BAY OF BENGAL NEWS

SEPTEMBER 1981

A PUBLICATION OF THE
BAY OF BENGAL PROGRAMME

Good News from Uppada

"Uppada" sounds like an Andhra Pradesh delicacy. It is actually a fishing village 35 km from Kakinada in north Andhia Piadesh. Some 10,000 people live here — more than 5,000 fishermen, several hundred weavers, some Burmese expatriates. It is one of the "sirongholds" of the nava, the traditional Andhra country craft. Every day, save Wednesday, several hundred navas and kattumarams lake off from the Uppada beach and return next morning : their catch could be seerfish, pomfret, hilsa, shark, tuna, prawns, mackerel or cat fish.

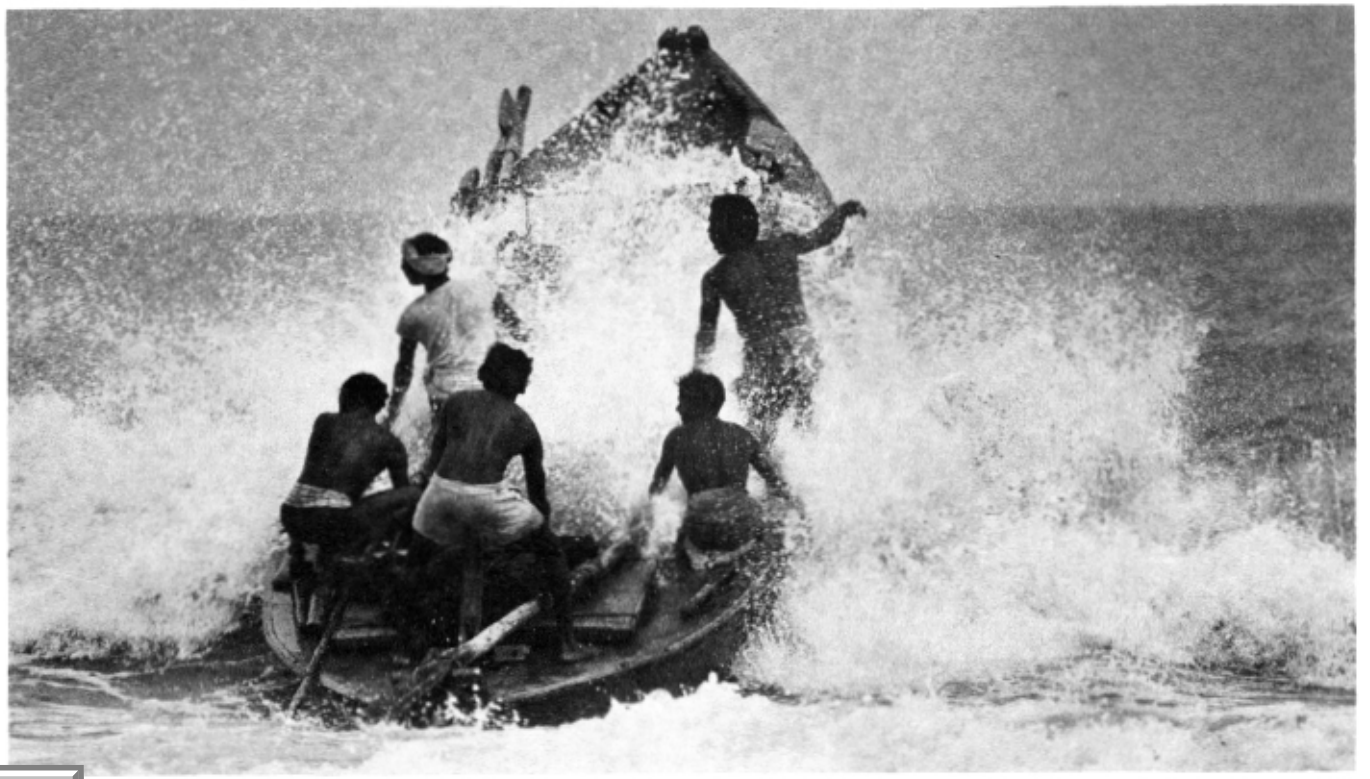
As fishing villages go, Uppada is fairly well organised. It has a school and a college, an apparently successful co-operative society, and two movie theatres whose owners happen to be fishermen. The few goldsmiths of Uppada do brisk business : when fishing is good the fishermen buy ornaments for their womenfolk.

Uppada isa close-knit village and during the past year its residents have had something special to talk about three orange-coloured motorised beach boats, known as FAO 1,2 and 3, which bring in very good catches:

The "FAO beachboats" have been designed and built by the Bay of Bengal Programme, which istrying to raise the incomes of traditional fisherfolk and is testing the viability of these craft (See *Bay of Bengal News January* 1981, for a story on BOBP's beachcmft project for Tamil Nadu and Andhra Pradesh). Labelled IND-13byBOBP, these boats are about 23 feet long, built of marine plywood and are equipped with 5 H.P. inboard motors. Uppada ves selected by the fisheries department of Andhra Pradesh for trying out the FAO boats because it facilities comparison between them and the local navas.

(Continued on page 6)

***BOBP's IND-13 boat crosses the surf at Uppada in Andhra Pradesh, India. The IND-13 has** performed **better than the** traditional nava during commercial fishing trials, using the same amount of fishing gear.*



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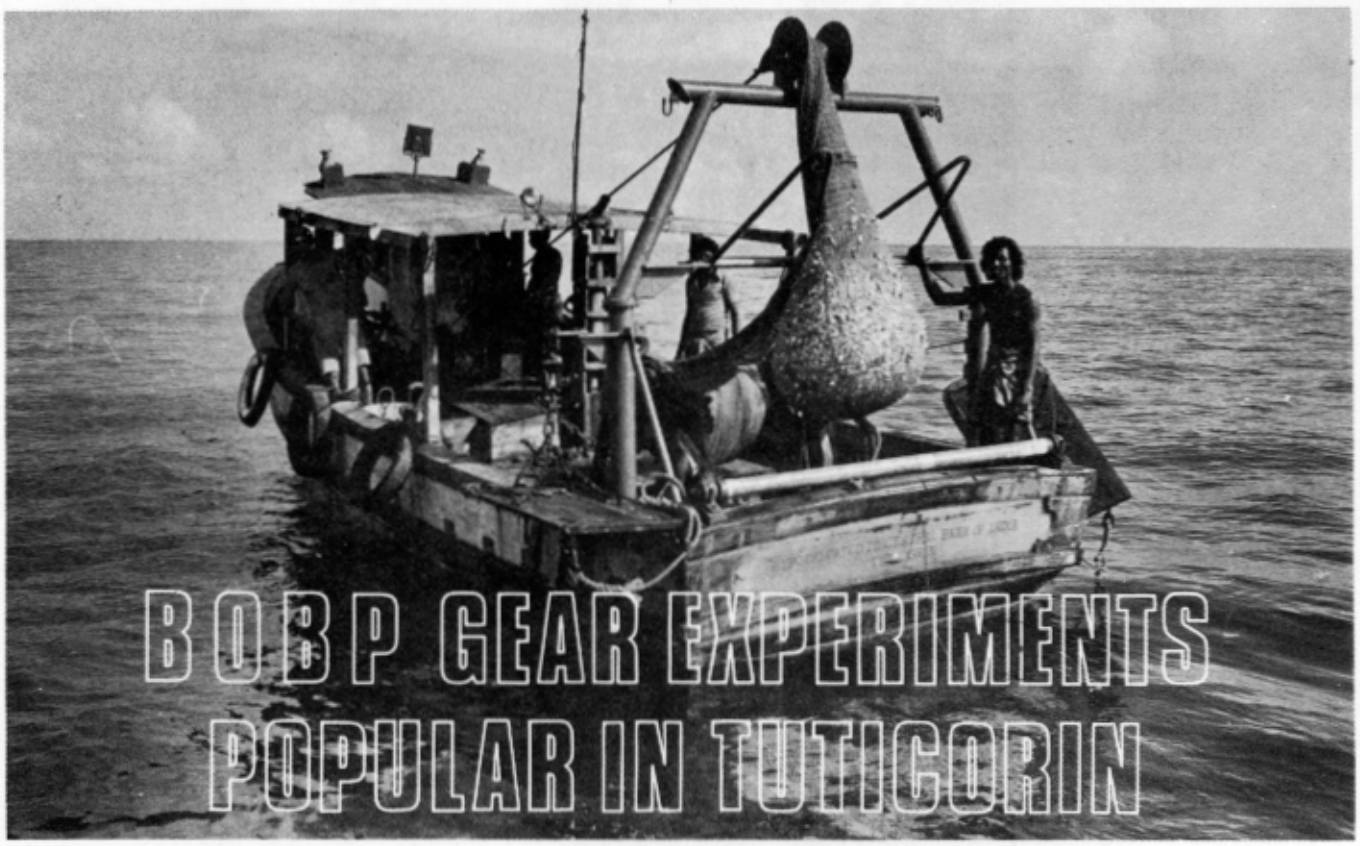

BOBP GEAR EXPERIMENTS POPULAR IN TUTICORIN

A big catch with a BOBP-designed experimental trawl tried out in Tuticorin in cooperation with a private fisherman.

Tuticorin on India's southeast coast always conjures up fisheries images. Sails flutter, motors buzz and craft dot the waterscape as far as the eye can see : several hundred vallams and mechanised boats.

From 1976, more and more shrimp-hunting mechanised boats have been operating in Tuticorin, thanks to foreign demand for shrimp. Recently, however, these boats have hitbad times: shrimp catches have fallen, operating costs have risen. Result: losses for boat-owners, crew without jobs.

The BOBP hasbeen active in Tuticonn from late 1980, trying out some new gearsand devices with the consentand cooperation of the Tamil Nadu government. The main thrust of BOBP's experimental work has been to reduce the present heavy dependence on shrimp, boost the catch of food fish, and improve the incomes of fishermen in the area.

New gears and devices tried out by the BOBP in Tuticonn include the high-opening fish trawl (with one boat and two boats); the one-boat high-opening fish-cum-shrimp trawl; mechanisation of gear handling (gantry, net drum, three-drum winch and tillable drum winch) and better rigging of trawls (locally manufactured cod end clips and split links).

One or more Tuticorin fishermen tried out each of these innovations, with practical demonstration and advice being provided by BOBP fishing technologist G. Pajot, and counterparts S.Pandurangan and P.V.Ramamurthy.

Some details of BOBP's experiments in Tuticorin:

- One unit of a high-opening fish trawl— which was meant to capture large quantities of food fish during the non-shrimp season — was offered to fisherman-boat owner Comen George in November 1980. He used it for four months (November 20 to March 31 1981) and caught 70.1 tonnes of fish valued at Rs. 1.01 lakhs.

The performance of Comen George's high-opening bottom trawl induced several other fishermen to fabricate similar bawls on their own initiative. At one time (March 1981) approximately 30 pairs of boats were deploying various versions of the high-opening bottom trawl.

- Fishing trials with one-boat fish-cum-shrimp bawls — which are meant for use during the lean shrimp season — have yielded encouraging results. The fish-cum-shrimp trawl has been found to catch more quality fish and of, higher market value than the conventional shrimp bawl and nearly the same amount of large shrimp.

