

KERALA CALLING

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A Leg-up for Many a Startup

Many young entrepreneurs in Kerala attribute their success to the Kerala Startup Mission's (KSUM) never- ending support

AWAKENING AFTER DEEP SLUMBER

By braving against the setbacks induced by the pandemic, the Kerala's Tourism sector is on the road to revival. With fresh hopes and expectations high, the tourism sector of Kerala is back with a bang



Kayaking on the Periyar River, Aluva



A new era dawns upon Kerala

With the inauguration of the Digital Hub, Kerala is poised to enter another phase of digital revolution in the country. The Digital Hub functions hand in sync with the integrated startup complex which had its inception two years ago. The technology innovation zone becomes the biggest one in South East Asia, with this venture!

The government is keen on shaping the youth into smarter entrepreneurs so that their creativity can be fully utilized by the entire society. With this aim in mind, the Kerala Startup Mission (KSUM) was formed. A huge boom has been seen in the Startup sector since the rule of the last government and it is growing faster and faster. The startups in Kerala have grown to 3,900, from 300 within a short span of five years! The government aims to make it 15,000 in the next five years by creating a centralised startup park. Besides, the government plans to set up innovation technology labs and incubators in different parts of the state.

Many have a success story to tell about their own startups. The Kerala Startup Mission (KSUM) has provided them with all support in every phase of their transition to success. And these young, creative minds have a lot to tell about the support they have

been provided with by KSUM. In this issue, we feature their success stories and their thankfulness to the government for the assistance they have been getting since the formation of their brainchildren!

The government is determined to deliver the benefits of the digital revolution to all citizens in the state. The Revenue department has launched several social welfare programmes on the digital platform as part of its 100-day action plan.

Dr. Jacob John is hailed globally as a renowned virologist. Kerala Calling did an interview with him on Kerala's resistance to COVID-19. He speaks eloquently and in detail on the latest scenario. This is an excellent interview, and our readers should not miss it!

Apart from these, many interesting topics are covered, of which 'Iranian touch' the frescoes of erstwhile Travancore will invite much attention and interest. The topic is handled by the historian Dr.Vysakh and we are sure that it will surely be the icing on the cake in this issue.

S. Harikishore I.A.S.
Editor

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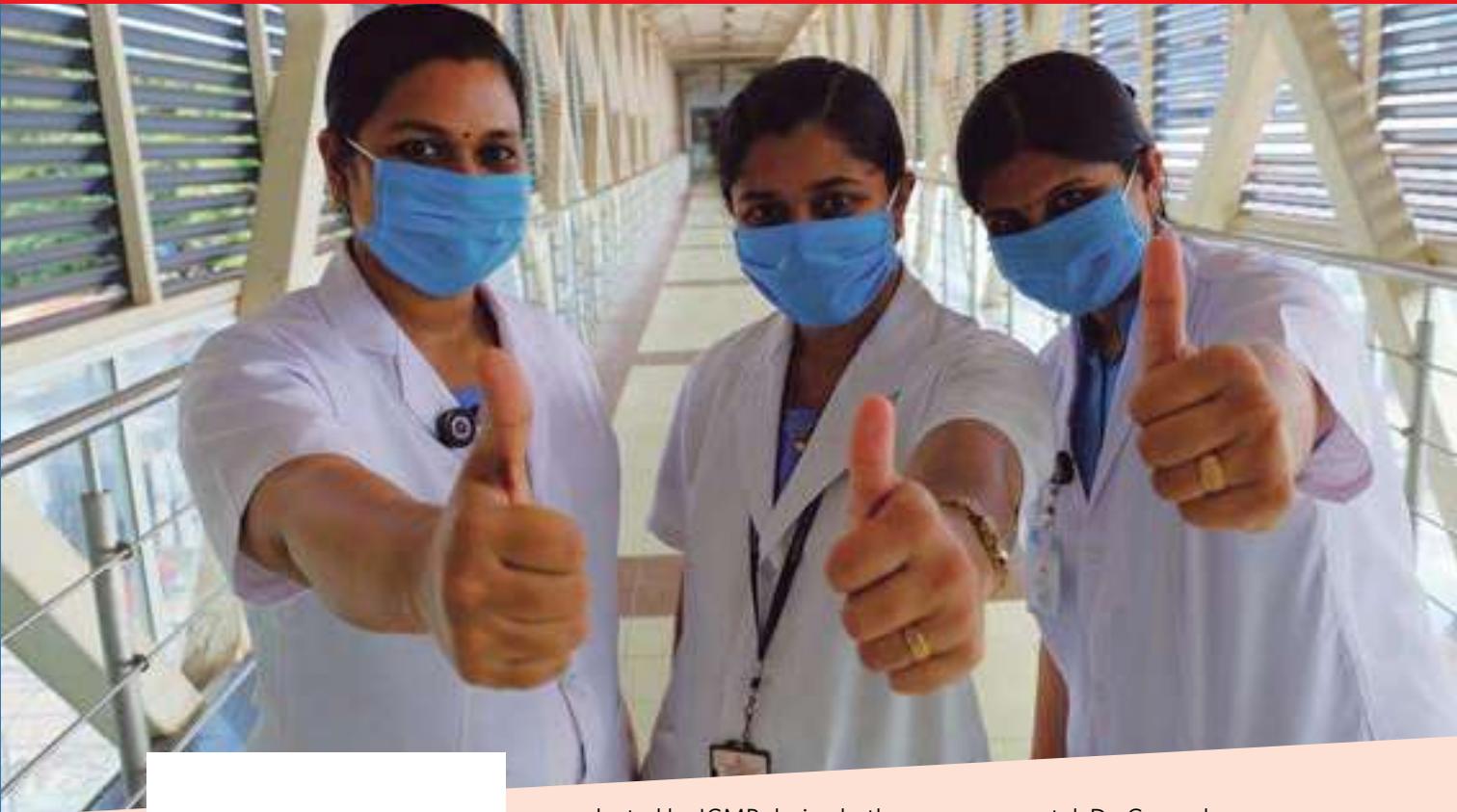
Pinarayi Vijayan
Chief Minister

The victory will be ours

So far, we have stood united to face and overcome the threat of COVID-19. We should never let that spirit die as there is an uphill battle of rebuilding the economy before us. Let's make sure that the victory will be ours.

The entire world has been going through an unprecedented crisis for the past one and half years. The COVID-19 pandemic has disrupted every facet of our lives. It has taken millions of lives, curtailed our social life, and caused severe economic perils. Under such circumstances, for any responsible Government, the most important question is the safety of its people, and the Government of Kerala is no exception.

Since January 2020, as soon as Kerala recorded India's first COVID-19 case, the State Government has made the safety and health of the people its foremost priority, over every thing else. The high population density, high prevalence of life style diseases, and a high proportion of elderly population make Kerala more vulnerable to the spread of the novel Corona virus. Even though these peculiar



Many renowned experts including epidemiologists and virologists have lauded this achievement and presented Kerala as a model before the whole nation.

conditions in Kerala make controlling a pandemic of this magnitude extremely difficult, our State has put an outstanding effort so as to restrain its impact. The analysis of Covid data shows that the containment measures taken by the State have been successful in curbing its sudden peak. By flattening the curve, Kerala could restrict the spread within the surge capacity of our health systems. The seroprevalence surveys

- conducted by ICMR during both the first and the second waves
- have proven beyond doubt that Kerala had the lowest proportion of the population that has been infected by the novel Corona virus.
- As per the survey, while about 25% of the Indian population was exposed to Covid during the first wave, antibodies were found in only about 11% of Kerala's population. The recent seroprevalence survey conducted during the second wave has detected antibodies in around 67% of the country's population. However, in Kerala, the seropositivity was about 44%. This means that we have successfully shielded more than half of the State's population from COVID-19.
- Many renowned experts including epidemiologists and virologists have lauded this achievement and presented Kerala as a model before the whole nation. In an interview given to 'The Wire', a national

- news portal, Dr. Gagandeep Kang, an eminent Indian virologist, appreciated the measures taken by Kerala to tackle the second wave of COVID-19. The reliability of the statistics we have been releasing and the targeted testing that we have been implementing received her special mention.
- Though the number of cases has shot up in the second wave, Kerala's mortality rate remains the lowest in India at 0.5% against the national average of 1.4%. This is a remarkable achievement during a devastating pandemic that has disrupted life in even many developed societies. Dr. Jayaprakash Muliyl, one of the foremost epidemiologists in our country, praised the strategies adopted by Kerala to minimise the deaths due to COVID-19 in an interview published in the Outlook magazine.
- Kerala is the first State in India to develop its own COVID-19 management and treatment



guidelines. The strategy we have executed to flatten the curve of Covid waves has never let the number of infected people outgrow the surge capacity of our health systems. Since Kerala could successfully stop the pandemic from reaching its peak so quickly, the Government has got sufficient time to develop the infrastructure and human resources of the health system. So Kerala has never had to face the shortage of Oxygen, or use more than 60-70% of our ICU beds and Ventilators. We have ensured good quality quarantine facilities all over the State for people who lack facilities at home. First Line and Second Line Treatment Centres have been established across the State, and high-end Covid treatment centres have been started in major health institutions. In Kerala, almost 90% of the COVID-19 patients

- get treatment at Government Hospitals.
- In addition to that, the State Government bears the treatment costs of patients admitted at private hospitals under the Karunya Arogya Suraksha Padhathi (KASP). More than Rs. 100 crore has been spent through this scheme to support COVID patients seeking treatment at private hospitals. Through such scrupulous measures, Kerala has ensured proper treatment and care to COVID-19 patients.
- There are many reasons for Kerala still being in the grip of the second wave and reporting more cases these days than any other State in the country. The most important factor is the success of the Kerala Model itself. The strategy to delay the peak and flatten the curve has resulted in a lengthier but milder wave than most other regions in India.

- The goal was to diminish the intensity of the wave and save as many lives as possible. The case fatality rate in Kerala underlines the success of our containment measures.
- As the peak has been delayed, a large number of people remain vulnerable to the virus. As per ICMR's latest seroprevalence survey, more than 55% of the population was still not infected. That is because of the successful implementation of stringent resistance measures which have been adopted here ever since the first wave. In the case of the second wave, the extremely contagious Delta variant of the COVID-19 virus was detected in Kerala in May which was much later than most other States in India. Unlike most other places, it didn't wreak havoc in Kerala. It is not a small feat, when we consider the fact that Kerala is a densely populated State.



Though the second wave hasn't put Kerala in much peril, the rise in the cases has never been overlooked. The Government has organised an international online conference to gather insights into the present condition of the pandemic in the State. Eminent experts from both India and abroad participated and presented their strategic suggestions to help strengthen the State's fight against the pandemic. The programme was extremely fruitful and provided novel insights regarding the situation that the State is currently in. The collective opinion of the Conference was that Kerala has exceptionally managed the crisis inflicted by COVID-19. Many of the expert participants put forward our committed efforts to avoid mortalities among Covid patients, as a model for the entire nation. Now, Kerala is witnessing a decline in cases. The number of

patients requiring hospitalisation is also decreasing. Moreover, Kerala is one of the States in India that runs the fastest and the most efficient Covid vaccination drive. We have so far administered the first dose of vaccine to more than 80% of the targeted population above 18 years, which is in turn more than 66% of the total population. The remaining 20% will also be inoculated within a month. In the light of these developments, the Government will have to focus on non-covid care and restoration of livelihoods, while continuing its vigilance against the pandemic. We have to recapture the socio-economic balance without jeopardising our fight against COVID-19. As part of this plan, Kerala has already relaxed some restrictions and begun the rejuvenation processes. Anticipating the third wave, the strengthening of the State's health system is also going on in full swing.

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So far, we have stood united to face and overcome the threat of COVID-19. We should never let that spirit die as there is an uphill battle of rebuilding the economy before us. Let's make sure that the ultimate victory will be ours.



K.Rajan

Minister for Revenue and Housing

An array of exemplary digital services

The Revenue department has launched numerous social welfare programmes on a digital platform as part of its 100 days action plan. The department has also ensured the quality of digital services along with the timely completion of projects. The department is introducing such revolutionary programmes envisaging three main goals: land for all, complete documentation of land and make all the services smart-enabled.

Village offices are the basic unit of the government. They have to be revamped according to the needs of the times. The government has introduced the smart village programme with this motive in mind. Village offices as well as their services are to be smart-enabled. The department has converted many of their actions and services onto the digital platform within 100 days. This makes it possible to obtain certificates and tax receipts while sitting in any part of the country. Land tax, which was previously paid only at the village office can now be remitted from one's mobile phone. People needn't



The digitalization of the basic tax register and revenue record register of 1666 villages in the state were completed. Various land-related services will now be available for free. Land records digitization will also enable surveys to have their errors removed.

pay multiple visits to the office. A mobile application has been created for people to use in an easy manner. The revenue e-service mobile app will be updated to include other land-related services.

Enabling online approval of field measurement sketches (survey map) at those villages in the state which have completed digital surveys is another newly introduced facility. Applicants can also remit the fee online. A due process has been introduced to ensure its authenticity.

A legitimate system has been introduced all over the state for assuring the credibility of the online application and obtaining the revenue record copy of the land owner. This system will be

installed in mobile applications too. Owners of property can easily apply for obtaining the location map of their land and pay the fees online.

The system for applying to change the type of land on the state land records portal has also come into effect. This process has been made online in order to take legal action and ensure transparency in the application submission process and to prevent forgery. It also facilitates online verification of the documents.

