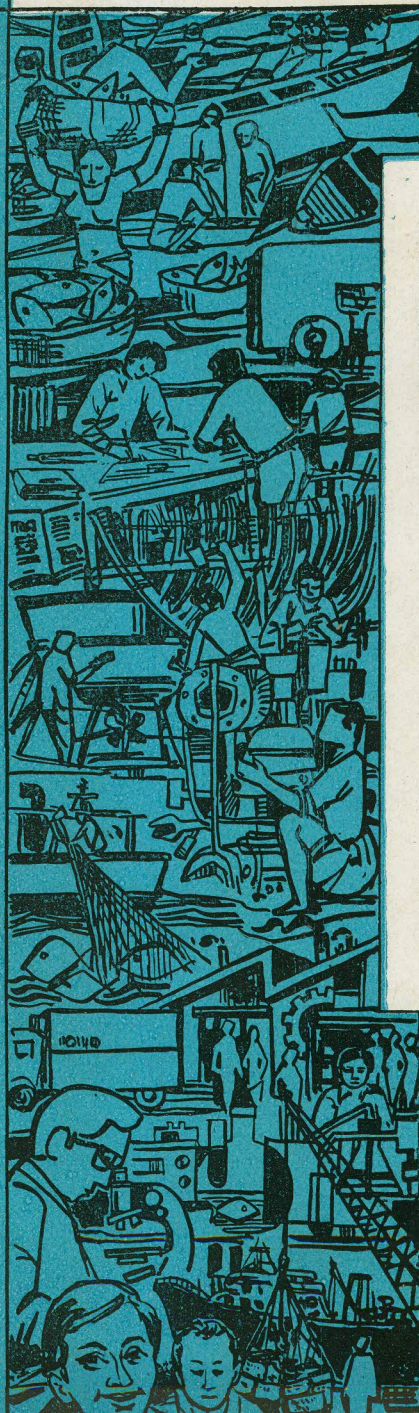


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# Fish Technology newsletter

Vol. II No. 12 APRIL-JUNE 1981



Summer Institute on Non-Traditional Diversified Fish Products & By Products : Trainees engaged in the Production of Fish Fingers.

**CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY**  
MATSYAPURI P. O. COCHIN - 682 029

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# Foreword

## EDITORIAL COMMITTEE

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Fish Technology Newsletter issued every month is intended to bring the fishery industry in India in touch with some of the important developments in fisheries technology resulting from investigations carried out at this Institute and elsewhere. It is not a research publication. Every effort has been earnestly made to express the ideas in non-scientific language. Its ultimate aim is the application of the results of contemporary research for the advancement of our fishery industry.

Fish Technology Newsletter does not owe allegiance to any manufacturer, patent, product or development agency unless otherwise specified. Its purpose is to open up a communication channel through which useful ideas can be exchanged, problems discussed and success shared. The process of exchanging views and opinions makes it easier to identify the real issues and that is where problem-solving begins.

We welcome contributions from any source which will help to achieve our above-mentioned aim. The sources of all such contributions will be acknowledged. We sincerely hope that the current events and informations contained in the columns "GLEANINGS FROM OTHER JOURNALS" and "LET'S TALK IT OVER" will be of interest to the Indian fishing and fish processing industries.

*Photography* Shri K. BHASKARAN

*Art* Shri G. MOHANAN

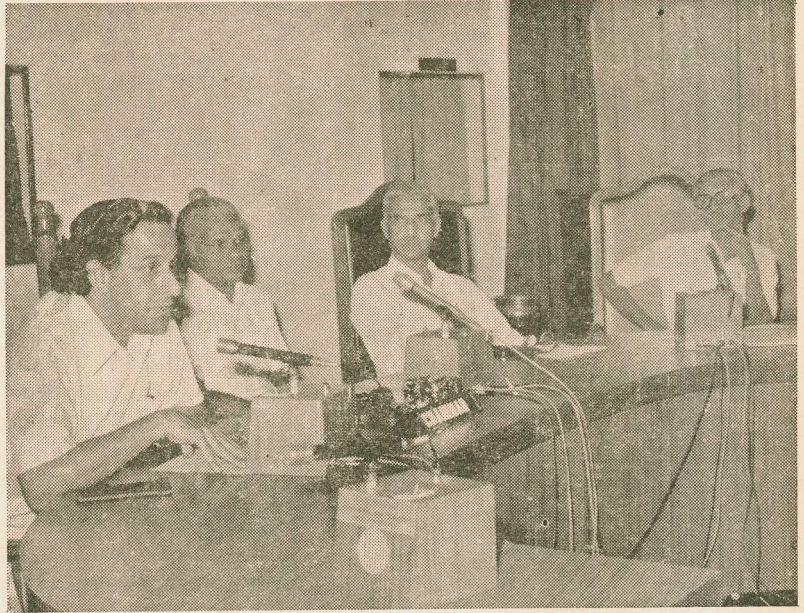
We also welcome suggestions from our readers for improvement in the contents and get-up of Newsletter. Any part of this publication may be reprinted in any language if the translation is true and the source is acknowledged.

