north of Mannar Island. The quality 'Gharbaki' is a class of squat shells badly adapted for cutting. This comes from the Coromandal coast from Point Calimere to Madras with colour and shape defective and the shell is more brittle. 'Duani' fished off Travancore is a large, excellent variety used as bracelets. 'Surti' from Kutch area is esteemed high as 'Ramessari'. It may be thus seen that the shells of Kutch, Gulf of Mannar and Rameswaram are in great demand as first quality shells while the rest come next in importance.

FISHERY VALUE

Of late there is a good demand for the chank flesh as an item of food by many sections of people. The chank flesh is rich in protein and minerals (Chari, 1966) and the values compare favourably with fishes. It is the foot of the animal which is scooped out of the shells by means of a sharp curved knife. The flesh so scooped out is boiled and sun-dried after which chips are made. It has been observed that from 100 chanks two litres of flesh are taken, the cost of which ranges from Rs. 4/- to Rs. 5/-. Thus if the annual landings of chanks is one million shells the fishermen derive Rs. 50,000 by the sale of the flesh alone. In addition to the above there is a great demand for the chank operculum from merchants in Mysore State for making incense sticks. One kg of operculum costs Rs. 50/-. It has been estimated that 10,000 chanks yield this quantity. Therefore, out of one million shells the fishermen derive an additional income of Rs. 5,000.

The prices paid by the private and public sectors for the chanks are different in different areas. For instance, in the Gulf of Kutch chanks above 90 mm diameter are paid Re. 0-90 each and a chank between 60 and 90 mm diameter at Re. 0-60. The disposal rate is rather very high being Rs. 7/- and Rs. 6/- respectively. The Ramanathapuram chank is paid a price ranging from Re. 0-40 each (Devipatnam) to Re. 0-65 each (Kilakarai). The Government of

Tamil Nadu pay Re. 0-60 per chank for shells from Tirunelveli coast. Taking on an average that the rate of a full sized chank is Re. 0-60, the revenue of the fishermen would amount to Rs. 6,00,000 for every million chanks fished. Mention may be made here of the additional revenue of the divers when a freak chank of *Valampuri* (Pl. III B) is fished by them. This sinistral form which is a freak is in demand as it is valued very much by Hindus and is used in worship in Hindu temples. The price offered for acquiring the *Valampuri* chanks is fantastic, ranging from Rs. 500/- for a chank of less than 45 mm diameter to Rs. 10,000/ or even more for a perfect chank of 65 mm or greater diameter depending on the size and competitiveness in the auction bids.

The *Valampuri* is said to occur mostly in and around Rameswaram waters. On the Tirunelveli coast official records show that only three chanks have been fished so far in recent times, one in 1920, another in 1957 and the last in 1970.

The Government pay the cost of 1,000 ordinary chanks to the diver who brings one *valampuri* chank. The lessees of Ramanathapuram waters are supposed to surrender one *valampuri* chank per year to the Government (as per lease agreement) or the cost of 1,000 ordinary chanks in lieu thereof; invariably they give the latter. The Government auction the *valampuri* chanks by calling for tenders on all-India basis.

EXPLOITATION OF CHANKS AT THE PRESENT LEVEL

Before independence nearly 4/5s of the total requirements of chanks in Bengal were met by Ceylon and the rest from Tirunelveli and Ramanathapuram fisheries. The consumption was estimated to be 25,00,000 per year (Hornell, 1914). Since the supply from Ceylon dwindled, the level of output from the Indian coast has risen up to 15,00,000 per year. This is hardly sufficient to meet the demands from the market. It is necessary to intensify the fishing for chanks which necessitates an evaluation of the available resources, establishing new areas of fishing and improving technique of fishing.

India has a coast-line of 4,667 km. Of this chank is known to occur along a distance of 130 km in the Gulf of Kutch, 65 km in Kerala and 430 km in Madras coast (excluding 290 km of Thanjavur, South Arcot and Chingleput coasts). In the Gulf of Mannar and the west coast the chank living areas are known to extend nearly 16 km into the sea, whereas in Palk Bay it is 12 km and in the Coromandal coast it is 10 km. Thus it may be roughly estimated that 10,000 sq km of our inshore sea-bottom are potential chank grounds, leaving out Kutch area and the Andamans.

The present exploitation on all India basis suffers from many drawbacks. Many productive areas which are far off from the base of operations are rarely

tapped due to difficulties by way of towage to the sail-crafts employed. The divers rarely go out in search of new fishing grounds since it will be a waste of time and labour for them to spend their time in this. They are aware of only a few rich chank grounds which they exploit season after season. In areas like Gulf of Kutch, Thanjavur, Chingleput and South Arcot coasts diving for chanks is not done. In other areas where diving is done the method used is age-old and is dependent on fair weather, clarity of water and currents. There is also the limitation of depth to which a skin-diver can descend. If the fishermen are shown new areas of fishing, taught modern method of exploiting the chank and provided with motorised crafts it is bound to improve the fishery and the total output many fold. Towards this goal it was felt necessary and very useful to conduct underwater survey of the sea-bottom from 10-27 metres depth along our coast by direct observations using SCUBA * to find out:

1. the extent and exact location of the chank beds in various zones, and the density of populations,
 2. new chank grounds in deeper waters so that these may also be exploited to increase the catches,
- and
3. to demonstrate the usefulness of modern diving equipments in chank fishing.

