

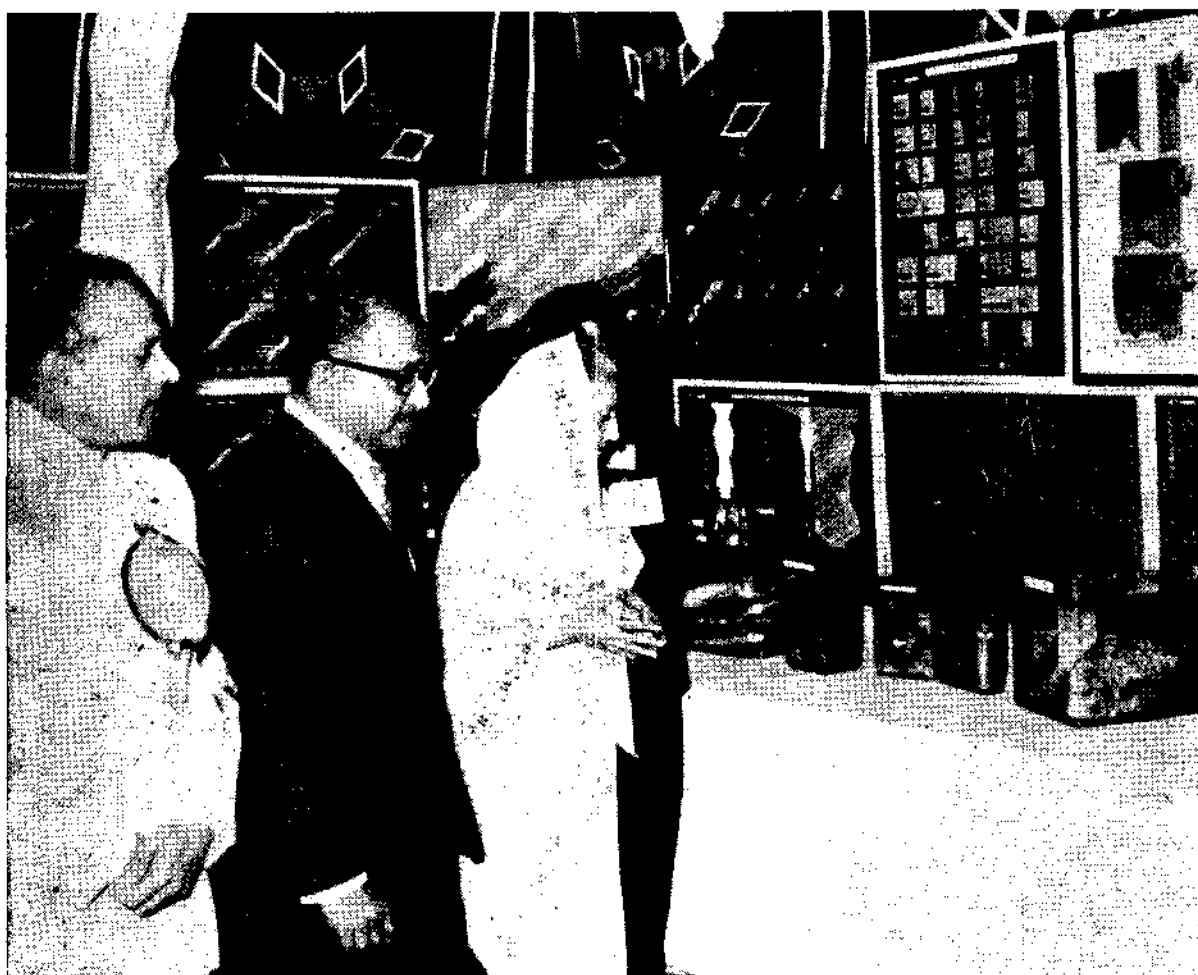


# CMFRI newsletter

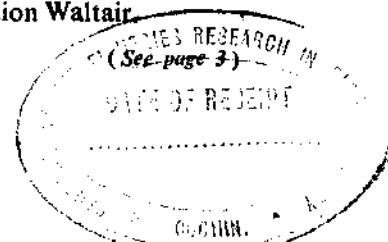
Number 3

January - May 1976

## PRIME MINISTER VISITS MARINE FISHERIES EXHIBITION



Prime Minister Shrimati Indira Gandhi visits the exhibition conducted by the Institute at Waltair in connection with the Indian Science Congress. Seen with Shrimati Gandhi are, from left to right, Dr. M. S. Swaminathan, Director General, I. C. A. R., Dr. E. G. Silas, Director and Dr. B. Krishnamoorti, Officer-in-charge of CMFR Institute Substation Waltair.