# Summer Institute on Fish Processing

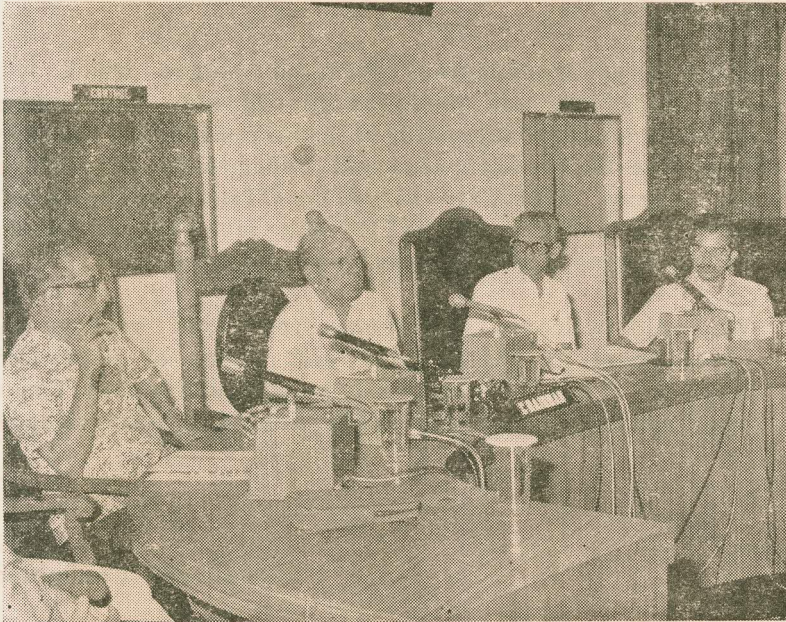
A month long Summer Institute on Non Traditional Diversified Fish Products and By-products being conducted at the Central Institute of Fisheries Technology (CIFT), Cochin ended on May 26, 1981.

Sponsored by the Indian Council of Agricultural Research (ICAR), this was one of the 21 such Summer Institutes on various subjects being organised in different centres of the country this year.

The aim of the Institute was to communicate the latest technological advances in the subject and provide the necessary orientation to the teachers, research scientists and extension workers in non traditional diversified fish products.



Shri. S. N. Rao (extreme left), Director, Marine Products Export Development Authority, Cochin, inaugurates the Summer Institute. Next to him are Dr. C. T. Samuel, Dean of Science and Head of the Department of Industrial Fisheries, University of Cochin, Dr. Reghu Prasad, Assistant Director General of ICAR and Shri M. R. Nair, Director of the Summer Institute.



Dr. K. I. Vasu (centre) Pro-Vice Chancellor, University of Cochin, addressing in the valedictory function. To his right is Shri Devidasa Menon, Former Director of Integrated Fisheries Project, Cochin.

There were 20 participants selected from different State Fisheries Departments/Corporations, Fisheries Colleges, ICAR Institutes, Marine Products Export Development Authority, Food Craft Institute, Universities etc. Besides lectures, demonstrations and group discussions, field trips were also arranged for the benefit of the participants. Particular emphasis was laid on the practical training in the preparation of fish protein concentrates, fish hydrolysates, paste fishery products, fish soups, fish wafers, chitosan, shark-fin-rays pickling and canning of clams and mussels.

(Continued on page 7)

# Guidelines for a Better Environment

Conserve our natural resources by using less of everything, including electricity, gas, oil, paper, and water.

