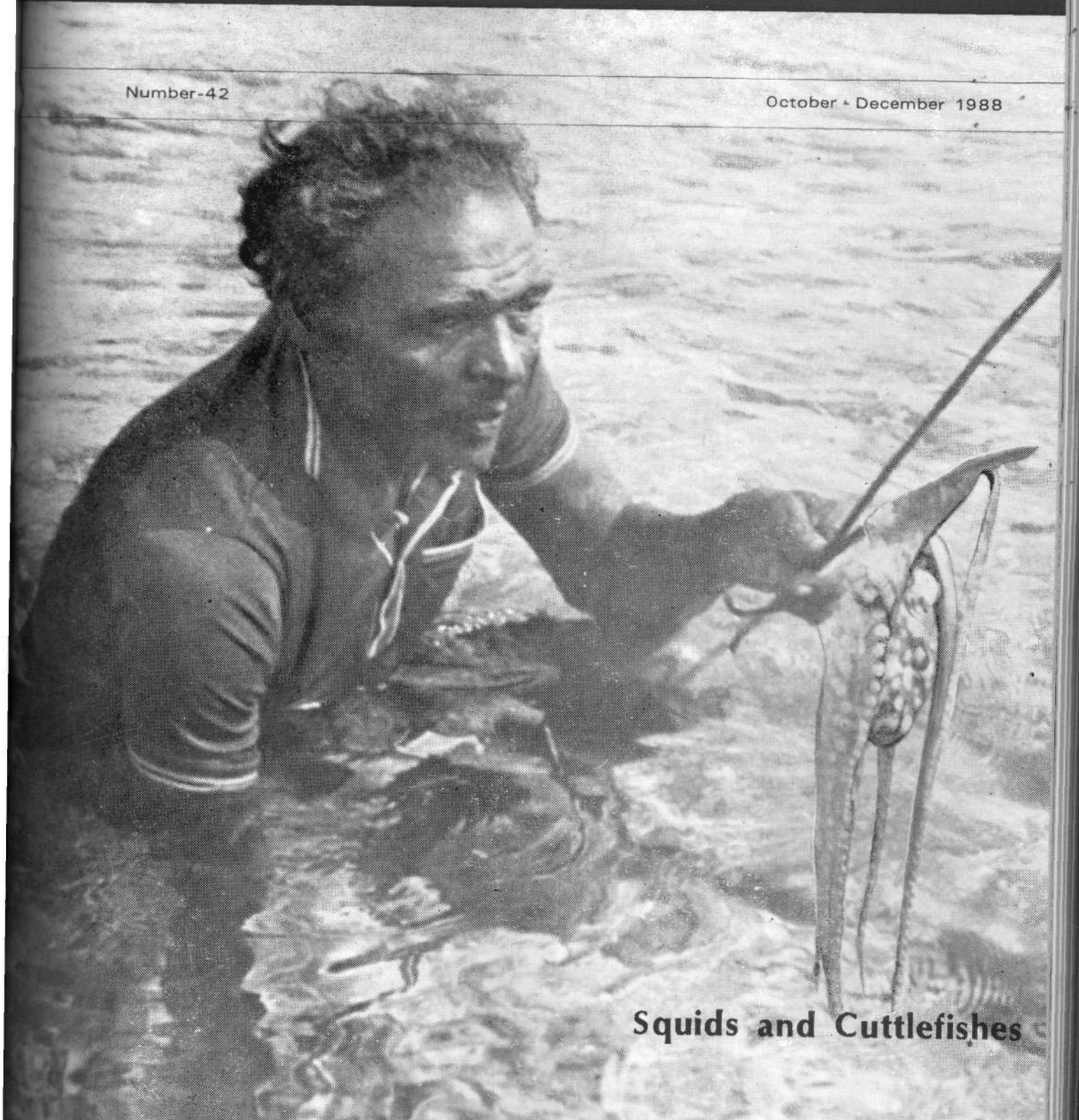
सीएमएफआरआइ न्यूज़लेटर

CMFRI newsletter

Number-42

October - December 1988



Squids and Cuttlefishes

Squids and Cuttlefishes - A Promising Resource from the Seas Around India

Sqiuds, cuttlefishes and octopuses are collectively known as Cephalopods, a group of invertebrates under phylum Mollusca. Realising the food value of sqiuds and cuttlefishes there has been some kind of sustenance fishery for this group since early times in our country. When the trawling for shrimps got its momentum since the early sixties, squids and cuttlefishes used to occur as by-catches in considerable quantities. But these were used to be discarded into the sea as they had no commercial importance then. However, in recent years a good export market has come into being for this group and hence increasing quantities of squids and cuttlefishes are now landed from the trawl catches. Still there is no organised or directed fishery for this group.

