BAY OF BENGAL NEWS

Issue No. 23
September 1986

A PUBLICATION OF THE
BAY OF BENGAL PROGRAMME FOR
FISHERIES DEVELOPMENT

WORLD FOOD DAY

October 16, 1986

"Fishermen and fishing communities" are the focus of this year's World Food Day. For a preview of events on that day, please turn the page.

<<

World Food Day, 1986

A Big Day for the Small Fisherman

Small-scale fishing communities, along with those engaged in fish processing and distribution, constitute a worldwide population of over 10 million. They supply at least 25 per cent of the world catch of fish, yet a vast majority of these people live a precarious existence characterised by poverty and privation. To focus attention on small-scale fisher-folk — on their vital contribution to food supplies and the need to improve their condition — the FAO has chosen "Fishermen and fishing communities" as the major theme for World Food Day, October 16, 1986.

The day will be celebrated this year by millions of people, from heads of government to school children in 50 countries.

How is WFD being observed in the Bay of Bengal region? Some examples : In India, posters, film shows, press supplements and the launching of welfare schemes for fisherfolk will mark World Food Day observances. The BOBP is sponsoring a supplement to be published in all the 11 editions of the Indian *Express.*

In *Sri Lanka,* World Food Day will be a many-faceted, many-splendoured, countrywide festival. The government will issue a commemorative postal cover and commemorative stamps. It will also provide the stimulus for the many events on the occasion; but it is private fisheries firms that will provide the funds, the enterprise and the elan. The biggest scene-stealer will be the October 18 fisheries rally in Negombo to be inaugurated by the Prime Minister. At the fisheries rally, school bands will lead a march by fisherfolk; floats will depict the progress in fisheries made by Sri Lanka over the years; a national fisheries song (for which contests will be held over several weeks) will be sung; a newly selected national fisheries flag will be hoisted; winners of oratorical and essay contests from schools and colleges will be honoured.

Another major attraction in Negombo is a fisheries exhibition which will combine elements of education and entertainment with business promo-

<<

tion. On view will be models, exhibits, photographs and charts, which will hold a mirror, to Sri Lankan fisheries and describe its progress over the years. Trade stalls put up by local and foreign firms are expected to do brisk business in fishery-related products, devices and gadgets.

Souvenirs, newspaper supplements, television and radio programmes, quiz, art and poster contests for students, sports and cultural contests among fisheries organizations concerned with social development — these are some other WFD activities. At the district level, roads, wells and beaches in fishing communities will be cleaned through "shramdan" (voluntary labour).

The BOBP is supporting the WFD observances in Sri Lanka thus :

— A supplement is being sponsored in an English daily newspaper. It will carry an article on BOBP's work, plus articles prepared by the Ministry of Fisheries. The BOBP's fishing boats developed for Sri Lanka — SRL-14, SRL-15 and SRL-17 — will be demonstrated in Negombo. Color prints of BOBP activities in Sri Lanka will be displayed at the Negombo fisheries exhibition.

— As part of BOBP's effort to promote fuel efficiency in Sri Lankan fisheries, specially made T-shirts sporting the slogan "I'm a fuel saver" will be presented to selected fishermen. The shirts will also be offered as prizes for the various WFD contests.

— Besides the T-shirts, some 1,500 Sinhala and Tamil posters on how to 'save fuel will be put up at various fisheries offices and fishermen's centres in the country. Each poster will contain about half a dozen "commandments" on fuel saving such as "Use sails as often as possible," "Maintain good care of engine", "Keep hull clean by removing barnacles," "Stay longer at sea" and "Use the most fuel-efficient engine. Operate it at optimum R.P.M." Sketches will illustrate the commandments.

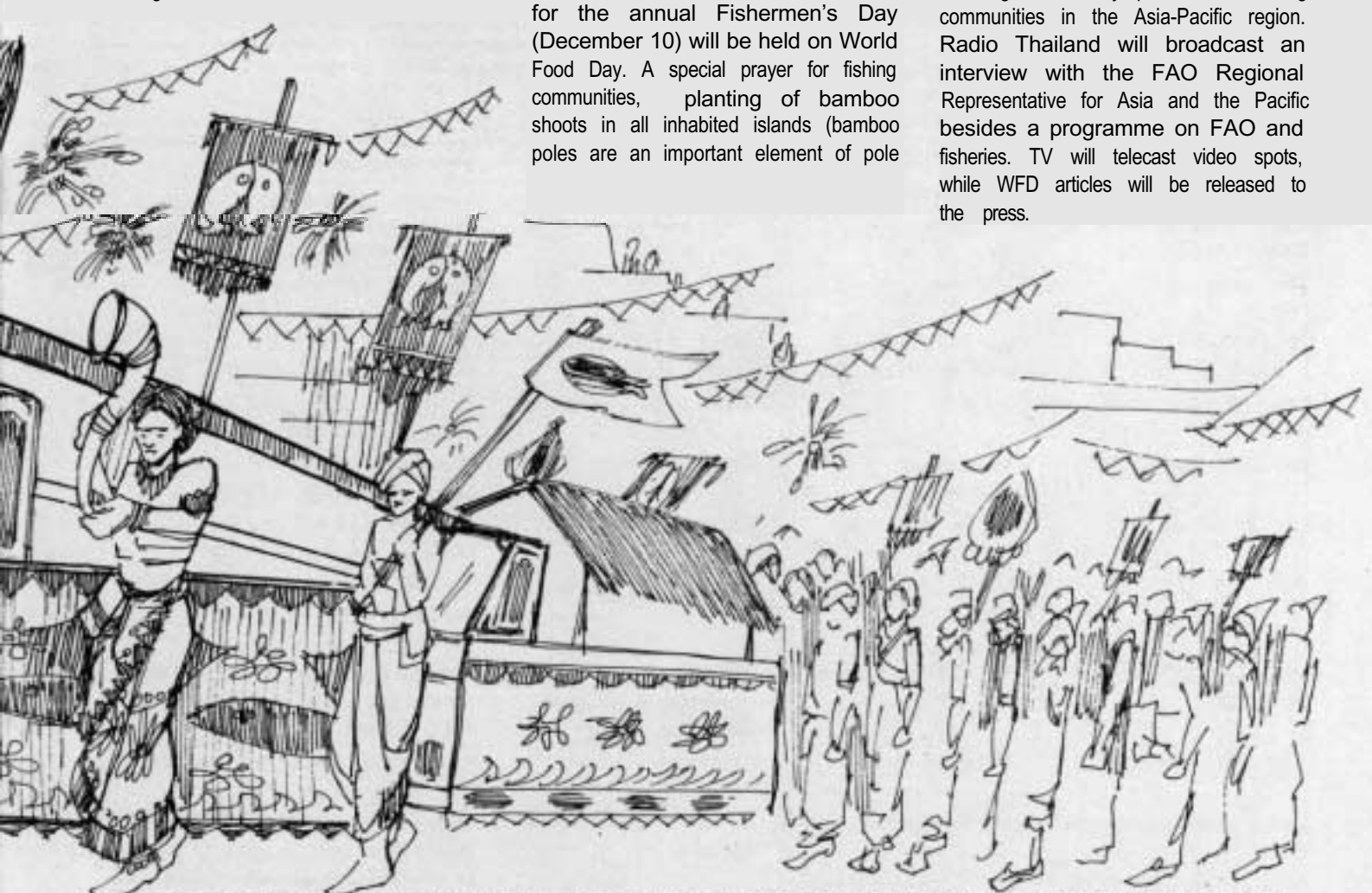
Henceforth, Sri Lanka intends to organize a "fisherman's day" every year. A different city will be the focal point of the celebrations each year.

In Malaysia , a new fish landing complex will be inaugurated in Johor, while the Agriculture Minister will declare open an exhibition.

In the Ma/dives, programmes planned for the annual Fishermen's Day (December 10) will be held on World Food Day. A special prayer for fishing communities, planting of bamboo shoots in all inhabited islands (bamboo poles are an important element of pole and line gear), fishing competitions open to all Maldives fishermen, demonstration of traditional fishery activities, radio and television programmes, a public meeting to be attended by Ministers — these will highlight the observances.

In Thai/and, the national radio will broadcast a special address by the Prime Minister and a panel discussion on fisheries and rural development. On television, Thailand's Agriculture Minister and the FAO's Regional Representative for Asia and the Pacific will be interviewed. A quiz programme will be held for students of secondary schools in and around Bangkok; the finals will be televised,

RAPA (the FAO's Regional Office for Asia and the Pacific), headquartered in Bangkok, also has several plans for WFD. The Thai Minister of Agriculture will preside over a WFD ceremony on October 16, and present awards to outstanding farmers from 14 countries of the Asia-Pacific region, and also to winners of a World Food Day quiz. An exhibition on FAO activities will also be held at RAPA. On October 14, RAPA will organize a symposium on fishing communities in the Asia-Pacific region. Radio Thailand will broadcast an interview with the FAO Regional Representative for Asia and the Pacific besides a programme on FAO and fisheries. TV will telecast video spots, while WFD articles will be released to the press.



The October 18 fisheries rally in Negombo — illustrated in advance by BOBP artist S. Jayaraj who read about plans for the rally, and threw in a bit of his imagination as well.