Purchase liquids in reusable, returnable bottles whenever possible, save aluminium cans and returnable bottles and bring them to recycling centers.

Use soap or low-phosphate detergents (some are now being made without any phosphates). These compounds break down quickly and do not pollute our rivers and lakes.

Instead of burning leaves or grass-cuttings make compost heap. (You can add all vegetable refuse from the kitchen too). The decaying matter provides good fertilizer.

If your family owns a car, the use of lead-free gas and emission controls will reduce air pollution from exhaust fumes. Make sure that the engine is not left idling: the worst emission problems occur at such times.

Walk, ride bicycles, and use mass transit more often.

Find out what your city or town is doing about waste disposal in both air, and water. Complain to your local authorities about dirty or noxious smoke emissions from factories or houses; and illegal burning of trash in back yards.

Check to find out how your own representatives have voted on conservation legislation. Let them know how you feel (they do read their mail), even though you are not of voting age.

Join local and national conservation groups. They need your support, and they can give you detailed information on products to use and centers for recycling. The National Audubon Society and some others also have junior divisions.

Use no pesticides unless absolutely necessary, and then only those containing the least harmful chemicals such as pyrethrin, methoxychlor, and the carbamates. DO NOT USE chlorinated hydrocarbon pesticides, including DDT, DDD, endrin, dieldrin and toxaphene. Remember, the cost of spraying these

long-lasting poisons is not merely what you pay for a product, but also the death of wildlife and the decline of our fish-food supply.

Boycott stores that sell furs, skins or other products from wild animals. Buy only furs that come from ranch-bred animals, such as mink or rabbit or nutria. When we lose a wild species, there is no replacement.

Everything we do has a total cost, not just in manufacturing a product, but also in what that manufacturing process does to the environment; not just in killing an animal, but in what happens to the environment after that species is gone. The manufacturer is not the villain. People create pollution and extinction by the things they want. Only people can restore the earth to a state which can continue to sustain life. And because *you are people*. it's up to you.



# Stages in Fish Marketing\*

Fishes are landed at the shore by many fishermen who are on the fish catching business. Marketing of this catch is generally done at the shore itself. The method followed is by general auction. In spite of the many co-operatives set forth, the product is marketed through the middlemen bringing in the major disparity of the price.

On one side the fishermen risk their lives out at sea and bring the product but get a less price for the effort. But, on the other side, the consumers grumble over the increasing prices for this delicacy especially at the inlands. Hence, to understand this situation of disparity a preliminary investigation was undertaken to have an insight into the fish marketing procedure from the fishermen to consumers. As per the observation, four stages were found to explain the above inference.

## 1st Stage

Fishes are landed at sea coast by fishermen. Majority of the fishermen sell the fish at the landing site itself. Lot of people would be found involved in this business. The purchasers at the landing site wait for the fish with money. Just as the boats arrive, a

quick evaluation of the quantity, quality and further marketing prospects will be done by the purchasers. Based on their evaluation the prices are arrived at over a discussion with the party. Some middlemen, in the form of brokers to the business who are known to the boat owners also mediate to bring about a quick settlement. Hence, at this stage the fish is generally marketed on the spot to the curers. If the quantity is too large it will be sold on a measure of baskets for an amount arrived at mutually.

## 2nd Stage

These curers, after purchasing the fish, cure it and wait for market, which is obtained easily during season. The curing procedure may be either dry or wet salt curing. In this stage the local curers through the agents contact the wholesale traders. They market the fish at the curing site itself.

## 3rd Stage

The whole-sale traders are the main transporters of fish to different parts of the country. They collect the fish from the local curers and transport them by lorries. Generally the fish is maintained on ice for long journey transport. After the transport,

the fish is again sold to retailers in the other area.

## 4th Stage

The last stage of fish marketing is from retailers to the actual consumers in different parts of the country.

Overall, it could be inferred that there are four main stages in marketing of fish. It is needless to emphasize the fact that at each step the maintenance cost, transport cost and the profit margin would increase thereby hiking the product at the level of the consumers. Ultimately it is the consumers who pay the increased price to the product, but at the same time fishermen are found to make a subsistence living. The major profit share is engulfed by the middlemen and traders.