The average production of squids and cuttlefishes at present is estimated around 40,000 tonnes contributing to about 2% of the all India marine fish production. Seventyfive - 90% of the catch comes from the west coast as trawl fishing is heavily concentrated in the region. The rest of the catch is landed at centres along the east coast.

The average annual production 1985-87 in the different maritime States of India is given in the following Table :

State	Average annual catch (t)	% in all India cephalopod catch
Gujarat	6,056	16.7
Maharashtra	12,360	34.1
Karnataka	1,710	4.7
Goa	734	2.0
Kerala	10,287	28.3
Tamilnadu	4,281	11.8
Pondicherry	51	0.1
Andhra Pradesh	682	1.9
Orissa	108	0.3
West Bengal	14	—
Lakshadweep	10	—

In recent years, CMFRI has strengthened its research investigations on cephalopod resources and observations are made from the research centres of this Institute at Veraval, Bombay, Mangalore, Cochin, Mandapam, Madras and Visakhapatnam. Besides studying the catch, effort and species composition, stock assessment of this group is also being made for the inshore and off shore regions. The dominant species composition at different centres is given below :

Species	Centres
SQUIDS	
Loligo duvauceli	all centres
Loligo uyii	Madras
Doryteuthis singhalensis	Vizhinjam and Cochin
Doryteuthis sibogae	Vizhinjam and Madras
Sepioteuthis lessoniana	Mandapam
CUTTLEFISHES	
Sepia pharaonis	all centres
Sepia aculeata	all centres
Sepia elliptica	Cochin and Veraval
Sepia brevimana	Madras
Sepia prashadi	Madras
Sepiella inermis	all centres
OCTOPUSES	
Octopus vulgaris, *Octopus cyaneus*, *Octopus membranaceus*	Lakshadweep

The data on catch per unit effort observed over a period of years indicated that CPUE was of higher magnitude in the observation centres like Bombay, Veraval, Sakthikulangara, Madras and Visakhapatnam. These are thus the leading centres for cephalopod production in the country.

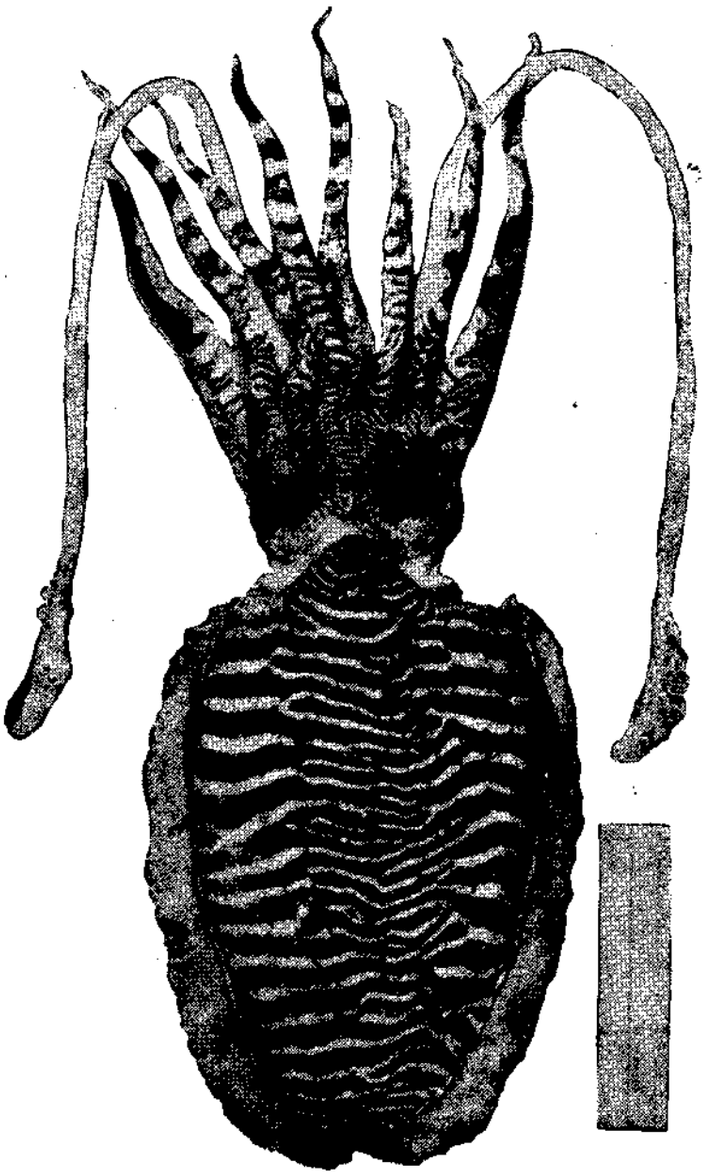
Export of cephalopods :

