



# Fish technology

## NEWSLETTER

Vol. V Nos. 11, 12 and Vol. VI No. 1

January — September 1990

## New Medium for Detection of Spoilage Bacteria Developed

CIFT has developed a new medium to detect *Alteromonas putrefaciens* which stands foremost among the spoilage bacteria encountered in food industry

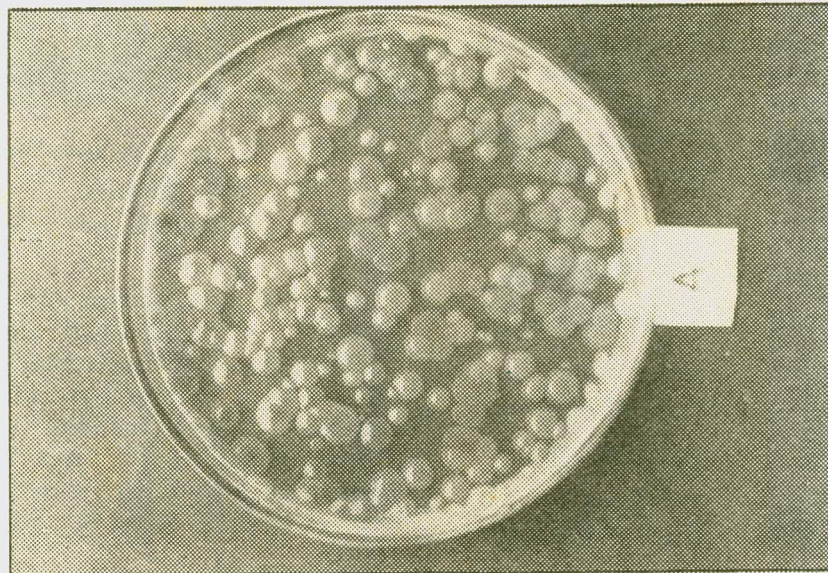
Tryptone soytone agar, the newly developed medium, facilitates the detection and enumeration of the microorganism which often goes unidentified by the commonly adopted isolation techniques.

*A. putrefaciens* is a versatile microorganism showing the ability to grow over a wide range of temperatures from as low as  $-4^{\circ}\text{C}$  to  $37^{\circ}\text{C}$ . It grows readily on chilled and refrigerated foods causing spoilage.

The ability to grow over a wide range of temperatures and the capacity to utilize a large variety of compounds, often producing malodorous product are special features of this bacterium.

Because of its close association with spoilage, the presence

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Colony of *A. putrefaciens* on Tryptone soytone agar

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## Central Institute of Fisheries Technology

MATSYAPURI P. O.

COCHIN - 682029

# Summer Institute on Packaging

Packaging has been accepted as a credible marketing tool. It has played an important role in the marketing of a product. Packaging is made aesthetically appealing so as to catch the immediate attention of customer. It is also meant to protect the product in transit, on the shop shelves and at home. If it is fishery product packaging assumes greater significance as it is an easily perishable item. Materials available for packaging have been continuously evolved thanks to the growth of science and technology. Already, a host of new materials is being used in the preparation of new forms of packaging. Packaging in-



Shri S. K. Dasgupta inaugurates the Summer Institute on Packaging. Others are: (L to R) Shri P. V. Prabhu, Dr K. Gopakumar, Shri S. C. Bhargava, Shri M. R. Nair and Dr P. N. K. Nambissan

## EDITORIAL COMMITTEE

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**Shri K. Bhaskaran**

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**Shri G. Mohanan**

dustry has come to stay in the country. This prompted the Indian Council of Agricultural Research to sanction a ten-day all India Summer Institute on Packaging of fish and fish products for export and internal market at CIFT from May 10, 1990.

Twenty one personnel including professors of universities and scientists of research institutes from seven states viz. Bihar, Orissa, Andhra Pradesh, Karnataka, Tamil Nadu, Pondicherry and Kerala participated.

Inaugurating the Summer Institute, Shri M. R. Dasgupta, General Manager (Works) Hindustan Newsprints Ltd., Velloor, said that packaging in India was slowly, but surely, coming of age "The packaging industry in India, however, still

has a long way to go," he said.