While BOBP has made no formal extension effort in Tuticorin, it has responded to specific requests from fishermen for technological assistance. For instance, three fish-cum-shrimp bawls were constructed and rigged by BOBP and handed over to private fishermen at their request Fishing tnals will be continued and monitored by BOBP's counterpart officer, Mr. Pandurangan.

Seven more fishermen-boat owners from Tuticorin have requested BOBP to provide them with shrimp-cum fish bawls. With the concurrence of Tamil Nadu's Departmentof Fisheries, BOBP is therefore arranging for an experienced net-rigger from Madras to visit Tuticorin and construct and rig the bawls forthem. He will train the crew of Tuticorin fishermen, and also othernet-riggers in Tuticorin on constructing the bawls. If this practice proves effective, it will be repeated for other BOBP trawl designs.

(continued on page 18)

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A Letter from the Publisher

This is the third issue of Bay of Bengal News. When starting the venture we were equally prepared for smiles and scowls, compliments and strictures. We need not have worried – nearly everyone has been generous. We feel that the newsletter is meeting its primary objectives of promoting small-scale fisheries development and providing information about BOBP activities.

However, there have been murmurs of dissent, not least within the BOBP itself. The newsletter is said to emphasize achievement, soft-pedal problems and ignore failure. On rereading Bay of Bengal News, I didn't come across any ewggemted claim or any burst of self-adulation, but I do admit that the small-scale fisheries sector in the Bay of Bengal region and the BOBP itself encounter a multitude of problems not yet reflected in the newsletter. Problems, frustrations and failures may offer lessons that guide future development and in succeeding issues we will attempt to describe and analyse some of the problems.

I commend to your attention the story on page 2 about BOBP's popular experiments in Tuticonn. The purpose of our trawling project was to explore the possiblities of diversifying the fishing effort of India's small-scale trawlers to produce more "food fish" and reduce the pressure on declining shrimp stocks. After more than a year of intensive fishing trials, employing light high-opening trawls towed by a single boat or a pair, the results clearly indicate that diversification is viable and more economic than existing commercial operations. During the experiments, a better deck layout and equipment were also introduced; these have made the fishing operations even more rewarding and comfortable for the fishermen. Judging by the spontaneous response from Tuticorin fishermen, the project could to all intents and purposes be considered a successful effort in technology development, fulfilling all expectations.

Nevertheless, we are recording these experiments with serious concern about future development While improved technology may better the status of fishermen working with the 32-foot trawler fleet, boost food fish supplies and ease the pressure on shrimp stocks, it may adversely affect the productivity and thereby the living conditions of many more fisherfolk employed in the ttaditional (non-mechanised) fishe y. This may lead to further conflicts between the sub-sectorsand that certainly is in everyone's interest to prevent.

The Tuticotin project underlines the need for more thinking about ways and means for fisheries management. In earlier times, when the resources were far from heavily utilised, technology development and increase of fishing effort were considered entirely justifiable. Today however, there are many situations, and not only in developed countries, where increased fishing effort could trigger off undesirable effects.

Technological change is essential for the development process. But it should perhaps be encouraged more selectively and should certainlybe accompanied by management measures to dilute any baneful impact and to ensure that established economic and social goals are met.

It takes a long time for suitable management schemes to be established and implemented, particularly so with regard to small-scale fisheries in developing countries. The sooner, and the oftener, people from different disciplines – technologists, sociologists, economists, planners – get frequently together to establish close links, the quicker will solutions be found.

The current issue of Bay of Bengal News focusses in a modest way on Tamil Nadu, our "home state" in India. There is an interesting factual article about kattumamms. Tamil Nadu has other types of indigenous fishing craft but these log rafts, of which there are some 30,000, are certainly the most remarkable. On pages 12-13 we encounter Pichai, a kattumamm fisherman. His work, ethos and lifestyle as also his earthy wisdom, are vividly portrayed by journalist Arthur Pais. Another journalist, Sabita Shetty, gives us cameos of some fisherwomen whom she met at various fishing centres.

Our lead stoy of this issue is devoted to BOBP's beachcraft development project which has made good progress since Bay of Bengal News first introduced it to readers (January 1981).

The first book to be reviewed by Bay of Bengal News is a sociological study on Sri Lankan fisheries. It will, I hope, stimulate thinking and serious reading of the book. Oyvind Gulbmndsen's essay on the return-to-sail concept is a thoughtful piece. His opinion is couched in so courteous an idiom that one may feel disinclined to contest his views. But on the subject of sails and motorisation there are many differing views and Bay of Bengal News will be glad to hear those of its readers.

– Lars O.Engvall

glimpses into BOBP projects

Beachcraft Trials : India and Sri Lanka

Our lead story (see page 1 and pages 6-7) discusses BOBP's fishing trials at Uppada in Andhra Pradesh, and the positive performance of IND 13, built for that state. Meanwhile, other types of boats are being built and tested by BOBP for Tamil Nadu, Kerala and Sri Lanka. Ausbalian surf expert Geoff Gowing visited the region for three weeks May-June to conduct surf trials; he is again here in September – two weeks in Colombo, two weeks in Madras.

The current status of boatbuilding and testing of BOBP craft is as follows:

Kerala : Two boats were built at Royapuram yard in Madras; the IND-17, a 25 ft. rowing and sailing gillnetter, and the IND-18, a 28 ft sail-cum-engine gillnetter. Both boats were provided with Gunter rigs and they performed well under sail. The IND-18 was successfully surf-tested at the Marina. Incidentally, the IND-18 is a stretched out version of the IND-13 fitted with the same 5 HP diesel engine.

IND-17 and IND-18 have been despatched to Kerala, where they await testing and introduction by consultant Oyvind Gulbrandsen now due to arrive from Norway.

SRL 11, BOBP's beachcraft for Sri Lanka, rides a bullock cart in Madras before taking a ship to Colombo.

Tamil Nadu : Three boats are being built by BOBP at the Royapuram yard of the Tamil Nadu Fisheries Development Corporation – two IND 11s (23 ft self-draining polystyrene-block boats successfully surf-tested in May 1980), and the interesting new IND-15 (a 21 ft rowing-and-sailing boat designed as a kattumaram alternative).

Talking about IND 15, BOBP's Ravikumar says : "It has been based on the IND 11 principle – timber framework with buoyancy provided by polystyrene foam – but it is somewhat similar to the Andhra Pradesh boat kattumaram, the *teppa*. After landing it can be split into two halves, each of which can be separately taken ashore. An Andhra Pradesh *teppa* is also being brought to Madras around Septemberto take part in comparative trials with IND 15."

Crew for these boats – four each for the two IND 11s and three for IND 15 – will be given pre-test training by Gowing when he arrives from Sri Lanka this month (September 1981). An Inspector of Fisheries from the Department of Fisheries, Tamil Nadu, bained in operating boats through surf will oversee commercial fishing trials of these boats forone full fishing season.

Sri Lanka : SRL 11, a 26 ft. sail-cum-engine gillnetter for Sri Lanka was surf-tested in Madras in May 1981. Two Sri Lankan fishermen came to Madras to take a look at the craft. They operated the boat (which is equipped with 12 hp engine) effectively on their own, both for surf-crossing and beachlanding. The SRL 11 has been shipped to Colombo, and is to take part in experimental fishing off Negombo very soon.

Two SRL 12 boats, longer versions (28 ft) of SRL 11, are also being built in Royapuram. They are to be used for experimental fishing using such methods as pair bawling, ringnets and gillnets far offshore. "A common characteristic of all these boats," says BOBP fisheries engineer Arild Overa, "is that they have rather large sailing rigs to perform well in a good breeze. We are at the moment experimenting with different rigs to find the best alternative."

To sum up : BOBP's drive for better fishing craft in the region is maintaining its momentum.

CoastalAquaculture: Mission Bangladesh

The BOBP is assisting in establishing a shrimp culture demonstration farm at Satkhira in the Khulna District of Bangladesh. The farm is meant to demonstrate improved technology to fish farmers in the area.

The demonsbation farm will consist of a seed-catch basin, two experimental ponds, and a 40-acre growth pond. The farm will establish optimum culture parameters and betterculture techniques, such as water filtration to exclude predators; efficient seed collection and bansferto growth ponds; and methods of population sampling for prediction of growth and harvest.

Satkhira was identified as the most suitable location for a pilot project in shrimp culture by a two-man BOBP mission – Mr. J.G. Broom, aquaculture consultant, and Dr. M. Karim, fisheries adviser. The mission met senior Bangladesh fisheries officials and made a six-week reconnaissance survey of a few selected locations in Cox's Bazar and Satkhira sub-divisions during April-May before opting for the Satkhira site.

Satkhira consists of delta land mostly used for paddy culture in the wetseason and for shrimp culture in the dry season. An estimated 6,500 acres of land in Satkhira are currently used for shrimp culture.

One of Satkhira's plus points is the large number of shrimp farms already operating – which will enable specialists from the pilot project to tackle problems these farms face; another plus point is the great difference in land elevation and tidal range – which will allow an almost unlimited exchange of water with high shrimp-carrying capacity.

After Bangladesh officials concurred with the mission's choice of Satkhira for locating the pilot project, the mission returned there for site selection and project preparation.

Talking about the project'saction plan, Dr. Karim said: "The pilot project is located on private land. This will soon be acquired by the Bangladesh govern-

Dr. J. Broom, BOBP consultant for a shrimp culture project in Bangladesh, goes out on a reconnaissance survey, accompanied by Bangladesh officials.

ment. The BOBP will engage a tnaster fish-fanner and procure essential equipment. Implementation of the project is expected to begin in November."

In connection with the project, three Bangladesh fisheries officers will undergo training in coastal aquaculture for about three months in India at Kakinada and Cochin.

Coastal Aquaculture: Mission Andhra Pradesh.

Early this year, a three-member mission from Indonesia visited Andhra Pradesh for four weeks to advise the state on coastal aquaculture development.

The mission's briefwas to review present activities in shrimp and fish culture and recommend improvements and further development; identify a location for setting up a pilot project for demonstration of shrimp culture; and outline the requirements for setting up and operating the pilot project.

The mission visited Hyderabad and brackishwater sites in Srikakulam, Visakhapatnam, Machilipatnam and Guntur. The mission members were officers of the Indonesian Directorate General of Fisheries. The team was headed by Soleh Samsi, head of the aquaculture section, and included Sihar Siregar, Chief Supervisor of the Section for Implementation of World Bank Credit to Small-scale Fishermen-Farmers; and Martono of the Inland Fisheries Research Institute at Bogor.

The mission was accompanied during a part of its survey by two BOBP experts fisheries adviser M. Karim and sociologist E. Drewes.

Documentation Service.

Research-minded fisheries experts may like to drop in at BOBP's small but well-equipped library in Madras, which stocks reports, technical papers, slides and films. The library also functions as meeting room and as slide auditorium, and is run by Ms. V. Bhavani, documentalist.

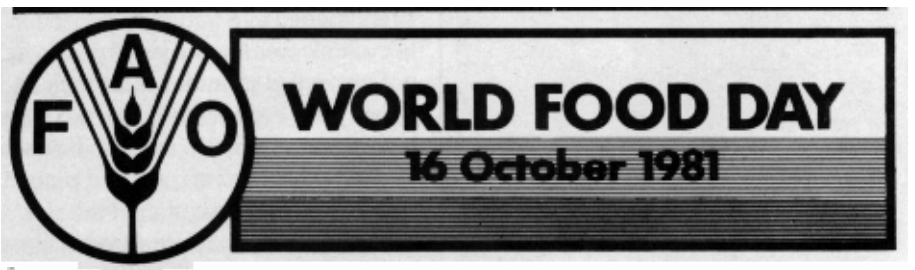
FAO fisheries publications available at the BOBP library include reports, chtulars, synopses and fishing manuals. Several of the fisheries commissions are represented here, though there's a natural emphasis on the Bay of Bengal region. There's such esoteric stuff as aquatic science and fisheries absbacts, marine science contents tables and fresh water and aquaculture contents tables. The current bibliographies of FAO documentation should prove useful to scholars and field staff alike.

