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Fish technology newsletter

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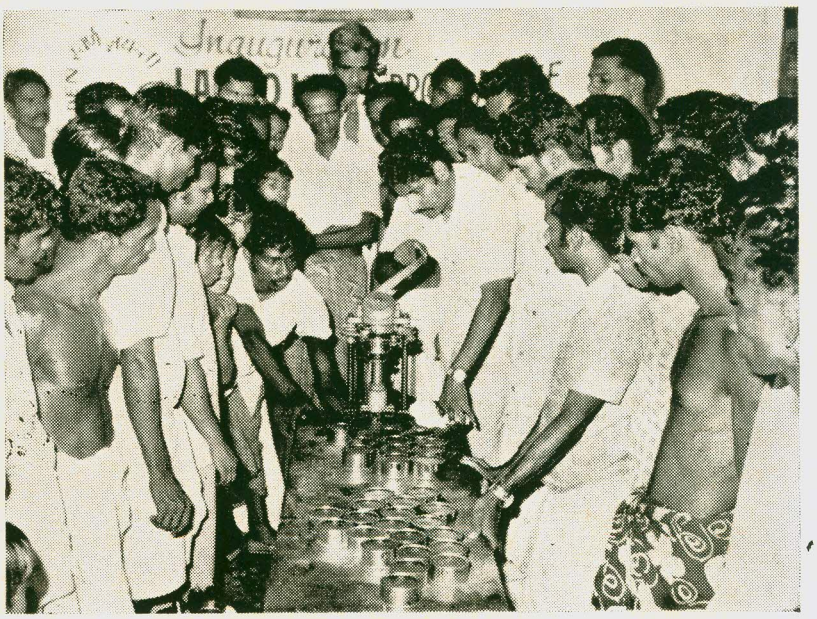

Field Demonstration of Canning Clam meat
By CIFT Scientists at Vaikom

CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY
MATSYAPURI P. O. COCHIN - 682029

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Foreword

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 investingations 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.

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.

Abbreviation : Fishtech News

Editorial Committee.

LAB - TO - LAND

PROGRAMME OF CIFT - 5

(One of the highlights of the Golden Jubilee Celebration of the Indian Council of Agricultural Research being observed this year is a country - wide programme of transfer of technology known as the 'Lab-to-Land' programme to which CIFT is also contributing in a humble way. In the previous issues we had published reports on such programmes held at Mangalore, Bombay, Kumarakam, Calicut and Kumbalam. In this issue we publish a report on a two-day training programme held at Vaikom in Kottayam District)

Clams, called "Kakka" in Malayalam, belong to *Velorita* and *Meretix Spp.* They are available from the brackish water lakes and estuaries. Marine clams are met with in the sandy beaches, especially in the bar mouth areas.

Though there are no systematic data available on the availability of clams it is understood that Vembanad lake which extends from the south of Cochin Port to the extensive paddy fields of Kuttanad of Kerala is the richest source of clams.