The digitalization of the basic tax register and revenue record register of 1666 villages in the state were completed. Various land-related services will now be available for free. Land records digitization will also enable surveys to have their errors removed.

The government intends to use digital technology in regional development through the concept of smart villages. As a part of the initial phase, every village has a website containing basic information, land information, activities, services and information management. One thousand six-hundred and sixty-six villages have come under this system allowing the services of villages to be co-ordinated under a single umbrella. In addition to this, certified land documents will be accessible to people who visit the website.

The state government is duty-bound to introduce and implement such social welfare schemes. Considering the current scenario around the world, the government aims to bring more services under the medium of online platforms

The e-service portal for remitting tax/fee has been updated. It will reduce the complications of the process as a quick pay facility to deliver the service to multiple people simultaneously has also been added.

The online platform can also be used to apply for and grant pension to those who have undergone treatment for cancer, tuberculosis and leprosy throughout the state. More than 10,000 people will derive the benefits of this scheme.

The state government is duty-bound to introduce and implement such social welfare schemes. Considering the current scenario around the world, the government aims to bring more services under the medium of online platforms. ●



V N Vasavan
Minister for Co-operation and Registration.

Standing by the youth

The Co-operative sector of Kerala has become a model for the rest of the states by launching Youth Co-operative societies.

The co-operative structure in Kerala which has achieved success in different arenas is now introducing a new venture. Its goal is to organise the youth of Kerala and make them a part of the country's rapid development. This move also aims at finding a solution to the issue of educated youth not finding adequate employment in the country. The general public has witnessed the strength and dedication of the youth in times of distress. They came together during the times of floods. They joined hands to help the distressed day and night irrespective of politics, religion or caste. Their dedication brought back to life many who had lost all their hopes and dreams. During this Covid pandemic, sighs of relief rose from households as the youth reached out to them with food parcels and medicines.

It became certain that the youth's hopes were not in vain as applications came from different parts of the state to form co-operative societies. Innumerable ideas have come from their thoughts. It is their dreams that are taking the shape of communities and co-operatives now. It was decided to form 25 co-operative societies as part of the Government's 100 days action plan. Instead, 27 Co-operative societies were inaugurated, the Co-operation department being unable to ignore the good ideas that the youth came up with anymore. Everyone was given an opportunity. As the Chief Minister said in his inaugural speech, the Government trusts the



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youth, with the expectation that the trust will not be lost.

The leaders of these co-operative societies are in the age group of 18 to 45. They are not the usual money lending societies. They are entrepreneurial in nature. They operate in the service sector. Once they become fully functional, huge employment opportunities will open up. Young people with great ideas who join

• multinational companies and talented youth who wander, seeking employment, are given a chance to become entrepreneurs. The Government provides them with a public platform to put their ideas into practice. These forums will become local start-ups. As such youth co-operatives become profitable and provide a reasonable income to the ones involved in the co-operative, it will end unemployment. Securing a job in their own country commensurate with their education will boost their confidence and improve their standard of living.

• The activities of each such registered society prove this fact. In Thiruvananthapuram, the Vattiyoorkavu Youth Brigade Entrepreneurs' Co-operative Society arrives at every doorstep. Individuals only need to ask for any help from them through a mobile app and help will be reached to their homes. The youth activists will deliver any document or household goods to their house. These activities are a great help to the needy and old folks

• who live alone. Medium-sized agencies are now active in the event management sector, which was once a monopoly of large companies. These companies are run for profit and hence benefits for the workers are limited. A group of young people from Neyyattinkara are making their debut in this field. Registered under the name 'K Track Events and Services Youth Co-operative Society', they will be organizing events at a low cost so that the common people in the rural areas can also depend on them. Workers will also be given a fair share of the income. Many young people can be given employment at the local level.

• The co-operative society registered at Punalur, Kollam is for artists. The society enables the creation of work opportunities and encouragement of artists. Finding creative people and providing an environment for them to improve and grow is a challenge. This challenge has been taken up by a young group of people. In Alappuzha, Cherthala Youth Co-operative Society is taking over the catering service. This is



State level inauguration of Youth Co-operative societies

an area that has the potential to provide employment to many people. Catering is one job that has to be handled responsibly. Many high-end companies and hotels are in this field. Their rates are often unaffordable to the common man. The co-operative society would provide affordable catering services to all.

The Kottayam District Youth Entrepreneurial Co-operative Society, which started operations in Velianur, has decided to form a youth labour force. The labour force, intended to create skilled youth members, will organize jobs for the youth throughout the district. This will increase employment. In addition to that, the public will find it easier to complete tasks that require skilled labour without delay. The profit earned through this can be used to create additional facilities. The Idukki Adimali Yuvadhara Youth Co-operative Society focuses on tourism projects. Staying in the Munnar valley, these youngsters are determined to make the most of the tourism potential of the scenic beauty of Idukki. There is a plan to supply spices to visitors to the place and also to the countries they might get introduced to through the tourists. They also intend to

start an online business of spices. The youth of Cheruthoni provide home stays and trekking facilities to tourists to enjoy the beauty from the top of the hill. The charm and beauty of the wilderness will rejuvenate the visitors and would also provide a regular income to a group of young people. The groups in Ernakulam are making arrangements to deliver daily essentials to homes. They would source goods at low rates and deliver them to houses, charging a small fee for delivery. The youth of Palakkad Chittoor have decided to indulge the palate of the common people, making healthy and delicious food products and having them delivered to homes. The eatables can be made-to-order. The youth are also confident about undertaking big hospitality events. Yuva Shakthi Yuva Co-operative Society in Naduvannur, Kozhikode is taking the initiative for the distribution of medicines. They deliver the medicine to homes and offices. The prescriptions can be sent to them online or on Whatsapp. Necessary tools for work will be provided to people who require them. They are also willing to supply security personnel, a job which is now done by private companies, often cutting a considerable amount

from their salaries as commission. The co-operative society can save the common man from such exploitation. All the three societies registered in Kasaragod have selected different sectors. The Kasaragod Youth Group plans to collect agricultural resources and distribute them as value-added products and prepare the necessary marketing techniques. The youth of Hosadurga have decided to explore different jobs starting from the IT sector to a catering service. They have also decided to convert agricultural

These Youth Co-operative Societies foster high expectations. They assure a great future. The youth of Kerala have a unique ability to execute and successfully complete with due rewards, every task taken up by them.

products into value-added products and distribute them. The youth of the Marketing Youth Co-operative Society in Ravaneshwaram intend to collect rice, vegetables, daily necessities and agricultural implements from other states and provide them to the people of Kasaragod at reasonable rates. These Youth Co-operative Societies foster high expectations. They assure a great future. The youth of Kerala have a unique ability to execute and successfully complete with due rewards, every task taken up by them. Young Malayalis have made their mark in every corner of the world. By virtue of their actions our land will prosper! ●

NEWS SCAN

Effortless government services@the doorstep!

The Government is about to launch Doorstep Delivery Services to extend a helping hand for the elderly of Kerala. The Government, according to the Chief Minister is providing easy and transparent access to government services to the elderly. The doorstep delivery system will be executed in 50 local bodies to benefit elderly people having physical illness, differently-abled and bedridden patients. The Government will issue a card to the beneficiaries along with the furnished details of ASHA or Kudumbashree workers. With the implementation of this system, these elderly people can avoid their visits to government offices. ASHA workers would be the main service providers and the rest of the volunteers will be given proper training before December. Anganwadi and Kudumbashree workers, ward members, local bodies, primary health centres and social workers would also be part of this system.

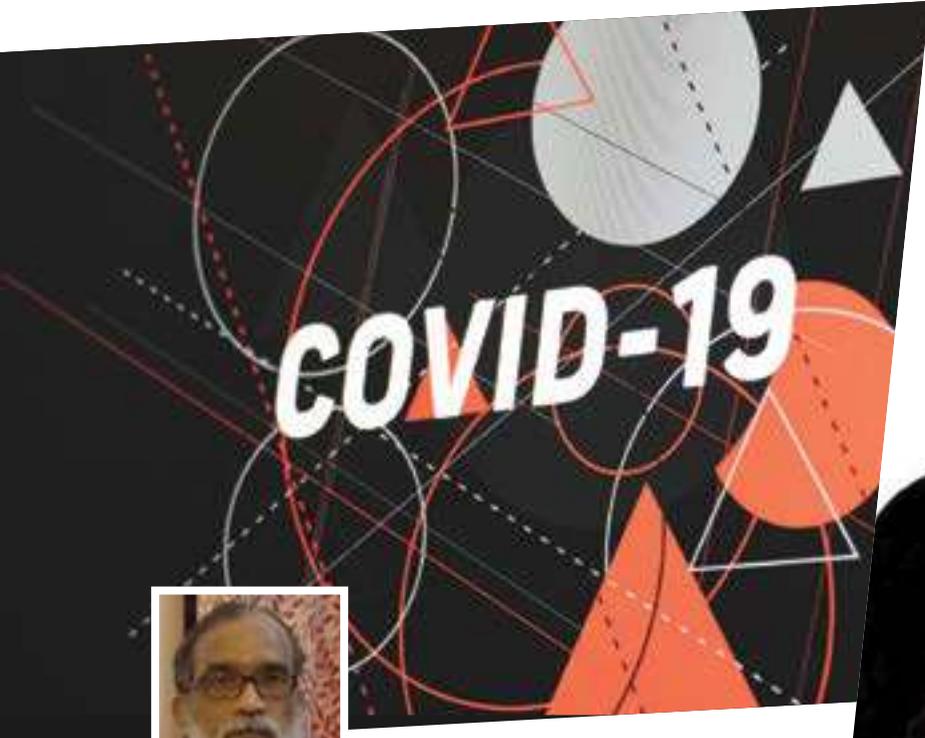
In the first phase, the doorstep delivery service would offer assistance in providing life certificates, mustering, applications for the Chief Minister's Distress Relief Fund, supply of life-saving medicines, and social security pension. Many more services will be provided as part of this system soon. The Government is also planning to avail services via an online platform by equipping Sevana centres and Akshaya centres into this. The Chief Minister said that the ongoing scheme to furnish all households with laptop and internet connectivity would enable citizens to access government services more facile and effortless.

TCS signs MoU with Kerala

The biggest IT Company Tata Consultancy Services has signed MoU to launch Innovation Park at the electronic manufacturing cluster at KINFRA Kakkanad. The memorandum was signed between KINFRA Managing Director Santhosh Koshy Thomas and TCS'Kerala Vice President Dinesh P Thampi in the presence of Chief Minister Pinaryi Vijayan, Industries Minister P Rajeev and principal secretary Dr. Ilankovan. The MoU delivers 36.84 acres of land for setting up units in the electronic hardware and the IT and ITES.

More than ten thousand job opportunities are expected with the opening of this campus. The first phase of this innovation park is expected to commence by the year 2023-2024. The innovation park will be set up in a 16 lakh square feet area. TCS has earmarked an amount of 440 crores for the IT complex and another amount of Rs 250 crores for other development processes. This is the second company that is signing a MoU with the Government. Major design and technology services provider Tata Elxsi had earlier signed an agreement worth 75 crores.





COVID-19



N. Bhadrans Nair
Executive Editor, Indian Science Journal



Dr. Jacob T. John
Virologist

COVID-19: Kerala's approach is commendable - Dr. Jacob T. John

In terms of pure numbers, Kerala has the highest caseload COVID-19 at present with some expressing 'concern' over the situation in the state. But a cursory look at the data reveals the mortality rate in Kerala is not alarming as the number of infections. N.Bhadrans Nair for Kerala Calling talked to the noted Virologist and former Professor and Head of the Departments of Clinical Virology and Microbiology at Christian Medical College, Vellore (Tamil Nadu), Dr. Jacob T. John on the overall picture Kerala presents.

• **Kerala Calling: Dr. Jacob John, despite the caseload declining in the majority of states, Kerala continued to contribute the maximum number of COVID-19 cases on a day-to-day basis. Why do you think, Kerala could not mitigate the spread of the global pandemic?**

• Dr. Jacob T. John: Kerala does not fit into the pattern of other states in India - and is an outlier. By the end of June/early July, every other state including Tamil Nadu and Karnataka, or Maharashtra and Delhi had a clear end of the second wave and had entered

Kerala did nothing wrong. In fact, the Kerala pattern is like many European countries with the Delta-caused wave still raging, unabated. Not short, sharp and very high - but stretched out and prolonged. That is good since the healthcare system can cope without getting overwhelmed.

an “endemic” phase. The endemic prevalence continues in India to date with approximately 40,000 daily cases (range 30,000-50,000). Kerala shows an entirely different picture. Having reached a low of about 12,000-13,000 per day during the first two weeks of July, there was a slow steady climb to about 20,000 per day by the third week of August. Eid festival was on 20 July and was not followed by a visible spurt, but the slow rising trend continued. There was a spurt after the Onam festival, with daily numbers reaching 30,000-32,000 for a few days, and then slowly declining to the present daily numbers of about 20,000-25,000. Naturally, anyone would ask “what did Kerala do wrong?” Kerala did nothing wrong. In fact, the Kerala pattern is like many European countries with the Delta-caused wave still raging, unabated. Not short, sharp and very high -- but stretched out and prolonged. That is good since the healthcare system can cope without getting overwhelmed.

