



NATIONAL SCIENCE DAY- 2014
(Feb-28)

SCIENCE AND TECHNOLOGY DEVELOPMENT IN INDIA



Chief Guest

Shri.D.KARTHIKESAN

Outstanding Scientist, Director, ISRO Propulsion Complex

BY

1.V.Steffy

2.A.S.Lekshmi

3.Jeyavarshni

SIGMA COLLEGE OF ARCHITECTURE ,MOODODU
22.02.2014 (9.00 am – 4.00 pm.), Saturday



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MOODODU
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**NATIONAL SCIENCE DAY- 2014
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**SCIENTISTS, YOUNG SCIENTISTS AND ENGINEERING STUDENTS
INTERACTION PROGRAM**

ON

SCIENCE AND TECHNOLOGY DEVELOPMENT IN INDIA



Compeering : Varsha
Introductory Address by : Mullanchery M.Velaian Organiser, KAP
Presided by : **Dr.T.James Wilson**
Chairman, Sigma College of Architecture
In the presence of : **Dr.T.Gladis Wilson**
Secretary, Sigma College of Architecture
: **Capt. Bennet Singh**
Port Trust, Tuticorin
Inaugural address by : **Shri.D.KARTHIKESAN**
Outstanding Scientist, Director,
ISRO Propulsion Complex



Theme Lecture I

Session Coordinator : V.Steffy

Space Technology for National Development

S. INGERSOL

(Scientist, Group Head,
ISRO Propulsion Complex Magendragiri)

Theme Lecture II

Session Coordinator : Achsah

Environmental protection

V. SUNDARARAJU IFS

Former Dist. Forest officer. K.K Dist.

Theme Lecture III

Session Coordinator : Fathima

Health and Medical conditions

Dr. A.JAYALAL

(General Secretary IMA Tamil Nadu)

Theme Lecture IV

Session Coordinator : Meera

Food and Agricultural challenges

Dr. SUGIN HERBERT

(Primary Health Centre, Kuttakuzhi)

Theme Lecture V

Session Coordinator : Jeswini

Nuclear Technology needs

A.BENZIGAR RAJAN

(Scientist, Dy. Manager,
ISRO Propulsion Complex Magendragiri)

Moderators

Shri.P.BALAKRISHNAN Shri.P.GOPALAN

Shri.M.JOHNRABIKUMAR Shri.S.THIRUVENGADAM

Shri.L.EDWINSAM Shri.D.SAMRAJ

Shri.C.SAJEEV Shri.S.JOHNSON

Dr.S.EDWIN GLADSON



V.Steffy,Leader,Red Team.

Science is the systematic knowledge gained by man through observation and experimentation. It is the process of acquiring knowledge about how living and non-living things behave. This process has been going for centuries forever, because knowledge can never be complete. The more we discover the more questions we find whose answers are unknown.

I reached Lakshmi theatre, Kuzhithurai by 7:30 am. I was very happy to see the young scientists present there already before me. I appreciated their punctuality and took my seat in the bus. Then the bus took off as I was admiring the beauty of the environment especially, the nursery garden present there. We reached SIGMA college of Moododu. I got down from the bus; I could find students of the college, inviting us. I was much surprised.

The meeting started by 8:30 am, **Varsha** of Maroon team compeered the program. First, the dignitaries were called on to the Dais. Then the Tamil Thai Vazhthu was sung by Maroon team girls. The meeting began with lighting Kuthuvizhakku followed by Varsha who gave a brief account about National Science day by.

- Science helps in mental excellence and inculcates knowledge to us.
- The National Science day is being celebrated in the commemoration of **C.V. Raman and his Raman Effect**.
- C.V. Raman carried out experiments on the scattering of light in water and found Raman lines.
- On February 28, he announced the Raman Effect and got Nobel Prize in 1930. This is how the day of 'National Science Day' emerged.
- Each year celebration would be done on certain topics. In 2011, the topic was, 'Chemistry in daily life'. In 2013, it was, 'Genetically modified food'. This year's topic is, '**Fostering scientific temper and energy conservation**'.
- C.V.Raman had built an excellent school and Raman Research Institute. He observed that, "The best industry is the production and diffusion of knowledge".
- According to him, Science was a joyous experience. He got Bharat Ratna in 1954 and Lenin Peace prize in 1957.

Next was the introductory address by KAP organizer, Mr.Mulanchery. M. Velaian, the king maker of KAP. He said that, last year, the award ceremony was held in SIGMA College. Always, there will be happy ending if we come to this college. We were exited to know that, the celebration of National Science Day was first bought to K.K district by Er. Ingersol and Mr.Velaian. Then we welcomed **Karthikesan sir, Director, IPRC**, by greeting him with flowers as our

token of respect and gratitude. Then all the dignitaries were welcomed by Mr. Velaian and honoured.

"Personality has the power to open many doors".

After that, Dr. James Wilson chairman of SIGMA College of architecture who has provided many opportunities to Young Scientists programme was on stage to give his presidential address. His personality had always been charming. He stressed that, the reading and thinking habit of Velaian sir is responsible for his success. Next, all the five leaders (young scientists) of the teams honoured Mr. Karthikesan. Followed by that was the speech by Mr. Karthikesan.

"A man is but the product of his thoughts what he thinks, he becomes."

Though he is in a very high position, he had found time amidst his busy schedule, to be with us. This shows his concern towards us. I was indeed surprised by his simplicity. I was so happy to know that he had reached SIGMA College, even before Velaian sir's arrival. His punctuality and simple look made me to salute him. His fresh and bright face had boosted me. He is a good role model for all of us. He had also been awarded with the Team Excellence award for the GSLV F04 mission. There was no quality he lacked. I felt much proud to have such an eminent personality there with us as a member of KAP. **Shri. Karthikesan, Director, Indian Space Research Organisation Propulsion Complex, Mahendragiri**, was honoured as outstanding scientist by Govt. Of India. He is the first and founder director of the newly-elevated ISRO Propulsion Complex from February 1, 2014.. It is only due to personalities like him that ISRO excels in front of the developed nations!

He started his speech greeting all. He appreciated Dr. James Wilson by saying, as the path of paddy fields extend; the college has also extended a lot. He emphasized three main points which is essential for students, that is

- Learning
- Behaviour with society
- Positive mind

He then told us a story of two brothers. One was a drunker while the other was an industrialist. First, the people asked the drunker, "How did you become a drunkard?" He answered, "My father's habit of drinking taught me this habit". Next, the people asked the drinkers' brother, that is, the

industrialist, "how did you become an industrialist?" He answered, "When I was a young boy, my father used to drink and beat my mother. Hence, I decided not to follow the path of my father and hurt others. Thus, I became an industrialist." . Both were born and brought up in one and same house and situation. One had chosen the negative path but the other one had preferred and selected the positive side of the . As mentioned above man is a product of his thoughts, we should also think, choose and adopt only positively always.

He further added that, Production has increased everywhere and there is over pollution too, now. In future, there will be no paddy fields. The paddy fields will be converted into industries. In order to save the earth, if you cut a tree, plant ten trees instead and be a positive thinker. In future we may say others, "My relative is in another planet". **Mr. Karthikesan** also spoke about Kudankulam power plant, that is, safety is essential but power is also needed. Now, there is 5 - 6% of electricity shortage.

Now a days, even windmills are not able to utilize and distribute the required power. Nuclear technology is also important. From, this, I could understand than Kudankulam Nuclear Power Plant is much essential. He wished us a grand success of the function and thus ended his speech. Then Achsa of Green team gave a feedback on the day's happenings. As usual, her feedback was best.

After that, **Cap. Bennet Singh** proposed the vote of thanks. He told that, he learnt that day from the chief guest to create time and save time. Science has boosted Velaian sir and science runs in his blood stream. Science can thus reverse the age of a person too. Ingersol sir is, 'simple in look, has simple background, but with a great brain'. He thanked everyone present there. The next one was an interesting part of the program. Yes, that was the dance of **Ethazi** from Red Team. It was indeed superb and her expressions are to be appreciated. She rocked the stage.

Followed by that, we had a break for five minutes. The sessions got started. The first session was handed over to me as was the session co-ordinator. The title was '**Space technology for national development**'. I gave a short speech on 'Space technology for national development'. My focus was on India. I said about some space probes sent by India.

"Space is big. You just won't believe how vastly, hugely, mind-bogglingly big it is. I mean, you may think it's a long way down the road to the drug store, but that's just peanuts to space."