The range of cephalopod products exported include frozen cuttlefish, frozen cuttlefish fillets, frozen squids, dried squids & cuttlefishes, and cuttlebones. The cuttlebone was the first item to be exported from 1966 onwards and others followed from 1973. An average quantity of 9,500 tonnes of cephalopod products valued at Rs 198 million was exported from India during 1985-87.

Potential resources of squids and cuttlefishes :

In view of the importance of economy of the fisheries sector. the cephalopod resuorces in the exploratory surveys have been undertaken by different government agencies to locate potential grounds for the group.

The erstwhile Pelagic Fishery Project in its survey beyond the traditional fishing grounds has indicated good concentrations of squids and cuttlefishes off the south west coast and in the Gulf Mannar. The exploratory surveys by the vessels of Fishery Survey of India off the Kerala coast and Wadge Bank have indicated good cephalopod catch rates. Survey by *M. T. Muraena* has also given similar indications for the north west coast. The foreign vessels operating under charter in Indian EEZ had a catch rate of 106 kg/hr in the depth range of 60-80 m. Trawl surveys by ***FORV Sagar Sampada*** have indicated good concentrations of cuttlefishes and squids along the west coast in the 50-200 m depth zone.

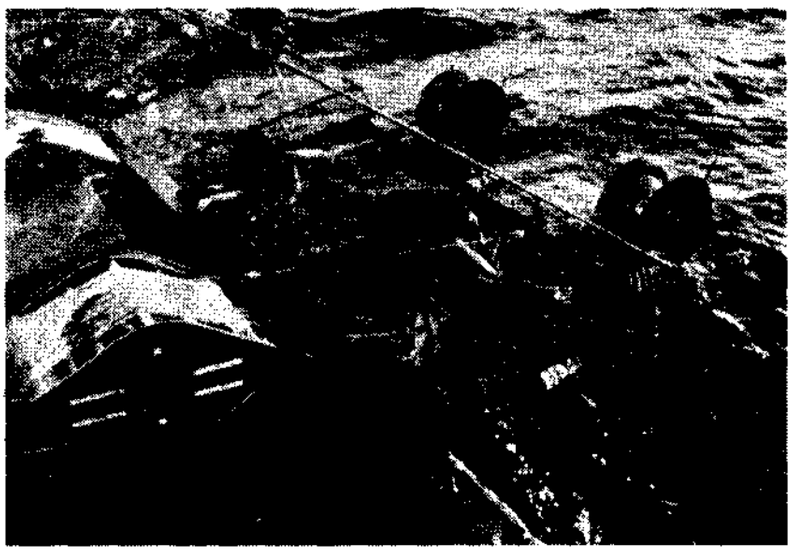


Sepia pharaonis, a commercially important cuttlefish

During the surveys by *R. V. Varuna* in the Arabian Sea, *R.V. Shoyo Maru* in the north Arabian Sea and ***F O R V Sagar Sampada*** off north west coast and north east coasts, the high potential for the exploitation of oceanic squids was recognized.