<<

Fishery Resources Research in the Bay of Bengal : A Factsheet on Bangladesh

Numerous surveys and exploratory fishing activities have been conducted in Bangladesh over the last three decades. Most of them have concerned demersal finfish and shrimp resources, Relatively little survey or exploratory work has been carried out on pelagic resources. But considerable interest is now being shown in the survey and development of pelagic fisheries, including that for small tunas.

Many of the surveys conducted so far have led to commercial trawling operations, either as national or as joint ventures. The country has fisheries research vessels capable of carrying out marine surveys, and a few smaller vessels are being introduced for surveying shallow coastal waters and riverine systems.

The setting up of a fisheries research institute has stimulated research activities in all the aquatic environments of Bangladesh. A majority of the scientists are young and are in the process of being frained as investigators. At the same time, attempts are being made to improve the fisheries statistical system and to strengthen fisheries statistical information. Universities are also actively engaged in fisheries research. Cooperation between these academic bodies and the government fisheries research institutions will strengthen fisheries resources research in Bangladesh in years to come.

Table 1 : Resources Surveys and Exploratory Fishing

Period	Vessel	Type of survey	Limitations/Remarks
Nov.-Dec. 1958	Chosui Maru	Trawl — fish + shrimp	Very short survey
Jan.-Mar. 1960	Kagawa Maru	Trawl — fish + shrimp	Very short survey
Dec. 1961-Dec. 1962 (intermittently)	Kinki Maru	Trawl — fish + shrimp	Mostly in the estuaries and Sundarban area
1961-I 966	R/V Jalwa	Trawl — fish	Assessment of fish and shrimp stocks in the Bay of Bengal
1968-I 971	Sagar Sandhani Meen Sand hani	Trawl — fish + shrimp	Assessment of fish and shrimp stocks in the Bay of Bengal
Nov. 1969-Jan. 1970	R/V Lesnoi	Trawl — fish + shrimp	Assessment of fish and shrimp stocks in the Bay of Bengal
Iun. 1972-Nov. 1972	R/V Tamango SRTM 499	Trawl — fish	Assessment of fish and shrimp stocks in the Bay of Bengal
Oct. 1976-Sep. 1977	M.V. Santamonica M.V. Orion — 8	Trawl shrimp	Assessment of fish and shrimp stocks in the Bay of Bengal
Mar. 7-19 1979	R/V Fisheries Research No. 2	Demersal + pelagic	Various methods were experimented with but insufficient in terms of duration
Nov./Dec. 1979 and May 1980	R/V Dr. Fridtjof Nansen	Acoustic survey of demersals & pelagics excluding shrimps	Very limited survey — Estimation of abundance of fish stocks in 10 to 150 m depth
Sept. 1984-continuing	R/V Anusandhani	Demersal + shrimp	Assessment of fish stocks in the Bay of Bengal
March 1985-March 1986	Local fishin g craft	Gillnet — experimental for hilsa	Very limited number of fishing days per month. Number of panels of suitable mesh size were rather few.

Table 2 : Statistics: Review of Present System for Marine Fisheries

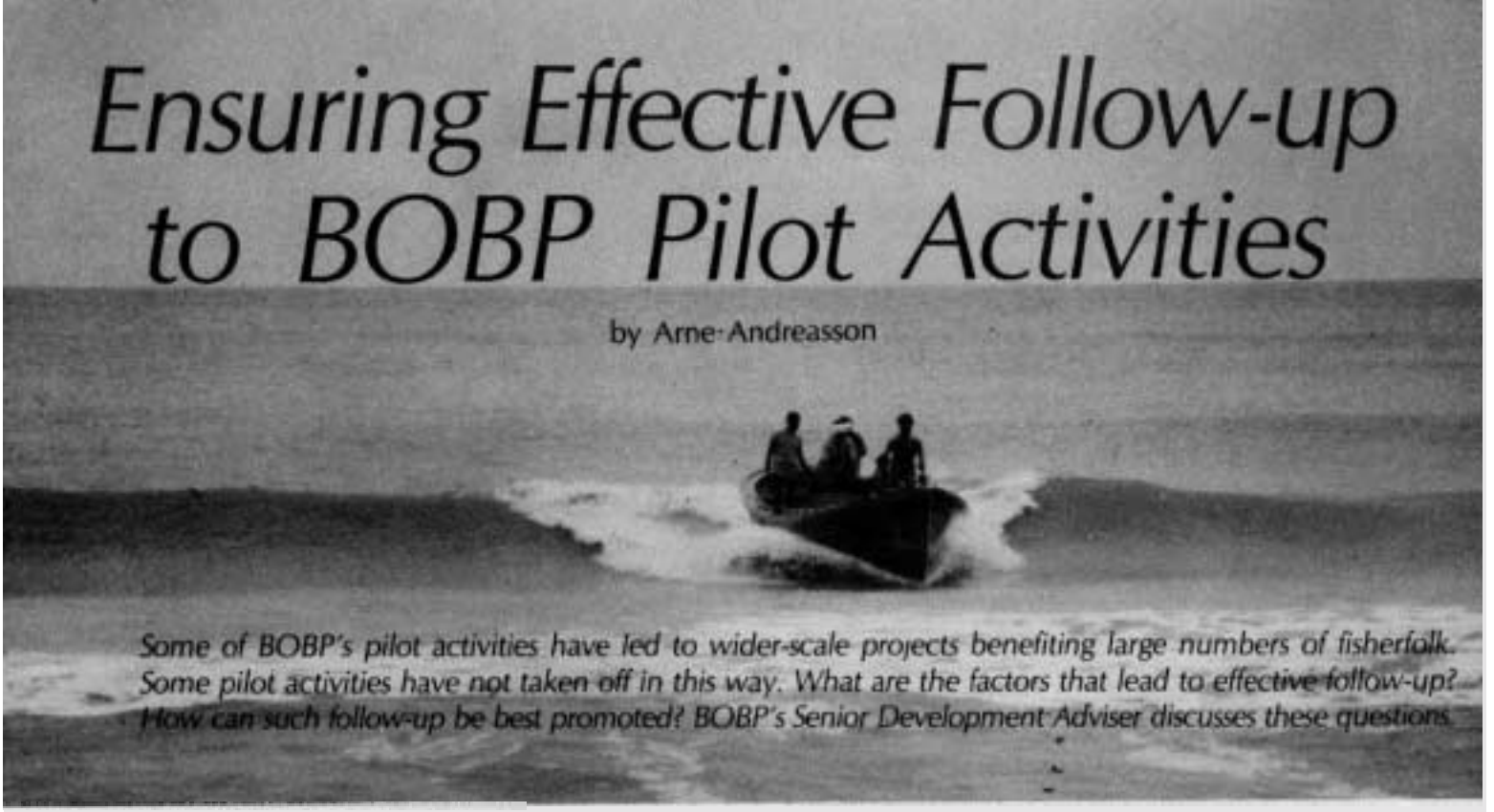
Institute	System used	Collection of basic data	Processing place and method	Species	Effort data	Publications! Remarks
Bureau of Census & Statistics	Sampling (general)	General statistics collectors	Statisticians — manually, Computerisation is presently under way	6-8 groups	Not available	Year/book
Marine Fisheries Division, Chittagong	Sampling of major fisheries	A few officers of the division; sampling sparse. Commercial trawler landings of shrimp + fish also sampled	Manual	Shrimp 4 groups. Finfish 11 groups	Available but incomplete for commercial trawlers	Marine Fisheries Bulletin
Fisheries Resources Survey System	Sampling based on frame surveys	A large number of field officers selected, trained and employed for statistics collection. This unit may become the statistical section of the Fisheries Directorate.	Computer facility available for processing. Assisted by FAQ.	Includes many marine and freshwater species groups	Not available	Interim report of the project

Table 3: Marine Fishery Resources Research Facilities

NATIONAL INSTITUTE	LOCATION	TYPE OF RESEARCH	BIOLOGISTS	GEAR	ACOUSTIC	COVERAGE OF KEY AREA	RESEARCH VESSELS	REMARKS! PUBLICATIONS
Fisheries Research Institute	Chandpur/ Mymensingh. Probably a marine station will be established in Cox's Bazaar	Recently established. Riverine fisheries research & freshwater aquaculture research. No activities yet in the marine sector.	Most of the biologists already recruited	No.	No.	1 Riverine production ecology, ii) Reproduction and culture of riverine species iii Paddy-cum.fish culture iv) Production in large water bodies v) Pen and cage culture vi) Hatchery production and its management	1 or 2 to be provided	Monthly and annual reports
Directorate of Fisheries (Marine Division)	Cox's Bazaar & Chittagong	Survey of pelagic and demersal resources — finfish and shrimp of economic importance (Under FAO/UNDP assisted Programme) and molluscs; Oceanography, Mariculture, Statistics & Socio-economics	26	4	1 (Expatriate)	Exploration + gear research	3 — R/V Anusandhani RJV Machranga FRP boat	
Fisheries Research Institute	Mymensingh. Five stations of which one marine station will be located at Cox's Bazar.	Marine fisheries exploration, biological and oceanographical research.	14 will be recruited in the near future.					
University of Dhaka (Zoology Department)	Dhaka	Hilsa biology, fish eggs & larvae	2 staff & number of research students	No	No	Racial studies	None	
University of Chittagong (Marine Science Division)	Chittagong	Productivity, aquaculture, fishery biology & microbiology	10 staff & number of research students	No	No	Shrimp & finfishes	None	

Ensuring Effective Follow-up to BOBP Pilot Activities

by Arne Andreasson



Some of BOBP's pilot activities have led to wider-scale projects benefiting large numbers of fisherfolk. Some pilot activities have not taken off in this way. What are the factors that lead to effective follow-up? How can such follow-up be best promoted? BOBP's Senior Development Adviser discusses these questions.