A state that did everything right in the past, Kerala had the lowest proportion of the population infected in the first wave. There are several pieces of evidence for that, but the one that many quotes is the July serosurvey by ICMR, showing by far the lowest seroprevalence among all states at 44 per cent. Although the serosurveys are not ‘robust’ with 28,000 sample size representing 1400 million (so a tiny fraction: 0.002 per cent), but carefully selected.

Why did Kerala have the lowest rate? Because Kerala had managed to curtail the Wuhan-D614G variant during 2020 very efficiently. In all other states, Wuhan-D614G had a free run and that gave them a very large proportion immune to Delta variant when it hit us in the second wave. Kerala alone has the second wave continuing not having reached the endemic phase. That is dictated by the “extremely high infectiousness” of Delta, not amenable to the measures in Kerala that were highly effective against Wuhan-D614G.

The first ICMR serosurvey concluded India in the first week of May 2020 had 6.46 million infections. Kerala was the first state to screen for the importation of SARS-CoV-2 from 30 Jan 2020, with extremely aggressive contact tracing out of a detective book. All infections were detected,

documented, home quarantine managed etc, all well known. So, on 3 May, Kerala had 500 and the rest of India had 6,459,500. But only 42,779 of them were detected and counted. You see the difference. Most people, including experts and opinion leaders, have not understood this reality. So, in all of India, only 0.66 per cent had been detected and 99.33 per cent of infections had been missed. In Kerala, virtually 100 per cent was detected.

Many attribute to relaxation of restrictions was one reason for creating a fertile ground for transmission, especially during two festival seasons in the recent past. Do you subscribe to it?

Many experts and commentators do not understand that “restrictions” of social contacts are for the benefit of citizens by reducing disease frequency, especially severe disease, and deaths. Such “restrictions” are unnatural among humans and cannot be prolonged too much – it has repercussions that impinge on the well-being of citizens.

There has to be a balance between restrictions and relaxations, both for people’s benefit. Too many restrictions affect mental health and livelihoods – too little will lead to more deaths. So, the final metric of too much relaxation is too many deaths. By that metric Kerala has not done any harm to citizens.

So, what are commentators worried about?

Numbers. The number is the wrong metric; harm is the real measure. I, personally, believe that relaxations have not been humane enough. They are as important as controlling the epidemic. The balance can never satisfy all people. Between too much and too little there is no textbook line.

Medical scientists say, sub-lineages of the Delta variant, responsible for the second wave of Covid in the country, are rising in Kerala. Is it another reason for the continuing state of high infection rate in the state?

By mid-August 2021, 100 per cent of infections in India were due to the Delta variant.

Its infection efficiency is so high that nowhere in the world has it been contained by non-pharmacological interventions. That does not mean we do not apply them – but surgical masks are not good enough – double masks or N-95 reusable masks are necessary to slow down transmission. The two effective factors of control are past infection and vaccination.

The state government has claimed, about 78 percentages of people have been given the first dose of the vaccine while 30 per cent were given both doses. Is it a satisfactory level to keep the population of the state insulated from further infections or even if infected, its severity?

In all States, the second wave due to Delta was over by the end of June, early July and since then

COVID-19



infection is not epidemic but endemic. So, we have not been able to vaccinate to flatten the second wave anywhere in India. According to data as of 12 September 2021, 13.3 per cent were given two doses nationally and 25.4 per cent in Kerala. Too little too late - but better late than never. One dose does not count except to expedite second dose coverage. One dose data nationally 42.1 per cent and in Kerala it was 64.7 per cent. Now vaccination should be targeted to open up schools (by vaccination all staff, teaching and non-teaching, parents of school pupils) and to open up economic activities.

Some experts have predicted a third wave in isolated pockets could be expected in October-November. What are your views on these issues?

If third wave prediction is to scare people into accepting continued severe social restrictions that is wrong.

If those who predict a third wave would express their logic, we could understand it and then meditate

on the probability based on their logic. I have not heard any logic, data or calculations why a third wave is inevitable. Let us prepare well for endemic prevalence and don't prolong strict restrictions to pre-empt an unlikely (or imagined/feared) third wave. A wave is an outbreak which means "disease outbreak" not infections, Infections are of two kinds - infection in the non-immune and break-through infections in the vaccinated or previously infected. Only the first kind can really cause a third wave. Using the basic reproduction number of the first wave variant and second wave variant, I calculate that about 400 million were infected in the first wave; of the remaining, another 750 million were infected in the second wave. Of the balance of 250 million, about 50 million may be covered during the endemic phase plus those vaccinated with two doses. The remaining 200 million are not big enough to sustain a third wave unless a variant far more infectious than Delta appears. Checking for such variants is what should be diligently done - and if none is found, then another wave is most unlikely. ●

NEWS SCAN

Vaccine production zone at Life science Park.

The Government decided to set up a Vaccine Production Zone at the Life Science Park in Thiruvananthapuram, with a special package for anchor industries setting up units. It is decided that a special package will be sanctioned to anchor industries that are ready to start vaccine production units at the park. The Government also announced a land lease for 60 years with a subsidy of 50% in the lease. There will be an exemption in stamp duty & registration fee, loans up to 100 Crore. Single-window and fast-track approval will be granted within 30 days. A subsidy of Rs 2 per unit will be given on the electricity bill. Companies can take proper decisions on which vaccine to be produced, the technology to be used and the basic infrastructure as well. If companies make sure that the 85,000square feet building is suitable for setting up a vaccine production unit, it will be leased out on annual basis. There will be a common waste treatment system, solar plant and bio-waste processing centre in the Park, which will be constructed by the Kerala State Industrial Development Corporation. Two separate letters of interest will be prepared to invite companies. Qualified companies will be considered for anchor industries only after completing the evaluation by the technical committee. Vaccine production unit, working group member Vijayakar Sista, is appointed as a consultant for setting up the vaccine production unit at Life Science Park.



NEWS SCAN

Property Management System at Chirayinkeezhu

Panchayath level property management system has been launched in Chirayinkeezhu grama panchayath as part of an Intelligent Property Management System (IPMS). With the launch of this sort of system, the basic information and geographical information are of a Panchayath, socio-economic data of the residents etc are introduced. Drones, GPS, various sorts of laser



taping methods and many new technologies are being used in this process of data collection. Apart from this, for easy retrieval, all the information will be made available on a web platform also. Data related to wetland, wasteland, paddy fields, watersheds, rivers, ponds other water bodies will be assembled in the information collected. Apart from that, photos and data related to the buildings, roads, bridges, service providers, electric lights also will be put together as part of the IPMS system. Tax assessment can be done by collecting proper information on the property, building area, floors and owner's information.

Citizen Portal For Hassle-Free Panchayath Services



The government of Kerala has introduced Citizen Portal to ensure the service of grama panchayats is more hassle-free and transparent. The launch of Citizen Portal was done as part of the Chief Minister's 100 days action plan program. With the commencement of Citizen Portal, the public can gain the information and services with a single click. The portal was developed by the Information Kerala Mission in collaboration with the Panchayat Department as part of the Integrated Local Government Management System (ILGMS). With the introduction of this new system, people can access the service of the Panchayat offices from home. The government of Kerala aims to fulfil the goal to make the dispersal of certificates and official papers in a time-bound manner. With the introduction of Citizen Portal, this will become more efficient and functional. The project was launched across 153-grama panchayats the and 150 more would be added in the state.



**KERALA
STARTUP MISSION™**



Sajini Sahadevan
Senior Journalist

KSUM gave us wings to fly high

“From mentoring to providing a vibrant ecosystem, KSUM has become the launchpad that every startup dreams of” opine the young entrepreneurs. Since its inception, the Kerala Startup Mission (KSUM) has focused on giving wings to the dreams of many entrepreneurs. KSUM appeared as a silver lining on an otherwise hazy horizon, filling that void between dreaming of an idea and setting it into motion.

Today, KSUM has lent a new dimension to 2900+ startups, providing the basic infrastructure to take off, from its 40+ incubation centres across 10L sqft of office space, grants to the tune of Rs.19.6Cr and funding of Rs.750Cr.

Thomson Skariah, co-founder, Rapidor, says every engagement with KSUM has only helped the startup become a better version of itself, from the screening process to the countless networking opportunities and

The many questions during the selection interview itself push you to think about the product and your vision for it many times over. You develop a lot of clarity

the ecosystem itself. "The system is a very thorough one with many cross-checks in place. The many questions during the selection interview itself push you to think about the product and your vision for it many times over. You develop a lot of clarity," Thomson, an IIT-Delhi alumnus, recalls earnestly.



Pawan Kumar, Prabhu Chanduru, Thomson Skariah - Rapidor

Rapidor, a B2B2C workflow solutions provider that Thomson started with Pawan Kumar and Prabhu Chanduru, was already in motion with a few clients in place by the time they approached KSUM. "They provided us with an office. The ecosystem there is very productive. Just being able to connect with other entrepreneurs and share your thoughts with like-minded people is a great experience." Thomson credits the leadership for the agency's success. "This environment has been helpful because of the right people at the

helm of things, including Dr. Saji Gopinath then and everyone else. There is no space for crony capitalism, people are there for the right reasons. They are always accessible with sincere encouragement, feedback, being open to suggestions, it was never just lip service."



Shameel Abdullah, Subbakrishna Rao Clootrack

Each facet under KSUM has come as timely aid to various startups in different ways. Customer experience analytics platform Clootrack's Shameel Abdullah, who was already two startups old, along with co-founder Subbakrishna Rao, both self-confessed serial entrepreneurs, finds that KSUM's two-pronged approach comes as a breath of fresh air. "KSUM focuses on business acceleration, which is what every startup needs, and helps settle the registration process without the usual red tape that every venture dreads."

The grant scheme is a lifeline for many startups when they are at the beginning of their entrepreneurial journey. The Innovation Grant, a scheme under KSUM that provides financial support depending on the need of the venture. The Idea Grant provides Rs.2L for students/students to develop a prototype or MVP; the Productization Grant, at Rs.7L an

idea, is meant to help a startup launch their product while the Scale-up Grant of Rs.12L, can boost sales or propel the product better. Thousif M, the founder of Tesz, a site for troubleshooting government process queries, says winning KSUM's Productization Grant of Rs. 7L was a shot in the arm that put their concerns

surrounding sustenance to rest. "We could then focus on community building, which is essential for Tesz to thrive, rather than revenue generation," he adds. Thousif, an IIM-Raipur alumnus, was working with various PWD projects across the country as an infrastructure

consultant when he would always see people queuing up at government offices with doubts about the processes in place. "I thought they would be available on the websites of the departments concerned but they weren't," he says. "The other options are a helpdesk at the office where one person has to

KSUM continues to turn lives around, a silent yet formidable presence for every entrepreneur with a dream that's waiting to be realized.

spend precious time repeating the same information to every person who approaches them or a presence on FaceBook or Twitter where the thread to the answers don't show up when someone does a Google search." Selected for the AWS Public



Thousif - TesZ

Sector Startup Ramp program, Tesz has 50+ experts from the government sector or retired officials to provide answers to queries posted by citizens on the free to use platform. Queries are forwarded to the officials in the departments concerned whose replies are then posted under the query. The site draws 3L visitors a month, a figure Thousif wants to increase to 1mn.

Under KSUM's stewardship, Thousif says, Tesz has developed a credible presence which helped bring experts onboard as well as many state and central departments. Currently, KSEB, KSUM, KSFE, Motor Vehicles department and the Central government's DigiLocker answer related queries from citizens. Recently, Sakala Mission of the government of Karnataka too has come onboard. It also allows citizens to provide answers to queries. Active participants get 'Claps' and a blue tick to show that they are verified.

Anand Subhash, founder and Chief Architect of ConceptBytes, an award-winning startup that offers Saas products to Enterprise customers, showing them the true potential of security and surveillance systems, says KSUM sharpened the team's pitching skills. As a startup that was already growing on revenues from patented innovations, the team



Anand Subash - ConceptBytes

was never faced with a situation where they were required to talk about themselves. Under KSUM's grooming, ConceptBytes found themselves to make winning pitches. "So when events by NASSCOM and Microsoft came up, we were confident," Anand says.

The agency is a level-playing field for entrepreneurs from all sectors. When Najeeb bin Haneef and his team, all students of biotechnology at Sahradaya



Najeeb bin Haneef - Zaara

College of Engineering and Technology, thought up micro algae in a new avatar - cookies, the team knew they had something unique to showcase. They participated in Huddle Kerala, a tech startup conclave hosted by KSUM, where the group had ample networking opportunities to promote their

nutritious breakfast substitute for those too busy for an elaborate meal. Najeeb's company Zaara Biotech was also a part of the startup delegation from KSUM to Gitex 2020. The company's Blite Spirulina Cookies, part of their range of India's first algae seaweed food products, caught the attention of multi-sector enterprise TCN International, resulting in a joint venture earlier this year. The cookies already have an online as well as in-store presence in India's major metros and abroad. Clients can also aim for a shift in lifestyle and connect to a nutritionist, yoga/fitness coach as a Blite customer. Other FMCG products such as algae-based soaps and cosmetics are also in the works.

Safil Sunny is the CEO of Tranzmeo, a KSUM-incubated startup started in 2017 that uses digitalisation to enable remote monitoring of pipelines around the world. Tranzmeo was one of many startups that benefited



Safil - Tranzmeo

from KSUM's grant scheme. Working in a NASSCOM 10K Warehouse, it was chosen by Cisco LaunchPad, an accelerator programme that specialises in helping B2B startups to scale, earlier this year. "We have benefited immensely from KSUM's mentoring and grants," Safil, who has 10 years of

experience in the IT industry, says.