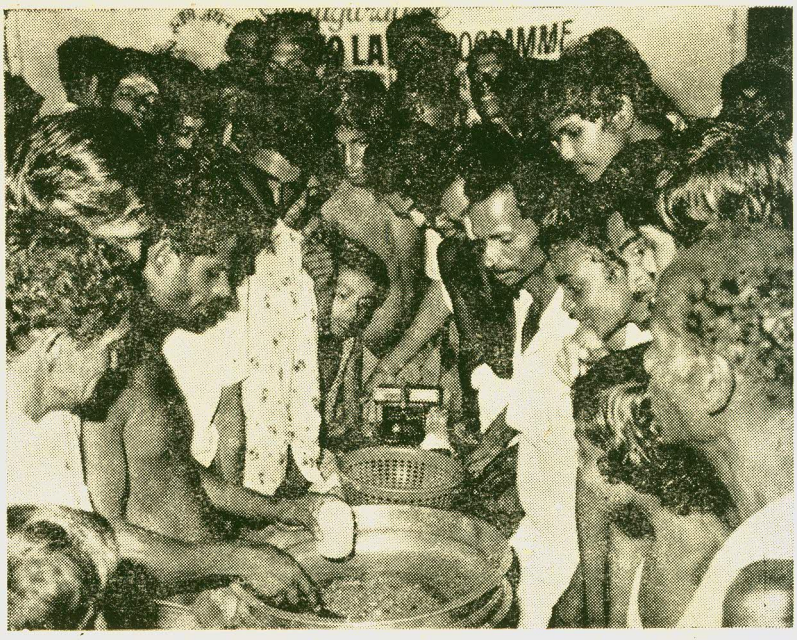
The shell of the clams is he most important source of calcium carbonate made use of in the lime industry in the State. The fossilised deposits of the clam shells collected in the Vembanad lake perhaps over centuries singularly meet the entire requirement of calcium carbonate for the working of a nearby cement factory. In this area alone there are thousands of per sons actively engaged in collection of clam shells. Of these nearly 50 per cent people are engaged in collection of live clams. A negligible portion, however, is boiled to recover the meat which is used for home consumption and sold in local markets.

Collection of clams

But as a protein-rich food item its potentiality has not yet been exploited fully in the country. The Central Institute of Fisheries Technology (CIFT), Cochin have worked out a detailed methodology to process and preserve the clam meat. This will help to create employment potential for the rural population and improve their economic condition.

Canning and pickle making are the two important methods worked out by CIFT. These methods were demonstrated to the people of Palliprathussery (Vaikom) in Kottayam District in a two - day Lab - to - Land programme in August, 1979.

The programme was organised by CIFT in cooperation with the Vaikom Lime Shell Co-op. Society Ltd. About one hundred persons participated in the training.



Making of clam meat pickle

Participants with Scientists

While inaugurating the programme in a function held at Palliprathussery S. N. D. P. Hall on August 21, T. V. Puram Panchayat President Shri M. Vasudevan emphasised the need of transferring such technology in other parts of the District. He pointed out that there were about 500 families in Vaikom Taluk alone who eke out their living on collection of clams and selling of clam meat in local markets.

Shri T. G. Sudhakaran Vaidyar Presided over the function.

PRODUCTION OF FROZEN FISH FILLETS

The fish freezing industry in India is mainly export oriented and depending mainly on prawn freezing. It is reported that a considerable part of the freezer capacity remains idle because of the non-availabilty of prawns. Very often this situation leads to a heavy loss to the processing industry. A partial solution to this problem is to adopt freezing of fish in the from of fillets. Fillets are the strips of flesh cut parallel to the backbone of the fish. Seer, tuna, mackerel, Chanos chanos, cat fish perches, mullets, threadfin bream carps, dara, shark, eel, Indian halibut etc. are landed in large quantitites in India.

Filleting :

Filleting can be done by hand or by using a filleting machine. None of the machines available at present is capable of filleting all varieties and sizes of fish. Although filleting machine is preferable for use in a factory, filleting by hand is also economic and can be followed by the industry.

Fillets may be with or without skin. The belly flaps are usually separated from the fillets as the belly flap tissue may discolor during frozen storage. In many developing countries the head and belly flaps will find a ready sale on the subsistance market and the fillet will fetch a much higher price in the luxury market.

Preparation of fillets

1. Select fresh fish for filleting.
2. Grade the fish according to size.
3. Remove viscera and wash thoroughly with potable water.
4. Place the fish (on side) on the work table. Cut (with a sharp knife) from just behind the base of the pectoral fin round to back of the head. Cut towards tail along the line of the dorsal fin. Cut forward to clear the fillet from the ribs and cut over to the edge of the ribs towards the tail and remove the fillet.
5. Turn the fish over and separate the fillet from the other side of the fish
6. Trim the fillets to remove the belly flaps, fins etc.
7. To remove the skin, cut nick in tail of the fillet using a thin bladed knife longer than the width of the fillet. Angle the knife slightly downwards, and pull skins across the knife while at the same time making slight saw cutting movements with the knife.
8. Wash the fillets thoroughly in potable water.
9. The fillets may be dipped in dilute brine for slight salting. Usually a dip in 15% brine (sodium chloride) for 15 to 30 second is practised.