The ultimate objective of the small scale fisheries project of BOBP is to help improve the standard of living of small-scale fisherfolk in the region. Considering the vast project area covering thousands of fishing villages in five countries and their immense needs, a single project of BOBP's size cannot have a direct impact on the lives of fisherfolk. With this in view, the designers of the project chose an indirect approach. The project attempts to develop, test and demonstrate methods and techniques by which the objective can be achieved. Applying the results on a wide scale is the collective responsibility of a number of institutions — government and private — and of individuals.

BOBP's work is carried out through pilot activities dealing with specific problems relating to aquaculture, fishing technology and extension (extension is broadly defined to encompass community development, credit systems, women's activities and non-formal education, besides traditional extension activities).

The sequence of events in a BOBP activity can be generalized as follows :

1. **problem** identification
2. work-plan formulation
3. research and development (pilot activities, tests, trials etc.)
4. training of key personnel
5. formulation of national projects and programmes
6. implementation of national plans and programmes.

The BOBP usually confines itself to the first five steps; the results are intended to catalyze larger-scale development. In the final stage of the activity, BOBP assists member countries in preparing a large-scale project — and, if needed, in mobilizing funds to implement it.

BOBP's work has (as regularly reported in Bay of Bengal News over the past five years) yielded a number of feasible technologies and methodologies. The high opening bottom trawls developed for the shrimp trawlers of Tamil Nadu have spread, and practically every trawler in Tuticorin and Rameswaram now has a trawl of BOBP design. A cage culture demonstration project in Thailand which started with 28 cages has developed into a significant industry with 3,600 cages operated by 1,000 owners producing some 500 tonnes of groupers and snappers per year. Other projects, although successful on the pilot scale, have not spread like these two.

Some of them — such as non-formal education for marine fisherfolk in Tamil Nadu and for fisher-folk children in Orissa, the link worker scheme for 'fisher-women in Tamil Nadu and motorization of Chandi boats in Bangladesh — are being processed for large-scale application with external funding, One of the major pilot activities — beachcraft development — has led to allotments in India s 7th Five Year Plan for introduction on a modest scale along the east coast. In Bangladesh a project concerning activities for women in a fishing community has been taken over by a voluntary organization.

Such follow-up to pilot projects is essential for BOBP work to produce the intended impact on small-scale fisherfolk. When BOBP winds up, and its achievements are evaluated, the question will arise to what extent its results have been applied on a wider scale, and to what extent the intended target group has benefited. Such a large-scale application of results is in most cases still to happen — it is too early to expect it. But enough has happened to start a discussion on how follow-up can be promoted and what factors might influence it.

Basically, two types of follow-up can be distinguished. In one of them, the results of BOBP work yield options for future action which national planners can further test, adopt and apply on a wide scale. The other type of follow-up is the immediate expansion of a successful pilot project to avoid losing the momentum gained — the interest sparked in the target group, the availability of trained personnel who have worked on the pilot project etc.

There are four main channels for follow up :

(i) The fisherfolk adopt a technology or methodology spontaneously after demonstration.

(ii) Voluntary organizations apply the results. of BOBP work in their schemes for fishing communities.

'(iii) Government plans and programmes take up the findings of BOBP work.

(iv) Externally funded government programmes and projects utilize the findings of BOBP work.

Spontaneous follow-up to project work

The high-opening bottom trawl mentioned earlier is the best example of spontaneous dissemination of results. The fishermen were quick to adopt the technology (after demonstration by the BOBP technologist and by two trained government officials). A few factors may explain how this has happened. The investment is low and the rate of return is high. Further, the trawlers are concentrated in a few harbours; this facilitates the spreading of information. A third factor may be even more important. The technology does not call for changes in mode of operation, special arrangements for finance or creating a new infrastructure.

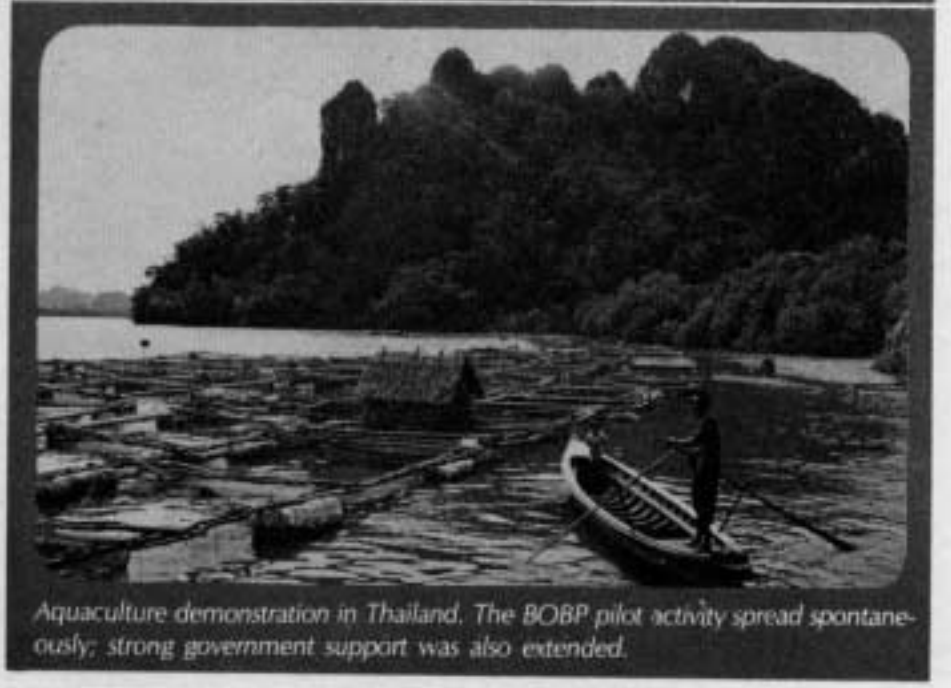
These factors also explain why results from other pilot activities do not spread automatically. One example relates to motorization of Chandi boats in Bangladesh. Six boats were equipped with long-tail outboard engines. The results were positive; the motorization was technically feasible and economically viable. However, after three years, no new boats have adopted the technology. The reasons have not been studied in detail, but the following factors may have been responsible : the target group has too low a profit margin to afford experimenting with a new technology and no suitable credit scheme provides capital at reasonable cost. Knowledge of the technology might not spread fast because the communities are scattered wide. Further, this technology demands workshops within reasonable distance, basic training for the fishermen in engine maintenance, and distribution of diesel at appropriate sites. Motorization of Chandi boats thus called for changes in infrastructure which were not sustained after the termination of the pilot activity. It is now proposed to be executed as a government project with external funding.

Take-over by voluntary organizations

In juldia, Bangladesh, BOBP used the participatory approach among fisher-women to set up groups among them to promote income-generating activities and to improve health and nutrition. The BOBP role was later

Bangladesh fisherwomen — Voluntary agency takes over a BOBP pilot activity.

High-opening-bottom trawling — an example of spontaneous follow-up by private operators after a BOBP pilot activity.



Aquaculture demonstration in Thailand. The BOBP pilot activity spread spontaneously; strong government support was also extended.

Project information should be well prepared, presented and distributed for effective follow-up of pilot activities.

Tamil Nadu fisherwomen. Donor support for follow-up of BOBP pilot activity likely.

A BOBP boat being towed to the beach at the Marina, Madras : Beachcraft development is a project ideal for government support.

taken over by Nijera Kori, a voluntary organization.

What features make a project of this type suitable for a voluntary organization? The project has a well-defined target group (poor fisherwomen) and a high degree of people's participation in line with the approach of voluntary organizations. Often, the latter also have dedicated field staff willing to work in the villages.

Shouldn't the government take over a project like the one in Juldia? The inhibiting factors were analyzed in a report on the project (BOBP/REP/24). To recount them :

– Adequately trained field level personnel willing to spend sufficient time in the communities are lacking in Bangladesh.

– There is no government authority geared towards integrated development work. The departments are sectoral in character, with specific targets for production of fish, health services etc.

– The participatory approach calls for flexibility in allocating funds, in changing plans and priorities. But the targets for government departments are usually fixed over a long period.

The report concluded that the project's participatory approach was successful; but that structural changes were needed in the administration to cope with it. It was suggested that fisheries departments could take a leading role in establishing an integrated approach to development work among fishing communities.

In some places such steps have been taken. In Tamil Nadu, the Directorate of Fisheries has established a Fisherwomen Extension Service which cooperated with BOBP in implementing a fisherwomen's link worker scheme, with much the same objectives as the activity for fisherwomen in Bangladesh.