Next, I invited scientist **Er.Ingersol** to give his presentation. He gave a PowerPoint presentation on 'Space Technology applications for the society'. He started by greeting all and told that, when school students speak it reaches all easily. He said:

- All have looked at sky. It has fascinated us. But we never know what they are. In olden days, mothers used to feed their children with food by showing moon. But now we have become advanced enough to land on moon.
- In ISRO, there is three dimensional atlas of moon. The distance of moon from earth is 3 lakh 84 thousand kilometres.
- Rocket is a machine that takes a satellite and put's it into the space. It takes about 21 days to reach moon.
- The speed of rocket is about 40,000 km/hr. it is an unimaginable velocity. It is more than the velocity of a bullet.
- Now, India has sent a satellite to moon itself. So, our boundaries are becoming widened. The distance of Mars from earth is 40 crores km.
- If we have to reach Mars, then, at first we have to go around sun because the gravity influence of sun is essential for us. **Mangalyan** moves in a heliocentric mass.
- 'Technology is leaping from one place to another'. September 24, 2014 will be a golden day for Indians as Mangalyan would reach Mars that day. It will be rounding around Mars for several months.
- After Indians sent 'Mangalyan' to Mars, US also sent '**Maven**' to Mars. It costs ten times than that of Mangalyan. So, this shows that Indians are humble.
- A liquid fuel that used in PSLV Rocket which takes Mangalyan to Mars was tested in Mahendragiri. Other countries are wondering at us, as we do wonderful experiments.
- Dr.Vikram Sarabai is the visionary of Indian space programme. Dr. Sarabai quoted that, "**we must be second to none in the applications of advanced technologies to the real problems of**

man and society." He observed that, space technology will help to reunite people and solve problems.

- We should have questioning mind and should arise questions like, 'Are aliens present?', 'Is there any other solar system?' etc.

The purpose of sending Mangalyan is to see:

- The presence of methane in Mars.
(Then, life may exist)
- The rate of loss of Carbon dioxide in Mars.
- Take photos of Mars. There will be six payloads in Mangalyan. All will start working by September 24.
- **Dr. A.P.J Abdul Kalam** visualized that by 1920 or 1925, India will become no: 2 or no: 1 nation in the world. So, we should also possess such a confidence.
- Dimensions of Indian Space Programme

Space infrastructure	Launches vehicles(PSLV, GSLV)
Space Craft	(LEO, GEO & beyond)
Sensors and transponders	

- Ground segment
 - Data Acquisition
 - TTC Network
- The Indian Space Organization started in **Thumba** (1960s) in a church. Small rockets were taken in a cycle carrier. The first rocket was sent in 1963 to test the Atmospheric Sounding at Thumba. Followed by that, were the **Rohini** series. They are small sounding rockets with a payload of just 5kg or 10kg.
- But now we have even cryogenic technology with us. This technology is present only in six countries in the world and India is one among them.
- We have sent **GSLV D5** and it is rounding successfully.
- Only four countries in the world are advanced, enough to send and bring the satellites back. Our country is also one among that.

- We have sent a space capsule before six years. It orbited around the space for 13 days. It was sent and brought back. Now, it is kept in a museum.
- This year **GSLV Mark III** is to be sent in Space Groove Module. There will be no man in it. Its hardware was delivered one month ago from Hindustan Aeronautic Ltd.
- Many companies grow as space technology grow. Godrej is a company that produces cryogenic missiles parts.
- The uses of space science are communication and remote sensing. Using satellite, we can see programs lively from any part of the country.
- There is audio, video and data communication. Now, 2G technology has further developed in to, 3G & 4G.
- Satellites are beautiful platforms in space. The distance of communication satellites from earth is 36,000 km. it takes one day to rotate earth. It looks to be static when we see satellites from earth.
- Geo-synchronous orbit depends on earth's gravity. 'Mangalyan' moves in a Helios-centric orbit. It is also used for business needs.
- **EDUSAT** is an educational Indian satellite. India is the only country to have an educational satellite.
- Our main goal must be socio-economic development.
- Remote sensing means, watching without touching. It helps in testing the resources. In olden days, people did surveys. But, this satellite has more advantages.
- We can observe objects in earth through all electromagnetic spectrums. There are many types of spectrums like:
 - X - Ray spectrum
 - Visual spectrum
 - Infrared spectrum
- A spectrum covers the whole universe.
- The applications of remote sensing satellites include checking the increase and decrease of yields in crops, the level of water table about forests etc.

- The flood that attacked Uttarkhand is called Flash flood. Lot of people were affected and disappeared due to the flood. To assess the flood's extended; we may use remote sensing satellites.
- The imagery provided by satellites, give us more data. It gives us a warning. This is disaster management. Space science and technology is a wider spectrum.
- Navigation means, to locate a place. Thus, we too can't hide anywhere. It can find missing aircrafts and ships. If GPS is present in an aircraft, it can land in adverse weather conditions.
- Now India depends on US for navigation. So, we have sent IRNSS through PSLV for navigation. Soon, we will send seven more and they will form a constellation. Then we don't have to depend on other countries for navigation services.
- If other countries have to respect us, we should have an increase in economics and for that increase, space science and technology plays a major role. Space technology serves us indirectly.
- Highly reliable products give us high rugged products. Space technology is very essential for us. It helps in industries too.
- We can make products in industries of high strength, low weight and low density using this technology.
- The cosmos and galaxies in space are beyond imagination. Now, it has been found that, more than 500 planets of earth - Like dimensions are present.
- The space technology even modernizes our life style.

Then Er.Ingersol showed us more images regarding:

1. Indian priorities
 - Food security
 - Disaster support
 - Human health
 - Infrastructure development
 - Education and capacity building
 - Water scarcity
2. Water resources
 - Inventory of surface water bodies
 - Groundwater

3. Modern satellites

- Communication
- Remote sensing
- Weather
- Space telescopes
- Space stations
- Military satellites

4. Earth's orbit

He told that India has launch 29 launch missions, 53 satellite missions and 1 lunar mission, so far. India is the only country which has sent 10 satellites in a vehicle. He also showed images of

- Space Capsule Recovery Experiment(SRF)
- SATCOM applications
- Tele-medicine (More than 3 lakh patients are benefitted annually)
- Tele - education
- Village resource centres(VRC)
- Components
 - Training and information
 - Digital connectivity
- Chandrayan - 1 (India's first mission to moon; the first to show that moon has water)
- Craters in moon
 - Fore
 - Nadir
 - AFT
 - Coulomb crater
- Places in moon
 - South massif
 - Light massif
 - North massif
- Nike - Apache (first sounding rocket, launched from Indian soil to sea height level. Has India's rocket and French satellite. This shows an international partnership.)

He said that, through space technology we can know more about it:

- Manufacturing in space
- Energy from space
- Human missions to moon and mars
- Behavioural study of humans in space environment
- Interplanetary exploration

The technologies which are going to be introduced include:

- Reusable launch vehicles
- Space tourism
- Electrical propulsion
- Nuclear propulsion
- Low cost access to space

ISRO has a vision for 2025. They have a goal. There's a frame. That's a lesson for us, examples of how space technology has reached people were shown.

The areas of interest in space are:

- Space exploration
- Solar energy
- Universe - it's dimensions
- Gravity - the universal binding force
- Atmosphere - protection umbrella
- Solar system
- Planetary exploration

Ingersol sir showed the picture of **IIST** - ISAT University built with ISRO's help. He encouraged us to learn there. (IIST - Indian Institute of Space science and Technology). Thus, he ended up his PowerPoint presentation. Then the session of mine got over a feedback of the presentation and vote of thanks by me.

After that, began the second session. It was regarding '**Environmental pollution**'. First, **Achash** of Green Team spoke on Environmental Pollution. She said:

- The air we breathe and the water we drink consists the environment.
- What have we done to - it? We have destroyed it.

- Some steps to prevent environmental pollution are:
 1. Air:

Oxygen helps us to breathe. Carbon dioxide helps in the photosynthesis of plants. But, burning, plastics, etc., have damaged the environment. Oil paints release hydrocarbons. Latex paints can be used instead of it. Don't dump plastics. Trees have filtering effects. So, plant trees. Encourage industries to use scrubbers (filter poisonous gases) and electric preceptors. Drive bicycle regularly.
 2. Water:

We can never live without water. Oil spills damage water resources. Paint factory wastes are not treated. Coastal people dump wastes. To avoid these, use less pesticides as pesticides stimulate the growth of algae. So, the aquatic animals may decline. In sewage, Canon plants can be planted as they release oxygen into the sewage and purify it. Industrial wastes should be treated with efflorescent. Don't wash clothes in water bodies. It is predicted that, the World War II may break out only due to fight between nations for water.
 3. Land:
 4. Don't dump plastics in land. Use rechargeable batteries. You must have an efficient waste management system.
 5. Forests:

Monoculture of rubber plantations has reduced the thickness among plants. So, we have to practice planting trees in our home itself.

"Think globally and act locally".

Her speech was so good and made us understand that we people are the terrorists to nature. Followed by that, Mr. Joe Prakash came there and released a book on biodiversity. Each of us was given a copy of it.