The exposure through participation at international events came as an eye-opener to Shameel. "Apart from KSUM's scale-up grant which was equity free, we made a trip to the US which secured us a major client. The trip was a first and showed us the potential of such networking. KSUM also had us participate in GITEX 2018 and we understood that as startups exposure really does matter."

Thomson, whose startup has already been on a winning spree with numerous awards to his team's credit, says infrastructure and market access apart, KSUM also curates impressive events, selecting the right companies apart from hosting a Big Demo Day. Having participated in the World Mobile Congress in Spain and numerous other events, the Big Demo Day, he notes, is an opportunity for startups to showcase their works and receive comments. "Appearing at events helps put a face to the company even if nothing else. Meeting industry leaders, winning at some of the events have also helped at a time when we were cash-strapped. My staff has also attended workshops organised by KSUM from which they have come back energised with new insights."

He is deeply appreciative of the PR support also provided by KSUM. "They keep you in mind for future references. While we might get caught up with the everyday challenges of scaling up, they keep track of events where we can make a pitch. If we win, they make it known through social media." KSUM continues to turn lives around, a silent yet formidable presence for every entrepreneur with a dream that's waiting to be realized. ●

The Digital Hub in Kerala: South East Asia's pride



The state-of-the-art digital hub set up by the Kerala Startup Mission (KSUM) in Kochi, and South Asia's largest product development centre for startups, was inaugurated by Chief Minister Pinarayi Vijayan. The digital hub which was started under Kerala Startup Mission, has novel technological innovations like healthcare incubator, Centre of Excellence (CoE) for Mouser Electronics, co-working spaces, design studios, investors hive and an innovation centre. Apart from these, occupying over 2 lakh square feet of built-up space in Kalamassery, the digital hub can support 200 startups. The centre of excellence in the digital hub will become a unified centre for software and hardware's product design and development. The functioning of the centre will be based on modern technological innovations like Artificial Intelligence, Robotics, Augmented Reality, the Internet of Things and Language Processing. It is expected that 200 startups will be functioning at the early stage by providing direct job opportunities for 2500 people.

The digital hub aims to be turned into a destination for designing and prototyping. The hub will be open for international organisations and institutions to build world-class products. Better skill capacity, excellence in design for manufacturing, chain of digital fabrication, super fab lab, hardware incubator maker village, small scale production centres, industrial corridors are some of the major attractions of the digital hub. Technology Innovation Zone is being established in a 13.2-acre land at KINFRA Hitech Park in Kalamassery. This has a total built-up area of 4 lakh square feet. Integrated startup complex, biotechnology incubation centre of 2.3 lakh square feet area are currently operational here.



Anilkumar G.
Joint General Manager and Company Secretary

Silverline : Taming time

Silverline semi high-speed rail project has become now a much anticipated and talked about project in the State. The proposed 531 km corridor that connects the capital city of Thiruvananthapuram to the northern city of Kasargod in less than 4 hours is slated to be a project that will help the state to the fast path of development and growth.

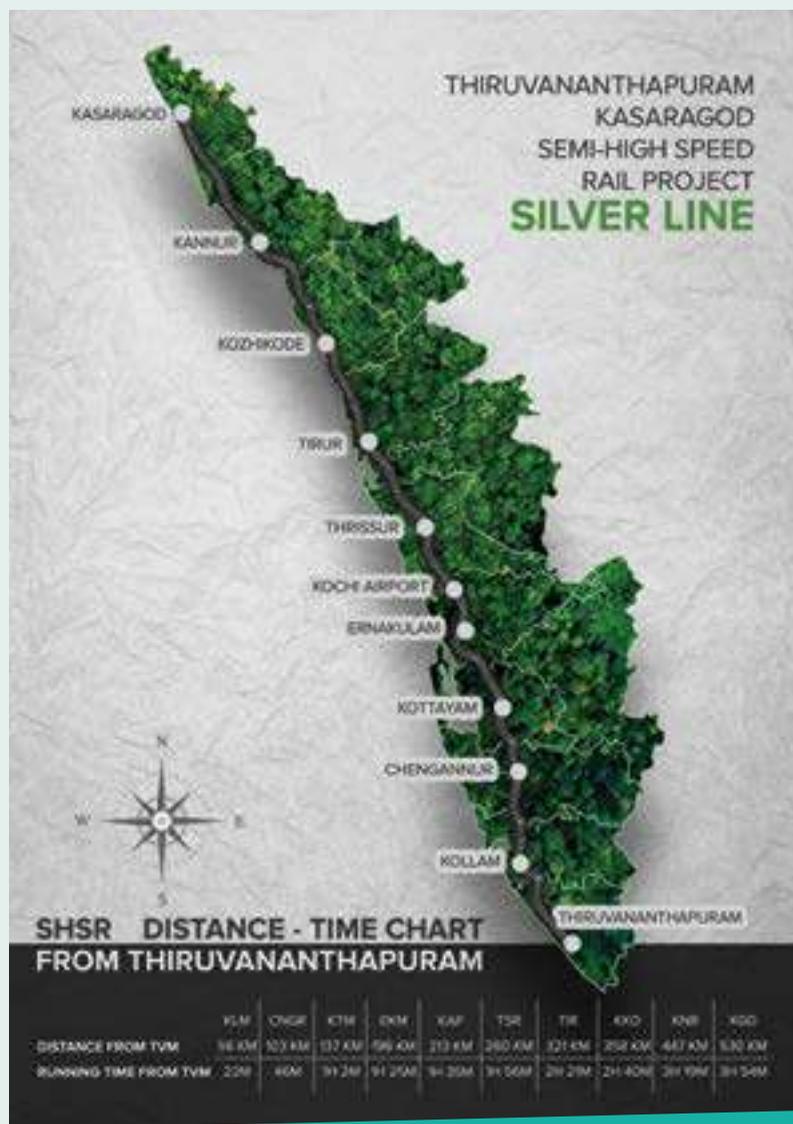
Kerala Rail Development Corporation Limited (KRDCL) or K-Rail, as it is most popularly known, is the joint venture between the Government of Kerala and the Indian Railways, is the implementing agency of the project. The total cost of the Silverline is estimated at around Rs 64,000-crore. A detailed project report (DPR) has been submitted to the Ministry of Railways and K-Rail is awaiting its approval. As per the DPR, the project can be completed in five years on starting work. SilverLine has been designed in such a way as to address the inadequacy

of existing rail transport and to strengthen the public transport system in the State. About half a lakh of people will get jobs in the construction phase and about 11,000 people will get jobs during its operational phase. SilverLine runs through ten districts with 11 stops.

About half a lakh of people will get jobs in the construction phase and about 11,000 people will get jobs during its operational phase. SilverLine runs through ten districts with 11 stops.

With the completion of this project, it is estimated in the travel survey conducted as part of the DPR preparation around 46,206 road users per day will be shifted to SilverLine. With 12,872 vehicles off the road in the first year, traffic congestion in the State will get significantly reduced. In addition, it can save Rs 530 crore on petrol and diesel fuel every year. 185 hectares of railway land and 1,198 hectares of private land will be utilized for the 529.45 km long project.

The SilverLine track, which is designed to avoid sharp curves, passes through relatively low densely populated areas. Measures are being taken to prevent the demolition of houses and buildings as much as possible and to shift the houses using the building lifting and shifting technology. The 88 km of the SilverLine path will be constructed on bridges, viaducts to avoid paddy fields and



buildings as much as possible. While the width needed for the National Highway is up to 45 m, the SilverLine needs only 15 to 25 m of land and can carry three times the passengers a National Highway can afford. According to Indian Railways policy, protective fencing has to be erected around the tracks where the train travels at a speed of more than 140 kmph for the safety of the public. The 137 km long track is traversed by overpasses, tunnels, and viaducts, so there is no restriction on freedom of movement. Elsewhere, there will be footpaths or overpasses every five hundred meters across the SilverLine track

to facilitate crossings. According to the detailed project report (DPR), the cost of setting up the SilverLine is Rs 63,940.67 crore. Out of this Rs 6085 crore is tax exemption to be paid by the Central and State Governments. Rs 975 crore is the value land owned by the Railways. The share of Central Railways to the project is Rs 2150 crore. The State government will bear Rs 3253 crore as their share. Rs 4252 crore will be raised through public equity participation. It aims to raise Rs 33,700 crore from international financial institutions. The Housing and Urban Development Corporation (HUDCO) has sanctioned



Rs 3000 crore loan for the first phase of land acquisition between Kochuveli and Chengannur. Kerala Infrastructure Investment Fund Board (KIIFB) has already agreed to provide a loan of Rs 2,100 crore to fund the land acquisition. Out of the total land required, around 185 hectares will be railway land and 1,198 hectares will be private land.

Once SilverLine comes to reality, it will not only accelerate the speed of travel within the State but also revive the economy that has been long hit by the COVID-19 pandemic.

Meanwhile, the State cabinet has given nod for the preparatory works needed for land acquisition for the SilverLine semi high-speed project. The sanction has been given for the acquisition of 955.13 hectares of land of various villages of Thiruvananthapuram, Alappuzha, Pathanamthitta, Kottayam, Ernakulam, Thrissur, Malappuram, Kozhikode, and Kasargod districts as per the provisions of the Land

Acquisition, Rehabilitation, and Resettlement Act of 2013 (LARR Act, 2013). A Social Impact Assessment study as said in the LARR Act, 2013 will be conducted by the issuance of notification as per Section 4(1) of the Act from the State Level Social Impact Assessment (SIA) agencies empanelled for the purpose. An expert committee would be constituted to check the Social Impact Assessment (SIA) study report.

The order also made it clear that the decision of the Government to proceed with the land acquisition as per sub-section (2) of section (8) of the LARR Act will be issued only after getting final approval for the project from the Railway Board. The sanction now has been given to the concerned department to make preparatory works needed for acquiring the land for the project.

The State cabinet has also sanctioned the creation of a Special Deputy Collector office consisting of 7 posts based at Ernakulam and 11 Special Tahsildar LA offices based at 11 districts mentioned above backed by enough Revenue officers to undergo the preliminary activities of the land acquisition activities.

Negotiations are already in progress with KIIFB and the Indian Railway Finance Corporation for the Rs 13,265 crore required for land acquisition. In Kerala, where the current investment-friendly environment prevails, K-Rail is also looking for the financial

model of roping in private players for around 40 per cent of the equity, similar to projects like Cochin International Airport and Kannur International Airport, in which even NRIs are partners.

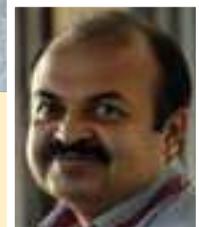
Once SilverLine comes to reality, it will not only accelerate the speed of travel within the State but also revive the economy that has been long hit by the COVID-19 pandemic. The project is surely going to be a game-changer to the development dreams of the state and brings a long-awaited answer to the speed travel inside the state. ●

- **Integration with Trivandrum and Kochi Airport**
- **Connecting IT corridors – Technopark and Infopark**
- **Last-mile connectivity by providing**
- **cab feeder services**
- **share auto services**
- **e-Bus services**
- **Bicycle/Bike rental schemes**
- **50,000 direct and indirect employment opportunities during the construction period of 5 years.**
- **10,000 employment opportunities during post-project operation period.**

K.M.Roy was an intense personality among the journalistic circles. He is remembered passionately by two of his former colleagues



R. Gopikrishnan
Chief Editor
Metro Vartha



N. B. Biju
Assistant Editor
District Information Office, Idukki

The full moon has vanished

It was when I was a reporter trainee at Deepika that I got an opportunity to see K. M. Roy the journalist at close quarters. He was a good friend of K. T. Tharian, the bureau chief of Deepika, Ernakulam. Roy sir used to drop in at the Deepika office on the Press Club Road. The question he asked me, when we were introduced to each other, remains in my mind even today: "Should you remain with the Malayalam newspapers? Luminaries like you should join either English newspapers or agencies. Don't worry about the language-shift. You'll find your footing in a matter of a week."

Luminary! I liked that word. It felt like a compliment coming from a senior journalist. Always generous with encouraging words, Roy sir was never a skinflint. K. M. Roy sincerely believed that excellent training held the key to great newspapers and journalists, and the efforts taken by him in this regard were not insubstantial. It almost seemed as if he was adamant that overseas training should be made available even to those working in middle-level newspapers.

The finesse he displayed in conversing with confidence and eloquence on any subject under the sun – be it literature, cinema or, politics – was extraordinary. He could effortlessly merge with the crowds and yet maintain a clear awareness of boundary lines. His was a unique personality. Ebullience, maturity and egalitarianism were second nature to him. He was quick-witted too.

An irreplaceable and intense personality

K. M. Roy was an intense personality in journalistic circles. I worked with him for close to ten years. Roy sir, who enriched the editorial department of Mangalam newspaper with his knowledge-sharing sessions and conversations, day and night, had the last word on any issue.

Sometimes a bit of conversation offered a peek into his famous column titled "Thuranna Manassode" [With an Open Mind]. To the Malayali readers, his columns "Thuranna Manassode" and "Irlulum Velichavum" [Light and Shade] were unique paths that led to an expansive journalistic style. As a person who worked in nearly nine institutions, including The Hindu, Economic Times, Far Eastern Economic Review, UNI and so on, Roy sir always said that one should not limit oneself to any one journalistic institution.

