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WELCOME

TO

COCHIN

THE VENUE OF

THE SYMPOSIUM ON MOLLUSCA

UNDER THE AUSPICES OF

THE MARINE BIOLOGICAL ASSOCIATION OF INDIA

SOUVENIR

JANUARY 1968

H. E. Shri. V. Viswanathan, the Governor of Kerala.

DR. S. JONES
(President, Marine Biological Association of India.)

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THE MARINE BIOLOGICAL ASSOCIATION OF INDIA

— *S. Jones*

The Marine Biological Association of India was organised on the 30th December '58 with its headquarters at Mandapam Camp and was formally inaugurated on 3rd January 1959 by the Minister for Fisheries, Madras State. Its aim is to promote the cause of marine sciences in the Indian Region "(a) by organising lectures, symposia and seminars on specific subjects, (b) by offering requisite information to research workers and students undergoing training in Marine Biological Sciences, (c) by publishing a journal which shall be called the **Journal of the Marine Biological Association of India,** (d) by issuing occasional Memoirs and Monographs. (e) by instituting fellowships and studentships for research workers at the various recognised institutions, (f) by sponsoring and aiding expeditions and (g) by instituting prizes to be awarded in recognition of outstanding contributions towards the advancement of the Marine Biological Sciences from the research workers of India, as funds permit". The Association has as its Patron-in-Chief His Excellency the Governor of Madras State and as patrons the Hon'ble Minister of Fisheries, Madras State, and the Vice Chancellors of the Aligarh Muslim University, the Annamalai University and the Kerala University.

The initiative for organising the Association was taken by the scientific staff of the Central Marine Fisheries Research Institute at Mandapam Camp, who continue to be mainly responsible for conducting its affairs in an honorary capacity. The Association has grown from an initial individual and institutional membership of 563 in 1959 to 837 by 1967. Of these 480 are from within India and 357 from countries outside. Foreign component in the membership of the Association is from nearly 50 countries viz., Argentina, Australia, Austria, Belgium, Bermuda, Brazil, Canada, Ceylon, Chile, Denmark, France, Germany, Ghana, Guyana, Hongkong, Hungary, Iceland, Italy, Indonesia, Israel, Japan. Kenya, Korea, Liberia, Malagasi, Malaysia, Mauritius, Mexico, Netherlands, New Caledonia (Oceania), New Zealand, Nigeria, Norway, Pakistan, Papua, Peru, Republic of Congo, Rumania, Singapore, Spain, Tanzania, Thailand, United Arab Republic, United Kingdom, United States of America, Union of Soviet Socialist Republics, Venezuela and West Indies. In addition to the above it is possible that the publications of the Association reach several other countries also through book sellers. There is hardly any country in the world where researches on marine sciences are in progress which does not subscribe for or procure the **Journal** and other publications of the Association directly or indirectly.

The above statistics will speak for itself to indicate the wide recognition that the Association enjoys and this is in no small

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ACKNOWLEDGEMENTS

The Souvenir Committee of the Symposium on Mollusca conducted under the auspices of the Marine Biological Association of India wishes to place on record its sincere thanks to all those who have assisted in the publication of the Souvenir. The Committee's thanks are also due to all the authors of various articles appearing in this Souvenir, the advertisers, who have responded spontaneously to its request; and to the Editors of the Illustrated Weekly of India, Kalamandalam Annual, Sea Food Trade Journal and the Annapurna for permission to reproduce some of the articles and illustrations appearing in the Souvenir.

measure due to its **Journal** being issued since 1959. The periodical had from its very inception achieved its present international status owing largely to the standard of the scientific papers published in the same.

A significant step that the Association took in the furtherance of its objectives was by organising symposia periodically The first Symposium was held in Mandapam Camp in January 12–16, 1962, on "Scombroid Fishes" constituted by mackerel, tunas, seerfishes and billfishes, with 72 contributions from 14 countries and with participation by Indian as well as foreign contributors. The proceedings of the Symposium coming to over 1400 pages issued in four volumes have already been recognised as the most outstanding contribution to fishery science from this part of the world. The second Symposium held at Ernakulam from January 12-15, 1965 was on 'Crustacea' the group that includes prawns, lobsters and crabs and a variety of smaller forms which are in one way or other directly or indirectly of importance to man. The Symposium received 124 contributions from 20 countries and was attended by quite a large number of contributors and other scientists from within and outside India. The proceedings consisting of about 2000 pages are to be brought out in six volumes and of this four volumes coming to over 1500 pages have already been issued. This has become an indispensable work of reference on this interesting and important group of animals. The third Symposium in connection with which the present Souvenir is being issued is on "Mollusca", the important group of animals consisting of squids, oysters, mussels, clams, gastropods (chanks) etc. It has received nearly a hundred contributions from over 15 countries and the Proceedings are expected to come to over 1500 pages to be issued in five volumes. The fourth Symposium will be on "Corals and Coral Reefs" and is proposed to be held at Mandapam Camp from January 12 to 16, 1969. The popularity and recognition enjoyed by the Association both within the country and outside are already evident not only from the wide range of membership but also from the response we have been receiving for the Symposia which are held regularly.

The **Journal of the Marine Biological Association of India** and the Proceedings of the Symposia have helped to highlight the work done in fisheries and cognate sciences in this country and thereby place India on the map of marine sciences in general and fishery sciences in particular. In addition to the above, the Association has just started a new series of publications viz., Memoirs, which consists of monographs and other comprehensive accounts on marine organisms. Over six of them are under various stages of publication and of these the first two on the Ribbonfishes of India and Ceratium are under issue.

It should perhaps surprise many to know that the Association has been able to do all this without any grant or subsidy from any organisation from within this country. The annual subscription for individual members in India is purposely kept as low as Rs. 10.00 to enable the maximum number of scientific workers to take advantage of the services of the Association. Every member is entitled to receive free a copy of the Journal of the Association, the publication cost of which comes to very much more than this amount!

The Association has never looked back since its inception That it is in a position to thrive in a self supporting manner by membership subscription and sale of publication is a matter of gratification to all, especially when few other scientific associations of this kind could make such a claim. As against about Rs. 350.00 on postage and about Rs. 2600/–

on printing spent in 1959 our expenses in 1967 comes to about Rs. 4000.00 on postage and about Rs. 60,000.00 on printing! Our printing programme for 1968 is expected to be much larger than for the previous year but we hope to meet all these commitments from our own resources apart from the expenses that are being incurred for conducting the present Symposium. Incidentally it may be mentioned that in addition to the scientific service the Association has been able to contribute its mite to the nation's economy by bringing in foreign exchange to the tune of Rs. 10,000.00 to Rs. 15,000 00 a year into the country.

The above might probably give a rather rosy picture about the Association but the teething troubles and the ordeals it had to undergo in the early years have remained an untold story. Ours was perhaps not unlike the case of the shepherd in the Virgil who at last got acquainted with Love and found him a native of the rocks. The efforts to get grants met with no response when we really wanted them and it was ultimately decided to depend on self reliance, and in this we have fortunately succeeded, due entirely to the untiring and unostentatious work and unstinted cooperation shown by my colleagues at the Central Marine Fisheries Research Institute. We have now decided not to seek as far as possible, for any aid and if necessary to go a step further by offering aid to the maximum possible extent in deserving cases. The Association has been in a way able to demonstrate that it is man that makes money but not quite the other way about.

The success of the Association is a challenge to others and it is hoped that it will give food for thought to the authorities giving subsidies and grants for such organisations. This also brings in a poser for others as to whether subsidies and grants are indispensible. It is understood that no Association could expect to get a grant unless there is a deficit and this unfortunately gives incentive to develop a tendency to create defict, which is a most negative approach! It is, therefore, time for a reappraisal of the whole procedure so as to encourage incentives of a positive and constructive nature and **not** of a negative nature as at present.

The Association has a programme of expansion of its activities which includes a proposal to establish a laboratory also in the pattern of the Naples Zoological Station or the Marine Biological Laboratory at Plymouth. It would not be possible to do this with its own resources. The materialisation of this will depend on the co-operation and support received from the scientists and the public.

What little the Marine Biological Association of India has been able to do within the short period of its existence from its humble beginning hardly a decade ago is in a way unique. We could say with pardonable pride that it has blazed a trail which has no parallel in this country. It is doubtful if there is any scientific association or society in India, probably for that matter anywhere else, which could claim to have served the cause of science to such an extent and against such odds on its own resources. The achievements of the Association will go down in the history of science in India as a classical example of what could be accomplished by the united and dedicated efforts of a devoted few.

COCHIN —

The Centre of Fisheries and Oceanography

— *R. Raghu Prasad*

Cochin, known as the "Queen of the Arabian Sea" is the only natural harbour in South India. Together with Ernakulam, situated on the mainland, it is the most picturesque city in Kerala. With palm-fringed lagoons, backwaters and a beautiful beach bordering one of the most productive seas, this city *inter alia* affords a diversity of environments for the theoretical as well as applied oceanographers and biologists.

Though the coast-line of Kerala is only about 580 kilometres of the entire Indian coast-line of 5,600 kilometres, the annual fish landings of the State are of the tune of three hundred thousand tonnes or nearly one-third of the total fish landings from the seas of India. The west coast of India alone accounts for about 80% of the country's total marine catch. Naturally during the last one and a half decades oceanography and fishery interests have begun to converge to this small city, which has now grown into an important centre of marine research. The following is a brief account of the various institutions engaged in the study of marine sciences.

Central Marine Fisheries Research Substation

The Central Marine Fisheries Research Institute, Mandapam Camp, now under the control of the Indian Council of Agricultural Research, is the pioneer institute in India tackling the problems of fisheries research and allied subjects on an All-India basis This institute started its major Substation at Cochin in 1951. Housed in a small rented building, the Station began to function with a small band of research workers on the problems connected with prawn fisheries. With the tremendous development in the fishing industry, the Substation's programmes were intensified and more staff was posted to this Substation and at present it has a strength of 86 inclusive of the auxiliary staff The Substation currently is housed in two rented buildings about 2 kilometres apart.

In the early stages the investigations conducted at this Substation were confined mainly to the coastal areas. But in 1957 oceanographic investigations on a wider scale were initiated with M O. KRISTENSEN, one of the fishing vessels of the Indo-Norwegian Project made available to the Institute. By the end of 1957 this vessel was replaced by R. V. KALAVA which made regular oceanographic cruises along the west coast of India

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till 1961. Towards the end of 1961 a modern research vessel VARUNA, specially built in Norway for oceanographic investigations, was made available by the Indo-Norwegian Project and has been regularly conducting fishery and oceanographic research since then. Investigations on the various aspects of the pelagic and demersal fish resources, hydrography, primary organic production and plankton of the west coast of India and compilation and processing of marine fishery statistics on an All-India basis are the main programmes that are being handled at the Substation.

Central Institute of Fisheries Technology

Sponsored by the Ministry of Food and Agriculture of the Government of India, this Institute started functioning at Cochin in 1957 with the Craft and Gear wing only. In 1958 the Processing Wing was added partly by the transfer of the Chemistry Division of the Central Marine Fisheries Research Institute from Mandapam Camp. Now the Headquarters of the Institute and the Processing Wing are at Ernakulam and the Craft and Gear Wing at Kochangadi.

The activities of the Processing Wing cover all aspects, fundamental and applied, of fish processing technology. The various research projects undertaken include Chemistry, Microbiology, Processing and Processing Engineering, Fish Curing, By-Products, Quality Control and Inspection. The Craft and Gear Wing designs boats, conducts investigations on craft, gear, mechanical accessories, fishing methods and gear materials and also on the engines used in fishing boats This wing has two branches the Gear Branch and the Craft Branch of which the latter is now under the Ministry of Food and Agriculture while all the rest are under the Indian Council of Agricultural Research.

During the last decade the Institute has taken many rapid strides and has grown in stature and activity. The Institute is also authorised for the preshipment inspection and quality control of frozen and canned prawns and of frozen frog legs.

Offshore Fishing Station

Nestled among the fish processing plants in Kochangadi is the Offshore Fishing Station, a Substation of the Government of India Deep Sea Fishing Station, Bombay. This station was started in 1957 with the object of exploring the fish resources of the continental shelf of the Kerala coast and to determine the effective gear and accessories to be employed in fishing for the various types of fish. The station operates boats and gears of different types and trains many young people in the techniques of mechanized fishing. The scope of activities of the station include advice and guidance to private industries in the matter of fishing gear, fishing technique and allied subjects.

Central Institute of Fisheries Operatives

This Institute was established by the Government of India in 1963 to train operatives of different skills in both theoretical and practical fields suitable to conduct fishing in the high seas with the help of larger, modern fishing fleet. All categories of skilled personnel required to man and maintain the high sea fishing vessels, such as Skippers, Fishing Mates, Marine Engineers, Electronic Engineers, Gear Technicians, Boat Building Foremen, Shore Mechanics and Radio-telephone Operators are being trained here.

This International Symposium on Mollusca is being held in the salubrious campus of this Institute and the delegates to the

Symposium can have a first-hand knowledge of the various facets of this Institute and also the dynamism and leadership which is behind this organisation

The Indo-Norwegian Project

In 1953 an agreement between the Governments of Norway and India and the United Nations was signed under which Norway was to conduct a programme of technical assistance in India The project envisaged mechanisation of fishing boats, provision of repair facilities, construction of one or more ice plants, supply of insulated vans for transport of fish, organisation of fishermen's co-operatives, improvement of environmental sanitation with emphasis on the supply of drinking water and establishment of a health centre.

The programme commenced in the project area at Neendakara 14 years ago. After a year the mechanical workshop and boat-building yard began production of indigenous mechanised boats. Later for examining the economic aspects of shrimp-trawling, four medium sized boats of 36 feet (M-boats) were brought from Norway. These, together with three exploratory fishing vessels required harbour facilities for operation and Cochin naturally was chosen as the most suitable site for the location of the Project. In 1956, under a new agreement the present project site facing the Cochin backwaters came into being. After 14 years of fruitful Indo-Norwegian co-operation the Project Site in Cochin has risen up as a symbol of international co-operation With a fleet of fishing vessels conducting exploratory fishing as far out as 800 kilometres and covering the area from Kanyakumari to Goa, this fishing centre is perhaps the best in India now.

Kerala University Oceanography Laboratory

The Department of Marine Biology and Fisheries was organised in 1938 at Trivandrum by the erstwhile University of Travancore. In 1940 a new building, the present Aquarium at Trivandrum, with laboratory facilities on the first floor was constructed As an offshoot of this, the Oceanography Laboratory was established temporarily in the Naval Base at Willingdon Island in Cochin. In 1962 the Laboratory was shifted to the newly constructed building on the Fore-shore Road facing the Cochin backwaters. The facilities here include Laboratories for biological and chemical work, research rooms for scientists and students, reference library, air-conditioned room for instruments, dark-room for photography, lecture hall, museum, preparation room for biological specimens and a modern hostel. An aquarium for marine and fresh water organisms is also being completed.

Studies on plankton, bottom fauna, bottom deposits, hydrography of the coastal region, as well as taxonomical, morphological, physiological and ecological studies on fishes and invertebrates are being conducted here. R. V. CONCH, the research vessel of the Laboratory, was commissioned in 1957. It is a 50-foot vessel with a 30 ton gross displacement and has a cruising range of over 500 kilometres. This vessel is used for training post-graduate and research students in oceanographic work and for marine biological collections. The Laboratory publishes a journal "Bulletin of the Department of Marine Biology and Oceanography".

This Department has facilities for research and training in Oceanography and offers courses in Marine Biology and Oceanography leading to the degree of Master of Science. A few students are working towards Ph. D. and D. Sc. degrees also.

Indian Naval Physical Laboratory

This Laboratory, situated within the Naval Base in Willingdon Island was established in 1952. Originally formed as an establishment under the Naval Headquarters, the Laboratory was absorbed into the Defence Research and Development Organisation in 1958. The Laboratory is thus under the joint control of the Director of Research (Labs) at the R & D Headquarters and that of the Director of Scientific Research (Navy) at the Naval Headquarters.

The Laboratory is divided into four research groups *viz.*, Acoustics, Mines, Electronics and Oceanography. The Oceanography Group is responsible for collecting, processing and storing all the data about the Indian waters that are of interest to the Navy. The main fields of interest are oceanographic instrumentation, processing of BT and related oceanographic data necessary for Naval operations, microseisms and studies on waves and swells.

National Institute of Oceanography

The latest addition to the group of organizations is the National Institute of Oceanography, one of the National Laboratories under the Council of Scientific and Industrial Research. The Institute started functioning from January 1966 taking over all the then existing units and activities of the Indian Ocean Expedition Directorate. Three Divisions of this Institute are functioning here now *viz.*, The Indian Ocean Biological Centre, Physical Oceanography Division and Biological Oceanography Division.

The Indian Ocean Biological Centre came into existence as part of the International Indian Ocean Expedition programme and it receives assistance from the UNESCO. The Centre receives, processes and stores plankton samples collected by the research vessels belonging to various countries which participated in the Expedition. Altogether over 2,500 samples have been received by this Centre for sorting, which is supervised by an UNESCO appointed Curator. The Centre has developed into one of the important sorting centres in the world.

The Physical Oceanography Division is handling mostly problems relating to the physics of the seas around India. It is also engaged in the study of bottom topography, geology, beach erosion, accretion, sand movement, coastal currents, storm surges and sea level variations, wave refraction, and statistical studies on the chemical and physical characteristics of the sea water.

The Biological Oceanography Division is concerned with the hydrography and primary productivity of Cochin backwaters, hydrography of inshore waters, studies on the osmo-regulation in crabs and studies on interstitial fauna.

Other Institutions

The Kerala State Fisheries Department, the Kerala Fisheries Corporation and thirty and odd fish canning and freezing companies spread over Cochin and the surrounding areas have made this City the nerve centre of Fisheries and Oceanography.

MOLLUSCA

— *R. Rabindranath Menon*

They are not as rare
or less thriving in the warm air
of the land, as people think.
Uncertain seas provide the link,
caressing their soft bodies
with the psychosomatic flair

of a private love affair.
Invertebrate from the very birth,
they roam this earth
at snail's pace, as slimy limpets
carry their tiny trumpets

under protective oyster shells.
Unvarying, unsegmented,
perhaps a little demented,
Molluscan movements
signify the man's descent
from solid to liquid world,

where molecules form a pliant mould.
Beware, and count the mollusca among you,
before begins the review,
lest the subhuman marine
silently wins with a majority sign.