The basic factor resulting in this pattern of marketing is the spot selling of fish at the landing site by the fishermen. This is due to their inability to meet the consumption needs without marketing the fish. Apart from this they are also found to be indebted, hence finding it difficult to come out of the vicious cycle.

At this juncture two aspects could be of much importance. First would be to provide

\*Written by Shri G. R. Desai and Dr. P. N. Kaul of CIFT, Cochin

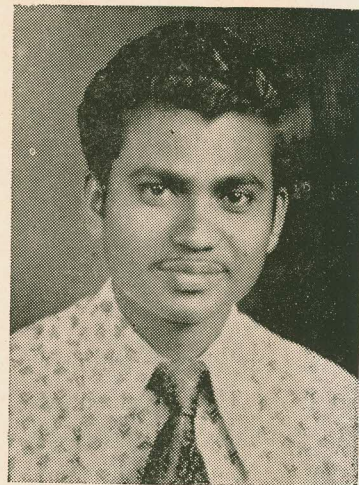
the credit facility keeping in view the vocation. The second aspect would be to educate them to cure the fish themselves in an improved way. This could be done through extension education. This action would help them to get a better price, build in the bargaining ability and improve their living conditions.

The other approaches which could be supplemented would be to have regulated

markets for fish independently. Also, co-operatives could be strengthened to take up the marketing function, thereby helping to get the fish marketed.

It is high time that approaches to better the lot of traditional fishermen should be planned and put to use before this section of the population migrates to an indifferent profession or place.

## EYES AND BODY OFFERED



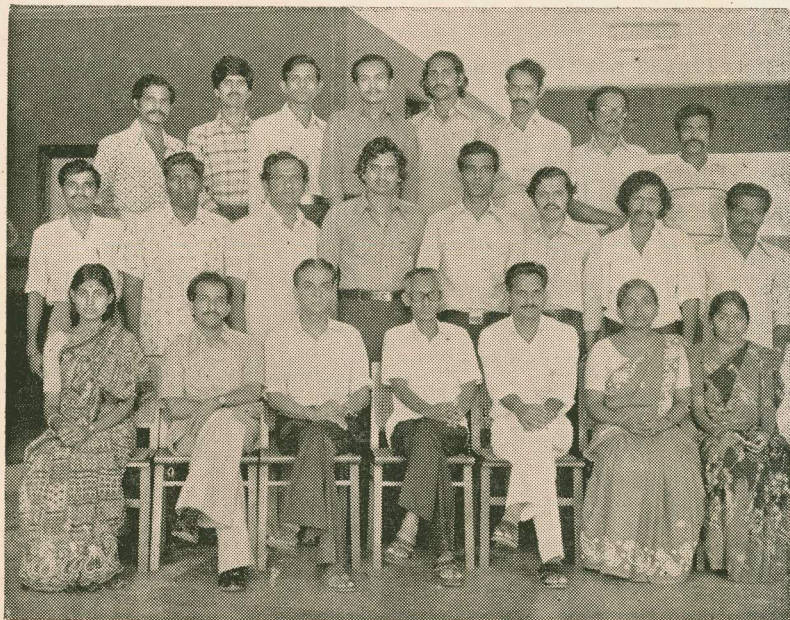
Shri P. Gopalakrishnan (32), an employee of CIFT, has declared to donate his eyes and body to the needy after his death.

(Continued from page 4)

Shri Devidas Menon, former Director of Integrated Fisheries Project, Cochin, made the valedictory address.

Presiding over the function, Dr. K. I. Vasu, Pro-Vice-Chancellor of Cochin University, asked the participants to make use of the in-service training they received for furthering the progress of Fisheries Technological Research in their respective States/Universities.

Shri M. R. Nair, Director of the Summer Institute, welcomed the gathering and Shri P. Madhavan, Scientist, expressed the vote of thanks.