## SCIENTIFIC CULTURE OF MARINE PRAWNS

In the face of the annually increasing demand for fisheries products in all parts of the world due to population growth and as most of the stocks of fish traditionally exploited cannot be sustained due to increasing fishing pressure, it has become imperative for man to look for new methods for raising this high grade but cheap source of protein. Aquaculture is recognised by all management nations as an immediate alter-

Central Marine Fisheries Research Institute rightly realised the importance of this urgent need and has launched an organised programme to investigate the possibilities of utilising this large mass of water for culture practices. The culture of prawns among others has received first attention due to its great value as a foreign exchange earner and the Institute, under an ad hoc scheme on Prawn Culture and Propagation, has opened a field

intensive field study, considerable seed resources were discovered in the natural environments like surf waters and certain backwater areas, it was felt that these resources could not entirely be depended upon in any large-scale culture programme since these were subject to great and unpredictable fluctuations. A farmer depending on these alone would be facing great risks. As a solution to this, experiments were conducted with commendable success to artificially hatch eggs of these species and rear them in large scale to suitable postlarval stages for stocking. The mature prawns of all commercially important species such as *Penaeus indicus*, *Metapenaeus dobsoni*, *Metapenaeus affinis*, *Metapenaeus monoceros* and *Parapenaeopsis stylifera* collected by trawlers from the sea have been brought to the field laboratory and acclimatised to the backwater conditions and were let to spawn in hatchery tanks. The eggs were mass-cultured up to postlarval stages with negligible mortality. For instance, in the case of *M.dobsoni*, it was possible to raise, on an average, a brood of 12,000 postlarvae from a single spawner, in a fibreglass basin of 50-litre capacity. By using techniques simple and inexpensive, the postlarvae were developed from the eggs in a short period of less than a fortnight. The success of these experiments opens up new fields of development as it indicates the feasibility of initiating large-scale production of seed of desired species for wider propagation.



*Larvae reared in fibre-glass basins*

native to meet this growing demand.

India with a long coastline consisting of such extensive biotopes as estuaries, lagoons and backwaters, has potential areas for culture practices. Of the roughly estimated 3,00,000 ha of our brackishwater, only about 10,000 ha are presently used for some sort of culture; the rest awaiting utilisation.

laboratory at Narakkal in 1975, to investigate the host of problems which would arise in the course of large-scale farming of these species. One of the most immediate problems that would naturally confront in any culture programme is the availability of the right type of seed for periodical stocking in culture ponds. Although, as a result of

The problems associated with the development of such hatcheries are, however, numerous. Selecting cheap and appropriate foods for the relatively more vulnerable larval stages and the possible diseases that might show up in the course of acclimatisation to new conditions are a few of those which are being investigated.

### **Prawn Larvae Presented to Chief Commissioner**

Dr. E. G. Silas, Director, during his recent visit to Andamans along with the ICAR Visiting Team has presented the Chief Commissioner, Shri M. Krishnatry, two consignments of prawn larvae he brought with him from Cochin, in specially packed plastic bags. The larvae, of the commercially important prawns, were hatched out at the Institute Laboratory at Narakal. While presenting the larvae Dr. Silas said that this small consignment would open out immense possibilities of prawn culture in brackishwater areas of the Territory and that it may pave the way for large exports of prawn from this area.

The Chief Commissioner thanked Dr Silas for the great personal interest he had taken for the development of fisheries in these islands. He also requested Dr Silas to help the Administration in drawing up a Master Plan for the Blue Revolution of this territory.

The prawn larvae were later released for stocking in the Shippighat brackishwater fish farm, by the Director of Fisheries, Shri P.M.G. Menon.

## **FISH CULTURE WILL HAVE TO BE SUPPORTED BY VASTLY EXPANDED RESEARCH ON FISH DISEASE AND NUTRITION**

— M. S. Swaminathan

In his presidential address in the Indian Science Congress in January, Dr. M. S. Swaminathan, touching on fisheries, drew attention to the recent research on fish culture in both inland and coastal waters which has opened up new vistas of production. "This will have to be supported by vastly expanded research on fish diseases and nutrition", said he.

For the first time, at its 63rd session, held at Waltair during 3 to 7 January, the Indian Science Congress had the focal theme, "Science and Integrated Rural Development" of national relevance. Dr. M. S. Swaminathan, Director General, ICAR, who was the General President of the Congress, had activated all Sectional Presidents "to articulate their thoughts for what scientists can and should do to promote rural development and agrarian prosperity."

The exhibition conducted during the session was also restructured to suit this new focal theme. The Central Marine Fisheries Research Institute has actively participated in this, of course, due to the praiseworthy enthusiasm of Dr. B. Krishnamoorthi and his colleagues at Waltair Substation, by displaying exhibits on the Institute's recent advances in mariculture, particularly pearl culture and mussel culture, which attracted many distinguished scientists from the country and abroad and also many other dignitaries. The Prime Minister was among those who visited the exhibition during the opening day.

Also a symposium on "Coastal Aquaculture" was held during the session at which the Institute has presented 11 papers.