Mr. R. Rabindranath Menon, I. A. S., is the Managing Director of the Mysore Government Electric Factory. He is the author of "Ode to Parted Love" & "Dasavathara and other poems".

MARINE BIOLOGICAL ASSOCIATION OF INDIA

Founded in the year 1958 to create active interest in marine biological and allied sciences and to promote the cause of the same in India. Membership open to all persons and institutions interested in these disciplines.

PUBLICATIONS

Journal of the Marine Biological Association of India

The official organ of the Association, published semi-annually since 1959. The most widely distributed Journal relating to marine sciences in South East Asia. Accepts advertisements relating to scientific apparatus and chemicals, optical instruments, technical publications, fisheries equipments, fishing and oceanographic vessels, fish and other marine products, etc.

SYMPOSIUM SERIES

1. **Proceedings of the Symposium on Scombroid Fishes, 1962.**
2. **Proceedings of the Symposium on Crustacea, 1965.**
3. **Proceedings of the Symposium on Mollusca, 1968.**

MEMOIRS

1. **The Ribbon-fishes of the family Trichiuridae of India** — *By P. S. B. R. James*
2. **The Goat-fishes of the family Mullidae of India** — *By P. A. Thomas*
3. **The Dinophyceae of the Indian Seas. Part I. The Genus** *Ceratium* **Schrank** — *By R. Subrahmanyan*

Others under preparation: **Stony (Madreporarian) Corals of the Seas around India; Echinoderms of the Seas around India.**

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For particulars regarding advertisements, subscription rates, publications, etc., please contact the Secretary, Marine Biological Association of India, Marine Fisheries P. O., Mandapam Camp, S. India.

COCHIN-

THE CENTRE OF INDIA'S SHRIMP INDUSTRY

— *Thomas Cheryan*

The marine products industry has become important in India's economy only very recently. Cochin — the Queen of the Arabian Sea — has become the centre of this industry and this ancient port that used to supply fishery products of the dry variety only, has now become an important centre for the production of frozen and canned shrimp, during a period of a little over a decade This article attempts to portray the location of the industry and the conditions that helped to bring the industry to Cochin.

Shrimp has the first place among the Indian fishery in point of value and second in point of volume. The total value of our exports of seafood was very nearly Rs. 135.2 million in 1966 and it was Rs. 63.3 million in 1965. Of this the most important product, both in quantity and value was the shrimp. The production, processing and export of shrimp and other varieties of seafood like lobster tails and froglegs, has been concentrated in Cochin and it is the centre of India's shrimp industry.

Traditional Centre of Industry

The shrimp has been the biggest earner of foreign exchange among the fishery products of India from very early days The dried "prawn pulp" has been a delicacy, among the Burmese and other peoples of South East Asian countries for centuries. Cochin has been the traditional centre of this trade all these years. Next to pepper and other spices or "Malabar Produce", the most important indigenous export product of the ancient Port of Cochin was the dry prawn. Tea and Cashew became significant only recently, with the dawn of the twentieth century.

The business houses dealing in prawns and dry fish congregated in the southern area of the business district of Cochin known as Jew Town. That must have been the reason, when freezing of shrimp began in Cochin, the plant happened to be established in this area. That was back in 1953 and most of the important concerns which came afterwards have followed this example and established themselves on the western shores of the Port waters.

The prawn business came to be concentrated in Cochin because of the rich prawn

Mr. Thomas Cheryan is the Editor of Sea Food Trade Journal.

fisheries of the Kerala coast. Also after harvest, the paddy fields around Cochin were flooded and they became very good prawn fishing grounds. When the rains come the harvesting of the sea prawns begin and all these were dried and brought to Cochin for export.

Cochin Has Required Amenities

When the freezing and canning of prawns began, Cochin became the ideal place for the business on account of these facts coupled with many other modern amenities that it provided for the export business. Mechanised fishing craft can operate from the Cochin Port throughout the year, even including the monsoon months because of the excellent sheltered harbour. The finished products can be exported without difficulty because ocean going ships with refrigerated holds call regularly at Cochin all the year round. Thus the valuable fishery resources bestowed on this part of the country by a bountiful nature, coupled with the initiative shown by the private industry in adapting to the needs of the day in the setting up of upto-date catching, processing and packing units helped in the successful establishment of the industry here.

Research Developed

While there was hardly any research worth the name when the industry began, it is creditable that the success of the industry opened the eyes of Government, leading to the establishment of various research units by them for the development of the Industry like, The Central Marine Fisheries Research Station, The Central Institute of Fisheries Technology, The Offshore Fishing Station, The Indian Ocean Biological Centre etc. The work done by the State Government Fisheries Department and the Indo-Norwegian Project are also worthy of special mention.

Situation of Factories

These excellent facilities helped to develop Cochin into the foremost shrimp freezing and canning centre not only in India but Asia as well. The Mattancherry bridge connecting the Cochin shore of the backwaters with the Willingdon Island on which are situated the wharves and docks of the Port of Cochin, is more or less in the centre of the two miles of waterfront area in which a number of prominent processing units are situated dividing it into two sections. In the one mile section to the north of the bridge are going south to north, The Southern Fisheries Corporation, The International Fisheries Ltd., The New India Fisheries Ltd., The Kerala Fisheries Corporation Ltd., The Cochin Company Private Ltd., The Choice Canning Company, The Indo-Marine Agencies (Kerala) Private Ltd., Hazrat & Co., Ebrahim Mohamed Hashim & Bros. and K. E. Kesavan & Co. Further north on the other side of the harbour entrance, on the Vypeen Island are situated the factories of the Island Seafoods Private Ltd. and the Island Club Canning Company. To the left of the bridge along the water front running towards the south are situated the offices of the India Seafoods with a small factory. Then come the factories of XL Seafoods, United Industries (Cochin) Ltd, Castlerock Fisheries, Kerala Food Packers, Four Seasons Fisheries Company, and Cochin Fish Canning Company. The Main Factory of India Seafoods is situate some five miles south west of the Cochin Port, where also we have the factories of George Maijo and Co.

Here in this short stretch of water front have been established some of the most upto-date processing and packing plants with Ice

Plants, quick freezing facilities, automatic graders, hygienic processing arrangements, automatic canning plants, large cold storage facilities and quality control laboratories. Mechanised fishing vessels come and unload their catches at the processing factories. All factories have equally convenient road facilities and supplies from far off stations come to them by insulated vans. The processed goods ready for shipping are also moved in such vans to the docks. Before the goods can leave the Factories, Government appointed quality control officers inspect them and certify them as fit for export. Only with this certificate do the Customs pass the goods for loading on to ships. At no point of time are frozen goods allowed to remain unprotected. This helps the goods to remain in prime condition and thus enhance the reputation for the quality of the Indian product.

Mechanised Boats Help Production

While in the old days fishing was done by small country boats, which could not go out into the sea to any appreciable distance, the introduction of the mechanised fishing vessels have revolutionised the catching operations for providing the raw material needed for the processing units. There are today somewhere near 600 fishing boats operating out of Cochin. There are also steel trawlers, some of them with foreign skippers. These fishing boats and trawlers bring in good catches more or less all the year round. Investigations have revealed the presence of rich shrimp beds in the seas off Cochin and modern methods of fishing have helped the exploitation of these fisheries and this has added more importance to Cochin as a centre of the shrimp industry.

The Cultural Heritage of Kerala

— *A. Sreedhara Menon,*

Kerala, the southernmost State of the Indian Union, has a spacious history which goes back to the days of remote antiquity. Kerala culture is one of the major streams that have enriched the cultural heritage of India through the ages. This culture has derived its vitality and strength mainly from its composite and cosmopolitan character. Even from time immemorial diverse cultures and civilisations, religions and philosophical systems, ways of life and ideologies have had their confrontation in the land of Kerala and this helped to set in motion a grand process of social assimilation and cultural synthesis. The Arabs, the Assyrians, the Babylonians, the Phoenicians, the Israelites, the Greeks, the Romans and the Chinese were among the foreign peoples who had contacts with Kerala in the ancient period.

Ancient Foreign Contacts

The story of the early international contacts of Kerala may be studied in the background of its extensive spice trade. Ancient Kerala had been famous for its spices and it was its fame as the land of spices that brought foreign peoples and cultures to the Kerala coast even from the 3rd millennium B C., if not earlier. The Assyrians and the Babylonians carried on a lucrative trade in Cardamom and Cinnamon with the Kerala coast in the 3rd and 2nd millennia B. C. The Ancient Egyptians used the Kerala spices to make perfumes and holy oils. The Old Testament contains references to Cinnamon and Cardamom, spices indigenous to Kerala. About 1000 B. C. King Solomon of Israel equipped a fleet of ships manned by Phoenicians and 'came to Ophir and fetched from thence gold'. Ivory, apes and peacocks from Kerala also figured in his cargo Kerala's trade in spices assumed considerable importance in the closing centuries of the era before Christ. The Greeks and the Romans also played a leading role in carrying on trade with the Kerala coast. With the discovery of the monsoon winds by the Egyptian pilot, Hippalus. in 45 A. D. Kerala's trade with Rome entered a decisive phase. Roman gold and silver were steadily drained into the land in return for its spices, muslin and other costly items Pepper was the chief item in the trade between Kerala and Rome, and Muziris (modern Cranganore) was the chief emporium of Roman trade. The trade with Rome declined about the 5th century A. D. In addition to the Romans, the Chinese also carried on a flourishing trade in pepper with Kerala The port of Quilon was the major centre of Chinese trade on the Kerala coast. The Chinese trade contacts continued vigorously till about the 14th century, gives an interesting account of the large volume of pepper trade carried on by huge Chinese junks that plied regularly between China and Kerala.

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Cultural Synthesis

The main result that flowed from these early foreign contacts of Kerala which were mainly commercial was that they led, at a very early period of history, to the introduction of such religions as Christianity, Judaism and Islam into the land and helped to accelerate the process of cultural synthesis in Kerala. The story of the fusion of Dravidian and Aryan cultures and the rise and fall of religions like Jainism and Buddhism in ancient Kerala is of particular significance in this context. An attempt is made in the following sections to sketch in brief the story of this cultural synthesis in all its richness and variety.

Early Kerala Society

The basic elements or factors necessary for the development of a composite culture were prevalent in Kerala Society even from very early days A survey of the social scene in Kerala during the first five centuries of the Christian era which are usually referred to as the Sangam Age in South Indian History would give us an insight into these elements. The most distinguishing feature of Kerala Society during the early Sangam age was its freedom from rigid caste and communal barriers. Society was organised on the basis of the principles of social freedom and equality. All occupations were considered respectable, no person being regarded as inferior in the social scale by virtue of his occupation. Dignity of labour received due recognition The toiling classes like the Panas the Kuravas, the Parayas and others occupied a high status in society and even enjoyed the right to full education The evils of untouchability and unapproachtabiliy were unknown. Though Aryan culture had entered Kerala three or four centuries before the dawn of the Christian era, the caste sytem with its emphasis on social exclusivesess had not crystallised itself. The majority of the people followed Dravidian practices of worship which were not based on any particular religious philosophy While the bulk of the population thus followed Dravidian practices a small percentage of the people also followed Jainism, Buddhism and Hinduism. In course of time each of these religions made steady progress within the framework of a free and open society and left its lasting impress on Kerala culture

Jainism

The Jain religion might have come to Kerala during the period before Christ. It had considerable hold on the people in the early centuries of the Christian era and had its royal patrons as well. Ilango Adikal, the author of the Tamil book *Silapathikaram*, was a Jain prince who lived at Trikkana Mathilakam and in those days Trikkana Mathilakam was a famous centre of Jain religion and learning. There were several Jain shrines and temples in ancient Kerala and it would be of interest to note that some of them continue to exist even today as Hindu shrines after undergoing a process of transformation Mention may be made in this connection of the rock-cut temple at Kallil near Perumbavoor (Ernakulam District) in which are set up images of Paraswanatha and Mahavira Theerthankara and Padmavathi Devi. The temple is now regarded by Hindus as their own and the *pooja* is conducted here by the Namboothiri Brahmins. Nevertheless, the followers of the Jain religion from nearby Mattancherri are known to visit the temple even today in the firm belief that they are worshipping Jain Gods and not Hindu ones.

Buddhism

Like Jainism, Buddhism also had its glorious innings in Kerala in the ancient past. Some of the Hindu temples of today such as the Vadakkunnathan temple, Trichur and the Kurumba Bhagavathi temple, Cranganore are believed to have been at one time Buddhist shrines. In the ancient past Buddhism flourished mainly in the area now comprised of the Alleppey and Quilon Districts. The Buddhist faith was firmly established in a place called Sree Moolavasam which was a famous centre of Buddhist pilgrimage in South India. Scholars have sought to identify the place somewhere in the vicinity of Trikkunnapuzha or Ambalapuzha in Alleppey District. A large number of Buddhist images found in the Kunnathur and Karunagapally Taluks of Quilon District and Mavelikara and Ambalapuzha Taluks of Alleppey District indicate the prevalence of the Buddhist faith in this area in the ancient past. The most notable of these Buddhist images is the famous Karumadikuttan near Ambalapuzha which is one of the protected monuments of the State. Early Hindu rulers also followed a policy of enlightened religious toleration and patronised Buddhist temples without reservation. In spite of the disappearance of Buddhism from Kerala in later years there are still traces of its lingering influence in the State. It is believed that the famous deity of Sastha or Ayyappan worshipped by the Hindus is a Hinduised version of the Buddha. In support of this belief it is pointed out that the pilgrims to the famous shrine of the Sastha at Sabari Mala observe the strict vows of non violence, vegetarianism and abstinance from worldly pleasures during the period of penance prior to their pilgrimage. Further, they also do not generally observe caste distinctions during this period and this attitude of mind accords well with the Buddhist emphasis on castelessness and cosmopolitanism. Even the story regarding the birth of Sastha (Hariharaputra) as the son of Vishnu (Hari) and Siva (Hara) is regarded as the result of an attempt on the part of the Vaishnavites and the Saivites to accommodate the Buddhists within the Hindu fold. There are also other evidences of the influence that Buddism has left on the life of the people of Kerala to this day. The extensive popularity of the Ayurvedic system of medicine in Kerala is believed to be a legacy of Buddhism. The practice which prevails in some of the temples such as the Siva temple, Thiruvizha and the Sastha temple, Thakazhi of giving medicinal preparations or oils to the mentally and physically sick devotees who visit them is also believed to be a survival of the influence of Buddhism with its great concern for the sick and the suffering. The impressive festivity called *kettukazhcha* or *kutiraketta* associated with temple festivals in some parts of the Quilon and Alleppey Districts bears traces of Buddhist influence as there is very close resemblance between it and the Buddhist festival which Fahien, the Chinese traveller of the early 5th century A. D., witnessed in the city of Pataliputhra. Above, all, Buddhism has continued to have its impact in the field of literature in Kerala even in modern times. Kumaran Asan, the great poet of modern Malayalam was considerably influenced by the Buddhist faith as is testified by his works.

Aryan-Dravidian Fusion

The story of the rise and evolution of Hinduism in Kerala and its relationship with other religions also forms part of the interesting story of cultural synthesis. The original Dravidian religion underwent modification under the impact of the Aryan ideas

which exercised a dominant influence in Kerala society since the 5th century A. D. Though with the spread of Aryan culture the caste system came to have an increasing hold in Kerala society, the incoming Aryans sought to bring within the Hindu fold those of the Panas, the Kuravas, etc, who distinguished themselves by their learning and erudition. The rise of Hinduism was also accompanied by the decline of Buddism and Jainism, for a vigorous movement was set in motion by Hindu religious leaders to undermine the influence of these religions without provoking violent conflict. The work of the great Acharyas, Prabhakara and Sankara, assumes considerable significance in this context In Sankaracharya the real genius of Kerala for cultural synthesis and reconciliation found supreme expression. He was a great reconciler who combined in his teachings and methods the best elements of Hinduism and Buddhism. Sankara followed the Buddhist example in giving Hinduism effective organisational framework. It was with this object in his view that he set up four great Mutts in four different corners of India, viz., Badarinath in the North, Puri in the East, Dwaraka in the West and Sringeri in the South. This aspect of Sankaracharya's work also illustrates his grand vision or concept of the unity of India. Sankara is said to have "laid the foundations of the attempts at synthesis which constitute the religious history of India in the middle ages". In fact the life and work of Sankaracharya provide much material for thought to those who are interested in the study of the contribution made by Kerala to Indian cultural heritage.

Apart from such factors, it is significant to note that the Hindu religion itself in the course of its growth in Kerala was moulded by a synthesis of Aryan ideas from the North and Dravidian ideas from the South. The early Aryan immigrants assimilated the practices of the native people and borrowed their Gods whom they accommodated within their own religion. In this connection, we may cite the example of Naga (Serpent) worship which secured a place in Hinduism and which was admittedly a non-Aryan practice. The very concept of *Ananthasayanam* i. e., of Vishnu reclining on the Serpent King, Anantha, bears evidence of the great influence exerted by Naga worship so popular in Kerala in the moulding of the Hindu religion. It may also be mentioned that those who are inclined to reject the Buddhist theory of the Sastha cult identify Sastha with Ayyanar, a Dravidian deity, widely worshipped on the East Coast and they even regard Sastha worship as the Dravidian element which was incorporated into the Aryan religion in the wake of the Aryanisation of the West Coast.