He was a silver-tongued orator, much sought-after in college forums and public functions. Holding as he did a high post in the Indian Federation of Working Journalist, he had a vast network of influential friends at the national level, that went beyond the circle of politicians. Even though he got an opportunity to be a significant link in parliamentary democracy, he turned down the offer. In his heydays, Roy sir was accosted by many a national leader. Whenever they came to Kerala on a visit, they stepped into his Mangalam office to renew the friendship. His colleagues have innumerable memories about and experiences with him that they cherish. K. M. Roy is a personality who cannot be replaced in the field of journalism.



S. Abhilash
Department of Atmospheric Sciences,
CUSAT

A wake-up call for climate emergency

Comprehended with improved knowledge of climate change, the recently released 6th assessment report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) now makes it clear that there has been a change in climate that goes beyond the range of natural variability. Climate change is realized all over the world and the recent changes are widespread, rapid and irreversible.

Unlike the previous assessment reports, the 6th assessment report goes on adding with a high level of confidence that human activities are causing climate change and making extreme events such as droughts, floods, heatwaves, cold waves, devastating thunder clouds, cloud bursts and intense cyclonic storms more frequent and severe. Climate change is already affecting every region on Earth in multiple ways. Human influence is the main driver of ocean warming since the 1970s, ocean acidification and reduction in the oxygen concentration in ocean water.

Realized changes in the climate over Kerala received more attention during recent times as evident from back-to-back drought conditions during 2015 and 2016, then in 2017 hit by the first-ever cyclonic storm “Ockhi”, though the main damages occurred at Sea, and followed by catastrophic floods and landslide episodes during the 2018, 2019 and 2020 monsoon season.



With warmer temperatures, the atmosphere can hold more water vapour. It is assumed that every 1-degree rise in temperature can increase the water availability in the atmosphere by 7% that can lead to heavy rainfall and faster runoff. On the other hand, an increase in evaporation in response to an increase in temperature can lead to more evaporation from land intensifies the dry season and drought. Hence, the accelerated water cycle in response to global warming can increase the frequency and severity of both ends of the extremes such as floods and droughts.

The changes we experience will increase with further warming. Unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions,

limiting global warming below 1.5 or 2.0 degrees C set by the Paris agreement will be breached between 2030-2040 and 2050-2060 respectively as projected by the intermediate emission scenario. Hence to limit global warming, strong, rapid, and sustained reductions in CO₂, methane, and other greenhouse gases are necessary. The climate we experience in the future depends on our decisions now. The IPCC report says that the South and the Southeast Asian monsoon have weakened in the second half of the 20th century due to the dominant impact of anthropogenic aerosol forcing on rainfall since the mid-20th century. The impact of global warming due to GHG emission and counteracting the impact of aerosol loading and cloud albedo feedback makes it difficult to produce reliable projections of Monsoons. In the long run, the Asian monsoon precipitation is projected to increase, the IPCC report says with medium confidence. In short, monsoon will become more erratic in such a way that, with warmer climate, wet and prolonged dry conditions will amplify further with possible implications for severe floods and prolonged drought conditions. However, the frequency and location of these events depend on the projected changes in the regional circulation patterns. The

slowdown of tropical circulation can partly be offset by warming-induced strengthening due to heavy precipitation events over the Indian region. Though spatial and temporal variabilities are an inherent part of the Indian monsoon, there are preferred regions of deep clouds especially over Central India, Northeast India and northern parts of the Western Ghats regions. These are the potential breeding zones of cloudburst to mini cloudburst events and under a warming climate, these regions may get expanded and more and more regions in India will become prone to severe flash flood events. The heavy rain received over a shorter period may lead to high runoff, erode soil and leach nutrients at a faster rate. Along with the changes in the rainfall intensity and distribution, changes in the cloud structure especially along the mountainous terrains of the Western Ghats and Himalayan regions making those regions hotspots for Mini cloudburst events. Mini cloudbursts are another classification of intense short spells which may not exceed 10cm in one hour, the classical definition of cloud bursts by the India Meteorological Department. However, based on the damage potential associated with less

intense rain spells with rain intensity greater than 5 cm in 2 hours may cause flash floods and landslides along the slopes of Western Ghat mountains and Himalayan regions. Heavy rainfall for a short duration especially from mesoscale mini cloudburst events also brings runoff water beyond the carrying capacity of the streams and flush off rainwater faster and rivers and midland regions of the west coast often may experience the frequent occurrence of flash floods. The combined effects of cloudburst, landslides and flash floods may get aggravated in the presence of degrading lands due to human activities such as the conversion of forest land to plantation and crop fields.

The scenario in Kerala

Realized changes in the climate over Kerala received more attention during recent times as evident from back-to-back drought conditions during 2015 and 2016, then in 2017 hit by the first-ever cyc-lonic storm "Ockhi", though the main damages occurred at Sea, and followed by catastrophic floods and landslide episodes during the 2018, 2019 and 2020 monsoon season.

Since 1901, the global mean sea level has risen by 0.2 m and is continuing at a higher rate. The global mean seas level is projected to rise by 0.38m in the range of 0.28-0.55m under low emission scenario and an average of 0.77m in a range of 0.63-1.01m under high emission scenario by 2100. The rise in SST and ocean heat content makes the north Indian ocean, especially the Arabian Sea a potential breeding ground for more and intense cyclonic systems.

The average system counts over the Arabian Sea increased from 2 to 3 during recent decades.

Evidently, along with cyclone count, the cyclonic systems are getting intensified during recent decades. Most of the climate projection models now predict an intensification of tropical cyclones in a warmer climate without altering the total cyclone count. This again affects both the life and livelihood of coastal communities and as a result storm surge induced water inundation will aggravate the extreme sea-level conditions all along the 7000 km long Indian coastal belt. The Indian coastal cities are expected to be hit hard by compound events such as sea-level rise, cyclone induced storm surges, coastal erosion due to wind and wave activities combined with other development activities along coastal zones. This combined with extreme rainfall events and higher river water runoff from the land makes most of the coastal regions around peninsular India more vulnerable in future. Hence cross-linkage of events and multiple hazards from a single event becomes challenging from a disaster management perspective. For example, a severe cyclone far away from the coast can produce damage to the vulnerable coastal regions by inducing heavy rains, flooding, water inundation, coastal erosion and storm surge.

Way forward:

The number of weather-related disasters has increased worldwide by a factor of five over the past 50 years. However, the number of deaths decreased almost threefold, aided by improved early warning systems and disaster preparedness. On the other hand, each disaster costs more as economic losses have increased sevenfold between 1970 and 2010. Hence, continuous and seamless

The rise in SST and ocean heat content makes the north Indian ocean, especially the Arabian Sea a potential breeding ground for more and intense cyclonic systems.

monitoring of the atmospheric processes starting from hours to days to weeks to seasons to years to decades are the necessary component of an effective disaster management system. A "bottom-up approach" is needed for the implementation of a multi-hazard early warning system in which the involvement of local communities is essential.

People-centred early warning systems rely on the direct participation of those most likely to be exposed to hazards. Without the involvement of local authorities and communities at risk, government and institutional interventions and responses to hazard events are likely to be inadequate especially when we are going to face more and more unconventional and freak weather events.

This is time to realize that, Climate change pose a systematic risk to the whole world similar to the COVID-19 pandemic. The complete lockdown is not the only solution, but the vaccination for climate change is our low environmental footprints. ●

Caravan Tourism to ensure novel travel experience



The government of Kerala has announced a comprehensive stakeholder friendly Caravan Tourism project which ensures a novel travel experience across God's own country, Kerala. With the launch of this novel venture, Kerala tourism is bringing a paradigm shift in the tourism sector. The Tourism department is promoting the Caravan Tourism policy in expectation to promote Responsible Tourism and to promote an eco-friendly market for local products. An effective and reliable mechanism will be put down for this venture in accordance with the guidelines of the Motor Vehicles Department. The Caravan Tourism policy will be having two major components viz Tourism Caravans and Caravan Parks. The Tourism Caravans caters to custom-built vehicles for travel, leisure and stay; Caravan Parks are the proposed places for parking the vehicles. Caravan Tourism is also to be developed on PPP mode with private investors, tour operators and local communities being key stakeholders. This project would be initiated with a private-public partnership by giving prime importance to Responsible Tourism. It is expected that Kerala tourism can bring back the hues and freshness of Kerala's own kind of tourism. By commencing the Caravan tourism

- project, it would be of much attraction for
- tourists, as it is the first of its type initiative in the
- country. Various initiatives are being planned to
- revive Kerala Tourism in the post covid scenario
- also. To be developed in both the private and
- public sectors, the minimum land requirement for
- caravan parks will be 50 cents with at least five
- parking bays and adequate security and safety



- arrangements. The government would soon
- announce an investment subsidy to the caravan
- operators.

- Tourism Minister P A Mohamed Riyas unveiled
- the policy which offers attractive investment
- subsidies to caravan operators. "Caravan Tourism
- is also to be developed on PPP mode with private
- investors, tour operators and local communities
- being key stakeholders," he said



Ignatius Pereira
Senior Journalist

The return of the mangrove forests

Under the Rebuild Kerala Initiative, the State Government has this year allocated Rs. 120 crores to the Forest Department to acquire mangrove forests thriving on private land, most of which are uninhabited estuarine islands. The project aims to ensure that the surviving mangroves are not destroyed.

Environment activists view the allocation as a great step forward in the direction of protecting environmental health via mangrove ecosystems. Another appreciable development is that mangrove forests have started getting their due importance from the Forest Department.

Mangroves are miracle salt-tolerant trees provided by nature thriving along the intertidal areas of sheltered shores and estuaries of tropical and subtropical regions. They are found in more than 120 countries. These trees play a major role in keeping the earth healthy for many forms of life to survive and proliferate. Mangroves have a wide range of applications ranging from defending the coast to providing security for many species of marine animals during their infancy. But the most valuable service they render is

mitigating the effects of climate change by absorbing and storing carbon dioxide thereby preventing greenhouse gases from entering the atmosphere. Several comprehensive studies on mangroves claim that mangrove forests can absorb almost 10 times as much carbon dioxide from the atmosphere than terrestrial forests. All mangrove forests are biodiversity hotspots. But mangroves are yet to get the due recognition they deserve from society at large. Mangrove forests are one of the biggest victims of anthropogenic assaults. A study that was published last year by the Earth Observatory wing of the National Aeronautics and Space Administration says that in the year 2010 mangrove forests covered about 53,000 square miles of the earth's coastline. But between the years

The fishing community will be one of the biggest direct beneficiaries under the project to revive, protect and conserve mangrove forests.

2000 and 2016, more than 1,300 square kilometres of mangrove forests were lost mainly because of anthropogenic assaults. This is bound to have telling ill effects on the earth's health if corrective measures are not taken. Kerala has been no exception to such assaults on its mangrove forest wealth. However, the welcome aspect is that of late considerable awareness has been created in the State on the importance of mangrove forests. But that awareness is yet to get translated to appreciable levels. To achieve that, government intervention alone will not suffice. There has to be an endearment

towards mangroves from society as a whole. The first and foremost requirement in this connection is to shed the wrong impression about mangroves as a nuisance plant. V.K. Madhusoodanan is an environmentalist who has been championing the cause of mangrove forests in Kerala for more than twenty years. Madhusoodanan had in the year 2011 discovered the yellow mangrove species (*Ceriops tagal*), at an estuarine island of the Ashtamudi Lake of Kollam district, which was thought to have gone extinct in Kerala more than 150 years ago. He says that while mangrove forests are lost due to human-driven causes as well as natural causes, almost the entire area of mangroves lost in Kerala was due to human-driven causes. According to a study report published in the year 1991, Kerala once had more than 700 square kilometres of mangrove forests. This has now dwindled to about 24 square kilometres. Worldwide, there are 58 species of true mangroves. Out of that 17 species are found in Kerala and that specifies that the Kerala coastline provides fertile grounds for a rich mangrove belt to thrive. Madhusoodhanan says that the Coastal Regulation Zone (CRZ) Notification had come as a boon for mangrove forests. Though the notification was revised four times, mangroves occupied top protection preference during all four revisions. He said that district wise, it is Kannur that has the biggest coverage of mangroves, about 38 per cent of the 24 square kilometres. Ernakulam flows with 31.5 per cent. Kollam is the only district where all the 17 true mangrove



species found in Kerala grow. However, the mangrove coverage in the district is at a low of below 3 per cent of the 24 square kilometres. The fishing community will be one of the biggest direct beneficiaries under the project to revive, protect and conserve mangrove forests. That's because mangroves provide ideal breeding grounds for much of the world's edible fish. About 75 per cent of commercially caught fish spend some time among the mangroves or depend on food webs that are linked to mangrove forests.

Mangroves are yet to get the due recognition they deserve from society at large. Mangrove forests are one of the biggest victims of anthropogenic assaults.

Mangroves are great resting and nesting sites for a wide variety of birds and many mangrove forests are a destination for migratory birds. ●



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Kerala's demographic dialogue with food security

Despite all adverse circumstances, Kerala's development initiatives stand uninterrupted

The most popular and path-breaking book *An Essay on the Principle of Population* published in 1798 by T R Malthus warned the world of a future crisis - of the population increasing in geometric progression (so as to double every 25 years) while food production increased in arithmetic progression, causing a disequilibrium for nations across the world. Epidemics and natural calamities are seen as positive checks on population. Anyhow the world has witnessed an explosive growth in population, though it has not doubled in 25 years in all nations as visualised by Malthus and food production in most countries have increased geometrically due to technological revolution and innovations. But developing countries of the world still suffer from food insecurity. It is especially significant for a country like India which ranks second in the world population. Demographic dynamics have a far-reaching

impact on the various aspects of economies across the world. Demographic transitions bring about challenges to feed the growing population. Though development has brought in an accelerated decline in mortality rates, reduction in birth rates and fertility rates have reduced the rate of growth of population in India. The country has also experienced the highest



There has been commendable achievements in the reduction of poverty and the state presents a glorified picture of reduced fertility rates, maternal mortality, death rates, the most favourable sex ratio in the country and longer life expectancy.

demographic heterogeneity across its different states.