## **BANANA PRAWN RESOURCES IN ANDAMANS**

"There is a good indication of a potential resource of the banana prawn, *Penaeus merguensis*, in the coastal waters of Andaman & Nicobar Islands", says Dr E.G. Silas who has visited Andamans in May. Banana prawn, a species slightly larger than our 'Naran', *Penaeus indicus*. is the highly priced prawn in Indonesia,

Australia and Philippines. During his visit, Dr Silas has interestingly studied the recently started prawn fishery in Shoal Bay in South Andamans. He has examined the catch and has found that the bulk of it consisted, amazingly, of this species. He has seen that the catch consisted of individuals of up to 17 cm in total length.

## ICAR VISITING TEAM TO ANDAMANS

A ICAR visiting team consisting of the following has visited the Union Territory of Andamans & Nicobar during 6 to 11 May and examined the existing set-up of the various ICAR units in order to recommend to the Council the co-ordination between them so that the basic physical facilities like, land, office, laboratory etc., are utilized effectively by the staff members working under each unit:

1. Dr C.M. Singh, Director, Indian Veterinary Research Institute, Izatnagar, Bareilly (U.P.) - Leader.
2. Dr E. G. Silas, Director, Central Marine Fisheries Research Institute, Cochin (Kerala).
3. Dr P.K. Thomas, Project Coordinator (W.M.), Central Soil & Water Conservation, Research & Training Institute, Dehra Dun (U.P.).
4. Dr N. V. Nelliatt, Sr. Scientist (Agronomy), C.P.C.R.I., Kasaragode (Kerala).
5. Dr K. N. Subramanian, Asst. Director, ICAR-Research Complex for N.E. Hill Region, Shillong.

The team also discussed with the Chief Commissioner the priority programmes the Administration would like to take up in agriculture, animal science and fisheries with a view to rendering the necessary research support for these programmes.

## CONSULTANCY

The following Government Departments, Institutions, Agencies and persons were benefited by our services by way of consultation:—

1. Executive Trustee, Cochin Town Planning Trust, Cochin-20.
2. The Institute of Agricultural Research Statistics, New Delhi.
3. The Director of Fisheries, Govt. of Kerala, Trivandrum.
4. The Secretary, Board of Revenue (Taxes), Trivandrum-1.
5. The Director of Fisheries, Govt. of Andhra Pradesh, Hyderabad-4.
6. The Director, Bureau of Statistics & Evaluation, Govt. of Pondicherry, Pondicherry.
7. Shri Rama Krishnan, Research Scholar, Jawaharlal Nehru University, New Delhi.
8. The Director of Fisheries, Govt. of Orissa, Cuttack.
9. The Director, Bureau of Economics & Statistics, Govt. of Kerala, Trivandrum.

10. The Director of Statistics, Govt. of Tamil Nadu, Madras-6.
11. The Consultant, Marine Products Export Development Authority, Cochin-16.
12. The Deputy Director, State Fisheries Department, Cochin-11.
13. The Director, Pelagic Fisheries Project, Cochin-16.
14. The Deputy Commissioner (FP), Ministry of Agriculture, Govt. of India, New Delhi.
15. The Director, Central Statistical Organisation, Ministry of Planning, Govt. of India, New Delhi.
16. The Director, Central Institute of Fisheries Technology, Cochin-3.
17. Dr M.J. George, Scientist, National Institute of Oceanography, Goa.
18. The Director, Bureau of Economics & Statistics, Govt. of Karnataka, Bangalore.
19. Shri Dennis Mathews, Usha Sales Ltd., Cochin-16.

### Seminar on Environmental Pollution

A 'National Seminar on Environmental Pollution' was held at Cochin during 6 to 8 May at which the Institute has presented four papers. Dr

K.V. Sekharan, Dr P.V. Ramachandran Nair, Shri V. Kunjukrishna Pillai, Shri C.P. Gopinathan and Smt. V. Chandrika attended.

## Deputy Director General at Vizhinjam Substation



Dr. B. K. Soni, Deputy Director General (A.S.), ICAR, with pearl oyster cultured at Vizhinjam substation. He visited the substation on 31 March 1976.

## Two new divisions for CMFRI

Besides the existing three divisions of the Institute, viz., Fishery Survey & Statistics Division, Fishery Biology Division and Marine Biology & Oceanography Division, two more divisions have come into

existence since April first. These new divisions are Crustacean Fishery Division and Molluscan Fishery Division. These two were previously enjoying only sectional status in the Fishery Biology Division.

## EXPERIMENTS ON AIR-LIFTING OF PRAWN LARVAE

Experiments on air-lifting of the larvae of *P. indicus* and *M. dobsoni* reared in the Narakkal field laboratory, for purpose of propagation in far-off places, have proved successful. The larvae in their early stages if transported safely, can be cultured in places where these prawns are not presently produced. Taking advantage of their miniature size, millions of larvae can be transported in compact plastic bags, reducing the transporting charges to minimum. The initial experiments of transporting them in plastic bags by air to Andamans have shown that the larvae can well withstand the air travel. This points to the possibility of supplying seeds at low costs to farms situated far away, removing the apprehension that the necessary seed may not be available if farms were developed in places where these species are not prevalent.