Religious Amity

In spite of the existence of several conflicting sects within Hindu religion and the prevalence of several non-Hindu faiths in the land of Kerala there was practically no religious rancour of any kind in the outlook of her people even from very early days. Their dealings with one another were characterised by a remarkable spirit of religious toleration. No religion in Kerala has been considered as inferior to the other. Communal amity has, on the whole, reigned supreme. The Hindu, the Jain, the Buddhist and the Christian lived in the early Kerala society as good neighbours This liberal and tolerant spirit may be seen in the relations between the different communities of the land even today. Instances are not rare of temples, churches and mosques existing in

close proximity to one another and peoples of all communities and religions participating freely in religious festivals conducted under the auspices of these religious institutions. In Trivandrum in the very heart of the city known as Palayam may be seen the phenomenon of a temple, a church and a mosque existing side by side while in Chennamangalam, at the historical site called Kottaikovilakom, a temple, a church, a mosque and a synagogue exist under similar conditions of close proximity. Similarly in Mattancherri may be seen the White Jews Synagogue and a Vishnu temple existing side by side and in Purakkad a church, a mosque and a temple. There are also instances of different religious communities co-operating in their religious rites. At Erumeli in Kottayam District there is the unique instance of the Vavar Mosque which is visited by Hindu pilgrims in their thousands on their way to the Sastha temple at Sabari Mala Perhaps in no other part of India can one see such an impressive demonstration of communal harmony as at Erumeli. It may also be mentioned that social institutions like *Makkathayam* (patrilineal system of inheritance) and *Marumakkathayam* (matrilineal system of inheritance) have been prevalent among different sections of people in Kerala, irrespective of religion or caste. Though *Marumakkathayam* has been prevalent mainly among Hindu communities like the Nairs and Kshatriyas it has also cut across religious barriers and exercised its hold on other communities as well The majority of the Muslims or Mappilas of North Malabar have followed the matrilineal system, though this is opposed to the Islam law. Similarly a section of the orthodox Namboodiri Brahmins living in the Payyannur Gramam of Cannanore District in North Kerala follow the Marumakkathayam system of inheritance which is not generally followed by other Brahmin castes in Kerala or outside.

Christianity, Islam etc.

The story of the progress of Christianity, Judaism and Islam in Kerala also furnishes its own valuable lessons in national integration or cultural synthesis It is generally believed that Christianity was introduced in Kerala by St. Thomas in 52 A. D. and that it made rapid progress as the result of conversions from among Brahmins and other high class Hindus. Though alien in its origin, the religion came to be accepted as an indigenous faith and it was patronised by local rulers and people. The number of Christians is also believed to have been reinforced with effect from the 4th century A. D. by immigration of Syrian colonists from Baghdad, Jerusalem and other places. The early Syrian Christians played a prominent role in trade and commerce and they obtained innumerable privileges and favours from the rulers of Kerala. The history of Christianity in Kerala also shows that the liturgy and organisation of the church were subjected to the impact of diverse cultural influences. The prevalence of the Latin, the Syriac and Malayalam rites in the Catholic Church testifies to such cultural confluence. In fact, the existence of various denominations, Catholic and non-Catholic, among the Christians owes its origin to foreign cultural influences of a varied nature. In spite of the existence of such diverse denomination each of which has drawn inspiration from some foreign influence or other, the Christians have completely assimilated themselves in the community in which they live and are Keralites in all respects. The Jews living on the Kerala coast from the first century A. D. have also written another interesting chapter in the history of Kerala. They too received much patronage from the native rulers from very early days as is evidenced by the Copper Plate Grant of Emperor Bhaskara Ravi Varma dated 1000 A.D. conferring significant rights and privileges on

the Jewish Chief Joseph Rabban. The Plate is still preserved in the White Jews Synagogue, Cochin. In addition to Christianity and Judaism, Islam too gained foot-hold and made progress in Kerala from the 7th century onwards. Though there is not much of historical evidence in support of the tradition that the progress of Islam in Kerala was the direct outcome of the conversion of a Chera Emperor by name Cheraman Perumal to Islam, there is enough evidence to believe that Muslims received special and favoured treatment from native rulers, particularly the Zamorin Rajas of Calicut. It is a significant fact that the navy of the Zamorins was manned by Muslims and that the Zamorin had issued even an order that in order to get sufficient number of Muslims to man his navy one or more male members of the families of the Hindu fishermen living in his domain should be brought up as Muslims. This is perhaps proof of the fact that not much importance was placed on narrow religious and communal considerations by the rulers of Kerala in their relations with the people.

Language, Literature etc.

In the preceding sections we have referred mainly to the maritime and religious traditions of Kerala. The contribution of the State to the cultural heritage of India in the fields of literature and arts is also of inestimable value. Kerala was part of the Tamil country till about 800 A. D. and the language of the people in those days, was Tamil. Some of the leading Tamil poets of the past like Paranar, Ilango Adikal and Kulasekhara Alwar belonged to Kerala. From the 9th century onwards Malayalam began to evolve itself as a distinct language. Having originated as an offshoot of Tamil, it came gradually under the influence of Sanskrit and Prakrit and before long it came to have a rich literature of its own. Today Malayalam is one of the most developed of the Indian languages and it has produced writers of all-India renown like Vallathol, G. Sankara Kurup and Thakazhi. Apart from language and literature, contribution of Kerala to other branches of learning is also substantial. It has evolved its own indigenous system of medical treatment and thus enriched the literature and practice of Ayurveda.

Arts

The State has an enviable tradition in the field of music and other fine arts. The ancient art forms like *Kuthu* and *Kudiyattam* gave ample scope for the exercise of musical talent. The service of Swathi Tirunal, the great ruler of Travancore (1829-1887), to Indian Music in modern times deserve special mention. Kerala has evolved its own art of painting through the ages. Some of the temples like Tiruvanchikulam have preserved the oldest specimens of Kerala murals. The palaces of Padmanabhapuram, Krishnapuram and Mattancherri contain the most exquisite mural paintings of the later periods. In recent times the State produced the great genius Raja Ravi Varma (1848-1900) whose paintings adorn many an Art Gallery in the country.

Kerala has developed its own forms of architecture and arts In the Padmanabhapuram Palace (Kanyakumari District) may be seen the best specimen of Kerala's indigenous secular architecture. The "Dutch Palace" at Mattancherri built by the Portugues in 1555 shows a synthesis of the Kerala and Western styles of architecture. The innumerable temples, churches and mosques of Kerala bear testimony to the evolution of its non-secular architecture. Among the visual arts the most famous is *Kathakali*, the world famous dance drama in which may be seen a harmonious blending of dancing, music and

acting. A very notable contribution of Kerala in the field of martial arts in recent times is the Circus.

In order to complete the story of cultural synthesis narrated in the earlier sections, we may also note the evidences of mutual cultural influences in the fields of language, literature and arts as well in Kerala. As a result of geographical and historical factors such languages as Tamil, Kannada and Sanskrit have exercised considerable influence on Malayalam language. This is particularly so of Sanskrit. Perhaps, it is the predominant influence of Sanskrit on Malayalam that accounts for the less striking hostility to Hindi among the people of Kerala than in the neighbouring Tamil speaking State of Madras Malayalam vocabulary has also been enriched by foreign influences such as those of the Arabs, the Chinese etc. In the field of architecture and arts too we find the blending of indigenous and foreign ideas and styles The Dravidian style of architecture has influenced temple building in certain parts of Kerala, particularly in the south and areas bordering Madras State. The Sri Padmanabha Swami temple, Trivandrum, is the finest specimen of the Dravidian style in Kerala. Some writers have also sought to discover traces of resemblance between the architecture of Nepal and Tibet on the one side and that of Kerala on the other in view of the fact that wood enters largely in the construction of temples and buildings in both those places. The particular pattern of roofing houses which is met with along the coastal route from Cochin to Quilon is alleged to be the result of Chinese influence. The Portuguese, the Dutch and the English have also left their influence on the architecture of Kerala and this may be seen particularly in the construction of Churches. The St. Francis Church, Fort Cochin where the Portuguese statesman Vasco Da Gama was originally buried, is an example in point. Kerala has also made her own contributions to national integration in the realm of fine arts. The great musical composer, Swathi Thirunal, sought to achieve a synthesis of classical Karnatak and Hindustani styles in the field of music. The mural Paintings found in some of the old temples and palaces of Kerala are reminiscent of the South Indian styles of painting prevalent from the days of the Pallavas of Kanchi to those of the Empire of Vijayanagar. Dr. Cousines, the famous art critic, has expressed the view that the Cochin murals show traces of the influence of the Buddhist painting that links the art of Kerala with that of Ajanta and Bagh. The influence of the Western style of painting may be seen in the paintings preserved in churches as well as in those of the great artist Raja Ravi Varma. Thus the history of Kerala and the evolution of her culture through the ages provides several interesting lessons in cultural synthesis

BHARATHA NATYAM

MANIPURI DANCE

THE QUEEN OF THE ARABIAN SEA

— *K. K. P. Menon*

The Country is lyric–
The Town is dramatic–
When mingled they make
The most perfect musical drama–
— Longfellow.

Palm-fringed lagoons, backwaters dotted with small islands, and enchanting view of the sea and idyllic charm and incomparable beauty of landscape impart an eerie touch of a fairy land to the tropical paradise of Kerala, Cochin and make it a musical drama or a poem in geography. Cochin claims very many titles, "The Queen of the Arabian Sea" and "Venice of the East" being the more popular.

Cochin is also the name of the erstwhite princely state. But the City of Cochin or the Cochin Corporation includes places in and around the harbour area such as Ernakulam, Mattancherry, Fort Cochin, Wellingdon Island etc. It may also be mentioned that this Corporation was formed only on November 1, 1967. It has an area of 83.524 sq. km with a population of 4,00,000.

Glimpses of History :

Cochin has rich past and like many of the ancient cities, the history of Cochin is strewn on every inch of its soil. Perhaps this history may be stained with blood, for, a number of battles have been fought on the soil and waters of ths city. It is no wonder if the history of Europe is the history of Cochin too.

Pliny (23–79 A. D.) or Ptolemy (126–161 A. D.) or Marco Polo (1290–1293 A. D.) or Ibn Batuta (1342–1347 A. D.) makes no mention of Cochin though they have stated about nearby places of this city. Ma Huan, a Chinese Muslim, who visited Cochin in 1409 A. D., is the first traveller to give an account of Cochin. Ma Huan has explained about the King, the classes of men in the Kingdom, the seasons and pepper trade of Cochin. The Italian traveller, Nicolo Conti was the next to mention Cochin. He reached Cochin (Cocym) in 1440 A. D. after a journey of three days from Quilon. It appears, there was a common saying during these days that "China was a good place to make money and Cochin to spend it at"!

Cochin became a centre of attraction by the arrival of foreign traders who came in search of a sea route to Malabar coast from Europe with the idea of flourishing their trade. Maritime communities vied with on another to earn the goodwill of Cochin for the sake of spices, especially the 'Black Gold' or pepper, sandalwood and ivory. As the centuries went by trades became empire builders. The struggles for power between European countries landed the Portuguese, the Dutch, the French and finally the British at Cochin.

The Portuguese Admiral Cabral landed at Cochin on the 24th December, 1500. He made

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friends with the Raja of Cochin and got permission to build factories at Cochin and also to purchase whatever he wanted. In return, the Portuguese promised to free the Raja from the yoke of Calicut Zamorin. Thus Cabral's activities at Cochin constitute the first chapter in the history of European contacts with Cochin. Joao Da Nova the next Portuguese Captain who arrived at Cochin (1501) was also received by the ruler. Then came the famous Vasco Da Gama with an idea of establishing Portuguese supremacy in the Arabian Sea. He reached Cochin on the 7th November, 1502. Vasco Da Gama's negotiations with the Raja of Cochin got the Portuguese a permanent foothold for 'armed commerce' on the Indian coast. The Portuguese also constructed a Fort in 1503, the Fort Manuel, which was the first fort constructed by Europeans in India.

The Portuguese appointed a Viceroy to look after their interests in India. The first Viceroy Francisco D' Almieda arrived at Cochin in November 1505. In 1509 he was succeeded by Alfonso D' Albuquerque. Albuquerque's immediate successors Lopo Soares (1515–1518), De Sequeira (1518–1522) and Duarte D' Menezes (1522–1524) were incompetent administrators. In 1524, the Portuguese Government sent Vasco Da Gama to India as the Viceroy of their dominion. But he died on the 24th December, 1524 and was buried in the Chapel of the Franciscan monastery at Cochin.

The Portuguese contacts with Cochin did much to the country. They were the first European power to establish trade contacts directly with India and also to secure a world market for Indian goods especially spices and muslin. They introduced in India the cashew tree, tobacco, custard apple, guava, pineapple, and pappaya. It may also be mentioned that the bungalow type of buildings were introduced in Kerala by Portuguese.

On February 15, 1661 Van Der Myden, the Dutch Commander landed his troops at Njarakkal, a place near Cochin. Thereafter Cochin witnessed many battles and by January 1663, the Dutch established themselves as the masters of Cochin. Trade was the primary concern of the Dutch. But in spite of the several vandalisms they showed at Cochin, they also introduced several new industries like salt farming, dyeing, and printing. Most remarkable of the Dutch contribution is the *Hortus Malabaricus*, the famous work on Indian Botany which deals with the medicinal properties of Indian plants. This monumental work was published at Amsterdam between 1686 and 1703 in twelve volumes.

Now it was the turn of the English. It began with a formal treaty between English East India Company and Cochin which was signed on the 6th January 1791 and came into effect from the 25th September. The conditions of the treaty and its consequences passed the Cochin State under the political control of the East India Company. The rest of the story is well known to our generation.

Cochin is a place of much religious importance and tolerance as this city had the privilege of welcoming different religions from various parts of the world. It is believed that St. Thomas, the Apostle landed at Muziris (Cranganore) near Cochin by about 52 A. D. and founded seven churches on the Kerala coast. Jews came to Kerala coast by 72 A. D. and settled at Muziris and from this settlement in 1565 they were compelled to migrate to Cochin. There are minor religious communities in Cochin are a such as Jains, Buddhists, Sskhs etc., besides a large population of Muslims and Hindus.

The Sage of the Cochin Port :

As can be seen from the foregoing pages, Cochin became the centre of attraction of the

world mainly due to the harbour. Cochin is one of the finest natural harbours in the world.

The origin and development of the present Cochin Port is an interesting saga of nature's bounty and man's adventure. In 1341, the ancient harbour of Muziris got silted up and became useless for proposes of trade. The Periyar river with its devastating floods forced a way into the sea opposite the present town of Ernakulam and thereby made possible the emergence of Cochin harbour. The shipping trade of the Port was concentrated at the coastal area now known as Fort Cochin with the port serving as a roadstead. The long rock-like barrier of sand and silt at the mouth of the harbour created perhaps when the Periyar forced its way into the sea, prevented access to steamers into the port from the sea. Sailing vessels used to lie at anchor in the open sea only.

Engineers discussed the problem of cutting the barrier of sand and making a deep channel for ships to enter inside. The first chart of the project was made in 1835 and for eighty five years only discussions remained. At last, in 1920 what was once thought to be an illusory dream was brought within the realms of reasonable hope, when the Madras Government with Lord Willingdon at its head clinched the matter by starting the work. Since then it was only a matter of time to form the harbour. Thanks to Sir Robert Bristow, who accomplished the difficult task with his devoted work and vision, the Cochin Port developed during 1920–1940. The harbour entrance between Cochin and Vypeen is 440 yards and gives access to about 125 sq. miles of navigable backwater.

An important event in the development of Cochin Port is the reclamation of Willingdon island. This man-made island, an area of about 900 acres, is the nerve centre of the activities of the port. The island named after Lord Willingdon, the then Viceroy of India, took its present shape in 1941. The deep water wharf berths of the port are situtated in this island. There are at present thirteen berths and two more are going to be constructed. The trade of the port during 1966–67 was 36,70,000 tonnes. The civil aerodrome, offices of the Port Trust, Customs, Indian Navy, and a number of shipping agents, are at this island.

The modern Port of Cochin lies on the direct route to Australia and Far East from Europe and is one of the major ports on the west coast of India. It is at lat. 9°–58′ N and long. 76°-14′E.

Place of Tourist Interest in Cochin :

The entrance of Cochin by sea itself provides an enchanting sight. The banks of the backwaters are festooned with an incredible lace-work of Chinese fishing nets.

Fort Cochin, the sentinel of Cochin has the maximum influence of foreigners in this part of the country. The main landmark in Fort Cochin is the St. Francis Church. It is the oldest European church in India. It covers the site of St. Bartholomews, a wooden structure built by the five Friars who accompanied Albuquerque to Cochin in 1503. On the 3rd May 1506 the Portuguese Viceroy, Almeida, was permitted by the Raja of Cochin to construct a new city of mortar and stone. Accordingly the mendicant order of Franciscans raised the present edifice, completed by 1510 and dedicated to St. Anthony. From 1510 to 1663 this church was officially called the Conventional Church of the Order of St. Francis of Assissi. From 1664–1804 it was the Dutch Reformed—Der Gergo Meert Godsienst. After the advent of British it was a Protestant church. The English carried out some renovation work in 1886–87 and afterwards it is known as St. Francis Church.

When Vaseo Da Gama died in 1524, his mortal remains were interned in the chancel of this church. It was taken to Portugal in 1540 by his fifth son, Pedro da Silva da Gama. A very interesting item to be seen in this church is the "Doop Boek"—the old Baptism and Marriage register for the period 1751–1804.

Mattancherry is the commercial capital of Kerala. It can also boast of the Dutch Palace and Jewish Synagogue, the two tourist attractions of world fame.

The Mattancherry palace or the Dutch Palace, was built and presented to the Cochin ruler Vira Kerala Varma (1537–1565) by the Portuguese about the year 1555, Since then for about two centuries it was the seat of the royal family of Cochin. About 1663 A. D. the Dutch made certain renovations to the palace and thereafter it is known as Dutch palace. This palace represents a peculiar blending of European and indigenous ideas of architecture. However, the mural paintings of the palace made this an important object of attraction. Of these paintings, the Ramayana scenes are the most famous.

The Jewish Synagogue, situted adjacent to the palace is a monument of the religious harmony prevailed in those olden days. The synagogue was originally built in about 1567. The Portuguese partially destroyed the original synagogue in 1664, but it was rebuilt by the Dutch. The clock tower was built in 1767. The famous copper plate Grants of Bhaskara Ravi Varma dated 1000 A. D. are preserved here. A golden crown presented by the Maharaja of Travancore in 1805 is also exhibited in the Synagogue. The Silver lamps of the Synagogue were presented in 1808 by Col. Macaulay, the first British Resident of Cochin and Travancore. The blue and white willow pattern tiles forming the pavement were brought from Canton in China and were presented to the Synagogue in 1763 by Ezekiel Rabi, a rich merchant of those days. The tiles numbering about 256 are hand-painted and the scenes depicted on each tile are different from each other.

Cochin has much more to be proud of—an important cultural centure, abode of many educational institutions, nerve centre of the fishing industry and oceanographic research, the Kerala High Court and the Head Offices of the Coir Board etc. Cochin is also on the threshold of an industrial revolution. Along with the numerous already existing factories the location of India's second Ship Building Yard, is expected to give rise to a large number of subsidiary industries.