Statisticians might like to consult such material as the Landing Place Survey, Department of Fisheries, Thailand; or the Statistics of Marine Products Exports, published by MPEDA, Cochin, Inaia.

Conference proceedings arrive from far and near. BOBP subscribes to some 25 core journals in fishery science, such as Aquaculture Digest and Fishing *News International.* Institutions such as ICLARM, SEAFDEC and Torry Research Station send their publications in exchange for BOBP's. There are also books and papers on socio-economic subjects relating particularly to community development, women in development, extension training and appropriate technology.

A few 35 mm FAO film strips are available at BOBP. They relate to purse-seine fishing, shrimp bawling, lampara net fishing, quality control, fishing grounds etc. There are also slides and black and white photographs of BOBP activities and of small-scale fisheries in general.

Documentation lists have been prepared for "stock assessment", "women and development" and "fish aggregation devices." A directory of fishery institutions in the region is being prepared.



October 16, 1981 is to be observed as World Food Day in accordance with the decision taken by the 20th FAO conference held in Rome in 1979. To quote FAO Director General Edouard Saouma, World Food Day provides an opportunity "for all those concerned about world hunger to renew their commitment and to take vigorous action."

To observe World Food Day, governments and private agencies throughout the world are planning a variety of activities – such as exhibitions, fairs, special educational courses and demonsbations, seminars and essay competitions, and issue of stamps, coins and medals. The press, radio and television of several countries will focus on World Food Day through newspapers, supplements, articles and special features.

The BOBP is observing World Food Day by organising a photo exhibition, "Glimpses into Small-Scale Fisheries in the Bay of Bengal" : it will be inaugurated at Hotel Taj Coromandel in Madras on October 16, and will be on view in Madras till October 20. The exhibition may later bavel to other centres in the region.

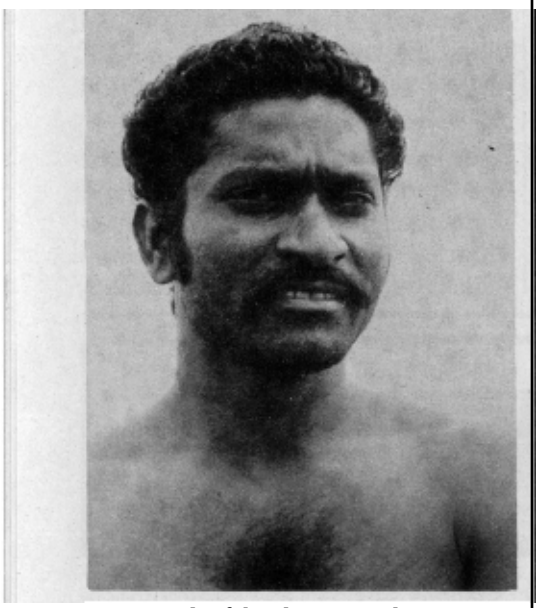
Good News from Uppada

(continuedfrom page 1)

FAO and 2 were introduced to Uppada in late November 1980 and FAO 3 in January 1981. Five crewwere selected for each boat, and SB Sarma, Inspector of Fisheries, Kakinada, was deputed to provide logistical and administrative support for the trials, and liaise with the crew one the one hand and with BOBP on the other.

The boats normally set outto sea every afternoon and land the next morning. Sarma monitors catch data and tackles problems that afflict craft, gear, crew and the operations in general, with supervision and advice provided by BOBP from Madras. BOBP experts – Ravikumar and Overa and consultant Gubrandsen – visit Uppada as and when necessary.

Six months of commercial trials reveal that the BOBP prototypes are more economical than the baditional nava, even though they cost twice as much. To illustrate : For the period November 1980 to May 1981 the gross earnings



per month of the three FAO boats were Rs. 33,044, Rs. 24,164 and Rs. 30,973 respectively; the three navas, by comparison, earned Rs. 16,551, Rs. 13,070 and Rs. 21,185, operating an equal quantity of fishing gear. The average net return per month of the three IND 13 boats was Rs. 1,248after deducting wages at Rs. 15/man day while the average net return of the three navas was Rs. 226. The investment return on IND 13 boats was 24% while the return on the nava was 7.3.%.

"We are on the right course," says Ravikumar.

Above: The crew of the three IND-13 boats tjpdergoing trials at Uppada. Below left: "IND-13 has increased my eamings" says-fisherman G. Bhanoji Rao.

How does the crew react to the FAO boats? We ask them to be critical – their response is hardly so.

Konada Narayana, 30, tells *Bay of Bengal News* that as a nay fisherman, his highest daily share was Rs. 50. With IND 13 his share was Rs.250 on one particular day (in March). His daily average share of Rs. 20-30 is much higher than while operating a nava. How does he spend the exba money? Nothing fancy. "My family eats better, and wears better clothes."

Konada's confidence in IND 13 was strengthened bya traumatic experience in cyclonic weather in January. His net got entangled in underwater rock and could not be extricated. For two days his boat stood alone in the sea : Konada and the other crew starved and prayed. But the FAO boat weathered the storm. "The nay would have capsized in these conditions."

On the third day the current turned, the cyclone abated, the net freed itself, Konada and his friends reached Hope Island. They then pushed the craft across it to the lee shore using the mast as a roller and the oars as skids, and sailed to Kakinada bay. By the time they returned home they were exhausted – but alive!

After that episode, says Konada, the people of Uppada have harboured no doubts about the FAO boats. Even in the matter of surf crossing, says Konada, the FAO boat is easier to manoeuvre than the bigger and heavier nava.

- *G. Bhanoji Rao,* 32, lost the nava he used to own in the May 1979 cyclone. The maximum share he ever received on a nay was Rs. 100 a day. He often makes twice as much with the FAO boat

B. Veeraraju, sarpanch of Uppada village and a fisherman himself, sums up the advantages of the IND 13 : "more money for less work".

For IND-13 ithasn'tbeen smooth sailing all through. It got off to a slow start – initial adminisbative problems – and hitsnags every nowand then. Theboat's engine has challenged BOBP ingenuity on several occasions.

What were the snags?

- Failure of flexible coupling due to poor quality rubber tyres and improper alignment
- Breaking of air cleaner flange and exhaust pipe flange due to vibration and corrosion.
- Excess wear of shaft and bearings due to sand abrasion resulting in leakage of water into the engine box through the sterntube.
- Heating up of engine due to insufficient air circulation.
- Frequent loss of the rudder heel locking pin.

While temporary repairs were undertaken by Sarrna at Kakinada, BOBP staff haveS attempted to solve the problems from time to time by introducing

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a rigid screwtype coupling.
a flexible stuffing box.

- bigger diameter shaft with renewable sleeves in way of bearings.
- fluted rubber (cutlass) stern bearing to minimise sand abrasion.
- Stainless steel exhaustpipe system to preventcorrosion, discharging slightly below waterlevel to muffle engine noise.
- a lid with an adjustable air scoop.

an air inlet shut off lock to stop the engine instantaneously and prevent damage in case of a capsize.

a sturdier heel fitting.

IND 13 has proved itself. It is viable. What is the next step ? BOBP experts believe the time is opportune to introduce 30 to 50 of these craft in Uppada. Two possibilities for finance are being mentioned.

1. A World Bank loan mooted earlier for 60 non-mechanised boats at Nizampattinam – this could be diverted to the beachcraft project if AP officials consider it worthwhile.
2. The DRDA (District Rural DevelopmentAgency), Kakinada could fund the project if its potential for good is demonstrated. (The DRDA is a government-funded but independently operated agency thataims at raising the incomes of people below the poverty line in rural areas).

BOBP experts believe thatbefore 30 to 50 craft are introduced at Uppada, fishermen selected to operate them should be bained on handling them and on maintaining the engines. The fisheries baining institute at Kakinada, it is suggested, could provide the baining.

From the experience gathered so far, BOBP has developed and built a larger version of IND 13, the IND 18. The cost increase is marginal and the craft offers more shelter to the fishermen besides better performance under sail and power. However, for introduction of these craft in large numbers, BOBP is designing a fibreglass boat (IND-20) based on the IND-18 design.

What all this adds up to is that IND 13 or 18 or IND 20 could very well be the beachcraft of tomorrow in Andhra Pradesh. **S.R.M.**

PROFILE

S.B. Sarma

Salagrama Bhaskara Sarma, 38, Inspector of Fisheries in Kakinada, rises every morning at 0430 at his home in Kakinada. An hour later he catches the first bus for Uppada or kicks the starter of his Moped for the 35 km ride through narrow crowded streets. He is at Uppada by 0700 a.m. Between 0700 and 1100, the three "FAO boats" (IND 13) and three traditional navas which he has to monitor land with their catches. Sarma jots down both catches and earnings, rechecking the figureswith two or three crew members.

Data collection over, Sarma talks to the crew of the IND 13 prototypes about problems they have faced. His small blackbag is full of bolts, nuts, and small tools to replace IND-13 parts lost or worn out. If the hull develops a leak, Sarma fixes it with araldite. He also ensures that sufficient diesel oil is available for the boats' next trip, and checks whether the gear is being mended and whether the engine has been attended to. "Net mending is necessary every day," says Sarma, otherwise it is likely to get useless very soon.

There are frequent problems with the engines, and Sarma either rushes to Kakinada and passes the problem on to a mechanic there or telephones Ravikumar at BOBP for advice. On other days he may have to arrange for spare parts for the engine or buy mending yarn. Around 3 p.m. Sarma goes to his office base, the fisheries baining institute at Kakinada, and enters the field data collected by him in the morning (from the IND 13s and the nays) on data sheets, provided by the BOBP. Every month these data sheets are sent to the BOBP office.

Sarma is rarely home before 6p.m. He then pores over the *Hindu*, or a technical fisheries publication, and helps his two sons, 15 and 13, with school studies before supper and sleep.

That is a typical working day in the life of Sarma, whom Uppada villagers know as a very active, friendly person, one who doesn't mind getting his feet dirty or hands wet while on the job. "If we have made progress at Uppada, we have good reason to thank Sarma," says Ravikumar. "And we have also to thank the Andhra Pradesh department of fisheries for the excellent backing given to us. A new post within that department – that of 'Inspector of Fisheries – Beachcraft' was created for Sarma to cut red tape and overcome adminisbative problems".

To ease Sarma's mobility, BOBP, with the concurrence of the Director of Fisheries, provided Sarma with a Moped. The vehicle has since been used for urgent trips to and fro, and for transporting supplies – and occasionally for taking BOBP's Ravikumar or Overa or Gulbrandsen to the mechanic's shop or even all the way to Uppada.