A different demographic experience is presented by the state of Kerala, which was one of the first states in India to reduce fertility rates, dating back to the 1960s. During the fertility transition, Kerala also transformed and attained a higher per capita income and poverty levels much below the national average [7.05%, Pocketbook of Agricultural Statistics-2017, p.16]. It had higher social development indicators, in particular a favourable sex ratio, one of the lowest infant mortality rates in the country and high rates of female literacy. The Kerala experience shows that social and human development in itself can trigger fertility transition.

Paddy, the staple crop has experienced a remarkable doubling of the yield or productivity from 1971-2020[1483kg/hectare to 3073/hectare- KER]. The PDS system in the state has been taking care of the food security of the state in spite of the declining annual per capita availability of paddy. This is commendable in view of the fact that the past century[1900-2000] has witnessed a five-fold increase in population in Kerala.

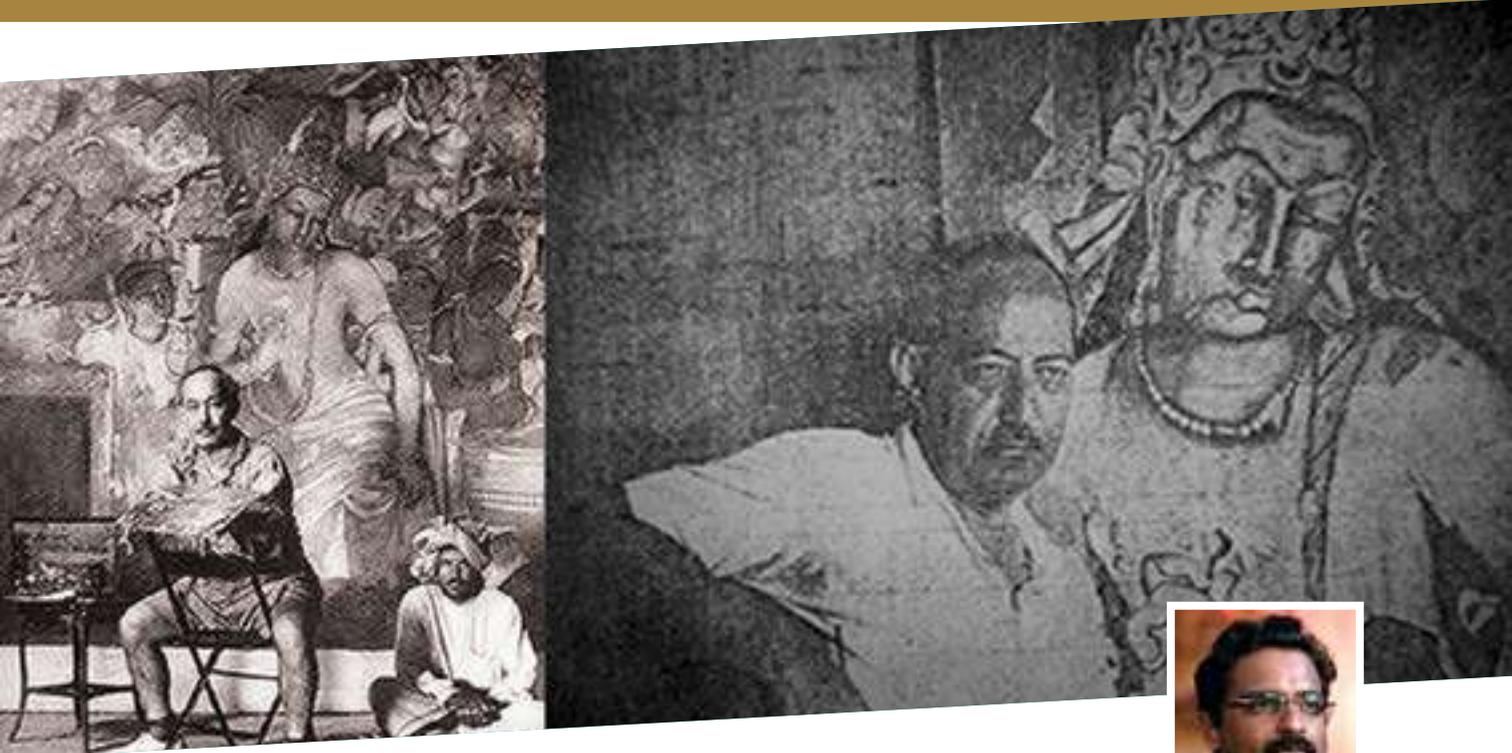
The recent incidences of climate disasters like floods and landslides, epidemics etc. aggravate the food security issue faced by the state. Though the state has been adding to human capital, the youth bulge in age structure and their entry into the labour force has coincided with the structural transformation of the economy- from agriculture to service. It is noteworthy that the state has been successful in ensuring food security to its subjects in the face of all challenges especially during epidemics and natural calamities.

Over consumption and overpopulation also underlie every environmental problem we face today. There are commendable initiatives by the government to expand the production of paddy. As a result of the multi-pronged strategy pursued by the state, there has only been a marginal decline in

land under paddy cultivation in the past decade compared to the earlier periods even though the state experienced the worst climatic disasters in the recent past. After 2016 the state has also witnessed a fall in the area categorised as cultivable waste. The state has always been at the forefront with regard to providing supportive measures like an effective PDS, a supportive price for paddy much above the one announced by the Centre and also restoring and reclaiming paddy cultivation in many areas.

The PDS system in the state has been taking care of the food security of the state in spite of the declining annual per capita availability of paddy.

There has been commendable achievements in the reduction of poverty and the state presents a glorified picture of reduced fertility rates, maternal mortality, death rates, the most favourable sex ratio in the country and longer life expectancy. Nothing has delayed or detained development in Kerala and it definitely demonstrates a model which other states can follow. ●



Sarkis Katchadourian along with the Bodhisattva of Ajanta he copied



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The Iranian 'saviour' of Kerala's frescoes

You may wonder what Iran has to do with Kerala's frescoes. The answer lies among the still anonymous piles of Travancore's art history. Sarkis Katchadourian, the internationally acclaimed Iranian artist and curator had contributed a lot in preserving the frescoes of the 9th-century cave temple of Tirunandikkarai of the erstwhile Travancore.

The 9th-century cave temple of Tirunandikkarai, in the (Kalkulam Taluk of Padmanabhapuram Division) Nanjinadu (present-day Kanyakumari district) of erstwhile Travancore is noted for its ancient frescoes. In AD 1933, P R Poduval, the then Director of Archaeology of Travancore found traces of wall paintings in the mandapam of the cave temple at Tirunandikkarai, which was by then converted to a Saivite one. The first fragments of the newly exposed frescoes were copied in the same year, which



Siva and Parvati

The first fragments of the Tirunanadikkara frescoes copied in 1933, prior to the visit of Katchadourian

depicted Siva, Parvati, a devotee, and a hand in the kathaka mudra of the Bharatanaty. The Tirunandikkarai frescoes, constituted a priceless testimony to the artistic eminence of Travancore in the remote past and provided invaluable material towards a chapter in the art history of India, and was thus rescued from oblivion by timely intervention.



The famed fresco of Ganapati at Tirunanadikkara

- The first copies of the
- Tirunandikkarai frescoes were
- exhibited at the Sree Chitralayam
- Art gallery on its opening in 1935.
- The Government of Travancore
- was keen on preserving one of
- its most ancient of the treasured
- frescoes and thus consulted the
- internationally-famed Iranian
- artist and curator, Sarkis
- Katchadourian, who had proved
- his mettle as an exceptional
- artist by recopying the fading
- frescoes of Ajanta, the Bagh
- caves, and those of Iran, and
- Sri Lanka. Katchadourian is an
- enthusiastic and experienced
- student, restorer and copyist
- of ancient oriental art, and
- familiar with the frescoes of
- India, expressed a strong desire
- to scrutinize the Tirunandikkarai
- frescoes. Katchadourian thus
- paid three visits to the cave
- temple in November 1940,
- accompanied by the then curator
- of the Trivandrum Government
- Museum, N.G.Pillai.

The Cave temple at Tirunandikkarai

- The Cave temple at
- Tirunandikkarai lies at the foot
- of a hill, carved out of gigantic
- granite rock, with two plain
- columns supporting the slanting
- roof over the entrance. On the
- west wall of the Shiva shrine
- is engraved a Vattezhuthu
- inscription in Tamil of the great
- Chola monarch Rajaraja I;
- recording the gift of the village
- of Muttam, with its name altered
- into Mummadicholanallur, to
- the temple of Tirunandikkarai.
- A subjoined inscription is
- engraved on one of the columns
- registering a gift of land (Sree
- Nandimangalam) by the
- assembly of Tirunandikkarai
- to one Nambi-Ganapati, for
- midnight offerings. The space
- between the granite columns
- was walled with masonry which
- converted the inner court into a
- dark ill-ventilated room



Original copy of **Siva and the Elephant** by Sarkis Katchadourian
 (Picture Courtesy: Sree Chitra Art Gallery, Thiruvananthapuram Museum)

depending for air and light solely on a small grilled window at the left end. The hall inside is 15 ft long and 8 ft high. The shrine contained a lingam, opens off the mandapam on the left side from the entrance and is reached by four low steps upward.

The Katchadourian effect

Aided just by the dim light of a hurricane lamp on the hazy morning of November 1940, on entering the abandoned shrine, Katchadourian reportedly sighed; "When the door was opened on the first visit, a hot, malodorous current brushed our faces. With much anticipation, I entered the hall of the temple but was disappointed to see the damaged works of art confronting me with their sad appeal. However, I received, after a while, the impression that the surviving bits of such old works could speak volumes to the world of art if carefully studied and copied...the beauty and freshness of these works had been obscured by

obstructing the light which ought to penetrate between the columns, through building an ugly wall. Time has already had its effect, and the supreme beauty once dedicated to the Gods has been almost obliterated."



Siva and the Elephant

The lesser-known attributes of the vanished monumental art could only be portrayed by the mouth of its 'saviour' as; "Perfection is the only word that can be used to describe their quality. The colouring is clear; a few of the works are on white background with red filling, and touches of green and yellow. The harmony of the

colours is admirably suited to each subject and shows its superb quality of workmanship. The symbolic touches of heavy and light lines are in themselves a measure of the religious inspiration of the craftsman reflected in the great legends of Kerala. Though fragmentary at that time, the reproducible vestiges' were deeply impressive in their keen suggestiveness of beauty in feeling and craftsmanship. Their affinity with the nobility, idealism and religious assurance and clarity of the great art of the era was obvious."

Katchadourian is evocative of the fact that these frescoes though obviously present Hindu figures, exhibits an affinity with the pictorial manner of the Ajanta frescoes. The ninth-century origin of the temple would bring its artificers chronologically within the Buddhist influence of cave decoration, and as delineated earlier, the heterodox affiliation cannot be ruled out for the presence of several Bodhisattva idols within the temple premises. The fragmentary frescoes recopied include panels depicting that of Ganapathi with attendants, Krishna, a Yali, seated ladies, a figure suggesting Saraswati holding a veena, Siva