## A new Pool-Officer<sup>1</sup> for the Institute

Dr Ragothaman M.Sc., Ph.D., has joined the Institute Substation at Tuticorin as a CSIR Pool Officer. Dr Ragothaman, a botanist specialised in diatoms, has taken his M.Sc. and Ph. D. from Annamalai University. On joining the Substation, he is engaged in the studies on primary production in the pearl banks. Besides, he is also associated with the project on algal culture.

## **Institute's Mariculture Scientist to Head State Government Pilot Project**

Shri G. P. Kumaraswamy Achari, Senior Research Assistant of the Institute, has been appointed by the Kerala Government as Assistant Project Officer in charge of their newly started Pilot Project on Pearl Culture. Shri Achari, who has succeeded in culturing artificial pearl at Vizhinjam where the pearl oyster and its utility were almost unknown, has taken



charge of his new post in April. Shri Achari has demonstrated that pearl could be produced with the help of locally-made instruments, and beads shaped out of plastic and ivory. He was also engaged in the successful experiments on mass culture of edible mussels on ropes and other suspended substrata in the open coastal waters of Vizhinjam. The appointment of Shri Achari to the new post by the State Government is indeed a recognition of the know-how developed by Central Marine Fisheries on mariculture.



Soon after inaugurating the 'Open House and Fisheries Fair' conducted by the Integrated Fisheries Project at Cochin in January, Shri A. C. George, Hon'ble Union Minister of State for Industries, went round the various exhibition stalls. Shri George (second from left) is seen visiting the CMFRI stall. On his left are Dr. Silas and Shri Devidas Menon, Director of IFP.

## **RESEARCH VESSEL FOR THE INSTITUTE**

The payment has been made of Rs. 34,00,000, the first of the three instalments, to M|S Garden Reach Workshop Ltd.,

Calcutta, toward the cost of building a research vessel for the Institute. The vessel is expected to be ready in twenty-four months.

## OUR STEP FORWARD

The feasibility of culturing edible mussels on suspended substrata along the open coastal waters has been established at Calicut. From the experimental mixed-culture raft

after each harvest. The only simple thing he may have to do is to leave a few parent mussels on the ropes at the time of each harvest. Encouraged by this result, the Insti-

cially most important Indian Prawn, which have been collected from the open sea have spawned for the first time in the laboratory. The eggs were successfully mass-cultured up to the postlarval stage. The various stages, through which this stockable



*Dr. P. S. Kuriakose who is in charge of the experimental culture of mussels at Calicut is proud of his harvest. The mussel on the rope is only sixty days old.*

moored at 5-m depth in December, mussels were harvested in April. The harvest has shown that the yield of mussels after an interval of only five months can be astonishingly high; about 600 kg of mussels were produced within this short interval from about 66 kg of young mussel seed on ropes. Incidentally, it was also observed that the spat produced by the mussels growing on the ropes do automatically settle on other ropes in the vicinity. This is encouraging in that the culturist, once his first batch of mussels have matured, will be free from the botheration of a replanting

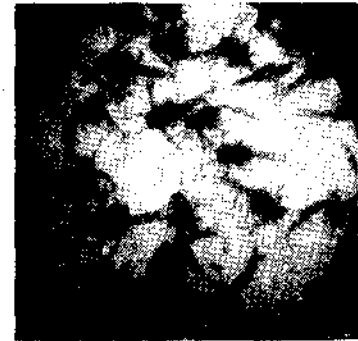
tute is extending the experiments to other centres also.

\* \* \* \*

Mature females of 'Naran', *Penaeus indicus*, the commer-



*Larvae soon after hatching*



*Later Stage*

stage has arrived, have been illustrated and described for the first time.

\* \* \* \*

The technique of culturing marine diatoms under laboratory conditions is perfected at Tuticorin. The culture of two species, viz., *Nitzschia* and *Navicula*, developed in the laboratory is now serving as a food reservoir for larvae cultured experimentally at the substation.

\* \* \* \*

A simple net is devised at Narakkal to collect the larval prawns from the surf where it occurs in abundance during certain periods. With the aid of this device it is now possible to collect large number of

(Continued on page 10)

## VISITORS

### Dr. P. R. PISHARODI

Dr P.R. Pisharodi, Director, Physical Research Laboratory, Ahmedabad, visited the Institute on 16 January. Dr. Pisharodi, addressing the scientific staff of the headquarters, gave a very fascinating lecture on the application of Infrared Scanners in oceanography. The existence of a water mass slightly higher in temperature, extending up to 400 miles or so off the southwest coast of India, which was earlier reported by INS Krishna during the Indian Ocean Expedition, was later conclusively proved by the infrared scanners used from aircrafts. The infrared scanners fitted at the bottom of the aircraft are capable of recording even slight changes in the surface temperature of the sea or land above which it flies. By special tilting arrangements, the scanner is capable of recording the temperature differences of a vast area. Dr. Pisharodi said that this water mass, though only slightly higher in temperature than the rest, is playing an important role in the southwest monsoon. This is mainly because, he said, tremendous amount of evaporation is taking place in this region and the watervapour thus formed rises to great heights and influences the monsoon to a great extent. The infrared scanners have also, he said, been engaged in measuring the extent of upwelling during S.W. monsoon.