Sarma's entire career has been spent on the sea, and he now has an impressive seatime record. Joining the Andhra Pradesh fisheries department as Assistant Inspector at the age of 20, soon after a licentiate in fisheries technology and navigation, Sarma specialized in navigation of vessels and fabrication of fishing gear, obtained a masterfisherman's certificate from the Central Institute of Fisheries Operatives, Cochin (a precursor to the present CIFNET), worked in Vizag, Narsapur and Kakinada (Andhra's threecentres of marine activity), and helped establish the fisheries operations unit of Andhra Pradesh Fisheries Corporation. His varied experience makes him useful as a man-on-the-spot.

"If we are to provide the best possible development assistance to national governments, we need *active cooperation* and *a good counterpart input from them,"* says BOBP director Lars Engvall. Salagrama BhaskaraSarma is a symbol of both.

Kattumarams

A Daniel describes these remarkable craft, which account for 70 per cent of Tamil Nadu's marine fish catch.

Tamil Nadu state has a coastline of about 1,000 kñt with 349 fishing villages and a fishermen's population of .349,000, about one-third of whom engage in actual fishing. Total marine fish catch at present is about 226,000 tonnes per annum. Some 70% of the catch at present is landed by indigenous craft -34,000 kattumarams and 8,000 vallams – and the balance by mechanised fishing boats.

The Tamil Nadu coast can be broadly classified into three distinctive areas. Each of the three hosts a distinctive type of craft. The three areas are the follQwing:

1. The Coromandel Coast extending from Pulicat in the north to Point Calimere in the south.
2. Palk Bay, from Point Calimere in the north to Rameswaram in the south.
3. The Gulf of Mannar, from Rameswaram in the north to Cape Comonn in the south.

In the Coromandel coast, which is highly surf beaten, only the raft-type kattumaram can be operated. In the Gulf of Mannar area, near the Cape Comonn region, boat kattumarams are in use. The Palk Bay and the Gulf of Mannar are sheltered areas from where the fishermen operate their indigenous canoes or vallams. The logs were originally of the species *Melia dubia* (Lunumidella) and were imported from Sri Lanka. At present *Albizzia stipulato (Mara Maram),* obtained from the Kerala forests, is used.

Thus two distinct types of kattumarams edst in Tamil Nadu – raft kattumarams and boat kattumarams.

1. A raft kattumaram is a keelless raft formed by lashing together three to five logs, occasionally seven light logs. These logs are not of the same length, the end ones being distinctly shorter. The craft range in length from three to nine metres. Each log is individually shaped, with a definite fore and aft curvature in the vertical plane. The longer logs are placed inboard and the shorter logs are placed outboard and all the logs are lashed together. All the logs meet at the stem, but the stem ends in a series of steps. At the fore end where the planks end at the same level, it is finished with an upward-curve prow, by means of prow pieces which are lashed to the logs forward.

A unique feature of the raft kattumarams is that they can be transformed into bigger or smaller units, depending upon the number of logs and the type of fishing for which the kattumaram is put into use. The owners can make different units at will according to the fishing requirements. These raft kattumarams are basically similar but given different names depending on the gear used and the length of the centre log or logs.

Craft-gear combinations

A four-log kattumaram, generally known as periamaram, is used to operate the *thurivalai* (boat seine, a primitive type of mid-water trawl net) and nets known as *edaualai, madaualai* and *pynthavalai.* For operating these types of nets, a three-log kattumaram, known as chinnamaram, is also necessaiy. A four-log kattumarani and a three-log kattumaram are used for operating a thurivalai. Two four-log kattumarams and two three-log kattumarams are used for operating the other three types of nets—the edavalai, madavalai and pynthavalai. A five-log kattumaram, which is the most common in Tamil Nadu, is generally used for operating driftnets locally known as *irukavalai.* A four-log kattumaram is also used for operating driftnets and bottomset nets. Another type of five-log kattumaram also known as thundilmaram, is used for line fishing. A seven-log kattumaram, the biggest of the raft kattumarams, is used for kola fishing, to capture flying fish.

The boat kattumaram consists of 3 to 5 logs and ranges from 6 to 8 metres in length. it is similar to the raft kattumaram except that the outboard logs are placed higher to form a roughly "U" shaped cross-section, a rudimentary boat. All the rogs are of the same size and there is no separate prow piece. The logs are lashed together forward and aft to two horn-shaped cross pieces that hold the logs. The boat kattumarams are generally operated in pairs for boat-seine nets (madivalai) and single kattumarams for gillnet fishing and line fishing. Fishermen of the Coromandel Coast say they find the boal kattumarams of the Gulf of Mannar region unsuitable, their surf performance being inferior

A kattumaram in full sail.

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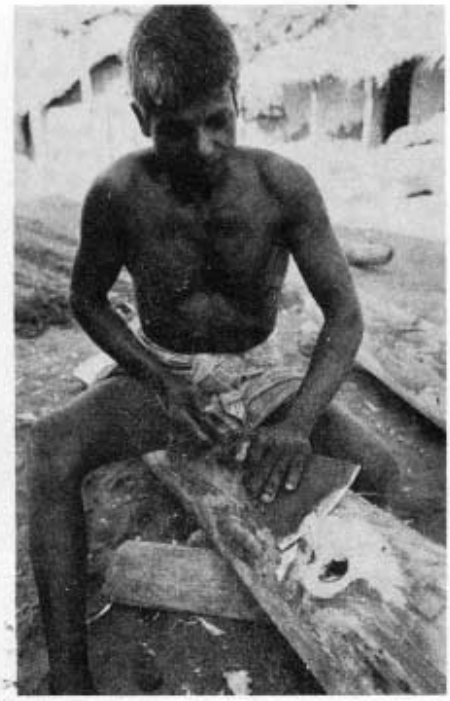


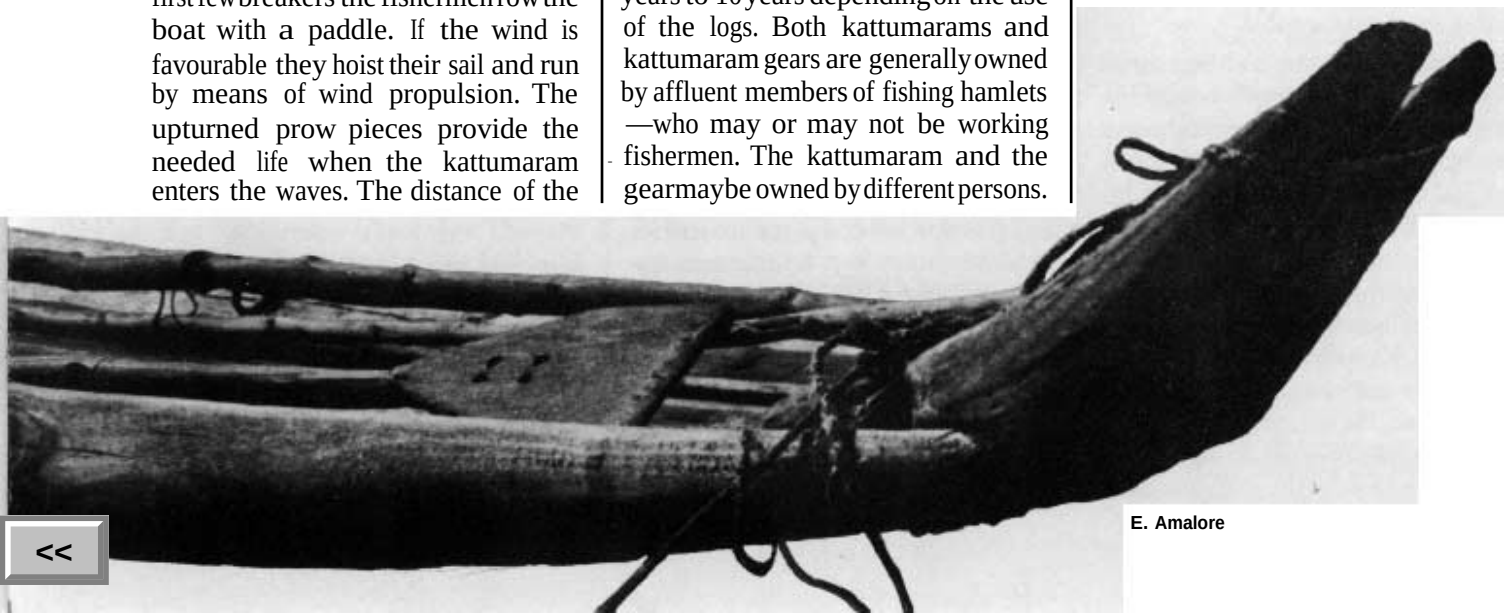
A six-log kattumaram returns with catch, mainly sardines. Right: Shaping of a kattumaram log. The fishermen do it themselves; but sometimes an expert, like this one in Kanyakumari, is hired for a few days.

Kattumarams are propelled through the surf by paddles and punting poles. In the southern districts, splitbamboo sticks are used. Oars are used at sea in some cases. Steering is also by oar. All kattumarams use the lateen sailing rig as means of propulsion. Sails are made either of cotton or synthetic material.

Depending on the type of fishing for which these kattumarams are put into use, the fishermen set out either early in the morning by 2.00 a.m. and return around 7.00 or 8.00 a.m., or set out late evening and return early the next morning. For line fishing, the fishermen set out early morning and return late in the evening. While launching out, the fishermen keep the bow of the boat at right angles to the surf and take off at the appropriate time when the surf condition permits the fishermen to launch their boat. After crossing the first few breakers the fishermen row the boat with a paddle. If the wind is favourable they hoist their sail and run by means of wind propulsion. The upturned prow pieces provide the needed life when the kattumaram enters the waves. The distance of the fishing ground from the shore depends on the fishing method. For example, if the fishermen use scoop nets, the ground may be near the shore, but if theychoose either gillnet fishing or line fishing, they may have to go 3 to 10 miles. On their return, the kattumaram has to be beached carefully; if it is not properly controlled, the breakers (waves) may dash the kattumarams against the shore. On reaching the shore, the raft kattumaram of the Coromandel Coast is untied and taken to the beach as seperate logs. But the boat kattumaram is always kept tied together.

The cost of kattumarams may range from about Rs. 300 to Rs. 750 per log, depending upon the length and girth of the log. The average cost of one unit ranges from Rs. 2,000 to Rs. 4,000. The life of the logs varies from about 3 years to 10 years depending on the use of the logs. Both kattumarams and kattumaram gears are generally owned by affluent members of fishing hamlets —who may or may not be working fishermen. The kattumaram and the gearmaybe owned by different persons. Many fishermen own neither craft nor gear but are employees of the owners andget an agreed share of the proceeds of the catch. Arrangements for sharing the earnings from kattumarams vary from region to region, even village to village; they also vary according to the type of fishing gear used at the time. The average earnings of the kattqmaram fishermen may range from Rs. 5 to Rs. 20 per day. There is no recurring expenditure.

Kattumaram fishermen lead a hazardous life. They are exposed to the vagaries of wind and wave and are quite unprotected at sea. In bad weather, kattu-



E. Amalore

Children in the fishing community take to the sea pretty quickly. Here's a youngster handling a kattumaram like a veteran. Top left: Lashing the kattumaram logs together. Top right: Pushing the craft into the water. Left: Getting ready to battle the waves. Right: Using a pole to propel the raft — Harry Miller took these shots at the Marina in Madras.

marams have been known to drift away from the shore, never to return. When the fishermen go out for kola maram fishing (flying fish), they have to stay out in the sea for two or three days. There have been occasions when in bad weather the fishermen have lost control of their craft and been washed ashore on a distant coast.

