



FROM THE EDITOR'S DESK

Hello members!

We are being bombarded with science news every day. A lot of research in every field of science is underway. And we always seem to lag behind in imbibing these informative and interesting reads. Interestingly, science keeps changing. It was in 80s that scientists believed that you must limit dietary cholesterol to maintain normal cholesterol levels in your blood. Today you see a sea of change!

Dietary Guidelines Advisory Committee brought out a 2015-2020 Dietary Guidelines for Americans, 'Cholesterol is not a nutrient of concern for over-consumption'. Now instead of curbing the dietary consumption of cholesterol, the recommendations are to limit the intake of saturated fats and trans-fats to less than 10 per cent of the total dietary intake.

This is the age of CRISPR-Cas9 a gene editing technique that can target and modify DNA in living organisms. The technique is much simpler, precise and less expensive than the older gene technologies.

The year 2015 has been an eventful year with findings in space, on Earth, technological innovations and its perils and advances in biology, health and medicine. The year marked the centennial of Albert Einstein's general theory of relativity. Climate change remained as one of the hottest stories. This was the year of the dwarf planets Pluto and Ceres and new view of Mars. The latest science news concerning orbs includes a joint mission launched by Europe and Russia to Mars to investigate whether methane in the Mars atmosphere comes from microbial life.

Revolution in physics as gravitational waves was seen for the first time. In February 2016 scientists discovered Einstein's gravitational waves produced from the collision of two black holes of 36 and 29 solar masses, respectively, which merged to form a spinning 62-solar-mass black hole, some 1.3 billion light-years away from Earth. The advanced Laser Interferometer Gravitational-Wave Observatory (LIGO) laboratories in the US traced the warping of spacetime. This observation provides evidence for unverified predictions of Einstein's general theory of relativity.

Laser Interferometer Gravitational-Wave Observatory (LIGO) India project was approved by the Union Cabinet on the 17th February 2016, giving a large boost for Indian initiatives in gravitational wave research and astronomy.

Tata Institute of Fundamental Research at Mumbai is now in the process of designing and fabricating a prototype interferometer, which will help train and familiarise scientists in the detection of gravitational waves. Pune's IUCCA, Indore's Raja Ramanna Centre for Advanced Technology and Gandhinagar's Institute of Plasma are other institutes involved in the project.

It is important to recognise that science involves as much creativity as any other creative discipline. We at the NCSC have been supporting science education at schools and teachers-training programme. In fact, science education is not a matter of rote learning and grunt work. It is imaginative and exciting. Formal science education begins as early as when the child is admitted to a school. Children have the ability to learn and to retain knowledge.

In order to inculcate a scientific temper in children and get them interested in science various techniques were explored at the two-day National conference, on 'Creative Writing in Science for Children' jointly organised by NCSC and Homi Bhabha Centre for Science Education (HBCSE), Mumbai, on October 3 and 4, 2015 at HBCSE, Mumbai. The chief guest Jayant V. Narlikar, cosmologist and emeritus professor at IUCCA, Pune delivered the keynote address at the conference.

Over the past few years' technology has taken over society. A groundbreaking technology of the year 2015 comes from Israel. Supply of fresh water in the world is inadequate to meet the increasing needs of growing population. To curb that, supply technology has deployed the largest and cheapest reverse-osmosis desalination plant in Israel producing 627,000 cubic meters of water daily.

Science & Technology is growing by leaps and bounds and in the coming years, the progress would be phenomenal. Technology Information, Forecasting and Assessment Council (TIFAC), Government's autonomous

technology think-tank under the Department of Science and Technology (DST), has come out with a visioning exercise Technology Vision 2035 (TV 2035) to develop a long-term technology perspective for India.

The document is supplemented with 12 sectoral roadmaps - Education, Medical Sciences and Healthcare, Food and Agriculture, Water, Energy, Environment, Habitat, Transportation, Infrastructure, Manufacturing, Materials, Information and Communication Technology (ICT). Technoscape, a snapshot of the sectoral roadmaps is included as a pullout in the document. TV 2035 tries to map technologies that would prevail in the country in the next two decades. The Vision document charts out the agenda for future in the domains of Science, Technology and Innovation.

To put forth the TV 2035 document in front of academicians, policy makers, scientists, engineers, teachers, student community, communicators and many more, a National conference on 'Technology vision 2035' was organised by National Centre for Science Communicators (NCSC) jointly with Technology Information, Forecasting and Assessment Council (TIFAC) and National Council of Science Museums (NCSM) on 18th April 2016 at the Nehru Science Centre, Worli, Mumbai.

When we have so much of science news in every sector, public engagement of science is more important than public understanding of science. So we move on from the knowledge deficit model style to engagement style communication.

The years 2015 and 2016 until now have remained very fruitful for NCSC. There have been several science communication endeavours and members have participated wholeheartedly in all. The list of events is long but we have tried to incorporate the salient features of what all has happened on the NCSC front till to-date.