Thus the city of Cochin is looking ahead for a prosperous future. The Queen of the Arabian Sea once again beckons the visitors to the land of beauty and friendliness that is Kerala, which enjoys the highest percentage of literacy in India and which is famous throughout the world for its pepper, cahewnut, tea, coir shrimp and handicrafts.

TRICHUR POORAM

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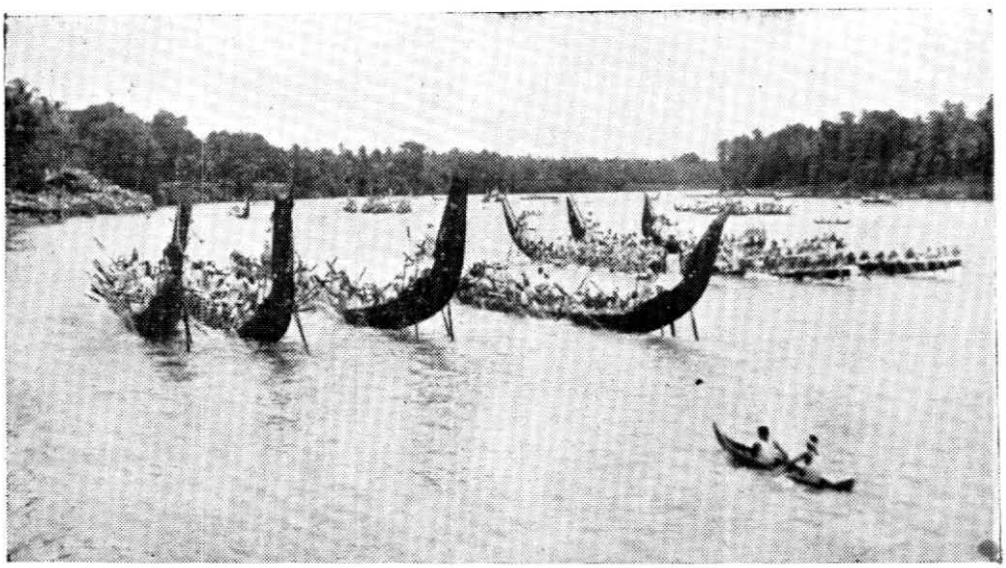
ONAM – FLORAL DECORATION



SNAKE BOAT RACE

FESTIVALS OF KERALA

— *Elayaraja Marthanda Varma*

INDIA celebrates its festivals despite privations and hardships. This dauntless spirit of our people is shared by Kerala, which has, besides the common Indian festivals, some of its own celebrations that are typical of the land and characteristic of the people. Artistic by temperament, the Malayalis look forward to these occasions, when they can give free expression to their love for song and dance. As these festivals have a religious background, the temples play a prominent part in their celebrations.

The first month of the Malayalam Year, Chingam or Sravan (August–September), witnesses the most important of Malayali festivals, Onam. It is a festival dedicated to a time-honoured belief, that each year King Mahabali, the guardian spirit and ancient ruler of Kerala (who was consigned to Pathala by Vishnu in his *Vamanavathara*), revisits his land to see if all is well with his country. To reassure him, the people of Kerala maintain a spirit of joyousness and gaiety throughout these festive days. The festival starts with the making of a figure, known as *Onathappan*. After an early bath the girls of the house, wearing new garments, set about making this figure of clay and crowing it with flowers. The *Appan* is represented as a tiny ball placed over ten tiers, with each tier standing for a day. On the tenth day comes Tiruvonam—a day of merry-making and giving of presents, mostly of cloth. Of all dances associated with Onam, the most important is *kaikottikkali*, a circular movement performed by women. There are also songs extolling the gay mood of the day and dealing with stories from the Puranas.

As this festival falls during the cool season, when the sky is blue and flowers are found everywhere, most of the activities are in the open air. While the women go in for amusements like music, dance and a ball game in which the ball is entirely made of coconut leaves, the men prefer more rough and strenuous sport, in which there is scope for a lot of horse-play; but tempers are kept in check and there are no remarks which would spark off trouble

The children love it when they find that their rowdiest pranks only evoke mild rebukes from their elders, and there is a genial air of "live and let live". People put on their best clothes in honour of Onam, but the colours are few in Kerala, as white is the favourite colour. with perhaps a border of gold lace on the dhotis. On Tiruvonam day the white is dyed a festive yellow. In the early hours of the morning, there are games in the water, swimming

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H. H. Marthanda Varma is the Prince of Travancore.

competitions and duckings which make one ready for a very heartly meal. In the less sophisticated places, they waive the breakfast and only have a sumptuous *sadya* (feast). It is the boast of the Malayali that he can lay on 101 varieties of different curries, rice and sweets, and, on Tiruvonam day, these delicacies would be served on plantain leaves.

In the evening after the lamps are lit and offerings have been made to *Onathappan* (placed in the family courtyard), a little boy, suitably got up for the occasion, shoots an arrow at the foot of the *Appan*, which is then taken down amidst whoops of joy (*kurava*), and there is a general scramble for the sweets. On reckoning the next day, the families find that they have spent more than they anticipated. But the spirit of the occasion is such that no one really cares. There is a typical verse in Malayalam to represent this spirit.

> A man and his fingers are having a conversation. The little finger : "My friend, Onam has come." Second finger : "But how about the feast?" The fourth, with joyous abandon : "Borrow it!" The fifth finger shows the owner of the hand where he should go, and, following its directions promptly, he goes to his neighbour for a loan (payable when able). But it is for Onam, and is seldom refused, and everyone has a merry and happy time.

In Dhanu (December-January), there is a festival which needs special mention, as it is peculiar to Kerala. It is in honour of Kamadeva, the God of Love. It is conducted by the ladies, and the men can only look on and partake of the *prasad* offered to the God. The little shrine, made almost overnight, is lit with many lamps and posts of boiled rice and milk are the *nivedya* to the deity. Sugar-cane, fruits and grain are all mixed in a preparation called *ettangadi*, and it is then offered. The circular dance, *Tiruvathirakali*, is accompanied by many songs from the Puranas and the *Bhagavatam*, which are sung by young matrons and maidens, with flowers in their hair and with lines of sandal paste on their foreheads. They offer prayers to the God of Love. In each house, tender coconut leaves are made into various shapes (like birds and flowers) and strung on doorways. Designs are drawn with rice flour on the doorsteps and courtyards, and the air of festivity is such as can only be created by women who are in a mood to enjoy themselves. The songs sung are very moving and find a place in the heart of every Malayali.

Another festival is the snake-boat race, at Aranmula. This is actually an offering to the temple deity, and so there are certain codes governing its procedure. The competition is conducted by two local factions, and it takes place on the famous Pampa river. People from all over the State go there in thousands to witness this spectacular pageant. The boats themselves are peculiar in construction, of a long and snaky appearance. The boatmen and their partisans enliven the proceedings with spritely songs (some deriding their opponents and extolling their own virtues). There are also songs praising Krishna, the presiding deity of Aranmula. After the race is over and the victorious team has been cheered and feted, both the parties are treated to a very splendid meal, which is financed by a patron who would win the favour of the Lord Krishna, the lover of all sports.

In the month of Metam (April-May) and almost corresponding to the Tamil New Year is

Vishu. It is considered to be of great importance in that it decides how luck will favour one throughout the year. Arrangements are made to see and hear only auspicious omens, and people get up in the early hours of the day and, helping each other in the dark, they grope their way to a room in which a lamp has been already lit. In front of the lamp, auspicious things, such as yellow flowers (*kanikonna*), jack-fruit, betel-leaves and gold coins in a small silver tray, are arranged. Incense sticks are also lit. After each member of the family has observed these symbols of prosperity and plenty he or she prostrates before the lamp and makes way for the late-comers, who are awaiting their turn to open their tightly-shut eyes to see the *kani* as the first sight of the morning. After bath and breakfast, there is an observance of a tradition that money should pass hands, and the younger people have a rollicking time, collecting money from the elders.

The Trichur Pooram comes in Metam (April–May) and is the pride of the people of Cochin. The long line of elephants (decorated with *nettipattams*) go round the *prakaram* of the temple, and the highlight of the day is the celebrated fireworks display.

All important temples conduct *utsavams*. The most well known are the half-yearly ones in the Sri Padmanabhaswami temple at Trivandrum. For ten days, the temple becomes the centre of Kerala dance forms, such as Kathakali and Ottam Tullal, and Chakkiyar Koothu and Velakali and other amusements like tightrope displays. Each day, there is *siveli*. Different *vahanams*, in gold and silver, are used for the processions of the deities in the temple corridors. On the ninth and tenth days, there are processions outside the precincts of the temple. The *palli vettai*, on the ninth night, is a hunt symbolising the suppression of evil. This is a unique procession in that it is conducted in absolute silence till the hunt is over. As the *dasas* of the titular deity, the rulers of Travancore have done the actual hunt by shooting an arrow on to the target set in a small made-up forest. The entire illumination is from oil lamps and there is an especial charm in this.

The following evening, there is a three-mile-long proceedes to the beach. This is called the *arat* (purificatory bath). The deity proceeds to the seashore, with all pomp and pageantry, and is escorted by His foremost servant, the Maharaja, who walks barefoot and traditionally dressed in the splendour of humility. This has been acclaimed as the simplest and most dignified of festivals to be seen anywhere.

KATHAKALI

A Brief Account of its Origin, Growth, and Content

— *M. K. K. Nayar*

Like the miracle plays of Europe, but in an incipient form, ritual plays used to be enacted in temples from very early times in Kerala. The most popular theme was the slaying of the demon Darika by Durga. One could not say how ancient this drama was in Kerala. It was certainly there before the second century A. D. This drama called *Darika Vadha* was perhaps one of the contributory factors to the common *Vadha* concept or the slaying of the demon usually depicted in several popular pieces of Kathakali.

Another interesting factor that played its part in the evolution of Kathakali was the tradition of the gymnasia known as *Kalaris* in Kerala. The *Kalari* was a place confined to military training including physical combat. The Nayars of Kerala were a fighting class although they were also chieftains and farmers alike. Their mainstay however was soldiering. The *Kalaris* provided the training. The *Kalari* gave rise to a form of drama which combined both physical display and intellectual relaxation. Gradually two distinct forms were evolved, the comedy and the dance drama. Comedy no doubt contained a good percentage of social satire.

Another important art form that contributed to the making of Kathakali was the Kudiattam. Again we do not know how old Kudiattam is. Chilappathikaram, the famous Tamil epic written by Elankovan, brother of Cheran Chenkuttavan, the Chera emperor of the second century A.D. who ruled from his headquarters within a few miles of the present Cochin Fort, described in detail the performance of Kudiattam and Chakiar Koothu then prevalent in Kerala. One could not say definitely which was older, Kudiattam or the Chakiar Koothu. The elite of Kerala at that time were well versed in Sanskrit. The drama attracted them. To enact Sanskrit dramas a group of people with histrionic talent was selected. The performance given by the group was called Kudiattam. It might be of interest to know that even in those days Kudiattam was performed by both men and women. The particular sect who performed these dramas were called Chakiars and their women, Nangyars. Chakiars were specially trained to portray different roles with enviable histrionic effect. Talented men among them used to

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give mono-act performances. Such performances were called Chakiar Koothu.

The Chakiar Koothu was dominated essentially by the comic spirit. The Chakiar had great licence to ridicule contemporary society. Even kings were not exempt. The convention was that if any member of the audience spoke in protest of the Chakiar's innuendoes, the Chakiar walked out of the stage. Chakiar Koothu is popular even today. It is usually performed in temples. Chakiars are great masters of the histrionic art. They are veterans in Abhinaya.

As the centuries rolled by, Jayadeva's Geetha Govinda became a popular poem in Kerala. The Zamorin of Calicut, a powerful king who managed the affairs of the famous Guruvayur temple devoted to Lord Krishna, was enamoured of Geetha Govinda. He insisted on Geetha Govinda being recited in the Guruvayur temple every day. Some devoted Nambudiri Brahmins in Guruvayur listening to this ecstatic music conceived of a dance drama based on it. This dance drama known as Krishnattam-in other words the dance of Krishna became vers popular in that area.

Ramanattam

The origin of Kathakali is shrouded in folklore. The first poem written for Kathakali is attributed to the Rajah of Kottarakkara, a small chieftain in South Kerala. When it was introduced it was popularly known as Ramanattam-in other words the dance relating to Rama. Legend has it that the Rajah of Kottarakkara had conceived of Ramanattam as a reply to the great Zamorin's Krishnattam. Whatever the legend may hold, the beginning of the Kathakali that we see today was with the Rajah of Kottarakkara's story of Ramayana written for the purpose. At that time he himself was not very clear in his mind of the tremendous potential of the seed he had sown. The costumes used then were not elaborate or glamorous. Dancers were also expected to sing along with their performance. Very soon, Ramanattam became popular. One of the reasons for this popularity was the jealousy of the smaller chieftains towards the mighty Zamorin. A chieftain called the Rajah of Vettathunadu, a neighbour of the Zamorin's territory, took Ramanattam into his hands and developed it in the initial stages. He devised proper dance movements, especially those now known as *Kalasams*. He also found that violent exercise caused shortness of brea.h and the song suffered from it. He therefore provided a musician to sing the poem from behind the dancers, so that the dancer could be free to dance and express the emotions. The Rajah of Vettathunadu was also responsible for improving the costumes and the facial make-up of the artist. But Kathakali was still in its infancy when this great lover of art breathed his last with very fond words on Ramanattam on his lips just as he closed his eyes for ever. He was no poet. He did not therefore wirte any poem for Kathakali.

The first major event that happened in the history of Kathakali after the creation of Ramanattam by the Rajah of Kottarakkara was the emergence of a great scholar, the Rajah of Kottayam in North Kerala. He recognised the tremendous potential of a dynamic art form like the Kathakali. He realised that any dance drama based on an essentially devotional piece like the Ramayana had its limitations for vibrant expressions and emotional display. He therefore turned to the Mahabharata where men were men and women were women. He converted Ramanattam which was till then more of a religious ritual than a dance drama into Kathakali, resplendant with emotion and capable of converting the audience into

identifying themselves with the characters displayed. He wrote four *Attakathas*, i.e., poems for Kathakali performances. They are even today the basic Kathakali themes. The first one related to the slaying of Baka by Bheemasena. The second called Kirmmera Vadha described the life of the Pandavas immediately after their exile from Hasthinapura. The third one, a very popular piece called Kalyana Saugandhika related to the mad rush of Bheemasena to collect the flower that attracted the whim of his beloved Draupadi. The fourth work of his called Kalakeya Vadha presented Arjuna at once as the most glorious hero and the most humiliated object of ridicule. It was the Rajah of Kottayam who gave shape and substance to Kathakali. Like Dandi who perscribed the code for a Mahakavya, the Kottayam Rajah evolved the pattern of presentation of Kathakali. After Kottayam's days no one heard of Ramanattam, everyone talked of Kathakali. Katha means story; Kali means play. But Kathakali does not mean merely a story play, it is much more than that.

It is not necessary here to go into the various stages of development of Kathakali after the days of the Rajah of Kottayam. Two significant events in the history of Kathakali should however be mentioned. The first relates to the period when a versatile artist called Kaplingad Nambudripad who lived towards the end of the 18th century, improved the costumes and make-up employed in Kathakali to make them attractive and at the same time unearthly. He introduced various reforms in the methods of presentation of characters and set the proper perspective for the creative artist. The second major event took place only forty years ago when the great poet Vallathol established the Kerala Kalamandalam, the academy of Kerala arts of today. It was mainly through his efforts that art lovers outside Kerala got an opportunity to learn and see this great art form.

Marvel of Perfection

Kathakali is a marvel of perfection in which detail upon detail is added, each complementing the other and fits into the whole with organic naturalness and exact balance. It opens with a festive gusto of relentless drumming and song accompanied by loud musical instruments, making the whole atmosphere ring with a weird sound transporting the audience to a different world of rhythm and fantasy. Essentially based on sage Bharatha's Natya Sastra, yet developed into much more meticulous detail, Kathakali is a highly specialised art, its specialisation permeating every aspect of it with the same uncompromising intensity and superb finish.

Kathakali combines in it both the *Thandava* and the *Lasya* types of dancing. Yet it is essentially a masculine performance. Intensive and ruthless training for a period of dozen years or more enables the artiste to bring under perfect control every part of his body solely for the sake of aesthetic expression. His eyes are ever vibrant; his facial muscles eloquent; his finger tips creative; and his whole person the very embodiment of rhythm. The story of the dance drama is related by the actor by gestures and with the aid of *Hasthalakshanas* (popularly known as "*Mudras*"), as the musicians sing the *slokah* and the *padas*. Bharatha taboos theatrical exhibition of battle scenes and blood-letting. But in Kathakali nothing is taboo. Marriages take place on the stage, battles are fought: entrails are pulled out. The most beautiful and the most grotesque are presented with equal dexterity.

Costume & Make-up

Kathakali is the visual presentation of mythological characters. The costumes and

make-up are therefore designed to create the necessary appeal. The facial make-up might give an impression that masks are used. In Greek dramas and Chinese and Japanese plays masks are used extensively. When one uses a mask one cannot express an emotion on the face. The Kathakali make-up is different because the whole face is painted over; the lips, eye-brows and eyelashes emphasised. The differential make-up is luminously clear in its typological indications. One could compare the make-up in a distant manner to the mask of a Japanese Noh Play actor. The mask employed by the Japanese and the Chinese does not permit the face its rich expressive mobility. But in a Kathakali character the contour of the face is clearly demarcated by a white thin fringe called the *Chutti* which frames it effectively making the face a stage for the inner spirit. The tumult or the tranquillity within finds immediate expression in the mobile features with no mask to conceal them.

Make-up alone takes about three to four hours for a Kathakali actor. The make-up and costume also determine the character portrayed. For this purpose mythological characters are classed into different categories. The first in the order or precedence is the *Dhirodatta*, the noble-hearted, upright hero. The costume known as *Paccha* (face painted in green) is allotted to such characters. Examples are the Devas (Indra), noble kings like Nala, Yudhishtira, Rukmangada, Arjuna, and Bheemasena. All characters who don *Paccha* also wear *Kiritas* (head-gear), but when it comes to Krishna, the head-gear is changed to what is called the *Mudi*. This costume has now come to be referred to as *Mudi*. For both *Mudi* and *Paccha* the facial make-up is the same. The clothing of Paccha normally consists of purple jackets and white skirts. Krishna's costume however is a dark jacket and yellow skirt. *Paccha* and *Mudi* represent *Satwa guna*.