The kattumaram is the craft best suited for heavy surf beach conditions. Attempts to replace these baditional beachlanding craft with competitively priced surf landing boats have so far been unsuccessful.

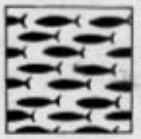
More than a decade ago, the Tamil Nadu Government tried out mechanisation of kattumarams with outboard motors in Kanyakumari district. But since these outboard motors were run on gasoline, the propulsion cost was not economic enough to make the operation viable. During 1971, trials were conducted at Madras with outboard motors fixed to kattumarams. Here also, petrol-fuelled outboard motors were found uneconomic. As a result, kerosene outboard motors were imported. But now that the cost of kerosene has increased too, such outboard motors are no more economic.

Since 70% of the marine fish landing of Tamil Nadu is from indigenous craft, the importance of this fishery is unquestioned. The Bay of Bengal Programme has taken up the project of kattumaram improvement. *Melia dubia* and *Albizzia molluccana*, the two species of kattumaram logs traditionally imported from Sri Lanka, are no longer available for import. Even the timber from Kerala forests used for kattumarams — *Albizzia stipulata, Bombox malabaricum* and *melia composito* — are now getting scarce, and the prices of the logs have risen steeply. If the logs are treated with chemical wood preservatives, they can be protected against fungus attack, and their working life increased. It has also been proposed to take up physical protection of kattumaram logs by means of fibre-reinforced plastic sheathing or fibre-glass sheathing.

Another kattumaram-improvement activity under BOBP auspices is that two alternate species of light timber available in Andaman forests — *bombax insigne* (didu) and *pterocymbium tinotorium* (papita) — have been imported, shaped into kattumaram logs and launched at the Marina to assess their suitability. These species have also been pressure-treated with copper-chrome-arsenic compound (tradename ASCU). The pressure-treated logs will soon be launched as kattumarams. How the pressure treatment has affected the logs will be known only after some time.

Fact Sheet of Tamil Nadu Fisheries

Geographical data :	Coastline	1000 km
	Shelf area	41400 sq. km
	— Upto 50 m depth	23200 sq. km
	— Breadth of shelf	40 - 60 km
	Potential area for coastal aquaculture	20000 - 27000 ha



Fish Production :	Marine	216000 t (1979-80)
	Inland	160000 t (1979-80)
	Potential annual yield	389,000 t

Craft :	Kattumarams	29744
	Canoes	7340
	Motorized craft and trawlers	2919

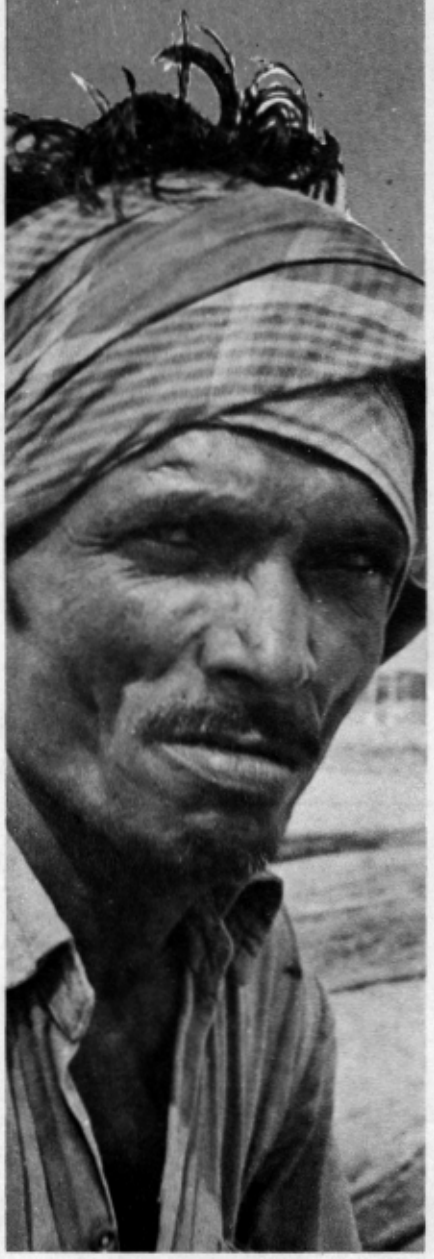
Gear (1967)	Boat Seines	10,500
	Driftnets	26,900
	Other gillnets	32,000
	Shore seines	2,200
	Trawl nets	3,700

Fisherfolk :	Fisherfolk population	3,37,713
	Active fishermen	80,035

Infrastructure :	harbours/jetties	8	
	landing centres	376	
	ice plants : public sector	26	- 76 t/day total capacity
	private sector		- 440t/day, total capacity
	cold storage, freezing	29	3952 t/day, capacity; 155 t/day, capacity
	canning plants	3	
	fish meal plants	5	
	boatbuilding yards	14	
	net-making plants	4	

		(Quantity)	(Value)
Exports and Imports:	*Exports* (1979)	8,294 t	Rs. 298.3 million
	Species exported :		
	— Frozen shrimp	49%	84%
	— Frozen froglegs	7.7%	5%
	— Frozen cuttlefish	2.6%	2%
	— Dried fish	37.7%	4.5%
	— Shark fins	1%	2.7%
	Imports :		No imports of fish or fish products. Only equipment is imported.

A MAN CALLED PICHAI



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Reporter Arthur Pais visited a 90-strong fishing community near the Marina, spent a working day with fisherman Pichai and his community, and gave us an engrossing story.

The day begins early for Pichai—at 4 a.m. He drinks two large glasses of strong tea: unlike his coffee-loving friends, Pichai swears by tea. He won't have any breakfast; nor will he carry any food to the sea. For today he has been assigned a short stint out to sea by "Periavar," the owner of his kattumaram.

"In any case," says Pichai, "I don't feel hungry before 10."

Pichai. Medium height, dark, emaciated. He looks much older than 40, his real age. "That doesn't matter," he says laconically. "My wife is five years older to me." Wife Tillai, mid40's, mother of three (two sons and one daughter) is also a wage-earner like her husband. As the auctioning woman, she gets exactly one rupee per day. "Not every day," she hastens to clarify. "If the men catch nothing, Tillai gets nothing."

Tillai decides to snatch some more sleep as her husband and his friends go towards the beach. Mattukuppam, the slum inhabited by Pichai and 90 other fishermen, is hardly visible from Kamaraja Salai, one of the busiest roads in Madras, facing the Marina beach. Despite protests from beach-lovers, the Mattukuppam fishing community has been using portion of this beach to park its kattumarams, nets and other accessories. This portion of the beach is also used to auction their catch.

"Our work is as unpredictable as the moods of the sea," Pichai says. "There is nothing routine about it." Today he is going out early on the first stint because the kattumaram owner decided so. "But tomorrow, he may ask me to go later, for the second shift, which will be a bigger operation".

Today Pichai and three others will operate a single cotton net from two medium-sized kattumarams. "We could take two more crew, if the catch is expected to be big". Often it's instinct that tells him whether the day will be fine or lousy.

When the catch is good and a gut feeling tells them that there's more out there, Pichai and friends return to the sea after handing over the catch to the auction woman. "On the other hand, when there's hardly any catch for the first 40 minutes, we lose heart, and if one of us suggests that we return to short and go back to sea again after a few hburs, we do so." Pichai is a garrulous person but as he approaches the kattumaram he becomes a bit pensive. He greets his buddies with warmth but without mirth. "The genuine greetings come when we return to the shore with a heavy catch", he says.

> **"Our** *work is as unpredictable as the moods of the sea ... there's nothing routine about it"*

His friends have a better appetite than Pichai does. They have brought cold rice, left over from the previous night, green chillies and pickled fish. The food is packed in tiny utensils. dry leaf covers the mouth of each utensil, a cloth seals it. The utensils are kept in a basket made of palm leaves "The basket is used to store the catch. When the baskets get full, the fish is kept in the net," Pichai explains. "And then the homeward sailing begins."

Pichai wants to know if we've heard stories of fishermen going into the sea in a sozzled state. "There's a great amount of drinking in my community," he says. "But you just can't go to the sea in a drunken stupor. Often when the morning breeze chills us, some of the youngsters want to take a stiff peg of sarayam (rot-gut), but we discourage them. Have plenty of coffee or tea, we tell them."

Do fishing communities in the city follow self-imposed territorial restrictions? "We are free to move in any direction," Pichai explains. "You might have heard

Above : Pichai's wife. Below : Pichai *readies his kattumaram for the sea.*

of recent gang fights in a couple of fishing villages, but these crop up due to personal animosities. The only fights we have at sea are when mechanised boats try to poach into our territory."

After five hours of fishing, Pichai and his friends negotiate the surf on their -- way to the shore with a triumphant smile. The catch has been good. As Pichai relaxes on the sands, wife Tillai hands over some breakfast, and of course tea. Then she gets busy with auctioning chores, and Pichai wonders how much money he's going to get at day's end.

Howaretheeamingsfromkattumarams shared ? The arrangements vary from region to region and even village to village throughout the eastern coast of India. Most of the fishermen in Mattu-kuppam own neither kattumamms nor gear, which means they are hired labour. Once the auctioning is over, 50% of the amount has to be handed over to the owners of the craft. The rest will be shared among the working fishermen who participated in that particular stint.

"You must have noticed two things", Pichai says. "Before the auctioning starts, each fisherman will keep a tiny portion of the fish for the use of his family. Another small portion goes into a special basket. The basket's earnings are handed over to the community leader, who'll bank it and spend it later on community events such as religious festivals."

It's common to see young boys, say seven or eight, going on a short kattu-mamm stint. "But they are not entitled to a share till their apprenticeship is over," adds Pichai. And how long is this training period .? "Oh, anything between five to seven years, but you must note that for every trip they make, right from the first day, they are entitled to a token payment". That has always been the tradition Pichai believes in. He himself was an apprentice for seven years before he was accepted as a full-fledged fisherman by his peers. "And it will happen to my son too." Pichai is now referring to his second son; the first one is not enamoured with fishing. He's right now in the final year of school. Though he can find time to go along with his father, he doesn't. "He dislikes the sea; when he's free he helps his mother in her auction chores."

Seeing Pichai in a pleasant mood Kalaimani, his eldest son, asks him for some money. Jaws is in its last week,

Pichai tells his son: Come with me, I'll show you a bigger shark than you see in the movie "'Jaws".

his classmates have told Kalaimani. He reminds his father that he has been asking to see the film for quite some time. In fact the son tries a bit of emotional blackmail: "So many times (in the past) you told me I could see the film if you get a good catch."Pichai, who has not seen a single English film, suddenly becomes extra alert. He says: "You come with me next time I go on a longer trip, and I'll show you a bigger shark than you'll see in that film." Kalaimani is an optimist. "But my friends say that you cannot get such big sharks in our country. Please, let me go today. The father is not impressed. Though not a moviegoer himself, he knows about the stiff admission rates of theatres on Mount Road. He suggests his son sees a Tamil film. "May be, I'll let you go tomorrow, if I get a better catch."

He'd like to take a short rest and nap, Pichai tells us. The temperature being what it is, he won't like to go to his thatched hut and suffocate. "There are plenty of trees around my hut. I'll rest in the shade."