Next Achsah invited **Mr.Sunderaraju IFS**, president (SOFCON), consultant of society for conservation of nature to speak. He gave a power point presentation on our environment. The points put forth by him were:

- Environment is the sum total of all surroundings of living organisms, including natural forces and other living things.
- Even people who live in cities get their food supply from their surrounding villages.
- Our surroundings actually had natural landscapes such as forest, river, mountain, desert or combination of these elements.
- Village depends on natural landscapes. We are closely linked with our surroundings. We breathe air. A person needs 3 oxygen cylinders that is Rs. 700. So, for 65 years (life span of man) it is Rs. 4, 98, 22,500.
- We use water to drink and for other day to day activities. We also use resources from which food is made. We depend on community of plants and animals which form a web of life, of which we also a part.
- Everything around us forms our environment and it is our duty to conserve it.
- Respecting nature is vital to protect our own livelihoods. Based on this, many cultural practises have been developed.
- In Rajasthan, once there was a severe drought at a place called Marwar for about 8 years. There was a spiritual leader, Jambaji who thought, trees are needed for rain. He preached 29 principles and the people who follow it are called 'Bishnais'. They grew trees like Vanni and Ilanthai.
- In 1730, there was a king, Ajith Singh who ruled Marwar. He wanted to build a fort. So, he ordered his soldiers to go and cut trees of the village 'Khejarli' of Bishnais. At that time a lady Amritha Devi with her three daughters embraced the tree and sacrificed their lives. About 363 Bishnais were killed as they protected the Vanni trees. This is a tragic event in the history of the entire world to protect the trees.
- There are more uses of trees. The leaves of Vanni trees provide fooder for animals. They can produce food. Jaggary too can be made. So, the people were affectionate to it.
- Botanical name of Ilanthai is Zizyphus and that of Vanni is Prosopis Spicigera.
- Chipko movement:

In Hindi, chipko means 'to embrace' or 'to hug' and that is what Uttarkhand women did. It is based on Gandhian principle of peace.

- There is a landmark event on trees. Some people went to cut trees in 1974. But, a lady Gaura Devi protested against it. She organised 27 women of her village to protect trees.
- The causes of environment's activities include:
 1. Population explosion
 2. Urbanization
 3. Industrial revolution
 4. Green revolution
 5. Transport
 6. Hydroelectric project
 7. Construction of dam
 8. Nuclear project
 9. Thermal project

Green revolution was introduced to meet the food supply problem. There, inorganic fertilizers were used. Thus, soil has lost its fertility. The friend of farmers, earthworm is not seen now. This is due to pesticides. We use fossil fuels for transport purposes. Thus the atmospheric temperature increases and this leads to global warming. Thermal projects use coal and hence release carbon dioxide.

The effects of this pollution are:

1. Deforestation
2. Desertification
3. Loss of biodiversity
4. Toxification
5. Acidification
6. Global warming
7. Depletion of ozone layer

There is a 'private forest act' to prevent cutting of trees. But, this act is being violated these days. We should motivate people to bring a change. Nowadays, in KK District lands are getting converted into rubber plantations. If it was reduced, desertification would also have reduced. The effluents released from rubber factories are highly toxic. In other districts, there are

more dying units and they release effluents. In order to avoid it, we should treat it and then releases. But, we don't do it. As a result, land and water bodies become toxic.

Global warming increases the greenhouse gases. Depletion of ozone layer is due to:

1. Air pollution
2. Water pollution
3. Soil pollution
4. Noise pollution
5. Dust pollution
6. Radioactive pollution
7. Oil pollution
8. Pesticide pollution
9. Plastic pollution

Due to the release of harmful gases in the atmosphere, holes are made in the ozone layer. The vegetation is also affected. Noise pollution is caused mainly due to the increase of vehicles. Vehicles that carry sand create more dust and thus create dust pollution. The inhalers of toxic gases in cement factories cause giddying problems. Oil leakage affects marine life and causes oil pollution. Pesticides like endosulfan (now banned) cause pesticide pollution. They cause mental depression, cancer and skin diseases.

Mercury from plastic industry enters the sea and thus kills the marine life. We should use organic pesticides. So, who is the main cause? Mankind is the root cause. Protecting the environment is in our hands. "Environment is our heritage". Our forefathers lead a harmonious life with nature. As a result, they have given us a healthy and wealthy environment. It is our bounden and foremost duty to handover a clean environment to our future generation. The economic stability of a country depends upon it's well-maintained environment. A country must have at least one-third of it's land as forests.

How to reduce degradation?

Awareness should be created on 'ecocide', 'environmental crises and 'eco-terrorism'. We should introduce Environmental studies in schools and colleges. There are organizations developed now such as 'CITES', 'EPA', 'EXNORA' to save

it. Environmental values and ethics must be taught. Now, 'Ganga cleaning project' and 'Chipko movement' is being implemented. We must make use of services such as 'Earth watch', 'Earth scan' and 'Earth walk'. Students and common public have to be sensitized on environmental issues. We have to introduce and enforce legislation.

The efforts of UN in stopping environmental degradation are:

- Organizing INCED also called 'Earth Summit'
- Earth summit was convened in 1972 in Stockholm, in 1982 in Nairobi and in 1992 at Rio De Genera.

Differences of opinion:

G7 is a group having seven developing nations which include UK, US, Japan etc..G77 is a group of 133 nations like Bahrain, Brazil, China, India, Iraq, Kenya, Kuwait, Oman, Pakistan, etc.

The population of America is 317 million while that of India is 1.27 billion. But, the release of CO₂ in America is 19 times of that we release. The fuel consumption in America is 11 times than that of India.

Environmental ethics:

- Lead harmonious life with nature.
- Conserve environment.
- Respect mother nature
- Avoid craze for wildlife products.
- Protect wildlife
- Preserve forests
- Maintain balance among five elements

The monuments of Hugo Wood were shown that is grave. There were trees around it. He desired to be buried amidst his favourite tree and it is where he rests in peace. Some words were written on his grave, which were "If you want to see me, please look around". The picture and words indeed touched our minds.

As an individual,

Plant more trees. You can plant small plants in your gardens too. Protect butterflies and insects as they are pollinators. You should have a capacity of identifying birds. You must know four main things.

1. Where does the food you consume come from?
2. What do you know about the place you live?
3. How are you connected with Earth?
4. What is your purpose and responsibility?

You should reduce the use of paper. You can also support environmental projects. Always buy organically grown produce.

- Save precious rain water.
- Use alternative source of energy.
- Use bicycle for healthy exercise.
- Use energy saver bulbs CFL bulbs.
- Walk rather than drive wherever possible.
- Use bio pesticides.
- Participate in events that highlight the need for conservation of nature.
- Try to participate in forest fire fighting operations.

NURTURE TREES

"Nurture trees to nourish birds, animals and insects.

Nurture trees to nourish water and air.

Nurture trees to nourish Earth"

Conserve environment not only for prosperity but for the future generations too, he ended. Then Achshah gave a feedback and vote of thanks. **Mr. Joeprakash** honoured Mr.Sundararaju with shawl and thus the session got ended up. To boost up ourselves with energy to lend our ears to the coming sessions, we departed from the hall by 01.15 pm for lunch. It was very delicious to eat. We again assembled by 02.00 pm for the rest of the session. **Jeshwini** of Green team was the session co-ordinator and first she spoke few words on "**The need of nuclear energy**". She mentioned that :

- Now, the electricity production is about 9,50,000 mega Watt. This is done by nuclear fusion, nuclear fission and radio activity.
- 30 billion tonnes of carbon dioxide is produced annually. But now, there is shortage of nuclear energy.

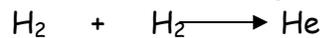
- Thorium is produced more in India. It is produced about 6,05,000 tonnes in India. There are totally 21 nuclear reactors in India.
- India has planned to increase the electricity production from 2.5% to 9.5%
- Nuclear energy is used in :
 1. Nuclear medicine (radio active isotope)
 2. Agriculture(Maharashtra)
- Nuclear energy is very good when compared with other energies.

Then she invited **Er. Benzigar Rajan**, Scientist to speak on nuclear energy, as he was honoured by **Mr. Edwin sam**, team co-ordinator of yellow team. Er.Benzigar showed us a power point presentation regarding nuclear energy. He said :

- Our universe has a very huge nuclear plants and that is Sun. Without Sun there is no life for even a second.
- It came from a system called 'Atom'. The basis of atoms are proton, neutron and electron.
- Weight of proton = $1.672 \times 10^{-27} \text{kg}$
Weight of neutron = $1.674 \times 10^{-27} \text{kg}$
Weight of Electron = $9.102 \times 10^{-31} \text{kg}$
- The most heaviest one is proton and not electron. Proton and neutron nearly have the similar weight. Proton and neutron are contained in the nucleus.
- Protons have positive charge.
Electrons have negative charge.
- That's why, when we touch a particle, we don't feel electric current's passage. Nuclear energy is also called atomic energy.
- The different forms of energy include :
 1. Heat energy
 2. Chemical energy
 3. Electro magnetic energy.
 4. Nuclear energy.
 5. Mechanical energy
- Heat energy :
The movement of atom collide with particles and produce heat energy (due to fast movement of electron.)
- Chemical energy :
Rice is stored chemical energy. Chemical energy is also present in seeds and agricultural products. It is the bonding of atoms. As the bond breaks, chemical energy is evolved, For Example battery (Lechlanche cell)
- Electromagnetic Energy :

Radio and television use electromagnetic energy. No one can live without it. For example red, blue and green have different concentrations of energy. Black has more concentration.

- **Mechanical Energy :**
Kicking of ball and throwing of ball also require mechanical energy. It is the energy which helps in the movement.
- **Nuclear Energy :**
- It is produced in two forms, that is by nuclear fission and nuclear fusion. If an atom splits, the energy is released. This is called nuclear fission . When two atoms join too, they release pressure and heat. This is called nuclear fusion. Sun undergoes nuclear fusion, that is,



- Nuclear energy is the most concentrated form of energy in the world.
Burning 1 tonne of coal = Burning 10 kg of Uranium
- The nuclear power countries include India, China, Russia, US, Pakistan etc., They have more nuclear power plants. There are 440 nuclear plants in the world in 31 countries. There are 30 nuclear plants under construction.