The cephalopod potential for the Indian EEZ is estimated at 180,000 tonnes. The estimates for Eastern Arabian Sea are 50,000 and Bay of Bengal are — 100,000 tonnes and 100,000 — 150,000 tonnes respectively. A harvest potential of 50,000 tonnes from the neretic sector and at 25,000 — 50,000 tonnes

Oceanic squid
Symplectoteuthis oualaniensis

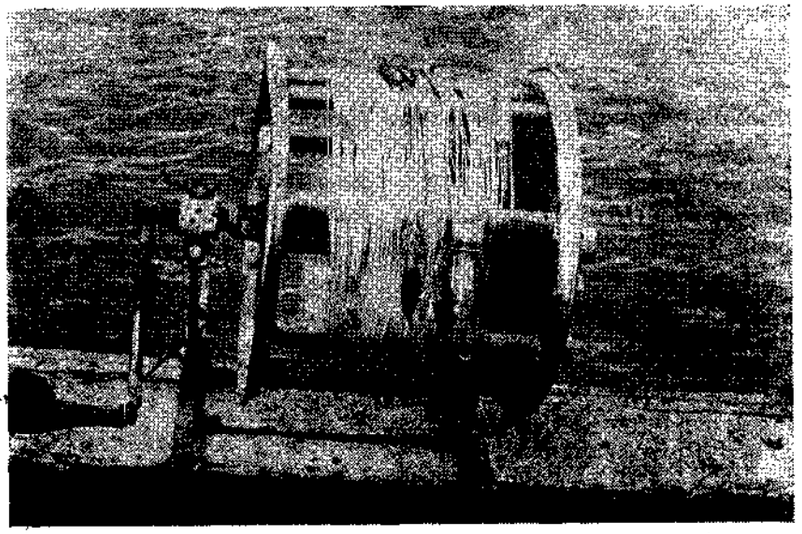


Automatic Squid jigging machine in operation

from oceanic sector are also estimated.

The need for aimed fishery for cephalopods :

Though the cephalopod production in the country has increased since 1973, much greater harvest could be made through aimed fishery for squids and cuttlefishes. There is considerable gap between the potential estimates and actual production. Experimental fishing with high opening bottom trawls have indicated that this gear could be successfully employed for increasing cephalopod production. Squid jigging and fishing with stick-held dip nets are two highly successful methods employed in Japan. Experimental fishing with these gears was first attempted by Marine Products Export Development Authority in 1985 which showed that these methods were technically feasible.



Hand Squid jigging unit

Recently a squid jigging programme aiming at training Indian personnel in the operation of the gear and testing the technical feasibility has been undertaken with a Japanese consultant under the auspices of Central Institute of Fisheries, Nautical & Engineering Training and Fishery Survey of India with the scientific involvement of CMFRI. Two vessels, *M. V. Matsya sugandhi* of FSI and *MFV Bluefin* of CIFNET rigged for automatic jigging are operating along south west coast. Encouraging results have been obtained off Quilon and off Vizhinjam coasts. This programme is expected to provide information on the commercial viability of this modern method in our waters.

Squid jigging involves simple gear and operation techniques with moderate capital investment. Two thirds of Japan's production is contributed by this gear. Squid jigging is a fishing method developed basically taking into consideration the behaviour of squids in response to certain physical factors like light etc. Squids are fast growing which naturally makes them voracious in their feeding habits. They prey upon anything coming in their way, be it crustaceans, finfishes or their own kind. They congregate in schools and are generally found in the deep scattering layers which are rich in forage organisms. They are attracted by artificial lights. All these behavioural aspects have been fruitfully utilised in catching them with jigs.