Happy Reading!
Dr. Parul R. Sheth



Technology Information, Forecasting and Assessment Council (TIFAC), a technology think tank under the Department of Science and Technology (DST), oversees technology trends and makes an effort to delineate possible technology trajectories that the country needs to take. TIFAC has made significant contribution to Indian S&T system by bringing out technology vision documents, technology assessment and foresight reports besides supporting technology innovation, technology infusion in Micro, Small and Medium Enterprises (MSME) sector and patent facilitation.

Recently, TIFAC has brought out the Technology Vision 2035 document, under the leadership of Dr. Anil Kakodkar, Chairman, TIFAC and National Apex Committee and mentor, Technology Vision 2035. This is an outcome of an extensive visionary exercise involving about 5000 experts across 12 key sectors of national importance. The Hon'ble Prime Minister at the 103rd Indian Science Congress released the document on 3rd January 2016, held in Mysore.

In brief, this document captures the needs and aspirations of Indians in the year 2035 and enunciates them in the form of 12 prerogatives – 6 individual and 6 collective; a set of 10 Grand Challenges has also been identified. Towards achieving these prerogatives, a range of technologies at different stages of evolution has been identified as enablers in this context. This document is also being followed by technology road maps of 12 key sectors. A brief of these road maps is captured as "Technoscape" in the document. You may access the document at www.tifac.org.in

NCSC is playing its cardinal role as S&T communicators in creating public understanding of TV 2035 by facilitating interaction between the TIFAC think-tank team and selected stakeholder groups for diffusion and dissemination of the essence of the document. A focused action plan can transform such technology vision into realisation.

Taking this into consideration, TIFAC jointly with NCSC and National Centre for Science Museums (NCSM) organised a conference on 18th April 2016 from 10 am to

5 pm at Nehru Science Centre, Dr. E Moses Road, Worli, Mumbai 400018. The programme in addition to the presentations on the main TV 2035 document by TIFAC team, included plenary sessions on four sectors – Education, Information and Communication technology (ICT), Energy, and Medical Sciences & Health Care.

Mr. Suhas B. Naik-Satam, General Secretary, NCSC and convener of the conference, coordinated the event. Mr. Shivaprasad Khened, Director, Nehru Science Centre, Mumbai and Mr. A.P. Deshpande, Chairman, NCSC welcomed the guests. Dr. A.P. Jayaraman, Vice Chairman, NCSC, delivered the opening remarks. He gave an insider view about how the idea to hold the conference was conceived.

Dr. Anil Kakodkar related the objectives of the proposed National discussion. He specified that the key ingredients of GDP are raw materials, human resources, technology and innovation. According to him, there is a need to ensure that technology is used with care because it enables strategic autonomy against restrictive regimes driven by political, economic and military interests. And hence robust decision-making is necessary to put technology into practice to avoid vulnerabilities.

There is an urgent requirement to make the R&D more productive, to evolve and nurture innovation ecosystems and to respond to technology development demands. A mindset change in domains – politics, society, academia, industry and bureaucracy is imperative, averred Dr. Kakodkar.

Dr. Prabhat Ranjan, Executive Director of TIFAC, giving an overview of the Vision document revealed that the aim of the document was to ensure security, enhance prosperity and strengthen the identity of Indians in 2035 using technology as both enabler and driver, to scale the growth. Citing the example of guar gum-related patents he stated that the manufacturing suffers because of a culture that looks down upon working with hands. He called for a change in the mindset on issues of physical labour.

Dr Ranjan listed 10 grand challenges before the nation, which included tackling anaemia in women and children, ensuring quality and quantity of water in aquatic bodies, providing learner centric, language neutral holistic education to all and understanding the national climate pattern and adapting to it.

Dr. Bal Phondke, one of the authors of the TIFAC document, brought out the salient features of the document. Dr. Gautam Goswami, Head, Technology Vision 2035, spoke about the making of the document. Twelve Advisory Committees were formed to provide sectoral perspectives and foresights for this definitive document. This massive

exercise involved 5,000 experts directly and about 20,000 people indirectly.

The plenary sessions began with the Education sector, in which TIFAC lead speaker Professor Varun Sahani, one of the authors of TIFAC document, Professor in International Politics at the Jawaharlal Nehru University (JNU), New Delhi, revealed that the document would meet the new demographics of India in 2035. Dr. H.C. Pradhan, Former Director, Homi Bhabha Centre for Science Education (HBCSE), TIFR made suggestions regarding the use of TV 2035 document in schools and teacher-training programmes. In the same sector, Professor B. M. Bhanage, Professor of Industrial and Engineering Chemistry, Dean, Institute of Chemical Technology, Mumbai stressed on the need for transformation in the Indian higher education system. He pointed out the need to make reforms at the state University level. Teaching in state universities and colleges can be improved by using digital learning technologies.