Follow-up through government development programme

BOBP's beachcraft development project, initiated in 1979, is a good example of a project which attracts development planners. India's 7th Five-Year Plan seeks to introduce 300 beachcraft along the east coast states. The beachcraft represents a productive investment expected to contribute directly to a development objective : increased production of fish. Further,

the boats are built in India using local resources and materials, thus giving an impetus to industrial development and increasing the GDP — all priority objectives of national development plans.

Another example is cage culture development in Thailand. This project actually represents. a combination of spontaneous spread and government supported application — quite a fruitful combination. One reason for the project's success is that it was technically and economically feasible. The cages were easy to construct, made from locally available material, and cheap. The technology suited the occupation patterns of the fisherfolk families. Also important was the continuous and close cooperation between the target group, the extension staff and the scientists. The staff was dedicated to the work and the demonstration lasted several years. Finally, the operational flexibility regarding expenditure and planning helped. The close cooperation between target groups and government officers carried the project's benefits to the intended beneficiaries.

Follow-up through externally funded government projects

Experiences, technologies and approaches from BOBP pilot projects are being utilized in various donor-funded development projects. Examples are a NORAD-supported project in Orissa, India, and DANIDA-supported projects in Karanataka and in Thanjavur, Tamil Nadu. Discussions on utilizing BOBP experiences are under way in a SIDA-supported district development project in Sri Lanka. All these are rural development projects, one element of which utilizes BOBP experiences.

There are some projects being readied for external funding which are based mainly on BOBP findings. Examples : Motorization of Chandi boats in Bangladesh; Non-formal education for marine fisherfolk in Tamil Nadu and for children of marine fisher-folk in Orissa; and Training of female link workers in Tamil Nadu. These project proposals have some common characteristics which make them suitable for donor support, The target groups are well defined and in line with the target groups specified by several donors. Also, the problems to be addressed are clearly identified, and successful implementation will improve the conditions of the poor in these societies. Though self-contained, these projects are regarded as essential components of rural development, with a high degree of people's participation. However, obtaining external funds is a time-consuming process. The plan procedures of donor countries, member countries and the BOBP. are not always in step. The interest of BOBP and the fisheries department is to ensure that a successful pilot project is followed up almost immediately. This will avoid time gaps during which the interest of target groups might flag, trained' personnel may get transferred to new jobs etc. But a decision on support takes at least one year, more often two to three years. Since the administrative procedures of member countries too are time-consuming, proposals have frequently reached donors too late to avoid gaps. There are other limiting factors as well. Some donors have agreed with member-countries to focus on particular geographic or subject areas — and the project which requires follow-up support may not fall within these areas. Also, an immediate expansion of a pilot project tends to be narrow in its approach; it is not in line with the donors' approach of concentrating on integrated rural development projects.

Promotion of follow-up

The discussion so far might give the impression that BOBP pilot projects always produce results feasible for follow-up. This is of course not true. (See the article "Project results and their impact" — Bay *of* Bengal News, December 1984, which discusses negative results and results with no potential impact). This fact should be noted, since it is significant for promoting follow-up.

On the one hand, dissemination of project findings should be promoted as early as possible in the course of a pilot project, specially if the results are expected to be suitable for a government scheme or an externally funded scheme. Early preparation of a proposal and early contacts with donors might ensure that the pilot activities are expanded without any time lag.

On the other hand, early promotion could be counter-productive if the methodology or technology finally proves to be infeasible (technically, economically, or socially). It would waste scarce resources and possibly lead to hardship for the beneficiaries.

A seminar held in Sweden in April this year (see ***Bay of*** Bengal News, June 1986), discussed the application of results from research and development projects, No method was recommended for universal application. However, the following general guidelines were indicated :

(i) During the design of a pilot activity the magnitude of an eventual follow-up should be considered.

(ii) During its planning phase, the project and the government authorities concerned should discuss how the anticipated outcome could be applied on a wider scale. It is possible at an early stage to identify the needs for strengthening of infrastructure, for training, etc., which as discussed earlier, would indicate an appropriate 'channel' for dissemination.

(iii) Options for follow-up should be continually reviewed and discussed by the government authority and the project. Possible voluntary organizations, donor agencies and government planning departments should be kept informed about progress. (The BOBP Information Service was complimented by the seminar as an example for other projects in this regard. However, in addition to this, there is a need for more specific information through meetings etc.)

(iv) When the feasibility of a pilot project is proven, it is the responsibility of the government to decide if and how the results should be followed up or applied wider. Steps (i) to (iii) should provide enough background information for an early decision. The project role in this phase is to assist the government in planning and formulating a project proposal.

Without timely follow-up, BOBP's work will not yield a sustained impact. Feasible solutions to problems faced by the fisherfolk will then rest peacefully within the covers of reports. Everyone concerned — governments, FAO, BOBP — have a responsibility to see that the results are disseminated and applied wherever possible on a wider scale to improve the conditions of target groups.

Oyster
A Wealth

BOBP aquacuiturist Charles Angell discus: ubiquitous marine animal, the oyster. H the potential for small-scale oyster farmi

An oyster shell (above) and an

A gastronomical and historical background

The succulent flesh of the "common" edible oyster has graced the tables of gourmets and gourmands alike since time immemorial. Its reputed powers range from aphrodisiac to restorative; it was often prescribed by 19th century doctors in North America, whether for the former or the latter purpose is not clear. While oysters are not especially high in protein, they are easily digested, and are a valuable source of essential trace metals. The ubiquitious oyster's occurrence on practically all coasts, temperate and tropical, is undoubtedly responsible for its popularity. Even without refrigeration, it can remain alive and wholesome for several days, allowing it to be transported some distance inland.

Oysters were reportedly cultured by the ancient Romans, and old woodcuts show oyster harvesting in Japan. They have been taken from natural banks and beds throughout their range and sometimes augment food supplies in coastal villages when rough seas prevent fishing activity.

The "classical" oyster eater will consider nothing but the fresh, raw flesh presented on the half-shell and, indeed, premium prices are demanded in restaurants and hotels for this product.

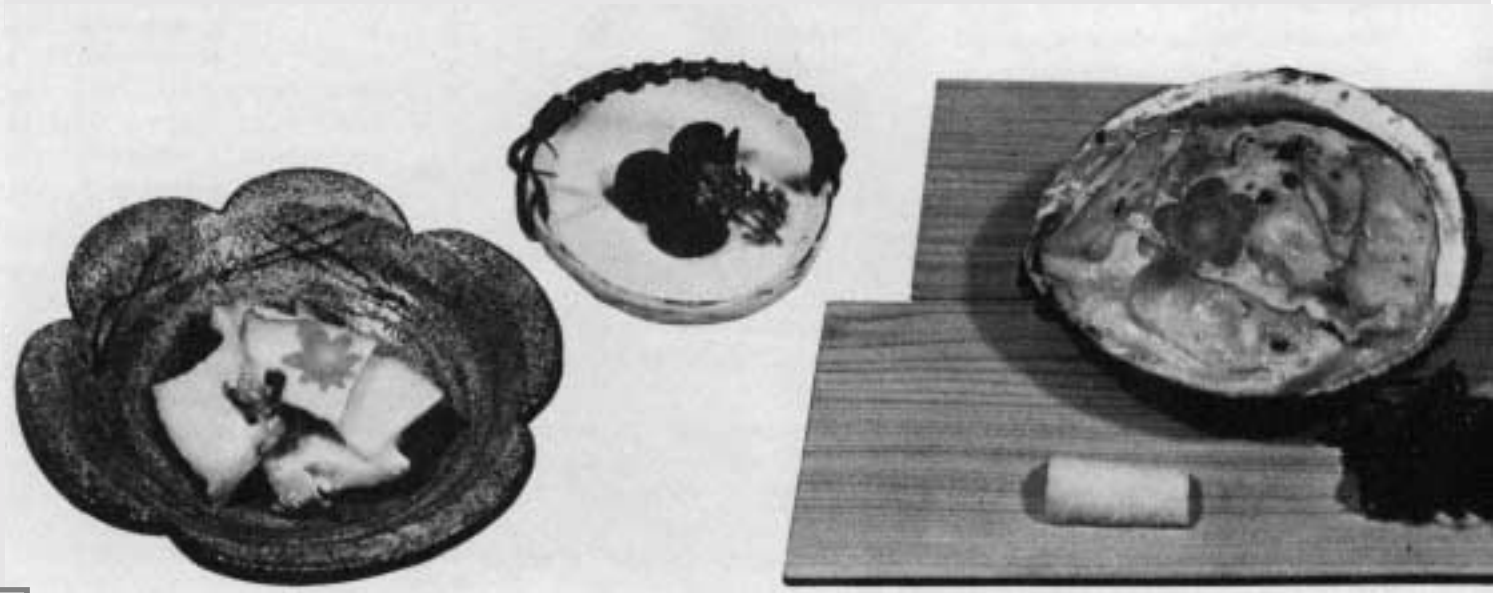
Unfortunately, increasing pollution makes this something of an adventure unless the live oysters are previously cleansed by a process known as depuration. The oyster "pot" of Cantonese cuisine, hearty oyster stew, oysters sauteed in wine or sake and other inumerable creations are delicious variations.