Shri M. R. Nair, Director of CIFT, presided. The seafood industry could save atleast five crores of rupees, if the method of packaging and packaging materials recommended by CIFT were accepted, shri Nair said.

Shri S. C. Bhargava, Deputy General Manager (Production), Hindustan Paper Corporation Ltd., Velloor, made the key note address.

Prof. P.N.K. Nambissan, Director, School of Marine Sciences, Cochin University of Science and Technology, and Shri P.G.K. Nair, Managing Director, Optima Packagings Ltd., Cochin, also spoke on the occasion.

Shri P. V. Prabhu, Head of Fish Processing and Packaging Division of CIFT, welcomed the

gathering. Shri S. K. Bhattacharya, Scientist of CIFT, proposed a vote of thanks.

Speaking as the chief guest at the valedictory function on May 25, Shri R. Sathia Rajan, Director of Integrated Fisheries Project, Cochin said that nearly five million tonnes of food stuff was spoiled every year in the country for want of proper storage, protection and packaging.

Shri Sathia Rajan pointed out that Kerala is the only state where dry fish and frozen fish are in demand by rich and poor alike. Proper care should be taken to protect the interests of such consumers while selecting packaging materials as well as packing the products, he said.

He further stressed the need for making available canned fish products at low cost to meet the protein deficiency among the weaker sections of society. He also pointed out that in U.S.A. 90 million cans of fish and fish products were sold every year.

Referring to the high cost of canning in the country, Shri Sathia Rajan suggested that this could be reduced to a great extent, if flexible container like retortable pouches were introduced.

Presiding over the valedictory function Shri M. R. Nair, said that this was the first time that ICAR had sanctioned a Summer Institute on Packaging of fish and fish products.

Dr K. Gopakumar, Director of the Summer Institute, said that out of 18 class room lectures

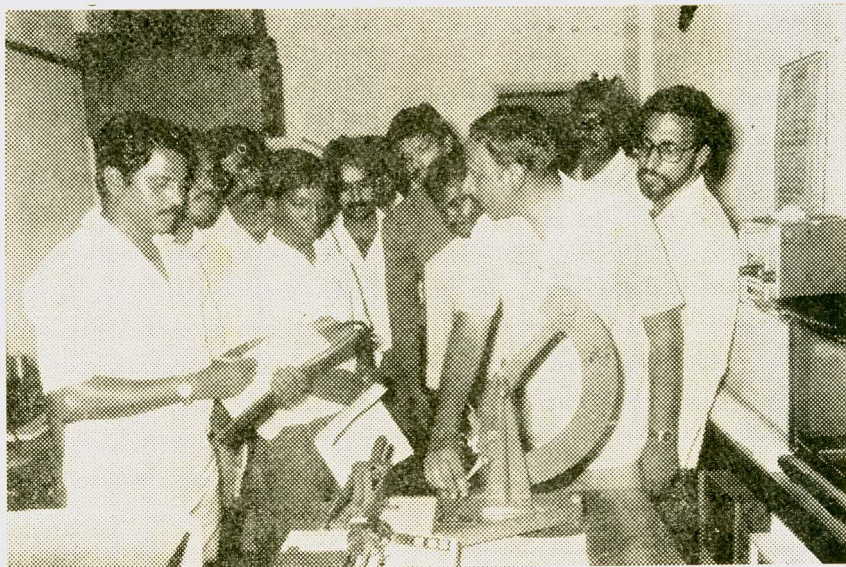
and 19 practical classes, ten lectures and seven practical classes were taken by experts from institutions like Paper Products India Ltd., CLTRI, Optima Packagings Ltd., Travancore Rayons, Super Packaging Industries, Kerala Corrugated Board Manufacturers Associ-

ation, Polymer Science Department of Cochin University etc.

Shri C. V. N. Rao, Scientist in charge of Burla Research Centre of CIFT, welcomed the gathering and Shri K. P. Antony, Scientist of CIFT, proposed a vote of thanks.