The scanner, which was first used exclusively for military purposes in the last world

war, is also used at present for medical purposes. The instrument is now of great use in diagnosing cancer at a relatively early stage when the cure is possible.

### MR. RODNEY S. L. JONHLAS

Mr. Rodney S. L. Jonhlas, the famous underwater expert from Sri Lanka, visited the Institute on 19 March. Speaking to a gathering of scientists at headquarters, Mr. Jonhlas has stressed up on the urgent need for the conservation of the various marine resources. He said that it is high time that the wild-life preservation is extended also to sea. Based on knowledge he gained as a result of his long experience under water, he said that the spiny lobster of the Gulf of Mannar is fastly moving towards depletion, and it will be too late if the measures for their protection are postponed in India. In Sri Lanka, he said, certain areas are already demarcated and declared as marine parks with the idea of offering sanctuary to this precious marine animal. According to law that is now existing there, no lobster could be fished from this zone. The dugong which also is being considered in Sri Lanka for protection like lobster, is another animal deserving early consideration in India in order to prevent extinction. He felt that the corals in India if protected can turn out to be a great tourist attraction which

will earn good foreign exchange. The large quantity of seashells exported from Bombay draws the attention of any conservationist to the unpleasant fact that these molluscan resources are being over-exploited. *Xancus pyrum*, the conch shell, withstood long period of exploitation only because the divers reject and return to sea those undersized and defective ones which are not accepted in the market.

He also added that the sea urchin, *Echinus*, is a promising resource for the future. Large quantities of this are already being exported to Japan from California.

Other distinguished visitors were:—

1. Shri R. Nagarajan IAS, Director of Fisheries, Tamil Nadu.
2. Shri Ahmed, Director of Fisheries, Assam.
3. Shri Prasad, Director of Fisheries, Bihar.
4. Shri Kawtra, Director of Fisheries, Punjab.
5. Shri T. Narayanan, Director (Animal Husbandry), Planning Commission.
6. Mr. John Christensen, Norwegian Ambassador to India.
7. Dr. Agramam Aga, Chief of Fisheries and Animal Husbandry Division and Dr. Soegirato, of the National Agency for Export Development, Indonesia.



## GENERAL

Ad hoc Inspection Committee Meeting for examining the Position of Representation of Scheduled Castes | Scheduled Tribes of the Institute was held at headquarters on 15 April.

The second meeting of the Management Committee was held on 23 April.

The XV Meeting of the Staff Research Council was held at the headquarters on 23 April. Dr. R. Reghu Prasad, Assistant Director General (F) was among those who attended.

### *Engagements*

The Director, Dr E.G. Silas, and Dr. K. V. Sekharan, SFS

(FB), have attended the meeting of the Central Government Employees' Welfare Co-ordination Committee, held at Ernakulam on 19-1-76.

The Director attended the 2nd Indian Seafood Trade Fair organised by the Marine Products Export Development Authority and the Seafood Exporters Association, at Madras on 8 and 9 February.

The Director attended the Central Board of Fisheries meeting at Delhi on 22 and 23 March.

The Director attended a meeting of the General Council of the Kerala Agricultural University at Trivandrum on 27 March.

The Director attended the Seminar on 'Management of Research' held for the Directors of I.C.A.R. Institutes at the Administrative Staff College of India, Hyderabad, during 27 April to 1 May.

Dr E. G. Silas delivered a lecture on 'Environmental Conservation' at Bharat Refineries, Cochin on 6 April in connection with the 'Safety Week' (3 to 9 April). Dr. Silas is a Member of the State Board for Prevention and Control of Water Pollution.

Dr M.S. Prabhu, FS attended the zonal meeting of the survey staff of the Institute, in the Maharashtra and Gujarat zone, held at Bombay on 29 and 30 January.

Dr. Prabhu and Shri S. K. Dharmaraja, attended the zonal meeting at Waltair, of the survey staff of the zone Orissa and Andhra (up to

### FOOD CAN BE PRODUCED PLENTIFULLY FROM THE SEA BY CULTURE METHODS



Looks like a heap of bananas in a vegetable market! These are mussels cultured by Dr. Kuriakose in the open inshore waters of Calicut.

## Pearl Fishery is On the Decline

Detailed underwater survey conducted by the diving experts of the Institute on the pearl banks off Tuticorin and Vaipar has revealed that there is alarmingly little prospect of pearl fishery in these regions during the current year, 1976-77.