Culture Technology

Oysters were perhaps the first truly cultured marine animal, with a history dating back to ancient times. The bulk of production still comes from temperate countries, but since the early fifties, oyster farming has expanded in Southeast Asia, particularly in the Philippines and Thailand. In the Bay of Bengal region, with the exception of Thailand, it has only been experimental, but there are indications that oyster culture can be developed in India and Malaysia.

In contrast to temperate seas, tropical oysters generally cannot be farmed on the sea floor because of heavy siltation and predation. Various systems have been devised for off-bottom culture, including stakes, racks, stones, concrete slabs and pipes, shell strings and baskets. Heavy fouling requires that tropical oyster culture be done in the intertidal zone, although suspended or raft culture has been technically if not economically successful in West Africa. In Southeast Asia, commercial culture seems to be entirely intertidal. Neverthless, the investment required for off-bottom culture' is compensated for by the high growth rates of tropical oysters. On a per hectare basis, production of oyster meats can reach very impressive levels. In India, experimental rack and tray culture has yielded up to 13 tons of meat per hectare.

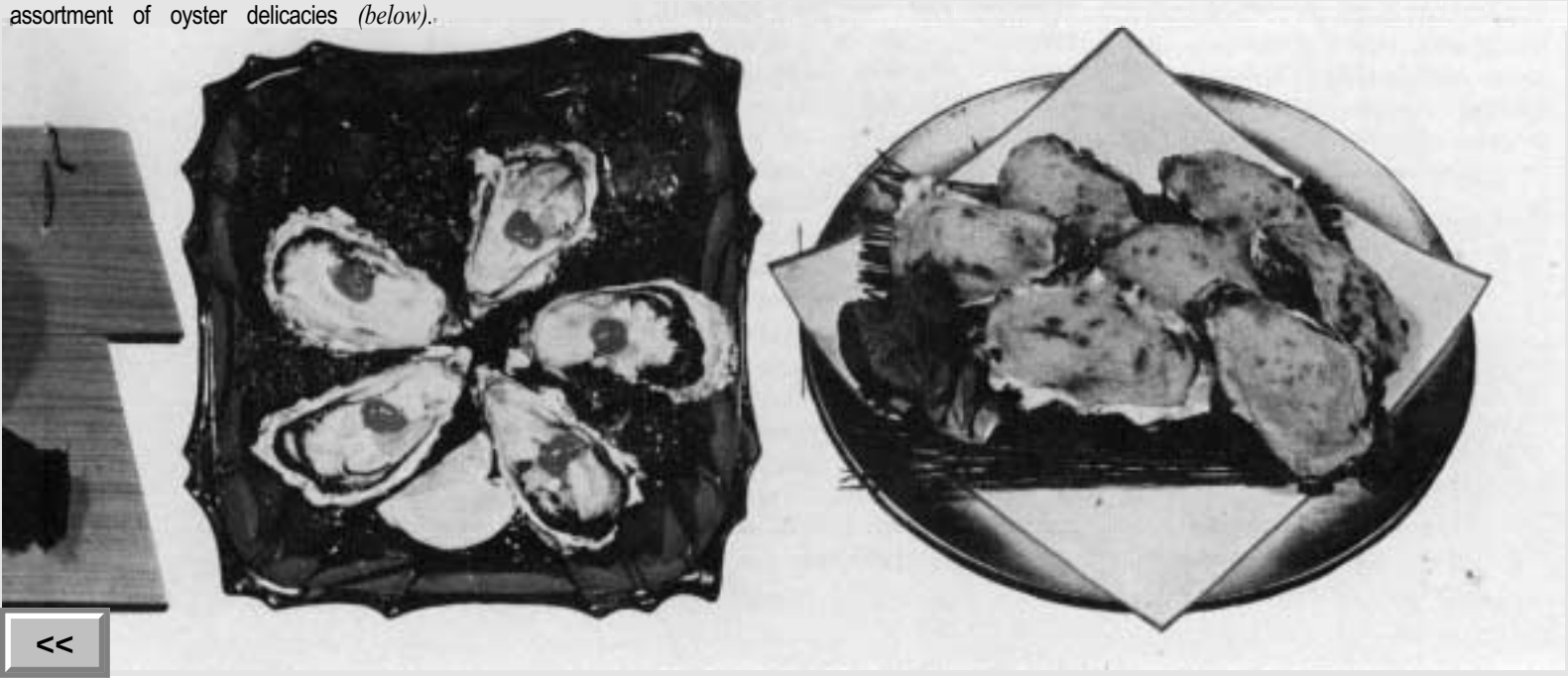
Oyster farming involves a series of discreet operations, from obtaining seed until harvesting. Oysters begin their lives as small pelagic larvae which search for a place to attach two to three weeks after being spawned. Seed collection is called cultching and must



Culture — of Potential

es the history, gastronomy and culture of that e also discusses processing technologies and ng in the Bay of Bengal region.

assortment of oyster delicacies *(below)*.



be timed with the periodic spawning of natural populations. Materials on which the larvae will attach or "set" include bamboo, old oyster shell, tyres and tyre tubes, concrete materials and lime-coated tiles. Spawning tends to occur year round in many tropical areas, but peaks are often associated with the end of the dry season or the onset of rains. Cultch must be kept clean during the setting period since larvae will be repelled by fouled or silted surfaces. Cultch material is dictated by the growout technology as well as cost. In Thailand a number of systems have evolved, depending on the ultimate market for the product. For the lucrative restaurant half-shell trade, setting is done on concrete pipes and the young oysters or "spat" are transferred to "growing pipes" upon which they are cemented at regular intervals to allow for the development of uniformly shaped shells with meats in optimum conditions. Along the inner Gulf of Thailand, oysters are allowed to set on stones placed on soft intertidal bottom where they grow to market size. Such oysters are marketed as shucked meats, either for direct consumption or for brining and pickling.

Due to the high demand for oysters in Thailand and the restriction of adequate setting to limited areas, a small seed collection and nursery business has arisen. Locally available cultch materials are used including branches and old shells. Spat are removed from the cultch after several weeks, cemented together in pairs and hung from racks. After several more months, the shell strings are sold to growout operators who transplant the spat to their growing grounds which may be several hundred kilometres distant. The seed collection and nursery business is often conducted by village women.

Along the inner Gulf of Thailand, east of Bangkok, innumerable small, family based oyster farms have sprung up. They use rock culture in the intertidal zone and often combine the oyster operation with stake culture of green mussels in deeper waters. Some of the culturists are replacing stones with concrete slabs poured on the spot — presumably because of transport costs for the stones. Oysters and oyster products (pickles and sauce) may be retailed by families along the roadside, directly fronting their farm.

Oyster farmers in the Philippines have developed culture technologies which are readily transferable to other regions. Several species of oysters found in the islands readily set on bamboo, enabling the development of inexpensive intertidal culture systems. Shell strings are also hung from bamboo racks, permitting the expansion of culture into deeper water. Oyster shell cultch may be nailed or wired to bamboo stakes planted in soft intertidal mud.

Family farm operators can take advantage of the most common materials for cultch and grow out. Besides bamboo and old oyster shells, even strips cut from cast away automobile tires can be used for cultch. Farmers in the Philippines have been using these materials to reintroduce the culture of marketable oysters in some bays in the central part of the country.

The CMFRI (Central Marine Fisheries Research Institute), based in Tuticorin on the east coast of India, has deve-

<<

Oyster culture has an ancient history. A japanese *book on* "land and *sea* products of Japan" published nearly 200 years ago 1799) contained this *scene of oyster* cultivation *in* Hiroshima.

loped an intertidal rack and tray culture system for the Madras oyster. Spat are collected on limed tiles, following the French method. When the spat have reached 2.5 cms, they are scraped off and placed in trays set on racks. Harvesting can be done one year after transfer to trays, when the oysters are about 11 cms long. The system is being modified to reduce costs by substituting shell cultch for tiles and growing out of oysters to market size directly on the cultch. Shell shape is not important if the primary market is for processed meats. Both growout methods could be easily combined on a rack system in the event of the development of a "half shell" trade.

Processing and marketing oyster in the Bay of Bengal region

The oyster lends itself to a variety of processing methods which both improve its hygienic qualities and extend its shelf life and consequently increase the market area. These technologies include both the traditional and the modern.

Thailand is the only country in the region with an extensive market for oysters and oyster products. While the demand is presumed to be good in Malaysia, little is known of the present market situation. However, oysters are a common ingredient in restaurant menus (oyster omlettes, for example). Oysters were consumed in India many years ago when extensive natural beds existed, but the market has shrunk and Goa is perhaps the predominant market at present.

In addition to the fresh form, traditional processing includes pickling and brining, but these do not ensure a safe product, at least at levels of pH and brine considered to be palatable. Steaming, followed by smoking, is popular in some West African countries where oysters are harvested from wild stocks. The processed meats are retailed in local markets and such an approach could be tested in the Bay of Bengal region, Steaming greatly improves the hygiene of the meats and, in fact, researchers in the United States have found that steam pasteurization of oyster meats can reduce pathogenic bacteria to safe levels without significantly affecting taste.

Oyster sauce is a popular product in Thailand and Malaysia. It is prepared by boiling the oyster meats until a thick broth is produced. This concentrate is then mixed with water and bottled. The meats are sun dried and sold for use as flavour enhancers in various dishes.