Trainees with Scientists of CIFT

# A Survey on the Under utilization of Fish processing plants in India\*

## I. KERALA

The marine products export from India has shown a remarkable increase since 1969. In 1969, the total export earning from marine products was Rs. 330.7 million and in 1979 this rose to Rs. 2620.3 million. Out of these, the share of frozen marine products alone was worked out to be 86.5% in 1969 and 94.9% in 1979. The flourishing trend in the fish processing industry over the years attracted many new entrepreneurs in this lucrative trade and as a result, the number of frozen seafood processors have increased considerably in the last decade. Also step like expansion of the installed capacity of fish processing plants was noticed during this period. As the fish processing plants mainly depend on prawns, which is seasonal, there is reason to suspect that at present there exists considerable excess capacity in the fish processing plants. Since large unutilised capacity of plants is not at all desirable for economic func-

tioning of any industry, the Scientists in the Statistics section of the CIFT have undertaken a survey during 1980, with the objectives of investigating the extent of idle capacity existing at present in the fish processing plants in India, the factors leading to their underutilisation, and the desired size of the plants in different maritime states of India depending upon the availability of raw material and other processing infrastructure. The chief findings the survey for Kerala State are furnished in this article.

Kerala is the pioneer state which started export of frozen prawns from India. Kerala has a coast line of about 560 Km with rich prawn grounds in the inshore and offshore areas of it. Many fish processing plants sprang up in this state; at first they

were located in Cochin but gradually extended to other parts of the state depending upon the availability of raw material. Out of a total of about 270 fish processing plants in India during 1979, 104 were located in Kerala. This accounts to 38.5% of the fish processing plants in the whole of India and 57.7% of the plants in the west coast of India. Of the 104 plants in Kerala, 69 were under 5 tonnes capacity, 19 were between 5-10 tonnes capacity and 15 were over 10 tonnes capacity per day. Out of 104 plants, 16 plants (15% of the total) were selected for the study as per the stratified random sampling procedure. Data on the installed capacity, actual production, factors leading to the underutilisation of plants, number of personnel employed, sources of getting raw material and ice and cold storage facilities in the plants were collected for 1978 and 1979 by interviewing the plant managers. The idle capacity was

\*Prepared by: H. Krishna Iyer, P. Srinivasa Rao, G. R. Unnithan, A. K. Kesavan Nair and R. G. Nair

estimated from the difference between the installed capacity of the plants and the actual production during the years 1978 and 1979 for 200 and 250 working days in a year and for single, double and triple shifts a day.

The estimates of the percentage idle capacity worked out for each strata (under 5, 5-10, above 10 tonnes/day) for the years 1978 and 1979 for 250 working days per year are given in the Table. It is

clear from the Table that there existed considerable unutilised capacity of fish processing plants in Kerala. In single shift the percentage idle capacity is less but as the number of shifts increased, the extent of idle capacity also increased. Among different strata, plants of 5 to 10 tonnes installed capacity per day was found to be having comparatively less idle capacity in all the three shifts. If the sizes of plants are less than 5 tonnes or more than 10 tonnes/day, the percentage idle capacity increases. The

investigation shows that the small plants (under 5 tonnes/day) were not economically sound enough to compete with others for procuring raw material at very high price resulting in the high percentage idle capacity whereas in the case of big plants (above 10 tonnes/day) it is the scarcity of raw material that caused underutilisation. The percentage error of estimation of the idle capacity for the state as a whole ranged between 6.3 and 21.6 for the three shifts.

**Table: Idle Capacity of the Fish Processing Plants in Kerala for 1978 and 1979**

(BASED ON 250 WORKING DAYS IN A YEAR)

	Single Shift 1978	Single Shift 1979	Double Shift 1978	Double Shift 1979	Triple Shift 1978	Triple Shift 1979
Total estimated installed Capacity (in tonnes)	56,070	56,070	1,12,140	1,12,140	1,68,209	1,68,209
Total estimated Idle Capacity (in tonnes)	28,560	26,904	84,009	82,994	1,39,440	1,39,065
% Idle Capacity	50.94	47.98	74.91	74.01	82.90	82.67
% Error of estimates	21.62	21.57	8.70	8.65	6.30	6.26
<b>% IDLE CAPACITY STRATUM - WISE</b>						
Under 5 tonnes/day	50.85	37.01	74.11	68.58	81.84	79.06
5 to 10 tonnes/day	9.46	20.90	54.74	60.40	69.82	73.60
Above 10 tonnes/day	80.42	80.80	90.21	90.40	93.47	93.60

# Fishing Craft and Gear Technology

The following working papers and allied newsletters published by the Bay of Bengal programme of the F.A.O./SIDA at Madras are a source of useful guidance.