The next session dealt with Information and Communications Technology (ICT) sector. TIFAC speaker Dr. Ashok Jhunjhunwala from Department of electrical Engineering, IIT Madras stressed about the need for ICT development in India. According to him India excels in ICT services but not in ICT products. His recommendations included affordable online services; making ICT products, better infra structure and better industry-academia links to help research beyond mere paper-publishing.

Mr. Devesh Rajadhyax, Founder and CEO of Cere Labs, Mumbai, praised the Vision document and emphasized the attainment of the 12 prerogatives for each and every Indian by 2035. He stressed on the fact that individual actors such as students and entrepreneurs are forces behind early stage technology. Such principal actors are identified for each stage of the timeline. The actors have certain motivations. The motivations stem from their background and upbringing, and drive their actions. It is extremely important therefore to align the priorities of Technology Vision with these motivations.

Mr. Rajadhyax highlighted the prerogatives and technologies that are important for the 'Left Out or Left Behind' segment of population and discussed why the technologies related to this segment are usually not preferred by implementers and what can be done to change the situation.

The post-lunch session dealt with the sector Energy. TIFAC speaker Dr. Ranjan Banerjee, Department of Energy Science and Engineering, IIT Bombay, Mumbai, talked about India's energy status. Even with 1/6th of world population, India consumes only 6 per cent of world's energy. He mentioned that in the past decades in India the proportion of power generated from renewable sources

has shrunk. Stating the energy goals of TV 2035, Dr. Banerjee recommended policies like developing an enabling ecosystem for energy sector and energy services.

Professor S. P. Sukhatme, Professor Emeritus, IIT Bombay, spoke about estimating India's future needs of electricity. The present mean annual per capita supply of electricity in India is only around 800 to 900 kWh. This is a low value and it is accepted that it will have to increase in the future. His talk concerned with two aspects, which could find a mention in TIFAC's Energy sector in TV 2035 document.

The first aspect he suggested was to lay down the future goals which India must eventually strive to achieve in terms of the value of the mean annual per capita supply of electricity in order to become an economically developed nation. The second aspect concerns with the nature of the distribution of the supply around the mean with respect to the population.

Professor Ravi B. Grover, Chairman, Homi Bhabha National Institute, Mumbai commented that India's energy installed capacity is only 298 GW while the envisioned increase was around 236 per cent within just 20 years. He also touched the worrisome problem about energy storage and

skyrocketing prices of lithium, the primarily used storage medium. Dr. Grover lauded TV 2035 document for pointing out various challenges to the R&D community in India.

The session on Medical Sciences and Health Care sector began with Dr. W. Selvamurthy, former Chief Controller, R&D for Life sciences, DRDO, New Delhi. He gave a detailed overview about India's health care status. He specified about maternal mortality, infant mortality, which form the focus of TV 2035 Technoscope for sector Medical sciences & Health Care. He pointed out the document's recommendations to improve life by providing nutritional interventions, improving public health and hygiene awareness.

Dr. Bal Inamdar, Obstetrician & Gynaecologist, Rotarian, Past District Governor, put forward his concern regarding maternal and infant mortality rates in India. According to him, more than 20 percent of all such deaths occurred in India. And this is a direct consequence of 48 per cent of live births in absence of skilled personnel. India is the 18th lowest spending country on health in the world.

Dr. Bijoy Kutty, Cardiac surgeon, Director, Icon heart Centre & Platinum Hospitals averred that nothing can undermine the importance of a healthy India. According

to him the probability of death for people under 15 is as high as 22 per cent. Due to the vast population of India and poor healthcare, non-communicable diseases alone cost \$ 2.58bn annually; an amount equivalent to the entire GDP of India and the productivity loss due to cardiovascular disease 17.9 man-years.

Dr. Kutty suggested improvements in healthcare such as installation of effective equipment like the Intra-aortic balloon pump (IBAP), which can save lives and cost-effective procedures such as beating heart surgery. In addition, he mentioned the use of nanotechnology in targeted pharmacological approach, an example of a developing field that will revolutionize future healthcare.

Dr. Anil Kakodkar summed up the day's proceedings. In his concluding remarks he stressed that technology development is an inherent cultural issue for India and hence only a change in mind-set and culture would facilitate research that creates technology. He urged the audience to become ambassadors for the ambitious endeavor TV 2035.

- **Dr. Parul R. Sheth** with inputs from **Mr. H.K. Thambi** and **Mr. Abhay Mokashi**

CONFERENCE REPORT

CHILDREN'S SCIENCE LITERATURE IN THE CRUCIBLE OF CREATIVITY

- By Dr A P Jayaraman

(Conference Convener, and Vice Chairman, NCSC)

NCSC and HBCSE jointly organized a two-day unique and immersive conference on 3 and 4 October, 2015. The theme of the conference was Creative Writing in Science for Children. A packed hall of 250 attendees listened to the Creative science litterateurs in rapt attention.