The CIFT (Central Fisheries Technology Institute) based in Cochin, India, has developed a number of "pickled" and canned products including smoked oysters in oil and oysters in brine. The IFP (Integrated Fisheries Project), also based in Cochin, undertook test marketing of the latter two products in majo Indian cities in 1981 and 1982 and encountered good consumer response. But without an existing culture industry, continued market development was hindered by a lack of raw material. The IFP used modern promotional marketing techniques including supermarket displays and advertising.

Some Problems

So far, everything sounds too good to be true, so we had best look at some of the problems confronting oyster culture development in the Bay of Bengal region.

Public health should be of over riding concern. Most coastal waters in the Bay of Bengal suffer from varying degrees of pollution by organisms responsible for enteric diseases. This is particularly the case during periods of heavy freshwater runoff. While it is difficult to trace epidemics of enteric disease directly to shellfish consumption, there are many known individual cases. If we are to develop a sound basis for oyster farming, the consumer must be assured of a safe product.

There are several ways to ensure the microbiological safety of oyster products, several of which have already been mentioned. There is also growing interest in the region among aquaculturists, industry and government in the application of depuration to this problem. In depuration, oysters are held in clean water long enough to purge themselves of disease-causing organisms, in some countries, this can be done by relaying the oysters from contaminated growing areas to clean holding areas, but this is unlikely to be feasible in the Bay of Bengal region. Therefore, systems which use chlorination, ultraviolet irradiation or ozone for water purification must be considered. Commercial application already exists in the Philippines and trials are being planned in Thailand. A very simple method was developed by the CMFRI in India based on filtered and chlorinated sea water and should be further tested to ensure its effectivness. Costs will be crucial in choosing the appropriate system, because depuration is non-existent in BOBP countries. It is still unclear at what point in the marketing chain the process should be introduced.

So-called red tides are of particular concern because of their association with deadly paralytic shellfish poisoning or "PSP". The toxins that are produced by red tide organisms are not destroyed by heat and depuration may take too long to be economically feasible. The only practical solution is the development of monitoring capability by public health authorities. And it is not only oysters that are affected by this toxin, but all filter feeding bivalves. In the light of PSP outbreaks which have caused fatalities in the region, this should be an urgent task.

Promotional efforts, both in culture and marketing, can be greatly expanded, at least in those areas-where there are no religious strictures against shellfish consumption. India is a good example of how this can be successfully accomplished with modern promotional and marketing techniques.

The extension of oyster culture to coastal communities presents its own unique set of problems. One must take into consideration that fishermen are accustomed to almost daily cash income from the sale of their catches, pitiful though that income may be. If we depend upon natural setting, some months will pass before oysters reach market size and can be harvested. The development of tropical bivalve hatcheries offers the opportunity to overcome the income problem by allowing almost continuous planting of hatchery spatted cultch which will allow frequent harvests throughout the

year in most areas. Oyster hatcheries in India and Thailand have demonstrated the technical feasibility of this approach. The economics of such a system remain to be worked out as well as the mechanics of integrating a relatively "high" technology system into a "low" tech village production system.

Careful groundwork among village folk will be required to lay the basis for the development of what to them will be a new and unfamiliar technology. A widespread and persistent extension effort will be required to demonstrate the income generating potential of small-scale oyster culture.

It will not be enough to have only technologists on the development team. There must be a meshing between technologist, rural sociologist, economist and marketing specialist from the initial feasibility study onwards – of course, this may be said to be true of any aquaculture or small-scale fisheries project.

The Potential

While the possibilities for coastal aquaculture development in the region have often been overstated, we feel that by concentrating efforts in those countries where there is an existing market or strong indication of market potential, small-scale oyster culture can be promoted and accepted by village folk. None of the problems confronting this nascent industry are insurmountable. Oysters are not going to feed the world, but they are appreciated by a growing middle class which in India is said to number fifty million – not a small target group by any means! A large segment of the Malaysian population has traditionally consumed oysters and this population is highly urbanized. The oyster culture industry in Thailand is already growing rapidly and may soon include hatchery seed production on a commercial basis.

Apparently, only in India have technologists explored the potential for non-traditional oyster products in canned form; the response was very encouraging. Can this be repeated in other BOBP-member countries?

The experience of the Philippines and Thailand has shown that oyster farming is well suited to small-scale development, and with the large coastal population surrounding the Bay of Bengal, the widespread distribution of edible oysters should provide ample supplies of natural spat. Compared to other aquaculture technologies, growing oysters requires only a small investment and its technology is quite straightforward. Oyster farming can be promoted as a part-time activity, involving all family members.

In summary, oyster culture should be approached from a development rather than from a purely technical standpoint. The full potential of oyster farming will be realized only by a strategy that integrates technology with community development and market promotion.

Expenditure and Savings among Orissa Coastal Fisherfolk

by Tirfe Mammo

A recent BOBP survey in two coastal villages of Orissa threw up a surprise – fisherfolk of the two villages do save money. They do so through chit funds, savings at home or purchase of assets such as jewellery or land. These and other survey findings are discussed in the article on these pages.

Do fisherfolk save any money at all? Is their reputation as chronic spenders and poor savers of money justified? To get some answers, BOBP recently conducted surveys in two typical coastal villages of Orissa, India – Udaypur and Gopalpur-on-Sea. The surveys aimed mainly at discovering patterns of ownership, spending, credit facilities, indebtedness and saving habits. They investigated how the money is spent and where it goes. They also aimed at launching a campaign for deposit mobilization in coastal fishing communities. This article discusses the findings of the surveys.

As in all other communities, the distribution of the means of production is not even in fishing communities. Some own both boats and nets, some have only nets; some others have nothing but join up as labourers or crew members. The fisherfolk possess, apart from craft and gear, fixed assets like land, jewellery, silver or brass vessels, mango, cashewnut or coconut trees. In times of need, these assets can be converted into ready cash. Though their main earnings come from fishing, some of the fisherfolk also engage in other income generating activities such as agriculture, poultry or goat rearing.

The average income of a household in the two villages, from both fishing and non-fishing activities, is found to be Rs. 1,600 - 2,000 per month. But this income fluctuates, depending on several factors such as good or lean fishing seasons, the system of sharing the catch on the basis of possession, etc.

The main items of expenditure concern basic needs viz. food, clothing, medicine, etc. Other non-productive forms of spending are marriages, social festivals, religious functions and also liquor and drugs. In Udaypur the annual expenditure for non-productive purposes per household was found to be Rs. 10,461. Of this amount, 67% was spent on food, 12% on clothing and medicine, around 16% on different social and religious festivals and nearly 5% on drugs and liquor. In Gopalpur the non-productive annual expenditure per household amounted to Rs. 13,008 of which 63% was spent on food, 11% on clothing and medicine, 15% on different social and religious festivals and nearly 11% on drugs and liquor.

Productive spending, i.e. money used for buying and maintaining instru-

ments of production(fisheries and agriculture)in the first village was Rs. 3,206 per household in a year. Of this amount 82% went towards purchase and maintenance of boats and nets and 18% towards agricultural inputs. In the second village, all productive annual spending amounting to Rs. 2,554 per household relates to fishing activities, Of the grand total of both productive and non-productive spendings, spending on productive purposes seems low in both the villages 22% and 16% respectively, while non-productive spendings are estimated to be between 78% and 84% of the total earnings,

The fishing community resorts to borrowing from moneylenders, middlemen and fish traders at very high rates of interest ranging from 34 to 45% per annum. This traditional method of borrowing is largely prevalent in both the villages where indebtedness to moneylenders was recorded as very high. The institutional credit given by banks and cooperative societies carries a rate of interest of 11 to 13% per annum. The institutional credit is used for productive purposes like the purchase of boats, nets, ice box, cycles for transporting fish to the market etc., whereas traditional borrowings are used mainly to meet non-productive needs like marriages and social and religious functions.

Many people assume that the rural poor do not save because they do not have physical or financial assets and because they lack the motivation to save. But this study proved that this assumption is wrong and that the rural poor really want to save and can save. The institution of "Chit FundsFF* is decades old. Other non-institutional methods include savings at home for day-to-day use and savings through fixed assets like gold ornaments, jewellery, silver or brass vessels. Some also invest in land or purchase cows and goats. But people in the two villages are now interested more and more in institutional savings which make possible credit to buy better instruments of production.

Eighty households in each village were approached to assess the savings

(Continued on page 17)

Members of a "Chit Fund" contribute to a collective fund every week or every month. On each occasion a different member gets the entire fund amount minus a certain percentage that goes to the organizer.