Technique of squid jigging

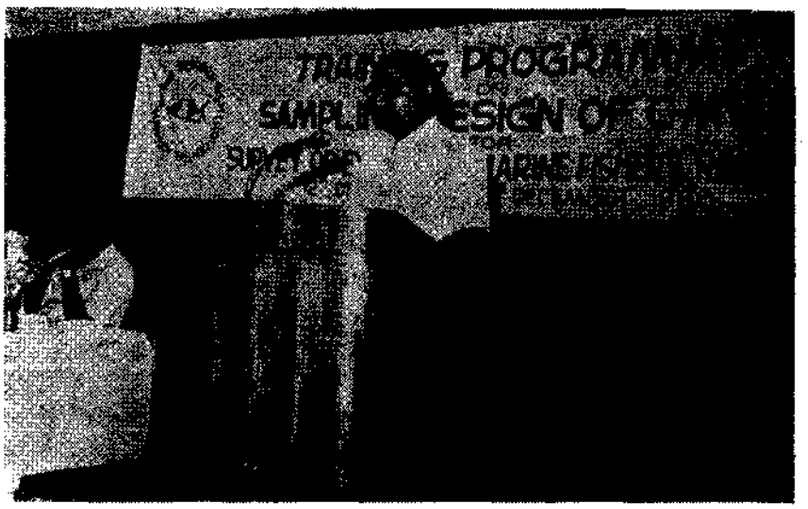
Squid jigging is either done with manually operated hand line units or with automatic mechanised units. But in either case, the principle involved is the same. A jig is nothing but an artificial bait. It has spindle shaped body made of coloured hard or soft synthetic material with two sets of sharply pointed hooks arranged in crown like clusters. Jigs are attached to monofilament lines at one metre interval. The line is wound round on to a drum which is cylindrical in hand line units or elliptical in mechanised units. The line is released into the water through out board rollers. A sinker is attached to the line. The automatic unit has two such drums and the line is released automatically to required depths and on reaching the set depth it is hauled back. The operation is repeated automatically. The jigs and the units are designed in such a way that the hooked squids drop on board automatically when hauled up.

Incandescent or halogen lamps of 1 to 4 KW power are used for attracting squids. It has been observed in Japanese waters that the squids concentrate in the boundary between light and shade. Stability of the craft increases the operational efficiency and for this purpose special type of anchors known as parachute anchors are used.

Training programme on sampling techniques for assessment of exploited marine fishery resources

A ten days programme on Sampling Techniques for assessment of exploited marine fishery resources was organised by CMFRI at Cochin from 12-22 December, for the benefit of fishery officials of maritime states. The course was attended by 8 officers deputed from the Fisheries Departments of Gujarat, Maharashtra, Tamil Nadu, Andhra Pradesh and Kerala.

The participants were introduced to the latest methodologies in sampling, collection of data on effort and estimation of marine fish production. Extensive practical training in both laboratory and field was part of the training programme.



Dr P. S. B. R. James, Director, C M F R I delivering the presidential address at the valedictory meeting. Seated is Dr Sathiarajan, Director, IFP.

FISHERIES EXTENSION SEMINAR

As a part of the research project 'Organising Outreach Programmes in Fishing Villages' the Fishery Economics & Extension Division of Institute organised an Extension Seminar at Chavakkad, a fishing village of Trichur district on 18 November. The seminar was co-sponsored by Indian Overseas Bank, Chavakkad.

The objective of this project led by Smt. Krishna Srinath, Scientist, was to create awareness among fishermen about the development opportunities available to them. The programme was organised based on the present status of development awareness of fishermen.

The Seminar was inaugurated by Shri Beeru Sahib, Municipal Chairman, Chavakkad. Dr A.V.S. Murthy, Scientist, CMFRI presided over the function. The Chairman in his inaugural address mentioned about the changing scenario in marine fisheries and appealed to the artisanal fishermen for greater participation in programmes organised by research and development agencies. He further stressed the need for working together with scientists and developmental agencies to improve the rural economy and increase their contribution to marine fish production. Shri K. Moidu, Member, Chavakkad Block Development Council and Member, State Fisheries Development Board in his felicitation admired the role of research and developmental agencies in the country's continuous fishery modernisation programme, and pointed out the inadequacy of repair and maintenance facilities for OBM and IBM units in the small scale fisheries sector.

The technical session was chaired by Dr K.C. George, Scientist, CMFRI. Scientists of CMFRI, KVK and representatives of Central Institute of Fisheries Technology, Kerala State Fisheries Department, Kerala Fisheries Development Co-operative (Matsyafed), Kerala Fishermen Welfare Fund Board, Rural Development Block, United India Insurance Company and the Indian Overseas Bank, the lead Bank of the area served as resource persons for the seminar. About 100 fishermen and 50 students from Fisheries Technical School, Chavakkad, participated in the Seminar and the discussions.

About 7500 spat of clam *Paphia malabarica* have settled down in the Shellfish Hatchery at Tuticorin. It is proposed to ranch the spat in the natural beds.

Honey comb rock oyster *Crassostrea cristagalli* spawned in the Shellfish Hatchery Laboratory.