Filleting by hand is quite easy and economical and a skilled worker can fillet and skin 10–12 kg of fish like cat fish, perch or milk fish per hour. The yields of skinless fillets obtained from many species of fishes are also good.

Name of fish	*% yield of skinless fillets*
Cat fish	25 - 28
Indian halibut	37 - 40
Perch	30 - 32
Milk fish	39 - 41
Ribbon fish	29 - 30
Seer fish	45 - 47
Jew fish	34 - 35

LET'S TALK IT OVER

Asst. Director of Fisheries, Govt. of Gujarat :

It is learnt that your Institute has conducted experiments with various gear materials and has come to the conclusion that H. D. P. E. tape twine is more efficient than other gear materials for trawl nets fabrications.

CIFT:

Comparative fishing trials were conducted with bulged belly type trawls made out of Nylon, Polyethylene monofilament and HDPE tape twisted twines. Results indicate that the trawls fabricated out of HDPE tape twisted twines are 2.0 and 1.4 times more efficient than the nylon and polyethylene monofilament trawls respectively.

Shri S. V. B. Satyanarayana Murthy, Hyderabad :

I propose to start a small scale unit for the manufacture of monofilament twines. I came to know that the monofilament twines that are needed for fishing nets have to meet the specifications set by your Institute. Please let me know the specifications.

CIFT :

This Institute has

Freezing of fillets

a) Individual quick freezing

i) After brining allow the fillet- to drain, wrap them individually in polythene sheet (150 gauge) and freeze in a contact plate freezer or tunnel freezer at -35 to -40°C.

ii) Pack the frozen fillets in cartons and store at -23°C

b) *Block freezing*

i) Weigh the drained fillets into required lots (500 gm, 1kg or 2kg) and pack in polythene lined waxed cartons

ii) Pour sufficient quantity of glaze water (temp: 1 to 3°C to cover the fillets

iii) Freeze the fillets (in carton) in a freezer at -35° to -40°C, remove from the freezer, pack in master cartons and store at -23°C.

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HULL PRESERVATION PRACTICES

During July 1979, the Marine Engineering Division of the Institution of Engineers (India) West Bengal State Centre at Calcutta organised an All India Seminar on 'Hull preservation Practices". A large number of engineers and Scientists participated in the Seminar and a good number of technical papers were presented and discussed.

CIFT through its Scientists of the Craft Division, M/s K. Ravindran and R. Balasubramanyan, presented a paper entitled "Protection against Marine Corrosion and fouling of steel fishing trawlers". Dr Ravindran attended the Seminar. The hull maintenance practice adopted by the Indian fishing fleet which operates a large number of imported and indigenously built steel trawlers were discussed.

GLEANINGS FROM OTHER JOURNALS

KERALA ACCOUNTS FOR MAXIMUM FISH CATCH

Total marine fish catch in the country in 1978 was estimated at 14 - lakh tonnes against 12.6 lakh tonnes in the previous year.

The catch in the mechanised sector rose from 6.25 lakh tonnes to 7.19 lakh tonnes mainly due to the introduction of Purse-seine gear. Purse-seine catches in Karnataka rose sharply from 25,000 tonnes to 75,000 tonnes which was about half the total catch in that state.

The maximum production was in Kerala with 3.73 lakh tonnes followed by Maharashtra (2.84-lakh tonnes) and Karnataka (1.53 lakh tonnes), in Andhra Pradesh alone there was a fall in the catch.