In India, Kudankulam and Bigarji power plants are under construction. At present Kudankulam plant can produce 2000mega Watt of electricity and Bigargi power plant can produce 9900 mega Watt of current. Our requirement is 1,50,000 mega watt So we burn fuels.

Fuel	Present	In 2020
Coal	67,166 MW	?
Gas	11,840 MW	?
Hydro	30,135 MW	?
Nuclear	2,720 MW	?
Wind	2,488 MW	?
Biomass	1000 MW	?
Solar	-	?
Total	1,15,035	2,50,000 MW

- India uses
Coal - 59 %
Hydroelectricity - 17 %
- There are three types of reactors :
1. Light water reactor
2. Heavy water reactor

3. Odo Odo water reactor

- Some power plants in India include :
 1. Kaiga (pressurised heavy water reactor)
 2. Kakrapar (Karnataka)
 3. Kalpakkam (TamilNadu)
 4. Narora (Gujarat)
 5. Rawatbhata (Uttar Pradesh)
 6. Tarapur (Rajasthan)
 7. Kudankulam (TamilNadu)

In an atom, if the electron, proton and neutron are equal, they are of normal material. If there is deficiency only in neutron, then it is Isotope. That's why Uranium is a heavy material.

When atoms are bombarded with neutrons, their nuclei splits into two parts which are roughly equal in size. This is fission. Two nuclei with low mass number combine to produce a single nucleus. This is fusion.

The process in a conventional nuclear power plant is:

- A controlled nuclear fission chain reaction
- Heats water
- Produce high-pressure steam
- Turns turbines
- Generate electricity
- Nuclear fission has a controlled fission and chain reaction. The controlled chemical we use is Boron.
- In fossil power plants, the water is heated. Then a stem rises up. Then the turbines rotate. The electricity is generated through generator to tower.
- In a nuclear power plant, coolant is used to cool the plant. Normal water is H_2O . But, this heavy water is D_2O (Deuterium Oxide). In nuclear plant, water is used as a coolant.
- We burn coal, oil and produce 25,000 tonnes of Carbon dioxide. This releases green house gases. So, the sea level too raises. CO_2 has crossed 400ppm, now

Burning 1 tonne of coal = releases 100kg of CO_2

By nuclear energy, it releases only 21g of CO_2 . It is possible to generate a high amount of electrical energy. This technology is readily available.

It creates more jobs. It is safer too. 1kg of Uranium Fuel Pellet has as much energy available. Nuclear energy can be used to preserve food. It has advantages as well as disadvantages. Next, Jeshwini said a feedback and thus the session got over.

The next session was handed over to **Fathima** of Green Team, on '**Health and medical conditions**'. First, Fathima gave a short speech on "Health and medical condition". She started her speech with the proverb 'Health is wealth'. She emphasised more about sanitation and healthy drinking water. Next she welcomed **Dr. Jayalal**, Senior professor of surgery to take over the mike. He gave a presentation. He said that we expect to live for many years. Then, we have to be healthy. A person is healthy when he is not only having any diseases, but also, healthy in all aspects of life.

He highlighted about obesity, which is a major problem in this modern world. His presentation was mostly composed of images. He showed a person with obesity. His tummy was so large and a poor man was under his tummy and was not visible due to the size of the tummy. The man with obesity searched the poor by saying, "where is the poor?". Another picture was divided into two parts. One part had a lady and the old machines used in olden times. The next part showed a lady with modern grinders, mixi, computers, etc. The lady of olden times was slim, as she worked hard. But the modern lady had obesity and was fat, as the simple machines were easier to work and made her lazy. He also listed on how to prevent these problems.

Next, Fathima thanked all and the session got over. The last session had begun with **Meera** of Blue Team, who was the session co-ordinator. She gave a short speech on '**Food and Agriculture**'. Followed by that, **Dr. Sujin Herbert** was welcomed to give us his power point presentation. It was on 'Food and agricultural changes'. He said:

- Food:
The substance consumed to provide nutrition is called food.
- Agriculture:
The cultivation of animals and plants is called agriculture.
- The object of the topic is to know about the challenges in cultivation and to get right nutritional support for body.
- The challenges that we face today includes:

1. Climate change
2. Global warming
3. Soil degradation
4. Over population
5. Water scarcity

- Rain water harvesting is the utilization of water that reaches your home.
- Drainage system is making use of used water for some other means. We may use it for agricultural purposes and make little change.
- Drainage system has now become the area for mosquito harvesting. Over population is also a great challenge.
- A poor stage in India is that, about one billion kilogram food grains rotten every year in India.
- There is imbalance in food malnutrition and false weights are created. As we eat three Parotta's, it means that, we have eaten the food of someone else with our food.
- Be a farmer yourself. You can plant trees or plants, wherever you find a place. In Japan, all plants are cultivated above the roofs. "you are what you eat".
- Every thirty five days, your skin replaces another one. You should have a healthy food system. Sustainable food is ecologically responsible, fair and accessible, local, healthy and has no waste.
- A story...

Once there was a brilliant grandpa who answered every question. So, some boys in the village wanted to make him a fool. They took a bird, hid it in their palm of the hand. Then they went to the grandpa and asked him, folding their hand, 'Is the bird inside alive or dead?'. But the grandpa cleverly answered a thoughtful answer. "It is in your hands". Yes, maintaining the earth is in our hands, he ended his speech.

Then, a central minister, **Shri.Kodiakunnil Suresh** arrived. We were indeed proud to meet him. I was very surprised. I spoke on 'Industrial and ecological condition'. Then he gave his address. Due to his

tight schedule, he left the place immediately. Then Meera thanked Dr.Sugin Herbert and all the sessions got over by that time. Then, Mr.Velaian proclaimed that, the next meeting would be on March 3 in IIST institution, Thiruvananthapuram. He insisted the five team leaders to send the research topics as soon as possible.

Then, was the feedback of the members of KAP. At first, **Mr. Balakrishnan** (team co-ordinator of red team) said us that we got more knowledge today. Next, **Mr.Thiruvengadam** said, we react for five speeches. He also appreciated **Dr.T.James Wilson** and his hospitality. Then **Dr. Edwin Gladson** (team co-ordinator of green team) wished us to do well. Followed by that, **Mr. Sajeev** (team co-ordinator of blue team) said us about Alfred Nobel who introduced the method of giving Nobel Prize. Then was the speech by **Mr.Samraj**, who wished us to use this opportunity properly and then, it was by **Mr.Edwin Sam**(team co-ordinator yellow team). He appreciated us that we had introduced the topics very well. He also exclaimed that this is his best National Science Day.

Mr. Johnson greeted all. After that, **Mr. John Rabi kumar** said us about the IIST and told us to know read about Image processing and remote sensing. Next, Mr. Joseph Fernando, the principal of SIGMA College of architecture appreciated that, this awareness is surely needed. At last, Dr.James Wilson acknowledged that this meeting was very impressing. Even rural children get a chance to expose their talents. So, he has also more interest in KAP. Then the meeting winded up with a vote of thanks by Cap.Bennet Singh.

The program was indeed informative. It helped us to established a bond with science.

My whole hearted thanks to Kumari Arivial Peravai., Dr. James Wilson, Chairman, SIGMA College of Architecture, Moododu, Dr. (Mrs). Gladys Wilson and Capt. P. Bennet Singh for arranging such a wonderful platform to celebrate National Science day .

We are indeed indebted a lot to Shri. Karthikesan, Director, IPRC, Mahendragiri, Er. S. Ingersol, Scientist, IPRC, Scientist. Benzigar Rajan, IPRC, Shri. V. Sundararaju, IFS, DFO(Rtd.), Dr. Jayalal, Professor, Kanyakumari Medical College, Asaripallam, Dr. Sujin Herbert, Govt.

Medical Officer for sparing their valuable time to crown the National Science day Celebration.

All praise and honour goes to the students and Staffs of SIGMA college of Architecture for arranging the National Science day Function in an excellent manner.

At, last I record my gratitude and thanks to Mr. Mullanchery M. Velaian, all Guide teachers, Co-ordinators, Consultants, Scientists and Medical doctors for accompanying and guiding us.

Really it is once again a wonderful opportunity to the Young Scientists.