Table 1 : Total average monthly income

Source of Income	Village			
	Udaypur (Rs.)		Gopalpur (Rs.)	
Fishing	1197	(60%)	1542	(94%)
Non-fishing	804	(40%)	103	(04%)
Total	2001	(100%)	1645	(100%)

Table 2 : Average annual productive expenditure per household

Spendings	Village			
	Udaypur (Rs.)		Gopalpur (Rs.)	
Purchase of boats and nets	1988	(66%)	2017	(79%)
Maintenance of boats and nets	490	(16%)	524	(21%)
Purchase and maintenance of agricultural instruments	548	(18%)	—	—
Total	3026	(100%)	2541	(100%)

Table 3 : Average annual non-productive expenditure per household

Spendings		Village			
		Udaypur (Rs.)		Gopalpur (Rs.)	
Basic needs	: Food	7059	(67%)	8255	(63%)
	Clothing	572	(06%)	1057	(08%)
	Medicine	629	(6.5%)	356	(03%)
Social festivals	: Marriage	1077	(10%)	862	(07%)
	Childbirth	138	(01%)	95	(0.5%)
	Liquor	437	(04%)	1464	(11%)
	Drugs	50	(0.5%)	34	(0.3%)
Inauguration of boats and nets		116	(1%)	20	(0.2%)
Religious functions — mainly poojas		383	(04%)	864	(07%)
Total		10461	(100%)	13008	(100%)

Table 4 : Pattern of indebtedness

Indebted to	Village	
	Udaypur	Gopalpur
Moneylender	43%	34%
Fish trader	3%	16%
Boat owner	—	19%
Pawn broker	—	3%
Shopkeeper	23%	12%
Relatives and friends	31%	16%
Total	100%	100%

Table 5 : Rate of interest charged per annum

Credit sources	Interest rate	Duration of loan
Moneylenders	40% — 50%	not fixed
Fish trader	34% — 45%	- do -
Boat owner	25% — 35%	- do
Relatives and friends	15% — 20%	short period
Cooperatives	11% — 12%	1 - 5 Years
Banks	12% — 13%	1 -.5 Years (sometimes more)

Table 6 : Habit of saving

Savings		Village	
		Udaypur	Gopalpur
Traditional :	at home	39%	61%
	Chit funds	1%	1%
Institutional :	banks	42%	37%
	cooperatives	7%	1%
	post office	11%	—
Total		100%	100%

Table 7 : Purposes of saving

Purposes		Village	
		Udaypur	Gopalpur
Long term :	marriage	17.5%	17.5%
	earn interest	14%	2.5%
	education of children	12.5%	2.5%
Short term :	immediate use (religious functions, social festivals etc.)	37.5%	51%
Others		1%	11%
Non-savers		17.5%	12%
Total		100%	100%

Motorization of *the Andhra Pradesh Nava*

by M. Murali Mohan Rao and R. Ravikumar

Can the Nava, the traditional fishing craft of Andhra Pradesh, be motorized? Attempts failed in the '50s but today one can see about 15 privately owned motorized Navas operating quite effectively in Kakinada. This article discusses the hows and whys of Nava motorization.

The Nava is a plank-built boat originally used in the Godavari river as a transport vessel for passengers and cargo. Its use as a fishing boat started at first in the delta area. The advantages of low draft and a hull form suitable for operation in moderate surf led to the widespread use of this boat in other parts of Andhra Pradesh. Today one can say that apart from the 'Teppa' or log raft, the Nava is the most popular traditional fishing boat in Andhra Pradesh. Migrant fishermen from Andhra Pradesh use the craft in Puri (Orissa) too.

The nava is found in many sizes ranging from 8 to 12 m in length. Though the proportions vary from place to place, the design features are maintained. A Nava is characterized by its highly rockered bottom. The boat is double ended with well rounded sections amidship. The lack of keel permits the boat to sit upright on a beach and minimizes damage when beach-landing. The boat is transversely framed and carve planked. Traditionally the Nava was built of teak, but today one can find Navas built of other timber too. The hull is easily driven, being long and slim. It performs very well under sail. The most common rig is the lateen. The foot of the sail extends from bow to stern. A leeboard is used to counter side drift and steering is always with a steering oar. The steering oar chock and the bow are very distinctive in a Nava.

Motorization : In most parts of the world, motorization of traditional craft has been the first step in development of the fishery. In India too there are several traditional boats on the west coast that were motorized many years ago. One wonders then, why motorization of the Nava did not catch on till now. A few have been motorized recently at Kakinada, and their fishing operation has proved to be successful. A close look at this subject could throw up a few valuable pointers to motorization of country craft in general. Let us pose a few questions and answer them.

What is motorization?

Motorization is the installation of an engine in a craft for the purpose of propulsion. The engine can be mounted inboard or outboard. Fuel for the engine could be petrol, diesel, or a mixture of kerosene and petrol.

Can *a// craft* be motorized?

All small craft can perhaps be motorized with a lightweight outboard engine, but the installation of an inboard diesel engine requires a strongly built hull to withstand vibration and to minimize misalignment of the

Motorized Nava with reversible gearbox and nets.

shaft. In the case of keelless craft like the Nava, a skeg has to be provided to install the sterntube and shafting. Other methods are also possible like the BOBP-designed pivoting engine box installed in a watertight well, or the use of a prefabricated tunnel.

Were any attempts made to motorize the Nava?

Yes, in the mid 50's, under the guidance of an FAO naval architect, a Nava was motorized in Kakinada with a 20 hp engine. A skeg was provided to take the sterntube, beam increased for more stability and the stern modified to a transom. The engine was imported. The boat could not be operated from a beach due to the appendages.

Were any Indian made engines suitable?

Yes, but the initial cost of a 20 hp engine was very high compared to the boat cost. including sterngear the price was Rs. 20,000. A smaller engine could have been used.

Were there other reasons for motorization *not* spreading?

The main emphasis of the commercial fishery was on shrimp trawling; fisheries other than shrimp fishery — such as gillnetting — could not afford the cost of the engine and associated running costs. A reliable light-weight low-cost diesel engine was not available. So motorization of Navas failed to catch on.

Why is motorization catching *up now?*

The availability of low-cost, lightweight diesel engines meant for the agricultural sector led a few enterprising operators to try them out on Navas. To date more than 15 motorized Navas operate successfully in Kakinada.

Are there any problems?

The engine installation and propulsion system should be improved. Being a long and narrow craft without a keel, the Nava is flexible. This leads to frequent misalignment of the shaft to the engine. The skeg should also be shaped to give a better flow to the propeller, thereby improving the performance. At present the engine is directly coupled to the shafting. A simple clutch arrangement would be beneficial in preventing fouling of nets. A reverse reduction gearbox would be even better in improving propeller efficiency as well as in providing good control for fishing operations of the craft.

Expenditure and Savings among Orissa Coastal Fisherfol k

(Continued from page 15)

pattern. Around 136 of the 160 households in both villages were in the habit of saving money.

For example, in Udaypur, among the 66 households that save, 40 households save in banks and cooperative societies and 38 in chit funds. In Gopalpur, among the 70 households that save, 31 save in banks and cooperative societies and 54 at home and in chit funds. As can be inferred from the above, there are households that save both at home and in banks. Around 26 households in the first village and 7 in the second save in both institutional and non-institutional establishments, according to the purposes of their savings.

It was found that households engaged in both agriculture and fishing activities and settled in a village have a greater propensity to save than those who live temporarily near the beach and depend only on fishing.

, It was also found that short-term savers use the money mainly for religious and social festivals. Lohg-term savers use the money for a daughter's wedding, to earn interest, to pay for children's education or for some productive investment.

Interpretations of the findings

In the light of what has been discussed, the writer believes that to encourage deposit mobilization, different approaches must be tried. For example, higher-income and middle-income households must be approached directly and persuaded to deposit their surplus income in banks. Publicity about the security and attractive interest of bank deposits and about low-interest bank loans may be called for. But this will be effective only if rural folk reduce unproductive expenditure.

One of the findings of the survey is that the moneylenders are campaigning strongly against fishermen patronizing banks and cooperative societies. To counter this, banks may have to improve their services to fishetfolk and simplify procedures and regulations. A door-to-door service for deposits **and** withdrawals, for example, is strongly indicated.

To stimulate savings among Orissa coastal fisherfolk, BOBP has prepared a slide show on savings, with *musical* commentary by Mr Sikander A/am, Oriya music composer. Ten sets of audio-visual equipment and copies of the slide show were presented to *banks and to the Orissa Directorate of Fisheries by tbe BOBP. In the picture below,* BOBP Director Lars Engvall hands *over* a set of audio-visual equipment (projector and radio-cum-recorder) to a representative of *one* of the banks.

ABSTRACTS OF BOBP PUBLICATIONS

BOBP/WP/27 : Reducing the Fuel Costs of Small fishing Boats. 0 Culbrandsen, Madras, India, July 7986.

This paper describes the principles of power requirements for small boats (below 12 m in length) and details ways of saving fuel which can be applied to existing boats as well as new boats. It illustrates by example how to estimate the savings from measures to conserve fuel. The paper also records fuel consumption trials carried out in 1982 in Sri Lanka, using the two most common Sri Lankan boats — the l&footer and the 28-footer. These trials confirmed the general principles enunciated earlier.

BOBP/REP/29 : Towards Shared learning : An Approach to Non-formal Adult Education for Marine Fisherfolk of Tamil Nadu, India. I S Saraswathi and P Natpracha, Madras, India, July 7986.