A view of the audience



Working of Tearing strength Tester is demonstrated to the participants

# A Refining Process For Commercial Dry Cured Fish\*

Commercially available dry cured fish in the country is generally poor in quality and has very limited shelf life of two to eight weeks only. The major quality defects are:

- 1) high moisture content due to insufficient drying,
- 2) high admixture with sand and debris due to drying in the open beach,
- 3) infestation with red halophiles and fungi from the salt and surroundings,
- 4) yellowing due to oxidation of the fat,
- 5) infestation with insects, and
- 6) presence of bacteria of public health significance due to unhygienic handling.

Curing is resorted to as the last alternative among the preservation methods. Further, in many areas it is done on a cottage / small scale basis. Any improvement in the processing suggested by Research and Development organisations is seldom practised by the curers as their scale of operation is limited, and those involved are least amenable to change. The whole sale dealers are not interested in adopting innovations as they get their profit even without making any change. Any loss in material due to poor quality is compensated by reduced prices paid to the curers. Loss of material due to poor quality at the retail outlets is estimated to be 10%, and as it is utilised as manure the econo-

mic loss is insignificant for the retailers. However, a lot of good quality protein is lost right from curing till it reaches the consumer. Retail marketing of cured fish has not improved to any significant level in the past quarter century except for the occasional replacement of the mostly used traditional packaging material, large leaf, by waste paper or in rare cases by polythene bags. The poor appearance and unpleasant odour of the cured fish together with lack of proper packaging make it difficult to sell this item along with other food products. The buyer also has difficulty due to the above limitations. Hence it was thought that imparting better appearance and use of better packaging materials may

\* Cyriac Mathen, T. S. Unnikrishnan Nair, K. George Joseph and P. Ravindranathan Nair, Calicut Research Centre of CIFT, Calicut-5.

(Contd. from page 1)

of this microorganism has been considered as an indicator of potential spoilage and their number as an index to the degree of spoilage. *A. putrefaciens* may constitute at least one-third of the total bacterial flora of foods such as fish, poultry and possibly meat when spoilage occurs.

Usually, no enrichment or selective agar is required to grow this microorganism and it grows readily in the commonly used bacteriological media.

Eventhough they out-number other types of bacteria in advanced stages of spoilage of

fish, their number in the fresh state is very low. Studies conducted in CIFT have shown that in the freshly landed fish, *A. putrefaciens* may constitute 0.11 to 0.38% of the total microbial population. In colony characteristics, it resembles the resident flora of fish. Hence, there is a chance of this organism being undetected in the usual plating procedures.

The typical colonies of this bacterium in the new medium will be pink to red, 1-3mm diameter, smooth and glistening with a black centre owing to production of hydrogen sulphide. Other types of bacteria which

produce hydrogen sulphide will also form black colonies on this medium. A count of such hydrogen sulphide producers has been considered as a useful index to follow spoilage changes.

Tryptone soytone agar has been found to be useful for enumerating *A. putrefaciens* as well as total hydrogen sulphide producers in the sample, in the same medium. The efficiency of this medium was compared with other reported media. On the basis of the findings, the medium could be recommended as very useful for enumerating *A. putrefaciens* and hydrogen sulphide producers of fishery origin.

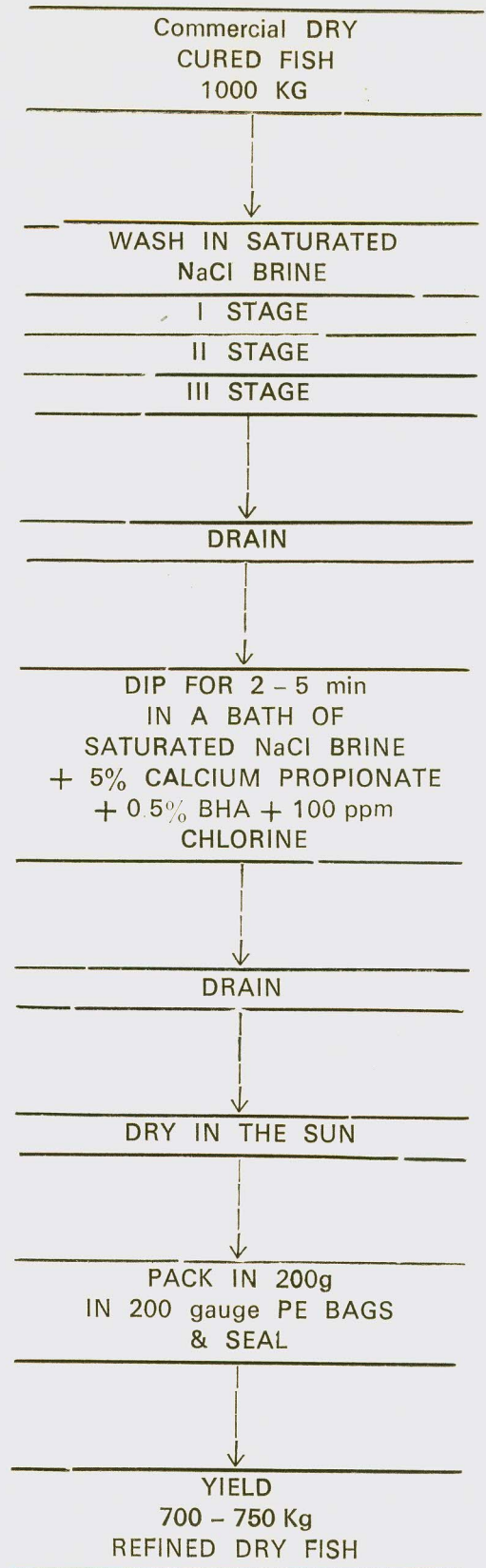
promote sales and consumption of cured fish.