Thank you



2.A.S.LEKSHMI,

Yellow Team

This is one of the most important days in a year. We usually celebrate our birthday very happily and it is also important to celebrate the National Science day because in this modern world a man can't live the Science and Technology and we, the young scientist got a chance to learn more from great personalities about Science and Technology development in India. In this day Kumari Arivial Peravai along with Sigma College of Architecture, Moododu celebrates the National Science day. At 7.45am, we all got into the bus and reached Sigma College of Architecture. There we had a great surprise that the students of that college welcomed us greatly with bindi and sweet. Really it was very happy for us because if we are starting a day with sweet then the whole day will be

sweet likewise our whole programme is very fine. The program was started at 8.25am and the compeering was done by Varsha. The personalities on the dice are Mullanchery.M.Velaian, Organizer of Kumari Arivial Peravai; beloved chief guest D.Karthikesan, Outstanding Scientist, Director, ISRO Propulsion Complex, Mahendragiri; Dr.T.James Wilson, Chairman, Sigma College of Architecture; Dr.T.GladisWilson, Secretary, Sigma College of Architecture; Capt. Bennet Singh, Port Trust, Tuticorin; Er.S. Ingersol

(Scientist, Group Head, ISRO Propulsion Complex Mahendragiri). We started the program with Prayer and the personalities lightened the lamp. Then told the details that why we are celebrating the National Science day on 28th February because that is the day in which C.V.Raman submitted his invention that is Raman's Effect and he submitted it on 28th February 1928 at Bangalore. For this he received the Nobel Prize for Physics in the year 1930 and also he is the first Asian to win Nobel Prize for Science, and one among the founders of Science in India. He always thought that Nature is the man's best teacher. He is a person with simplicity and curiosity. C.V.Raman became the recipient of Bharat Ratna in the year 1954. On his remembrance we are celebrating 28th February as the National Science day. Each year we get a theme and this year the theme is Energy Conservation which is very important that conserving energy is something precious which we are conserving for our future generation. Then Mr.Velaian gave the Introductory Address and he told that the time which we spend for entertainment can be used to study things about science, he also told about our chief guest D.Karthikesan, Outstanding Scientist, Director, ISRO Propulsion Complex, Mahendragiri that it was a history that he is the first director and founder of ISRO Propulsion Complex, Mahendragiri and then he asked all the young scientist to honor him with roses, then Dr.James Wilson honored him and also Dr.Sathish Kumar who Phd for his service to the society Dr.James Wilson also honored him. Then Mr.Velaian introduced all the personalities and he finalized by saying that National Science Day is to develop our nation. After that Dr.James Wilson gave the presidential address and first of all he wished us and welcomed us to this program and he told that C.V.Raman had published many articles and reports that is because of his reading practice and he asked us to follow the reading practice and he told that it's the pleasure to guide the students like us, then he mentioned that this day will be very useful and interesting one. After that the five team leaders honored the beloved chief guest. Then the chief guide for the wonderful day Mr.D.Karthikesan, Outstanding Scientist, Director, ISRO Propulsion Complex, Mahendragiri, gave the inaugural address and told about this college and he told that KAP is a volunteer organization, then he asked explained that the foundation is important and KAP is building the strong foundation to the society. He described that in a paddy field water is important and the individual growth is

important for a country. Then he told a story of two brothers and in that one is having all bad habits and the other one is just opposite and then one day some people asked the bad one that why are you drinking and also having the bad habits then he answered that my father used to drink so by seeing him I too started that habit and the people asked the other one and he told that my father used to drink and disturb all so I should never follow it. Through this story, he told us that there are both positive and negative things and we should always take the positive things. He also told that in the field of agriculture science and technology is important to increase the production and then he told safety is the first and important thing. Then in present science and technology is important in all places starting from a paddy field to industries. After that Achsah told the feedback and Capt. Bennet Singh gave the vote of thanks. Then Ethalz Sherin Joseph performed a dance. After that we had a break and then the theme lecture section started.

Theme Lecture I

Session Coordinator: V. Steffy

Space Technology for National Development

S. INGERSOL

(Scientist, Group Head,

ISRO Propulsion Complex Mahendragiri)

First Steffy told a brief content of the topic and she told that in the year 1958 NASA was started, in 1969 August 15 ISRO was started, 1979- Bhaskara was launched, she also told some of the important launched Rockets that are in the year 1980-Rohini, 1981- Bhaskara II, 1982-INSAT18, 1983-INSAT13, 1989-IRS 1A, then INSAT1/C was launched and also in 2001-GSLV, 2004-EDUSAT that is first satellite which has been sent for the education and in 2013 November 5 Mangalyan was launched to Mars for finding the trace of life on Mars. Then Er.S.Ingersol had given us a PowerPoint Presentation on the topic Space Technology Application for the Society. He told that in the olden days the mothers used to feed their children by showing the moon but now no one is doing so. He also told that the distance from Earth to moon is about 3, 84,000km and he also specified that a Rocket can travel 12km/second and he also explained that if this speed continues then it will take only 2hours to cover the distance between KanyaKumari to Jammu Kashmir, at that time I wondered and when I calculate the distance covered by it in 1hour is 43,200 and in one day that is 24hours is that of 25, 92,000. He told that a jet travels 900 km/hour and a bullet covers 1km/second. He also described us that

it is about 40,00,00,000km distance from Earth to Mars and also he told that it is not the distance directly from Earth to Mars that is the satellite first rotate the Sun and then it comes to Mars due to gravitational force and then he told that Mangalyan will reached Mars in 10months that is September 24, 2014 will be a golden day in the history of Indian Space Research Organization because it gives valuable information about Mars and the aim of this satellite is to find the trace of methane gas in Mars because if methane gas is present in anywhere then it implies that there has been live which can exist there and the atmospheric CO₂ will be took out by the Sun's Solar energy. He also described that the Indian technology costs 1/10 of USA. Then he told that the Indian Space Programme was started by Dr.Vikram Sarabhai and the theme for this programme is that "We must be second to none in the applications of advanced technologies to the real problems of man and society". He told that if we have confidence and hard working then we can bring our country first in the field of science. Then the dimensions of Indian Space Programme are the space infrastructure, ground segment, applications, and capacity buildings. He also told about the launch vehicle evolution. He also described that the first ISRO was started in a church in Trivandrum and the father of that church gave it to ISRO for the development of our country. He explained that first they had the cycle carrier rocket and in the year 1963, a pencil rocket was launched which of 1kg capacity and then the Rohini was launched which is a small sounding rocket with the capacity of 10kg but now Indian rockets have the capacity of 2150kg. India is one among the 6 countries which have the cryogenic technology and also among the 4 countries having the technology to sent a rocket and bring it back. In the month of July, India is going to send the GSLV mark3 with space crew models in it. Hindustan Aeronautic Limited which is a public sector that produce the parts for the rockets. Due to the space technology many companies are also growing. Satellites which are sent for many purposes like economic, communication, remote accessing system are very useful. The data communication satellite provides us live programmes, such satellites had a wonderful platforms in the space and also they are in a great height in the space and a satellite can grow 100km to 36,000km in the orbit and these takes 1day to revolve around the earth. He told that India is the only country to send a rocket for education and he also told space technology is important for the development of social and economic life of a country. He also explained about carbon fiber which is used in artificial legs. After that he told that India has

29-Launch Missions, 53-Satellites, 22-Foreign satellite, and 1-Lunar Mission. He explained about Tele-Medicine and in Andaman & Nicobar about 3lakh people are getting benefits in each year. Then he told Chandrayaan-1 was the first to find water in moon and he also showed some of the pictures of moon taken by the chandrayaan-1. He also described about the more technologies like reusable launch vehicle, space tourism, electrical propulsion, low cost access, nuclear propulsion. Then finally he told about IIST-Indian Institute of Space Technology. After that Steffy told the feedback.

Then Mr. Joe Prakash published a book and then he distributed that book to us and it was a very useful book for us because it is about bio-diversity.

Theme Lecture II

Session Coordinator: Achshah

Environmental protection

V. SUNDARARAJU IFS

Former Dist. Forest officer. K.K Dist.

First Achshah told a brief description about the topic that is the place which we live and surrounding of it is called environment and she also explained about the pollution of the environment that is due to the toxic chemicals, dumping of plastics, household wastes cause land pollution, untreated sewage and the chemical wastes, pesticides cause water pollution, toxic gases of vehicles and industries cause air pollution, cutting of trees also cause deforestation and she also told that the third world war will be only for water. Then Mr. Sundararaju told that the sum total of all the surroundings of the living organisms, including natural resources are called environment. He told that the city people get food from the village and the village people depend upon the natural landscape. He also told that we use 3 cylinder of air per day and in one year Rs.700 each then in 65 years the cost will be of Rs.4, 98, 22,500. He told that our daily life is closely linked with our surroundings. He also explained about the importance of our environment that most of the traditions refer it as their mother land. He also told a story about the Jambaji, Leader of Bishnais and their place is in Jodhpur, Rajasthan faced severe drought in Marwar so they planted two trees Prosopis Spicigera and Zizyphus Jujuba, the root of these two goes deep in the soil and prevent drought and in the year 1730, King. Ajith Singh ruled Marwar and he planned to build a fort so he ordered his soldiers to cut those trees to build the fort and when the soldiers came to cut it a woman called Amrita Devi embraced the tree along with her 3 daughters and sacrificed their lives, at last 363 Bishnais were killed in protecting the trees and news spread to the king and he stopped cutting the trees. He also told about the

chipko movement that is in 1974 Gaura Devi of Uttarkhand organize with 27 women of her village protect the trees. Through these two stories we can find that our ancestors know the importance of trees. Then he described the Causes for environmental degradation that are population explosion, transports, urbanization, green revolution which is formed only before 50years, industrial revolution that is also just before 200years, construction of dams, hydel electricity, thermal project, nuclear project. Then he explained about the disturbances that are deforestation, desertification, loss of biodiversity, toxification, acidification, global warming. After that he told about the depletion of ozone layer causes skin and eye cancer. Then he described about pollutions like air, water, soil, noise, dust, radioactive, oil, pesticide, plastic pollutions etc... Then he discussed about who is the cause for all this things and the answer is MAN because our forefathers lived a harmonious life with nature so they are healthy but we are destroying it. Then he also discussed about how to reduce environmental degradation that is by spreading awareness and organizing conference like 'Earth Summit' and then he talked about the efforts of United Nations. After he told the environmental ethics that are harmonious life, conserve our environment, respect the mother land, biological diversity, preserve the forests, balance among the five elements. After he told the story of the monument of Hugo Wood [1870-1933] who wants him to burry in his own land covered full with trees and in his monument it was written in his mother tongue that "S1 Monumentum Requires Ciraumspice" those lines means "If you want to see me please look around." Then he explained the role of students in conserving environment that are plant more trees, reduce the use of paper, learn & try to identify birds, be kind to animals & birds, save precious rainwater, use energy saver bulbs-CFL, reduce the amount of water, always use organic pesticides. Then he concluded his presentation by saying that Nurture trees-to nourish water & air, to nourish Earth, to nourish birds, animals and insects. Then Achshah told the feedback.