Kathi, another prominent costume of Kathakali, is devoted to *Prathinayakas* or heroes who are classed under the *Dhirodhata*. The costume in general is similar to *Paccha*. The facial make-up is different. A knife-shaped pattern is drawn on either cheek in red pigment over the normal *Paccha* make-up. In addition, a small ball called *Chuttippoo* is fixed on the tip of the nose and another one in the centre of the forehead. *Kathi* represents *Rajasa guna* and is the costume of characters like Ravana, Kamsa, Jarasandha and Duryodhana. *Kathi* can be said to denote a combination of royalty and evil. Kings of Rakshasas like Ravana or Rakshasas among kings like Kamsa are depicted in *Kathi*. Also villains like Kichaka. Whereas *Paccha* characters do not open their mouth or create any noise, *Kathi* characters are permitted to make weird noises appropriate to the occasion or to the emotion expressed.

The costume that represents *Thamoguna* or *Thamas* is *Tati*. *Tati* means beard. There are red, black and white *Tatis*, each depicting a type of *Thamoguna*. Red *Tati* has the face painted in a frightening dark pattern and wears an impressive red beard. The headgear is round in shape and much larger in size than the *Kiritas* worn by *Paccha* or *Kathi*. On the tip of the nose and on the forehead *Tati* costumes wear *Chuttippoos* of a much bigger size than those worn by *Kathi*. Red *Tati* is usually given to extremely wicked characters like Rakshasas or despicable men like Dussasana. Examples are Bakasura and Murasura. The concept or the red *Tati* is one of a destructive evil force with little or no thinking faculty. The costume has therefore been extended to portray roles like Sudarsana Chakra and Veera bhadra. The Sudarsana Chakra is the all-powerful weapon of Vishnu. Annihilation without thought is its motto. So also Veera bhadra, born out of the ire of Siva and is nothing but an agency for destruction and blind obedience.

A further extension of the *Tati* costume is its application to the Monkey kings like Bali and Sugriva. Here again, the human concept for the unthinking monkey must have influenced this decision.

The black *Tati* or black beard is a costume given to a character like Kali in Nala Charita. The character depicted is as evil as the red *Tati*, but has the subtle distinction that it denotes also a treacherous schemer.

White *Tati* or white beard is a further refinement of the *Tati* group of characters. A good example is Sakuni, the notorious uncle of the Kauravas, who is an arch schemer with no scruples but no physical prowess either. The make-up is simpler than in red *Tati*. Even the usual *chutti* is omitted and a white beard worn.

All bearded characters are permitted to make noises appropriate to the occasion. Sometimes this may amount to loud roaring.

Another costume very popular in Kathakali is *Kari*. It is an all black costume with the face painted in black and the jackets and skirts blacker. The headgear is primitive. This costume is used for depicting the lowest primitive human being; both men and women. The noises they produce can almost amount to howling. The characters portrayed in this costume are *Kiratas* (Chantalas) and demonessed like Surpanakha or Tataka.

The make-up used for gentle characters is *Minukku*. It consists of a mere painting of the face with a yellowish orange pigment. There is no *chutti;* no elaborate clothing as in other characters. *Stri* (woman), *Rishi* and Brahmanas appear in *Minukku*. Other characters who appear with such make-up are charioteers and messengers.

Hanuman is a character of great significance in Kathakali. The costume used for Hanuman is also unique. The headgear called *Vattamudi* has a distant resemblance to the French military headgear of the 18th century.

Stories of Kathakali are written in the form of *Attakkathas* in Malayalam and consists of *slokas* constituting the narrative portion and *padas*, the dialogue. These are set to music in appropriate ragas and the musician sings them to the accompaniment of the drums and cymbals.

The stage used in Kathakali is the simplest imaginable. The only equipment needed on the stage is a huge coconut-oil-fed lamp towards which all movements converge. The curtain used is a small rectangular piece of cloth called *Thirassila*. The drums used are the chenta and the maddala. The chenta is not used during *lasya*. The other musical accompaniments used are the *chengala* and *ilatala*. Almost all the stories that appear on the Kathakali stage are from the two great Hindu epics, the Mahabharata and the Ramayana.

In truly traditional style Kathakali is played throughout the night in the open air. It starts in the evening with *Kelikottu*, the formal announcement when all the drums and cymbals are played in the courtyard for a while. At about nine O' clock in the night, the maddala is played for a short while in front of the oil lamp. This is followed by *Totaya* when one or two players perform an invocational piece. After this the musicians sing the first *sloka* of the story of the night. This is followed by *Purappadu*. This is reckoned as formality- a formal *darsan* of the Lord and his consort. It is also presented as the *debut* of the hero or heroes. At the end of this, the musicians and drummers take the opportunity to entertain the audience with the nuances of their art. This interrognum is called the *Melappada*. After the *Melappada*, the story begins.

When characters in constumes other than *Paccha* or *Minukku* make their debut, they follow a formality called *Tiranokku*. A literal though incorrect translation of this word is "curtain-look." The word debut conveys its meaning in a more exact manner. The character stands behind the *Tirassila* very close to the lamp and to the accompaniment of the drums and cymbals slowly brings the *Tirassila* down so that the audience can have a good look at the character and make-up for a few steady moments. It started in the old days as a convention to draw the attention of the spectators to the arrival of a powerful character and to enable the audience to appreciate the elaborate make-up employed so that they could get a proper mental picture of the character depicted. It has come to stay as an inevitable formality and helps to create the necessary tempo required when a powerful character makes his or her debut.

One of the unique features of a Kathakali performance is what is called *ilakiattam*. The term is used to distinguish it from *Cholliattam*. *Cholliattam* means dancing to the words sung by the musician. The musician can sing only what is written in the poem. When the artistes dance to express the meaning of the *slokas* and the *padas* sung by the musician, it is *cholliattam*. At the end of it one should normally expect the curtain. But the curtain does not fall so soon in Kathakali. The characters continue to converse with each other by the use of gestures and hasthalakshanas. Depending upon the talent and standing of the artiste on the stage this conversation can occupy anything from five minutes to a few hours. This is the occasion when the artiste gets an opportunity to use his *manodharma*. An artiste of high calibre can make the scene most effective and delightful. The converse is also true. Traditions and conventions have determined the occasions when *ilakiattam* could be elaborated. Instances are numerous. To site one example: the story is 'Bali Vijaya' in which Ravana at the instigation of Narada goes to Bali, challenges him to fight and gets thoroughly humiliated in the end. In the scene in which Narada with his inimitable talebearing technique infuriates Ravana against Bali, the great Lord of Lanka decides to go and teach Bali a lesson. The *pada* ends there. Thereafter both Ravana and Narada enter into a long discourse. The incident can develop from Ravana picking up his famous Chandrahasa, the sword presented to him by Lord Siva and Narada making fun of him by saying that anyone would laugh at the idea of a hero like Ravana using a sword to vanquish a mere monkey instead of carrying a small piece of rope to tie it up. This could give an opportunity to Ravana to explain to Narada what Chandrahasa means to him. He could describe his triumphant battle with Vaishravana; the capture of the Pushpaka Vimana; his storming of Kailas and the way in which he threw up the whole mountain as if it were a feather and so forth. Depending upon the talent and the mental horizon of the artiste he could make the scene an unforgettable one. Ardent devoteess of Kathakali look forward to scenes of *Ilakiattam* than any other portion of Kathakali. Other occasions when *Ilakiattam* is done are where a character takes an opportunity to describe a forest (Vana Varnana) the heaven (Swarga Varnana) and so forth.

A traditional Kathakali performance runs through the night and the *Mangala Sloka* is sung with the dawn.

ASPECTS OF THE ECONOMIC PROBLEM OF KERALA

—*V. V. Giri*

Nearly five years in Kerala as Governor gave me an insight into its present economic problems which have earned it the name of "Problem State". Kerala today is faced with economic issues that demand the urgent attention of both the Central and the State Governments. In my view, at the root of all major difficulties of the State lie the economic problems. In a nutshell, these are:

(1) The growing pressure of population and land, coupled with a high degree of population growth;

(2) An underdeveloped industrial sector, in the modern sense of the term; and

(3) A highly developed social services sector (especially of education), which has added to the State's burden of the educated unemployed.

According to the 1961 census figures, the population of the State is nearly 17 million, in a total area of 15,000 square miles, with a density of 1,227 persons per square mile — one of the highest densities in the world. There is acute pressure of population on land, and every nch of available space has been put to some use or other.

Again, the industrial sector in the State has not grown to the extent it should have. Among the many reasons for its existing industrial backwardness, the following stand out prominently:

During the first two Five-Year Plans, the State could not draft or formulate its developmental programme in a scientific manner; only with the beginning of the Third Five-Year Plan could concrete steps be taken to evolve a foolproof, well-coordinated and scientific developmental programme.

Secondly, by and large, the indusries in existence in the State are of the old and traditional type, like coir, tile, cashew, etc. It is a peculiar feature of the State that the tertiary sector, including trade and commerce, absorbs nearly 34% of the working force in Kerala, and the industries sector only 19% of the total working force.

This growth of the tertiary sector has *preceded* the growth of the secondary sector, namely, industries, with the result it gives a misleading picture of Kerala's economic progress. To assure the State's industrial progress, it is necessary to start labour-intensive industries and also small-scale and cottage industries which can greatly alleviate the unemployment problem.

The State spends nearly one-third of its revenue (Rs. 23.67 crores) on education. In normal circumstances, this enlightenment and education of the State's people could have been an asset, if only there had been adequate employment opportunities. Lack of these has been responsible for a considerable degree of unemployment of both the educated and the unedudated, leading to a general sense of frustration among the people.

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The solution to this problem is to disperse sizable chunks of population from Kerala to places like the Chumbal Valley and Dandakaranya, where lakhs and lakhs of acres remain uninhabited and uncultivated. Simultaneously, steps should be taken to propagate family-planning measures to arrest the excessive rate of population growth.

Here, I intend dealing mainly with one particular aspect of Kerala's economic development, namely, the development of the fishing industry. During the Onam celebrations, the famous boat races *(vallam kali)* attract tourists from different parts of the country and even from abroad. These boat races in Kerala serve to give the present generation an idea of the State's ancient maritime tradition. With its many rivers and a long coastline, Kerala holds immense possibilities of utlising its water resources for various purposes. The people of the State, from time immemorial, have been renowned for their spirit of adventure, and for establishing contacts with outside nations much before others ever throught of them.

Some three years ago, when I was discussing the problems of Kerala with Professor K. N. Raj, the well-known Indian economist, he remarked: "What iron and steel and coal are to Bengal and Bihar fishing is to Kerala." This gave a clue to the infinite possibilities that could be explored for the economic and social advancement of the people living in the coastal areas of Kerala. Steps were taken to concentrate on the developmental aspect and, to this end, concrete proposals were put forth before the Planning Commission by the State Government. It was felt that the export earnings of the State from fishing, which was Rs. 1.79 crores in 1960-61, could be increased substantially. As a matter of fact, export earnings from prawn products alone are expected to be Rs. 6.52 crores in 1965-66, as against Rs. 1.62 crores in 1960-61.

If a major deep-sea fishing project could be implemented during the Fourth Plan period in the State, the position in 1970-71 will be quite encouraging, as shown by some preliminary studies undertaken on the possibilities of deep-sea fishing in Kerala. The schemes proposed are to increase marine fish production by five lakh metric tons-that is, by one-third of the unexploited commercial fish potential. The total cost of such comprehensive development of the fishing industry would be in the region of Rs. 60 crores in the public sector. This would yield a foreign exchange earning of about Rs. 35.26 crores.

This is only with regard to the fishing industry. There is also considerable scope to start simultaneously other ancillary and subsidiary industries–shark-liver oil factories and fish-meal plants, to mention two. This will also help raise the standard of living of the poorer sections of the community, especially of the people in the coastal areas, whose plight is none too enviable. One of the objectives of the Fourth Five–Year Plan, we should remember, is to ensure a basic minimum level of living to every family. Along with this, we can undertake the development of poultry and animal husbandry by utilising the unedible and other fish products which can directly help meet our food shortage.

Apart from this, it is stated that one of the major "exports" of Norway is its oceanographers. Kerala too, with its great tradition here, could export a large number of oceanographers, if only we had a sufficient number of schools to train men in marine biology and oceanography.

The plans to develop the fishing industry that are contemplated should be sufficiently broadbased and should keep the economic aspect fully in the forefront, rather than the social welfare aspect, which hitherto governed the State's fishing plans. It is heartening to note that the Government of India is thinking in terms of establishing a Fishing Corporation in the public sector, which will interest itself in the various aspects of developing the fishing industry.

Kerala is ideal in every way for the fishing industry to be developed considerably. With its coastline extending more than 350 miles, the State can make rapid economic progress. At a time when our efforts are concentrated on augmenting the food supply and also on earning much-needed foreign exchange, the development of the fishing industry in Kerala is a prospect that holds out great hopes indeed.

Malayalam Poetry Today

— *G. Guptan Nayar*

THE term modern defies definition. It changes meaning according to the purpose one sets himself. In a survey of modern poetry, therefore, one can take off from any convenient point of vantage. For the present I shall content myself with contemporary Malayalam poetry, which of course is modern, but not necessarily 'modernist'.

Mahakavi Vallathol Narayana Menon — Vallathol for short, died on the 13th of March 1958. With him the last of the great trio departed and an era in Malayalam poetry came to an end. Not that something happened immediately after the death of the Mahakavi. But his exit cut the slender chord which linked us with a romantic past.

Vallathol had ceased to be a noticeable influence long before his death. He had given us his best before 1940. Yet he was in the field. The pink decade — it was not the thirtees as in England but the forties — had compelled even this grand old Gandhian to sing in tune with the politics of the left. But the effect of his swing to the left was neither rewarding nor exciting. His panegyric on Stalin, his indictment of Nazi atrocities and the few slender volumes of his later poems, provoked only mild amusement in the readers. The stirring rhythms and the melodic sweetness of his early poetry had ebbed out. Instead he lost himself in a labyrinth of prosiness. To many of his admirers, it was small comfort to think that he did not allow himself to be considered outmoded or stale till the end. No doubt his mind kept up with the times, but his poetry thinned out progressively. Yet he could not help writing and he wrote.

I have mentioned this not to minimise the worth of Vallathol's contribution to poetry but to emphasise the fact that even this enchanting warbler hastily seized upon political themes and burnt his fingers. That was the complex and chaotic situation we were in during the pre-Independence days when not even a saint could be serene. There was no escape from getting involved. One was either a Marxist or a socialist or at least that elastic being called humanist, but definitely not a romaticist and defeatism meant perdition.

Several young poets had gathered under the banner of the progressive school. Works of divergent political shades were accepted as vaguely progressive. But one faction gradually crystallised into a Marxist group. They held that every work of art should accelerate the pace of revolution and the new technique of socialist realism was widely advertised as the only acceptable manner of writing. To many this realism suddenly appealed as an inviting idealism in which the working class hero always

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emerges as the master of his own destinies. These poets were often satisfied with a clumsy expression of some expedient ideas. Most of their writings are now forgotten for obvious reasons. If a few had managed to survive it was not because of their essential radical outlook but because of their gift for feeling deeply and truly. More about them later.

To several others like G. Sankara Kurup (67), Edasseri (61) and Vyloppilli Sreedhara Menon (56), Marxian Utopia was not a so very exciting prospect. But they too had a vague feeling of unrest. Weary of the conventional expression of sentimental pity, they felt like asserting their feelings a little more purposefully. This gave them a chance to get out of the philosophy of despair which most of them had propagated for long, along with that prince of pessimists, Chamgampuzha. Thus came Sankara Kurup's 'To-morrow', Vyloppilli's 'Torches' and Chamgampuzha's own 'Crimson Flowers'. Among these Chamgampuzha was perhaps loudest in his protest, but ironically came down soon to collapse into greater despair and die prematurely (1948).

"Call me not a poet" he once declared,
"Since it is seeds of sin I sow".

This was the running theme of his songs. Of different calibre were G. Sankara Kurup, Balamani Amma and Vyloppilli. Rantings and ravings were not to their taste. Their feelings were more organised and their language was richer in metaphor though less lyrical than that of Chamgampuzha. Sankara Kurup, the leading figure in Malayalam Poetry today, is a confirmed humanist, impulsive and restless, ceaselessly striving to reach higher altitudes of experience. More than any other poet he seems to echo Auden's Prayer 'O teach us to outgrow our madness'. Consider this piece, it is called 'Church bells'.

"To pull apart an old world
put up by charming Sin
And build it anew
To prove that its builder had
erred with his scale
Falsely marked,
was born,
It is said in Bethlehem once
A kind and gentle mason
He yearned and strove to level
down its rugged base
To chase afar the leering Satan
that lurked darkling in its nooks
To set up casements all around
and let in light and air from Heaven
To render the precincts chastely
fit for the winged grace's birth:
For all this did he strive
But man, ungrateful wretch,
his yardstick snatched
Snapped it into two and formed
a crucifix
And there on that cross
was the mason nailed
The hallowed maker of a glorious history
Vain Vain, sweet bells, your
agonising peals!
With that mason's bones
Has cultured man bedecked
the walls of History
Yet you weep, sweet bells
you cannot help it
When, melts in tears, the poets tuneful
heart.

Sankara Kurup is also the poet of transcendental wonder. The mystery of nature, of the starry heaven, of life and death, even a blade of grass thrills him. As an example of his cosmic awareness the justly famous poem 'Viswadarsanam' can be mentioned. It is in essence an invocation to the expanding universe,

a hymn to the creative spirit of the power above.

> Ah, if only I could gain
> admittance to the tower-gate
> wherfrom glimpse the Majesty
> in whose durbar the mighty Suns
> with retinues of satellites
> gather in their millions
> And take pre-ordained positions
> in awe and fear and reverence.

The poet, on one occasion compares the earth to a roving gypsy girl and himself to a child held by her in her hammock. The child watches the vast universe in gaping wonderment and realises with whispering humbleness that the atom splitting man is only an atom on this vast macrocosm. I have not the time to quote from other poets — Vyloppilli, Balamani Amma or Kunhiraman Nair — to show how these poets too could relate their private experiences to a universal consciousness. Kunhiraman Nair is unique in that he can be supremely indifferent about comtemporary problems and yet create a wonderland of riotous imagination. In his poems images crowd, jostle against each other and finally you lose your way in a forest of sensations. Sridhara Menon, a teacher of science has an intuitive understanding of nature's vagrant moods. He observes and handles life with the deftness of a surgeon. He is not sentimental or wildly excited but precise and polished.