The Calicut Research Centre of Central Institute of Fisheries Technology has been working on quality improvement of cured fish. One approach to the problem was by refining preservative treatment and retail packaging of commercial dry cured fish. These studies have resulted in evolving a viable process for refining commercial dry cured fish, thereby improving its quality and shelf life.

#### Description of the refining process

As most of the quality defects are due to external contamination washing was considered the best procedure to remove them. Washing in water reduced salt content and such products developed fungal infestation in the early stages of storage. Washing in saturated sodium chloride was found advantageous as it did not alter the salt level and imparted a better appearance to the fish. Washing in three changes of brine was found to be the optimum for cleaning the commercial dry cured fish. Dipping the cleaned fish in a bath of saturated sodium chloride brine containing saturated calcium propionate (nearly 5%) and available chlorine (100 ppm) for 2 to 5 minutes followed by draining, drying and packing in 200 gauge polythene bags was found to keep the fish free of 'red' fungi and bacteria of public health significance upto six months. Addition of an antioxidant, Butylated Hydroxy Anisole (BHA), prevented rancidity in fatty fish. The optimum level was found to be 0.5% by weight of the fish, dissolved in minimum quantity of rectified spirit and mixed in the bath. The brine used for

FIG. FLOW CHART OF TREATMENT PROCEDURE.



washing and dipping needs replenishment when it becomes dirty and very turbid. Ten to twenty dips can be made from the same bath with replenishment of calcium propionate and BHA by adding one tenth of the quantity initially used in the preparation of the bath. Chlorine is to be added at 100 ppm level before every dip. The solution shall be changed when it becomes very turbid and dirty. The same treatment is effective for freshly cured fish with only one washing in saturated sodium chloride brine.

#### Advantages of the process

- 1) The appearance is very much improved
- 2) Sand content of the product is reduced to very low levels
- 3) Dirt and debris are washed off
- 4) Protects the fish from 'red' fungi and rancidity for at least six months when moisture is 30-35%
- 5) Packing in polythene bags makes handling and retailing possible in stores which sell other food materials
- 6) Consumers can pick up a packet from the store and carry it with other food items
- 7) Product from primary curers

#### Note :

1. Calcium propionate is first made into a paste with minimum quantity of brine. This paste is dissolved in the whole of the brine.
2. Addition of BHA is essential only for fatty fish. BHA is first dissolved in the minimum quantity of ethyl alcohol, which in turn, is added to the bath.
3. Calcium Hypochlorite / Sodium hypochlorite can be used as source of chlorine. The latter is preferred.
4. Draining of the dipped product overnight or more does not affect quality.
5. Polythene bag with printed label looks attractive.

can be brought to a central location for refining.