After that session we had our lunch break and after the lunch the again starts.

Theme Lecture III

Session Coordinator: Fathima Haashima

Health and Medical conditions

Dr. A.JAYALAL

(General Secretary IMA Tamil Nadu)

Fathima Haashima told that health is wealth and a person should know to maintain his/her health and hygienic and the disease that is of two types:

Communicable and Non- Communicable and she also told some of the diseases and their cause. Then Dr.A.Jayalal told about the six dimensions of health and wellness that are: emotional, intellectual, spiritual, occupational, social, physical wellness and he also showed the wellness wheel and also he told most people do not die. He also described about the ways in which the people die like life style diseases that is due to communicable diseases-24%, non-communicable diseases-61% and injuries-11%. Then the main four diseases due the die are Diabetes, Cancer, Chronic Respiratory and Cardio-vascular. Then the four modifiable shared risk factors are Tobacco use, Unhealthy diet, Physical inactivity, Harmful use of alcohol. Then he said that lack of exercise is also very big threat. He told that nurturing our mind and body is important. He showed some of the Indian junk foods which are harmful to health and he told that one paratta is equal to 8idlis and also big food, big size gives big diseases. He also explained about the domestication of children and the risk factors for teen suicide. Then he told that umbrella can't stop the rain but can makes us stand in the rain, confident can't makes you success but gives you the power to face challenges. Then he also explained perception that the glass filled with half water but the glass is fully filled that is $\frac{1}{2}$ of water and $\frac{1}{2}$ is of air. After that he told us that FEAR has two meanings, one is Forget Everything And Run and another one is Face Everything And Rise but the choice is ours. In his presentation there was a quote that "Your best teacher is your last mistake" told by Dr.A.P.J.Abdul Kalam. He also told us that our aims should be high and he also told a story of Walt Disney that when he was working in a newspaper he was rejected because of his creativity but now he is the founder of Disney which is an outstanding creativity. Then he showed us a positive chart which consist of all the positive things such as smile, laughter, patience, mercy, hope, love, praise, knowledge, self control, self confidence etc... and the negative chart consist of negative things such as fear, sorrow, cupidity, jealousy, over confidence, less confidence, anger etc...Then he finished by saying that to maintain physical and mental health these all things are important. After that Fathima Haashima told the vote of thanks and feedback of that session.

Theme Lecture IV

Session Coordinator: Meera

Food and Agricultural challenges

Dr. SUGIN HERBERT

(Primary Health Centre, Kuttakuzhi)

Meera takeover that session and she told the brief description of the topic that the technology used in the field of agriculture is the most important invention of the world that helps to increase the production. After that Dr. Sugin Herbert began his presentation and he told that food is any substances that are concerned with energy. The need for the technology in the field of agriculture is that the food production will have to raise 60%-70% between now and 2050 as the world population expand to 8billion. He also described that the earthworms are the farmer's best friend but due to climatic changes, global warming, soil degradation by the use of chemicals and pesticides the earthworms are destroying. He also told the water scarcity is also a major problem in the irrigation of crops and the ways to water scarcity are rainwater harvesting, waste water and drainage management system, reuse of used water. Then he told us a picture of drainage. Less agricultural land due to the increasing threat of world population and poor storage of crop that is about 1billionkg of food grains rotten every year in India. He told that these things will result in mal nutrition, imbalanced food. He also told that we want to be a farmer so that cultivate some vegetables and grains in our house for our use and then he told that we should also be a dietitian so that we understand about our diet and health. Then finally told a story, in that one grandfather who is very wise and his answers for all the questions are always correct and also in that same story two naughty children are there and one day this two will plan to cheat and prove that this grandfather is wrong so when this children are thinking for an idea they saw a sparrow in the tree and this two catch that sparrow and went to the grandfather and they told that in their hand a sparrow is there and questioned that grandfather that whether that bird is alive or dead and this children planned that if the grandfather is saying that the sparrow is alive then they will kill the bird with their hands but if the grandfather is saying that it is dead then they will show that the bird is alive. And finally the grandfather told that the answer is in your hand. With this story Dr. Sugin Herbert finished his presentation. After that Meera gave the feedback and vote of thanks.

Theme Lecture V

Session Coordinator: Jeswini

Nuclear Technology needs

A.BENZIGAR RAJAN

(Scientist, Dy. Manager,

ISRO Propulsion Complex Mahendragiri)

Jeswini takeover this section and the notable points which she told are that the nuclear energy will not cause any kind of pollution and also it will

not release any toxic gases. Then Er. Benzigar Rajan told that nuclear energy is produced from sun and the atom is the basic for the nuclear plant. He also told about Proton which is of 1.672×10^{-27} kg, Neutron which is of 1.674×10^{-24} kg, and Electron which is of 9.102×10^{-31} kg. He told that the five forms of energy are heat, chemical, nuclear, mechanical and electromagnetic energy. He also explained about nuclear energy that is when the nucleus splits [fission], nuclear energy is released in the form of heat energy and light energy. Nuclear energy is also released when nuclei collide at high speed and join [fuse] and Nuclear energy is the most concentrated form of energy. He also told that 1ton of coal energy=1kg of nuclear energy but only few countries have nuclear energy that is about 440 nuclear plants in 31 countries, in India only 2% of the energy released is nuclear energy. In India, the nuclear plants are present in Kaigo-Karnataka, Kakrapur-Gujarat, Kalpakkam-TamilNadu, Narora-Uttar Pradesh, Rawatbhata-KotaRajasthan, Tarapur-Maharashtra and Kudankulam- TamilNadu. He also told that in nuclear fission, two nuclei with low mass number combine to produce a single nucleus with a higher mass number and nuclear fission is the process whereby a nucleus with a high mass number. He also explained that in a conventional nuclear power plant a controlled nuclear fission chain reaction takes place which heats the water and produce high pressure steam and then that water goes to the turbines and generates electricity. He also described the advantages of nuclear energy that it is possible to generate a high amount of electricity or energy in a single plant, this technology is readily available it does not have to be developed, nuclear power generation does emit relatively low amount of CO₂, the emission of greenhouse gases and therefore the contribution of nuclear power plants to global warming is relatively little, the nuclear power plant requires only little space while comparison with others, it is also reliable. He finished his presentation by saying the energy equivalents that is 3barrels of oil or 1 ton of coal or 1 cord of wood or 17,000 cubic feet of natural gases is equal to 1kg of nuclear energy. After that Jeswini told the feedback.

With that all the five themes presentation was over and in between this presentation one of the central minister came to the programme and he wished us and KAP.

Then Mr.Velaian told about the programme and he told that it was different and good one. Then Mr.BalaKrishnan, Thiruvengadam, Dr.Edwin Gladson, Professor.C.Sajeev, Mr.SamRaj, Mr. Edwin Sam, Mr. Johnson, Mr.JohnRabiKumar, Capt.BennetSingh, Dr.James Wilson told the feedback about the programme. Then we finished our programme with our National Anthem.

A special thanks to **KAP** for this wonderful opportunity and **Dr.T.James Wilson** Chairman and **Dr.T.GladisWilson** Secretary of **SIGMA** College of Architecture for providing us space and feeding us with food and giving all the hospitalities to us and all the **students** of that college who cheered and boosted us with energy and the last but not the least all the **members of KAP** and the **great personalities** who came there and guided us in their busy schedule.

3.Jaya Varshini,

I arrived near Lekshmi Theatre at 7.30 am. The Sigma College bus took us to the sigma college of architecture and technology. We reached the college sharply at 8.20 am. Two sisters from the college welcomed us. The programme began at 8.30a.m. Varsha from maroon team compered the whole programme. She invited Sri.Karthikesan, Dr.James Wilson, Mrs.Gladis Wilson, Mr.Velaian, Er.Ingersol, Capt.Bennet singh on the dais. The Tamil Thai Vazhthu was sung by maroon team members. The Kuthuvilakku was lighted by Sri.Karthikesan, Dr.James Wilson, Mrs. Gladis Wilson, Er.Ingersol, Mr.Velaian and Varsha from maroon team.