## WORKING PAPERS (BOBP/WP)

1. Investment Reduction and Increase in Service life of Kattumaran Logs.  
R. Balan. Madras, India, February 1980
2. Inventory of Kattumarams and their Fishing Gear in Andhra Pradesh and Tamil Nadu.  
T. R. Menon. Madras, India, October 1980
3. Improvement of large-Mesh Driftnets for Small-Scale Fisheries in Sri Lanka  
G. Pajot. Madras, India, June 1980
4. Inboard Motorisation of

small G.R.P. Boats in Shri Lanka  
Madras, India, September 1980

5. Improvement of Large-Mesh Driftnets for Small Scale Fisheries in Bangladesh.  
G. Pajot. Madras, India September 1980
6. Fishing Trials with Bottom-Set Longlines in Sri Lanka  
G. Pajot, K. T. Weerasooriya. Madras, India, September 1980
7. Technical Trials of Beachcraft Prototypes in India  
Gulbrandsen, G. P. Gowling, R. Ravikumar. Madras, India, October 1980
8. Current Knowledge of Fisheries Resources in the Shelf Area of the Bay of Bengal.  
B. T. Antony Raja. Mad-

ras, India, September 1980

9. Boatbuilding Materials for Small-Scale Fisheries in India, Madras, India, October 1980
10. Fishing Trials with High-Opening Bottom Trawls in Tamil Nadu, India  
G. Pajot John Crockett Madras, India, October 1980

## MISCELLANEOUS PAPERS (BOBP/MIS)

- 11 - Fishermen's Co-operatives in Kerala: A Critique  
John Kurien. Madras, India, October 1980

## NEWSLETTERS:

12. Bay of Bengal News, January 1981
13. Bay of Bengal News, May 1981

The major causes behind the idle capacity of fish processing plants in Kerala are:

- i) Non-availability of raw material (prawn)
- ii) High cost of production
- iii) Labour troubles
- iv) Frequent power failures
- v) Unsteady foreign market and

vi) Competition among processors in procuring the raw material.

The following are few recommendations which may help to reduce the idle capacity of plants in Kerala.

- i) Diversification of products
- ii) Mass aquaculture of prawns to meet shortage of

raw material

- iii) Abolition of purchase tax while procuring the raw material
- iv) Improvement of shipping facilities
- v) Restriction of new entrepreneurs in the field
- vi) Liberalisation of aids from banks to small processors

# Let's Talk it Over

## M/s. Orient Marine Products (P) Ltd., Madras

We are interested in freezing of sea foods, especially Frog-legs, by carbon dioxide. Would you please enlighten us in the matter?

CIFT: We have not developed any method for freezing sea food by carbondioxide. Nor do we know any party adopting this method at present. However, literature on freezing by carbondioxide are available. Please refer to pages 70 to 73 of the book, Fundamentals of Food Freezing by Norman W. Desrosier and Donald K. Tresseler, published by AVI Publishing Company, INC, West Port, Connecticut.

## Asst. Director of Fisheries, Malpe, Karnataka

We would like to know whe-

ther CIFT has evolved any formula for the production of improved quality feeds for inland reservoir fishes.

CIFT: One of the fish feed formula developed by this Institute has been found to be very efficient in the case of inland fishes. The formula of the feed is:

- 1) Tapioca starch 50.0%
- 2) Ground nut cake 17.0%
- 3) Fish meal (55-60 Proteins) 33.0%

The ingredients are to be ground fine powder. Starch is gelatinised with hot water (90°C) and the other ingredients are mixed well with the gelatinised starch, pressed to pellets of required size and shapes and dried to moisture content below 5.0%. This can be stored in gunny bags without deterioration for at least six months.

## M/s. Sea and Sand Enterprises, Sakthikulangara, Quilon

What is the production technology of breaded prawns?

CIFT: Peeled and deveined prawns, individually, are first treated with a batter (liquid solution containing egg, starch spices etc) and then coated with a breading mixture (bread powder, starch, spices etc) and fried in vegetable oil like palm oil, soya oil etc. for 3 to 6 minutes until the surface is fried well to obtain an yellow to brown colour. The fried breaded prawns are then frozen and packed. It is kept in frozen storage and sold in frozen condition. The consumers have to fry them well prior to consuming.



## OBITUARY

Shri Korah Eapen (35) Scientist S1, died of sudden illness at Cochin on January 23, 1981.