#### Cost of the process

The cost of refining is mainly the cost of calcium propionate, BHA, polythene bags, sodium chloride, and labour for dipping, drying and packing. Calcium propionate, if purchased from manufacturers direct, may cost only Rs. 42/kg. The treatment cost, including labour and cost of chemicals is roughly Rs. 1,000/- a tonne. A tonne of commercial cured fish yields 700-750kg finished product, and the loss is due to additional drying of the refined product. The cost of polythene bags for packing 750kg in 200g. lots will be nearly Rs. 500/-. The total cost is Rs. 1,500/- per tonne of raw cured fish for refining and retail packaging. Thus, the cost of one tonne finished product will be  $(a \times \frac{100}{70}) + 1,500/-$  where 'a' is the cost of one tonne of commercial cured fish. Selling price can be determined by adding profit, commission etc., to this.

The process has been proved viable on commercial scale trials and demand for such product is good.

## SHRIMP WASHING AND GRADING MACHINE INTRODUCED

A mechanical device – SIFT WASH – for washing and grading of shrimps has been introduced into the market. Manufactured by M/s Raja Engineering Industries, Bombay, it is found to be as efficient as that of imported machines of identical specifications. The manufacturers claim that the machine has the capacity to wash and grade 300 – 350 kg. shrimp per hour.

The machine was demonstrated at the processing hall of CIFT on April 25, 1990 in the presence of several seafood processors, scientists of CIFT, officials of Marine Products Export Development Authority and Export Inspection Agency.

It was observed during the demonstration that the machine was effective in hygienic and filth – free washing and grading of peeled shrimp in the range of 80/120, 120/200, 200/300 and 300/500.

## CIFT SCIENTIST HONoured

Dr (Mrs.) B. Meenakumari, Scientist of CIFT, has been selected for the '5th JEB Prize-1989', instituted by the Journal of Environmental Biology Foundation. The prize, given to a young scientist every year for outstanding research work, carries a Gold Medal, Citation and a Cash Award of Rs. 1000/-

# Cooking Gas from Water Hyacinth

CIFT has successfully developed a technology to produce cooking gas from water hyacinth, locally known as "Kulavazha".

Experiments have proved that the gas can be burnt easily in house hold LPG type gas stove and generates perfect blue flame. It gives brilliant white light when burnt in a petromax mantle type gas lamp.

Unlike LPG this gas does not deposit any soot on the cooking vessel as it contains 75 per cent combustible component (methane) and 25 per cent non-combustible part (carbon dioxide). Theoretically, heating value is comparable to LPG for the gas mixture.

This technology provides a convenient form of energy to the country's fishing villages where the raw material is abundantly available. Moreover, the solid waste after production of

gas can be used as manure for agriculture.

The Institute has set up a working pilot model unit having a mild steel reaction chamber, gas lamp and gas stove.

Studies indicate that 100 kg. raw water hyacinth will produce half a kg of gas which will not only meet the requirements for a day's cooking for a family of five but also keep a lighted petromax burning for a few hours at night.

The cost of the unit including the reaction chamber, gas lamp and gas stove amounts to Rs. 10,000/-

This process of gas generation from the aquatic weed will serve two purposes: its removal from water bodies facilitating fishing and water transport in back waters and rivers, and providing for cooking and lighting at fishermen's homesteads.