Varsha detailed about "The life of Sir.C.V.Raman". C.V.Raman, an Indian Physicist, noticed the blue color of glaciers and the Mediterranean sea during a voyage in Europe in 1921. This motivated him to discover the reason for the blue color. Raman carried out experiences regarding the scattering of light by water and transparent blocks of ice which explained the phenomenon. He detected lines in the spectrum which he later called Raman lines. On February 28, 1928, Sir.C.V.Raman announced the discovery of the Raman effect at the Indian Institute of science in Bangalore. He presented his theory at a meeting of scientists in Bangalore in March 16, 1928 and won the Nobel Prize in 1930.

In 1986, NCSTC asked the Government of India to designate 28 February to honour our Nobel laureate Sir. Chandrasekhar VenkataRaman for his invention of the Raman effect. Every year a different theme is selected and activities, the fourth program and act are based around that theme. The focal theme for the year 2009 is "Expanding horizons of Science", 2010 is "Gender

equality science and technology", 2011 is "Chemistry in life", 2012 is "clean energy options and nuclear safety for 2012", 2013 is "Genetically modified crops and food security" and 2014 is "Fostering scientific temper".

C.V.Raman was born on 7 November 1888 in his maternal grandfather's house, in a small village of Thiruvanaikaval near Thiruchirapalli on the bank's of Cauvery in Tamilnadu. Raman's maternal grandfather Saptarshi Sastri was a great Sanskrit scholar, who in his younger days travelled on foot to distant Bengal to learn Navya Nyaya. Raman's parents were Chandrasekhara Iyer and Parvathi Ammal. Raman's father, who initially taught in a local school for many years and later became a lecturer in Mathematics and Physics in A.V.Narasimha Rav College, Vishakapatnam in Andhra Pradesh. Raman passed his Matriculation examination at the age of 11 and he Passed his F.A.examination with a scholarship at 13. In 1903 Raman joined the presidency college in Chennai from where he passed the B.A and M.A examination. He stood first both in M.A and B.A examination and won all prizes available. Raman passed away from natural causes on 11 November 1970.

Mr. Velaian gave THE introductory address. He told sigma college of architecture and technology is the top most college in Kanyakumari district. He informed that National Science day celebration was introduced in Kanyakumari district by him and Er.Ingersol. He said ISRO's scientist Er.Karthikesan was the founder of ISRO Propulsion complex. We welcomed him by giving rose. Dr.James Wilson honoured Mr.Karthikesan with Ponnadai. The 'KAP' members gave him a momento. Sri.Karthikesan and Dr. James Wilson honoured Mr.Satheesh Kumar, who got PHD award with Ponnadai. Mr.Velaian continued his address. He welcomed all the dignitaries who were present. He wished us to take notes without mistake.

Dr. James Wilson gave presidential address. He told Sir.C.V.Raman got Nobel prize because of his effort. He informed Raman wrote more than 400 reports. He instructed us to read newspapers regularly.

Sri. Karthikesan gave inaugural address. He told the growth of Sigma college of architecture and technology is benefit for the region people. He said individual development is very important for one country. He advised us to concentrate in studying. He instructed us to have positive thinking. He said paddy field is destroying. So, we will get paddy from industries in future. He told us to plant trees in our house.

Achsah from green team given feedback. Ethazh Sherin Joseph from red team performed a dance. It was very nice. Capt. Bennet Singh given vote of thanks. We had a break for 5 minutes.

Theme lecture 1 :

Team Co-ordinator : Steffy

Steffy from Red team gave introduction on "Space technology for national development. In 1957 the Russians launched Sputnik 1. This was the first space probe to go to space. In 1957, the first man went to Space. NASA was born on 1958. In 1969 Neil Armstrong became the first man to land in the moon with Apollo 11. In 1981, the first space shuttle Columbia was launched. In 2000, the first weather satellite was launched space activities in the country started during early 1960'S with the scientific investigation of upper atmosphere and ionosphere over the magnetic equator that passers over Thumba using small sounding rockets. Realizing the immense potential of the technology for national development, Dr.Vikram Sarabhai, the vision leader envisioned that powerful technology could play a meaningful role in national development and solving the problems of common man. Indian space program driven by vision of Dr. Sarabhai is considered as the father of Indian Space program.

ISRO created successfully two major satellite systems namely IWSAT and IRS. Also, PSLV and GSLV. Bhaskara I is the first experimental remote sensing satellite carried TV and microwave cameras send at 7 June 1979. Bhaskara II is second experimental remote sensing satellite send at 20 November 1981. INSAT - 1A is first operationalized multi purpose communication and meteorology satellite. INSAT - 1B is identical to INSAT - 1A send at 30 August 1983. IRS - 1A is first operationalized remote sensing satellite send at 17 March 1988. INSAT - 1C INSAT - 1 D improved vision of IRS -1A, GSAT satellite for first development flight GSLV send at 18 April 2001. EDUSAT is India's first educational satellite send at 20 October 2004. INSAT - 4A Send for direct to home TV broadcast service. IRNSS - 1A Send at 1 July 2013. Mangalyan was launched into orbit on board indigenous PSLV - C25 rocket at 2.35 pm on November 5, 2013 by ISRO from Satish Dhawan space centre at Sriharikota, Andhra Pradesh. The development of space technology have solved the country's requirement in the field of remote sensing and communication.

Er. Ingersol presented a powerpoint on "Space technology Applications for the Society". The earth is 3 lakh 84000 kms distance from the moon. According to Dr.Vikram Sarabhai "We must be second to none in the applications of advanced technologies to the real problem of man". Space technology is technology that is related to entering and retrieving object or life forms from space. The Space Infrastructure are *launch vehicles (PSLV, GSLV) * Space crafts (LEO, GEO) and beyond * sensors and transponders. Indian space organization was started at 1962 in a church. 3 kgs of rockets and 10 kgs of rockets were used at first. But, now 300 kgs of rockets were using. The goal of space technology is to develop economic in the society. Infra spectrum's image is helpful to learn about the problems in planets. Remote sensing

technology is helpful to learn the wealth of forest and water. Satellite is used to know about potential information. Space science technology is costly technology. The Multipurpose s/c platform are * DTH, interactive TV and towards HDTV * Increased number of transponders * c; Ext - c; ku band * Regenerative transponders. India's priorities . . . touching mainly are food security, water security, Environment Assessment monitoring, weather and ocean state forecasting. Modern satellites are communication satellites, Remote satellites, Weather Satellites, Space telescope satellites, Scientific Satellites, Space Station Satellites, military satellites & Rescue Satellites. Chandrayan I is the India's first mission to moon. Mineral resources present in India are fcc, fcc ratio's and Ejecta minerals. Space technology and new horizons are manufacturing in space, energy from Space. Interplanetary exploration, Behavioral study of humans in space environment human mission to moon and mass, Reusable launch vehicles, low-cost access to space, space tourism, Electrical Propulsion and Nuclear propulsion. Areas of interact in space sciences and technology are space exploration, universe - its dimensions, space based communication system, Gravity - the universal binding force, Solar system, planetary exploration and Sun - source of energy. Steffy given feedback.

Lecture II :

Team Co - ordinator : Achsah

Achsah gave an introduction about "Environment Protection". Environment is compliment to all beings. Many disturbances were caused to Environment. Trees absorbs CO_2 and release O_2 during Photosynthesis. One billion of people is depending in the forest. Forest in Kanyakumari district is decreased from 30% to 19% due to deforestation. The use of fact and most production leads to depletion of certain resources of nature. Air is mixture of gases. Three main gases were Nitrogen of 78%, Oxygen of 21% and argon of 1%. Smoke released from industries cause air pollution. Due to air pollution lung cancer affect us. The consequent temperature increase in atmosphere is called global warming. Soil is the uppermost layer of the earth where plant grows. Plants depend directly upon the soil for growing. "A nation destroys the topsoil destroys itself". Soil erosion is caused mainly due to the pesticides used for agriculture. Soil Erosion decreases the soil fertility Contamination of water is due to pollutants released from sewages and domestic wastes, pesticides and agricultural run offs, Industrial wastes, nuclear wastes and oil spills. So, we should protect our environment.

Mr. Joe Prakash released a book. It is about Animals in Kanyakumari district. It was given to all the coordinators and us.