But he can't rest for the next two hours. Some of his friends have bought a new cotton net costing Rs. 500. They want him to take them to Pichai's *swamiyar,* a godman who also doubles as an astrologer. They want an auspicious time to launch the net. "But you don't have watches," we wonder. "How will you know the exact auspicious moment ?" It's simple, they laugh at our naivete. "Our leader will be there to bless the occasion, and he surely has a watch."

After the fishermen meet the astrologer, the net will be soaked in a boiling liquid prepared from tamarind seeds. This is supposed to strengthen the net, increase its useful life. And at the appointed, auspicious moment the net will touch the sea water.

"I don't believe in superstitions; most of my friends do not care for them either," Pichai speaks to us while ignoring his friends for a few minutes. "But I do go to the astrologers." His astrologer seems to be popular with his friends too. "Not only does he predict, he also suggests

(continued *on page 17)*

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Women Workmates

Dasamma. Is she 50 or 60? She does not know and I find it hard to guess. Her face is lined, her skin withered, but her figure is lithe and her walk brisk.

Dasamma lives in a fishing village right beside the famed Marina beach of Madras and sells fish in the city markets. Every day she comes to the beach at fish landing time and buys the fish from one of the many auctioneers there. Sometimes she buys for Rs. 50 sometimes even for Rs. 200. She cannot buy directly from the fishermen even if they are her husband or sons. The auctioneer, who is from her village and appointed by it, knows her well. He does not demand instant payment, he is willing to wait until she has sold the fish herself.

The auctioneer keeps aside a share of the fish handed over to him by each fisherman. He auctions it separately when this swells in quantity, later. The proceeds of this auction go into the village kitty. The auctioneer gets paid only a percentage.

The village kitty is usually used for annual festivals and other ritual village functions. In times of hardship, it is used to buy rice for distribution in the village. The rations are usually allotted on the basis of number of male adults in each family, women and minors getting half rations or less. Their reasoning is that since the money comes from the fish caught by the men, they have first call on it ... The kitty is sometimes used as a war chest when there's a fight with another fishing village. Then money flows freely as blood ! How much does Dasamma make on an average per day ? Oh-h-h, she hasn't kept back She gets a few rupees, less a few She has to pay the cycle *rickshawkaran* for taking the fish to the market, she has to pay rent for the stall at the market (the rent depending on the kind and amount of fish she is selling). It's always a struggle.

What about the men in her family? Dasamma dismisses them contemptuously. She has four sons but only one of them goes 'fisarman'. The others have been to schooL They do not want to go 'fisarman' (Dasamma is proud to repeat the English word). They do odd jobs now and then. "But they are a lazy lot. I have to feed the mouths at home".

Dasamma's sari is as bleached and weather beaten as her face, a large tear in it held together by a knot but on her wrists are a pair of solid gold bracelets. A relic of better times. Fisherwomen (fishermen rarely get to handle money) do not know the banking habit Their savings, if any, are in gold. In hard times there is always the pawnbroker. Dasamma has held on to her bracelets through thick and thin. By luck or design, the bracelets fit her wrists so snugly, they cannot be taken off.

The Royapuram fish landing centre is crowded, noisy. Mechanised boats and kattumarams (which bring the fish from the mechanised boats to the shallow waters) are chock-a-block in the bay.

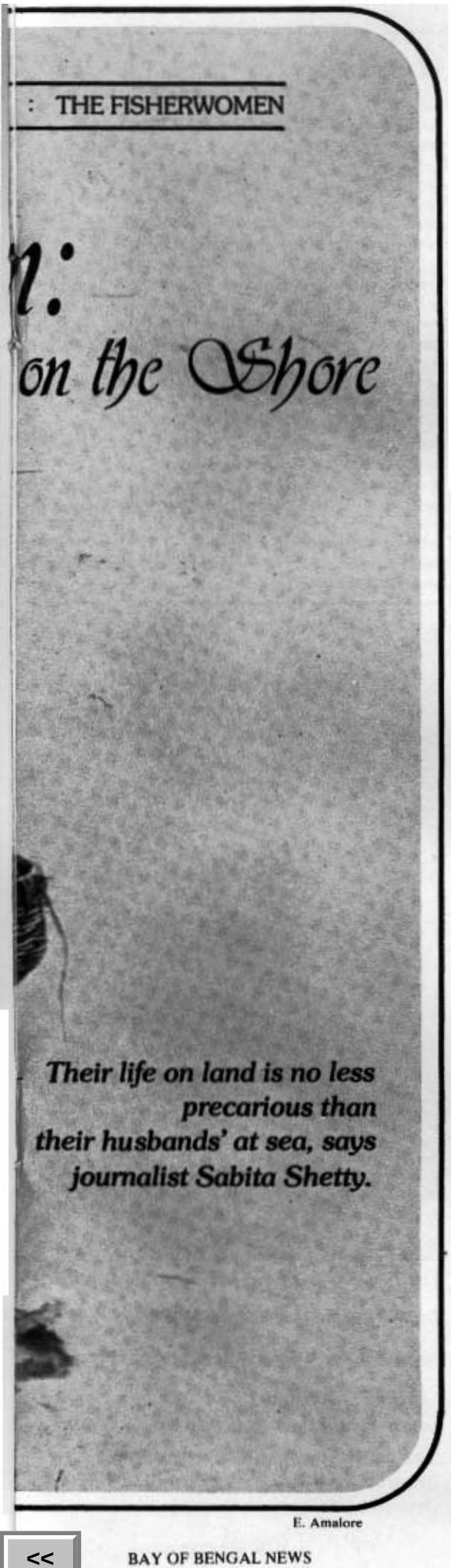
On shore, the auctioning is in progress. The auctioneers here are women. Crowding round them are more women bidding for the fish. The auctioneers stand out from the rest not only by their strident voice but also by their obvious affluence. No auctioneer is without some gold round her neck, on her arms or ears.

Although only a few miles separate Royapuram from Marina, the auctioning system is entirely different. The auctioneer has a share in each lot — may be a handful of prawns, a heap of sardines or a pink 'sankara' which is hers to auction and keep. The village or community makes no claim on the proceeds.

When the catch is good and the fish has to be sent to distant markets to be sold, the fisherwomen send it by cycle rickshaw, sometimes a couple of them share a rickshaw. They follow by bus. The *rickshawkaran* knows where to wait for them.

On days when they are not able to dispose of all they have bought, they keep it packed in ice overnight at their homes and try to sell it the next morning. Or else they salt-dry it.

The dry fish bade is usually handled by wholesalers. A few women like Panchalai, however, specialize in selling only dry fish. They buy a month's lot at a time (worth Rs. 800 to Rs. 1000) on



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a deferred payment basis. Although from day to day there maybe a loss or gain of a couple of rupees, Panchalai admits to a tidy profit at the end of the month.

Another group of prosperous women are those selling food in the village and at the landing centre —rice and fish curry, hard-boiled eggs, fried savouries, steamed yam, yellow sweetmeats, over-ripe fruit... Since most fisherwomen spend their day either at the fish landing (some come twice a day to buy fish) or the market, they often have no time to cook or eat at home. Both men and women quite frequently buy their food. And when the catch is good, the food stalls do roaring business. For the minute he has money in his hands, the fisherman loves to eat, drink and be merry with no thought for the morrow. That is why his woman keeps a tight hold on the purse strings and doles him out only pocket money. It is also the woman, who more often than not, assumes responsibility for repaying loans taken in hard times.

Perianilankarai is 15 km. from Madras. While some families here are quite prosperous, there are 13 households without kattumarams or nets of their own. In an area of acute water scarcity the village is lucky to have a well with sweet water. But it hasn't been cleaned forages and nobody uses it. Fortunately there are hand pumps—but these also require repair every few days and nobody bothers.

Most houses – mud-walled, thatch-roofed – have one or two rooms. Ganapathy's house has four. His children eat from stainless steel plates, and in the kitchen are huge brass vessels. Unlike others in the village, Ganapathy is not content with the catch at home. He loads his kattumaram, net and crew into a lorry and goes to the fishing grounds along the coast. Each trip lasts 34 days. Outside his house is a green flag with a crescent and star. It is a prayer flag invoking the blessings and protection of Nagore-ar. Hindu or Muslim, the fishermen along their coast consider this Muslim saint their guardian and protector at sea.

Ganapathy is one of two persons in the village owning a 'pachai valai'. With this net, he is able to haul in big catches. His women do no bading. It is a mark of prosperity, or even prestige.

Next door is a family of four brothers. All have studied up to the ninth standard. When they left school, they didn't want to take up fishing. They looked for jobs in the city, but jobs were hard to find and one by one they returned to the life they had sought to escape. Oh they are all right now. But fishing was 'boring'. "When the catch is good, we feel no regret, but when it is poor..."

Their mother takes the fish by headload to the surrounding villages. She has been doing it all her life. Her daughters-in-law don't know the bade. They come from fairly properous families from other villages. When such girls marry "beneath their station" so to say Sand are forced to take to a way of life they are not used to, they find it extremely difficult In most families in this area, at least one woman takes to selling fish. The exception is families where there is a baby to be looked after.

The house where the transistor is blaring belongs to a "bicycle trader". He delivers the fish at the various markets in the city. He gets paid Rs. 10 per trip. His wife and daughter try to supplement the income by weaving nets, but it is tedious work Some social worker who had come to the village had taught the daughter to make a bag. But who'd buy bags.?

Though living so close to the city, the village has no source of income other than fishing. There's a chicken coop in every second house, but the chickens and their eggs are for the family cooking pot Nobody sells them. There's a privately owned prawn processing factory just at the entrance to the village. But very few village women are employed there except during the peak season. The management prefers to employ girls from Kerala who are already trained and quick at the work. They are also willing to work shifts. The fisherwomen from Penanilankarai refuse to work the night shift. Even the male labour in the factory is not from the village. They are erratic, says the manager. When the fishing is good they go off without so much as a by-your-leave.

Karpayee's husband owns no kattumaram or net. She is the main breadwinner of the family. She buys the fish from the other women. (In their village there is no auctioning system. The women sell the fish their husbands have brought in). Karpayee takes the fish by bus to the city market because they fetch a better price there. But the bus people always object. She has to be careful the water does not seep through or there's no blood draining out of her basket.. Ayya-yo, some of the..people on the bus – what a fuss they make holding their noses and pursing their mouths.

A woman lies dozing in front of – is it a house? Three palm fronds joined together. Take me with you, she implores. Where's her husband? I have no one. I am not married, she says. The women and children gathered round snigger – oh she's married all right but her husband's left her. He has another 'wife' now they say. Coming and leaving are a part of life.

The village folk look after this anathai (orphan) as they call her. Somebody gives her some rice, a handful of fish, a discarded sari

The lot of the lone woman is hard indeed. Mangamma runs a sweet shop for the village children. Is she able to make both ends meet ? "On a fewpaise a day?" she laughs bitterly.

The fisherwoman does not risk her life at sea like her husband, but her life on land is no less precarious and uncertain than her husband's at sea.

WOMEN IN TAMIL NADU FISHERIES

About half of the 400,000 strong marine fishing community along the Tamil Nadu coast consists of women. They take vigorous part in the fishing profession, particularly in fish handling, marketing, processing, net-making and net mending. They do not normally take part in fish capture activity.

The most visible women's activity is marketing selling fresh fish at shore, the village market, sometimes at town markets. In districts like Madras, Chingleput and North Arcot women's participation is as high as There are "middle-women" who buy fish, and auctioneers who sell it.