Parvati (on the right) and worshippers

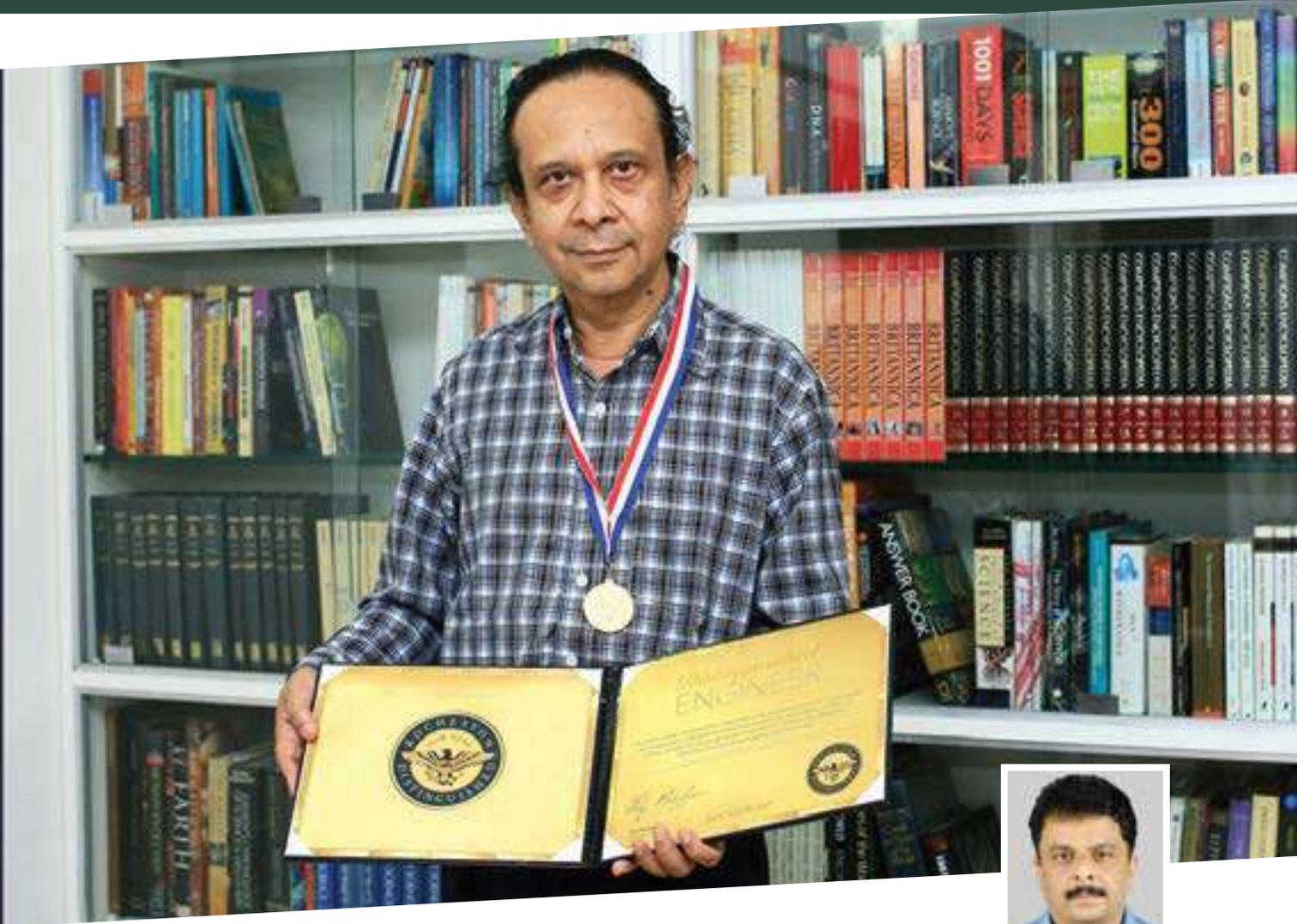
and the Elephant (Iravata), etc. The traces of plasters in the ceiling of the mandapam could be indicative of frescoes even upon

it. A qualitative analysis of crumbling plasters revealed the presence of iron, aluminium and calcium salts; suggestive of the native plastering technology. N.G.Pillai's brilliant elucidation of the painstaking efforts undertaken by Katchadourian gives a spectators view of the entire process of copying the last lines of a vanishing art of yore. He narrates; "I assisted Katchadourian in cutting suitable sizes of tracing paper and fastening them to the panels with bee wax. Line by line the visible fragments were traced with the utmost care by the artist. Where lines were missing, areas suggesting the outline of the map indicated the irregular gaps. Four hours of continuous hard work in acute discomfort yielded a promising collection of suggestive fragments. I was uncertain in my mind that such copying of fragmentary lines was worthy work for an eminent artist. But I was mistaken, and soon realised that the trained eye



The Yali figurine

tip of a fingernail and that of an ear-lobe....Mr. Katchadourian worked on transferring the traced lines to canvas-backed paper....on this the artist went over the copied lines in watercolour, checking every section with the utmost care in circumstances of foul air that would have deterred all but one devoted to his work. Katchadourian also made careful notes of the tints in the fragments that remained for insertion in the finished copies...His devotion to the work was an object lesson. In the hot and stuffy atmosphere of a partially lightened room, I watched him lose himself in what he was doing, oblivious of time, of hunger, of fatigue, of everything except the work in hand." Katchadourian's pioneering authoritative notes of these ancient frescoes form a momentous event in the art history not only of Kerala but of India and on being the first among the Travancore frescoes to be reproduced, it deserves to be prominently exhibited at the upcoming Raja Ravi Varma Art Gallery within the premises of the Thiruvananthapuram Museum for students and art enthusiasts to research upon and cherish the once prevalent unparalleled fresco tradition of ancient Kerala.



Dr A Rajagopal Kamath

In search of cosmic information...

Dr.Thanu Padmanabhan’s untimely demise shocked the entire scientific world. He believed that a complete description of the universe may be possible if we could combine the basic tenets of general relativity with quantum theory.

• **D**r Thanu Padmanabhan had biggest questions on the origin of the universe from his student days at the University College,Thiruvananthapuram. He understood the most advanced concepts in physics and mathematics from the ideas gained from the ancient treatise in mathematics by Jyestadeva named Yukthibhasha. This book was about the contributions of the scholars of the Kerala school of astronomy and mathematics namely Samgamagrama Madhava, Neelakantha Somayaji, Parameshvara and Achyutha Pisharati who lived between the 14th and 16th centuries. They put forward some of the outstanding mathematical ideas including Calculus. Gravitation by Charles Misner, Kip Thorne and John Wheeler was another important

The origin of the universe is the result of a phase transition as per Thanu Padmanabhan.

work that helped the curious soul to understand advanced concepts like the general theory of relativity.

His main topics of interest were structure formation in the universe, Quantum Cosmology and Quantum Gravity. The surge of interest in Quantum Physics and Particle Physics among physicists was the result of the findings from high energy collisions in the particle laboratories like CERN. Keeping himself away from the keen taste of the excitement of this fast-moving science Thanu Padmanabhan tried to revitalise the interest in Albert Einstein's theory of gravitation, the general theory of relativity.

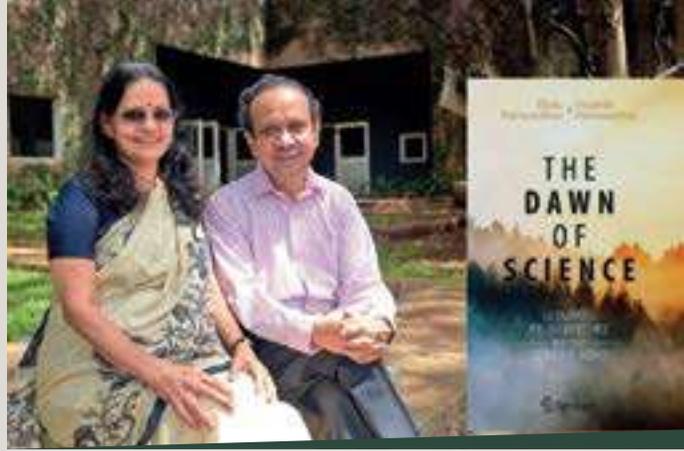
Presently, we have a satisfactory explanation regarding the three fundamental forces, electromagnetism, strong nuclear force and weak nuclear force. We know much about the force carrying particles of these forces. But gravitation which is also a fundamental force poses a tough time for the researchers. Efforts to find the force carrying particle of gravitation termed 'graviton' has not succeeded so far. Newton explained gravitation as a force between massive objects. Einstein stated that gravitation arises due to the spacetime curvature itself. This was the most plausible explanation for the phenomenon. As per Padmanabhan's idea, we should consider that spacetime comprises of discreet elements. These are atoms of spacetime like the atoms of matter. Instead of searching for the elusive particle graviton, we should

• explain gravitation as a characteristic of spacetime itself. We can assume that gravitation is an emergent phenomenon arising from the basic elements of spacetime itself.

• The laws of Physics seem to be quantum mechanical rather than classical. At microscopic scales such as in the case of molecules, atoms, nuclei, elementary particles and when observing the phenomenon at high energies and in the earliest moments of the universe, we need quantum theory. If we could incorporate the principles of quantum theory into classical laws like electricity and magnetism, we get a fundamental description known as quantum electrodynamics. This theory is successful in combining quantum theory with classical laws for force. We can combine Einstein's description of gravity with quantum theory to formulate a quantum theory of gravity.

Keeping himself away from the keen taste of the excitement of this fast-moving science Thanu Padmanabhan tried to revitalise the interest in Albert Einstein's theory of gravitation, the general theory of relativity.

• Spacetime should be thought of as made of microscopic degrees of freedom, just as matter is made of atoms. Planck length, a natural length scale in quantum gravity can be built from three fundamental constants in physics namely Newton's gravitational constant, Planck's constant in the



• quantum theory and the speed of light which is important in the theory of relativity. Gravitation emerges from the elements in this microscopic scale and manifests as the fundamental force we experience now. Stephen Hawking and Jacob Bekenstein hypothesised that black holes have a temperature. It never reaches absolute zero value. Similarly, spacetime too has a temperature as per Thanu Padmanabhan. This is based on Ludwig Boltzmann's ideas on thermodynamics. We consider that the universe originated from a superdense state called singularity in a big bang that happened 13.8 billion years ago. Space, time and matter were inseparable at that moment. As per Thanu Padmanabhan's idea, there is no need for a singularity. The analogy between gravity and thermodynamics has become a physical reality now. This idea is telling us something deep and beautiful about nature. There were quantum fluctuations at the beginning of the universe. These initial perturbations gave rise to the macroscopic structures we see today. The information about the earlier phase of the universe, that is Cosmin, cosmic information, reaches the present phase. The value of Cosmin is determined by several models of quantum gravity. The magnitude of the quantum fluctuations in the early universe resulted in the denser regions of matter in turn formed galaxies and galaxy clusters. The origin of the universe is the result of a phase transition as per Thanu Padmanabhan. ●



Sanil P Thomas
Sports Journalist

Historic & Fantastic

“Not just been historic, they have been fantastic”. The International Paralympic Committee chief Andrew Parsons said while declaring the Tokyo 2020 Paralympics closed. That’s true for India as well as the country finished with an unparalleled 19 medals (five gold, six silver and 8 bronze) and stood 24th in the overall medal tally.

Of all 54 athletes who represented India in the Tokyo Paralympics 2020, 17 of them won medals. Two athletes, shooters Avani Lekhara and Singraj Adana won two medals each creating their own legacies on debut. Lekhara who became the first Indian woman to win a Games gold (10 m air rifle) added a bronze in 50 m rifle in three positions. The 19-year-old was paralysed waist down after being injured in a car accident in 2012. The 39-year-old Adana who has his right hand impaired won silver in 50 m pistol and bronze in 10 m air pistol. It was a spectacular performance for India at Tokyo, given that India’s overall Games haul was a mere twelve before Tokyo.

It was a spectacular performance for India at Tokyo, given that India's overall Games haul was a mere twelve before Tokyo.

The Paralympic legend, Devendra Jhajharia, who won gold in javelin throw in 2004 and 2016, now at 40 added a silver to his blithering career. He improved his performance (64.35m) to win silver in Tokyo making him India's most decorated Paralympic athlete. His left arm was amputated after he touched a live electric cable while climbing a tree when he was just eight. He became the first Para sportsperson to have won Rajeev Khel Ratna. His Gold in Athens was the trendsetter for India in the Paralympics.

Shooter Manish Narwal who was struck by polio in his teens, and an Arjuna Awardee indeed, shattered the Games record while winning the gold in P4 mixed 50 m pistol SH1 event. Pramod Bhagat landed gold in men's badminton singles SL3 class. He was World champion as well. Badminton made its debut in Tokyo. Manoj Sarkar bagged bronze.

Krishna Nagar, who has a short stature impairment added another gold for India in badminton. He won it in the men's singles SH6 class. Suhas Yathiraj who has a deformity in one leg claimed silver in badminton singles SL4.

Waist down paralysed Bhavinben Patel won silver in table tennis. Harvinder Singh won India its first medal in archery, a bronze.

Following Devendra Jhajharia, Mariyappan Thangavelu too won

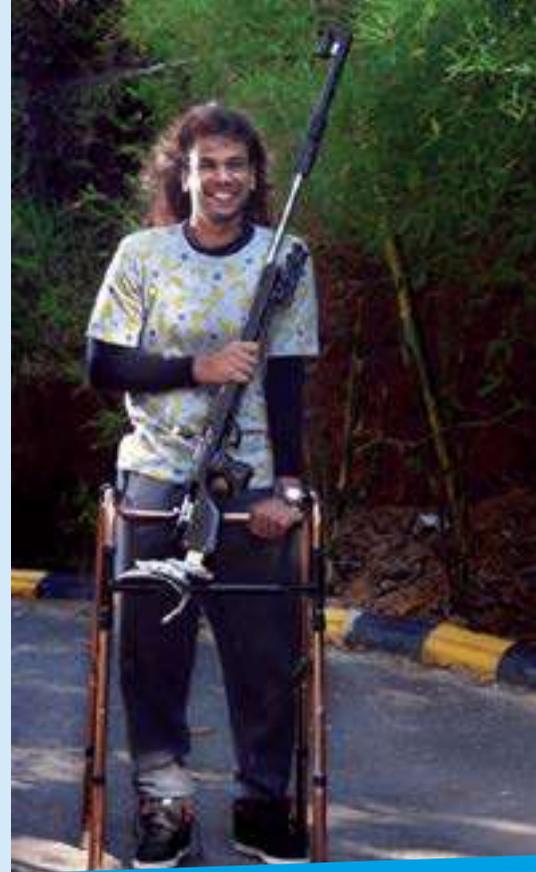
back-to-back Paralympic medals. Mariyappan finished with a silver in the high jump. These two legends who were flag bearers for Indian para-sports for such a long time handed over the baton to the new stars in style. Sarad Kumar claimed bronze in the high jump.

Sumit Antil eclipsed his own world record five times on his way to win the gold in the javelin throw. He lost his left leg in a bike accident. Praveen Kumar just 18 and his left leg impaired, was the baby medallist in the Indian squad winning silver in the high jump. Sunder Singh Gurjar finished behind Devendra in the javelin.