I have already mentioned that the poets of revolution could do little to enhance the status of poetry though they gained a temporary boosting at party meetings. Their verses raised dust and made otherwise fresh views grey. Perhaps it is in the nature of things that revolution can never be a permanent ideal. And thus, these pampered children of the party had soon to recover their souls and look inwardly to find the natural springs of poetry. From the public squares they went back to their secret bowers to express without inhibition their inner feelings. This does not mean that they threw overboard all their social obligations. No, they still, poured out their wrath on the exclusiveness and selfishness that characterises much of contemporary civilization. But their angry protests did not fail to contain liquid notes. I am thinking particularly of three very gifted poets — P. Bhaskaran (43), Vayalar Rama Varma (38) and O. N. V. Kurup (36) who have had varying degrees of party affiliations. O. N. V. Kurup in his latest anthology (Peacock Feathers) invokes a few lines from Garcia Lorca where the Spanish Poet says:

> 'I will go very far
> Farther than the hills
> farlher than the seas
> to beg Christ the Lord
> to give back the soul I had
> of old, when I was a child
> ripened with legends
> with a feathered red cap
> and a wooden sword'.

This sets the mood of his recent poems. Here is genuine humility; here is a craving to see more than what appears on the surface. Even while maintaining the same degree of pre-occupation with social problems there is an intensification of feelings which of course is the vital thing in the poetic process. And this requires a vigilant re-vitalisation, of one's capacity to experience. Our poets both young and old now evince a keen desire to go beyond their natural boundaries, something akin to the feeling of the eaglet to reach the Sun. It is no small gratification to see that even one-time, sceptics who derided and discredited everything ancient have now returned like prodigal sons to the same old cherished fond values. Poems like Edassery's 'Ambadi Revisited' Balamani Amma's 'Viswamitran' and 'Vibhishanan' and Vyloppilli's 'Jalasechanam' show this revived interest of

the senior poets in classical themes. These poets go back to the myths not with the revivalist's obsession of the golden past but to find some essential unity of purpose in this continuum of time or to dig out some great truth which lay sleeping in the caverns of the past. The manner of telling these stories is not that of the old Romantics, who, we are told, were moved by patriotism or reverence for the ancient Dharma. I shall illutstrate my point with a poem entitled 'Bhasmasura' by a very young poet Cherian K. Cheriyan. It is written in the form of Bhasmasura's monologue. The demon endowed with the power of destroying everything he would touch wants to test his boon on Siva himself. And Siva runs for life. This poem cleverly symbolises modern man's dilemma in this nuclear world. He is a victim of his own scientific advancement. It is his own dark self that now chases him in the form of the demon. Siva is the creator, and the destroyer rolled into one. In the concluding lines the demon asks Siva, 'on whose side is Vishnu'. The demon thinks Vishnu is on his side. The irony is no doubt biting.

Speaking of irony I am led naturally to a closely allied type of poetry in which satire is the key note. N. V. Krishna Warrier excels in this type. N. V. has a heightened sense of human absurdity which he lays bare with clinical thoroughness. He is, like good old Moliere, a laughing urbane commentator. His formalistic experiments have always been most interesting. He introduced a new diction devoi of musical fineries. R. A. Scott James in his book on 'Fifty years of English Literature' writes about a similar change brought about by the poets of the thirties in England. "The modern poets" he says "by example and precept have successfully destroyed respect for the all too musical, the sentimental and the nonsensical in poetry. They cultivated the use of hard, vivid and brutal images, they have restored masculinity, grit and brains. They administered a tonic that was needed, though the tonic was bitter."

N. V., does exactly the same in Malayalam poetry, 'Kochu Thomman' one of his best known poems describes a typical college student and his shallow school boyish infatuation for an Anglo-Indian girl typist. The poet admirably reproduces the air of smug superficiality that characterises the modern youth, who is more a worshipper of the cow-boy than of Cupid. The story ends in a tragi-comic strain, when the girl sheds all her supercillious airs to unravel a tale of utter domestic misery, poverty and dejection.

It is a powerful poem in which the poet with puckish humour unmasks the hollowness of our urban life. Most of his poems are tirades against the priggishness of sanctimonious people. This perhaps echoes the mood of the Wasteland or the Hollow Men. But there is one great difference. N. V. and his friends express themselves quite clearly. They don't borrow their idioms from the Divine Comedy or the Bhagavad Gita. They borrow them from the everyday speech of the people, sprinkling it with a healthy doze of English, wherever necessary.

There are some people who think that everything in modern poetry has to come under the cloak of T. S. Eliot. This is a false idea. Of course here too, we have an Eliot School but with few teachers and fewer pupils. N. N. Kakkaad and Ayyappa Panikkar are the main props of the movement. They are no doubt endowed with fine perception and poetic gifts. But sometimes one gets sick of the obvious tricks — the broken images, the eccentric word-patterns, the borrowings from classics "and above all a highly sophisticated recoil from logical coherence". Kakkaad's "Kanwa of the

City" and "1963" contain some excellent though eccentric images. His "Kanwa" is not the old sage who lived in the hermitage but a poor N. G. O. who has only a dismal hole to live in. He is a bewildered man moving across the maddened surface of a frightful city life.

With brain spitting petrol
Two legged taxis
screeching through the sidewalks
The smell of hairoil and talcum
Mixed up in perspiration.
Flowing in slushy corrents.

It is all very interesting as technical experiments. But the big question of all art is how to transport your mind to the Supreme mood of ineffable peace. If the modern poet's only aim is, as Day Lewis puts it, to give "a shock treatment by which he hopes to break down the reader's too civilized resistance" then I would say that, that is only a small part of the poet's job. All readers are not lunatics and no society hopes to preserve its mental sanity by periodic shocks. Therefore to offer nothing but shock-therapy is to bring down one's professional skill to the level of a quack.

Forests of Kerala

—*P. N. Nair*

1. General.

The land area of Kerala, the smallest State in India is 38,855 sq. Kilometres and lies between latitudes 8° and 12°45′ and longitudes 74°40′ and 77°50′. Palm fringed, lagoon studded and adorned with lush green mountains, Kerala sprawls along the west coast of India, towards the apex of the Peninsula. The narrow belt of coastal plains is delimited by the mountain range of Western Ghats with peaks rising over 2440m and covered with luxuriant vegetation.

2. Physical Features.

The territory forming the State is shaped like a triangular slice. It is bounded in the east by the Western Ghats. These mountains are mostly of a 'relict' type composed of ancient crystalline or metamorphic rocks. They are not the mountains in the true sense of the term but are mere outstanding portions of the old plateaux. On the west is the Arabian Sea and the State has a comparatively long coast line with instrusions of backwaters and lagoons and can be distinguished as passing into 3 distinct zones of vegetal formations. The coastal area starts with a sandy stretch and can be classed as a typical coconut country which further eastwards meets undulating tract dominated with lateritic formations bearing the largest extent of agricultural and paddy fields. Passing further eastwards, submountain hill country with medium elevation of 460m to 915m stretches out. This comprise predominantly of forest clad hills and considerable extent of estates of hill produce like rubber, coffee, cardamom etc. Rising further and forming the main chain of the western ghats is the High Ranges occupied mostly by extensive tea estates. Anamudi the highest peak in the western ghats 2695m is within the State. There are few prominent valleys viz., Nilambur, Attapadi, Silent, Idiyara, Pamba, Achencoil, Kallada and Shendurney carrying rich and luxuriant forests which form a real treasure.

3. Drainage.

A net work of streams, rivulets and rivers drains the area. The coastal plain being narrow, the rivers are short and they carry the water into the Arabian Sea. Some of the rivers have been harnessed for irrigation and hydel power. Few rivers are of immense service for cheap transport of timber and other forest produce.

4. Climate.

Though Kerala falls within the tropics it has an equable climate, the variation of temperature between summer and winter being small. The coasts have a smaller range of temperature and atmosphere is usually humid. Altitude

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tempers the heat and upon the hills it is delightfully cool. Still higher up the climate is typically subtropical with a distinct winter and occurrence of frost is characteristic. The mean annual temperature of the plains varies between 35° in summer to about 23° in cool months. The rainfall which tells on the nature and quality of vegetation is varying from about 406cm average in the northern districts to 127cm to 76cm along the southernmost and eastern limits of the State. The highest average rainfall recorded is in the High Ranges ranging up to 965cm at Anamudi. Major portion of the rain fall enjoyed by the State is borne by the South-West Monsoon between June to August. Few showers are also obtained from the North-East Monsoon during October--November. January to May are dry months.

5. Forest resources in Kerala.

Kerala has been famous even from very early times as the richest store-house of valuable timber trees and medicinal plants. It was the treasure of the west-coast-ivory, teak, rose-wood, ebony, cardamom, pepper and other hill products which attracted the Arabs, Portuguese, Greeks, Spaniards, British and others to India. It was these treasures that caused envy and enmity between local rulers and caused their downfall. History reveals that Kerala Forests had an important role in the field of foreign trade.

Though in the past, forests in Kerala covered more than 1/3 of the land area, at present, the effective forest area is less than 20% of the total land area whereas according to the National Forest Policy, the area under forests should be at least 33%. The area under exploitable forests in Kerala is even less, coming to nearly 14% only. The per capita forest area is as low as 0.072 hectares as compared to 0.18 hectares in India and 1.6 hectares for the whole world.

In a State like Kerala, forests form the most important renewable natural resources which have to be utilised to the best advantage. The productive capacity of the forests of Kerala is the highest in the country. Hence it is essential to increase the value of the forests by intensive forest management and by proper and sensible utilisation of the available forest resources. The forests of Kerala are botanically very rich comprising a good many varieties of species including more than 600 types of trees which are being used or likely to be used in a better way for a variety of purposes.

The forests of Kerala are mostly natural and partly artificial (forest plantations). The natural forests of Kerala are mixed and irregular and their nature and composition vary depending on the altitude, climate and soil conditions. Plantations of certain important species such as Teak, Elavu *(Salmalia malabarica)*, Eucalyptus, Mathi *(Ailanthus malabaricus)*, Kanala *(Evodia lunu-ankenda)*, Mahogany are raised in suitable areas after extracting the tree growth in natural forests or in areas devoid of tree growth as in the grass lands of the High Ranges.

Wood forms the most important forest raw material in Kerala. Wood from Kerala forests are used for a variety of purposes–for construction, as industrial raw material and as fuel. Some of the important timbers commonly used for constructional purpose are Teak *(Tectona grandis)*, Venga *(Petrocarpus marsupium)*, Thembavu *(Terminalia tomentosa)*, Maruthy *(Terminalia paniculata)*, Thampakam *(Hopea parvoflora)* Unnam *(Grewia teliaefolia)*, Anjili *(Artocarpus hirsuta)*, Punna *(Calophylum tomentosum)*, etc.

The principal species used for plywood manufacture that are available in Kerala forests are Pali, *(Palaquium ellipticum)*, Ooravu *(Machilus macrantha)*, Venkotta *(Lophopetalum*

wightianum), Vellapine *(Vateria indica)*, Karanjily *(Dipterocarpus indicus)*, etc. All these species occur in the evergreen forests and are difficult to regenerate artifically in extensive plantations. Besides the above species commonly used for the commercial plywood, other species such as Teak, Rosewood *(Dalbergia latifolia)*, White cedar *(Dysoxylum malabaricum)*, Mahogany etc., available mostly in the deciduous forests are used for decorative veneers.

The main species used in the match industries are Elavu *(Bombax-Salmalia malabarica)*, Pala *(Alstonia scholaris)*, Kanala *(Evodia lunuankenda)*, Mathi *(Ailanthus malabaricus)* etc. Some of these species occur in the evergreen forests and others in the deciduous forests. A variety of species that are used for packing case and available in Kerala are Mavu *(Mangifera indica)*, Aval *(Holoptelea integrifolia)*. Kumbil *(Gmelina arborea)*, Cheeni *(Tetrameles nudiflora)*, Thanni *(Terminalia belerica)*, Perumthol *(Hymenodictyon excelsum)*, Thondi *(Sterculia urens)*, Uthi *(Lannea grandis)*, Charu *(Holigarna arnottiana)*, Kalavu *(Hardwickia pinnata)*, Malavembu *(Melia duba)*, Aranjili *(Antiaris toxicaria)*, Vatta *(Macaranga peltata)* and so on. The most important forest resources for the paper pulp and Rayon pulp industry are provided by bamboos, reeds, certain grass and certain wood species such as Eucalyptus, Padiri *(Stereospermum chelonoides)*, Vekkali *(Anogeissus latifolia)*, and Malapunna *(Dillenia pentagyna)*. These species are available in the natural forests or in artificial plantations. Many other different species that are used for specific industrial purposes like furniture, textile auxiliaries, sports goods, pencils, building boards, mathematical instruments are also available in our natural forests in limited quantities. The cottage industries producing mats, baskets, furniture etc., are also depend on forest resources like reeds, bamboos and canes.

Kerala forests also produce certain minor forest produces like medicinal plants, ivory, various fruits, tannin barks, honey etc., which are also used in industries here and abroad.

The demand for fuel wood and charcoal is also met mostly from the forests. The fuel wood generally comes from the top ends and branches of trees felled for industrial purposes, from dry and dead trees and also from non-commercial species.

Apart from industries directly dependant on wood as raw material, the timber transmission poles required by the Electricity Board and Posts and Telegraphs department and timber for the cabin and waggon construction, panelling etc., of the Railways and the wooden railway sleepers are also supplied from the forests. Wood is therefore an essential commodity in the national economy and is an integral part of modern civilisation.

Some of the Kerala timbers are famous for their importance in export trade. Rosewood and Teak are just two examples. Other common timbers such as White cedar *(Dysoxylum malabaricum)*, Thembavu *(Terminalia tomentosa)* etc., are also likely to earn their value in export trade because of their decorative values, veneering qualities, strength and durability.

6. Forest Plantations.

In a State like Kerala with limited area under forests, it is essential to practice intensive forestry to meet the evergrowing demands for the forest produces. One of the main methods to increase the value of the forests is by converting the irregular mixed, less valuable natural forests into a regular series of plantations containing economically and industrially important species singly or in a mixture of two or three mutually adjustable types. The value of the forests so converted into plantations is many times its original value. The Forest Department has attained proud achievements in this field.

The following table will indicate the extent of forest plantations in the State till the end of 1967.

Species	Extent
Teak	49,390 Hectares
Softwood (Matchwoods)	14,204 ,,
Eucalyptus	16,270 ,,
Wattle	355 ,,
Bamboo	334 ,,
Miscellaneous types	1,800 ,,
Cashew	5,201 ,,
Anjily	186 ,,

The department has thus about 87,740 hectares of plantation at the close of 1967. A more ambitious programme of raising various economically and industrially important plantations is being carried out during the current and subsequent Plan periods. This will include not only species mentioned above but also many more valuable species both indigenous and exotics like Red sanders *(Pterocarpus santalinus)*, Andaman padauk *(Pterocarpus dalbergioides)*, Rose wood *(Dalbergia latifolia)*, Tropical pines such as *Pinus insularis, Pinus merkusii, Pinus radiata*), *Pinus carrebaea, Pinus taeda,* various Eucalyptii, Bamboos, Silver oak (*Grewelia robusta*), etc.

7. The main forests type of Kerala.

The State, though small in extent, has a variety of climatic conditions, consequent on variation in rainfall and elevation. It is only conspicuous by the absence of desert type and the truly temperate and alpine types. The following are the main forest types occuring in the State.

(a) Southern tropical wet evergreen forests.

These are lofty, dense, evergreen forests 76m or more in height, and characterised by a large number of species of trees which occur together. Availability of mositure is the main factor deciding the distribution of these forests and these forests are conspicuous by the preponderance of evergreen species. They occur up to an elevation of 1070m with an annual rainfall of over 254 cm. Main timber species met with are *Palaquium ellipticum, Vateria indica, Calophyllum tomentosum, Dysoxylum malabaricum, Artocarpus hirsuta, Mesua ferrea, Poeciloneuron indicum, Dipterocarpus tndicus, Canarium strictum, Hepea parviflora, Machilus macarantha, Gluta travancorica* etc. Reeds and canes are common. Large areas of these forests are leased out for Cardamom cultivation.

(b) Southern tropical semi-evergreen forests.

These are closed high forests and represent a transition from the Evergreens to the drier types. The forests lie as an intermediate zone between the wet Evergreen and moist deciduous forests. Average rainfall may be taken as 203cm to 457cm and they occur from plains up to an elevation of about 762m. The dominant trees attain big dimensions and include both evergreen and deciduous ones. Climbers are heavy and epiphytes abundant. Bamboos are also usually present. The main commercial species met with are *Hopea parviflora. Canarium strictum. Trewia species, Eugenia species, Vateria indica, Calophyllum tomentosum, Terminalia paniculata, Streospermum chelonoides, Holigarna arnottiana, Lophopetalum wightiannum, Artocarpus hirsuta* etc.

(c) Montane wet sub tropical evergreen forests.

This type of Evergreens is distinctly noticed from elevations over 1220m and thrives best at high elevations. Rainfall varies from 190cm to 760cm. These forests may be found in sheltered pockets and concave declivities along the High Ranges, the rest of the hills may be all grass lands. Mosses, Ferns, Lichens and epiphytes are characteristic. *Lauraceae, Mytraceae, Ternstroemiaceae* etc., are the major families represented in this type. These forests

are not very valuable from revenue point of view.

(d) The temperate shola grass lands.

These grass lands form extensive areas in the high ranges scattered here and there with Shola patches which are mostly along the valleys and pockets. These grass lands may consist of small grass or coarse big grass with a sprinkling of *Phoenix*, *Phyllanthus*, *Terminalia* species etc. These grass lands are being planted up with Eucalyptus and wattle. The elevation of these grass lands is usually over 1220m.

(e) Southern tropical moist deciduous forests.