Shri Eapen joined CIFT in 1975 as Assistant Fishery Scientist of Processing and

Process Engineering. Later he was inducted to Agricultural Research Service as scientist-S1. He was working on developing machineries and equipment for modernizing fish processing. He is survived by his wife.

# Gleanings from Other Journals

## 10,000 houses for Fishermen

The Kerala Fishermen's Welfare Corporation proposes to finance the building of 10,000 houses for fishermen this year.

Under the scheme, an aid of Rs. 4,000- half of it as grant and the other half as loan- will be given in three instalments as the work makes progress.

On completion of house with floor area of 21 square metres an additional loan of Rs. 1,000 will be sanctioned for building a store room.

Of Rs. 5 crores needed by the Corporation for the scheme Rs. 3 crores will be obtained from the State Government and the rest from HUDCO. The amount obtained from the State Government will be utilised for giving loans for building store rooms and grants, whereas the amount from HUDCO would be distributed as loans.

## Marine container unit at Cochin opened.

Union petroleum and chemicals minister P. C. Sethi today formally commissioned a marine freight container plant at Aroor, 20 km south of Cochin, the first public sector container enterprise set up by the state owned Balmer Lawrie and Company.

- Economic Times -

## Tax Concession to boost deepsea fishing

The Fishing industry is likely to be given concessional excise duty on diesel tax concessions and other incentives as part of a Government bid to attract investment to deepsea fishing operations.

The Union Minister of State for Agriculture Mr. R. V. Swaminathan at the annual meeting of the Association of Indian Fishery industries regretted that the response to the policy measures to promote deepsea fishing had been poor.

The Ministry of Agriculture was thinking of granting some concession on excise duty on diesel he said while rejecting the demand for a support price for catches from deep sea.

## Lag in growth in last three years:

Mr. N. P. Singh, President of the Association said fish production in India had grown three-fold in the first 30 years after Independence but had been static in the last three years. Of the total catch of 23 million tonnes, marine catches accounted for 1.5 million tonnes.

The number of mechanised vessels rose from 2,000 in 1960 to over 16,000 in 1977. Since then, however, there had been hardly any growth either in the number of mecha-

nised vessels or in marine catches.

- Hindu -

## Fishing Vessel Project by FAO

A crash project to speed up the development of suitable vessels for small scale fisheries in India and Sri Lanka has been undertaken in Madras by the Food Agricultural Organisation (FAO) and Swedish International Development Authority (SIDA) under their six million dollar Bay of Bengal Programme (BOBP).

Nearly a dozen experimental boats are being built at the Rayapuram boatyard here of the Tamil Nadu Fisheries Development Corporation (TNFDC), following an agreement between BOBP and the corporation early this year. These include one boat for Sri Lanka, eight boats for Tamil Nadu and Andhra Pradesh and two for Kerala according to a BOBP spokesman.

The main feature of most of these boats is that they are motorised, yet "beachable" capable of landing on the beach without expensive harbour facilities. Some of the designs are based on the India east coast prototype boats, surf-tested last year by BOBP Ennore, north of Madras, while the Sri Lanka boat would test new ideas. Two non-motorised craft (sail boats) are also being built.

- Economic Times -

# CIFT Appointment, Promotion, Transfer etc.

## APPOINTMENTS:

S/Shri Premlal Panda, Surjananda Dishri, Godabari Mahanandia joint Burla Research Centre as Supporting staff Grade-I

S/Shri Stanislas Kiro and Baikuntha Pradan joined Burla Research Centre as Technician II-3 (Technical Assistant)

S/Shri A. B. Varghese and A. A. Kunjappan joined as T-2 and T-1 respectively at Head quarters

Shri Dibyalochan Pattanaik joined Burla Research Centre as S. S. Grade I.

Shri B. Prakash joined as Technician-I (Junior Lab Assistant) at Head quarters

Shri N. Shriharshan joined as Technician-5 (Engineer) at Head quarters.

Shri K. K. Narayanan joined as Technician-I (Boilerman) at Head quarters.

Shri N. Venkata Rao joined as Technician I (Field Assistant) at Kakinada Research Centre.