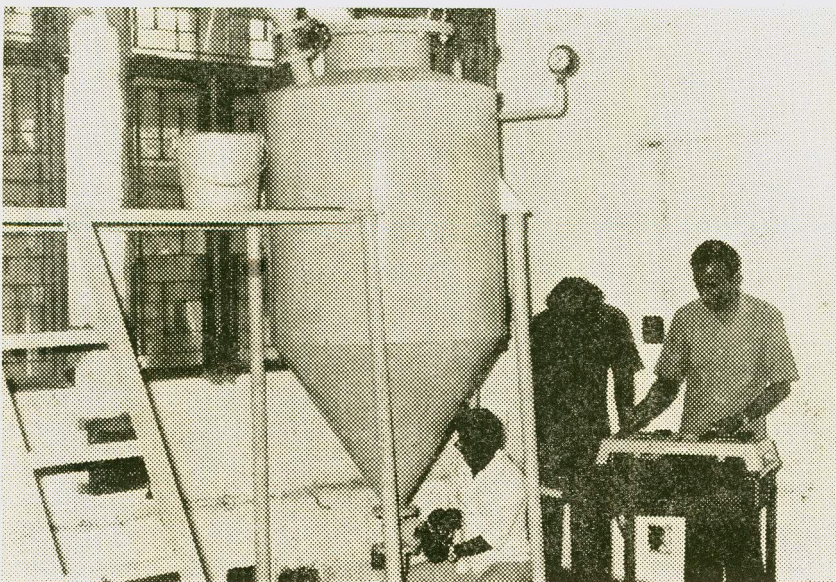
## TRAINING ABROAD

Detection of bacterial pathogens and bacterial toxins in fish and fishery products is one of the major fields of research work in CIFT. Three scientists working in this field – Messers K. George Joseph, S. Sanjeev and Dr (Mrs) Nirmala Thampuran – were deputed to U. K. for a 12 – week course in Basic Food Microbiology. The training course which started at NRI, Chatham Maritime, Kent, from April 2, 1990, was a part of CIFT – NRI collaborative research project.

The course syllabus covered the principles of food microbiology with special emphasis on the role of micro-organisms in quality control, food processing and storage. The trainees were also allowed to do short time project work according to their choice at the end of the course. Accordingly, Dr Nirmala worked on the detection and isolation of *Aeromonas hydrophila* in fish and fishery products, Shri S. Sanjeev the detection of *Staphylococcus enterotoxins* in food and Shri George Joseph mycology of dried fish/food products.

## STUDENT FROM SOMALIA TRAINED

Mr Hussein Ali Hussein, student from Somalia, was trained in fish handling, chilling and freezing of fish and fish products in June, 1990. Apart from training in fishing gear technology, he was acquainted with the methodology for preparation of various processed fish products like fish fillets, minced fish surumi, fish balls, cutlets etc.



Gas Plant with Gas stove in operation

# Training Course on Listeria

A one – week training course on the methods of detection and isolation of *Listeria monocytogenes*, an organism of public health significance in fish and fish products, was held at CIFT from Feb. 26, 1990.

Jointly organised by CIFT and the Natural Resources Institute (NRI) of U. K., the training course was attended by technically qualified personnel from Central Govt. Institutions like Export Inspection Agency, Marine Products Export Development Authority, CIFT and private organisations like East Coast Marine Products (P) Ltd., Visakhapatnam, and Devi Marine Foods Exports Ltd., Madras.

Dr Richard Fuchs of NRI took classes.

Mr M. R. Nair, Director of CIFT, inaugurated the training course on Feb. 26. Dr Richard Fuchs and Dr Peter Wareing spoke. Dr K. Gopakumar, Joint Director of CIFT, welcomed the gathering. Dr M. K. Kandoran, Principal Scientist, proposed a vote of thanks.

Interest in *Listeria monocytogenes* has grown in the last few years following several outbreaks in North America and Europe. However, reports of organisms resembling *Listeria* date back to the last century.

Recently food – borne outbreaks on consumption of tomato, pasturized milk, cheese, shell fish salami etc have been reported.

*L. monocytogenes* is a gram-positive, non – spore forming motile rod. It is supposed to be a tough pathogen as it survives freezing and grows in and around 1°C. It is relatively resistant to common salt and sodium nitrite. Animals and symptomless human carriers will shed the organism for more than 3 years.

*L. monocytogenes* is widely distributed in nature. The organism has been isolated from:

Sewage Leaves, grasses, Soil Cabbage, Lettuce, Mud Tomatoes, fruits, Faecal matter Insects, Fertilizer, Organic leisons, decaying vegetation, Cerebrospinal fluids, Warm-blooded animals, Cold-blooded animals.

Listeriosis causes abortion in pregnant women. The organism also causes meningo encephalitic listeriosis, cutaneous listeriosis, septicemic listeriosis, Oculoglandular listeriosis, pneumonic listeriosis, arthritis, osteomyelitis and endocarditis.

Relatively very little is known on the incidence of *Listeria* in fishery products. A case of listeriosis on consumption of shellfish and fresh fin fish has been documented in New Zealand in 1984. In a recent study (1988), the U.S. Food and Drug Administration has reported isolation of the pathogen from 15 out of 57 seafood samples tested by them. The organism has not, so far, been isolated from seafood in this country.