## Identity Cards for Field Staff

The field staff of the Institute are supplied with identity cards bearing the Institute seal. By carrying these cards the staff, particularly those engaged in survey work, are expected to get better cooperation from the public and the fishing industry, in the execution of their normal duties. The identity cards are being issued to other categories of staff also if required.

Machilipatnam) held at Waltair on 16 and 17 March.

Shri G. Venkataraman JFS, Shri V. S. Krishnamurthy Chennubhotla AFS, Shri N. Kaliaperumal RA and Shri J. R. Ramalingam RA have attended the 'East Ramnad Industrial Seminar' held under the auspices of the Central Electrochemical Research Institute at Karaikudi on 22 February. An exhibition on the industrial production of agar agar from seaweeds was also sponsored by the Institute Regional Centre during the seminar.

Dr M. V. Pai JFS presided over a function to inaugurate the suboffice of the Govt. of India Export Inspection Agency at Karwar on 5 April.

(Continued from page 7)

larvae in a relatively short period so that they could be



*A collection of eel larvae*

quickly removed to the laboratory without causing much

mortality, where they can be conditioned prior to stocking.

\* \* \* \*

Immigration of elvers (glass eels) in Coleroon, Vellar, Gadilam and Penniyar rivers on the east coast is reported for the first time. Good numbers of larvae were collected for the purpose of experimental culture and transported to Mandapam Camp. The larvae were found to be capable of withstanding the transportation in ordinary fish containers.

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

Sd/-

K. N. Krishna Kartha  
Publisher, CMFRI Newsletter

Date: March 1976

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## STAFF NEWS

The following permanent Laboratory-cum-Field Assistants of the Institute have been promoted as Junior Scientific Assistants with effect from 28-1-1976.

1. Shri K. Ramasomaya-julu, at Gopalpur.
2. Shri K. P. Viswanathan, at Cochin.
3. Shri C. Thankappan Pillai, at Cochin.
4. Shri Joseph Andrews, at Mangalore.
5. Shri K. Chittibabu, at Palasa.
6. Shri S. Russel Conrad Samuel, at Bombay.
7. Shri N. Jayabalan, at Madras.
8. Shri P. Radhakrishnan, at Vizhinjam.
9. Shri V. Selvaraj, at Veraval.
10. Shri K. Dharmaraju, at Gopalpur.
11. Shri Joseph Xavier Rodrigo, at Mandapam Camp.
12. Shri V. A. Narayanan Kutty, at Cochin.
13. Shri S. Vijayabaskar, at Ongole.
14. Shri V. Sivaswamy, at Bombay.
15. Shri N. Palaniswamy, at Ratnagiri.

### Appointment

Shri V. Varadaiah as Jeep Driver at Karwar w.e.f. 26-12-75.

Kumari Rosy Pitchai as Jr. Stenographer at Madras w.e.f. 29-1-76.

Shri K. Dharma Rao, Watchman, as Motor Driver at Waltair w.e.f. 10-2-76.

Shri Y. Venkatachalam as Jr. Clerk at Waltair w.e.f. 11-2-76.

Shri P. Muthu, Sr. Clerk, as Assistant (Building & Security) at Mandapam Camp on ad hoc basis w.e.f. 30-1-76.

Shri V. Chemutty, Sr. Clerk, as Assistant at Cochin on ad hoc basis w.e.f. 9-2-76.

Shri K. Maragathavadivelu, Jr. Clerk, as Sr. Clerk at Cochin on ad hoc basis w.e.f. 29-1-76.

Shri B. Devadas Puthran, Jr. Clerk, as Sr. Clerk at Karwar on ad hoc basis w.e.f. 31-1-76.

Shri K.C. Devassy as Fieldman at Narakkal w.e.f. 27-2-76.

Shri E.F. Francis as Watchman at Narakkal w.e.f. 27-2-76.

Shri K. Shunmugasundaram as Fieldman at Veppalodai w.e.f. 25-2-76.

Shri G. V. Padnekar, Sr. Clerk, as Assistant at Bombay on ad hoc basis w.e.f. 27-2-76.

Shri Appa Rao, Jr. Clerk, as Sr. Clerk at Waltair on ad hoc basis w.e.f. 28-2-76.

Shri A. R. Pawaskar Kadir as L.F.A. at Bombay w.e.f. 4-3-76.

Shri C. Yohannan, Jr. Clerk, as Jr. Stenographer at Cochin w.e.f. 19-3-76.

Shri M. K. Abdulla, Peon, as Jr. Clerk at Cochin w.e.f. 20-3-76.

Kumari R. Chandrika as Jr. Clerk at Cochin w.e.f. 27.3.76.

Kumari P. K. Sreedevi as Jr. Clerk at Cochin w.e.f. 27-3-76.

Smt. K. Vijayalakshmi as Jr. Clerk at Cochin w.e.f. 6-4-76.

Shri Rajan as Peon (Supporting Staff Grade I) at Cochin, on transfer from the office of the Chief Commandant, Raipur, w.e.f. 13-4-76.