- HINDU

'INTER FISHING 80'

'Inter Fishing 80' is scheduled for 4th to 8th March, 1980 at Bordenre, France. This fourth International exhibition on maritime activities, fishing, ship building, ports, off shore technology, pollution prevention etc is being organised by Technoexpo S.A/ Interfishing i) rue la Michodierel 75002, Paris, France.

- Sea Food Export Journal

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worked out specifications for high density polyethylene for fishing purposes which have been brought out by the Indian Standards Institute as a national standard (IS 6347 - 1971 - Polyethylene monofilament twines for fishing). You may please contact the above institution.

Development Officer,
The State Industrial and Investment Corporation Bombay :

Kindly enlighten us on the following points:

a) Various sizes of ropes and nets normally used in fishing industry.

b) Size-wise break-up of requirement of these ropes and nets.

CIFT :

The sizes of ropes normally used in fishing industry includes 3 mm, 4 mm, 6 mm, 10 mm, 12 mm, 14 mm, 16 mm and 18 mm. Material used for fabrication of ropes is mostly polyetheylene. Polypropylene and nylon ropes are not produced indigenously on a commercial scale for fishing nets.

Ready made nets are generally not manufactured by any firm. Webbings of different mesh size and twine size are made by the different net making plants which is tailored to different designs. Polypropylene webbings are not made in India. Nylon is mainly used for purse seine webbnigs. The body of the webbing will usually be of knotless webbing with nylones 210 denier yarns and 210 denier / $\frac{1}{2}$ twines ($\frac{1}{2}$ code) while the bunt, selvedge etc will be knotted webbing of 210/2/3 to 210/6/3.

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COMPUTER THAT CATCHES FISH

The computer will be "one of the boys" on trawling trips in the future. Quicker than the human eye can resolve the fish echoes on the horizontal sounder screen it identifies the shoal of fish detected and latches on to them electronically. By dint of the best possible navigational aids it pilots the fish almost automatically into the trawl. The consequence is that the crew can concentrate more on the target, so that trips are shorter and more profitable.

The best course is determined by an intelligent combination of computer and the most up-to-date locating devices; this was tried out for the first time recently in a Hamburg stern trawler in the Atlantic off southern Ireland. The heart of this "Integrated fishing system", is the horizontal sounder screene coupled with a computer. It informs the captain continuously of the actual situation in respect of a catch.

Following the analysis of the fish echoes, which have been converted to computer data, a floating arrow on the screen indicates the position of the shoal continuously, at its precise angle to the trawler. The computer also prints out the "depth" of the shoal, so that the captain is aware of its shape and extent.

In order to be able to follow the movements of the trawl as well, the computer analyses the echo soundings and reception signals of the trawl probe, which is attached to the trawl two rope and has its bearings taken by two transmitters. From these data it computes the exact position of the net, towed somewhere behind the ship, plotting it into the overall picture with a line of dashes; the precise depth of the net appears in the form of a thick line.

By continuously following the precise positions of the shoal and the trawl the computer, which also processes vertical sounding data, can work out the best heading for the ship, having already determined the course being taken by the trawl in relation to the shoal of fish, an angle which is also plotted into the picture as the "catch target/net indicator". All the captain has to do is to stand on the bridge and manipulate his helm until the trawl heading is at zero angle to the shoal heading.

- HINDU

FREE MEDICAL CHECK UP FOR CHILDREN

Seventy children aged 12 and below of the staff of Central Institute of Fisheries Technology (CIFT), Cochin have been given free medical check-up including dental examination. This programme was arranged by the CIFT as part of observance of the International Year of the Child and Golden Jubilee Year of the ICAR. Last month the staff of the CIFT donated school uniforms and note books to 43 needy children.