Dr Richard Fuchs takes classes

# Training Course on Fish Mycology

A five-day training course on dried fish mycology was held at CIFT from Feb. 12, 1990. Mycology is concerned with the study of fungus.

Jointly organised by the Natural Resources Institute (NRI) of U. K. and CIFT, the course was designed to impart training in isolation and identification of fungus in dried fish by different methods, methods of control, and handling and packaging of dried fish.

Representatives from Marine Products Export Development Authority, Export Inspection Agency, Integrated Fisheries Project and CIFT took part in the training.

Inaugurating the training course Mr M. R. Nair, Director of CIFT, observed that a large quantity of dried fish was



Dr Peter Wareing (second from Right) explaining analytical techniques

spoiled owing to poor processing, handling, and storage practices. He pointed out that "Sundrying of fish is the oldest processing method in the country and about 20 per cent of

the total catch is processed into cured fish".

Dr Peter Wareing of NRI also spoke. Dr K. Gopakumar, Joint Director of CIFT, welcomed the gathering. Dr M. K. Kandoran, Principal Scientist, proposed a vote of thanks.

## Training Abroad

As a part of the CIFT - NRI collaborative project Mr A. C. Joseph, Scientist, was deputed for a three-month special training in fish processing and technology with special emphasis on battering and breading at Humberside college of Higher Education, Grinsby, U. K.

During his training which started from Jan. 8, 1990, Mr

Joseph had a good exposure in the subjects like batter systems, crumbe systems, coatings, principles of frying, freezing and packaging of enrobed products. He also studied in detail the technological aspects of development of a variety of value added products such as fish fingers, fish cakes, fish medalions, fish/prawn muggets, breaded prawns, fish sausage,

surimi and surimi based products like Kamaboko, Hampen, and Sattuma Age.

According to Mr Joseph, since the present market trends reflect a rapidly growing demand for ready-to-cook or ready-to-serve convenience products, battered and breaded fish products are ideal to satisfy this demand.

# CIFT Observes Hindi Week and Raj Bhasha Divas

Competitions in essay writing, precis writing, letter writing, noting and drafting, reading, music etc. were conducted in connection with the Hindi week from Sept. 10, 1990. It was followed by the observance of Raj Bhasha Divas on Sept. 14.

Mr P. Sulochanan, Zonal Director, Fishery Survey of India, was the Chief Guest in the public function held in connection with the Raj Bhasha Divas.

Mr M. R. Nair, Director of CIFT, presided over the function. Mr K. K Balachandran, and Mr P. V. Prabhu, Principal Scientists, spoke. Dr K. Gopakumar, Joint Director of CIFT, welcomed the gathering and Mrs. Jessy Joseph, Hindi Officer, proposed a vote of thanks.

The Chief guest distributed prizes and certificates to the winners.



Shri P. Sulochanan inaugurates the Raj Bhasha Divas

## National Science Day

CIFT observed the National Science Day (Feb. 28) with a three day training course on modern microbiology for the post graduate zoology and botony students of leading colleges in Ernakulam.

Apart from Guest lectures of Dr R. S. Fuchs and Dr Wareing of NRI, U. K., CIFT scientists took lecture and practical classes.



College students get training in Microbiology

The following scientists have been appointed Heads of Divisions of CIFT. The period of appointment is for three years from January 1, 1990.

# CIFT Heads of Divisions Changed

|    | <i>Name</i>  | <i>Division</i>                           |
|----|--|---|
| 1. | Shri P. Vasudeva Prabhu,<br>Principal Scientist.     | Fish Processing                           |
| 2. | Shri P. Appukutta Pankickar,<br>Principal Scientist. | Fishing Technology                        |
| 3. | Shri S. Ayyappan Pillai,<br>Principal Scientist      | Engineering & Electronics                 |
| 4. | Shri P.D. Antony,<br>Principal Scientist             | Biochemistry, Nutrition &<br>Microbiology |
| 5. | Shri K. Krishna Rao,<br>Principal Scientist          | Extn., Information & Statistics           |

## STATEMENT RELATING TO OWNERSHIP AND OTHER PARTICULARS ABOUT THE PERIODICAL, FISH TECHNOLOGY NEWSLETTER, AS REQUIRED BY THE REGISTRAR OF NEWSPAPERS OF INDIA