FRAD Zonal Workshop

Annual workshop of FRAD field staff engaged in marine fisheries survey were held during November. The zonal meetings for the staff in West Bengal, Orissa and Andhra Pradesh was held at Vishakhapatnam Re search Centre. The staff members attached to Ongole and Nellore in Andhra Pradesh and different centres at Tamil Nadu met at Mandapam Camp and those in Maharastra and Gujarat met at Bombay Research Centre. The field staff in different centres in Kerala and Karnataka met at Cochin.

The discussions at the Workshop helped in updating the frame for sample survey and improving sampling procedures to increase precision of estimates.

KVK

Seven training programmes on prawn/fish culture were organised in which 116 farmers icluding 82 women participated.

* * *

A one-day course on prawr seed collection was organised ir which 15 women were trained.

Technical session of the Extension Seminar — fishermen and scientists in interaction.

Four training courses of three, two and one day duration each were conducted in which 67 farm women participated. One of these courses was arranged as a part of the World Food Day celebrations.

* * *

A one day training programme on paddy cultivation was arranged for the benefit of 6 farm men.

* * *

Two courses of one day duration each on fruit preservation was organised for the benefit of 38 women.

* * *

Two one-day courses on nutrition was organised in which 29 women were trained.

* * *

As part of the new 20 point programme of the Prime Minister a one day training programme on Social Forestry was organised in which 15 women participated.

* * *

The Local Management Committee meeting of the KVK was held on 22 November under the Chairmanship of Dr P.S.B.R. James, Director.

'Hindi Week' Celebration

Hindi week was celebrated at CMFRI Headquarters during 5-9 December. Competitions were held for the members of staff in essay writing, drafting, terminology, translation, poetry, recitation, light music, typewriting etc in Hindi. The members of staff showed great enthusiasm and participated actively in the programmes.

Black-lip Pearl Oyster Spawned in the Laboratory

Pearl oyster *Pinctada margaritifera* spawned in the Shellfish Hatchery Laboratory at Tuticorin. At present about 13 million larvae are being reared for settlement in the hatchery. This is the first time that the black-lip pearl oyster has spawned in India under controlled conditions.

NEHRU CENTENARY YEAR CELEBRATIONS

Hon'ble Justice Shri K. Sukumaran, High Court of Kerala, addressed the staff of the Institute on 28 November as part of the Nehru Centenary Year Celebrations. The focal theme of his talk was "Nehru — The Architect of Agrarian Reforms in the Country."

Prof. B. Erishikesan Tampi of Maharaja's College, Ernakulam addressing the staff at the valedictory function of the Hindi Week Celebrations.

Extension Meeting

A meeting of the Fishermen's Forum at Kandakkadavu was called on 20 December under the research project planned change in a coastal village — model for a first-line extension

programme. The extension programmes for the year 1989 were discussed with the members to secure their participation in the planning of the programme. The meeting helped to identify the felt needs of the local people and streamline the programmes accordingly.

Visitors

Tuticorin

Shri P.K. Mishra, I.A.S., Chairman, paradip Port Trust, Paradip.

Shri Peter Thomson, Assistant Director of Fisheries, Maldives.

Dr Koos Vijverberg, Limnological Institute, Oosterzee, Netherlands.

Students from 37 colleges visited the research centre.

Karwar

Students of St Peter's College, Kolanchery

Veraval

Dr M.R. Nair, Director, CIFT, Cochin.

Shri Farugul Hug and Zakaria Mamoom, CFTC Fellows, Bangladesh.

Senior batch of D.F.Sc. Students, CIFE, Bombay.

Minicoy

Karnataka Legislative Committee on 'Papers Laid on the Table' under the Chairmanship of Shri Jose Fernandez, M.L.A.

Shri P. Singh, Deputy Secretary, Ministry of Law and Justice, New Delhi.

Prof Mrithyunjay Banerjee, M.L.A. with eight other M.L.A.s of West Bengal.

Ph.D. Awarded

Shri A.P. Lipton, Scientist S-2 was awarded Ph.D. Degree by the Madurai Kamaraj University for his thesis entitled 'Studies on Microbial Diseases of Some Commercially Important Freshwater Fishes with special reference to Aeromonas and Pseudomons.'