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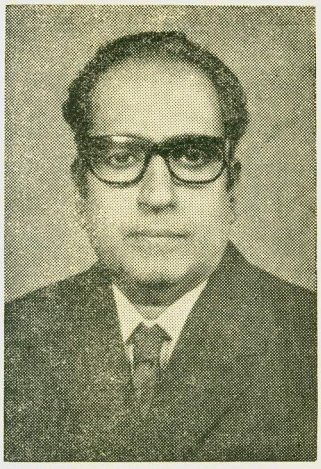
APPOINTMENTS

S/Shri N. Padmanabha Pillai, Shaju A. Averah and Gopal Rao Desai joined the CIFT Headquarters as S. S. Grade I, Technician -2 (Draughtsman) and Scientist S-2 respectively.

Meet Our Scientists—8

T. K. GOVINDAN



Shri Therampurath Krishna Panickar Govindan (born 20th July, 1928 at Kumbalam, Ernakulam District, Kerala) is Scientist S-2 heading the packaging Division of the Central Institute of Fisheries Technology, Cochin, since April, 1979. Earlier to this, he worked in the All India Co-ordinated Research Project on Transportation of Fresh Fish from January, 1972 and held charge of the Research Centre of the Institute at Kakinada for over 3 years. In this capacity, he organised a well equipped laboratory for tackling research problems on fish processing technology at that Centre and initiated the work. He designed and fabricated one dismantlable insulated galvanised iron container for iced and frozen fish transportation and successfully tested it in the field for transporting fish from Kakinada to Delhi and Calcutta by rail side by side with other conventional containers.

Having had his earlier education at Ernakulam (B. Sc and a Post-graduate Diploma in Applied Chemistry of Oils, Soaps. & Aromatics) Shri Govindan did his M. Sc in Organic Chemistry by research at the Madras University under the guidance of the late a renowned organic chemist of his time, Dr K. N. Menon, before joining the Central Marine Fisheries Research Institute, Mandapam as Research Assistant in January, 1957. Transferred in the same capacity to the present Institute in December, 1958 at its very inception, he was promoted as Assistant Research Officer (Quality Control) in November, 1960 and as Research Officer (Jr. Fishery Scientist under ICAR) (Processing) in January 1964 and headed the Calicut Research Centre of the Institute for over 2 years in 1963-65. Transferred back to the headquarters as Head of the Processing Division in September, 1965, he held that assignment until promoted and transferred to Kakinada as Scientist S-2 early in 1972.

Shri Govindan has several *firsts* to his credit. He was the first to establish a general biochemical differentiation in the muscle compositions of tcrustaceans and molluses on the one side and other varieties like taleosts, elasmobranchs etc on the other in so far as the former contained 8 to 10 the amount of free alpha amino acids and about twice the amount of non-protein nitrogen compared to the latter- He was the first to report a parallel increase in the trimethylamineoxide content of prawn muscle along with increase in salinity of the medium in which they thrive, thus establishing a definite physiological role for the compound in prawns. Heavy losses in protein and non-protein material from prawn muscle occurring due to leaching during storage in ice were reported and their utility in assessing the eating quality of the ice - stored material indicated.

Shri Govindan was actively associated with the work of laying down quality standards for frozen, canned and dried

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prawns, besides studying the detailed mechanism of spoilage of prawns when held over with and without contact with ice. Losses in nitrogenous constituents of fish muscle during salt-curing and a method for satisfactory removal of urea from elasmobranch fish muscle were worked out while at the Calicut Research Centre. He worked as counter-part to Shri C. G. Tucker, FAO Expert on Accelerated Freeze Drying in 1966 and studied the freeze drying characteristics of the common food fishes of Kerala coast as well as several ready to-eat high calorie food preparations based on fish. Also studied the keeping quality of several fishes and shell fishes in refrigerated sea water.

Shri Govindan is a Founder Member of the Society of Fisheries Technologists(India) and edited its official organ, FISHERY TECHNOLOGY, from 1969 to 72. He has got more than 130 scientific/technical/popular publications to his credit covering almost all aspects of fish processing technology. His absorbing hobby is science-writing.