Shri S. Jeyachandran, Jr. Clerk, as Sr. Clerk on ad hoc basis at Cochin w.e.f. 13-4-76.

Shri P. P. Joseph as Jeep Driver at Cochin, under Scheme on Pearl Culture and Propagation, w.e.f. 19-4-76.

Kumari A. K. Omana as Jr. Stenographer at Cochin w.e.f. 20-4-76.

Shri K. B. Waghmare as J.S.A. at Bombay w.e.f. 22-4-76.

Shri C. J. Prasad as Computer at Cochin w.e.f. 23.4.76.

### Transfer

Shri Kuber Vidyasagar, Sr. Research Assistant, from Veraval to Bombay.

Shri K. K. Sukumaran, Research Assistant, from Bombay to Mangalore.

Shri A. A. Jayaprakash, Research Assistant, from Bombay to Cochin.

Shri K. K. Appukuttan, Research Assistant, from Mandapam Camp to Vizhinjam.

Shri P. V. Sreenivasan, Research Assistant, from Vizhinjam to Porto Novo.

Shri A. R. Pawaskar Kadir, L.F.A., from Bombay to Jamnagar.

Shri M. Sriram, J.S.A., from Jamnagar to Bombay.

Shri V. Sivaswamy, J.S.A., from Bombay to Mangalore.

Shri Joseph Andrews, J.S.A., from Mangalore to Cochin.

Shri M. S. Muthu, Jr. Fishery Scientist, from Madras to Cochin.

#### Relief

Shri M. Bhaskaran, Research Assistant at Cochin, on resignation w.e.f. 9-1-76.

Shri Abdul Rahiman, Driver-cum-Serang at Cochin, on resignation w.e.f. 11-12-75.

Shri K. J. Joseph, Research Assistant at Cochin, to take up the post of Lecturer in the University of Cochin, w.e.f. 25-2-76.

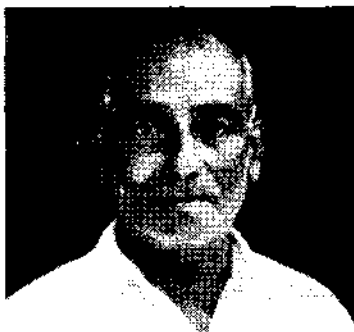
Dr G. S. Sarma, Jr. Fishery Scientist who was on foreign service as Scientist in the N.I.O., Goa, rejoined the Institute and was later relieved w.e.f. 24-2-76 to take up the post of Professor in the University of Cochin.

#### New Prawn Species Reported

Dr E. G. Silas has collected 13 species of penaeid prawns from creeks, bays and swamps, in and around Port Blair during his visit to Andamans in February. Out of this collection one species is new to science.

#### Retirement

Shri G. Devarajulu, Laboratory Attendant, has retired from service w.e.f. 29-2-76.



#### Wedding

Shri M. J. John, Sr. Clerk at headquarters, married Miss Mary, daughter of late Shri Y. John, at Ernakulam, on 29 April.

#### Training undergone in SCUBA diving

Shri K. Ramadoss and Shri Pon. Siraimetan, Research Assistants at Tuticorin, have completed their training in 'Scuba' diving.

## NEW EQUIPMENTS FOR THE INSTITUTE

National Fishery Data Centre of the Institute will soon be equipped with the following modern electronic devices for quick processing of statistical data:

1. Programme Board Punch.
2. Programme Board Verifier.

#### Institute Benevolent Fund

An amount of Rs. 2050 has been granted as interest-free loan from the Institute Benevolent Fund to 12 staff members.

#### ICAR Fellowships

The following members of staff were awarded the I.C.A.R. Junior Fellowships for undergoing higher studies, under 1975-76 Programme:

1. Shri A. Raju, J.S.A.
2. Shri V. Gandhi, J.S.A.
3. Shri P. K. Mahadevan Pillai, J.S.A.

*Issued*

## CMFRI BULLETIN 27

Exploited Marine Fishery Resources of India: A Synoptic Survey, with Comments on Potential Resources