The attendee professional profile was academic and the femininity environment was luminous. Senior science teachers, content creators, editors, writers, illustrators, science communicators and scientist communicators comprised the participants. Many were at the doctoral level and most were at post graduate level. Women traveled long distances from Delhi, Hyderabad, Bengaluru and Kashmir. A lady professor with a bevy of her graduate science students came from mofussil town. A veteran architect of



Peoples' Science movement of Kerala struck by the visible and sustained attendance whispered that this was not possible in the women empowered state of Kerala.

The curtain raiser event was purely functional. No prayer, no lighting and no bouquets. At the stroke of ten, Dr. Parul Sheth, Treasurer NCSC smartly moved to the mike and took control of the assemblage. Er A.P. Deshpande, Chairman NCSC briefly narrated the professional activities of NCSC

and the continuing programs in the mission of science communication. Dr. Jayashree Ramdas, Director HBCSE gave a short summary of the Centre's engagements in science education. Dr. A. P. Jayaraman, a Vice Chairman and convener of the conference gave a brief history, design features and critical creative elements of the conference. He informed the audience that sessions were not topic based and the resource persons would share their unshared cumulative experience in their long and illustrious career in creative science literature for children. Professor J.V. Narlikar delivered thirty minute long key note address. Sri. Suhas B. Naik Satam, a General Secretary of NCSC thanked the speakers closing the session.

A set of inquiring semi-structured questionnaire formulated from contemporary academic writings on the science and

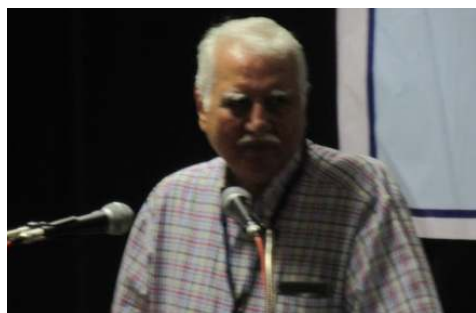


philosophy of creativity was generated and placed before Prof Narlikar for contemplative analysis two months ahead of the conference. He presented the psychological profile of a typical creative personality from empirical studies. Citing a Bulgarian school experience, he remarked that the teacherly inhibition to creative sparks from students in classroom was discernible. He highlighted the milieu in creativity and stressed the need for a congenial organizational behavior.

He expounded how creativity of great authors can be further enhanced and described his own endeavor of "Jeeves and the psychology of the inventor" in Wodehousian fashion. He lamented the typical Indian layman's insensitivity to science rubbishing it as beyond my ken. What distressed him most was the vicious grip of traditional rituals like garlanding icons even in advanced research centres like BARC and TIFR.

As an antidote to this virulent anti science syndrome, he advocated intense science popularization and pointed out science fiction as a creative vehicle to enter the minds of children. He gave insider details of how Fred Hoyle wrote the SF novel The Black Cloud when prestigious science journals rejected the concept of interstellar molecules. The possibilities inherent in SF and the exploitation of those by creative minds are necessary conditions for a mature scientific age.

The audience listened with riveted attention as the exposition was a journey through the uncharted space of creativity and an unpublished seminal analysis of the science behind creativity from a renowned astrophysicist and a famed science fiction author.

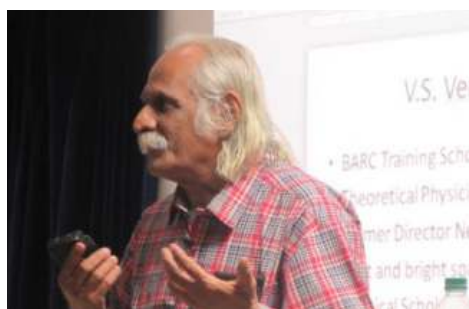


Dr. Bal Phondke is a molecular biologist and a career scientist who consciously gravitated himself to science journalism and made indelible mark in science communication in our country. He was former editor of Science Today and Director of National Institute of Science Communication and Information Resources. He gave an enchanting account of the trajectory of creativity in Indian scicom domain illustrating with his sustained interaction and mentorship. The scientific leadership he provided and the inspiring guidance he gave as he was in the field as

a performer yielded magnificent insight into the dynamics of creative science literature for Children in India.



K. Krishnakumar is a mechanical engineer by professional education but is the cerebral celebrity in the Think Tank of KSSP and BGVGS. Like a skilled magician, he took the attendees into his maglev path and revealed the brave new world of scicom. He underlined the societal impact of science and cited historic interventions facilitated by science. Well known as the architect of total literacy movement, he presented his prescriptions and proscriptions for creative writing and teaching of science to children in his signature style. His powerful advocacy resonated in the slogan of science for social revolution at the front end of early childhood science education.



Dr. V. S. Venkatavardan, an eminent Physicist and former Director of the Nehru Planetarium, Mumbai energized the post lunch session engaging the total attention of the participants. He delivered a curious amalgam of science and poetry and ignited passion for creative expression of scientific themes. He blended Shakespearean imageries with the metaphors of modern science in a child friendly manner.