These forests are characterised by the dominant species being almost entirely leafless in the peak of the dry season, though there is often a sprinkling of Evergreens in the underwood. These are closed forests of 30m to 37m height, with abundance of climbers and bamboo undergrowth is characteristic. Annual fires are very common in these types of forests. These types of forests are commercially the most valuable and the most useful species is Teak; but percentage of composition of teak is only 10 to 15%. Other important commercial species are *Terminalia paniculata*, *Terminalia tomentosa*, *Lagerstroemia lanceolata*, *Grewia teliaefolia*, *Dalbergia latifolia*, *Adina cordifolia*, *Bombax malabaricum*, *Sterospermum chelonoides*, *Pterocarpus marsupium*, *Anogeissus latifolia*, *Xylia xylocarpa* etc. Best type of this forest occurs in localities where the rainfall is about 203cm. This type of areas are being converted into teak plantations by clearfelling and artificial regeneration. They may occur up to elevations of 762m.

(f) Tropical dry deciduous forests.

These are composed of a mixture of species, particularly all of which are deciduous for several months in the dry season. The lower canopy is almost entirely deciduous. The composition in the upper canopy is *Terminalia tomentosa*, *Terminalia bellerica*, *Terminalia chebula*, *Anogeissus latifolia*, *Cassia fistula*, *Pterocarpus marsupium*, *Tectona grandis*, *Butea frondosa*, *Bridelia rhetusa*, *Cleistanthus collinus* etc. These are generally 15m to 23m in height. This type occurs in the eastern limit of the State at Marayur side. *Bambusa arundinacea* and *Dendrocalamus strictus* are found to occur in these areas. The presence of valuable *Santalum album* in forests makes them a valuable and rare asset.

8. Forests and Tourism.

Kerala forests with their characteristic green splendour, salubrious climate, majestic mountains and richness of flora and fauna are famous from the tourist point of view, also. The main aims of a tourist are pleasure, knowledge and rest. The majestic and magnanimous forests of Kerala provide all these to his heart's content.

The Kerala forests are abound with health resorts, wildlife sanctuaries and centres botanical, ecological and zoological studies. The green glory of the forests with its luxurient vegetation studded with attractive and colourful wild flowers. the gurgling waters of the swift-moving streams and rivers, the rapids, waterfalls, innumerable lakes both natural and artificial, the towering grass-covered peaks projecting into the sub-tropical and temperate altitudinal zones are all fascinating to the inquisitive, industrious and pleasure seeking tourists. Those who are desirous of enjoying rest and comfort away from the maddening crowds of the urban surroundings will find ideal camping facilities within the sanctum sanctorum of the forests.

The main tourist centres in Kerala forest which have earned reputation are its wild life sanctuaries. Of these, the most famous one is the Periyar Wild Life Sanctuary covering an extent of 777 sq. km of hills and forests situated in the High Ranges at an altitude varying from 914m to 1829m surrounding a waterspread area of 2833 hectares of the artificial Periyar

lake. Large herds of elephants, gaurs, samburs etc., are sure sights in this sanctuary almost throughout the year. Wild dogs, wild pigs, barking deer also roam in the jungles and around the lake. Tigers and panthers are not rare. A variety of birds like jungle fowl, myna, parrots etc., also adorn the living beauty of this sanctuary. The characteristic peculiarity of this sanctuary is its facilities for pleasant cruising in the lake coupled with the safe and sure sights from the boats of the silent denizens of the jungle grazing, browsing and playing on the hill slopes and on the fringes of the lake. Fishing for Mahseer and Tilapia is a pleasing pastime in this sanctuary. A few well-furnished rest houses are available in the interior of the sanctuary for camping besides the modern hotels such as Aranyanivas and the Periyar house. Watch towers have been provided near the rest houses in the interior to enable the tourists to watch the wild life from safe height.

Another Wild life Sanctuary equally good but not so well known as the Periyar Sanctuary is the one at Parambikulam around the Parambikulam lake. Here also extensive Teak plantations, the deciduous, semi-evergreen and evergreen forests provide a very attractive sylvan setting. Elephants, gaurs, spotted deers, sambar etc., can be seen in plenty. There is a net workof roads to move about withinthe sanctuary.

Other less well known wild life sanctuaries abounding in natural beauty but only being developed for its wild life population are the ones at Neyyar in the Trivandrum District and Peechi and Vazhani in Trichur District.

Considering the various prerequisites for tourism, particularly accessibility and camping facilities, a few localities situated within the forests or near about the forests in Kerala have already shot into prominence in recent years or have the necessary potentials to turn out into fascinating tourist centres or health resorts. Neyyar, Agasthiar Peak, Ponmudi hills and Chemmunji in Trivandrum District, Kakki, Pamba, Achenkovil and Palaruvi Waterfalls near Arienkavu in Quilon District, Peermade, Munnar and Devikolam situated in the High Ranges falling within Kottayam District, Sholayar, Poringal, Adirapally waterfalls, Peechi and Vazhani in Trichur District, Malampuzha and Mukkali (on the bank of the river Bhavany near about the silent valley) in Palghat District, Sultan Battery in the high hills and Nedungayam near about Nilambur falling within Calicut District and Manantoddy of the Cannanore District are just a few forest areas of tourist interest where the visitors will be richly rewarded by the enchanting beauty and valuable experience.

Some of the famous temples are situtaed in the interior of the forests. Sabarimala, Arienkavu, Kulathupuzha, Achenkovil etc., are just a few examples. The most famous one is, of course, the Sastha temple at Sabarimala located much deep inside thick forests and high hills. The wild animals roam about in these forests as if they are the privileged children of God. This temple is attracting lakhs and lakhs of people every year from all over India particularly from the south. The main pilgrim season is between the middle of November and middle of January, though the worshipers in small numbers visit this temple throughout the year. A visit to this temple out of season is nothing less than an adventure which requires courage and determination. It will not be incorrect to say that the pilgrims visiting these famous ancient temples curiously located deep inside the mountain ranges and dense forests after undertaking an extremely arduous journey are also, in a sense, tourists of our forests. Once a pilgrim visits this temple, his urge to visit this place again and again year after year become greater and greater. This urge is necessarily due to call from the Almighty and also to the sanctity, serenity, tranquillity and enchantment of the nature's reservoir of beauty and majesty.

There is no doubt that the forests of Kerala form the main natural wealth of the State. Financially and educationally this wealth is incalculable. These forests provide raw materials for various wood based industries and other enterprises in which wood is an important requirement. It also provides medicinal plants in plenty. It helps to improve agriculture by ensuring perennial supply of water and organic manure. It prevents soil erosion in the hills. It provides facilities for sports and physical exercises. It also provides peace and enchanting beauty. Above all Kerala forests are excellent tourist centres which if properly dealt with will earn considerable revenue for the State.

MOLLUSCS
in Indian Tradition and Economy

— C. MUKUNDAN

The molluscs constitute a natural resource of sizeable magnitude in many parts of the world. They are an age-old group represented among the early fossils, a group of great diversity in size, distribution, habitat and utility. The range of their distribution is as extensive in space as in time for it covers terrestrial, marine and fresh water habitats. They include members from the tiny estuarine gastropod *Bithynia* and small garden snails to the Giant Clam *Tridacna* or the Giant Squid *Architeuthis*. Their use as ornaments, utility articles and medicine has been widespread from ancient days. Not all molluscs, of course, are so helpful or even harmless. Even like the humans that exploit them, there is in their midst an effective section that hides behind the goodness of others to indulge in a spot of mischief of their own. The sacredness of the Chank is countered by the sin of the snail-carriers of *Schistosoma* or by the destructive talents of the shipworms and fouling molluscs. This, in a way, but adds to the importance of their study; it does not diminish the positive qualities of the group. Though the recognition of their full potential, including their role as nutritious, even delectable, food is of relatively recent date, it is clear that man has exploited the shell resources to varying extents ever since he started utilizing nature's gifts for his own personal or social needs.

In India the molluscs have occupied a marked place in the affairs of man from time immemorial, in his affairs of state and economy, in his affairs of mind and aesthetic values, in his affairs of religion and rites of worship. From their pride of place in mythology and legend they have inspired countless tales in folklore, caused long-standing customs and traditions, and in more recent times come to occupy prominent positions in heraldry and royal insignia, besides featuring conspicuously in the economy of vast sections of the people.

The most renowned of these molluscs, in lore and in literature, is perhaps the Pearl oyster, as the very mention of fabulous pearls strikes a responsive chord rich in associations. History and legend here bring forth such an admixture of fact and fiction, wherein for some historical pearl or other, kingdoms have fallen, fortunes changed hands or widespread destruction has followed. The pearls have also inspired countless ancient poets to moralise and gush forth lyrical, even if unscientific, accounts of their origin and occurrence.

Molluscs in ancient India

Evidence of long-standing associ-

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ation between man and molluscs in India is afforded by the shell remains discovered in human habitations of pre-Vedic Mohanjedaro, Harappa, Amri, Nal, Nundara and Rupar. These included not only the cowries *(Cypraea)* and the Chank *(Xancus)* but also their products —bangles and cores of shells from which the bangles have been sawn out. In Vedic times, despite the relative rarity of references to marine life in the Vedas, possibly because of the predominantly agricultural or pastoral nature of Vedic civilization which had very little contact with the sea, the few references that occur relate mainly to the molluscs—the *sankha* (Chank) *sukti* (Pearl oyster), *sambuka, valluka* and *vodika* (generally held to be spiral-shelled gastropods).

But to know the hold of the molluscs over ancient Indian mind, one has to start from the dim ages of mythology and legend.

a) *in mythology*: The sacred Chank, for instance, is so much a symbol of Hindu worship and mythology that it is integrated with almost every aspect of early Indian thought and culture. Vishnu, in his original aspect, has it as one of his four emblems; some of his avatars too are depicted as holding it. Possibly from this close affinity the chank is used in all Hindu temples, irrespective of sects, as an indispensible instrument of worship, as a container for holy water, as an instrument of invocation and call to the devout for worship. The mystic wail of the sacred chank resonant in the fading twilight of daybreak or dusk is part of the spiritual aura that surrounds most Hindu temples. Particularly the sinistral chank, by its very rarity, is held in such esteem that all major temples in India have one or more of these.

Such adoration does not appear to be confined to the chank alone, nor to Hinduism alone. The fossil cephalopod *Ammonites* of the sub-Himalayan region, known to the vaishnavite devout as *salagram,* is held in high veneration as the very abode of Vishnu. And the Buddhist monasteries in Tibet have been known to keep sinistral chanks; the one at the Sakya Monastery, for instance, is believed to have been gifted by the great Kublai Khan himself in late 13th century. In some of the neighbouring countries of India too these shells are preserved as priceless treasures, at some time their value having been assessed at their weight in gold!

b) *in folklore and superstition:* From its intimate association with the religious and emotional life of the people, the chank gradually slid into man's diverse walks of life. The folklore of different parts of India is replete with tales that have found concrete expression in many social customs as well. The lore relating to the place of chank and chank products in the marriage rites is vast, particularly in Bengal where the wearing of a lacquered chank bangle is part of the traditional ceremony. There is evidence to show that similar customs were prevalent elsewhere too, though non-existent now. Anthropologists refer to agricultural and pastoral communities like the Vellalans and Idaiyans, where the married women wear chank bangles customarily. The lore sometimes links the shell to Shiva who, as the story goes, laughingly chided Parvati at the time of her wedding, as not as charming as she might be, and proceeded to create out of his braided hair a Being who brought chank bangles for the adornment of the bride. Or, as in the story from South India, it is linked with Sri Krishna who, after abducting Rukmini from her marriage with Sishupala, married her himself

by placing a chank bangle on her wrist.

The influence that the shells exerted on the imagination of the ancient world is also borne out by the wealth of proverbs about the shells in different Indian languages.

From religion and folklore it is but a short step to superstition and the shell pervades the superstitious world just as extensively. From innocent, amusing beliefs, such as that sinistral shells blow of their own accord during the nights (a superstition once so entrenched in Tamil areas that even Christian divers felt concerned of this!) to stories of their power to ward off evil, all sorts of superstition have been reported. Tattooing or branding with heated metal the form of a chank, or burying a chank beneath the first stone laid for the construction of a temple or a house, all were once considered purificatory acts to ward off evil omens.

c) *in social customs and traditions:* Apart from the uses already mentioned as inspired by folktales and superstitions, shells as traditional personal adornment were in use among many communities. It is quite possible that these were originally worn as amulets or mascots tied round the neck, but their form and use acquired a range in later years from finger rings and necklaces to disc ornaments for hair or head dresses. Rings cut out from *Strombus* shells were used either as finger rings or strung on a cord and interspersed with coral beads as necklaces. Necklaces were also made with discs cut out of shells or from bisected shells merely strung together. The wearing of these necklaces once a girl had attained a particular age was an obligatory custom in many tribes in the past. The shell discs as ornaments for the ear or as decoration for head-dresses appear to have been popular till recent times among peoples of the Northern border—the Bhutanese, the Assamese and the Nagas.

Other shells used as ornaments included the ring-cowry *Ornamentaria*. This cowry along with the money-cowry *Monetaria* were considered a symbol of wealth and prosperity and found a place in many social functions like marriages, rice-giving ceremonies, *sradha* (death anniversaries) etc. Sometimes cowries or chanks were placed with the dead body as part of funereal rites.

The cowries were also widely used in gambling and many other indoor games.

d) *in trade and handicrafts:* Ancient Indians rarely left any records of their commerce or trade, when foreign sources have often filled in much information. As one leaves the dim past of myths and legends and comes into years of early history, indications of the commercial importance of molluscs are forth-coming. The accounts of foreign travellers mention the brisk trade that went on in shells from the fishing grounds of the Gulf of Mannar and Kathiawar coasts. The chank bangle trade is referred to in ancient Tamil writings and its prevalence proved by archaeological evidence. The travelling monk Cosmas Indico-Pleustes in the 6th century referred to the export of conch shells from India. The disputes and rivalries that went on between the foreign powers on this score, particularly at the time of the Portugese and the Dutch, are part of more recent history. Rings, bangles plainly or elaborately carved, and disc ornaments appear to have been the main handicraft products of the past.

The "ink" extracted from the cuttle fish *Sepia* was used as a drawing ink till recently and was known to keep the clarity and intensity of colour for long. Similarly the "purple" extracts from some gastropods were also used as dyes and pigments.

e) *as currency:* The shells, particularly the cowries, constituted the currency among many civilized and uncivilized peoples of the world. The most commonly used were the money cowries *Monetaria*. Sume ancient Hindu treatises about the 5th century mention the use of cowries as currency. Because of similar use of cowries in many part of Africa, the trade in cowries flourished. There are records of annual despatch of cargoes of cowries fished from Laccadive—Maldive waters to Wydah and Lagos, where they were exchanged for Spanish doubloons brought by the slave traders. Many European nations also imported cowries from India and other places for payment to West Africans in exchange for their products. Marco Polo, in the account of his voyage to China, recorded the finding of cowries circulating as currency in Yunnan in the 13th century.

Many Indian hill tribes, including the Nagas, employed it almost until the appearance of the Rupee. Till about a century ago the shells appear to have had a fixed and well worked-out exchange value among the Nagas. Slaves and cattle were traded in shells. The villages captured during raids paid their ransom in shells as well as in other kind.

f) *as medicine:* Many molluscs, predominantly the chank, appear to have been extensively used medicinally in ancient India. Chank shells, powdered and mixed with water, was considered an effective salve for ailments ranging from skin diseases to rickets and asthma. Chank ointment was similarly held as cure for eye inflamation or granulation on inner side of eyelids, for piles or even for leprosy. Sometimes chank powder was prescribed, mixed with ghee and taken internally, for skin troubles, consumption and such. Another remedy compounded of partially burnt camphor, chank powder and human milk or white of egg was considered a speedy cure for soreness of eyes. The chank powder was, in short, a panacea for diverse illnesses like jaundice, cough, phthisis and general debility. The dried egg capsule of chank, powdered with pepper and coriander in til oil, was considered effective to relieve headache, while the dried visceral mass was thought efficacious for enlarged spleen.

Some of the remedies appear scientifically possible of explanation. The use of chank powder as remedy for dyspepsia seems based on the carbonate of lime counteracting the hyperacidity of gastric fluids. Similar may be the case of rickets-an illness characterized by insufficient deposition of lime in bones. In many cases, however, it may be the religious association of the chank and the consequent faith in it that proved responsible for many cures.

Other molluscs that were put to medicinal uses included the cowries, *(Cypraea)*, the apple snails *(Pila)* and the widowpane oysters *(Placenta)*.

Molluscs in modern India

The molluscs in India are playing a living role yet, shedding many of their past associations and reported miraculous properties (the impact, no doubt, of the so-called ungodly present day generations!) but assuming newer and vastly more utilitarian roles.

a) *Surviving customs and traditions:* However, traditions and habits die hard and superstitions assume modern garb and survive, if only in name. Chanks or other shells tied to the forehead of draft bullocks or around the neck of cows and cow-buffaloes to keep them in milk are still sights not very uncommon. True, they are often put on as mere ornamentation now, their owners having no idea of the origin of this practice. Such is also the case of the shell necklaces that continue to be worn by many tribes even today. The mark of sophistication is not altogether absent, either –the shells that were once used to cut out discs for the ears and the hair, now turn out dress buttons.

Even the role of the conch as a clarion call to duty and action, exemplified in ancient days in times of war (when every great warrior had his own individual and renowed conch which he blew lustily while going into action) – even this role appears to have survived in the custom in Bengal of blowing the conches in times of emergencies such as eclipses or earth quakes. The resounding booms proceeding from almost all houses in a locality is kept up until the calamity is over (or, may be, until the deafened neighbourhood is past caring).

b) *in heraldry and design:* The nobler, more elevated roles of the shells also have survived in part. Apart from the continued use of the chanks in Hindu temples, the heraldic designs of the royal houses as well as the state emblems of both Travancore and Cochin had the sinistral chank as a prominent motif. Perhaps reminiscent of the early use of shells as currency, the chank shell was a symbol on coins issued by many ancient rulers, especially of the Pandiyan and Chalukyan dynasties. In more recent times Travancore and Cochin again used them on coins and early stamps. What is perhaps significant here is that in these cases the chank symbol was often used in place of and to the exclusion of the sovereign's head. What higher status can one ascribe to these shells?

c) *in trade and handicraft:* The trade in shells as raw material for the traditional handicraft products appear to have fallen, with the glass and plastics displacing the chank in the bangle and bead-necklace manufacture, to a large extent. The chank bangle industry, however, still survives in Bengl. New forms of handicrafts have evolved in place of old. The old-world infants' drinking-spout fashioned out of chank lingers among some of the poorer classes, while the richer strata are supplied with carved shell ash trays or *Nautilus* reading lamps or window-pane oyster lamp shades. A glue made out of the powdered horny operculum of the chank is still in use in some places as an adhesive base in the manufacture of incense sticks.

d) *Fisheries:* Apart from the well-established fisheries for the Pearl oyster and the chank along the Gulf of Mannar and Kathiawar coasts many clams, mussels, squids and other minor shell-fishes constitute smaller fisheries of local importance in many other regions as well.