Women are also conspicuous in fish curing, particularly in Ramnad, Tirunelveli, Kanyakumari and Tanjore districts.

Fisherwomen engage in net-making and net-mending to a limited degree in almost all the districts, but in large numbers in Kanyakumari and Tirunelveli. In Kanyakumari district the Kottar Social Service Society, a voluntary agency, employs about 1300 women in 13 net-making units. They are operated exclusively by women.

The Tamil Nadu Department of Fisheries has selected one fishing village each in Chingleput, Tanjore and Tirunelveli districts to formulate schemes to better the social and financial status of women from the fishing community. In these selected fishing villages, women are known to be very active and quite receptive to new ideas. For formulating this scheme, the Department drew partly on material from two BOBP-organised workshops – held in April 1979 (training of women extension workers) and in September 1979 (social feasibility in small-scale fisheries development).

The Department has just appointed an Assistant Director, Mrs. Freda Chandrasekharan, in charge of "Fisherwomen Extension Service." "This is excellent news." says Patchanee Natpracha, BOBP Sociologist, "and reveals great foresight the part of the Department of Fisheries It is worthy of emulation. We at BOBP will do everything possible to assist and strengthen this new unit in its endeavours.

The many *roles of the fisherwomen.*

Top left: Shrimp beheading in Pulicat.

Above: Fish drying at Royapuram.

Left: Net braiding and baby care – a woman handles both ifl Kanyakumari.

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A Man Called Pichai

(continued from page 13)

remedies." Example: Not long ago Tillai had a prolonged illness. Doctors were not helpful, but the swamiyar suggested we change our hut, then pray at a temple 20 kilometers away, perform *pradakshan* (go round the temple several times). I had to do this for seven days, three hours each day. And the miracle did take place; Tillai was cured."

Pichai respects astrologers and *swamiars,* but doesn't understand why they hike their fees from time to time. "They are godmen; so they won't have many problems like we have," Pichai says in a matter-of-fact tone. "The other day, I consulted my astrologer about my younger brother who likes the bottle a little too much. The *swamiyar* said evetything would be all right in two years, and demanded Rs. 5 from me. "You did not charge half that amount the last time I met you", I protested, "but he would not listen, he only told me about soaring prices."

Pichai has been a teetotaller for over two decades now. "I used to drink very rarely," he recalls. "On one occasion I must have taken an extra quantity and in a moment of madness, I twisted the ears of an attractive neighbour. She must have been very fond of me; so she did not protest just then. But when I was sober she asked me why I had done such a thing to her. That shook me and I swore against alcohol." Pichai had been tempted subsequently to imbibe some *sundai sor* (a mild fisherman's brew, a rather unpalatable rice beer) but the memories of that "shameful" incident made him shun all kinds of alcohol.

Pichai loves to gamble and smoke however. "These are also he says candidly. "But tell me, does a gambler (who doesn't drink) illtreat his wife? Does he go around calling her abusive names in the middle of the night ? Does a gambler spend the entire night in a gutter?" And yet, there are times when Pichai reproaches himself, when he feels he should have saved some money and bought a kattumaram and a net by pooling his resources with those of friends.

Back from the astrologer, Pichai sleeps for a few hours. In the evening hç goes on a tea-drinking spree in a hole-in-the-wall tea-shop which displays a bilingual signboard Marina Tea Bar, it says in English and Tamil. A few hours later, his friends will keep themselves warm and busy with something far more potent. The *kuppam* (slum / fishing village) will be transformed. Riots of smells from the frying pans, inebriated talk, boastful bets and challenges, jokes, insults and accusations. While this open air circus goes on, surely several men, women and children will be trying to sleep. Especially the men who will be going out early next morning, and Pichai will be one of them.

Should We Return To Sail?

(continued from page 20)

it – masts, sail, rigging, etc. – costs money and generally clutters up the deck space; especially modem rigging with terylene sails, aluminium masts and stainless steel wire is an expensive investment. I personally think that the most immediately beneficial saving with the Sri Lanka 28 ft boat would be alternative (2) – the boat is grossly overpowered with a 30 h.p. engine. When it was designed by FAO 20 years back, an engine of about 15 h.p. was specified. Since then there has been an escalation in power with a marginal increase in speed. This is similar to a development that has taken place in the fishing industry all over the world due to cheap fuel and the competitiveness among fishermen to go faster than their fellows.

A recent investigation in Noiway showed that if the engine power of the Norwegian fishing fleet was cut in half, the average speed would only drop 10%. So rather than a full scale return to sail on motonsed boats, Ibelieve in a much more careful use of power. We must first of all use smaller engines and improve on the propellers to get maximum thrust for the power installed. One main exception to the question of reduction in engine power is for trawlers, where there is a relation between the engine power and the catch result Here again there are large potentials in saving by adopting slow moving, large diameter propellers in nozzles. The governments can play a crucial role in economizing on engines and fuel by giving subsidies only for engines up to a specified size related to the boat.

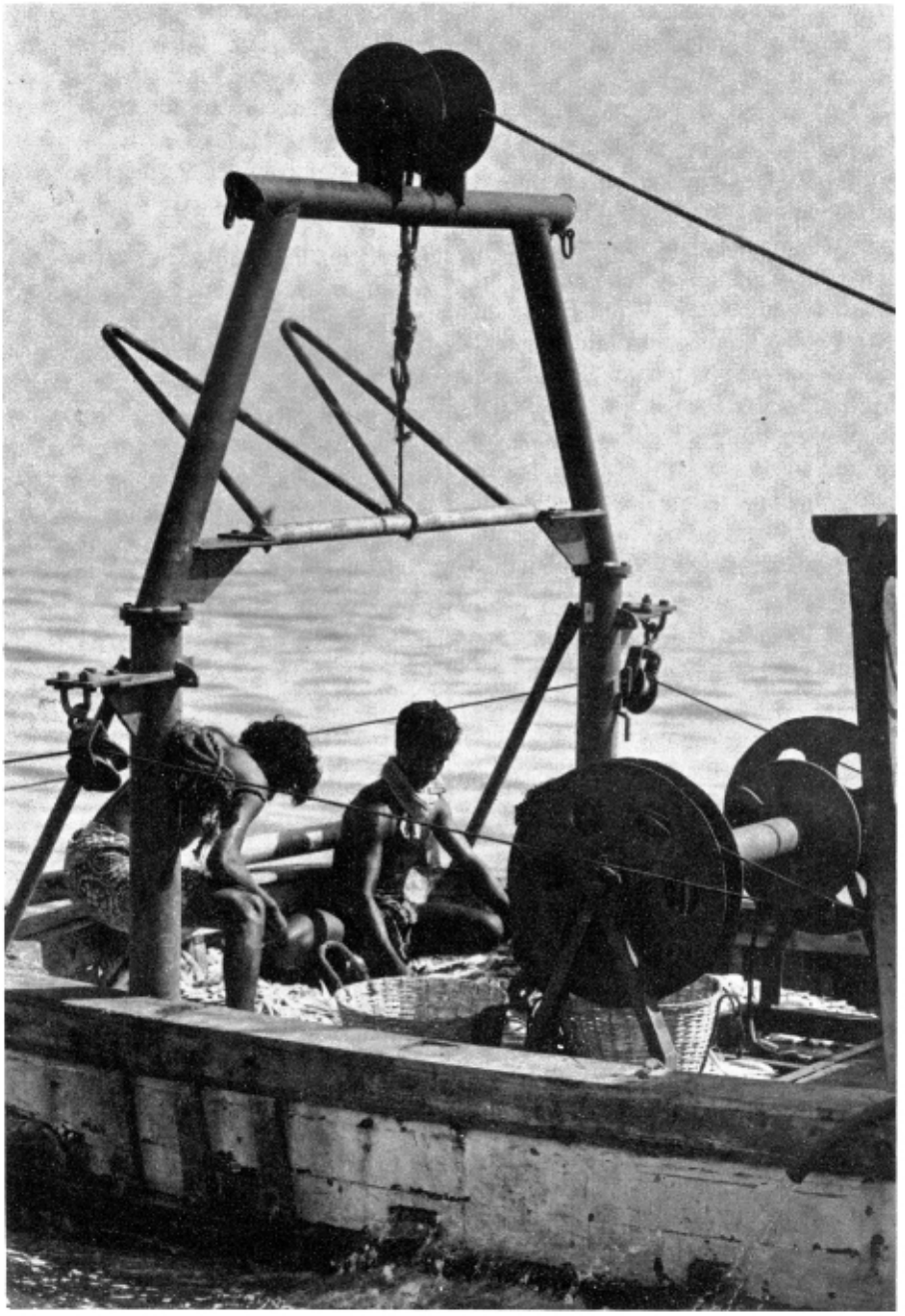
.For new construction, the more extensive use of sail in developing countries is of interest because of the possible savings that can be made by installing a low horsepower engine which would be used in calm waters or adverse wind but the boat would be designed with an efficient but low cost rig for the use of sail as a main propulsion. An example of this approach is a 28 ft beachboat recently built by BOBP in Madras which has a 5 H.P. air-cooled diesel engine, and a sail area of 27 m^2.

For carrying light loads and for fishing methods like handlining, longlining and trolling, requiring small boats, I believe in the development of sailing/rowing craft without engines, based on existing traditional craft like the Oru in Sri Lanka.

lihink we will be much more careful in the future in advocating motorization as the only way to push production. An engine often doubles the investment cost in a fishing boat. Maybe you could achieve the same production with the same investment by having two sailing craft instead of one motonsed craft and thereby provide more jobs and spread benefits a little wider.

Oyvind Gulbrandsen, Norwegian naval architect, is an FAO and BOBP consul- *tant. (See profile of Gulbrandsen in Bay of Bengal News, January 1981).*

I underline the "maybe" because there are so many variables that have to be considered when introducing new fishing craft and we must not be canied away by a nostalgic "back to the sail movement" forgethng the long hours spent by the crew toiling with rowing oars under a scorching sun on a windless day or trying to reach the shore in winds dead against the direction of travel. But with increasing cost of oil based energy, more use of sail power is definitely to be reckoned with in the future.



Picture shows a new gear handling** system **designed by BOBP being used by a** private **boat in Tuticorin. The** system **includes a gantry, net-drums and a winch.

BOBP GEAR EXPERIMENTS POPULAR IN TUTICORIN

(continued** from **page 2)

The BOBP is also arranging to provide a shrimp-cum-fish trawl net to the Tamil Nadu directorate of fisheries at the latter's request. The net will be used for surveying operations by the Survey-cum-Inshore Fishing Station, Royapuram. A net-maker and a seaman from the station are also being trained in the fabrication of the net

A BOBP-designed gear-handling system – which includes a gantry, net-drums and winch – was tried in the boat of Tuticorin fisherman Alphonse. He and his crew found that the system increased deck space and facilitated fishing operations. The gantry and net-drums, for instance, made net hauling quick, smooth and easy. "The gantry is a four-in-one contrivance," says Pajot, "and more efficient and reliable than the four units it replaces : the gallows, the mast, the boom and stays".

A visit to Tuticorin to study BOBP's gear experiments finds the fishermen's response to it to be quite positive.

"From TImnelveli to Kanyakumari," says Joseph Fernando, an articulate fisherman of Tuticorin, "the operators of mechanised boats and their crew usually live for a whole year on what they earn for four months. Our shrimp trawlers are active from May to August. In other months what we catch hardly meets our fuel bill."