## PROMOTION

S/Shri P. D. George, K. B. Bhaskaran, Kirtan Kisan, G. Chinna Rao and Orilika He-man, SSG-I to S. S. Grade II

Shri G. L. Tandel A. S. Grade I to Technician-I at Veraval Research Centre

Shri O. C. Lonan, S. S. Grade III to S. S. Grade IV at Head quarters.

## REVERSION

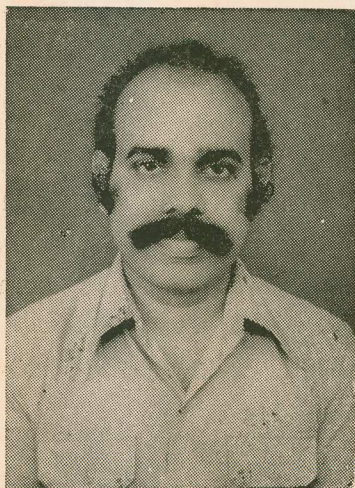
Shri Veer Singh, Senior Clerk, Burla Research Centre, to Junior Clerk at Veraval Research Centre.

Shri O. K. Xavier, Technician -I, Bombay Research Centre, to S. S. Grade I at Head quarters.

## TRANSFERS

Shri C. K. Muraleedharan Junior Clerk, Head quarters, to ICAR Research Complex, Tharnapani as Senior Clerk.

Shri K. Gopalakrishnan, Scientist SI Veraval Research Centre to Exploratory Fisheries Project Bombay as Deputy Director.



## Doctorate Awarded

The University of Kerala has awarded Ph. D. Degree in the faculty of <sup>Science</sup> ~~Since~~ to Shri P. K. Surendran, Scientist SI Microbiology division, CIFT Cochin for his thesis entitled "Chemical Preservatives in Relation to Control of Mic-

robial changes in Fishery Products". Shri. Surendran conducted his research in the Microbiology laboratory of CIFT, Cochin, under the guidance of Dr. K. Gopakumar, Head of the Processing Division of CIFT.

## M. K. KANDORAN



Shri. M. K. Kandoran is working as Scientist-S2 in the Extension, Information and Statistics Division of CIFT, Cochin.

Born in 1938, he passed M. Sc (Applied Chemistry) with Ist Class from Maharaja's College, Ernakulam. In 1962 he joined the Calicut Research Centre of CIFT. During his service at Calicut Centre, he developed a new technique for removal of urea from shark flesh, which, inspite of its high nutritional value, is not relished by many fish consumers on account of its high urea content. Studying various properties

of existing packaging materials, he suggested a proper method for packing cured fish.

Shri. Kandoran was later transferred to Veraval Research Centre of CIFT in 1966 and served there till 1969. During this period he developed an improved method for preparation of laminated Bombay Duck which is popular in international markets. Processes for canning smoked eel fillets, pomfrets and hilsa were developed by Shri Kandoran. He has also made substantial contribution in the formulation of methods for irradiation of commercially important fishes, smoking of eel fillets and preparation and utilisation of shark liver oil residue.

Since 1970 Shri Kandoran has been serving in the Extension, Information and Statistics Division of CIFT at Cochin. He is in charge of extension training programmes of the Institute. He has organised training courses on various aspects of fishery technology in Kerala, Karnataka,

Maharashtra, Gujarat, Tamilnadu, Andhra Pradesh, Orissa and West Bengal for the benefit of the fishermen and fishery industry. He has been actively engaged in the Lab-to-Land programmes of CIFT. These programmes have resulted in the improvement of hygienic condition of fish processing plants, production of high quality processed fishery products for export and establishment of new industries on fabrication of modern fishing gear by fisherwomen and production of clam meat pickle, mussel meat pickle, prawn/fish pickle and prawn/fish wafers.

Being a Scientist in Extension Division, Shri Kandoran is maintaining a good liaison with the public in general and fishery industry in particular. He has brought out thirty one scientific and technical publications including compilation of a text book titled "Quality Control in Fish Processing".

## CIFT is at your Service

*It transfers Fishery Technology by way of:*

- ◆ Demonstrations of Fishing and Fish Processing techniques evolved by it
- ◆ Answering Technical queries
- ◆ Supplying project reports and design drawings
- ◆ Training courses of fishing and fish processing

*Please contact:*

Director,  
C. I. F. T.,  
Matsyapuri P. O.,  
Cochin - 682 029