by

E. G. Silas, S. K. Dharmaraja, and K. Rengarajan

## NEW ADDITIONS TO OUR LIBRARY

### Headquarters Library

#### BOOKS:

Oceanography and Marine Biology, Vol. 13.	.. Harold Barnes
Estuarine Research, Vols. 1 & 2.	.. L. Eugene Cronin
Air Pollution: the Emissions, the Regulations & the Controls.	.. James P. Thomany
Oil on the Sea.	.. David P. Hoult
Marine Pollution by Oil.	.. Institute of Petroleum, Oil Pollution Analysis Committee.
Tropical Marine Pollution.	.. E. J. Ferguson Wood & R. E. Johannes
Culture of Bivalve Molluscs.	.. P. R. Walne
Fisheries Resources of the Sea and their Management.	.. David Cushing
Readings in Man; the Environment and Human Ecology.	.. Arthur S. Bougey
Environmental Pollution Control: Technical, Economic and Legal Aspects.	.. Alland McKnight, etc.
Danger in the Sea.	.. Alec France-Brunner.
Encyclopedia of Fish.	.. Gareth Nelson, etc.
Fundamentals of Ecology. 3rd Ed.	.. Eugene P. Odum
A Colour Atlas of Microbiology.	.. R. J. Olds
Modern Molecular Theory for Organic Chemists.	.. Weston T. Bordon
Sea Urchin Development: Cellular and Molecular Aspects.	.. Louis W. Stearns
Recent Researches in Estuarine Biology.	.. R. Natarajan
Atmosphere-Ocean Interaction.	.. E. B. Kraus
Physics for Life Science Students.	.. Hans Breuer
Satellite Dynamics.	.. G.E.O. Giacaglia
Biological Systems.	.. Shelly D. Gerking
Depositional Sedimentary Environments.	.. H. E. Reineck & I. B. Singh
Biological Oceanographic Process.	.. Timothy R. Parsons.
Investigations on Cetacea, Vols. 1 - 4.	.. G. Pilleri
Statistics; An Introductory Analysis.	.. Taro Yamane
Physical Chemistry of Nuclie Acids.	.. Victor A. Bloomfield, etc.
How Fishes Live.	.. Peter Whitehead
Intersexuality in Animal Kingdom.	.. R. Reinboth
Coastal Engineering, Vol. 2.	.. R. Silvester
McClane's New Standard Fishing Encyclopedia.	.. A. J. McClane
Marine Ecology, Vol. 1, Pt.3.	.. O. Kinne

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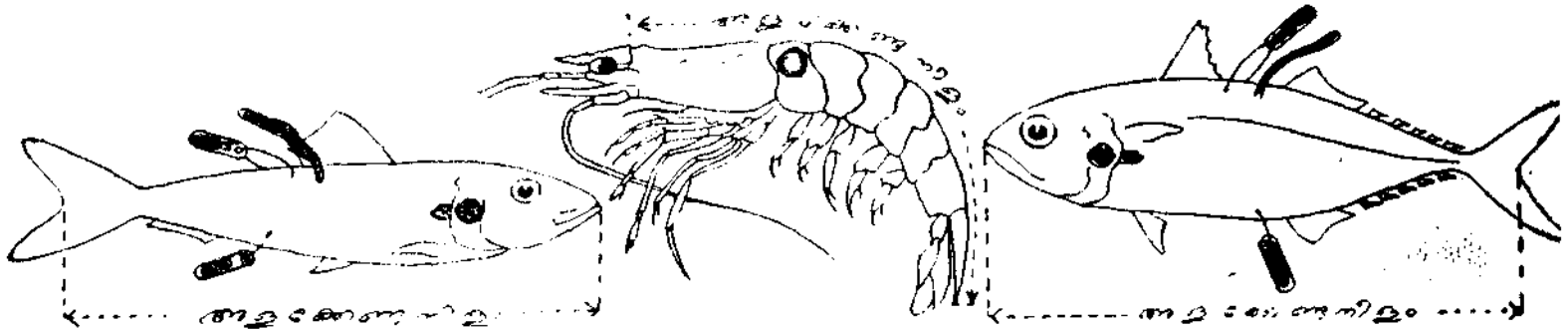
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## ഈ മീനുകളെ ശ്രദ്ധിക്കുക!!

ചെമ്മീൻ, അയല, മത്സി ഇവയെ നിറമുള്ള പ്ലാസ്റ്റിക് അടയാളങ്ങൾ കൊളുത്തി

### കടലിൽ വിട്ടിരിക്കുന്നു

ഈ മീനുകളെ തിരിച്ചെല്പിക്കുന്നവർക്ക് അടയാളത്തോടുകൂടിയ ഓരോ മീനിനും 3 ക. വീതവും അടയാളത്തിനൊന്നും 1 ക. വീതവും ലഭിക്കുന്നതാണ്.

കണ്ടുകിട്ടുന്നവർ ഏല്പിക്കേണ്ട സ്ഥലങ്ങൾ:-

**സെൻട്രൽ മറൈൻ ഫിഷറീസ് റിസർച്ച് ഇൻസ്റ്റിറ്റ്യൂട്ട്**

മംഗലപുരം, കണ്ണൂർ, കോഴിക്കോട്, എറണാകുളം, നീണ്ടകര,  
വിഴിഞ്ഞം, കൊളച്ചൽ, കന്യാകുമാരി.

പ്ലാസ്റ്റിക് അടയാളം മാത്രം തപാലിൽ അയക്കുന്നവർ അറിയിക്കേണ്ട വിവരങ്ങൾ:

1. അയക്കുന്ന ആളിന്റെ പേരും മേൽവിലാസവും
2. മീനിനെ കണ്ടെത്തിയ സ്ഥലവും തീയതിയും
3. മീനിന്റെ നീളം (ഇഞ്ചിലോ സെന്റിമീറ്ററിലോ.)