Dr. B.B. Singh is a radiation biologist and a jurist of intellectual property rights. Cheating and copying by writers and illustrators plague the landscape of creative writing for

children. Some plagiarists believe that they would not be caught and some are too lazy and sloppy to work hard. He clarified that a common malady among modern writers is self-plagiarism when one is using one's own work fully or partially, or is expressing the same thoughts in another form through different media without referencing its original version. Thou shall not steal was the loud and clear message he transmitted.



Professor S. Sivadas, monikered as Asimov of Kerala having written more than 170 creative science books for children and bettered Asimovian record presented his reflection of wrestling in creative solitude for over fifty years with sciency stuff for children. On the stage along with him was Venki Thalath, who illustrated all his books. The creative author and his innovative illustrator presented a singularly magnificent insight into the triangle of creativity of person, process and product. Sivadas dissected his leading child-centric characters, delineated their anatomy and described their physiology in his inimitable style.



"I experimented with all forms of literature-stories, dramas, puppet dramas, articles, cartoons, comics, posters, riddles, puzzles and so on. As the editor of 'Eureka' I got the opportunity to do a lot of experiments in creative science literature." He continued his majestic journey through his creative world sharing his discoveries for the sciency child. He summed up with the release of his work on Eco novel. "The aim of creative science literature should not be limited to teaching science or development of scientific temper and healthy social outlook. Good creative science literature could also be used to develop healthy social outlook, self-confidence and ecological perceptions." He concluded his mellow presentation as a true professor in intellectual sincerity and academic simplicity.



Ms Chandana Chakrabarti, Science Communicator, co-author with Dr Pushpa Bhargava and an irrepressibly passionate advocate of the scientific method asserted the absolute need for propagating scientific method among children to ward off the evils endemic to society. In a provocative and disarming pattern she presented the sad state of contemporary educational scene and how anti-science is being patronized by learned academies and governmental institutions. She pointedly drew attention to the constitutional mandate and sanctity of scientific temper and her encounter with jurists on the issue. With compelling and cogent arguments, she pleaded for the healthy growth of scientific thinking skills in children.



Devendra Mewari, a botanist and an acclaimed children's science writer in Hindi was totally immersed in his creative world where he writes science with his literary pen. "While writing for children, I have experimented in various styles keeping in view that my text is full of warmth, clear and easy to understand. I am conscious of the fact that I am writing for children of today in the language that sounds of now and the styles that appeal to the present generation of children." In interactive communication with school children he conducts a guided tour through the solar system with his imaginatively created spaceship Kalpana.

Vithal Nadkarni, an international minded science journalist and a former editor in Science Today is critically appreciated by connoisseurs for his cutting edge sciency stories created by a transmutation technique unique to him. Not to have read Vithal's



science stories is to be behind the times as he is always ahead of times. He vividly and graphically displayed his creative afflatus by a string of professional encounters with world class scientists with whom he cultivated strong relationships. The mechanism of creating science stories from primary references enriched with the thoughts of vanguard scientists was discussed.



Dr. A. P. Jayaraman, a nuclear engineering scientist and an international science story teller came to the stage with his narrator Ms. Rekha Bajaj and his Illustrator Venki. Rekha is a biophysicist and a teacher trainer of Royal Society of Chemistry. He described how he transmuted an Indian folk tale and retrofitted into an embedded story of desalination to entertain children and to educate teachers on the prospects and promise of reverse osmosis.

When the Singspring plant delivered potable water from grey water in Singapore, he fabricated the story. It was narrated by his Chinese narrator collaborator geologist, Ms Chuah Ai Lin in Singlish with telling effect with a workshop for teachers with derivative science questions. The book, Royal Shit and other Science stories was released on the occasion. Venki discussed the computer-aided illustration for the story Happiest Roman.



A flagship program titled Editors' Enclave was designed developed and delivered



to provide a glimpse of the structure and pathways of supply chain in Creative Science Literature for Children under the leadership of Dr. Parul Sheth. Ms Anjana Vaswani, 2015 winner of Sharjah International Book Fair winner gave the knowhow of how she selects and transmutes folk tales infusing them with the features attractive to today's children. Sri Rakesh Khanna from Ace Media, presented their best creative products on a variety of NCERT syllabus-friendly products of Brainwave. He suggested a paradigm shift that false positives are more innocuous than virulent false negatives as a heuristics in creative writing for children in science. Ms Vrushali Sheth from RAPPLES took the audience through a swift short and succinct animation capturing the quintessence of writing from cave age to interactive age. Mr Kingston DeSouza of KidZee has built strong educational bonds in early childhood education with over five lakh children.

A special science based magic show – Science on Stage- was presented by Sri Raju of Nuclear Power Corporation.

NCSC in collaboration with All India Radio(AIR) and partly financed by Vigyan Prasar has started broadcasting a serial in Marathi entitled "SAMANA AAPATTINSHI" "सामना आपत्तीशी" from December 6, 2015 at 9:30 am from all stations of AIR in the state of Maharashtra. In all till date, 11 episodes have been broadcast and another 15 will be broadcast uninterrupted except on the National Broadcast day. Dr. Kishor Kulkarni, General Secretary, NCSC is coordinating with AIR and Vigyan Prasar.