Non-formal adult education is a major need for marine fisherfolk who have never attended school. Since no material tailored to the needs of fisherfolk existed in Tamil Nadu, BOBP set out preparing a curriculum package designed to improve fisher-folk's skills at literacy and numeracy, to make the fisher-folk more critically aware of themselves and their environment, and to give them a tool for self-reliance, BOBP mobilized several experts — individuals and institutions — towards this task. The resulting publications — most of them meant for fisherfolk, a few for their 'animators' or 'teachers', a few for those who train the trainers — are described in this report. The report also discusses how the publications evolved — a process that included communication with the fisher-folk, discussion with experts, field testing and evaluation. The paper should be useful to everyone who is concerned with non-formal adult education for rural populations.

BOBP/WP/45 : further Development of Beachlanding Craft in India and Sri Lanka. A Overa, R Ravikumar, 0 Culbrandsen, and G Cowing. Madras, India, July 1986.

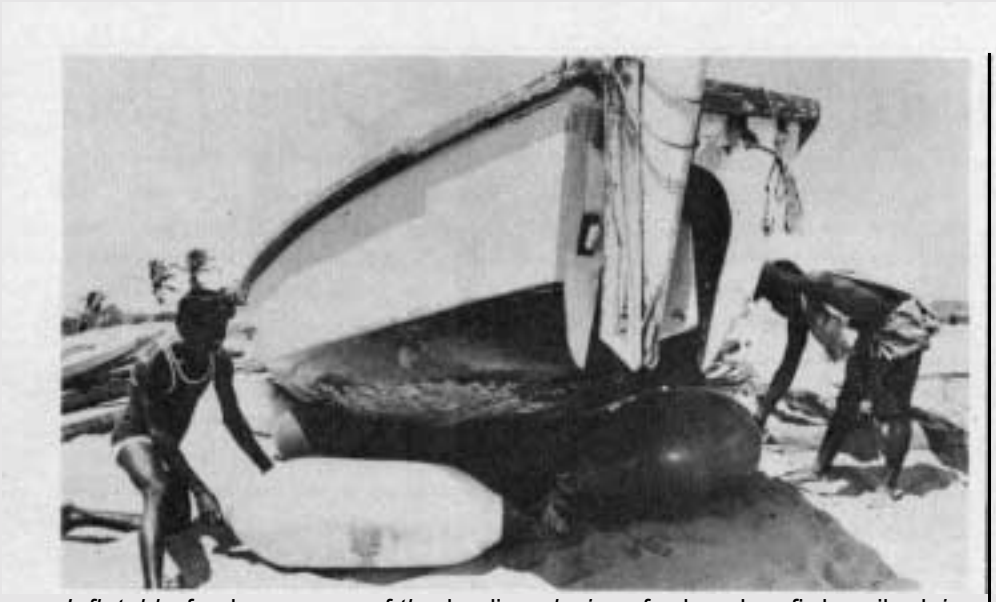
This technical paper describes eight prototypes of BOBP beachlanding craft developed for India and Sri Lanka. It also describes the technical trials of the craft, with emphasis on their surf-crossing abilities.

BOBP/WP/46 : Experimental Shrimp Farming in Ponds in Polekurru, Andhra Pradesh, India. I A Janssen, T Radhakrishna Murthy, B V Raghavulu and V Sree Krishna. Madras, India, July 1986.

During 1982-85, BOBP executed a pilot activity on brackishwater culture of shrimp and fish in Polekurru, near Kakinada, Andhra Pradesh. A farm complex of six ponds was set up;

Testing of non-formal adult education material prepared for marine fisherfolk by BOBP — in Tiruchendur, Tamil Nadu. BOBP/REP/29 describes and documents the NFAE work.

<<



Inflatable fenders — one *of the* hauling *devices for* beachcrafi described *in* BOBP/W'P/5 7.

various pond configurations and water management practices were tried out, During two years of trials three culture cycles were completed and a fourth was in progress. This paper describes the project's design and execution and summarizes the lessons learned.

BOBP/WP/47 : *Growth* and Mortality *of the* Malaysian *Cockle* (Anadara granosa) under Commercial *Culture :* Analysis through Length-Frequency Data. Ng *Fang Oon,* Madras, India, July 1 986.

Cockle culture plays a major economic role in, Malaysia. To prevent overexploitation of cockle, the government decided a few years ago to strictly enforce legislation on the minimum size of harvested cockle. But following opposition from cockle farmers, who considered this size unviable for culture operations, the government relaxed enforcement and launched a series of biological and economic studies with some BOBP assistance to obtain information on more appropriate management measures. One of these studies is described in the present paper. It analyses length-frequency data of the Malaysian cockle, using several methods. The data were collected monthly from five different plots under commercial culture during a period of 12-17 months. Yield-per-recruit analyses suggest that the present legal size for the five culture plots 'is well above the maximum yield per recruit.

BOBP/WP/51 : Hauling *Devices for* Beachlanding Craft. *A Overa* and *P A* Hemminghyth. Madras, India, August 1 986.

This paper describes and analyses some mechanical hauling devices for beachcraft developed and tested by the BOBP from 1980 till 1985. These devices include a capstan, an engine-driven. winch, beach rollers and inflatable fenders.

BOBP/WP/53 : *Atlas of* Deep-Water Demersal Fishery Resources *in the Bay of* Bengal. T Nishida *and K Sivasubra*-maniam. Madras, India, September 1986.

This paper analyses available data about deep-sea demersal resources in the Bay of Bengal region, most of which are presently unexploited. It contains maps on the distribution and abundance of 20 fish families, and a list of species found in the 100-600 m depth zone. Catch, effort and other relevant data for the paper were obtained mainly from cruises of the Norwegian research vessel Dr. Fridtjof Nansen.

BOBP/REP/31 : *In-service* Training Programme *for* Marine Fisheries *Extension Officers of Orissa, India. U Tietze,* Madras, India, September, 1986.

This report describes an in-service training programme for marine fishery extension officers of Orissa, India, carried out between March 1982 and July 1983. The programme dealt with major areas of fisheries extension work — social, economic, technical — and covered three "modules" — credit for fisherfolk, community development, small-scale fishing gear and methods. For each module the training programme consisted of a preliminary survey, a training course, field assignments to plan a pilot project, field workshops, and a final seminar. The pilot project was then implemented.

The in-service programme improved the. knowledge and the capabilities of extension officers. A major gain was that it led to two independent development projects — &edit for fisherfolk and non-formal edudation for fisherfolk children.

BOBP/REP/31 *reports on* BOBP's *in-service* training *scheme for Orissa extension officers, The scheme* required close interaction between *Orissa* extension *officers* and marine fisherfolk.

The Man Behind World Food Day 7986

If the world's small-scale fishermen are treated as VIPs this October 16, the person they have to thank is Michael Festus Weneslaus Perera, 56, Sri Lanka's Minister for Fisheries. At the 1984 World Fisheries Conference in Rome, Mr. Perera proposed the choice of "Fishermen and fishing communities" as the World Food Day theme for 1986.

Getting fisheries into the limelight comes naturally to Minister Perera. He has been doing it since 1978 when he became Fisheries Minister. Fisheries hits newspaper headlines 365 days a year in Sri Lanka mainly because of its peripatetic Minister, who is often on his toes 18 hours a day. His day begins at 4.30 a.m., he eats most of his meals in his car, he drives home every night to Wennappuwa, 75 km from Colombo, so as not to miss his morning audience with fisherfolk there.

Mr. Perera strikes an immediate rapport with any fisherman anywhere, says Aloy Fernando, Sri Lanka's Additional Secretary for Fisheries. He's as much at home with Fidel Castro, who as a boy fished with his bare hands, as he is with the Prime Minister of Japan, who has a yen for fisheries. He is equally popular in Jaffna, where he rides a bike and accepts heaps of garlands from the fishermen, as he is in Wennappuwa, where he is regarded as a Godfather.

"Formerly, progress in fisheries was always assessed in terms of higher production", says Claude Fernando, Director of Planning and Programming in the Ministry, "It is Minister Festus Perera who switched the focus of planning effort to the fisherman". He set up a separate division in the Ministry of Fisheries for fishermen's welfare. Now, fishermen not merely get generous loans and subsidies for fishing craft, gears or engines, but also for houses, wells, latrines, community and day care centres, navigational aids. . . . Plans are afoot to start a pension scheme for fishermen. The Minister believes that such incentives are essential as a temporary expedient, but should be gradually phased out.

Development activities have been given a big push too. The 1979-83 Master Plan for fisheries development, the first of its kind in Sri Lanka; the setting up of NARA in 1981; efforts to modernize technology in capture and culture fisheries through organizations such as BOBP — these have kept the Ministry's corridors abuzz with activity. Fish production has doubled in value during the past seven years — from Rs. 115.1 million (1979) to Rs. 225 million (1986).

"Mr. Festus has made us proud of our profession", says a Negombo fisherman. And after the spectacular WFD observances in Sri Lanka this year, the island's 300,000 strong fisherfolk community might well feel as tall as their 6 ft tall minister.

- S R M

New sewing machines for Wennappuwa fisherwomen — Minister Festus Perera tries out one of them, much to the ladies delight

Published by Lars O Engvall for the Bay of Bengal Programme, Post Bag 1054, Madras 600 018, Indoa. Phototypeset and printed at Nagaraj & Co., Madras 600 041. Processed at Color Crafiks, Madras 600 028. Editor : S.R. Madhu. Layout Artist : E. Amalore.

<<