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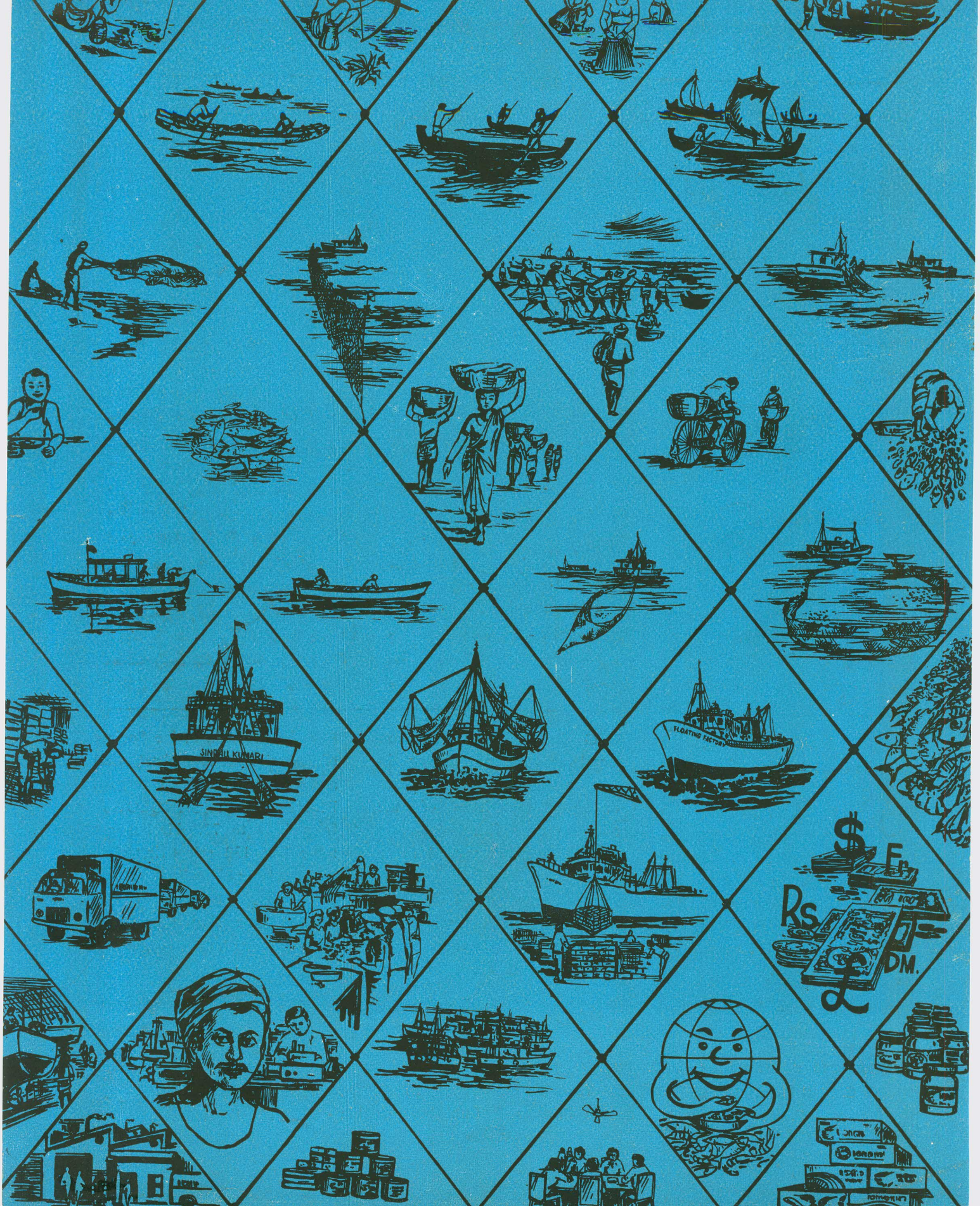
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