Shri Arun Shivnath Ninawe

Shri Arun Shivnath Ninawe, Senior Research Fellow at the Post-graduate Education and Research Programme in Mariculture has been awarded Ph.D. by the Cochin University of Science and Technology for his studies on certain nitrogen cycle bacteria in the prawn culture fields of Kerala. Shri Ninawe worked under the guidance of Dr R. Paul Raj, Scientist, CMFRI.

ICAR Senior Fellowship Awarded

Smt Mary K. Manisseri and Smt Krishna Srinath, Scientists S-G have been selected for the award of ICAR Senior Fellowship for the year 1988.

Engagements

Dr P.S.B.R. James, Director, attended the following meetings:

Meeting of the working group of Eighth Five Year Plan of Department of Ocean Development at New Delhi, 7 October.

Nineth meeting of the steering committee for Island Development Authority at New Delhi, 12 October.

ICAR Director's Conference and Divisional meetings at New Delhi, 31 October & 1 November.

International Symposium on Aquaculture Research Needs for the year 2000 at New Delhi, 15 - 18 November.

Meeting of the ICAR Scientific Panel for Fisheries at New Delhi, 24 November.

Meeting of the working group on fisheries at Department of Ocean Development, New Delhi, 12 December.

National Workshop on Sea Farming for mainland and islands of India at Bombay, 20 December.

Dr P.S.B.R. James, Director, Dr M.M. Thomas, Shri D.B.S. Sehara and Smt Krishna Srinath, Scientists participated in the International Conference on Appropriate Agricultural Technologies for Farm Women organised by ICAR and International Rice Research Institute at New Delhi, 30 November - 4 December.

Dr M.M. Thomas, Officer-in-charge, KVK attended the monthly T & V Workshop of the Agricultural Extension Programme of Kerala Agriculturual University.

PGPM

Nine Junior Research Fellows of Seventh batch of M.Sc. Mariculture completed their course.

Ten Junior Research Fellows of Nineth Batch joined M.Sc. programme in Mariculture.

Appointments

Kum P.K. Seetha as Field Assistant (T-1) at Cochin, 7 November.

Shri C. Purandhara as Field Assistant (T-1) at Mangalore, 2 November.

Shri Bijoy Krishna Barman as Field Assistant (T-1) at Visakhapatnam, 1 November.

Shri S. Hemasundra as Field Assistant (T-1) at Visakhapatnam, 2 November.

Shri V. Rajendran, T-4 as Technical Officer (T-6) at Cochin, 24 December.

Shri P.K. Mahadevan Pillai, T-4 as Technical Officer (T-6) at Madras, 30 December.

Shri Yaomi Sasa as Field Assistant (T-1) at Bombay, 29 December.

Shri K. Dhanaraju, Technical Assistant T-1-3 as Technical Assistant T-II-3 at Kakinada, 30 December.

Shri N. Ravindranathan, S.S.G. III as Senior Gesterner Operator 17 December.

Shri T.K. Antony S.S.G.I. (Lift Operator) at Cochin, 11 October.

Shri S. Mohanan as S.S.G. I (Lift Operator) at Cochin, 17 October.

Smt R.M. Sarasamma as S.S. G.I. (Messenger) at Cochin, 2 November.

Shri N.K. Harshan as S.S.G.I. (Messenger) at Cochin, 28 November.

Shri A. Kajendran, Senior Clerk as Assistant (Ad hos) at Mandapam Camp, 4 November.

Shri K. Santiprasad, Junior Clerk (ad-hoc) at Mandapam, 23 December.

Transfers

Shri A. Prosper, Junior Technical Assistant (T-2) from Malvan to Tuticorin.

Shri S. Mohideen Meeras, Deckhand Senior (T-2) from Cochin to Mandapam Camp.

Shri A.K. Unnikrishnan, Cook (T-2) from Cochin to Visakhapatnam.

Shri K.C. Gopalan, T-1 (Cook) from Cochin to Vizhinjam.

Shri R. Ananda Jyothi, S.S.G.I. (Peon) from Tuticorin to Madras.

Retirements

Dr M.D.K. Kuthalingam, Scientist S-3 on superannuation, 30 November.

Shri V. Ramachandran, S.S. G. III (Lab Attendant) on superannuation, 31 October

Shri S.M. Seeni, S.S.G.III (Lab Attendant) on superannuation, 30 November.