"Have you ever faced my dilemma?" Joseph asks with fervour. "Boats that develop leaks. Nets that need mending. Engines that have to be overhauled. Problems with repaying government loans, with crew. All this in addition to the usual problems of running a family that ewry one faces. And to tackle all this, I was earning money only four months in a year!"

"The high-opening bottom trawl introduced to Tuticorin by the BOBP has sustained me during the shrimp off-season, kept me and my family from hardship and enabled me to pay up the instalments due on my boats.

Joseph is full of praise for the improved technology the BOBP has brought to Tuticorin. "My English is rickety, but whenever Pajot comes here I catch hold of him and blurt out whatever I can and manage to communicate so that I get his ideas on everything. On framing a net, determining mesh size, on assessing the possible performance of a new net. Also of course on the operation and repair of nets.

Joseph emphatically refutes the suggestion that the high-opening bottom trawl helps the "haves", the well-to-do fishermen, rather than the have-nots. "Not long ago I was a traditional fisherman operating vallams. I acquired a mechanised boat only with a bank loan, and I still have to repay the loan."

Joseph adds that the crew of his mechanized boats consist of traditional fishermen who can't make a proper living from their kattumarams and vallams. "I feed half a dozen families – those of my crew. Till this year my boats used to be idle during off-shrimp season and half a dozen families would go hungry. Now, thanks to devices like the high-opening bottom trawl, my crew can keep their families going almost throughout the year... We need more of such technological improvements."

SRI LANKAN FISHERIES : AN ANALYSIS OF CHANGE

Coastal fisheries have seen much change since the second world war. Change – somewhere fast, somewhere slow, in some places not for the better. Looking at Sri. Lanka, we may ask ourselves : Why did the north develop so differently from the south ? Were conditions so much different from the outset ? Which social forces were at work ?

In his MA thesis for the Free University of Amsterdam , Maarten Bavinck analyses major social forces at work in the northern part of Sri Lanka, which developed a so-called 'petty commodity fish production" : its favoumble results are well known. In the northern area, mechanisation of fisheries has generally had a positive impact.

The same cannot be said for the south-west coast of Sri Lanka. Some people feel that mechanisation has lowered the economic status of fisherfolk of this area and diminished equality and employment.

Thus the same innovation seems to have generated different results in the north and the south.

Mr. Bavinck makes clear that the favourable conditions and forces of the north were not present in the southern area. He also comes to the conclusion that these favourable forces will no longer be present in the future in the north and ends his study with a warning that social conflicts may well be expected as a result of this change in social forces.

OOO

Characteristic of the so-called "petty commodity" mode of production is that small-scale technology is used by the owners – or to say the same thing the other way round, owned by the users. Thii particular mode of production was studied by Karl Marx, who found that in the absence of a distinction between owners and workers it led to a high degree of income equality.

The "petty cornmodity mode of production can only take place if there is some (new) means of production available, which can be individually owned by many people and is spread over the community. Mr. Bavinck describes four social forces that developed the "petty commodity" mode of production in northern Sri Lanka. These are the State; the big merchants; the beach seine owners (who constitute the old elite group); and the boat owners (the new elite group). There are thus two forces from outside the village, two from within.

The important role of the State was the effective control over the means of production : nets, boats and engines were imported and **all** import was government-controlled. The government selected 31/2 ton boats, plus outboard engines to be fixed on existing country boats, and gillnets. This technology could be handled by 2-4 persons as opposed to the older method of beach seining which always required some 30 workers.

The big merchants recognised the fact that boats cannot be controlled from a distance, and were happy to leave the risk of running the little boats to the local fishermen.

Forces for Equal Distribution

So the forces which introduced the technology and the money came from outside, the forces for ***equal*** distribution Mr. Bavinck finds at the village level,

Often we find that the old elite tries to hold on to the privileged position if a new technology becomes available. In Sri Lanka, however, we see that the old elite – the beach seine owners – had gained interest in education and white-collar jobs and lost interest in fishing. Without resistance or interference they allowed others to profit from the new technology.

The last force are the boat owners, the new elite : they could have taken advantage of the situation and accumulated ownership in a few hands. That this did not happen Mr. Bavinck attributes to the existence of a "moral economy". In the village, what counts is not just the mercenary motive : one has the duty to help a neighbour or relative when he wants to start his own business.

Applying this analysis now to fisheries in the north, Mr. Bavinck concludes that government policy and the big merchants together made the required small-scale technology and credit available and the village forces themselves distributed these evenly over the population, with the known good result.

In the south the four social forces took on another turn : government policy provided no small-scale technology since the local orus could not easily be mechanised (force 1). The old elite did not allow new entrants, and the beach seines were operated where boats wanted to anchor (force 3). Due to a number of reasons the boats came into the hands of a few individuals (force 4). So three forces worked in the "wrong" direction. .It is therefore that critical descriptions could be made of what happened in the south.

If we study the configuration of the four forces in the present and future we can easily asser tthat import of larger-size boats is possible (force 1) and that big merchants and other non fishermen are able to invest (force 2) in this new technology. As for force 4, the moral economy is eroding and making way for cool calculation. It follows that petty commodity fish production is heavily threatened.

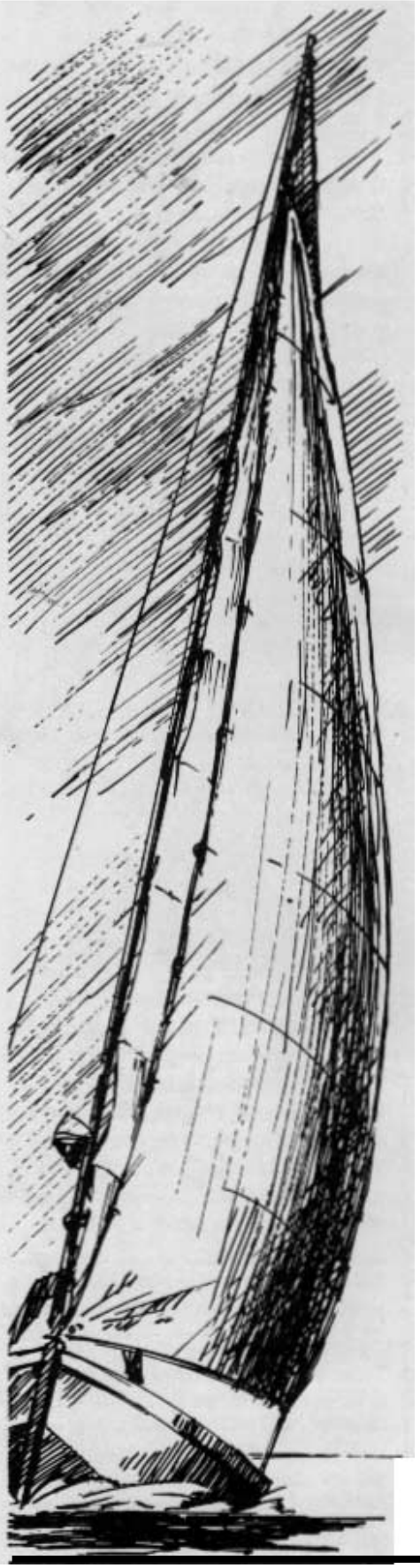
Mr. Bavinck uses thii method of hiiorical dynamical forces very well to analyse and clarify some cases. To say that the book is pleasant and easy to read, however, would be a lie. One has to work oneself through descriptions and reasoning. Mr. Bavinck succeeds in clarifying and simplifying the historical dynamical process but still the picture is complex and requires effort from the reader. But without effort, I am afraid, it is not possible to understand the development process, and the insights gained are well worth the effort. – F.W.Blase

Maarten Bavinck : "The Fortification of Petty Commodity Fiih Production in North Sri Lanka", M.A. Thesis for the Dept. of Cultural Anthropology and Development Sociology of the Free University, Amsterdam (April 1981) 129 pages, to be ordered from the Free University, Post Box 7161, 1007 MC Amsterdam, The Netherlands, § 10 including postage.

See also : Maarten Bavinck, "The Changing Face of Sri Lanka Fishing Economy", paper for Symposium 'Small Scale Fishermen in Developing Countries" held in May 1980 at the Royal Tropical Institute, Amsterdam.

Should we return to sail?

Oyvind Guibrandsen's provocative poser and thoughtful reply.



If you asked this question to fishermen in India, eight out of ten would answer "What do you mean? The shrimp trawlers and a few other boats have got engines, but we have only sails and arm power to move our kattumarams and canoes."

For India, the question is therefore irrelevant unless we could find a way of catching shrimp on a large scale with sail powered vessels and the prospects here do not seem too promising.

Countries which abandoned sail for fishing vessels decades ago, have however, due to increased cost of fuel again started looking into the use of sail power. A tuna fishing vessel using sail and engine has recently been launched in France and there is some interest in using sail on the west coast of U.SA This is a very small start but it is a development that was unthinkable only ten years back. The project potential is largely limited to fishing methods like trolling where a constant speed of four to five knots can be achieved by sail.

presently powered by a 30 H.P. engine and is utilized for large mesh drift netting, carrying a crew, gear and fish load of around 800 kgs. The boats spend on an average three hours to reach the fishing ground and the same time back, that is a total of six hours steaming time at full throttle. The increase in the price of fuel over the last years now really starts hurting. What can be done to save on fuel cost?

The fisherman has four options:

1. Travelling at full engine speed (30 H.P.)
2. Travelling at half engine speed (15 H.P.)
3. Using sail only.
4. Using sail part of the distance in favourable wind and the engine when the wind is unfavourable.

How do these alternatives compare in fuel saving and extra time saved on the fishing trip ? Alternative (4) has however so many variables that we have "to exclude it in the comparison.

	Full Power	Half Power	Sail only
Engine Power	30 HP.	15 HP.	0 H.P.
Speed (knots)	7.5	6.5	4 average
Steaming time (hours)	6	7	12
Fuel consumption (in litres)	36	21	0
Fuel consumption (SRL Rs.)	216	126	0
Saving	0	90	216
Extra time on the fishing trip	0	1 hour	6 hours

The use of sail for going to the fishing ground and back to port is more an open question. Crew costs are high in developed countries and if the duration of the fishing trip is increased due to the slower speed with sail, the extra crew cost might easily cancel any savings on fuel.

In developing countries where crew costs are low in relation to fuel costs, the prospects of using sail seems a lot brighter. But before being carried away by a vision of white sail against a blue horizon and no noise and fumes from dirty engines, let us look at a specific case, the Sri Lanka 28 ft boat Several thousands of this craft have been introduced over the last 20 years. It is

By going completely back to sail the fisherman could save Rs. 216 but has to spend an average six hours longer on his fishing trip. Is the saving worth it ? I doubt so. A complete return to sail would for a day trip boat like this be out of the question. If the boat could spend several days on the fishing ground and use ice for keeping the catch fresh, there would be a better case for sail.

The fishermen can use alternative (4) – that is the use of the sail when the wind is blowing in the right direction and the engine when there is no wind or unfavourable wind. What we have to keep in mind however is that although the wind is free, the equipment to catch

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Published by Lars O. Engvall for the Bay of Bengal Programme, Post Bag 1054, Madras-600 018, India. Phototypeset at Mesvag Process and Printed at Nagaraj & Co., Madras -600041. Editor: S.R. Madhu. Layout Artist: E. Arnalore.

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