(i) *Pearl oyster:* The fishing grounds for the Pearl oyster (*Pinctada fucota*) are in the Gulf of Mannar on the east coast. The inshore areas here afford a suitable habitat for the growth of oysters. The Oyster beds are dispersed on patches of rocky sea bottom (called *paars*) 8-12 miles from shore at depths of 7-12 fathoms.

The pearl fishery, though well

known since ancient days, was neglected for a considerable part of the first half of this century. But the operations were revived in 1955, after a lapse of nearly three decades, and for successive years up to 1961 yielded lucrative fisheries.

A pearl oyster fishery in the Palk Bay off Tondi was held in the early second decade of this century. In the Gulf of Kutch off Jamnagar and nearby places pearl fisheries of very small magnitude are annually harvested, the oysters exposed on rocky reefs at low tides being hand-picked by fishermen.

(ii) *Chank:* The chank (*Xancus pyrum*) is peculiar to the waters of India (and Ceylon) and the Andamans, its nearest relatives being found only in Brazilian waters. Among the distinct traditional fisheries for the chank (Tirunelveli-Ramanathapuram, South Arcot-Tanjore, Kanyakumari-Trivandrum and Kathiawar) only the fishery in the Gulf of Mannar and Palk Bay is well-organized and carried on systematically. The chank beds off Kathiawar coasts are probably next in importance. As in the case of the pearl oysters here, at Okhamandel, the chanks are not dived for, but are collected at spring tides when extensive littoral areas are uncovered.

The Tirunelveli-Ramanathapuram chanks have been noted for their solidity, weight and hardness. The chank beds lie in fine sandy areas (called *pirals*) interspersed with the rocky Pearl oyster beds in the Gulf of Mannar and extending further into the Palk Bay. The Tirunelveli-Ramnad chanks now constitute the bulk of the production that meets the demand of the Bengal chank-bangle industry.

(iii) *mussels and clams:* These form regular fisheries of considerable local importance along the east and west coasts. The meat is widely eaten, even considered delicious by those who develop a taste for it. The brown and green mussels (*Mytilus* spp.) form particularly good fisheries in Kerala, the former occurring in patchy but extensive beds from Kovalam to the Cape, while the latter is abundant in the northern districts. There are similar fisheries in many other states for edible bivalves like the weaving mussel (*Modiolus* sp.), wedge clams (*Donax* spp.) the backwater clams (*Meretrix* spp.) and backwater oysters (*Ostrea* spp.).

(iv) *Squids and miscellaneous shellfishes:* Besides the above-mentioned, many widely distributed fisheries such as for the squids, edible gastropods and the like are existent. The most important of these is the fishery for the squid *(Sepioteuthis)* centred along the coast of Ramanathapuram district, where large shoals appear in April-July. They are consumed locally or, in times of poor demand, sun-dried and sold in the interior.

The cuttlefishes *(Sepia)* do not form any regular fishery in these areas, but are taken occasionally in cast nets or shore seines. Though they are eaten, it is the cuttle bone that is more important commercially. These bones are washed ashore in large numbers and are gathered for sale. A considerable quantity of cuttle bones is sold from Kerala too. The demand for cuttle bone from abroad adds to the value of this trade.

Among the miscellaneous molluscs serving as food may be mentioned the edible whelks *(Pellia)* consumed by the poorer classes along Konkan coasts, the olives (*Oliva* spp.) extensively used as food by certain fishermen castes on the

Coromandel coast and the common apple-snail *(Pila)* which is eaten and also used medicinally.

The window-pane oyster (*Placenta*), though not edible, is important commercially and a small industry for this exists in the Gulf of Kutch. The shells, transluscent and mica-like; are raw material for many handicraft products, and the animals produce an abundance of seed pearls which are not valuable as jewellery but are held to have medicinal properties.

Besides their use as food, many of these shellfishes mentioned earlier, particularly the squids and to a lesser extent mussels and clams, are in great demand as fish baits.

The fishery for *Trochus* and *Turbo* in the Andaman and Nicobar islands is of importance because of the commercial demand for "mother of pearl" in the manufacture of shell buttons, buckles and other artistic fancy goods. This fishery, like those of the Pearl oyster and the chank, is under State control and the beds situated on rocky ledgers at 8-10 fathoms are leased out for exploitation. As in the case of the chank, however, the industry for "mother of pearl" has also been affected by the recent introduction of plastics and synthetic materials.

e) *in industry*: The shells are used in modern industry primarily for the manufacture of lime and cement. Especially in this country where in the mortar used in building construction as well as in the whitewash needed for its maintenance lime is an essential commodity, the industry of this, though scattered and so individually on a small scale, is cumulatively in large one. Though mussel and clam shells are usually used for preparing lime, chanks are used for special needs and occasions, as the lime produced by the chank shell is found to be of superior quality. Similarly, though carbonate deposits are widely used in the manufacture of cement, the factory at Kottayam in Central Kerala makes use of the dead and subfossil shells from the Vembanad Lake as their chief raw material.

f) *as enemy of man:* This account has so far dealt with some of the useful, or at any rate harmless, aspects of molluscs in their relationship with man. There is a reverse side to this too. The molluscs can also be agents of large-scale destruction or dreaded carriers of death to livestock or to man himself.

They cause destruction to property by fouling or by boring. many bivalves, particularly of the oyster and mussel group, are chief components of fouling communities that encrust submerged objects like piles and boats, causing considerable loss of timber or in case of vessels, reducing their speed and spoiling their streamlined efficiency in water. The wood-borers (like *Bankia, Teredo, Martesia* etc.) or ship-worms, even as their latter popular name suggests, eat away submerged timber and cause extensive damage to wooden hulls of seagoing vessels. These molluscs thus have a significant place in the economy of a maritime people.

The importance of molluscs as a hazaard to health stems from their close association with many helminth parasites. The well-known Schistosomiasis (Bilharziasis) or snail fever is spread through the agency of amphibian or freshwater snails that are intermediate hosts to these parasites. This dreaded disease is rampant in Africa, Middle East, South East Asia and tropical South America. But India has so far been free

from it though allied helminth species have been recorded from many common freshwater snails, like *Lymea* and *Indoplanorbis*. These snails are also active in the spread of many serious trematode infections in livestock.

Present-resources - need for survey and utilization

A mentioned earlier the resources of molluscs that can sustain regular and very productive fisheries are abundant in our waters. The primary need is to survey these resources and gather data on the existing level of their exploitation-which is bound to be low. Only the Pearl oyster and chank fishing grounds had received some early attention in this regard, and even here a recent cooperative underwater survey conducted by the Central Marine Fisheries Research Institute and the Madras Fisheries Department with the aid of Aqualung or SCUBA diving revealed many changes in patterns from that recorded by earlier surveys done decades ago, and also indicated fresh grounds that could be exploited commercially. Such systematically carried out surveys and preliminary studies should be made for other resources as well.

Great as the industrial use of molluscs is, perhaps the significance of molluscs in future would be greater as a potential source for human consumption. Only a few of the mussels, clams and oysters are now generally eaten and even these are more a poor man's food and have not attained their place on the gourmet's table that they could. The need for popularising molluscs as food is great, particularly in a country like ours where provision of nutritious food is a long-standing problem and any means to tackle it should be tried and, if successful, popularized. From the nutritional point of view the molluscs have many advantages such as easy digestibility coupled with high contents of minerals and vitamins. They have approximately 8-10% of proteins (by weight) 4-5% of carbohydrates, 2-3% of minerals with but 1-2% of fat. It has been calculated that a good serving of oysters, for example, would supply more than the needed daily allowance of iron and copper, about half the required amount of iodine, about one-tenth the daily need of protein, calcium, phosphorus, vitamin A, thiamine, riboflavin and nicotinic acid. Thus the role that the molluscs can play, along with fishes, in meeting the country's quest for balanced, nutritious diet has to be more widely recognized.

IMPORTANT TOURIST CENTRES IN AND AROUND KERALA

— *P. V. RAMACHANDRAN NAIR*

The Wild Life Sanctuary

Cradled in the Western Ghats with the pleasant comfort of the cool hills, the Wild Life Sanctuary at Thekkedy is unique in India. It offers the tourist the the luxury of cruise on boats in the Periyar Lake and the thrill of watching a variety of wild animals.

Situated 914–1828 metres above sea level in and around the Periyar Lake the Sanctuary is 777 sq. km in area. The lake formed by a dam across the Periyar river, is spread over 26 sq. km with its curves, spurs and bays. The dense tropical jungles provide a natural home for animals like the elephant, bison, wild boar, sambar, antelope, tiger and leopard.

From Cochin the distance to Thekkadi is 192 km. The starting point of the exciting journey to Thekkadi is Kottayam. This city, 70 km from Cochin, with its excellent tourist bungalow atop a hill, provides a fine midway halt before the climb to Periyar. The drive from Kottayam is itself a thrilling journey. The ascending road lies through rich plantations of pepper, rubber and, higher up, tea and cardamom and every bend of the spiral road bring in view a fresh panorama of scenic glory.

At Thekkady there is a western-style hotel, Aranya Nivas, managed by the State Tourist Department. Edappalayam Tourist Bungalow is located right inside the sanctuary and can be reached by boat from Aranya Nivas Hotel. It would be necessary to reach the Hotel jetty by 5P.M. to be ferried over the Periyar Lake. The stay at Edappalayam, ringed by a protective ditch, will be a memorable experience, for here at night you have a chance of seeing wild animals across the ditch. There is an Economy Class Tourist Bungalow also close to the to the Aranya Nivas Hotel.

Scheduled cruises by the launch 'Periyar' of 30 seat capacity and a few more launches are available on hire. Canoes could also be hired by those who prefer to row on their own. Each scheduled curuise takes three hours. The best part of the day for boating is either early morning or dusk, when the animals come out with their young ones.

Apart from a quiet holiday on the hills, Thekkadi offers unique opportunities for fishing. Furnished fishing huts are available at three places, Thannikkudy, Mullakudy and Manakkavala. These have also observation posts close

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by to watch wild animals. Lodging charges at these places are moderate.

The Periyar Wild Life Sanctuary is already on the world's tourist map and should be a must on your itinerary.

Trivandrum

Trivandrum, the capital of Kerala State is a modern city. With dense greenery undulating reads, slopes and parks it is a very picturesque city. Known as 'Anantasayanam' in ancient days, it has been a sacred place of the Hindus. In 1750, it became the capital of Travancore State when Raja Marthanda Varma shifted his royal seat from Padmanabhapuram (further south) to Trivandrum.

Sri Padmanabhaswamy Temple at Trivandrum is historically and architecturally the most important landmark. It is a fine specimen of South Indian architecture. The *gopuram* (tower) rising in seven storey, seen against the reflecting pool in front, provides a grand sight. Over three hundred granite pillars line its corridor and exquisite mural and ornamental structures adorn its walls.

Among the modern buildings in Trivandrum are the Kaudiyar Palace, the Kanakakunnu Palace, the Observatory, the Secretariat, the Legislative Chambers, the Victoria Jubilee Hall, and the University buildings and colleges. These impress a visitor with their predominantly indigenous designs.

One of the most attractive structures in Trivandrum is the Museum, a colourful turreted edifice standing on crest of the popular Public Gardens near the Observatory Hill. It has a good collection of bronzes, sculptures, models and zoological specimens. A 300 year old temple car, a cluster of rare musical instruments of various periods and regions, the vivid model of a Nair joint family *tarawad* (house) etc., may be specially noticed. Around the Museum lie the zoological gardens, with a beautiful landscape garden. Though of modest proportions in its layout and in its attractions, it is one of the best in India.

Close to the Museum, in the same compound, is located the Chitralaya or the Art Gallery. It houses a rich and representative collection of paintings of the various Indian and East Asian Schools. The former includes a large collection of Raja Ravi Varma's paintings and copies of Kerala's exquisite murals. Paintings of the Rajput, Mughal and Tanjore schools, reproductions of the murals of Ajanta, Bagh and Sittannavasal are prominently on view. The collection of Eastern art include paintings from Japan and China, the ritual and dance masks of Java and Bali. The canvases of the Roerichs, vividly capturing the colours of the Himalayas, are also to be seen.

The other tourist attractions of Trivandrum are the Aquarium near the beach, the Observatory and the Oriental Manuscript Library. The Library has a large collection of ancient palm-leaf manuscripts.

Kovalam-on-the-Sea

Kovalam is a sheltered bay and is endowed with unusual natural beauty and lies about 12km from Trivandrum. The tourist can relax comfortably in the bath house or take a refreshing bath in the cool waters of the blue sea.

Framed by a rugged promontory of rocks intruding into the sea on one side and by the long, gentle curved beach-

line fringed heavily by the swaying coconut palms, the panoramic view of the bay extending to the ocean-line and the sky is infinitely picturesque. At night when the moon and stars pour their soft radiance on the rippling waves, the seapool presents an unforgettable sight. The waters here are safe for seabathing even for a novice. Catamarans (a tie-up of light wood) can be hired by swimmers who wish to go into deeper waters.

Padmanabhapuram Palace

53 km on the Trivandrum-Cape Comorin highway, with a slight detour (at Thuckalay town), lies the Padmanabhapuram Palace, the ancient seat of the Travancore rulers. The palace contains relics of antiquity having historical and artistic value. The earliest structure here has been dated as of the 13th century. The Council Chamber, the intricately designed corridors, the Mother Palace and the Nritta Mandapam (Dance Hall) claim special attention in the complex of structures. The Dance Hall, with its beauty of design, unity of conception and its austerity of decorativive details, will give the visitor an aesthetic thrill. It is a real gem of Kerala's architecture. The incredible smoothness of its floor and the feeling of cool comfort it creats make one marvel at the architect's skill. Adjoining the structure lies a latticed chamber for royal ladies to watch unseen the dance and music performances.

The greatest attraction of the palace lies in its numerous multi-coloured paintings, depicting scence from the epics. Executed in the 17th and 18th centuries, these paintings are truly remarkable for their fine technique and harmony of composition. Among the more notable murals are 'Anantasayanam' (Sri Padmanabha reclining on Serpent Ananta), Lord Ganesa and the Dance of Siva (Nataraja).

Cape Comorin

A further drive of 33km from the detour on the main road takes one to Kanyakumari or Cape Comorin (Madras State), the land's end of India, where one can watch the sun rising or setting on the ocean.

Madurai

256 km from Trivandrum and approachable by air, road or rail lies Madurai with the imposing Meenakshi Temple. With its nine majestic towers, the pillared portico with a tank of the Golden lotus, and the court of thousand pillars there is no finer example of temple art. The tank, according to tradition, was a testing place for works of literature—a manuscript devoid of literary qualities was believed to sink when placed in the water. The thousand-pillared court, built in 1560, is unique; its motif of the stylized dragon is not found elsewhere. The columns present a kaleidoscopic view from any point inside the hall. In the outer corridor, there are the musical pillars; tap on them you will find that each pillar produces a different musical note. The temple is dedicated to Meenakshi, a local princess who married Sundareswara (Lord Siva).

The delicately-carved figures and the countless pieces of sculpture with varying themes-religion, statesmen, soldiers and dancing girls-show that the rulers of Madurai were not mere warriors but were keen patrons of the arts. The dancing figures of Siva and Kali and the graceful stone images of temple-dancers spotlight the grandeur of the monuments. Known to have been the

most important centre of Tamil culture, Madurai was the seat of atleast three great academies, the oldest of them dating back to a few centuries before Christ.

Another place of interest in Madurai is the Tirumalai Nayak Mahal–an imposing 17th – century palace of the Nayak rulers. This palace of late mediaeval Hindu architecture, with its Saracenic features, is famous for the stucco work in domes and arches. The portico in the front known as the *Swarga Vilasam* (the celestial pavilion) is an arcaded octagon, crowned by a huge dome 18 metres in diameter. A unique feature of this dome is that it is wholly constructed of brick and mortar, without a single rafter or girder to support it.

152 km from Madurai by road or rail, at Mandapam Camp is the Headquarters of the Central Marine Fisheries Research Institute. 19 km from Mandapam Camp is the holy town of Rameswaram. It is on an island in the Palkstraits at the extreme South-eastern limit of the Indian Peninsula. It contains are of India's most venerated temples, which is also a fine example of South Indian architecture.

Bangalore and Mysore

Bangalore, the capital of Mysore State is one of the prettiest cities in India. Situated at an altitude of 914 m. above sea level, the city enjoys a salubrious climate for most part of the year. The city is well laid out, has long avenues, spacious parks, palatial builings, big factories, commercial houses and two well-known centres of scientific research. This city has also some of India's biggest industrial undertakings belonging both to the State and private sectors. Principal attractions in the city are the 16th century Fort of Kempe Gowda, rebuilt by Hyder Ali and Tippu Sultan two centures later; Tippu Sultan's Palace; the Botanical Gardens of Lal Bagh; the Cubbon Park with it is Museum; the Palace and the Vidhan Soudha, which is the Government Secretariat. 71 km from Bangalore is the Nandi Hill, a popular hill-resort.

138 km from Bangalore and connected by an exellent road is Mysore, a lovely city full of palaces and parks. Nearby is the picturesque Chamundi Hill with an imposing ancient temple and the Raja's palace.

19 km from Mysore by road are the famous Brindavan Gardens, laid out below the Krishnaraja Sagar Dam. Under artificial illumination, which is done on Wednesdays, Saturdays, Sundays and other holidays, these terraced gardens with cascades, leaping fountains and multi-hued flower-beds are transformed into a fairyland.

Operation of Kheda

Mysore is also famous for its *Kheda* or elephant-capture operations. One of the most thrilling spectacles of its kind anywhere, the *Kheda* is the method for driving wild elephants into an arena ringed by deep trenches. Thus caught alive, the captured elephants are roped and later trained to obey the dictates of man. This fascinating venture, involving the co-operative endeavour of more than a thousand skilled men, is hazardous and costly. In January 1968 a Kheda operation is planned.