Mr. Sundar Raj (Rtd, District Forest Officer) presented a power point on "Environmental Protection" - the sum total of all surroundings of a living

organism, including natural forces and other living things. Our surrounding were originally a natural landscape such as forest, river, mountain, desert or a combination of these elements. People who live in cities get their food supply from surrounding villages. These villages in turn are development on natural landscape for resources. Our daily life is closely linked with our surroundings. We breathe air. A person needs 3 oxygen cylinders/day @ Rs. 700 / each / for 65 years will be Rs.4,98,22,500 in future. We use water to drink and for other day to day activities. We depend on the community of plants and animals which form a web of life, of which we are also a part. Everything around us forms our environment. Our dependence on environment is too great. We cannot continue to live without conserving the earth's environment resources. During 1446, there was severe drought in Marwar (Jodhpur) region of Rajasthan. The famine continued for 8 years. 'Jambaj' the spiritual leader of that region preached 29 principles. People who followed those 29 principles are called "Bishnais". They grow large number of Vanni and Ilanthi. In 1730, King Ajith Singh ruled Marwar. He wanted to build a fort. He send his soldiers to cut the trees from the village "Khejarli" of "Bhishnais". 'Amrita Devi' embraced the tree along with her three daughters and sacrificed their lives. 363 Bhishnais were killed in protecting the vanni tree. A tragic event in the history of the entire world to protect the trees. In Hindi, chipko means 'to embrace' or 'to hug' and that is what the Uttarkhand women had done in 70's to save the trees. In 1974, a Woman Gaura Devi organized 27 women of her village to protect the trees. Causes for environmental degradation are Population explosion, Urbanisation, Industrial revolution, Green revolution, transport, construction of dams, Nuclear Project, Thermal project, transport and Hydel project. Disturbances caused to environment are deforestation, desertification, Loss of Biodiversity, Toxification, Acidification, Global warming, depletion of ozone layer, Air pollution, Water pollution, Soil pollution, Noise pollution, Dust pollution, Radioactive, Oil pollution, Pesticide pollution and Plastic pollution. Environment is our heritage. Our forefathers lead a harmonious life with nature. As a result they have given to us a healthy and wealthy environment. It is our bounden and foremost duty to handover a clean environment to our future generation. UN has organized UNCEO also known as Earth summit. G7 is a group of consisting of 7 developed wealthiest and most industrialized nations like U.S, Japan, France, Germany, Italy, U.K and Canada. The environmental ethics are : * we must lead a harmonious life with nature. * we must preserve the forests. * Protect wildlife. The role of students were : * Develop respect for all forms of life. * we must know 4 things basically. * Plant more trees. * If garden is small, plant herbs or Geepers. * Prevent trees from being cut. * Reduce the use of paper * save precious rainwater. The word nurture means to nourish birds, animals, insects, water, air and earth. Achshah given feedback. Mr. Joe Prakash honour

Mr.Sundar Raj with ponnadai. We had our lunch at 1.15pm. After our lunch we came back to the same hall at 2.00pm.

Theme Lecture : III

Team Co-ordinator : Jeshwini

Jeshwini gave an introduction on "Nuclear energy needs". Energy is important requirement. 9 lakhs 40 megavolt power increased 2013 by the last year. The great sources of power are wind power and solar power. The carbondioxide and sulphurdioxide are the gases emitted by nuclear power. Germany has the shortage amount of nuclear resources. India has largest thorium in the world. There are 21 nuclear reaction in India. Nuclear energy is not only used for power generations but other uses. Nuclear energy is also used in nuclear medicine. Nuclear energy even used for agriculture in Maharashtra. Mr.Edwin Sam honoured Er.Benzigar Rajan with ponnadai.

Er. Benzigar Rajan presented a power point on "Nuclear energy needs". Sun is the very huge nuclear plant. Nuclear energy came from the system called atoms. Atom has 3 quantity. They were proton, electron and neutron. The weight of neutron is 674×10^{-27} kg, proton is 672×10^{-27} kg and electron is 9.102×10^{-27} kg. Electron is having nuclear which is constitutely by protons and electrons. All protons has positive charge and all electrons has negative charge. Nuclear energy is called atomic energy. The forms of energy are heat energy, chemical energy, electromagnet energy, nuclear energy and mechanical energy. Heat is produced because of collision of electrons. Chemical energy is the bounding of atom. The nucleus of an atom is the surface of nuclear energy. When the nucleas splits, nuclear energy is released in the form of heat energy and light energy. Nuclear energy is also released when nuclei collide at high speeds and join. Nuclear energy is the most concentrated form of energy. 1 ton of coal = burning of 10 kg of uranium. Indian nuclear starts from Gujarat, Haripur, Jitapur, Maharashtra and Koodankulam. TamilNadu is the largest producer of coal. Kaiga, Kakrapur, Kalpakkam, Naroa, Rawatbha, Tarapur, Koodankulam has nuclear plants in India. In nuclear fusion, two nuclei with low mass numbers combine to produce a single nucleas with a higher mass numbers. Fission are bombared with neutrons, their nuclei splits into two parts which are roughly equal in size. In a conventional nuclear power plant:

- ❖ a controlled nuclear fission chain reaction.
- ❖ heat water.
- ❖ Produce high pressure steam.
- ❖ That returns turbines.
- ❖ Generates electricity.

Nuclear power generation does emit relatively low amounts of Co_2 . The emissions of green house gases and therefore the contribution of nuclear power plants to global warming is therefore relatively little. This technology is readily

available, it does not have to be developed first. It is possible to generate a high amount of electrical energy in one single plant. Energy equivalents is

- ❖ Uranium fuel pellet has as much energy available as.
- ❖ 3 barrels of oil = 1 ton of coal.
- ❖ 1 cord of wood = 17000 cubic feet of natural gas.

Jeshwini given feedback.

Theme Lecture IV :

Team Co-ordinator : Fathima Haashima

Fathima Haashima gave an introduction on "medical science". "Health is wealth". A well known and even proverb describes the significance of complete physical, mental and social well being and not merely the absence of diseases or infirmity. Health and hygiene plays a vital role in our lives. Health for one is how the body condition is and hygienic is the one how he take care of his body. In India a number of endemic communicable diseases present on series public health hazard. Over the years where Government has setup a variety of natural programme aimed at controlling the diseases. Small pox formally significance source of mortality eradicated as part of the worldwide effort to eliminate that disease. Malaria, Leprosy, Pneumonic plague, diarrheal diseases, dengue fever, hepatitis, tuberculosis are few diseases which are still hazardous disease in our country with millions of people suffering from diseases and ailments that simply no longer exist almost anywhere else on the planet, India had grown economically to an incredible depth. Malnutrition, obesity, diabetes, epidemics of AIDS, chronic heart diseases etc., are seriously affecting problems of our society now - a - days. My. Sajeew honoured Dr. Jayalal with Ponnadai.

Dr. Jayalal presented a powerpoint on "Health and medicine". Health is a state of complete physical, mental and wellbeing . The six dimension of health are Emotional wellness, Intellectual wellness, spiritual wellness, occupational wellness, Social wellness and Physical wellness. Most people do not die. They kill themselves by their wrong actions before living a full life span. The two types of disease are communicable disease and non-communicable disease. Risk factors of Suicide is an undiagnosed untreated or ineffectively treated mental disorder. Obesity is caused due to junk foods. So, Avoid Junk foods. Fear has two meanings. That is "Forget everything and turn, forget everything and rise". According to Dr. Abdulkalam "Mistake is your best teacher". The famous failures are Albert Einstein, Michael Jordan, Walt Disney, Steve Jobs and Oprah Winfrey. If we can believe in us, we can live healthy.

Fathima Haashima given feedback:

Theme Lecture V :

Team co-ordinator : Meera

Meera gave an introduction about "Food and agricultural challenges". According to Arthur Keith "The discovery of agriculture was the first big step

to the civilized life". India is agricultural country with diverse climate, crops and cropping system. But, now it is facing lots and lots of crises especially in reduction in land area due to increased population growth. The destruction of forest also leads to uneven climate change which leads to scarcity of water for agriculture. Delayed monsoons, reduced land area, labour shortage, uneven market prices brought great difficulties in farming community. In today's world food is poison and poison is food. We live with food, food doesn't live with us. Mr. Balakrishna honoured Dr. Sugin Herbert and Mr. Samraj with ponnadai.

Dr. Sugin Herbert presented a power point on "Food & agricultural challenges". Agriculture is the cultivations of animals, Plants, Fungi and other uses. Challenges in cultivation is to get right nutritional support. Food production will have to rise 60% - 70%. Important problems in agriculture are climate, soil degradation, water scarcity and populations. Rainwater collect on multistoried roof can use for agriculture. Poor storage is 1 billion of kg food grains rotten every year in India. To protect agriculture be a farmer ourself. Whatever area find in our location we should plant the plants.

Admist, some great personalities came to our meeting. Dr. James Wilson gave introductory address. He invited Steffy to talk a few words.

Steffy present about "Industrialization". Today the world is fact paced. The reason is industrialization. The use of fact and most production lead to depletion of certain resources of nature. The smoke released from industries leads global warming. Toxic wastes from industries were main cause for the pollution water. Industries also affect land. So, protect our mother earth.

The Central Minister conveyed gratitude to Sigma Management and all of us. He wished us.

Dr. Sugin Herbert continued his PPT. To be healthy, be a dietician. We should know what we can eat, what we can't eat. Every 35 years, our skin replace itself. Our liver, about a month. Our body make these new cells from the food we eat. What we eat literally becomes 'we. Meera gave the feedback.

Mr. Velaian told National Science day celebration is very nice. The 5 Speeches were very informative. He said next meeting is on 3rd March at IIIST, Thiruvananthapuram.

One by one all the dignitaries wished us success in life. Capt. Bennet Singh concluded the programme by Vote of thanks. The programme ended at 4.30 pm by National Anthem.

Feedback:

It is a very useful programme. The 5 Speeches were very informative. I could to learn a lot from their PPT. So, I express my sincere thanks to Mr. Velaian and all the 'KAP' members.

Thank U.