The topics covered till today are as follows:

- Structure and function of National Disaster Management Authority and

regional centres.

- Disasters : natural and manmade
- Tsunami
- Famine
- Epidemics and endemic diseases
- Biological warfare, chemical weapons
- Cyclones
- Stampede
- Storms, hailstorm and lightning
- Accidents : roads, railways and airlines
- Disasters due to high-rise buildings

- Role of National disaster Response Force in mitigating natural disasters

The next episodes in the pipeline are - control room of MCGM, cold waves and heat waves and disasters, interactive programme based on the responses received from listeners and reply to their queries. Climate change and impending dangers, various accidents in industries, and The National School Safety Programme are being taken up in 200 schools of Maharashtra. Mr. AP Deshpande, Dr. Parul R. Sheth and Dr. Kishor Kulkarni contributed scripts for this serial in addition to other writers are from outside NCSC.

REMEMBERING DR. VASANT GOWARIKER

Time and tide wait for none. It is hard to believe that, Dr. Vasant Gowariker passed away a year ago. But, he is not just a name, soon to be forgotten! Though he is gone, he will be remembered for years to come.

A gem like Dr. Gowariker had many facets. He played a major role in India's first Satellite Launch Vehicle (SLV-3) programme. He was a solid propellant for rockets, author of a book on Polymer Science and surprising enough, a monsoon predictor. He was also responsible for declaring, 28th Feb as National Science Day and the Awards for Science dissemination. Lesser known to many is that he was an encyclopedia of Pesticides & Fertilizers.

Dr. Vasant Gowariker was an adviser to NCSC, Mumbai, which was established in 1997 to



develop science communication in India. NCSC jointly with ISRO organised a seminar in fond memories of Dr. Gowariker on his first death anniversary at Bal Shikshan Sanstha of Maharashtra Education Society, Pune on January 2, 2016. The program was organised

to inspire the younger generation towards a career in India's space sector.

To mark the occasion, a book 'The many facets of Dr. Vasant Gowariker', containing contributions by Dr. Gowariker's former colleagues and friends, including former President of India, Dr. APJ Abdul Kalam, was distributed free to the students and other guests. ISRO chairman Dr. A.S. Kiran Kumar, chairman, ISRO, presented Mrs. Sudha Gowariker with a brass model of ISRO's latest rocket - LVM3 or the GSLV Mark 3. Top ISRO officials, to name a few, Dr. Pramod Kale, Dr. R.R. Navalgund, Dr. Madhav Dhekane, Prof. A. Chandrasekhar and Shri G.S. Pillai, Managing Director, Walchandnagar Industries Ltd. graced the occasion.

6TH NATIONAL SCIENCE FILM FESTIVAL

Vigyan Prasar, (DST) New Delhi in collaboration with Nehru Science Centre, Mumbai, NCSM, Ministry of Culture, Govt. of India, organised the 6th National Science Film Festival (NSSF) and Competition (6th Rashtriya Vigyan Chalchitra Mela & Competition) during 9th to 13th February, 2016 at Nehru Science Centre, Mumbai.

NSSF is a process of unique bottoms up engagement amongst citizens engaged in films based on Science and Technology Communication. It provides an excellent opportunity to engage different cross sections of society on S&T issues, which are so essential in the modern world.

NSFF is being organised since the last 5 years to promote scientific temper in the country through science, environment and health related films. The festival aims at motivating filmmakers and students towards science films and recognising their efforts at national level. Every year

about 150 films are received from various organisations, independent filmmakers and student filmmakers.

Film makers and film enthusiasts (professional and students) at NSFF are awarded National Beaver Awards - trophies and cash awards. Award winning films are screened across the country throughout the year by various state and central government agencies.

This event has been receiving outstanding response from different parts of the country. Five successful National SSFs and Competitions have been organised since 2011 in different parts of the country in the esteemed presence of noted film directors and actors like Shri Muzaffar Ali, Shri Adoor Gopalakrishnan, Shri Amol Palekar, Dr Chandra Prakash Dwivedi, Smt Suhasini Mule and Shri Nasser.

This year Shri Shyam Benegal, Dr. Mike Pandey and Shri M.S. Sathyu graced the 6th NSFF 2016. Shri Shyam Benegal, eminent,



internationally acclaimed, film director, was the Chairman of the Jury for adjudicating the Science Film Festival. During the festival 65 short-listed films were screened. Workshops, interactive sessions and panel discussion on science films were organised.

At this event, Dr. A. P. Jayaraman, Suhas B. Naik-Satam and Dr. Parul R. Sheth were invited as panelists for the panel discussion on "Approaching and dealing with scientists for science filmmaking" on February 13, 2016 at Nehru Science Centre, Dr. E Moses Marg, Worli, Mumbai.