Kerala's lone representative was Siddharth Babu, hailing from Thiruvananthapuram, Sidharth got qualified for Tokyo with his bronze medal-winning performance in a world Para Shooting held in Dubai. He was a Karate champion and met with an accident in 2002 and paralysed from the waist down. He took up shooting thereafter.

Almost half of India's medal haul was in the track and field. The 13-day Games, with 539 golds up for grabs in 22 sports showed yet another victory for Tokyo following the Summer Olympics. China finished on top with 207 medals including 96 gold. When the Indian team left for the Games, the Paralympic Committee of India Secretary-General who was also Chef de Mission said, "We are expecting 15 medals including five golds". PCI President Deepa Malik, who herself had silver to her credit in 2016 said "We are going to see a record haul of medals as our athletes are in the prime form".

Since India has won just 12 medals including four golds in 11 previous appearances and their best show was in Rio with



two gold, one silver and one bronze, bookmakers predicted a maximum of 10. But our stars exceeded all expectations. They overcame odds aplenty to qualify and braved COVID and circumstances to finish high in

Kerala's lone representative was Siddharth Babu, hailing from Thiruvananthapuram, Sidharth got qualified for Tokyo with his bronze medal-winning performance in a world Para Shooting held in Dubai.

Tokyo. They did a wonderful job, incredible and inspirational. The national sports award distribution ceremony has been postponed from the usual August 29, National Sports Day, to recognise our para sportspersons as well. Let their miraculous performance get due recognition. ●



Arteria 2021 edition is officially inaugurated by Tourism Minister P. A. Mohamed Riyas.



Ajit Kumar. G
Curator, Arteria

Towards a graffiti-rich state

Arteria, as graffiti has virtually come to be known as in Kerala, is a relatively recent phenomenon. It is an attempt to promote an effortless interaction of the people with art. It takes art closer to people.

The American Artist Shepard Fairey's claim to fame was his Mural Arts. Strangely, it was this very art form which got him into trouble with the law. He was charged with defacing public walls around the city with graffiti, a crime that could lead to a sentence of up to five years. Graffiti was viewed as an intrusion into public spaces and a kind of vandalism by the legal systems of many countries. Graffiti made an appearance initially more as an expression of dissent than as an art form. Back in the 1960s and '70s, graffiti was seen at various suburban train stations, trains and other public spaces as a means of communicating the distress of those who were side-lined by the society. Many graffiti artists chose to hide their identity to escape prosecution. They worked in the darkness of the night and disappeared before daylight broke. It was only recently that graffiti gathered popular acceptance as a public art form. In many cities there are ongoing projects to beautify public spaces with various art installations, to increase revenue through tourism. This method is also used to promote social or political ideas. In certain cities, it is even



Graffiti artist Anpu Varkey is in front of her creation.

included in restorative justice programmes at juvenile prisons. Arteria, as graffiti has virtually come to be known as in Kerala, is a relatively recent phenomenon. It took shape in 2014 when, with the support of the Tourism Department, Mr Biju Prabhakar, the District Tourism Promotion Council Chairman and District Collector, held discussions with many artists in Thiruvananthapuram, and waved the green flag.

The problem of protecting the artwork from sun and rain was a huge challenge. So also, the threat of advertisement posters getting stuck over them. Finally, what worked in its favour was the artists' conviction that their works, instead of languishing inside empty galleries, should attract popular attention and patronage. The government was convinced that this would be the best way of beautifying urban spaces and keeping them clean. As an experiment, the first edition came up on the outer walls surrounding the





Chandrasekharan Nair stadium in Thiruvananthapuram city on Independence Day, 2015. Eminent artists including Kanayi Kunjiraman, Kattoor Narayana Pillai, B. D. Dathan, Pradeep Puthoor, Tenzing Joseph, Nemom Pushparaj, Robert Lopez, Vijayan Neyyattinkara and others contributed to it.

This caught the imagination of the public so much so that the graffiti remained untampered and unblemished for longer than expected. People not only did not vandalise the pictures but even respected them! This inspired the then Tourism Minister Mr Kadakampilly Surendran to expand the project to various other places in the city and on larger surfaces.

The Tourism Minister Mr P. A. Mohammed Riyas has now taken the initiative to spread Arteria even further and cover the entire state. The fourth edition beginning its work at Beypore will see the implementation of this

government decision. As this project takes wing and succeeds in covering all major tourist spots and important cities, Kerala will hopefully gain fame as a land of mural paintings too. There is no doubt that this project will provide a new aesthetic experience to all tourists, foreign and domestic alike.

Arteria is an attempt to promote an effortless interaction of the people with art. It takes art closer to people. People no longer need to go in search of galleries to enjoy and appreciate art. But the challenge for the artist is to show something which will generate enthusiasm in the public. Arteria has made constant interaction between artists and art lovers possible, and opened the doors to endless possibilities of experimentation, dialogue and learning in Visual Art. ●





Nuances of legendary acting. This still from *Chemmeen* was taken by the late Sivan.



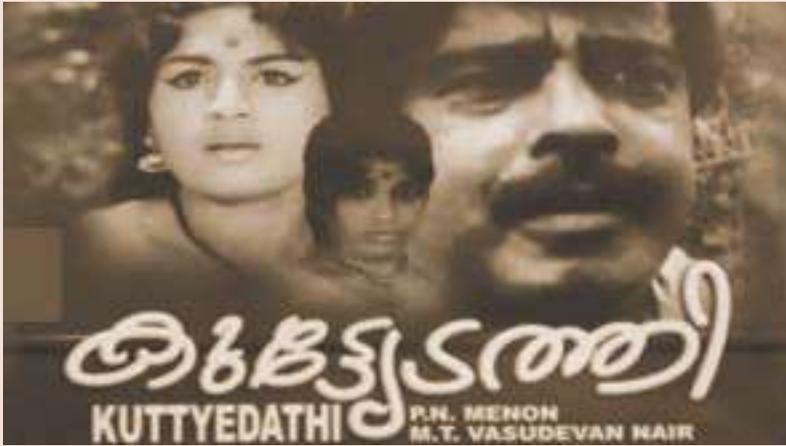
K B Venu
Film Critic

The uncompromising spirit of an actor

Almost all the important characters immortalized by Sathyan have some tragic traits in them. He mostly represented the middle class and proletariat. These characters with strong belief in the power of man, and a strange kind of optimism and unwillingness to accept defeat often resembled Sathyan's personal life.

“My death can only be postponed,” Sathyan once said, sipping a spoonful of beer in the company of a shooting crew. The crew was that of P N Menon's *Kuttyedathi*. The year was 1971. By that time the great thespian had realised that he was about to lose his valiant battle against blood cancer. But he kept himself busy, working almost every day under tight schedules.

It was with some reluctance that P N Menon approached Sathyan to request him to do a role in *Kuttyedathi*. Menon was planning to complete *Kuttyedathi* with a shoe string budget. To their surprise Sathyan agreed to do the role without insisting much on remuneration. But Sathyan didn't mince words when he told Menon that he was still angry



with the director for not casting him in the path-breaking *Olavum Theeravum* in which Madhu essayed the protagonist. Sathyan said: "I agree that Madhu is the right choice for Bapputty. But there was Kunhali, portrayed by Jose Prakash. I would have done that role. Do you think that character doesn't suit me?"

Sathyan was talking about a villainous character, a womaniser and rapist. The director said he didn't consider Sathyan because it was a negative role. Sathyan said: "Negative or positive, it is a character. For an actor, character is important - a character that provides scope for acting."

It was while serving as a police inspector Sathyan decided to try his luck in films, though he didn't have the features of a conventional hero. M T Vasudevan Nair once wrote in a memorial piece: "He was elder than Thikkurissi Sukumaran Nair. His complexion was dark. A short built, fat bodied man. He overcame all these short comings by the power of his acting skills."

Confidence was Sathyan's forte; both in artistic and real life. The dexterity with which he designed the body language of his characters is unmatched. The major breakthrough in his career was the role of a school teacher in *Neelakkuyil*. Interestingly, even in this film which gained Sathyan immense popularity, his character is not a real hero. It was the down-to-earth nature

and man-next-door image of the characters that made Sathyan a popular actor.

In *Mudiyanaya Puthran*, adaptation of a popular stage play by Thoppil Bhasi, Sathyan's character Rajan is a rogue who rebels against the civilized society. In *Odayil Ninnu*, while performing as Pappu, a rikshaw puller with a heart of gold, Sathyan devised some unique mannerisms to make



the character look strikingly realistic. The way Pappu lifts the handle bars of the rikshaw with his leg and runs along the streets with the passenger on it, is an unforgettable visual image. *Daham* is another important movie of the same year in which Sathyan appeared as Jayarajan, accused in a double murder case. *Ramu Kariat's Chemmeen* was released in the same year. *Kariat* chose Sathyan to give screen

life to Palani, the strong willed fisherman created by Thakazhi Sivasankara Pillai. Sathyan is at his natural best in the movie. He made a sterling performance as a crazy Chemistry Professor, Sreeni, in *Yakshi*.

Paranoia leads to the tragedy of *Sudheendran* in *Vazhve Mayam*, yet another unforgettable character portrayal by Sathyan. In *Thriveni*, Sathyan's character is a 65-year-old land lord, Damodaran, who marries a young girl. Damodaran is aware that his beautiful wife was intensely in love with a young man. She was pregnant from him when Damodaran married her. When his wife tells Damodaran the real truth about her pregnancy, he says: "The most important thing is that I am going to be a father at the age of 65."

Sathyan's swan song, *Anubhavangal Palichakal*, is an all time classic. He depicted the tragic life of *Chellappan*, an ordinary daily wages worker with Communist back ground, with credibility and elegance.

The artistic association between Sathyan and legendary director K S Sethumadhavan worked wonders in several movies. Sethumadhavan is perhaps the only director who could utilize the immense talents of Sathyan to the maximum extent.

M T Vasudevan Nair remembers that he had referred to Ernest Hemingway's *The Old Man and The Sea* while writing an obituary in a newspaper immediately after Sathyan's demise. Quite natural. Sathyan, the human being, like many of the characters he depicted on screen, was akin to Hemingway's *Santiago*. He could never be defeated.

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BOOK REVIEW



A review of the book **Environment & Citizen** by Dr.V. Prasannakumar

P. Rajendranath

What can we do for our environment ?

Environmental Citizenship has been an influential concept in many different arenas since we are currently experiencing an unprecedented environmental crisis. Loss of biodiversity, climate change, ice melt, plastic pollution, ocean pollution, ocean acidification and desertification are just some of the global environmental problems whereas habitat loss and habitat fragmentation, extreme urban development, overconsumption of natural resources and waste disposal are the problems faced at the local level. In addition, new environmental problems such as climate engineering, genetic pollution and genetic drift, water stress, extended air pollution and environmental health are also emerging. It is reported that increasing pressures on the environment could cause irreversible damage within the next few decades and that current inaction will have an enormous impact on the environment in the years to come.

It is in this backdrop the book "Environment & Citizen" written by Prof. (Dr.) V. Prasannakumar, former Head of Geology Department, University of Kerala and UGC Emeritus Fellow (2016-2018) warrants attention. He is presently Emeritus Scientist of Kerala State Council for Science Technology and Environment. His earlier book in Malayalam, "PrakrithikshobhanganalumKeralavum", which gave an excellent insight into the various natural hazards with special reference to the state of Kerala, has won the Kerala Science Literature Award in the popular science category.

The book begins with a chapter on 'Understanding the Universe' which is a prerequisite for understanding the term Environment in its proper context and clearing the various misconceptions we have developed over a period. Beginning with the emergence of the Universe roughly about 15 billion (15,000,000,000) years ago, it introduces us to the galaxy 'MilkyWay' with more than a trillion (1,000,000,000,000) stars in it of which Sun is just one average sized star, around which the Solar System evolved 5 billion years ago. The chapter also speaks about the formation of Earth, "the only known planet in the entire universe which has the presence of water as well as an atmosphere rich in

oxygen", the essential characteristics for the existence of life. The second chapter explains what constitutes the environment, its various components and how the increase in population of human beings who have existed only for 200,000 years have been placing demands upon the planet resulting in Environmental modification and degradation.

The book goes on to explain the various environment conservation measures and movements and the legal and policy level frameworks that are put in place now to protect the environment. The third chapter deals with historical development of environmental concerns, green movements, environmental legislation, national environmental and land use policies, consumption, conservation and Environment Impact Assessment. The final chapter deals with the Citizen's role with respect to Environment where the author brings out the various religious perspectives which considered nature as an act of divinity and included preaching to make people aware of its significance and the need for its preservation.

The author observes that many a time misbehaviour to the environment rises from the lack of understanding about the significance of even the smallest object in constituting the universe. The burgeoning population is a reality and the increasing pressure on environment is reaching its peak. Mankind's greed is all set to exhaust even the very last portions of the non-replenishable natural resources because of a lack of concept of time (in millions of years) for the formation of many of these resources. People know that forests or broken eco systems can be set right in the lifespan of a generation or two but what everyone needs to understand is that geosystems like rocks, soil, ground water, fossil fuels and ore minerals will not be replenished in the course of hundreds of thousands of generations because these are formed in the course of at least tens of millions of years. The author is trying to highlight this aspect and warn that the human race is facing a 'challenge of its survival from itself' thus awakening a deep sense of the citizen's duty to protect and conserve the environment.

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