Such a programme can be only a long range one and will take quite some-time to be completed. To start with, the survey of the sea-floor off Tuticorin was begun, since this is one of the important chank fishery zones. The results of this survey have brought to light extensive chank beds within Lat. $8^{\circ}35' N$ - $8^{\circ}55' N$ to Long. $78^{\circ}15' E$ - $78^{\circ}35' E$ (Mahadevan and Nagappan Nayar, 1968). The outstanding feature of the survey was the discovery of new chank beds. These beds lie within 20-25m and run north to south. The chanks were all large sized measuring over 60 mm in diameter which is an ideal size (A grade) for the bangle industry. In shoerward parts of this area, the density was much less and the size also smaller. This might be due to the fact that while many of the nearby beds are constantly fished the divers do not know the beds in the deeper water and they are unable to dive with their primitive method thus leaving a good population of chanks unfished. The fishermen rarely go to the southern beds off Tuticorin due to lack of proper facilities. Once a year they move over to Trichendur and exploit the beds close to the shore for a week or so and return to Tuticorin with their 6 days catches. There appears to be insufficient effort and steps appear to be necessary to arrange regular fishing of this area.

* Self-contained underwater breathing apparatus.

INDUSTRIAL USES OF CHANKS

At the present day the use of chanks for industrial purposes is confined to the chank bangle industry only. Apart from this, chanks are of use in preparing lime for special needs and occasions as the lime made from the chank shell is found to be of superior quality. This is done in coastal districts and also in Bengal. But the shells are too valuable to be used for manufacture of lime. Native doctors in almost all the districts of Tamil Nadu prescribe chank powder in curing many skin ailments and in the treatment of eye diseases. But the chank bangle industry completely overshadows the other uses.

Two great centres of chank bangle manufacture existed in ancient times apart from the extreme south of Tamil Nadu, namely one in the southern Deccan and the other around the shores of the Gulf of Cambay. No chank cutting is done in any of these places now as the women in these parts have abandoned their habit of wearing chank bangles. Now chank cutting, save for some insignificant work done in Kilakarai near Ramanathapuram is a forgotten art with the exception of Bengal. The industry flourishes solely in West Bengal, mainly depending on shells supplied by Gujarat, Tamil Nadu and Kerala states. All the shells of the chank used in the bracelet-making industry are imported into Calcutta which is the sole emporium for chank shells. The women of Bengal wear bangles made from chank shells following a very old custom. The richly carved and highly polished chank bangles are traditionally worn by the women. The custom requires a bride to put on for marriage ceremony two red coloured chank bangles. Santals, Kochis, Tibetans and Maghs also wear roughly-carved bangles. In Asam, Tibet, Nepal and Bhutan also this custom is prevalent. Dacca was the chief centre for this industry before partition. But, after the independence of India the artisans in West Bengal have taken up this trade and numerous factories have been started, chief centres of the bangle industry being located in Calcutta, Bishnupur, Bankura, Jitpur (Murshidabad), Chandernagur and Midnapur. It is gathered that more than 13,000 artisans are engaged in the chank bangle industry. The West Bengal small-scale Industries Corporation purchases the chanks from Tamilnadu, Kerala and Gujarat and from reputed chank dealers like Messrs. A. M. S. Mohamed Aboobaker & Co., Messrs. Sultan & Co. etc. at rates ranging from Rs. 2.50 to Rs. 9.00 per shell depending on the quality and size of the chanks.

The chanks are in turn sold to manufacturers of chank bangles at a slightly higher rate. At present the industry is not subsidised by the Government. The artisans known by different names are paid by the manufacturer at different rates, depending on the nature of their work. Cutting workers are paid at Rs. 12.00 per 100, polishing workers Rs. 4.50 per 100, finishing workers Rs. 32.00 per 100 etc. There are others like 'Ghasa' paid at Rs. 2.50 per 100, 'Majhar' at Rs. 12.00 per 100, 'Saj' at Rs. 3.00 per 100 and 'Bidhani' at Rs. 5.00 per 100.

It is estimated that it will be possible for one artisan to cut at least 75 pieces of chankbangles in a month. But the output by cutting machines which have been recently introduced seems to be nearly 300 pieces per month. While cutting the bangle is of little importance in the industry it is the designing, finishing etc. which need utmost care and attention. An ordinary artisan earns Rs. 4 per day as minimum wages while a skilled worker doing finishing work earns Rs. 10 per day. Detailed account of how chank bangles are sawn, polished, decorated etc. may be found in the writings of Hornell (1918) and the same practice is being followed even today.

The rate of disposal to the market of the finished product is rather profitable and some of the prevailing rates are as follows :

Bangles for Pooja purpose	...	Rs. 0.50 to 1.50 per pair
Bangles for ordinary use	...	Rs. 4.00 to 6.00 per pair
Bangles for use (fine finish)	...	Rs. 12.00 to 20.00 per pair
Chank rings	...	Rs. 0.50 to 2.00 per piece
Chanks for blowing purpose	...	Rs. 1.00 to 100.00 per piece
Chanks for Pooja	...	Rs. 0.50 to 50.00 per piece

The present state of the chank industry in Bengal is said to be dull because of the short supply of raw materials and due to high labour charges. Perhaps the industry can be revitalised by increased exploitation of chank resources and supplying the market with larger quantities of chanks.