National Education Society (NES) International School Mumbai – (International Baccalaureate) IB world school in association with South Asian IB Schools Association, (SAIBSA) organized the 5th NES National Science Festival 2016 on February 27, 2016 as a tribute to Nobel Laureate Sir C.V.Raman on the discovery of Raman Effect. The festival was jointly organised with BARC, HBCSE and IIT at the NES International Mumbai – IB World School, Mulund, Mumbai.

Esteemed celebrities Dr. B.N.Jagtap, Director Chemistry Group, BARC, Dr. A.P. Jayaraman, Former nuclear scientist, BARC and Vice chairman, NCSC, Mr. Rajesh Bhojani, Head,



Business Development West Business, British Council, Prof. Shyam Sunder Iyer, IIT, Delhi, Dr. Srinivasan, Scientist, BARC, Dr. Kaisar Dopaishi, President, SAIBSA, Mr. Abraham Koshy, Vice Chairman, The Computer Society of India, Prof. Rajkumar Singh, IIT, Madras and Dr. Radha Srinivasan, Head, Physics Department, University of Mumbai, graced the occasion.

Dr. Meenakshi Ambasankaran, a family friend of Sir C.V. Raman was the special invitee who related her reminiscences and fond memories about Sir C.V. Raman.

Dr. R. Varadarajan, Secretary, SAIBSA and Principal, NESISM welcomed the guests and

delivered the Valedictory speech.

IB schools from South Asian Region participated in large numbers during the festival. The highlights of the festival were science exhibition – working models, filmmaking, NES International Youth Green Parliament (NYGP), science quiz completion, scientific drawing and painting contest, essay writing, debate, and teachers' seminar, dance competition on space science, skit and bio-jewellery.

At the 5th NES National Science Festival, Dr. Varadarajan felicitated Dr. Jayaraman and other Indian women scientists including Dr. Parul R. Sheth, who represented NCSC. She also judged IB students for debate competition for the junior and senior groups; the topic of debate being "Technology is a boon or a bane?"

Dr. R. Varadarajan (Extreme left), and Dr. R. Varadarajan felicitating Dr. Parul R. Sheth Dr. A.P. Jayaraman with other scientists.

SEMINAR ORGANIZED BY NCSC JOINTLY WITH MUMBAI PRESS CLUB



Dr. Sarada Bulchand, Dr. Parul R. Sheth, and Dr. A.P. Jayaraman

Mumbai press Club in association with

NCSC organized a programme on "Recent trends in Science Journalism & Science Communication" on Saturday, March 12, 2016 at Mumbai Press Club, Conference Room. The key speakers for the programme were Dr. A.P. Jayaraman, Vice Chairman, NCSC, Dr. Parul R. Sheth, Treasurer NCSC and Dr. Sarada Bulchand, Science Communicator, TIFR, Mumbai. Mr. Suhas B. Naik-Satam, General Secretary, NCSC and Mr. Mrutyunjay Bose, Mumbai Press Club, coordinated



the event. Mr. A.P. Deshpande, Chairman, NCSC and Mr. Jatin Desai, senior committee member, Mumbai Press Club, graced the occasion.

BRIEF SUMMARY OF PRESENTATIONS

Role of Science Communicators in public understanding of Science by Dr. Parul R. Sheth

Today, improving public understanding of science is an investment in the future and not a luxury. It is true that media representations of science and science-related policies are essential for quickly communicating scientific messages to public. However, some important parts of the scientific messages can easily get lost or garbled during communication.

Communicating science to people who are not well versed with science needs translation of ideas and concepts, which are often complex. You need to convert science into a comprehensible language and create interest in public without twisting the scientific truth.

There are several creative and innovative ideas to communicate science. Both science journalists and science communicators complement one another and should work together to promote public engagement with scientific knowledge with the help from scientists. Science journalism and science communication can be seen as a pairing, whose union and complementary roles are

necessary for producing better engagement with science.

Changing dynamics as I see it by Dr. Sarada Bulchand

Scientists and the media share a dynamic relationship. While most scientists are wonderful storytellers in technical language, reaching out to the wider public is challenging. TIFR has a legacy of outstanding research across the breadth of science where many scientists feel the urgent need to get their stories publicized. However, they also face various challenges. Scientists work to overcome these challenges in order to reach out to the community.

Changing demands of a science communicator with respect to the changing modes of communication in the context of the science communication activities that are taking shape at TIFR Mumbai and its centres across the country, were presented.

Building a bridge between research organisations and media by Dr. A. P. Jayaraman

Organized research in India is largely a governmental affair. In public interest the

outcome of research of societal significance has to be communicated to the stakeholders. This is usually done through the media. Media management is thus a recognised function and information flow is outward. In the absence of credible information, misinformation and disinformation fill the vacuum.

Bridge has to be built to connect the two disparate entities namely Research Centres and the Media. Beyond building the bridge as infrastructural facility, traffic has to be facilitated. And here comes the Media Manager. Media Management is a POEM. Planning, Organizing, Executing and Monitoring a supply chain of information linking production, distribution, exchange and consumption of information. Media releases have been fossilized and spin-doctors have been exterminated.