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I, K. C. Purushothaman, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-  
( K. C. PURUSHOTHAMAN )

Date: 15 - 9 - '90

## STAFF NEWS

### Appointment

1. Shri B. Ganesan joined Head Quarters as Animal House Keeper
2. Shri Dhruva Charan Bhoi joined Burla Research Centre as SSG I
3. Smt. T. N. Ambujakshy Amma, joined Head Quarters as Assistant Administrative Officer
4. Shri T. A. Kuttappan joined Head Quarters as SSG - I
5. Miss Tessa Francis joined Head Quarters as SSG - I
6. Shri T. N. Shaji joined Head Quarters as SSG - I
7. Shri P. K. Somasekharan Nair joined Head Quarters as Jr. Clerk
8. Shri P. N. Sukumaran Nair, joined Head Quarters as T. 1 (Field Asst.)
9. Shri T. K. Rajappan, joined Head Quarters as SSG - I
10. Shri R. D. Padnekar joined Goa Research Centre as SSG - III
11. Shri C. N. Raghavan joined Head Quarters as SSG - II
12. Shri B. Sivanandan, joined Kakinada Research Centre as SSG - II
13. Shri K. Vasudevan Nair joined Head Quarters as T-6
14. Shri T. V. Sathyanandan joined Headquarters as Scientist (Agrl. Statistics)
15. Shri R. Anil Kumar joined Headquarters as Supdt.
16. Shri A. K. Venugopal joined Headquarters as Assistant
17. Smt. K. Gracy, joined Headquarters as Senior Clerk

18. Shri B. Hemalatha joined Kakinada Research Centre as Sr. Clerk

19. Dr M. K. Mukundan, Scientist (SG), joined Headquarters from Kerala Agricultural University.

20. Shri O. K. Xavier joined Headquarters as Driver

### Retirement

1. Shri T. A. Francis, SSG - I, Veraval Research Centre

2. Shri P. C. Sukumaran, SSG - III, Head Quarters

3. Shri S. Sadanandan, Asst. Admin. Officer, Headquarters

4. Shri P. P. Poulouse, Driver, Headquarters

5. Shri P. K. Damodaran, T-2 (SLA), Headquarters

6. Smt. Nafeesa Ali, Assistant, Headquarters

7. Shri K. Bhaskaran, Senior Clerk, Headquarters

8. Shri M. J. Sebastian, Assistant, Headquarters

9. Shri T. Neelakantan, T-1-3, (Project Operator), Headquarters

10. Shri T. K. Bava, T - 1 - 3, (Deck Hand), Headquarters

### Resignation

1. Shri Loka Nayak, T - II - 3 (Technical Assistant), Headquarters

2. Shri H. R. Maru, SSG - I, Veraval Research Centre

3. Shri A. Venugopalan Nair, T - II - 3 (Wireless Operator) Headquarters

4. Shri Suresh K. Dhabarde, Junior Clerk, Goa Research Centre

### Transfer

1. Shri Rakesh Kumar, Administrative Officer, Headquarters to CIRG, Makhdoom

2. Shri Mohammed Jaffer, T - 1 - 3 (Engine Driver), Veraval Research Centre to CMFRI

3. Shri T. V. Satyanandan, Scientist (Agrl. Statistics), Headquarters to CMFRI

## INSTITUTE J. C. RECONSTITUTED

The Institute Joint Council of CIFT has been reconstituted with Director of CIFT as chairman.

Members from the Official side are :

Dr K. Gopakumar, Dr M. K. Kandoran, Shri V.C. George (all Principal Scientists, Dr P. K. Surendran (Scientist Selection Grade), Senior Administrative Officer and Asst. Finance & Accounts Officer.

Members from the staff side consist of S/Shri M. K. Kuttikrishnan Nair, T-2, M.K. Sasi-dharan, T-4, V.V. Ramakrishna, T-4, T.M. Ramraj, Senior Clerk, Smt. C. G. Marykutty, Senior Clerk, Shri P.A. Thomas, SSG. III., and Shri Krishna Chandra Mahar, SSG. III.

Dr P. K. Surendran and Shri M.K.Kuttikrishnan Nair will function as Secretary Official and Staff side respectively.