The agony and ecstasy of a media manager standing on one end of the bridge and managing the affairs was shared by experiential study cases underpinning the role of people management. Strategy, tactics and operationalisation were illustrated with examples.

JOINT LECTURE-SERIES BETWEEN NCSC AND MARATHI VIDNYAN PARISHAD, MUMBAI DURING MAY 2015- APRIL 2016.

May 12, 2015	Earthquake- how and why	Dr. Paresh Vaidya
June 20, 2015	Mumbai development plan	Mr. Vidyadhar Phatak
July 18, 2015	Smart cities	Ar. Sulakshana Mahajan
August 8, 2015	Science cartoons	Mr. Sanjay Mistry
September 27, 2015	Cancer-ayurvedic treatment	Dr. Arvind Kulkarni
October 17, 2015	Scientific civil construction	Dr. Mahesh Yasharaj
November 11, 2015	Science fiction-homage to Mr. Laxman Londhe	Dr. Bal Phondke, Subodh Jawdekar
December 5, 2015	New health policy	Dr. N.S. Deodhar, Dr. R.D. Lele
January 1, 2016	Facing competitive examinations	Mr. Raghavendra Kolhatakar
February 2, 2016	Scientific temper in Maharashtra	Mr. Dinkar Gangal
March 23, 2016	Yoga and health	Dr. Satish Pathak
April 16, 2016	Fire fighting mechanism in Mumbai	Mr. Pratap Karguppikar

INITIATIVE BY VIGYAN PRASAR

Vigyan Prasar (VP) an Autonomous Institute under the Department of Science and Technology, Government of India is proposing to commence an initiative, "Indian science News Feature Service" to showcase Indian science and communicate S&T developments in Indian labs, educational institutions and research institutions to people. The initiative proposes to bridge the gap between science and media.

In this context, a 'brainstorming' meeting was organised on March 21, 2016 at Vigyan Prasar, New Delhi. Dr. Parul R. Sheth was invited to attend the meeting, whereshe represented NCSC. The proposal to create a platform to showcase research work

of scientists working in laboratories and academic institutions across the country was discussed.

Research findings published in peer-reviewed journals or research work presented at conferences would be put forward in an easy-to-understand language, create a context for ready acceptance and generate content in the form of news and feature service, which can be used in the media straight away.

A five-point agenda was provided for the proposed Indian Science News and Feature Service.

1. Science web portal on Indian Science.
2. Science news/feature service in Hindi

and English. Feature service for print, radio, and TV media (both exclusive and non-exclusive). Video capsules for TV channels & Audio bytes/recordings for web and radio broadcast.

3. Custom created science illustrations/ graphics etc. repository.
4. Media interactions. Sensitisation of media personnel to reporting science. Focusing on smaller towns/cities to reach out to local/vernacular media.
5. Training – short-term training and orientation programmes for media students and young M.Sc and Ph.D scholars.

PRESS CLUB AWARDS

Redink Awards for Excellence in Journalism – 2016 were presented on April 26, 2016 at the NCPA's Jamshed Bhabha Theatre. The awards were handed over by the Governor of Maharashtra, Shri C.H.Vidyasagar Rao and Mr. Piyoush Goyal, Union Minister for Power, Coal, New&Renewable energy.

This year's theme for the Redink awards 2016 was "To rise above it all". A panel discussion – 'Who shot the messenger' was conducted by veteran journalist and columnist Shobhaa De, along with Ravish Kumar of NDTV, Siddharth Varadarajan, Founding Editor, The Wire, Sucheta Dalal, managing editor of Moneylife and Minhaz Merchant of Business Barons.

Amongst the many awards, T. N. Ninan,

Chairman & Editorial Director of Business Standard was conferred upon the Redink Lifetime Achievement Award for business journalism. Ravish Kumar, TV anchor and senior Executive Editor, NDTV was awarded the Journalist of the Year Award. The Redink Start-up of the Year Award was given to TheWire.in, a news and public affairs website that has experimented with various forms of Citizen Journalism with telling effect. Jagendra Singh was conferred the 'RedInk Veer PatrakarPuraskar' posthumously.

Apart from these four, awards were also given in the 10 other categories. Redink team received more than 1,500 entries across categories. The curators scanned through the entries and sifted them for the jury members. The jury members in various

categories went through a tedious exercise before arriving at the final list of awards.

Amongst the many categories, NCSC members were invited to be on the judging panel for the category Science and Innovation for print and television media. Dr. Bal Phondke, Mr. Suhas B. Naik-Satam, Dr. Parul R. Sheth, Dr. Anuradha Mujumdar and Dr. Siddhivinayak Barve were the invited jury members. The award for the best Science and Innovation story was presented to Ms. Gunjan Sharma, The Week in the print category and Mr. Pallav Bagla from NDTV was awarded for the best television.